

General Instructions

- (i) This booklet contains 299 questions, each provided with a complete, step-by-step solution.
- (ii) It comprises 299 single-correct multiple-choice questions.
- (iii) Attempt each question on your own before reviewing the given solution.

1. Upward movement of the thyroid gland is prevented due to?

- (A) Berry ligament
- (B) Pretracheal fascia
- (C) Sternothyroid muscle
- (D) Thyrohyoid membrane

Correct Answer: (B) Pretracheal fascia

SOLUTION:

Clinical pearl approach. The thyroid is wrapped by two layers: a true fibrous capsule and an outer sheath derived from the pretracheal fascia. It is this pretracheal (false) capsule that fastens the gland to the cricoid and thyroid cartilages, which is why a goitre rises on swallowing and not on tongue protrusion. The same fascia thickens posteriorly into Berry ligament, holding the gland against the cricoid near the recurrent laryngeal nerve. Eliminate the rest: the sternothyroid is an infrahyoid strap muscle that limits the gland from rising into the neck but is not its suspensory attachment, and the thyrohyoid membrane connects the hyoid to the thyroid cartilage, not to the gland. So the structure that prevents free upward movement of the gland is the pretracheal fascia. Reference: Gray's Anatomy, 41e, p 470.

Quick Tip: Think of the false capsule that binds the gland to the larynx and makes it move on swallowing.

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2. The reason for the long left recurrent laryngeal nerve is due to the persistence of which arch artery?

- (A) 3rd arch
- (B) 4th arch
- (C) 5th arch
- (D) 2nd arch

Correct Answer: (B) 4th arch

SOLUTION:

Embryology mnemonic angle. Trace the left recurrent laryngeal nerve and you find it hooking beneath the arch of the aorta. The clue is to remember the fate of each pharyngeal arch artery: the third becomes the carotid, the fourth becomes the aortic arch on the left and the proximal right subclavian, the fifth disappears, and the sixth gives the pulmonary arteries plus the ductus arteriosus. As the heart and great vessels descend into the thorax during development, the left recurrent laryngeal nerve gets caught beneath the persisting left fourth arch, which is the definitive arch of the aorta. That long downward course is why a left aortic arch aneurysm or a mediastinal mass can cause hoarseness (Ortner syndrome). The right nerve loops only around the right subclavian (fourth arch) and stays higher. Hence the answer is the fourth arch. Reference: Langman's Medical Embryology, 13e, pp 28, 239.

Quick Tip: The left nerve loops under the arch of the aorta, so ask which arch the aortic arch comes from.

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3. Ligation of the hepatic artery will impair blood supply in

- (A) Right gastric and Right gastroepiploic artery
- (B) Right gastric and Left gastric artery
- (C) Right gastroepiploic and short gastric vessels
- (D) Right gastric and short gastric vessels

Correct Answer: (A) Right gastric and Right gastroepiploic artery

SOLUTION:

Branch-tracing shortcut. Start from the celiac trunk, which splits into three: left gastric, splenic, and common hepatic. Anything you can reach by walking down only the common hepatic limb will lose its supply when that limb is tied. From the common hepatic come the right gastric artery and the gastroduodenal artery, and from the gastroduodenal comes the right gastroepiploic artery. Both therefore sit on the hepatic side. Now disqualify the distractors: the left gastric is a sibling branch of the celiac trunk and is fed independently, while the short gastric arteries hang off the splenic artery, the other celiac sibling. Neither is downstream of the hepatic artery. So the pair that loses flow is the right gastric and right gastroepiploic. In practice rich anastomoses (gastric arcades) often keep the stomach alive, but anatomically these two are the hepatic-dependent vessels. Reference: Gray's Anatomy, 41e, pp 1116-1117.

Quick Tip: Follow which gastric branches descend from the common hepatic artery and the gastroduodenal artery.

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4. Wolffian duct remnant in female is

- (A) Pouch of Douglas
- (B) Uterovesical pouch
- (C) Gartner's cyst
- (D) Broad ligament

Correct Answer: (C) Gartner's cyst

SOLUTION:

Remnant-matching angle. The trick is to know which adult female structures are leftovers of the mesonephric (Wolffian) system. The cranial part lingers as an epoophoron and paroophoron, and the caudal part lingers as the Gartner duct, whose cystic swelling in the anterolateral vaginal wall is the Gartner cyst. So the only mesonephric remnant in the list is option C. Reject the others on simple grounds: the pouch of Douglas and the uterovesical pouch are not embryological remnants at all but peritoneal recesses formed by reflections of peritoneum, and the broad ligament is a double fold of peritoneum draping the uterus and tubes. None has anything to do with the Wolffian duct. Therefore Gartner cyst is the answer. Reference: Gartner's cyst of vagina, J Anesth Crit Care Open Access, 2017.

Quick Tip: Look for the vaginal-wall cyst that is a mesonephric duct leftover, not a peritoneal pouch.

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5. Nerve supply of the extraocular muscles is constituted by all except

- (A) Ophthalmic nerve
- (B) Oculomotor nerve
- (C) Trochlear nerve
- (D) Abducent nerve

Correct Answer: (A) Ophthalmic nerve

SOLUTION:

Mnemonic-first elimination. The classic eye-movement rule is LR6 (SO4) 3: lateral rectus = CN VI (abducent), superior oblique = CN IV (trochlear), and everything else = CN III (oculomotor). That rule already names three of the four options as genuine motor supply to the extraocular muscles, so the odd one out must be the fourth. The ophthalmic nerve is CN V1, the topmost branch of the trigeminal, and it is purely sensory: it carries afferent input from the cornea,

conjunctiva, upper eyelid, forehead and nose, but it never makes a muscle contract. Being sensory, it cannot form part of the motor supply of the extraocular muscles. Hence the all-except answer is the ophthalmic nerve. Reference: BDC, 7e, Vol 3, p 215.

Quick Tip: Three nerves move the eye muscles. Which listed nerve is purely sensory?

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6. Claudication due to popliteal femoral incompetence is primarily seen in

- (A) Thigh
- (B) Calf
- (C) Buttocks
- (D) Feet

Correct Answer: (B) Calf

SOLUTION:

Level-localisation angle. Intermittent claudication is reproducible muscle pain on walking that eases with rest, and its location reliably points one level below the diseased artery. Build a top-to-bottom map: aorta and common iliac block gives buttock and thigh pain (the Leriche triad adds impotence and absent femoral pulses), the femoral segment gives thigh symptoms, the superficial femoral and popliteal segment gives calf pain, and tibial or pedal disease gives foot symptoms. Femoropopliteal disease is in fact the commonest location of atherosclerotic peripheral arterial disease, so calf claudication is the textbook presentation. Applying the map to popliteal-femoral incompetence lands squarely on the calf. Reference: BDC, 7e, Vol 2, p 137.

Quick Tip: The pain is one segment below the block. What muscle group does the femoropopliteal segment feed?

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7. Which muscle is paralyzed if there is hyperextension of the metacarpophalangeal joint and flexion of the interphalangeal joint?

- (A) Extensor digitorum
- (B) Interossei and lumbricals
- (C) Adductor pollicis
- (D) Pronator quadratus muscle

Correct Answer: (B) Interossei and lumbricals

SOLUTION:

Action-reversal angle. Picture the hand at rest: the lumbricals and interossei are the only muscles that simultaneously flex the MCP joints and extend the IP joints, balancing the pull of the long extensors and flexors. Knock them out and you read off the opposite of their action: the MCP joints fall into hyperextension (long extensors now unopposed) and the IP joints fall into flexion (long flexors now unopposed). That deformity is the claw hand, the hallmark of ulnar nerve palsy and worse in combined ulnar-median lesions. Run a quick contrast with the distractors: extensor digitorum paralysis gives wrist or finger drop, not clawing; adductor pollicis loss shows up as Froment sign at the thumb; and pronator quadratus is a deep forearm pronator with no role at the fingers. So the muscles paralysed are the interossei and lumbricals. Reference: BDC, 7e, Vol 1, p 163.

Quick Tip: Which intrinsic hand muscles normally flex the knuckles and straighten the finger joints? Their loss reverses both.

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8. Tumour of the uncinate process of the pancreas will compress which artery?

- (A) Portal vein
- (B) Superior mesenteric artery
- (C) Inferior mesenteric artery
- (D) Common hepatic artery

Correct Answer: (B) Superior mesenteric artery

SOLUTION:

Spatial-relations angle. The uncinate process is the part of the pancreatic head that curls to the left and projects behind the great mesenteric vessels. The defining anatomical fact is the sandwich: the superior mesenteric artery and vein pass in front of the uncinate process, while the aorta lies behind it. So any mass swelling out of the uncinate has the SMA draped directly over its front surface and is the first thing it compresses or encases. This is exactly why pancreatic head and uncinate cancers are judged unresectable when imaging shows SMA encasement. The other choices sit elsewhere: the portal vein forms behind the neck of the pancreas higher up, the common hepatic artery runs along the upper border toward the liver, and the inferior mesenteric artery is well below and to the left. Therefore the compressed artery is the superior mesenteric artery.

Reference: BDC, 7e, Vol 2, p 328.

Quick Tip: The uncinate process hooks behind the vessel running in the groove at the neck of the pancreas.

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9. A boy met with a motorbike accident. CT brain shows injury to the posterior end of the superior temporal gyrus. He is likely to suffer from

- (A) Fluent aphasia
- (B) Non-fluent aphasia
- (C) Conduction aphasia
- (D) None of the above

Correct Answer: (A) Fluent aphasia

SOLUTION:

Localisation-to-syndrome angle. Pin the lesion first: the posterior end of the superior temporal gyrus in the dominant hemisphere is Wernicke area (Brodmann 22), the brain region that decodes the meaning of language. Damage there breaks

comprehension while leaving the speech motor apparatus in the frontal lobe untouched, so the patient talks readily and smoothly, just nonsensically, often with word substitutions and made-up words, and cannot understand others. That smooth but empty output is what we label fluent aphasia, also called receptive or sensory aphasia. Contrast it with the other patterns to confirm: a halting, effortful, agrammatic output points to Broca (inferior frontal gyrus), non-fluent aphasia, and an isolated repetition deficit with preserved comprehension points to conduction aphasia from arcuate fasciculus injury. The posterior superior temporal gyrus matches fluent (Wernicke) aphasia. Reference: BDC, 7e, Vol 4, p 129.

Quick Tip: Posterior superior temporal gyrus is the receptive speech area. Is the speech output fluent or halting?

10. A 65-year-old lady presents with a vascular injury to the inferior frontal gyrus. Which functional area would mostly be affected?

- (A) Visual
- (B) Auditory
- (C) Wernicke
- (D) Motor speech

Correct Answer: (D) Motor speech

SOLUTION:

Area-matching angle. Take each functional cortex and locate it, then see which one sits in the inferior frontal gyrus. The primary visual area is occipital, around the calcarine sulcus. The primary auditory area is in the superior temporal gyrus on the transverse temporal (Heschl) gyri. The Wernicke (comprehension) area is at the posterior end of the superior temporal gyrus. None of those is frontal. The motor speech area, Broca area (Brodmann 44 and 45), is the one that occupies the pars opercularis and triangularis of the inferior frontal gyrus in the dominant hemisphere. So a stroke there hits motor speech and produces non-fluent

expressive aphasia with effortful, telegraphic output but largely intact understanding. The answer is the motor speech area. Reference: BDC, 7e, Vol 4, p 129.

Quick Tip: The inferior frontal gyrus of the dominant hemisphere houses Broca area. What function is that?

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11. Where is the highest oxygen concentration present in fetal circulation?

- (A) Superior vena cava (SVC)
- (B) Inferior vena cava (IVC)
- (C) Right ventricle
- (D) Aorta

Correct Answer: (B) Inferior vena cava (IVC)

SOLUTION:

Clinical pearl: in the fetus the placenta does the breathing, so the vessel closest to the placental return carries the highest oxygen. Oxygen-rich blood exits the placenta via the umbilical vein, bypasses the liver through the ductus venosus, and dumps straight into the inferior vena cava. That makes the IVC the most oxygenated large vessel so option (b) is correct.

Eliminate the rest quickly: the SVC carries used blood back from the brain and arms, so it is poorly oxygenated. The right ventricle gets a blend that already includes SVC blood. The aorta is fed downstream after mixing across the ductus arteriosus, lowering its saturation further. Highest oxygen content tracks the IVC because it sits right at the receiving end of the umbilical/ductus venosus stream. Ref. Nelson Textbook of Pediatrics, 20e.

Quick Tip: Follow the route of umbilical vein blood after it leaves the placenta.

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12. When the value of the ventilation-perfusion ratio (V/Q) is infinity, it means?

- (A) No O_2 goes from alveoli to blood and no CO_2 goes from blood to alveoli
- (B) Dead space
- (C) The PO_2 of alveolar air is 159 mmHg and PCO_2 is 40 mmHg
- (D) Partial pressures of O_2 and CO_2 are equal

Correct Answer: (B) Dead space

SOLUTION:

Think of the two extremes of the V/Q spectrum as a memory anchor. At one end, ventilation is zero but perfusion continues: that is a true shunt ($V/Q = 0$). At the opposite end, perfusion is zero but ventilation continues: V/Q heads toward infinity, and that is dead space, which is option (B).

Dead space alveoli get fresh air but no blood arrives to pick up oxygen or drop off CO_2 , so no gas exchange occurs in that unit. Normal matching sits at $V/Q \approx 0.8$. A value above 0.8 leans toward dead-space physiology (more air than blood), while a value below 0.8 leans toward shunt physiology. Option (a) describes a complete failure of exchange but is not the named term, and options (c) and (d) quote specific gas tensions that do not define the infinity condition. The single correct label is dead space.

Ref: Arvind Arora Review Book of Physiology.

Quick Tip: If Q (perfusion) drops to zero, what is left is air that never meets blood.

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13. The proteoglycan present in the glomerular basement membrane is?

- (A) Keratan sulphate 1
- (B) Keratan sulphate 2
- (C) Heparan sulphate
- (D) Chondroitin sulphate

Correct Answer: (C) Heparan sulphate

SOLUTION:

Mnemonic angle: the glomerular basement membrane is the charge barrier, and the molecule that gives it its negative charge is heparan sulphate, option (c).

Because albumin is also negatively charged, like charges repel and albumin is held back, which is why heparan sulphate loss leads to proteinuria.

Build the membrane piece by piece: type 4 collagen forms the structural scaffold, laminin and nidogen bind the components together, and heparan sulphate proteoglycan supplies the anionic charge. Keratan sulphate (options a and b) is typically found in cornea and cartilage, and chondroitin sulphate (option d) is more a cartilage and connective-tissue proteoglycan. Neither is the signature proteoglycan of the glomerular basement membrane, so the answer is heparan sulphate.

Ref: Arvind Arora Review Book of Physiology

Quick Tip: Think of the negatively charged proteoglycan that forms the charge barrier and repels albumin.

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14. A 35-year-old female was watching TV for long hours with her hands under her head. She complains of a tingling sensation over her arm. Which type of nerve fibers is most likely to be affected?

- (A) A fibers
- (B) B fibers
- (C) C fibers
- (D) Sympathetic nerve fibers

Correct Answer: (A) A fibers

SOLUTION:

Remember the rule of opposites for nerve fiber vulnerability. Pressure preferentially blocks large myelinated A fibers, while local anaesthetics preferentially block small unmyelinated C fibers. The clinical story here, a

compressed arm going numb and tingly after prolonged mechanical pressure, points straight to a pressure block of A fibers, so option (a) is correct.

The reason is size and myelination. Large A fibers have the highest metabolic demand at their nodes and are physically deformed most by compression, so conduction fails in them first when blood supply and pressure are unfavourable. The small unmyelinated C fibers keep conducting longest under pressure, which is why pain and temperature sometimes persist even when touch and position sense fade. B and sympathetic fibers are not the answer for a purely mechanical compression scenario. Choose A fibers.

Ref: Arvind Arora Review Book of Physiology.

Quick Tip: Pressure block hits the large myelinated fibers first; local anaesthetic hits the small ones first.

15. The reflex in which there is inhibition of gastric emptying when there is acid and a hypertonic solution in the duodenum is:

- (A) Enterogastric reflex
- (B) Gastroileal reflex
- (C) Gastrocolic reflex
- (D) Myenteric reflex

Correct Answer: (A) Enterogastric reflex

SOLUTION:

Decode the name and the answer falls out: entero (intestine) gastric (stomach) means the signal starts in the intestine and acts on the stomach. So when duodenal contents turn acidic or hypertonic, the enterogastric reflex tells the stomach to slow its emptying, which is option (a).

This is a protective brake. The duodenum can only neutralize and process so much chyme at a time, so the reflex throttles gastric output in response to acid (pH near 3-4), hypertonicity, fat, and protein digestion products. Contrast the distractors: gastroileal opens the ileocecal traffic when the stomach fills,

gastrocolic produces the urge to defecate after a meal, and the myenteric reflex is the basic local wall reflex coordinating peristalsis. Only the enterogastric reflex matches inhibition of gastric emptying driven by duodenal acid and hypertonic solution.

Ref: Gastrointestinal physiology, gastric emptying regulation.

Quick Tip: Name the reflex that runs from the duodenum back to the stomach to slow it down.

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16. In multiple sclerosis, the slow conduction of motor and sensory pathways is due to?

- (A) Defect in the node of Ranvier
- (B) Loss of myelin sheath
- (C) Leaking of sodium channels
- (D) Leaking of calcium channels

Correct Answer: (B) Loss of myelin sheath

SOLUTION:

Picture the wiring analogy: myelin is the insulation on a wire that lets the signal leap between nodes (saltatory conduction). Strip the insulation, as multiple sclerosis does to CNS axons, and the leaping fails, so conduction slows or blocks. That makes loss of the myelin sheath, option (b), the answer.

Multiple sclerosis is an autoimmune attack on central myelin, producing demyelinating plaques that scar over time, hence the name sclerosis. The clinical result is slowed and sometimes blocked transmission across both motor and sensory tracts, explaining the variable weakness, numbness, and visual symptoms. The distractors describe finer phenomena: nodal defects and ion-channel leaks can follow demyelination but are not the defining cause that the question asks for. The single best answer is destruction of the myelin sheath.

Ref: CNS demyelination physiology.

Quick Tip: What insulating layer must be intact for fast saltatory conduction?

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17. Which of the following clotting factors in a patient on warfarin therapy would have decreased gamma-carboxyglutamate residues?

- (A) Factor 2
- (B) Factor 11
- (C) Tissue factor
- (D) Factor 5

Correct Answer: (A) Factor 2

SOLUTION:

Use the classic mnemonic for vitamin K-dependent factors: 1972 (factors 10, 9, 7, 2) plus proteins C, S, and Z. Warfarin slows the gamma-carboxylase of reduced vitamin K, so these factors leave the liver undercarboxylated, meaning fewer gamma-carboxyglutamate (Gla) residues. Scan the options against the list, and only Factor 2 (prothrombin) qualifies, so option (a) is correct.

The Gla residues are the calcium-binding hooks that anchor the factor to platelet phospholipid membranes; without them the factor cannot work normally even though protein is present. Factor 11 (option b) and Factor 5 (option d) are not vitamin K-dependent, so warfarin does not change their carboxylation. Tissue factor (option c) is a transmembrane initiator of coagulation, not a Gla protein. Hence Factor 2 is the answer.

Ref: Vitamin K-dependent carboxylation biochemistry.

Quick Tip: Only the 2, 7, 9, 10 (and proteins C, S, Z) group is undercarboxylated by warfarin.

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18. Blood stored in citrate-phosphate-dextrose (CPD) is better for hypoxic patients than acid-citrate-dextrose (ACD) because?

- (A) It has less P50
- (B) It is less acidic
- (C) The fall in 2,3-DPG is less
- (D) None of the above

Correct Answer: (C) The fall in 2,3-DPG is less

SOLUTION:

Frame it around oxygen delivery. A hypoxic patient needs transfused blood that actually releases oxygen to tissues, and that ability depends on 2,3-DPG keeping the dissociation curve shifted right (high P50). Stored blood loses 2,3-DPG over time, so the question is which anticoagulant protects it better. CPD, with its phosphate buffer and higher pH, blunts the fall in 2,3-DPG compared with the more acidic ACD, so option (c) is the answer.

Because ACD is acidic, glycolysis and 2,3-DPG synthesis are suppressed more, the curve shifts left, and the transfused blood clings to its oxygen instead of giving it up. CPD preserves 2,3-DPG, keeps P50 closer to normal, and supports better tissue oxygenation, which matters most after cardiac surgery or in any hypoxic state. Option (a) is the opposite of what you want, and although option (b) is factually true, the mechanistic reason the examiner wants is the smaller fall in 2,3-DPG.

Ref: Stored blood transfusion physiology.

Quick Tip: What red cell molecule, better preserved in CPD, lets stored blood still unload oxygen?

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19. Which of the following is referred to as the "window of the limbic system"?

- (A) Hypothalamus
- (B) Amygdala
- (C) Hippocampus
- (D) Thalamus

Correct Answer: (B) Amygdala

SOLUTION:

This is a direct recall of a Guyton phrase, so anchor the buzzword: the amygdala is the "window" through which the limbic system sees where the person stands in the world, making option (b) correct. It earns that title because it receives convergent input from the limbic cortex and from auditory and visual association areas, letting it judge the emotional weight of incoming sensory information. Sort the other limbic players by their headline role to eliminate them. The hypothalamus is the command center for autonomic and hormonal output. The hippocampus is the memory machine, central to forming new long-term memories. The thalamus is the great sensory relay station for the cortex. None of these wears the "window" label, which belongs uniquely to the amygdala and its role in emotional appraisal and fear processing.

Ref: Guyton and Hall Textbook of Medical Physiology.

Quick Tip: Which limbic structure appraises the emotional meaning of what you see and hear?

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20. Cerebral blood flow is regulated by all except:

- (A) Blood pressure
- (B) Arterial PCO₂
- (C) Potassium ions
- (D) Both blood pressure and potassium ions

Correct Answer: (D) Both blood pressure and potassium ions

SOLUTION:

Approach this by ranking the regulators of cerebral blood flow. The single most powerful controller is arterial PCO₂: a rise in CO₂ dilates cerebral vessels strongly and raises flow, so option (b) is a genuine regulator and cannot be the exception. That immediately narrows the answer to the choices involving blood pressure and

potassium.

Cerebral blood flow is famously buffered by autoregulation, staying nearly constant across a mean arterial pressure of roughly 60-150 mmHg, so within the physiological range blood pressure is not an effective moment-to-moment regulator. Potassium is only a weak metabolic contributor compared with PCO₂ and adenosine. Since the stem asks for what does not regulate flow, the combined option naming both blood pressure and potassium ions, option (d), is the intended answer. PCO₂ remains the dominant true regulator.

Ref: Principles of Medical Physiology; RK Marya.

Quick Tip: Autoregulation keeps flow steady across a wide BP range; PCO₂ is the dominant true regulator.

21. Hepcidin inhibits which of the following.

- (A) Absorption of cobalamin
- (B) Transfer of iron into enterocytes
- (C) Folic acid synthesis
- (D) Respiratory oxidase

Correct Answer: (B) Transfer of iron into enterocytes

SOLUTION:

Mnemonic angle. remember hepcidin as the iron gatekeeper that locks the exit door. The exit door is ferroportin, the channel that ships iron from gut cells and macrophages into blood. When hepcidin is high (as in chronic inflammation), it degrades ferroportin, and iron gets trapped inside the enterocyte. Trapped iron is then lost when the cell sloughs off, so net absorption falls. That makes transfer of iron into enterocytes the step hepcidin blocks, and is why anemia of chronic disease shows low serum iron despite full stores. Quick elimination of the rest: cobalamin uptake is an intrinsic-factor and ileal-receptor job, folic acid synthesis is something only bacteria do (a drug target, not a hepcidin one), and respiratory oxidase sits in mitochondrial energy production. None touch iron transport. So

option (b) is the only fit. Diet pearl to recall alongside: vitamin C keeps iron in the absorbable ferrous form and boosts uptake, whereas tea tannins bind iron and reduce it.

Quick Tip: Think of the liver hormone that shuts down ferroportin during inflammation.

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22. Which of the following techniques is used to study current flow across a single ion channel?

- (A) Patch clamp
- (B) Voltage clamp
- (C) Iontophoresis
- (D) Galvanometry

Correct Answer: (A) Patch clamp

SOLUTION:

Start by splitting the options into single-channel versus whole-cell methods. Galvanometry only reads a current, and iontophoresis pushes ions or drugs across tissue, so both are out immediately because neither isolates a channel. That leaves the two clamp methods. Voltage clamp fixes the membrane potential of the entire cell and reads the summed current from all channels, so it cannot resolve one channel. Patch clamp is different: a polished micropipette presses onto the membrane and forms a tight gigaohm seal over a microscopic patch holding only one or a handful of channels. Because the seal is so tight, the only current the electrode sees is what crosses that patch, giving the elementary single-channel record. That is exactly what the stem wants, so option (a) wins. Pearl to lock in: Neher and Sakmann developed patch clamp and earned the 1991 Nobel Prize, and it is the workhorse for neurons, cardiac and skeletal muscle, and beta cells.

Quick Tip: Which method seals off a tiny membrane patch with a glass pipette?

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23. A 4-year-old boy of a first-degree consanguineous couple was noted by the parents to have darkening of the urine to an almost black color when it was left standing. He has a normal sibling, and there are no other medical problems. Growth and development to date are normal. Which of the following is most likely to be elevated in this patient?

- (A) Methylmalonate
- (B) Homogentisate
- (C) Phenylpyruvate
- (D) Alpha-ketoisovalerate

Correct Answer: (B) Homogentisate

SOLUTION:

Pattern recognition first: a metabolite that turns urine black only after the urine sits exposed to air is a giveaway for alkaptonuria, because the offending compound has to oxidize in the open before it darkens. That compound is homogentisic acid, which builds up when homogentisate 1,2-dioxygenase is missing in the tyrosine degradation pathway. The disorder is autosomal recessive, which fits the consanguineous parents and the one healthy sibling. So homogentisate is the elevated metabolite, option (b). Now eliminate by severity, since the child is healthy with normal growth: methylmalonic acidemia, phenylketonuria and maple syrup urine disease (the sources of methylmalonate, phenylpyruvate and alpha-ketoisovalerate respectively) all present early with a sick, failing to thrive or neurologically impaired infant. A thriving 4-year-old whose only sign is darkening urine cannot have those. The benign course plus black-on-standing urine seals the diagnosis as alkaptonuria.

Quick Tip: Black urine on standing in a healthy child points to a tyrosine pathway defect.

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24. Which of the following is true about the different structures of protein?

- (A) Secondary structure is the three-dimensional structure of protein
- (B) Secondary structure is stabilized by disulfide bonds
- (C) Primary, secondary and tertiary structures are destroyed during denaturation
- (D) Secondary and tertiary structure depend on the sequence of amino acids

Correct Answer: (D) Secondary and tertiary structure depend on the sequence of amino acids

SOLUTION:

Work this one by knocking out the false statements one at a time. Statement (a) calls the secondary structure the three-dimensional shape, but the full 3D fold of a single chain is the tertiary level, so that is wrong. Statement (b) says disulfide bonds stabilize secondary structure, yet secondary structure (helices and sheets) is held together by backbone hydrogen bonds, while disulfide bridges between cysteines stabilize the tertiary fold, so that is wrong too. Statement (c) claims denaturation destroys the primary structure, but denaturation only unravels the higher-order folds; peptide bonds stay intact, so the primary sequence survives, making it wrong. That leaves statement (d), which is the central dogma of protein folding: the order of amino acids in the primary sequence carries all the information needed for the chain to fold into its secondary and tertiary forms. Hence (d) is the true statement.

Quick Tip: The sequence written first decides every fold that follows.

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25. The insulin to glucagon ratio is decreased. Which enzyme is active at this time?

- (A) Glucokinase
- (B) Hexokinase
- (C) Phosphofructokinase
- (D) Glucose-6-phosphatase

Correct Answer: (D) Glucose-6-phosphatase

SOLUTION:

Translate the hormone clue first: a falling insulin to glucagon ratio is the biochemical signature of fasting. In fasting, the liver's job is to put glucose into the blood, which means it runs gluconeogenesis and glycogenolysis and turns glycolysis off. Now sort the options by pathway. Glucokinase and hexokinase phosphorylate glucose to keep it inside the cell, and phosphofructokinase-1 drives the committed step of glycolysis, so all three are glycolytic, fed state enzymes that go quiet when insulin is low. The odd one out is glucose-6-phosphatase, the final enzyme that strips phosphate off glucose-6-phosphate so glucose can exit the hepatocyte into circulation. That is precisely what fasting demands, so it is the active enzyme and the answer is (d). Memory hook: the phosphatase that lets glucose escape is the fasting enzyme; the kinases that imprison glucose are fed-state enzymes.

Quick Tip: Low insulin to glucagon means fasting; pick the enzyme that frees glucose for export.

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26. Ochronosis is due to the accumulation of which of the following?

- (A) Homogentisic acid
- (B) Homocysteine
- (C) Xanthurenic acid
- (D) Glyoxylate

Correct Answer: (A) Homogentisic acid

SOLUTION:

Link the word ochronosis straight to alkaptonuria, the only condition that pigments cartilage and connective tissue a dark bluish-black. The metabolic block is in homogentisate 1,2-dioxygenase, so homogentisic acid piles up. In urine it oxidizes and blackens on standing; in tissue it polymerizes over decades into

alkapton pigment that stains intervertebral discs, nasal and ear cartilage, and joints, producing arthritis. That tissue pigmentation is exactly ochronosis, so the accumulating compound is homogentisic acid, option (a). Clear the distractors with their own diseases: homocysteine rises in homocystinuria (lens dislocation and thrombosis), xanthurenate shows up with vitamin B6 deficiency and disturbing tryptophan handling, and glyoxylate is tied to primary hyperoxaluria and kidney stones. None pigment connective tissue. Note the original options repeated homogentisic acid twice; replacing the duplicate with homocysteine keeps four real choices and leaves the answer unchanged at (a).

Quick Tip: Same metabolite that blackens urine on standing in alkaptonuria.

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27. Bilirubin in serum can be measured by which of the following?

- (A) Van den Bergh reaction
- (B) Ehrlich's reaction
- (C) Schlesinger's reaction
- (D) Fouchet's reaction

Correct Answer: (A) Van den Bergh reaction

SOLUTION:

Match each named reaction to its target pigment and sample. The trick is that three of the four belong to urine, and only one is the serum bilirubin assay. Ehrlich's aldehyde reaction picks up urobilinogen in urine; Schlesinger's test detects urobilin in urine; Fouchet's test detects bilirubin but in urine. The van den Bergh reaction is the classic serum method: diazotized sulfanilic acid couples with bilirubin to form colored azodipyrroles read on a colorimeter. Conjugated bilirubin, being water soluble, reacts quickly and gives the direct value, while adding methanol brings the poorly soluble unconjugated bilirubin into reaction to give total, and the difference is the indirect fraction. So for serum, the answer is van den Bergh, option (a). Pearl: direct equals conjugated, indirect equals

unconjugated, and normally only about 4 percent of plasma bilirubin is conjugated because the rest is excreted in bile.

Quick Tip: The serum assay uses diazotized sulfanilic acid.

...

28. In a sample of double-stranded DNA, if adenine is 28 percent, what is the amount of cytosine present?

- (A) 23 percent
- (B) 25 percent
- (C) 46 percent
- (D) 22 percent

Correct Answer: (D) 22 percent

SOLUTION:

This is a direct Chargaff's rule calculation. In any double-stranded DNA the two purine-pyrimidine pairings force adenine to equal thymine and guanine to equal cytosine, and the four percentages must total 100. Plug in the number: adenine is 28 percent, so thymine matches at 28 percent. Their sum is $28 + 28 = 56$ percent, which leaves $100 - 56 = 44$ percent for the guanine plus cytosine pair. Since guanine equals cytosine, split that evenly: $44/2 = 22$ percent each. So cytosine is 22 percent, option (D). A fast sanity check: cytosine and guanine are equal, and adenine and thymine are equal, and 28 plus 28 plus 22 plus 22 lands exactly on 100. Recall pearl: A-T pairs are held by two hydrogen bonds and G-C pairs by three, so a higher G-C content makes DNA more thermally stable, which is a frequent follow-up point.

Quick Tip: A equals T and G equals C, and all four bases add up to 100 percent.

...

29. Which of the following vitamins at higher doses causes cystoid macular edema?

- (A) Vitamin A
- (B) Vitamin D
- (C) Vitamin E
- (D) Niacin

Correct Answer: (D) Niacin

SOLUTION:

Clinical-pearl approach: the buzzword pairing here is high-dose niacin and cystoid macular edema. Niacin (nicotinic acid, vitamin B₃) is prescribed in gram-level doses to treat dyslipidemia, and at roughly 3 g per day or more it produces a characteristic ocular toxicity that includes cystoid macular edema, blurred vision, and eyelid edema. The classic exam point is that this niacin maculopathy is non-leaking on fluorescein angiography (unlike most causes of macular edema) and fully reverses when the drug is withdrawn. That makes option (d) the answer. Eliminate the fat-soluble vitamins by their own toxicity signatures: vitamin A excess gives raised intracranial pressure and papilledema, vitamin D excess gives hypercalcemia and band keratopathy, and vitamin E excess interferes with clotting. None of these produce cystoid macular edema, so niacin stands alone.

Quick Tip: Think of the lipid-lowering vitamin given in gram doses.

...

30. Which of the following is a true statement regarding Huntington's chorea?

- (A) There is a loss of function type of mutation
- (B) It is an autosomal recessive disorder
- (C) It is a trinucleotide repeat expansion type of disorder
- (D) There is an increased number of CAA repeats

Correct Answer: (C) It is a trinucleotide repeat expansion type of disorder

SOLUTION:

Option-elimination works cleanly here. Statement (b) calls Huntington's autosomal recessive, but it is autosomal dominant, so out. Statement (a) calls it a loss-of-function mutation, but the expanded huntingtin protein gains a toxic function (a toxic polyglutamine tract that damages striatal neurons), so out. Statement (d) names CAA repeats, but the expanded triplet in HTT is CAG, so that detail is wrong. That leaves statement (c): Huntington's is one of the classic trinucleotide repeat expansion disorders, where an unstable CAG repeat lengthens beyond about 36 to 40 copies and triggers disease, with longer repeats giving earlier, more severe disease (anticipation). So (c) is the true statement. Clinical recall to anchor it: choreiform involuntary movements, psychiatric and mood changes, and progressive dementia, with caudate nucleus atrophy on imaging.

Quick Tip: Caudate atrophy, autosomal dominant, and an unstable CAG triplet.

31. Addition of which amino acid will increase the UV absorption of a protein?

- (A) Tryptophan
- (B) Leucine
- (C) Proline
- (D) Arginine

Correct Answer: (A) Tryptophan

SOLUTION:

Quick rule: only the three aromatic amino acids absorb UV light, and you can remember them as the W, Y, F trio (tryptophan, tyrosine, phenylalanine). Strip away the non-aromatic options first: leucine, proline and arginine have no ring, so they contribute almost nothing to absorbance and can be eliminated at once. That leaves tryptophan as the only aromatic choice here. Its indole ring is the most efficient absorber of the three, absorbing about ten times more strongly than tyrosine or phenylalanine, with peak absorbance near 280 nm. Because of this,

the more tryptophan a protein contains, the higher its absorbance at 280 nm. Laboratories use exactly this property to read protein concentration off A280 values. So adding tryptophan gives the biggest jump in UV absorption.

Ref: Rebecca James, Self Assessment and Review of Biochemistry, 3rd edn.

Quick Tip: Think about which amino acids carry an aromatic ring and absorb near 280 nm.

...

32. Which of the following is the richest source of vitamin B₁₂?

- (A) Meat
- (B) Green leafy vegetables
- (C) Corn oil
- (D) Sunflower oil

Correct Answer: (A) Meat

SOLUTION:

Clinical pearl: vitamin B₁₂ is the one vitamin a pure vegetarian cannot get from natural food, because no plant makes it. Use that fact to sort the options. Green leafy vegetables, corn oil and sunflower oil are all plant derived, so none of them supply B₁₂, and you can cross out three options in one stroke.

The only animal-derived choice left is meat, which is the correct answer. Animal tissues, particularly liver, concentrate B₁₂ along with fish, eggs and dairy. This is why pernicious anaemia and dietary B₁₂ deficiency are classically seen in long-standing vegans, who must rely on fortified breakfast cereals or supplements instead. So meat is the richest source listed.

Ref: DM Vasudevan, Textbook of Biochemistry, 6th edn.

Quick Tip: B₁₂ comes only from animal products, never from plant oils or greens.

...

33. Which amino acid is used to synthesise nitric oxide?

- (A) Glycine
- (B) Arginine
- (C) Tyrosine
- (D) Threonine

Correct Answer: (B) Arginine

SOLUTION:

Mnemonic anchor: arginine gives rise to NO, and the leftover product is citrulline, the same pair you meet in the urea cycle. So when a question asks for the source of nitric oxide, arginine should come to mind immediately.

Eliminate the rest: glycine feeds heme, creatine and purines; tyrosine builds catecholamines, thyroid hormones and melanin; threonine is simply an essential dietary amino acid. None of them make NO. The reaction is run by nitric oxide synthase, which requires heme, FAD, FMN, NADPH and tetrahydrobiopterin to split arginine into citrulline and NO. The NO produced is a fleeting signalling molecule, lasting only a few seconds before becoming nitrite and nitrate that exit in the urine. Hence arginine is the answer.

Ref: Standard biochemistry texts.

Quick Tip: The precursor is a basic amino acid that is converted to citrulline as NO is released.

...

34. Which of the following is true about a non-competitive antagonist (inhibitor)?

- (A) K_m remains same, V_{max} decreases
- (B) K_m increases, V_{max} remains same
- (C) K_m decreases, V_{max} increases
- (D) K_m increases, V_{max} increases

Correct Answer: (A) K_m remains same, V_{max} decreases

SOLUTION:

Compare it against competitive inhibition and the answer falls out. A competitive inhibitor fights for the active site, so more substrate wins it back: K_m rises, v_{max} is unchanged. A non-competitive inhibitor does the opposite. It sits on a separate allosteric site and cripples catalysis whether or not substrate is bound.

Because the active site is still free to bind substrate normally, affinity (K_m) is untouched. But no amount of extra substrate can undo the block, so the maximum reaction rate (V_{max}) drops. Reading the options that means K_m same and V_{max} decreased, which is option 1. On the double-reciprocal plot this shows up as a higher $1/V_{max}$ intercept with the same x-intercept, the classic crossing-on-the-x-axis pattern. The remaining options describe activation or competitive-type changes and are wrong.

Ref: Lippincott's Biochemistry, 5th edn.

Quick Tip: The inhibitor binds away from the active site, so substrate affinity does not change but maximal velocity falls.

...

35. Werner syndrome, associated with premature aging, is caused by a defect in which of the following?

- (A) Telomerase
- (B) Caspase
- (C) DNA topoisomerase
- (D) DNA helicase

Correct Answer: (D) DNA helicase

SOLUTION:

Tie the name to the gene: Werner syndrome equals the WRN gene, and WRN encodes a RecQ DNA helicase. That single link answers the question, option 4.

The clinical picture is one of accelerated aging, premature graying, thin hair, taut wrinkled skin, leg ulcers, early cataracts, atherosclerosis, osteoporosis, plus a

raised risk of type 2 diabetes and cancers. All of this stems from a faulty helicase that cannot properly unwind DNA for repair and replication, leaving the genome unstable.

Rule out the rest: telomerase mutations underlie dyskeratosis congenita, caspases drive apoptosis, and topoisomerases relieve supercoiling, none of which produce the Werner phenotype. So DNA helicase is correct.

Ref: WRN gene, RecQ helicase family.

Quick Tip: The mutated WRN gene belongs to the RecQ family of DNA-unwinding enzymes.

...

36. Which of the following dietary fibers is insoluble in water?

- (A) Pectin
- (B) Lignin
- (C) Hemicellulose
- (D) Cellulose

Correct Answer: (B) Lignin

SOLUTION:

Sort the fibers by how they meet water. Pectin is the textbook soluble, gel-forming fiber, so it is out. Hemicellulose interacts with water and retains it in stool, so it is excluded too. That narrows the answer to lignin.

Lignin stands apart because it is not even a carbohydrate, it is a dense, cross-linked aromatic polymer that simply will not dissolve in water. Functionally it works as an antioxidant, boosts bile-acid excretion and helps lower cholesterol.

Cellulose is likewise water insoluble, but in this option set lignin is the recognised single best answer for an insoluble dietary fiber. Hence option 2.

Ref: DM Vasudevan, Textbook of Biochemistry, 6th edn.

Quick Tip: One of these is not a carbohydrate at all, it is an aromatic polymer that does not dissolve.

...

37. According to NCEP-ATP III criteria, which of the following is NOT included in the diagnosis of metabolic syndrome?

- (A) High LDL
- (B) Hypertriglyceridemia
- (C) Central obesity
- (D) Hypertension

Correct Answer: (A) High LDL

SOLUTION:

Recall the five-part checklist for metabolic syndrome and the odd one out becomes obvious. The components are big waist (central obesity), high triglycerides, low HDL, high blood pressure and high fasting glucose, and you need any three to label the syndrome.

Run the options through that list. hypertriglyceridemia, central obesity and hypertension all sit squarely inside the criteria. The lipid abnormalities counted are specifically a high triglyceride level and a low HDL level. LDL cholesterol never appears in the NCEP-ATP III definition. So high LDL is the one that is not included, making option 1 correct. A handy way to remember it: metabolic syndrome cares about triglycerides up and HDL down, not LDL.

Ref: DM Vasudevan, Textbook of Biochemistry, 6th edn.

Quick Tip: The metabolic syndrome lipid criteria are about triglycerides and HDL, not LDL.

...

38. Which of the following is the basis for the intestine-specific expression of apoprotein B-48?

- (A) DNA rearrangement and loss
- (B) DNA transposition
- (C) RNA alternative splicing
- (D) RNA editing

Correct Answer: (D) RNA editing

SOLUTION:

Key fact: apoB-48 is the textbook example of RNA editing in humans, so spotting that phrase is enough to pick option 4.

Here is the mechanism. One apoB gene serves two tissues. In the liver the mRNA is translated in full to give apoB-100. In the intestine a deaminase changes a single cytosine to uracil in the mRNA after it is transcribed, turning a CAA glutamine codon into a UAA stop codon. Translation halts early, yielding apoB-48, which is roughly 48 percent the size of apoB-100, hence the name.

Eliminate the others: DNA rearrangement and transposition reshuffle the genome (as in immunoglobulin genes), and alternative splicing chooses different exons. None of these explains apoB-48 which is purely a post-transcriptional base edit. So RNA editing is the answer

Ref: Lippincott's Biochemistry, 5th edn.

Quick Tip: A single base in the mRNA is chemically changed (C to U), creating a stop codon.

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39. A 30-year-old male presents with swelling around the knee joint. Histopathological examination of the swelling shows many giant cells interspersed with mononuclear cells. What is the probable diagnosis?

- (A) Osteosarcoma
- (B) Ewing's sarcoma
- (C) Giant cell tumour
- (D) Chondrosarcoma

Correct Answer: (C) Giant cell tumour

SOLUTION:

Pattern recognition wins here: many giant cells plus mononuclear cells, sited at the knee, in a young adult, points straight to a giant cell tumour of bone, option 3.

GCT favours the epiphysis of long bones near the knee, the distal femur and proximal tibia, in patients aged 20 to 40. On gross exam it is a red-brown, often cystic mass. Microscopically you see uniform oval mononuclear (the true neoplastic) cells studded with osteoclast-like giant cells that can pack in well over a hundred nuclei, along with frequent mitoses, areas of hemorrhage and reactive bone.

The distractors have different signatures: osteosarcoma makes malignant osteoid, Ewing's sarcoma is a small round blue cell tumour, and chondrosarcoma forms malignant cartilage. None of them is defined by sheets of osteoclast giant cells, so GCT is the diagnosis.

Ref: Robbins Basic Pathology, 9th edn

Quick Tip: Young adult, lesion at knee epiphysis, sheets of mononuclear cells with many osteoclast-like giant cells.

...

40. A 30-year-old woman presents with easy fatigability, exertional dyspnea and weight loss. She also reports frequent falls. On examination there is a bilateral decrease in vibration sense. Her hemoglobin is 8.2 g%. She was treated with folate; her anemia improved but her neurological symptoms worsened. What is the most probable reason for her condition?

- (A) Folate was not absorbed
- (B) Unmasked pyridoxine deficiency
- (C) Deficiency of folate reductase in the CNS
- (D) Folate therapy caused rapid use of vitamin B12 stores, aggravating symptoms

Correct Answer: (D) Folate therapy caused rapid use of vitamin B12 stores, aggravating symptoms

SOLUTION:

Read the trap: hematologic response but neurologic decline after folate is the signature of an underlying vitamin B12 deficiency, so option 4 is correct. Her vibration loss and frequent falls reflect subacute combined degeneration of the dorsal columns, a B12 lesion. B12 normally recycles methyltetrahydrofolate back to tetrahydrofolate for DNA synthesis. When you flood the system with folate, you bypass that block, so red cell production resumes and the anemia improves. The catch is that the renewed DNA synthesis rapidly draws down the already low B12 reserves, and folate offers no protection to the nervous system, so the myelopathy progresses.

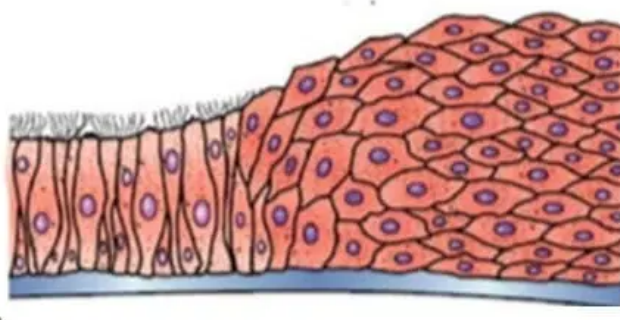
The other options do not fit: folate clearly was absorbed (the anemia corrected), pyridoxine deficiency causes a different picture, and a CNS folate-reductase defect is not the mechanism here. Always check B12 before treating megaloblastic anemia with folate.

Ref: Standard hematology texts.

Quick Tip: Anemia improves but the cord signs worsen, what happens to B12 stores when you push folate alone?

...

41. A 45-year-old man who is a chronic smoker presents with a complaint of cough. The physician takes a biopsy of the airway, shown below. Which of the following cellular changes has happened in this patient?



- (A) Hyperplasia
- (B) Dysplasia
- (C) Metaplasia
- (D) CIN3

Correct Answer: (C) Metaplasia

SOLUTION:

Clinical pearl: chronic smoker plus airway biopsy equals squamous metaplasia until proven otherwise.

Eliminate first: CIN3 belongs to cervical pathology, so it is out for a bronchus. Hyperplasia means more cells of the same type, which does not fit a description of one tissue becoming another. Dysplasia means atypical, disordered cells with loss of maturation; that is a pre-cancer change, not the simple lining swap seen here.

What is left: metaplasia, the replacement of the delicate ciliated columnar respiratory epithelium by stratified squamous epithelium. Cigarette smoke drives this adaptive change first; only later can dysplasia and carcinoma follow.

Key point: metaplasia is reversible, which makes it the textbook earliest response of the bronchial mucosa to smoking. That is why the medically correct option here is Metaplasia, even though the recalled key listed Dysplasia.

Reference: Robbins Basic Pathology, 9e, cellular adaptation.

Quick Tip: One adult epithelium is swapped for a hardier adult epithelium, and it can reverse if the smoker quits.

...

42. A 30-year-old woman presents with thyroid swelling. On investigation, her TSH level is elevated. Postoperative histology shows lymphocytic infiltration and Hurthle cells. The most probable diagnosis is?

- (A) Graves disease
- (B) Hashimoto's thyroiditis
- (C) Follicular carcinoma
- (D) Medullary carcinoma thyroid

Correct Answer: (B) Hashimoto's thyroiditis

SOLUTION:

Mnemonic anchor: Hashimoto equals Hurthle cells plus high TSH.

Read the labs first: TSH is elevated, so the gland is underactive. That single fact removes Graves disease, where TSH is suppressed because the gland is overdriven.

Read the histology: dense lymphocytic infiltrate with germinal centres and Hurthle (oxyphil) cells is the signature of chronic autoimmune thyroiditis. Cancers behave differently: follicular carcinoma is diagnosed by capsular or vascular invasion, and medullary carcinoma shows neuroendocrine C cells with amyloid stroma, neither of which is described.

Putting it together: a hypothyroid young woman with lymphocytic, Hurthle-cell-rich thyroid tissue has Hashimoto's thyroiditis, the leading cause of acquired hypothyroidism. Anti-TPO antibodies would confirm it clinically.

Reference: standard endocrine pathology.

Quick Tip: High TSH plus germinal centres plus Hurthle cells in a young woman points to one autoimmune gland failure.

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43. Which of the following will be seen on cardiac biopsy of a patient who had a post-MI reperfusion injury?

- (A) Waviness of fibres
- (B) Eosinophilic contraction bands
- (C) Neutrophils in cardiac cells
- (D) Swelling of cells

Correct Answer: (B) Eosinophilic contraction bands

SOLUTION:

Link the mechanism to the slide: reperfusion equals calcium influx equals contraction band necrosis.

Option elimination: waviness of fibres is the very first ischaemic change you can see, well before any reperfusion, so it does not specifically answer this question. Neutrophils invading the infarct are a feature of the inflammatory wave at one to three days, marking the healing timeline rather than reperfusion. Cellular swelling reflects early reversible injury from failed ion pumps and is non-specific.

The specific lesion: once oxygenated blood re-enters dead or dying cells, calcium rushes in through damaged membranes, locking actin and myosin into a hypercontracted state. These rigid sarcomeres show up as bright eosinophilic transverse bands.

Bottom line: eosinophilic contraction bands are the pathognomonic histology of myocardial reperfusion injury.

Reference: cardiovascular pathology, ischaemic injury.

Quick Tip: Reperfusion floods dying myocytes with calcium, hypercontracting the sarcomeres into dense pink bands.

...

44. Loss of foot processes (foot process effacement) on electron microscopy is classical in which of the following?

- (A) Membranous glomerulonephritis
- (B) Focal segmental glomerulosclerosis
- (C) IgA nephropathy
- (D) Diabetic nephropathy

Correct Answer: (B) Focal segmental glomerulosclerosis

SOLUTION:

Frame it as a podocyte problem: foot process effacement is a podocyte injury sign, so look for the podocytopathy on the list.

Eliminate by EM signature: membranous glomerulonephritis is defined by subepithelial immune deposits and spike-and-dome capillary walls. IgA nephropathy is defined by mesangial IgA on immunofluorescence. Diabetic nephropathy is defined by basement membrane thickening with Kimmelstiel-Wilson nodules. None of these has effacement as its defining feature.

The match: focal segmental glomerulosclerosis shows widespread foot process effacement as its dominant ultrastructural change, with IgM and C3 trapped in sclerosed segments and juxtamedullary glomeruli affected first.

Take-home: on this option set, FSGS is the entity whose classical EM hallmark is loss of podocyte foot processes.

Reference: renal pathology, glomerular diseases

Quick Tip: Think of the podocyte diseases: the segmental scarring entity on the list shows effacement as its dominant EM finding.

...

45. Which of the following factors plays the major role in the initiation of thrombus formation?

- (A) Vasoconstriction
- (B) Coagulation cascade activation
- (C) Platelet activation
- (D) Endothelial injury

Correct Answer: (D) Endothelial injury

SOLUTION:

Anchor on Virchow's triad: injury, stasis, hypercoagulability. The question asks for the initiator, so find the upstream trigger.

Sort the options: platelet activation and clotting cascade activation are both responses, not causes; they switch on only after something exposes the reactive

subendothelium. Vasoconstriction is a reflex in haemostasis but it controls bleeding, it does not start a pathological clot.

The trigger: endothelial injury strips away the protective lining and uncovers collagen and tissue factor. Platelets then stick and the coagulation cascade fires. So the injury is the prime mover, and it is the single most important factor in arterial and cardiac thrombi.

Summary: endothelial injury initiates thrombosis; platelet and coagulation activation are the consequences.

Reference: haemodynamics, thrombosis.

Quick Tip: Of Virchow's triad, the one that exposes collagen and tissue factor and sets everything else in motion is the initiator.

46. A 33-year-old man presents with a 5-week history of calf pain, swelling, and low-grade fever. Serum creatine kinase is elevated. A muscle biopsy reveals numerous eosinophils, and he also has peripheral blood eosinophilia. Which of the following interleukins is primarily responsible for the increase in eosinophils in this patient?

- (A) IL-2
- (B) IL-4
- (C) IL-1
- (D) IL-6

Correct Answer: (B) IL-4

SOLUTION:

Think Th2: wherever you see eosinophils plus IgE plus allergy, the cytokine family at work is IL-4, IL-5, and IL-13 from Th2 cells.

Cross out the rest: IL-2 is the T-cell growth factor, it expands lymphocytes not eosinophils. IL-1 and IL-6 are classic macrophage-derived pyrogens that cause fever and acute-phase response but have no specific eosinophil role.

Pick within the list: the most specific eosinophil cytokine is IL-5, yet it is absent from the options. IL-4 is the master switch that commits naive T cells to the Th2

lineage, so it sits at the top of the pathway that produces eosinophilia. Therefore IL-4 is the best available answer.

Pearl: remember IL-4 starts Th2, IL-5 grows eosinophils; when only IL-4 is offered, choose it.

Reference: basic immunology, T-helper subsets.

Quick Tip: Eosinophils are a Th2 story; pick the Th2 master cytokine from the options offered.

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47. Which of the following is true about polyarteritis nodosa (PAN)?

- (A) Microscopy shows fibrinoid necrosis in large arteries
- (B) ANCA is positive
- (C) About 30% of patients have HBsAg positivity
- (D) Patients have hypogammaglobulinaemia

Correct Answer: (C) About 30% of patients have HBsAg positivity

SOLUTION:

Two facts unlock PAN: it is a medium-vessel vasculitis and it is ANCA-negative.

Test each option: the fibrinoid necrosis of PAN is in small to medium muscular arteries, not large arteries, so that statement is false. PAN is the classic ANCA-negative vasculitis, which separates it from microscopic polyangiitis and GPA, so the ANCA-positive claim is false. PAN is an immune-complex disease, so hypogammaglobulinaemia does not fit either.

The true statement: roughly 30% of PAN patients carry chronic hepatitis B, and HBsAg-HBcAb complexes lodge in the affected vessels, supporting an immune-complex cause in those cases.

Remember: PAN spares the lungs and loves the kidneys, gut, heart, and muscle, and it has a strong hepatitis B link.

Reference: systemic vasculitides.

Quick Tip: One classic association of medium-vessel PAN is a viral hepatitis seen in roughly a third of patients; PAN is ANCA-negative.

...

48. A 23-year-old male presents with fatigue and tiredness. Investigations show Hb 9 g%, MCV 101 fL. The peripheral smear shows microcytic RBCs and hypersegmented neutrophils. Which is the most probable etiology?

- (A) Lead poisoning
- (B) Iron deficiency anemia
- (C) Chronic alcoholism
- (D) Hemolytic anemia

Correct Answer: (A) Lead poisoning

SOLUTION:

Treat this as a clue-sorting puzzle: The question mixes a microcytic smear with hypersegmented neutrophils, two features that usually point in opposite directions.

Walk the options: iron deficiency anemia gives microcytosis but never hypersegmented neutrophils, so it cannot explain the full picture. Hemolytic anemia shows reticulocytosis with schistocytes, spherocytes, or bite cells, none mentioned here, so it is unlikely. Chronic alcoholism is a reasonable cause of macrocytosis, but the patient is young with no drinking history given, which the key uses to exclude it.

What the key chooses: lead poisoning, a toxin that disrupts haem synthesis and can give a microcytic anemia with basophilic stippling, fitting the fatigue and mixed findings.

Crucial: the labs are internally contradictory in this recalled item; clinically, hypersegmented neutrophils with a high MCV would push you to check B12 and folate first.

Reference: anemia approach, NEET PG recall.

Quick Tip: The smear is intentionally mixed; the key leans on the toxic cause that disturbs haem synthesis in a young man without alcohol history.

...

49. What is the main feature of chemotaxis as observed in white blood cells?

- (A) Increased random movement of neutrophils
- (B) Increased adhesiveness to intima
- (C) Increased phagocytosis
- (D) Unidirectional locomotion of neutrophils

Correct Answer: (D) Unidirectional locomotion of neutrophils

SOLUTION:

Define the term: chemotaxis literally means moving along a chemical gradient, so the defining feature must involve directed travel.

Reject the distractors: increased random movement is the opposite of directed, so it fails. Increased adhesiveness to the vessel intima describes margination and adhesion, an earlier and separate step in the leukocyte cascade. Increased phagocytosis happens after the neutrophil arrives, so it is downstream, not the essence of chemotaxis.

The answer: unidirectional locomotion of neutrophils toward rising concentrations of chemottractants such as C5a, LTB₄, and chemokines, plus bacterial peptides from outside the body.

Remember the sequence: margination, rolling, adhesion, transmigration, then chemotaxis, then phagocytosis. Chemotaxis is the directed crawl, step by step toward the target.

Reference: inflammation, leukocyte recruitment.

Quick Tip: The key word is directed: movement up a gradient, not random and not adhesion.

...

50. Which of the following anticancer drugs are competitive inhibitors of tyrosine kinase?

- (A) Imatinib and sunitinib
- (B) Letrozole
- (C) Bicalutamide
- (D) Fulvestrant

Correct Answer: (A) Imatinib and sunitinib

SOLUTION:

Quick rule: if the drug ends in -nib, it usually inhibits a kinase, and the small-molecule TKIs compete with ATP at the kinase active site.

Scan the options: imatinib and sunitinib both end in -nib, so they are tyrosine kinase inhibitors; imatinib hits BCR-ABL in CML, sunitinib is a multi-kinase agent for GIST and renal cancer. The remaining options work on hormone pathways: letrozole blocks aromatase, bicalutamide blocks the androgen receptor, and fulvestrant degrades the estrogen receptor. None of those touch tyrosine kinase.

Mechanism reminder: these -nib drugs sit in the ATP pocket and stop phosphorylation of downstream targets, which is why they are called competitive inhibitors.

Answer: imatinib and sunitinib.

Reference: targeted cancer chemotherapy.

Quick Tip: Look for the drug names ending in -nib; those are the ATP-competitive kinase blockers.

...

51. Which of the following is not a prokinetic agent?

- (A) Dopamine antagonist
- (B) 5-HT₄ agonist
- (C) Macrolides
- (D) Diphenylmethane

Correct Answer: (D) Diphenylmethane

SOLUTION:

Clinical pearl: Remember the four prokinetic classes by mechanism, then spot the odd one out.

1. D2 (dopamine) antagonists: metoclopramide, domperidone, itopride.
2. 5-HT₄ agonists: cisapride, mosapride, prucalopride.
3. Motilin agonists: macrolides like erythromycin (low-dose, used to speed gastric emptying in gastroparesis).
4. Cholinesterase-related: itopride also has anti-AChE action.

Diphenylmethane is the chemical class of stimulant (irritant) purgatives such as bisacodyl and phenolphthalein. These trigger colonic secretion and peristalsis as laxatives, so they are not prokinetics. Hence diphenylmethane is the correct answer for the drug that is NOT a prokinetic.

Ref: K. D. Tripathi, 7th Edition, GIT drugs chapter.

Quick Tip: One of these is actually a stimulant laxative group, not a gut motility enhancer.

...

52. Which of the following drugs acts by inhibiting DNA replication?

- (A) 6-Mercaptopurine
- (B) Actinomycin D
- (C) Mitomycin C
- (D) Asparaginase

Correct Answer: (A) 6-Mercaptopurine

SOLUTION:

Option-elimination approach:

Actinomycin D: intercalating agent, blocks RNA synthesis (transcription) more than DNA replication. Out.

Mitomycin C: bioreductive alkylator that cross-links complementary DNA strands.

Acts on DNA structure, not classic replication inhibition through nucleotide depletion. Out as the best fit.

Asparaginase: an enzyme that hydrolyses circulating asparagine, starving leukemic cells of the amino acid and blocking protein synthesis. Out.

That leaves 6-mercaptopurine, a purine analogue antimetabolite. After conversion to thioinosinic acid, it blocks purine nucleotide formation and de novo purine synthesis, and the false bases get incorporated into DNA. This halts DNA replication, making it the answer.

Mnemonic: antimetabolites (MTX, 6-MP, 5-FU) starve the cell of nucleotide building blocks and so stop replication.

Ref: K. D. Tripathi, 7th Edition, Anticancer drugs.

Quick Tip: Look for the antimetabolite that blocks purine nucleotide synthesis.

53. What is the drug of choice for onychomycosis?

- (A) Terbinafine
- (B) Fluconazole
- (C) Nystatin
- (D) Itraconazole

Correct Answer: (A) Terbinafine

SOLUTION:

Quick clinical logic: Onychomycosis is a dermatophyte nail infection, so pick the agent that is both fungicidal for dermatophytes and accumulates in keratin.

Terbinafine, an allylamine, inhibits squalene epoxidase and is fungicidal against dermatophytes. It binds nail keratin and stays there long after stopping, giving the best mycological cure, so it is the drug of choice.

Why not the others: Nystatin is a topical polyene effective only for *Candida*, useless for dermatophyte nails. Fluconazole has weaker activity for this indication. Itraconazole works well and is the main backup (pulse regimen), but terbinafine still edges it out as first-line for dermatophyte onychomycosis.

Exam pearl: terbinafine for toenail dermatophyte infection; itraconazole when Candida or non-dermatophyte molds are involved.
Ref: standard antifungal therapy guidelines.

Quick Tip: The fungicidal allylamine that concentrates in nail keratin wins here.

...

54. Theophylline causes diuresis by which of the following mechanisms?

- (A) PDE3 inhibition
- (B) PDE4 inhibition
- (C) Beta-2 agonist action
- (D) Adenosine A1 receptor antagonism

Correct Answer: (D) Adenosine A1 receptor antagonism

SOLUTION:

Mechanism-led reasoning: Theophylline has two big actions, and the trick is matching the right one to diuresis.

PDE inhibition raises cAMP and drives bronchodilation, CNS stimulation, and positive cardiac effects, not the renal sodium handling. So options for PDE3 and PDE4 inhibition do not explain the diuresis.

Beta-2 agonism is not a methylxanthine action at all, so that option is out.

The diuretic effect is a renal tubular event. Methylxanthines block adenosine A1 receptors on the proximal tubule, which normally promote sodium and water reabsorption. Antagonising A1AR cuts proximal reabsorption, and the effect disappears entirely in A1 receptor knockout mice. Theophylline also weakly dilates renal vessels and boosts renin, both via adenosine receptor blockade.

Pearl: adenosine = retain sodium; block it (theophylline, caffeine) = mild diuresis.

Ref: renal pharmacology of methylxanthines.

Quick Tip: Methylxanthines block a purine receptor in the proximal tubule to cut sodium reabsorption.

...

55. Which of the following antimicrobials should not be given to a chronic asthmatic patient managed on theophylline therapy?

- (A) Erythromycin
- (B) Amoxicillin
- (C) Cefotaxime
- (D) Cotrimoxazole

Correct Answer: (A) Erythromycin

SOLUTION:

Interaction-spotting approach: Theophylline is a narrow-margin drug cleared by liver CYP enzymes, so the dangerous antibiotic is the enzyme inhibitor. Scan the options: amoxicillin (penicillin), cefotaxime (cephalosporin), and cotrimoxazole are not meaningful CYP inhibitors of theophylline clearance, so they are safe.

Erythromycin, a macrolide, inhibits hepatic CYP and reduces theophylline metabolism. Plasma theophylline rises, risking nausea, tachyarrhythmias and convulsions. Hence erythromycin should be avoided, or theophylline cut to two-thirds with level monitoring.

Memory aid for CYP inhibitors that raise theophylline: erythromycin, ciprofloxacin, cimetidine, allopurinol, oral contraceptives.

Ref: K. L. Tripathi, 7th Edition, drug interactions of methylxanthines.

Quick Tip: Pick the macrolide that blocks hepatic enzymes and pushes theophylline into the toxic range.

...

56. What is the drug of choice for prophylaxis of motion sickness?

- (A) Promethazine
- (B) Prochlorperazine
- (C) Metoclopramide
- (D) Itopride

Correct Answer: (A) Promethazine

SOLUTION:

Pathway-matching trick: Match the antiemetic class to the cause. Motion sickness arises from the vestibular apparatus, signalled by acetylcholine and histamine, so the best drug must be anticholinergic and antihistaminic. Promethazine fits perfectly: it is an H1 blocker with marked anticholinergic action, protecting for 4 to 6 hours when given roughly 30 to 60 minutes before travel. That makes it the prophylactic drug of choice (with hyoscine and dimenhydrinate as cousins).

The other three target dopamine: prochlorperazine and itopride are D2 blockers and metoclopramide is a D2 plus 5-HT₃ blocker. Antidopaminergic and anti-5-HT₃ drugs are weak for the vestibular trigger, so they are second-line at best.

Pearl: vestibular vomiting = antihistaminic/anticholinergic; chemical or GI vomiting = antidopaminergic.

Ref: K. D. Tripathi, antiemetic chapter.

Quick Tip: The anticholinergic-antihistamine antiemetic taken before the trip is best.

...

57. Which of the following antihypertensive drugs is avoided in patients with high serum uric acid levels?

- (A) Hydrochlorothiazide
- (B) Enalapril
- (C) Prazosin
- (D) Atenolol

Correct Answer: (A) Hydrochlorothiazide

SOLUTION:

Side-effect recall: The classic metabolic adverse effects of thiazides are the 4 hyper-s plus hypos: hyperglycemia, hyperlipidemia, hyperuricemia, hypercalcemia, hypokalemia and hyponatremia.

Hyperuricemia is the key one here. Hydrochlorothiazide cuts urate excretion (competes for the tubular secretory pathway and causes volume contraction that boosts urate reabsorption), so blood uric acid climbs and gout can flare. That is why it is avoided when serum uric acid is high.

The alternatives are urate-neutral: enalapril (ACEi, even mildly uricosuric via losartan-like effects in some ARBs), prazosin (alpha-blocker), and atenolol (beta-blocker) do not raise uric acid. Any of these is preferable for a gouty hypertensive. Pearl: gout plus hypertension, skip the thiazide, consider an ACE inhibitor or losartan.

Ref: K. D. Tripathi, 7th Edition, diuretics.

Quick Tip: The diuretic that competes with urate for tubular secretion is the one to avoid.

...

58. The mechanism of bacterial resistance to penicillins via beta-lactamase is:

- (A) Altered penicillin binding proteins
- (B) Drug efflux
- (C) Breaks drug structure
- (D) Alteration in 50S ribosome structure

Correct Answer: (C) Breaks drug structure

SOLUTION:

Name-the-enzyme logic: The clue is in the word beta-lactamase, an enzyme that acts on the beta-lactam ring. Enzymes that end in -ase cleave the target intact only by breaking it, so this is a drug-destroying mechanism.

Beta-lactamase hydrolyses (cleaves) the beta-lactam ring of penicillins. Since that

ring is what binds PBPs to stop cell wall synthesis, cutting it inactivates the antibiotic, the drug structure is broken. That makes option C correct.

Distinguish the distractors, which are other resistance routes: altered PBPs with low drug affinity (MRSA, pneumococci), efflux pumps that pump the drug out (tetracyclines), and ribosomal target changes (aminoglycosides, macrolides) that have nothing to do with beta-lactamases.

Pearl: beta-lactamase = enzymatic destruction; clavulanate, sulbactam and tazobactam are added to protect the ring.

Ref: K. D. Tripathi, 7th Edition, beta-lactam antibiotics.

Quick Tip: The enzyme name tells you it hydrolyses the beta-lactam ring.

...

59. A patient on lithium therapy developed hypertension and was started on a thiazide diuretic. After a few days, he developed coarse tremors and other features suggestive of lithium toxicity. What is the probable mechanism of this interaction?

- (A) Thiazide increases the tubular reabsorption of lithium
- (B) Thiazide inhibits the metabolism of lithium
- (C) Thiazide acts as an add-on drug to lithium
- (D) All of the above

Correct Answer: (A) Thiazide increases the tubular reabsorption of lithium

SOLUTION:

Rule out and reason: First kill the wrong options. Lithium undergoes no hepatic metabolism, so thiazide cannot inhibit its metabolism, option B falls. Thiazide is not simply an additive mood agent, so option C is meaningless. That makes All of the above wrong too.

Now the real mechanism: lithium mimics sodium in the nephron. Thiazides block distal sodium reabsorption, causing natriuresis and mild volume depletion. The proximal tubule reacts by avidly reabsorbing sodium, and lithium rides along the same path, so its reabsorption climbs and plasma lithium rises into the toxic range, producing coarse tremor and other toxicity.

So option A, increased tubular reabsorption of lithium, is correct.

Pearl: any sodium-depleting state (thiazide, low-salt diet, dehydration) raises lithium; manage by lowering the lithium dose and checking levels.

Ref: K. D. Tripathi, 7th Edition, lithium.

Quick Tip: Lithium is not metabolised; think how sodium loss changes its tubular handling.

...

60. Which of the following drugs/hormones acts via a tyrosine kinase receptor?

- (A) Insulin
- (B) TSH
- (C) LH
- (D) MSH

Correct Answer: (A) Insulin

SOLUTION:

Sort by receptor family: Group the options by signalling type and the odd one out is the answer.

TSH, LH and MSH are all anterior-pituitary-axis peptide hormones that work through G-protein coupled receptors. They activate Gs, raise cAMP, and stimulate protein kinase A. So all three share the GPCR-cAMP route.

Insulin is different. Its receptor is a receptor tyrosine kinase, a heterotetramer of 2 alpha (extracellular, ligand-binding) and 2 beta (transmembrane, with kinase domains) subunits held by disulfide bonds. Insulin binding switches on the beta-subunit tyrosine kinase, causing autophosphorylation and recruitment of IRS protein, driving metabolic effects.

So insulin is the drug/hormone acting via a tyrosine kinase receptor.

Pearl: growth factors, insulin and IGF-1 use RTKs; most peptide hormones (TSH, LH, MSH, ACTH, glucagon) use GPCRs.

Ref: K. D. Tripathi, 7th Edition, receptor pharmacology.

Quick Tip: Three of these are GPCR-cAMP hormones; the metabolic one has intrinsic kinase activity.

• • •

61. Pegloticase is used for the treatment of:

- (A) Reactive arthritis
- (B) CPPD (calcium pyrophosphate deposition disease)
- (C) Chronic tophaceous gout
- (D) Refractory rheumatoid arthritis

Correct Answer: (C) Chronic tophaceous gout

SOLUTION:

Clinical pearl: drugs ending in '-ase' here point to an enzyme. Pegloticase is a uricase that chews up uric acid directly so it belongs to gout, not to any other arthritis on the list.

Pegloticase oxidises urate to allantoin, a far more soluble product that the kidney clears easily. Because it is given intravenously and carries infusion-reaction and anti-drug-antibody risk, it sits as a third-line option only for severe refractory chronic gout with large tophi after oral agents fail.

Option-elimination: reactive arthritis and rheumatoid arthritis are inflammatory but not crystal-driven by urate, so a uricase has no role. CPPD deposits calcium pyrophosphate, not monosodium urate, so lowering urate does nothing. That leaves chronic tophaceous gout as the only urate-deposition disease, the right answer.

Quick Tip: Think of the drug that enzymatically dissolves uric acid in deposit-heavy disease.

• • •

62. Which fluoroquinolone is contraindicated (dose must be reduced) in liver disease?

- (A) Levofloxacin
- (B) Pefloxacin
- (C) Ofloxacin
- (D) Lomefloxacin

Correct Answer: (B) Pefloxacin

SOLUTION:

Memory hook: 'Pefloxacin = hePatic'. Among the fluoroquinolones, it is the one that leans on the liver instead of the kidney for clearance. Pefloxacin undergoes extensive hepatic metabolism and has the longest half-life of the group, so repeated doses pile up and plasma concentrations roughly double compared with a single dose. In hepatic dysfunction this build-up risks toxicity, so the dose is cut in liver disease while staying unchanged in renal failure. By contrast, levofloxacin, ofloxacin, and lomefloxacin are excreted predominantly unchanged in urine, so they need renal, not hepatic, dose adjustment. That isolates pefloxacin as the correct answer.

Quick Tip: Find the quinolone that is hepatically cleared and accumulates, unlike the renally excreted rest.

...

63. At a high altitude of 3000 m, a person complains of breathlessness. All of the following can be used for the management of this person except:

- (A) Intravenous digoxin
- (B) Oxygen supplementation
- (C) Immediate descent
- (D) Acetazolamide

Correct Answer: (A) Intravenous digoxin

SOLUTION:

Think of the AMS toolkit: Descend, Oxygen, Acetazolamide (and dexamethasone for cerebral, nifedipine for pulmonary oedema). Match each option against that toolkit.

Oxygen corrects the underlying hypoxia, immediate descent is the single most effective measure (even 500 to 1000 m brings relief), and acetazolamide, a carbonic anhydrase inhibitor, drives a bicarbonate diuresis and respiratory stimulation that hastens acclimatisation. All three are textbook AMS therapy. Intravenous digoxin is nowhere in this toolkit. It is reserved for heart failure and supraventricular rate control and offers no benefit in hypobaric hypoxia, so it is the odd one out and the correct 'except' choice.

Quick Tip: Three of these fight hypoxia or speed acclimatisation; one is a cardiac drug with no altitude role.

...

64. A patient with diabetes and COPD developed postoperative urinary retention. Which of the following drugs can be used for short-term treatment to relieve the symptoms of this person?

- (A) Bethanechol
- (B) Methacholine
- (C) Terazosin
- (D) Tamsulosin

Correct Answer: (A) Bethanechol

SOLUTION:

Frame it by mechanism: non-obstructive retention means the detrusor will not contract, so you want a cholinergic 'push', not an alpha-blocker that merely opens the outlet.

Bethanechol is a synthetic choline ester selective for muscarinic receptors of the bladder and gut, and unlike acetylcholine it resists cholinesterase, giving a sustained detrusor contraction. That makes it the classic choice for postoperative

and postpartum bladder atony.

Eliminate the rest: methacholine is a provocation agent that can trigger bronchospasm, dangerous in a COPD patient; terazosin and tamsulosin are alpha-1 antagonists suited to outlet obstruction in BPH, not to a flaccid bladder. So bethanechol is the answer.

Quick Tip: You need to make a weak bladder squeeze, not relax an obstructed outlet.

...

65. Drug of choice for invasive aspergillosis is:

- (A) Posaconazole
- (B) Voriconazole
- (C) Liposomal amphotericin B
- (D) Caspofungin

Correct Answer: (B) Voriconazole

SOLUTION:

Clinical pearl: for invasive aspergillosis, the first move is a triazole, and the specific one is voriconazole, remembered as 'V for the Vessel-invading Aspergillus'.

Voriconazole earned its first-line spot after a controlled trial demonstrated better outcomes than amphotericin B deoxycholate. It works by inhibiting ergosterol biosynthesis, weakening the fungal membrane.

Sort the rest by role: liposomal amphotericin B is the principal alternative when voriconazole is contraindicated; caspofungin, an echinocandin acting on the cell wall, and posaconazole are reserved for salvage therapy or prophylaxis. That keeps voriconazole as the single best answer.

Quick Tip: One triazole beat amphotericin B head-to-head and became first line.

...

66. Which of the following drugs acts by inhibiting the transcription of DNA to RNA.

- (A) Rifampicin
- (B) Nitrofurantoin
- (C) Ciprofloxacin
- (D) Novobiocin

Correct Answer: (A) Rifampicin

SOLUTION:

Map each drug to the step of the central dogma it attacks. Transcription (DNA to RNA) needs RNA polymerase, so look for the RNA polymerase blocker.

Rifampicin clamps onto the beta subunit of bacterial DNA-dependent RNA polymerase and stops RNA synthesis at the initiation step. This single mechanism is why it is also a cornerstone antitubercular drug and a prophylactic against meningococcus.

The distractors hit other steps: ciprofloxacin and novobiocin interfere with DNA gyrase during replication, and nitrofurantoin generates reactive metabolites that broadly damage bacterial macromolecules. None of them act on transcription, so rifampicin is the answer.

Quick Tip: Which antitubercular drug famously turns secretions orange and blocks RNA polymerase?

...

67. A patient was recently started on fluphenazine. A few weeks later, he developed tremors, rigidity, bradykinesia, and excessive salivation. The first line of management for this patient is:

- (A) Selegiline
- (B) Trihexyphenidyl
- (C) Pramipexole
- (D) Amantadine

Correct Answer: (B) Trihexyphenidyl

SOLUTION:

Pattern recognition: a high-potency antipsychotic plus new tremor, rigidity, and drooling equals drug-induced (pseudo) parkinsonism from D2 blockade, an extrapyramidal side effect.

The fix is not to flood the brain with dopamine, because that would reignite the psychosis the fluphenazine is treating. Instead you tip the dopamine-acetylcholine seesaw back by blocking acetylcholine. Trihexyphenidyl, a central anticholinergic, is the standard first-line choice for these symptoms.

Why not the rest: selegiline, pramipexole, and amantadine are dopaminergic agents reserved for true Parkinson's disease and are inappropriate, even risky, in a psychotic patient. Hence trihexyphenidyl is correct.

Quick Tip: Antipsychotic-induced parkinsonism is corrected by an anticholinergic, not by adding dopamine.

...

68. A person was given a muscle relaxant that competitively blocks nicotinic receptors. Which of the following drugs is used for reversal of muscle relaxation after surgery?

- (A) Neostigmine
- (B) Carbachol
- (C) Succinylcholine
- (D) Physostigmine

Correct Answer: (A) Neostigmine

SOLUTION:

Mechanistic logic: a competitive blocker is reversible by sheer mass action, so flood the synapse with acetylcholine by inhibiting cholinesterase.

Neostigmine, a quaternary-ammonium anticholinesterase, stays in the periphery and raises end-plate acetylcholine, displacing the non-depolarising agent and restoring neuromuscular transmission. It is co-administered with an

antimuscarinic (atropine or glycopyrrolate) to prevent bradycardia and secretions.

Rule out the rest: physostigmine is a CNS-penetrating anticholinesterase used for central antimuscarinic toxicity, carbachol is a direct agonist for miosis in eye surgery, and succinylcholine is itself a paralytic. So neostigmine is the reversal agent.

Quick Tip: Boost acetylcholine to push the competitive blocker off the receptor: pick the anticholinesterase that stays peripheral.

...

69. Zero-order kinetics is otherwise known as saturation kinetics. It is independent of:

- (A) Plasma concentration
- (B) Clearance
- (C) Volume of distribution
- (D) Half life

Correct Answer: (A) Plasma concentration

SOLUTION:

Concept-first: 'saturation' tells you the elimination machinery is maxed out and running flat-out at a fixed rate. A flat fixed rate cannot scale with how much drug is around.

So in zero-order elimination a constant quantity (say, mg per hour) is cleared whether the plasma level is high or low, which means the elimination rate is independent of plasma concentration, the correct option.

The other terms are not constant here. Half-life and clearance both shift with concentration in zero-order behaviour (half-life grows as levels climb), so neither is the answer. Volume of distribution describes drug spread, not the saturable elimination feature. Ethanol, high-dose phenytoin, and aspirin are the standard examples.

Quick Tip: If a fixed amount leaves per unit time, the rate cannot depend on how much is in the plasma.

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71. Which of the following is the law on child sexual abuse in India?

- (A) Child Sexual Abuse Prevention Act
- (B) Protection of Children from Sexual Offences Act (POCSO)
- (C) Child Welfare Act
- (D) Sexual Offences Act

Correct Answer: (B) Protection of Children from Sexual Offences Act (POCSO)

SOLUTION:

Clinical-legal pearl: when an Indian exam asks which law protects children from sexual offences, the answer is always POCSO. Quick elimination first: the Child Sexual Abuse Prevention Act, Child Welfare Act and a stand-alone Sexual Offences Act are not enacted Indian laws, so they drop out immediately. That leaves POCSO. The Protection of Children from Sexual Offences Act came into force in 2012 and was amended in 2019 to add stricter punishments. Remember its scope by the three Ps: it covers Penetrative assault, Pornographic use of children, and Plain (non-penetrative) sexual assault and harassment, plus the aggravated forms of each. A child here means anyone below 18, and the Act is gender-neutral and applies across the whole country. So the correct choice is POCSO.

Quick Tip: Think of the dedicated 2012 statute that defines a child as under 18 years.

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72. Punishment of perjury comes under which IPC section?

- (A) IPC 191
- (B) IPC 192
- (C) IPC 193
- (D) IPC 197

Correct Answer: (C) IPC 193

SOLUTION:

Mnemonic-led approach: line up the false-evidence sections in order. IPC 191 = giving false evidence (the definition), IPC 192 = fabricating false evidence (the definition), IPC 193 = punishment for both (perjury). So the section that actually carries the penalty is 193, with imprisonment up to seven years plus fine. The trap option, IPC 197, is about issuing or signing a false certificate, which is a different offence. Since the question specifically asks for the punishment of perjury, options 191 and 192 are only definitions and must be ruled out, and 197 is unrelated. The remaining and correct answer is IPC 193.

Quick Tip: 191 defines it, 192 fabricates it, but only one section punishes it.

...

73. When civil negligence is brought up against a doctor, the onus of proof lies upon:

- (A) Judicial first-degree magistrate
- (B) Police not below the level of sub-inspector
- (C) Doctor
- (D) Patient

Correct Answer: (D) Patient

SOLUTION:

Reason from first principles: in civil law the person who alleges a wrong must prove it. The patient is the one alleging that the doctor was negligent, so the patient carries the burden of proof. Eliminate the distractors fast: a magistrate

and a police sub-inspector are figures from criminal procedure, not parties who carry a civil burden of proof, so options 1 and 2 are out. The doctor is presumed innocent, so the burden does not start with the doctor, ruling out option 3. That leaves the patient. The one nuance worth remembering is *res ipsa loquitur*, where the negligence is self-evident and the burden then shifts onto the doctor but the default rule for civil negligence keeps the onus on the patient. Correct answer: patient.

Quick Tip: The doctor's innocence is presumed, so who must prove otherwise?

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74. Relatives of a patient state during postmortem examination that the deceased had a tattoo which is now invisible. How can it be identified?

- (A) Examine the lymph node
- (B) Spectrophotometer
- (C) Ordinary light
- (D) X-ray

Correct Answer: (A) Examine the lymph node

SOLUTION:

Pathology-flavoured reasoning: tattoo ink sits in the dermis, where macrophages engulf the pigment particles. These pigment-laden macrophages travel through lymphatics to the regional lymph nodes, depositing pigment there permanently. That is why even a faded or decomposed tattoo can be confirmed by examining the draining lymph nodes for pigment. Walk through the options: ordinary light fails because the mark is already invisible, so option 3 is out. A plain X-ray does not image soft-tissue dye, ruling out option 4. A spectrophotometer is a laboratory colour-measuring instrument, not a body-examination method for tattoos, so option 2 is wrong. The dependable answer that works even on decomposed bodies is examining the regional lymph node.

Quick Tip: Dermal pigment drains somewhere and stays there even after the skin mark fades.

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75. True about the hymen in child rape is:

- (A) Hymen easily tears because it is thin
- (B) Hymen easily tears because it is in the front
- (C) Hymen hardly tears because it is highly elastic
- (D) Hymen hardly tears because it is situated deep

Correct Answer: (D) Hymen hardly tears because it is situated deep

SOLUTION:

Key forensic teaching point: in child sexual assault an intact hymen never excludes rape. The reason is anatomical. In a young child the genitalia are small and the hymen is set deep within the vulva, so an assault often produces only vulval or partial penetration that does not reach the hymen. Test the options against this. Saying the hymen tears easily because it is thin or because it lies in front contradicts the clinical reality that it commonly stays intact, so options 1 and 2 are wrong. Elasticity does help protect the hymen, but the option that the examiners want for a child specifically is its deep position. Hence the hymen hardly tears because it is situated deep, making option 4 correct.

Quick Tip: In a small child, full penetration rarely reaches a structure placed where?

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76. Wagon's symptom is related to:

- (A) Cocaine poisoning
- (B) Cannabis
- (C) Opium
- (D) Alcohol

Correct Answer: (A) Cocaine poisoning

SOLUTION:

One-line clinical pearl: Magnan = cocaine bug. The patient with chronic cocaine use develops formication, a tactile hallucination of insects or sand crawling beneath the skin, and scratches until ulcers form. Link the name to the drug and the answer is immediate. Run a quick check on the distractors: cannabis gives euphoria, distorted time sense and the run-amok picture, opium causes the classic pinpoint pupils and respiratory depression, and alcohol withdrawal gives delirium tremens with visual hallucinations rather than the under-the-skin crawling sensation. None of these is the cocaine bug. So Magnan's symptom belongs to cocaine poisoning, option 1.

Quick Tip: Imaginary bugs crawling under the skin point to one stimulant drug.

77. Parents complain that their child was assaulted by a relative and the child has anal pain. On investigation a test shows yellow needle-shaped crystals on adding picric acid. What is the name of the test.

- (A) Florence test
- (B) Barberio's test
- (C) Acid phosphatase test
- (D) Creatine phosphokinase test

Correct Answer: (B) Barberio's test

SOLUTION:

Pattern match the reagent to the test. Picric acid plus yellow needle-shaped crystals equals Barberio's test, which precipitates spermine as spermine picrate and confirms semen. Tie each seminal test to its reagent and colour to eliminate the rest: Florence test uses iodine and gives brown choline-periodide crystals, so option 1 is wrong because the colour and reagent differ. The acid phosphatase

test is an enzymatic colour reaction that relies on the very high acid phosphatase of prostatic fluid, not on picric acid, ruling out option 3. Creatine phosphokinase is a cardiac and muscle enzyme with no role in semen identification, so option 4 is out. The picric-acid, yellow-crystal description fits only Barberio's test, option 2.

Quick Tip: Picric acid producing yellow spermine crystals names this test.

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78. The maximum number of days for which a Magistrate can detain a mentally ill person under a Reception Order is:

- (A) 30 days
- (B) 90 days
- (C) 50 days
- (D) 100 days

Correct Answer: (A) 30 days

SOLUTION:

Number-pairing trick: a Magistrate's Reception Order = 30 days, while admission under special circumstances by relatives = 90 days. The question specifies detention ordered by the Magistrate, so the figure to pick is 30 days. Knock out the distractors: 50 and 100 days are not statutory detention periods at all and are pure filler, so options 3 and 4 go. The 90-day option is the classic trap because it is a real period, but it applies to admission under special circumstances on a relative's application, not to a Magistrate's Reception Order, so option 2 is wrong here. The correct answer for the Magistrate's order is 30 days, option 1.

Quick Tip: Separate the Magistrate's Reception Order limit from the 90-day special-circumstance admission.

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79. The vector for Zika virus is:

- (A) Aedes
- (B) Culex
- (C) Anopheles
- (D) None of these

Correct Answer: (A) Aedes

SOLUTION:

Mnemonic anchor: Aedes carries the dengue, chikungunya and Zika triad, so the moment Zika is named, think Aedes (mainly Aedes aegypti and Aedes albopictus). Match each mosquito to its disease to clear the field: Culex transmits Japanese encephalitis, West Nile and filariasis, so option 2 is wrong, and Anopheles is the malaria vector, so option 3 is wrong. Because Aedes is clearly the established vector, option 4 (none of these) is also incorrect. Beyond the mosquito bite, Zika is notable for sexual and vertical (mother-to-fetus) transmission causing microcephaly, but the vector asked for is Aedes, option 1.

Quick Tip: Same mosquito that spreads dengue and chikungunya.

...

80. All are true regarding Japanese encephalitis except:

- (A) Caused by a flavivirus
- (B) Humans are dead-end hosts
- (C) Transmitted by Culex
- (D) Cattle are amplifier hosts

Correct Answer: (D) Cattle are amplifier hosts

SOLUTION:

Concept-question, so hunt the single false statement. Build the true picture of Japanese encephalitis: a flavivirus (group B arbovirus), transmitted by Culex tritaeniorhynchus, with pigs as the amplifying host and birds as the natural

maintenance hosts, while humans, cattle and horses are dead-end hosts that do not pass the virus on. Now check each option. Flavivirus is correct, Culex transmission is correct, and humans being dead-end hosts is correct, so options 1, 2 and 3 are all true. The amplifier is the pig, which develops high viraemia, not cattle, which are actually dead-end hosts. So the statement that cattle are amplifier hosts is the false one, making option 4 the answer to this except question.

Quick Tip: Which animal is the true amplifier, the one with high viraemia?

...

81. All of the following have superantigen properties EXCEPT:

- (A) *Vibrio cholerae*
- (B) Streptococcal pyrogenic exotoxin
- (C) Staphylococcal enterotoxins
- (D) None of these

Correct Answer: (A) *Vibrio cholerae*

SOLUTION:

Mnemonic-led approach: Remember superantigens as the Staph and Strep toxins that whip up a cytokine storm by clamping MHC II to the T-cell receptor outside the peptide groove, switching on roughly 1 in 10 T-cells at once. The headline members are staphylococcal TSST-1, the staphylococcal enterotoxins, exfoliative toxins and streptococcal pyrogenic exotoxins. Run option-elimination: option b (streptococcal pyrogenic exotoxin) and option c (staphylococcal enterotoxins) are both on that list, so both are true superantigens and cannot be the answer. Option a, *Vibrio cholerae*, makes cholera toxin, an enterotoxin that ADP-ribosylates the Gs protein, locks adenylate cyclase on, floods the enterocyte with cAMP and pours out watery stool. That is a classic enterotoxin mechanism with no T-cell cross-linking, so it is the odd one out. Answer: *Vibrio cholerae*.

Quick Tip: Think which of these toxins activates T-cells en masse versus one that just ADP-ribosylates a G protein in the gut.

...

82. Which of the following is a Category A bioterrorism agent?

- (A) Chikungunya
- (B) Anthrax
- (C) Hendra
- (D) Influenza

Correct Answer: (B) Anthrax

SOLUTION:

Tier-table approach. The CDC bioterrorism scheme runs A, B, C in falling order of threat. Category A is the deadly headliner group, think of the mnemonic anchors smallpox, anthrax, plague, botulism, tularaemia and the viral haemorrhagic fevers, all capable of mass casualties and demanding national preparedness. Category B is the second tier (moderate spread, low mortality) and includes chikungunya, cholera, ricin and the food and water threats. Category C is the emerging-threat bucket meant for agents that could be engineered, such as Hendra, Nipah, MERS, SARS and highly pathogenic influenza strains. Map each option to its tier: chikungunya is B, Hendra is C, influenza is C, and only anthrax lands in A. Answer: Anthrax.

Quick Tip: Recall the highest-risk tier: the one with smallpox, plague and the viral haemorrhagic fevers.

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83. Which culture medium is used for the isolation of E. coli O157:H7?

- (A) Sorbitol MacConkey agar (SMAC)
- (B) Wilson and Blair medium
- (C) Potassium tellurite in McLeod's medium
- (D) Deoxycholate citrate agar (DCA)

Correct Answer: (A) Sorbitol MacConkey agar (SMAC)

SOLUTION:

Biochemical-key approach. The single fact that cracks this question is that *E. coli* O157:H7 is a non-sorbitol fermenter, unlike the bulk of commensal *E. coli*. Sorbitol MacConkey agar is engineered around exactly that difference: it uses sorbitol in place of lactose, so sorbitol-positive organisms make acid, take up neutral red and grow pink-red, while O157:H7 produces pale, colourless colonies that stand out. Eliminate the rest by their real targets, Wilson and Blair (bismuth sulphite) and deoxycholate citrate agar are enteric media aimed at *Salmonella* and *Shigella*, and potassium tellurite in McLeod's medium is the classic selective plate for *Corynebacterium diphtheriae*, where colonies turn black. None of those keys on sorbitol, so they cannot single out O157:H7. Answer: SMAC.

Quick Tip: The medium swaps lactose for a sugar this strain cannot ferment, so its colonies stay colourless.

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84. Donovanosis is caused by which of the following organisms?

- (A) *Haemophilus ducreyi*
- (B) *Leishmania donovani*
- (C) *Klebsiella granulomatis*
- (D) *Treponema pallidum*

Correct Answer: (C) *Klebsiella granulomatis*

SOLUTION:

Eponym-trap approach. Donovanosis is the same as granuloma inguinale, a chronic STD marked by painless, slowly spreading, beefy-red genital ulcers that bleed on touch and show Donovan bodies on tissue crush smears. The Donovan body eponym and the Donovan species both honour Charles Donovan, which is the trap baked into this question. Sort the four ulcer-and-eponym notions: *Klebsiella granulomatis* is the true cause of donovanosis; *Leishmania donovani* is the protozoan of visceral leishmaniasis (kala-azar), not a genital ulcer at all; *Haemophilus ducreyi* gives painful, ragged chancroid; and *Treponema pallidum* gives the single painless indurated chancre of primary syphilis. Match the painless beefy ulcer plus Donovan bodies to the *Klebsiella* and the rest fall away. Answer: *Klebsiella granulomatis*.

Quick Tip: The genus that gives painless beefy red ulcers and Donovan bodies is the clue, do not confuse it with the *Leishmania* of the same eponym.

85. Which fungal infection is classically acquired by traumatic inoculation?

- (A) *Sporothrix schenckii*
- (B) *Blastomyces (blastomycosis)*
- (C) *Coccidioides*
- (D) *Paracoccidioides*

Correct Answer: (A) *Sporothrix schenckii*

SOLUTION:

Route-of entry approach. Group the dimorphic fungi by how they get in. Three of these, *Blastomyces*, *Coccidioides* and *Paracoccidioides*, are inhaled: their conidia are breathed in from soil or dust and the infection begins in the lung. Only one is a cutaneous, trauma-seeded fungus, and that is *Sporothrix schenckii*. The clinical tag to memorise is rose-gardener's disease: a gardener pricks a finger on a thorn or sphagnum moss, the fungus is driven under the skin, and over weeks a chain of subcutaneous nodules and ulcers ascends the draining

lymphatics (lymphocutaneous spread). So when the stem says traumatic inoculation, skip the three respiratory mycoses and pick the lymphocutaneous one. Answer: *Sporothrix schenckii*.

Quick Tip: Think rose-gardener's disease, a thorn prick seeds the skin and the nodules climb the lymphatics.

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86. Which of the following organisms is NOT a cause of urethritis?

- (A) *Trichomonas vaginalis*
- (B) *Haemophilus ducreyi*
- (C) *Chlamydia trachomatis*
- (D) *Gonococcus* (*Neisseria gonorrhoeae*)

Correct Answer: (B) *Haemophilus ducreyi*.

SOLUTION:

Syndrome-sorting approach. Split STD organisms by what syndrome they produce. Urethritis means inflammation of the urethra with discharge and dysuria, and its roll call is gonococcus (gonococcal type) plus chlamydia, *Trichomonas vaginalis*, *Mycoplasma genitalium* and HSV (non-gonococcal type). Three options, gonococcus, chlamydia and trichomonas, sit squarely in that list. *Haemophilus ducreyi* belongs to a different bucket: it is the agent of chancroid, a soft, painful, ragged genital ULCER paired with tender, suppurating buboes in the groin. An ulcer-and-bubo bug is not a discharge-and-dysuria bug, so it is the one not involved in urethritis. Answer: *Haemophilus ducreyi*.

Quick Tip: One of these makes a painful genital ulcer, not a urethral discharge, that is the odd one out.

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87. A patient develops nausea, vomiting and stomach cramps within 3 hours of attending a social gathering. Which organism is the most likely cause of this food poisoning?

- (A) *Staphylococcus aureus*
- (B) *Salmonella*
- (C) *Clostridium botulinum*
- (D) *Clostridium perfringens*

Correct Answer: (A) *Staphylococcus aureus*

SOLUTION:

Incubation-clock approach. Time-to-symptom is the discriminator in food-poisoning questions. A 1 to 6 hour onset dominated by vomiting screams a PREFORMED toxin eaten with the food, and the two classic short-incubation culprits are *Staphylococcus aureus* and *Bacillus cereus* (emetic type). Here, at 3 hours with nausea, vomiting and cramps, *Staphylococcus aureus* is the answer: its heat-stable enterotoxin is already in the contaminated dish, so no bacterial growth in the gut is needed and symptoms arrive almost immediately. Contrast the slower agents: *Salmonella* and *Clostridium perfringens* run 8 to 72 hours because they must multiply or release toxin in vivo, and *Clostridium botulinum* (12 to 36 hours) presents with cranial-nerve palsies and descending flaccid paralysis rather than early vomiting. Short clock plus vomiting equals Staph. Answer: *Staphylococcus aureus*.

Quick Tip: Vomiting within a few hours points to a preformed toxin, not one that needs the bug to grow inside you.

...

88. A 46-year-old woman with HIV has severe persistent diarrhoea. On histological investigation, which organism is most likely causing the diarrhoea?

- (A) Cryptosporidium
- (B) Staphylococcus aureus
- (C) Salmonella
- (D) Clostridium botulinum

Correct Answer: (A) Cryptosporidium

SOLUTION:

Host-context approach. In an immunocompromised AIDS patient the differential for chronic diarrhoea is dominated by opportunists: Cryptosporidium, Microsporidia, Isospora, Cyclospora, CMV and Mycobacterium avium complex. The stem flags a histological diagnosis, which favours an organism with a distinctive tissue footprint. Cryptosporidium fits best: its oocysts stain acid-fast on modified Ziehl-Neelsen, and on biopsy the small round parasites cling to the apical surface of the enterocytes, an intracellular-but-extracytoplasmic location that is a board-favourite clue. Now discard the non-opportunists and the wrong syndromes: Staphylococcus aureus produces acute toxin-driven vomiting (not a chronic AIDS picture), Salmonella causes acute enterocolitis or enteric fever rather than histology-diagnosed persistent diarrhoea, and Clostridium botulinum causes flaccid paralysis with no diarrhoea at all. The immune context plus the brush-border parasite seals it. Answer: Cryptosporidium.

Quick Tip: Chronic watery diarrhoea plus low CD4, look for the acid-fast protozoan hugging the enterocyte brush border.

...

89. Which organism causes lymphogranuloma venereum (LGV)?

- (A) Chlamydia trachomatis
- (B) Neisseria gonorrhoeae
- (C) Treponema pallidum
- (D) Haemophilus ducreyi

Correct Answer: (A) Chlamydia trachomatis

SOLUTION:

Serovar approach. Chlamydia trachomatis is a single species split by serovar into three disease groups, and remembering the split answers this instantly. Serovars A to C cause trachoma (chronic conjunctivitis leading to blindness), serovars D to K cause genital chlamydia, neonatal conjunctivitis and pneumonia, and serovars L1 to L3 cause lymphogranuloma venereum. LGV runs in stages: a meeting painless genital papule or ulcer, then tender inguinal and femoral lymphadenopathy that can show the pathognomonic groove sign, then late fibrosis. Knock out the wrong agents by their own classic STDs: Neisseria gonorrhoeae equals gonorrhoea, Treponema pallidum equals syphilis with a painless hard chancre, and Haemophilus ducreyi equals chancroid with a painful soft ulcer. Diagnosis is by nucleic acid amplification with L-serovar typing. Answer: Chlamydia trachomatis.

Quick Tip: Same genus as trachoma and genital chlamydia, but the L-serovars give a bubo-forming lymphatic disease.

90. Which interleukin is responsible for class switching of B cells to produce IgE?

- (A) IL-1
- (B) IL-3
- (C) IL-4
- (D) Both IL-1 and IL-3

Correct Answer: (C) IL-4

SOLUTION:

The subset approach. Tie each immunoglobulin switch to its cytokine. IgE is the allergy and anti-helminth antibody, and it is made when Th2 cells release IL-4, the master switch cytokine that flips the B-cell heavy chain to the epsilon isotype; IL-13 helps, while Th1 interferon-gamma actively suppresses IgE. Now eliminate: IL-1 is an acute-phase, fever-inducing cytokine from macrophages with no role in isotype switching, and IL-3 is a haematopoietic growth factor that expands stem

cells and mast-cell precursors rather than switching antibody class. Because IL-1 has no switching role, the combination option (both IL-1 and IL-3) is also wrong. The one cytokine that turns B cells into IgE producers is IL-4. Answer: IL-4.

Quick Tip: Think the master Th2 cytokine that drives allergic responses and the epsilon class switch.

...

91. Rapid bedside detection of HBsAg in point-of-care kits is based on which principle?

- (A) Immunochromatography assays
- (B) Chemiluminescence
- (C) ELISA
- (D) Immunofluorescence

Correct Answer: (A) Immunochromatography assays

SOLUTION:

Clinical pearl approach: Whenever a question says rapid, point-of-care or card test for an antigen or antibody, the default answer is the lateral-flow immunochromatographic assay. That is exactly how the bedside HBsAg strip behaves.

How it works: Serum is dropped on the pad and wicks along the membrane. Mobile gold or dye-labelled anti-HBs picks up any HBsAg, and the complex is trapped at a fixed test line, producing a coloured band you read by eye in minutes. No instrument is needed.

Eliminating the rest: Chemiluminescence and ELISA are plate or analyser based methods used in the lab for confirmation and quantitation, not the strip principle. Immunofluorescence needs a microscope and labelled antibody and is not the screening method for HBsAg.

Hence the principle is immunochromatography. Ref: Jawetz, 27e, p.504.

Quick Tip: Think of the simple lateral-flow card strip used at the bedside, not a lab machine.

...

92. A nosocomial (hospital-acquired) infection is defined as one occurring within how many hours of hospital admission?

- (A) 48 hours
- (B) 72 hours
- (C) 24 hours
- (D) 50 hours

Correct Answer: (A) 48 hours

SOLUTION:

Memory hook: Nosocomial equals 48. The number to lock in is two full days after admission.

Reasoning: If an infection shows up within the first 48 hours, the patient most likely brought it in already incubating, so it is community-acquired. Only after that window can we attribute it to the hospital environment, instruments or staff.

Extended definition: The same label applies up to 3 days after discharge and up to 30 days after surgery, which is why surgical site infections counted late are still nosocomial.

Why not the others: 24 and 72 hours and 50 hours are distractors; only the 48-hour figure is the accepted definition. So the answer is 48 hours. Ref: Park PSM; NCBI NBK441257.

Quick Tip: It is the same 2-day window used to call pneumonia ventilator-associated.

...

93. Which cell-surface component produced by *Neisseria gonorrhoeae* is mainly responsible for attachment to host cells?

- (A) Lipooligosaccharide
- (B) Pili (fimbriae)
- (C) IgA1 protease
- (D) Outer membrane porin protein

Correct Answer: (B) Pili (fimbriae)

SOLUTION:

Option-elimination first:

Lipooligosaccharide is the gonococcal endotoxin and triggers the inflammatory damage; it is not an adhesin.

IgA1 protease cleaves mucosal secretory IgA to help colonisation, but it is an enzyme, not an attachment organelle.

Por (outer membrane porin) supports invasion and intracellular survival.

That leaves pili (fimbriae), the correct answer.

Why pili: These are filamentous structures built from pilin proteins that physically anchor the bacterium to mucosal epithelium and resist being engulfed by neutrophils. Their antigenic variation also frustrates immunity, so prior infection gives no lasting protection. Adhesion equals pili is the take-home point.

Ref: Jawetz, 27e, p.282.

Quick Tip: The structure that lets bacteria stick to surfaces is usually a hair-like appendage.

...

94. According to the Bio-Medical Waste Management Rules 2016, chemical liquid biomedical waste should be discarded in which colour-coded container?

- (A) White
- (B) Yellow
- (C) Blue
- (D) Red

Correct Answer: (B) Yellow

SOLUTION:

Colour-code map (BMW Rules 2016):

Yellow: anatomical, soiled, expired drugs, chemical (solid and liquid), cytotoxic, lab and microbiology waste.

Red: contaminated recyclable plastic waste like tubing, catheters and IV sets.

Blue: broken or discarded glassware and metallic body implants or sharps.

White: translucent puncture-proof box for needles and other sharps.

Apply it: Chemical liquid waste, including used or discarded chemicals and liquid secretions, sits squarely in the yellow stream, with cytotoxic items getting an extra CYTOTOXIC mark.

So the answer is yellow. A quick way to remember: yellow is the broad incineration bin for everything biological or chemical that must be destroyed. Ref: Park PSM, 24e, p.831.

Quick Tip: Anatomical, expired drugs, cytotoxic and chemical waste all share the same colour bin.

...

95. Under the Factories Act, the maximum number of work hours per week for a person, including overtime, is:

- (A) 48
- (B) 50
- (C) 60
- (D) 100

Correct Answer: (C) 60

SOLUTION:

Two-number recall: Normal week equals 48 hours; with overtime the ceiling equals 60 hours.

Build-up: The Factories Act fixes the standard work-week at 48 hours. It then allows overtime of about 2 hours each working day, which over the week brings

the total close to 60 hours.

Eliminate distractors: 48 is only the base limit without overtime, so it is too low for the question asked. 50 is not a defined statutory figure. 100 is far above any legal limit. Only 60 fits the with-overtime maximum.

So the answer is 60 hours. Ref: Park PSM, 24e, p.852.

Quick Tip: Start from the standard 48-hour week and add the daily overtime allowance.

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96. Which vaccine is most appropriate to ensure people are protected after a disaster?

- (A) Vaccination against typhoid
- (B) Vaccination against cholera
- (C) Vaccination against typhoid and cholera
- (D) Vaccination against tetanus

Correct Answer: (D) Vaccination against tetanus

SOLUTION:

Think mechanism, not myth. The common belief that epidemics follow every disaster, so mass typhoid and cholera shots are needed, is wrong. WHO does not advise blanket gut-vaccine campaigns after disasters because exposure-driven transmission is usually low and the benefit small.

The real risk: Disaster victims and rescue workers sustain wounds in contaminated debris, and such injuries can lead to tetanus. Keeping everyone up to date with a tetanus-containing vaccine is the practical, evidence-based priority. Hepatitis cover is also relevant.

So, Among the options, tetanus is the vaccine to give. Cholera and typhoid options are distractors based on the outdated post-disaster epidemic fear. Answer: vaccination against tetanus. Ref: Park PSM, disaster chapter.

Quick Tip: Disasters mean dirty wounds; which vaccine prevents the infection that follows them?

...

97. What does the WHO MONICA project stand for?

- (A) Multinational monitoring of trends and determinants in Cardiovascular Disease
- (B) Multinational monitoring of trends and determinants in cerebrovascular disease
- (C) Multinational monitoring of trends and determinants in diabetes
- (D) Multinational monitoring of trends and determinants in congenital heart disease

Correct Answer: (A) Multinational monitoring of trends and determinants in Cardiovascular Disease

SOLUTION:

Acronym decode: MONICA = MONItoring + CARdiovascular. Spelling out the capital letters of the name gives away the answer at once.

Full form: Multinational MONItoring of trends and determinants in Cardiovascular disease, a WHO project.

Scale and aim: It enrolled populations from 41 centres in 26 countries and ran for about a decade, ending in 1994. Its purpose was to explain the differing trends in coronary and stroke mortality across countries by linking them to changes in classic risk factors, acute care and survival.

Eliminate: Cerebrovascular, diabetes and congenital heart disease all break the acronym, since the CA stands for cardiovascular. Answer: cardiovascular disease. Ref: Park PSM, 24e, p.385.

Quick Tip: Read the acronym itself: MONICA hides MONItoring and CARdiovascular.

...

98. Under the ESI Act, the maximum duration of Extended Sickness Benefit for an insured person with tuberculosis is:

- (A) 91 days
- (B) 1 year
- (C) 2 years
- (D) 4 years

Correct Answer: (C) 2 years

SOLUTION:

Separate the two benefits:

Ordinary Sickness Benefit: paid for a maximum of 91 days in a year for ordinary illness.

Extended Sickness Benefit: an add-on for specified long-term diseases such as tuberculosis, leprosy and certain cancers, available to those with continuous qualifying employment.

Duration of the extended benefit: It runs for a maximum of 2 years for these chronic conditions, well beyond the basic 91 days.

So: For tuberculosis the extended benefit ceiling is 2 years. The 91-day option is the ordinary benefit trap, and 1 year and 4 years are distractors. Answer: 2 years.

Ref: Park PSM, 24e, p.854.

Quick Tip: 91 days is the ordinary benefit; the extended one for chronic TB lasts much longer.

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99. A person reports 4 hours after sustaining a clean wound without laceration. He had received tetanus toxoid (TT) 10 years ago. The next best step in management is:

- (A) Full course of tetanus vaccine to be given
- (B) Full dose TT with TIG (tetanus immunoglobulin)
- (C) Single-dose TT
- (D) No need for any vaccine

Correct Answer: (C) Single-dose TT

SOLUTION:

Algorithm in two questions:

1. Is the wound clean and minor or tetanus-prone? Here it is clean, not lacerated and under 6 hours old, so it is clean minor.
2. Is the person immunised, and when was the last dose? He is immunised but the last dose was about 10 years ago.

Decision: For a clean minor wound in someone previously immunised whose last booster was roughly 10 or more years back, a single tetanus toxoid booster is enough. TIG is reserved for tetanus-prone wounds in incompletely immunised or unknown-status patients, so it is not required here.

Reject the others: A full primary course is for the never-immunised; no vaccine at all would leave waned immunity unaddressed.

Answer: single-dose TT. Ref: Park PSM, 24e, p.331

Quick Tip: Clean minor wound plus a remote last booster equals one toxoid dose, no immunoglobulin.

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100. The recent (2009) influenza pandemic was caused by which strain?

- (A) H1N1
- (B) H5N1
- (C) H7N7
- (D) H3N2

Correct Answer: (A) H1N1

SOLUTION:

Pandemic timeline pearl:

- 1918 Spanish flu: H1N1.
- 1957 Asian flu: H2N2.
- 1968 Hong Kong flu: H3N2.
- 2009 swine flu: H1N1 again.

Apply it: The recent pandemic the question refers to is the 2009 swine flu, caused by a new H1N1 strain. So H1N1 is the answer.

Eliminate: H5N1 is avian flu with high case-fatality but only sporadic human outbreaks, not a true pandemic. H7N7 is another avian subtype of limited human impact. H3N2 belongs to the 1968 pandemic, not the recent one.

Answer: H1N1. Ref: Park PSM; WHO influenza data.

Quick Tip: Think swine flu, 2009, the same H and N numbers as the 1918 Spanish flu.

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101. Mission Indradhanush is for:

- (A) Non-communicable diseases
- (B) Universal immunization
- (C) Family planning
- (D) Safe water and sanitation

Correct Answer: (B) Universal immunization

SOLUTION:

Mnemonic anchor: Indradhanush = the rainbow, and its seven colours map to seven life-threatening vaccine-preventable diseases. That single image tells you the mission is about vaccination, not lifestyle disease, family planning, or sanitation.

The scheme was rolled out in December 2014 to plug the gaps left by routine immunization. Many children stay unvaccinated or partially vaccinated, and this drive is designed to reach them and complete their schedule, the textbook definition of universal immunization.

The seven diseases are diphtheria, pertussis, tetanus, polio, tuberculosis, measles, and hepatitis B. In chosen districts, vaccines for Japanese encephalitis and Hib are added, and expectant mothers get tetanus protection.

Quick elimination: non-communicable diseases (**a**) belong to NPCDCS, family planning (**c**) is a separate vertical, and safe water with sanitation (**d**) falls under Swachh Bharat type programmes. Only option **b** fits.

Ref: Park's PSM, 24th ed., p. 462.

Quick Tip: Think of the seven colours of the rainbow standing for seven vaccine-preventable diseases.

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102. A study had a normal distribution with the median value as 200 and standard deviation 20. 68% of values will fall between:

- (A) 160-240
- (B) 170-230
- (C) 180-220
- (D) 190-210

Correct Answer: (C) 180-220

SOLUTION:

Read this off the empirical (68-95-99.7) rule. For a bell-shaped curve, the percentage of data captured depends only on how many SDs you move out from the centre: ± 1 SD holds 68%, ± 2 SD holds 95%, and ± 3 SD holds 99.7%.

First fix the centre. Because the curve is normal, mean = median = mode = 200. The SD is 20.

The question asks for 68%, so move out exactly one SD on each side: $200 - 20 = 180$ and $200 + 20 = 220$. The band is 180 to 220, which is option **c**.

Spot the traps: 160 to 240 is the ± 2 SD (95%) band, 190 to 210 is only ± 0.5 SD, and 170 to 230 does not match any clean SD multiple.

Ref: Park's PSM, 24th ed., p. 885.

Quick Tip: 68% of values lie within one standard deviation of the mean in a normal curve.

...

103. Which of the following is a technique or method based on behavioural sciences?

- (A) Management by objectives
- (B) Network analysis
- (C) Systems analysis
- (D) Decision making

Correct Answer: (A) Management by objectives

SOLUTION:

Sort the options by what they actually measure. Behavioural-science methods deal with people, goals, and communication; quantitative methods deal with numbers, networks, and money.

Management by objectives (MBO) is a people-and-goals tool: managers and staff jointly set targets and review performance against them. That places it squarely in the behavioural group alongside organizational design, personnel management, information systems, and communication.

Now eliminate. Network analysis (**b**, the PERT/CPM family) sequences project activities on a numerical timeline. Systems analysis (**c**) and decision making (**d**) are likewise quantitative or operational-research tools. None of these hinges on human behaviour.

So the only behavioural-science answer is management by objectives, option **a**.
Ref. Park's PSM, 25th ed., p. 934.

Quick Tip: One option deals with people and goal-setting rather than numbers and networks.

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104. As per the Sustainable Development Goals, the target for maternal mortality ratio (MMR) is to achieve maternal deaths of:

- (A) < 70 per lakh live births
- (B) < 100 per lakh live births
- (C) < 7 per 1000 live births
- (D) < 10 per 1000 live births

Correct Answer: (A) < 70 per lakh live births

SOLUTION:

Two things decide this question: the right number and the right denominator.

Denominator first. Maternal mortality ratio is always quoted per **100,000** live births, which is the same as per lakh. Any option written as per **1000** (*c* and *d*) uses the wrong base and can be struck out immediately, regardless of the number attached.

Number next. SDG target 3.1 commits countries to cut the global MMR to under **70 per 100,000** live births by 2030. That rules out **100 per lakh** (*b*), which sits above the ceiling.

What survives is less than **70 per lakh live births**, option *a*.

Ref: Park's PSM, 24th ed., p. 28, Table 4.

Quick Tip: The SDG MMR target uses a denominator of 100,000 (one lakh), not 1000.

...

105. The best method for routine monitoring of air pollution uses which set of indicators?

- (A) Sulphur dioxide, smoke, and particulate matter
- (B) Sulphur dioxide, hydrogen sulphide, carbon monoxide
- (C) Carbon dioxide, hydrogen sulphide, lead
- (D) Sulphur dioxide, lead, and particulate matter

Correct Answer: (D) Sulphur dioxide, lead, and particulate matter

SOLUTION:

Anchor on the Air Quality Index pollutant list and check each option against it. The AQI panel is: particulate matter (PM2.5 and PM10), nitrogen dioxide, sulphur dioxide, carbon monoxide, ozone, ammonia, and lead.

Run elimination. Option **c** names carbon dioxide and hydrogen sulphide, neither of which is on the AQI list, so it goes. Option **b** includes hydrogen sulphide too, so it also goes. Option **a** uses smoke as a general term rather than the keyed AQI components.

Option **d**, sulphur dioxide, lead, and particulate matter, is made up entirely of recognized AQI indicators, so it is the keyed best answer.

Ref: PIB, Government of India, National Air Quality Index.

Quick Tip: Match the option to the pollutants that make up the Air Quality Index.

...

106. The variation in one data set is compared with another data set by using:

- (A) Variance
- (B) Coefficient of variation
- (C) Standard error of mean
- (D) Standard deviation

Correct Answer: (B) Coefficient of variation

SOLUTION:

Clinical pearl for stats MCQs: when two data sets have different means or units, only a relative measure of spread is comparable, and that measure is the coefficient of variation.

The CV is computed as $CV = \frac{SD}{\text{mean}} \times 100$. Dividing the SD by the mean strips away the units and the scale, so a CV of, say, 15% in one group can be set against 15% in another even if the raw values are wildly different.

The distractors are all absolute. Variance (a) is SD squared and carries squared units. Standard deviation (d) is spread in the original units, so it cannot be compared across different scales. Standard error of mean (c) measures how precisely the sample estimates the population mean, not the spread comparison asked for.

Hence the answer is coefficient of variation, option **b**.

Ref: Fundamentals of Biostatistics, 7th ed., pp. 20-21.

Quick Tip: You need a relative, unit-free measure of spread to compare two different data sets.

...

107. In which of the following methods of management is the benefit measured in natural units?

- (A) Program budgeting system
- (B) Network analysis
- (C) Cost-effective analysis
- (D) Cost-benefit analysis

Correct Answer: (C) Cost-effective analysis

SOLUTION:

The deciding contrast is between cost-effectiveness and cost-benefit analysis, and the giveaway is how each one expresses benefit.

Cost-effectiveness analysis (CEA) keeps the cost side in money but leaves the benefit side in natural, clinical units: life-years gained, cases prevented, deaths averted. When those natural units are weighted for quality of life, you get the QALY, the most complete CEA measure.

Cost-benefit analysis (CBA) is different in one crucial way: it forces the benefit into monetary terms so it can be subtracted from cost, so it does not use natural units. That eliminates option *d*.

Program budgeting (*a*) and network analysis (*b*) are not outcome-valuation methods at all, they are planning and scheduling tools, so they do not fit.

The method that measures benefit in natural units is cost-effective analysis, option *c*.

Ref: Park's PSM, 24th ed., p. 908.

Quick Tip: Which evaluation keeps outcomes in clinical units like life-years gained rather than rupees?

...

108. The difference between the incidence in the exposed and the non-exposed group is best given by

$$\text{Attributable risk (AR)} = \frac{\text{Incidence of disease rate among exposed} - \text{Incidence of disease rate among non-exposed}}{\text{Incidence of disease rate among exposed}} \times 100$$

- (A) Relative risk
- (B) Attributable risk
- (C) Population attributable risk
- (D) Odds ratio

Correct Answer: (B) Attributable risk

SOLUTION:

One keyword cracks this: difference. In epidemiology, a difference between two incidences means subtraction, while ratio measures mean division. Sort the options on that line.

Attributable risk is the subtraction measure: $AR = I_{\text{exposed}} - I_{\text{non-exposed}}$. It quantifies how much of the disease burden in the exposed is due to the exposure itself, usually given as a percentage in a cohort study.

Everything else is a ratio. Relative risk (*a*) divides the two incidences, $I_{\text{exposed}}/I_{\text{non-exposed}}$. Odds ratio (*d*) divides odds and is the case-control surrogate for RR. Population attributable risk (*c*) scales the AR up to the whole community, factoring in how common the exposure is, so it is not the simple two-group difference.

The plain difference between exposed and non-exposed incidence is attributable risk, option *b*.

Ref: Park's PSM, 25th ed., p 80

Quick Tip: The word difference signals a subtraction of incidences, not a ratio.

...

109. If the value of one variable is given, you can predict the value of another variable by using the:

- (A) Coefficient of variation
- (B) Coefficient of correlation
- (C) Coefficient of regression
- (D) Coefficient of determination

Correct Answer: (C) Coefficient of regression

SOLUTION:

Separate two ideas that students mix up: correlation describes a relationship, regression predicts a value.

Here you are handed one variable and asked to find the other, so you need a predictive tool. The coefficient of regression does exactly this: it gives the change in the dependent variable y per unit change in the independent variable x , letting you plug in x and read off y .

Why the rest fail: the coefficient of correlation (b) only notes how strongly and in which direction two variables move together, with no quantity output. The coefficient of variation (a) is a relative measure of dispersion, unrelated to prediction. The coefficient of determination (r^2 , option d) reports the fraction of variance explained, again not a predicted value.

So prediction belongs to the coefficient of regression, option c .

Ref: Fundamentals of Biostatistics, regression and correlation.

Quick Tip: Prediction of one variable from another is the role of regression, not correlation.

...

110. Prospective screening is done in the case of:

- (A) Neonate for thyroid diseases
- (B) Immigrant screening
- (C) Pap smear for a 45-year-old female
- (D) Diabetes mellitus for a 40-year-old male

Correct Answer: (B) Immigrant screening

SOLUTION:

Ask one question of each option: is the screening for the person's own benefit, or for others and disease control? Prospective screening is the latter.

By definition, prospective screening is requested by an authority, aims primarily at case detection, and serves the protection of the community rather than the individual being tested. Immigrant screening fits perfectly: a country screens incoming migrants to catch and contain communicable diseases, mainly for public benefit, so option **b** is correct.

The other three are individual-benefit programmes. Neonatal screening for congenital hypothyroidism (**a**), a Pap smear for cervical cancer (**c**), and diabetes screening in a middle-aged man (**d**) are all early-detection efforts aimed squarely at helping the person screened.

So the prospective-screening example is immigrant screening, option **b**.

Ref: Park's PSM, concepts of screening

Quick Tip: Which screening is done at an authority's request for others' benefit rather than the person's own?

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111. A researcher wanted to prove the relation between COPD and smoking. He collected patient records from government hospitals and records of cigarette sales from the finance and taxation department. This is an example of which study design?

- (A) Cross-sectional study
- (B) Posological study
- (C) Ecological study
- (D) Operations research

Correct Answer: (C) Ecological study

SOLUTION:

Quick rule: when the exposure and the outcome are both counted for a whole group and never matched person to person, the design is ecological.

Here cigarette sales (the exposure) come from a tax department total, and COPD numbers (the outcome) come from pooled hospital records. No single person is recorded as both a smoker and a COPD case, so the correlation is drawn at population level. That is the defining feature of an ecological correlation study. Eliminate the rest fast: a cross-sectional study needs both exposure and disease measured in the same individuals at one time point. Operations research studies the working of a programme to fix bottlenecks. A posological study is about dose. Since only aggregate population figures are compared, ecological study is the fit. Watch the trap of ecological fallacy: a group-level link does not prove the same link holds in individuals. Ref: Park PSM, 24e.

Quick Tip: The data are at population level, not of individual patients.

112. A study was done to assess malnutrition among young children. 100 children were selected each from rural and urban areas. Out of these, 30 among rural and 20 among urban were found to be malnourished. Which of the following statistical tests is used to compare the data sets?

- (A) Paired t-test
- (B) Chi-square test
- (C) Standard error of mean
- (D) ANOVA

Correct Answer: (B) Chi-square test

SOLUTION:

Mnemonic anchor: t-test and ANOVA are for means, chi-square is for counts.

Decide which one your data are.

Here the result is a head count split into two boxes, malnourished or not, in two groups. That is categorical data summarised as proportions (30 percent rural, 20

percent urban). Comparing two proportions for significance is exactly what the chi-square test does, by checking how far the observed cell counts sit from the counts expected if there were no difference.

Knock out the rest: a paired t-test needs two measurements on the same individuals (before and after); ANOVA compares the means of three or more continuous groups; the standard error of the mean is a spread statistic, not a hypothesis test. None handles two proportions. So chi-square wins. Ref: Park PSM, 24e.

Quick Tip: The outcome is a proportion of a categorical variable, not a mean.

...

113. The active disinfectant property of bleaching powder is due to:

- (A) Chlorine
- (B) Hypochloric acid
- (C) Hypochlorous acid
- (D) Chloramines

Correct Answer: (C) Hypochlorous acid

SOLUTION:

Clinical-pearl approach: the germ killing in chlorination is done by the small neutral molecule HOCl, not by chlorine gas itself.

Bleaching powder (CaOCl_2) puts chlorine into the water. That chlorine immediately reacts with water and the key product is hypochlorous acid. Because HOCl carries no charge and is small, it slips through the bacterial cell membrane and oxidizes vital enzymes, which is why it is the most potent disinfecting form. The hypochlorite ion OCl^- helps a little but is charged and far less effective.

Reject the distractors: plain chlorine is only the source, chloramines (chlorine plus ammonia) are weaker and slower combined chlorine, and hypochloric acid is not a real disinfecting agent. The active killer is hypochlorous acid. Ref: Park PSM, 24e.

Quick Tip: Chlorine reacts with water to form the actual germicidal acid.

...

114. Mother does not transmit which of the following antibodies to the baby?

- (A) Polio
- (B) Diphtheria
- (C) Measles
- (D) Tetanus

Correct Answer: (A) Polio

SOLUTION:

Rule to apply: a mother hands over only IgG across the placenta, never secretory IgA. So ask which of these is protected mainly by IgA.

Diphtheria and tetanus immunity is circulating antitoxin IgG built from toxoid shots, so it crosses freely and shields the newborn. Measles passive immunity is also IgG that crosses the placenta, which is the very reason the first measles dose is held back to around nine months until that maternal antibody wanes.

Polio is the odd one out: protective immunity at the intestinal mucosa is secretory IgA, and IgA cannot cross the placenta. Therefore polio antibody is the one the mother does not effectively pass on. Note that the source recall paper duplicated Diphtheria as an option (a transcription error), corrected here to Measles without changing the answer. The mother does not transmit polio antibody. Ref: maternal immunity literature, NCBI.

Quick Tip: Mucosal IgA immunity does not cross the placenta.

...

115. Voluntary admission can be done for a maximum of how much time according to the Mental Healthcare Act (MHA) 2017?

- (A) 48 hours
- (B) 7 days
- (C) 30 days
- (D) 90 days

Correct Answer: (D) 90 days

SOLUTION:

Frame it by escalating timelines under the Mental Healthcare Act 2017 for someone admitted on their own request.

Initial independent admission runs short, but the question asks for the outer limit. When stay must go past 30 days, or there is readmission inside 7 days, the law requires assessment by two psychiatrists and reporting to the Mental Health Review Board. With that safeguard, the admission can be held up to a maximum of 90 days, with consent reviewed fortnightly and a community-care plan made. The smaller numbers are decoys tied to emergency or review checkpoints, not the maximum. So the maximum voluntary admission duration is 90 days. Ref: MHA 2017.

Quick Tip: Beyond 30 days, two psychiatrists allow extension to the legal maximum.

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116. Blood bags are disposed of in which colour-coded bag?

- (A) Yellow bag
- (B) Black bag
- (C) Red bag
- (D) White bag

Correct Answer: (C) Red bag

SOLUTION:

Sort by what the item is made of. A blood bag is a contaminated plastic container, so place it in the stream meant for infected recyclable plastics.

Under the colour code, that stream is the red bag, which collects intravenous tubing, catheters, urine bags and blood bags for disinfection (autoclave or microwave) followed by recycling.

Rule out the rest by their categories: yellow takes anatomical and highly infectious waste meant for incineration, black holds ordinary non-infectious dry office and ward waste, and white is the rigid puncture-proof box reserved for metal sharps like needles and blades. A blood bag is none of these; it is infected plastic. So the answer is the red bag. Ref: Biomedical Waste Management Rules 2016; Park PSM.

Quick Tip: A blood bag is contaminated recyclable plastic, not anatomical waste.

117. Absolute contraindications for an IUD (Intrauterine Contraceptive Device) are all of the following except:

- (A) Pregnancy
- (B) Undiagnosed vaginal bleeding
- (C) Pelvic inflammatory disease
- (D) Uterine malformation

Correct Answer: D) Uterine malformation

SOLUTION:

Strategy for the except question: tag each option as absolute or relative, then the lone relative one is the answer.

Pregnancy is an absolute no: an IUD must never be placed in a pregnant uterus. Active pelvic inflammatory disease is absolute because the device would worsen and spread infection. Undiagnosed vaginal bleeding is absolute since a serious cause such as malignancy must be excluded first.

Uterine malformation, however, sits in the relative column. A congenitally

distorted or fibroid-bearing cavity may not hold the IUD properly, so insertion is discouraged, but it is not the categorical bar that pregnancy and active infection are. That makes uterine malformation the exception. Ref: Park PSM; standard OBG contraception texts.

Quick Tip: One of these only distorts the cavity rather than forbidding insertion outright.

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118. Which of the following is a water-related (water breeding) disease?

- (A) Yellow fever
- (B) Scabies
- (C) Cholera
- (D) Dysentery

Correct Answer: (A) Yellow fever

SOLUTION:

Use the four-bucket sorting of water diseases: borne (drink it), washed (too little water for hygiene), based (aquatic intermediate host), related (insect that breeds in water).

The water-related bucket means a vector that breeds in water carries the disease. Yellow fever rides the Aedes mosquito, which lays eggs in water collections, so it lands squarely in this group alongside malaria, dengue and filariasis.

The distractors belong elsewhere: cholera and dysentery are waterborne, caught by swallowing faecally contaminated water; scabies is water-washed, tied to insufficient washing rather than the water itself carrying the bug. Only yellow fever is vector-bred, so it is the water-related disease. Ref: Park PSM.

Quick Tip: Think which one is spread by a mosquito that breeds in water.

...

119. In Vision 2020 (The Right to Sight), the Secondary level Service Centre is targeted to cover how much population?

- (A) 10,000
- (B) 50,000
- (C) 1 lakh
- (D) 5 lakh

Correct Answer: (D) 5 lakh

SOLUTION:

Memorise the Vision 2020 pyramid by population served. 50,000 then 5 lakh then 50 lakh then 5 crore, rising tier by tier.

The base is the Primary Vision Centre at 50,000 people each. The next tier up is the Secondary Service Centre, and it serves 5 lakh, run by two ophthalmologists with eight paramedics and an eye care manager. Above that, Training Centres take 50 lakh and Centres of Excellence take 5 crore.

So 50,000 is the trap that belongs to the Vision Centre, while the Service Centre asked about covers 5 lakh. The answer is 5 lakh. Ref: Vision 2020 Right to Sight; NPCB.

Quick Tip: Vision Centre covers 50,000; the Service Centre is one tier higher.

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120. CA-125 is a marker for the screening of ovarian cancer. To characterize this test, histopathological confirmation of ovarian cancer was done in a cohort of patients. 60 of 100 women who tested positive had ovarian cancer, and 20 of 100 women who tested negative had ovarian cancer. What is the negative predictive value of this test?

		The Truth		
		Has the disease	Does not have the disease	
Test Score:	Positive	True Positives (TP) a	False Positives (FP) b	$PPV = \frac{TP}{TP + FP}$
	Negative	False Negatives (FN) c	True Negatives (TN) d	$NPV = \frac{TN}{TN + FN}$
		Sensitivity $\frac{TP}{TP + FN}$ Or, $\frac{a}{a + c}$	Specificity $\frac{TN}{TN + FP}$ $\frac{d}{d + b}$	

- (A) 20/100
- (B) 40/100
- (C) 60/100
- (D) 80/100

Correct Answer: (D) 80/100

SOLUTION:

Stay in the test-negative column only, because NPV is a column statistic, not a row one.

The 100 women who tested negative are your whole denominator for NPV. Of them, 20 actually had cancer (false negatives) and 80 did not (true negatives). NPV asks: of everyone who screens negative, what fraction is genuinely disease-free?

So $NPV = \frac{TN}{TN + FN} = \frac{80}{100}$, which is 80 percent. Do not be lured by 60/100, that is positive predictive value from the test-positive column. The answer is 80/100.

Ref: Park PSM, screening test characteristics.

Quick Tip: NPV uses only the test-negative column: true negatives over all negatives.

121. Screening is NOT useful in which of the following carcinomas?

- (A) Carcinoma prostate
- (B) Carcinoma colon
- (C) Carcinoma breast
- (D) Testicular tumor

Correct Answer: (D) Testicular tumor

SOLUTION:

Clinical pearl: screening works only for cancers that are common, slow to surface, and have a cheap reliable test, so eliminate the ones that clearly meet this.

Breast cancer is screened with mammography, so it is out. Colorectal cancer is screened with stool tests (FOBT, FIT, fecal DNA) and endoscopy (sigmoidoscopy, colonoscopy), so it is out. Prostate cancer uses PSA and the digital rectal examination, so it is out.

That leaves testicular tumor. It is a relatively rare cancer, mainly of young men, and no organization recommends a population level screening test for it; even routine self examination is not advised as formal screening. With no validated screening pathway, testicular tumor is the answer.

Take home: of the four, only testicular cancer has no recommended screening program.

Quick Tip: Which of these is an uncommon malignancy with no validated population screening test?

...

122. Admission rate bias is also known as which of the following?

- (A) Reporting bias
- (B) Response bias
- (C) Berksonian bias
- (D) None

Correct Answer: (C) Berksonian bias

SOLUTION:

Mnemonic angle: Berkson, admission, hospital go together.

Berksonian (Berkson's) bias is a selection bias unique to hospital based studies. A patient carrying two diseases is more likely to land in a hospital bed than a patient with a single disease, so hospital samples over represent people with combined conditions. This inflates or fabricates an apparent link between an exposure and a disease that does not exist in the general community.

Since the whole problem comes from unequal hospital admission rates, it is named admission rate bias. The other options do not fit: response bias is about who answers a survey, and reporting bias is about how information gets recorded. So the correct match for admission rate bias is Berksonian bias.

Quick Tip: Think of the hospital based case control bias driven by patients with multiple diseases being admitted more often.

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123. Stimulation of the external auditory canal leads to cough due to which nerve?

- (A) Auricular branch of vagus
- (B) Greater auricular nerve
- (C) Auriculotemporal nerve
- (D) Facial nerve

Correct Answer: (A) Auricular branch of vagus

SOLUTION:

Clinical pearl: the ear cough reflex is a vagal trick.

The auricular branch of the vagus nerve, known as Arnold's nerve, carries sensation from the posterior wall and floor of the external auditory canal. The vagus is the same nerve that innervates the larynx and pharynx, the regions whose stimulation normally produces cough. So a sensory signal from the ear canal can be misread centrally and set off a cough, the so called Arnold's reflex.

By elimination: the greater auricular nerve (from the cervical plexus) and the auriculotemporal nerve (a trigeminal branch) supply skin of the auricle but have no role in the cough reflex, and the facial nerve only contributes minor oral sensation. The cough connection belongs to the vagus, making the auricular branch of vagus the answer.

Quick Tip: The same cranial nerve also supplies the larynx, which is why poking the ear canal can make you cough.

...

124. Widening of the cartilaginous part of the external auditory canal is called?

- (A) Otoplasty
- (B) Myringoplasty
- (C) Tympanoplasty
- (D) Meatoplasty

Correct Answer: (D) Meatoplasty

SOLUTION:

Word root angle: match the suffix to the structure.

Meatus means the canal opening, so meatoplasty is the surgery to widen the lateral cartilaginous external auditory canal, commonly performed during canal wall down mastoidectomy to keep the cavity ventilated and easy to clean.

Run through the others to confirm: otoplasty (oto, ear) reshapes the visible auricle for cosmesis; myringoplasty (myringo, drum) seals a hole in the pars tensa; tympanoplasty repairs the tympanic membrane and middle ear with a graft. None of these touch the canal width. The procedure that widens the canal is meatoplasty.

Quick Tip: The word root refers to the meatus, the canal opening, not the drum or the auricle.

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125. Tubercular otitis media is characterized by all of the following EXCEPT?

- (A) Painful otorrhea
- (B) Multiple perforations
- (C) Pale granulations
- (D) Foul-smelling ear discharge

Correct Answer: (A) Painful otorrhea

SOLUTION:

Pattern recognition: the classic triad of TB otitis media is painless discharge, multiple perforations, and pale granulations.

Tuberculous otitis media usually follows pulmonary tuberculosis, with bacilli spreading up the eustachian tube. The textbook picture is painless otorrhea resistant to standard antibiotics, several perforations across the drum, and abundant pale granulation tissue, often with underlying bone necrosis and preauricular node enlargement. Foul smelling discharge can occur once bone is destroyed.

The question asks for the odd one out. Three options (multiple perforations, pale granulations, foul smelling discharge) are all real features. Painful otorrhea contradicts the painless nature of the disease, so painful otorrhea is the exception and the correct answer.

Quick Tip: TB middle ear discharge is classically painless, so pick the feature that contradicts that.

...

126. Partial closure and full closure operations are done in which condition?

- (A) Atrophic rhinitis
- (B) Allergic rhinitis
- (C) Vasomotor rhinitis
- (D) Occupational rhinitis

Correct Answer: (A) Atrophic rhinitis

SOLUTION:

Eponym link: nostril closure equals Young's operation equals atrophic rhinitis. In atrophic rhinitis the nasal mucosa, glands and turbinates waste away, leaving wide cavities that collect foul smelling crusts. The treatment idea is to make the cavity smaller so drying air no longer reaches and dries the mucosa allowing it to recover. This is achieved by surgically closing the nostril: complete closure is Young's operation and partial closure is the Modified Young's operation. The other rhinitis types listed (allergic, vasomotor, occupational) are managed with medical therapy and allergen control, never with closure surgery. So the condition where partial and full closure are performed is atrophic rhinitis.

Quick Tip: Which rhinitis has abnormally wide, crust filled nasal cavities that surgery tries to narrow?

127. The occipitomental view of an X-ray of the paranasal sinuses (PNS) is called?

- (A) Caldwell view
- (B) Water's view
- (C) Towne view
- (D) Pine view

Correct Answer: (B) Water's view

SOLUTION:

Quick recall: occipitomental equals Water's view equals maxillary sinuses. For paranasal sinus imaging, the occipitomental projection is named Water's view. The patient extends the neck and the beam runs from the back of the head toward the chin, which lifts the dense petrous temporal bones out of the way and projects the maxillary antra in full view. That is why it is the go to plain film for maxillary sinusitis and orbital floor or midface fractures. Eliminate the rest: Caldwell view is occipitofrontal and shows frontal and

ethmoid sinuses; Towne view is an axial occiput projection; Pine view does not exist. The occipitomenal view is Water's view.

Quick Tip: The occipitomenal projection that best shows the maxillary sinuses carries a surname starting with W.

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128. Shifting fluid (shifting subretinal fluid) is characteristically seen in which condition?

- (A) Exudative retinal detachment
- (B) Tractional retinal detachment
- (C) Rhegmatogenous retinal detachment
- (D) Retinodialysis

Correct Answer: (A) Exudative retinal detachment

SOLUTION:

Concept first: shifting fluid means the fluid is free to move, which only happens when there is no break and no traction.

Exudative retinal detachment is caused by leakage of serous fluid from the choroid or retinal circulation into the subretinal space, with an intact retina and no fibrous pull. Such free fluid obeys gravity, so it gravitates to the lowest point and visibly relocates when the patient lies down or sits up. Clinicians call this shifting subretinal fluid, and it is the classic sign of exudative detachment.

Contrast this: Rhegmatogenous detachment has a retinal break that fixes the fluid path, tractional detachment is tethered by fibrovascular membranes, and retinodialysis is itself a type of break. None produce freely shifting fluid. Hence exudative retinal detachment is the answer.

Quick Tip: Free serous fluid with no break or traction will pool wherever gravity takes it.

...

129. Conjunctival injection, pharyngeal injection, polymorphic rash and cervical lymphadenopathy can be seen in which condition?

- (A) Kawasaki syndrome
- (B) Measles
- (C) Thrombocytopenia
- (D) Mumps

Correct Answer: (A) Kawasaki syndrome

SOLUTION:

Mnemonic CRASH and burn: Conjunctivitis, Rash, Adenopathy, Strawberry tongue/oral changes, Hand and foot changes, plus burn (fever). That mnemonic IS Kawasaki disease.

The stem lists nonexudative conjunctival injection, an injected pharynx (an oral mucosal change), a polymorphic rash, and cervical lymphadenopathy, four of the classic principal criteria of Kawasaki disease, a medium vessel vasculitis that threatens the coronary arteries if untreated.

The alternatives do not fit the full pattern: measles gives Koplik spots with cough and coryza, mumps gives parotid swelling, and thrombocytopenia is merely a platelet abnormality, not a clinical mucocutaneous syndrome. The combination described is diagnostic of Kawasaki syndrome.

Quick Tip: Fever in a child plus red eyes, red throat, rash and a neck node points to a vasculitis with coronary risk.

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130. Inhomonymous homonymous hemianopia with a Wernicke's hemianopic pupil is seen with a lesion of?

- (A) Optic radiation
- (B) Lateral geniculate body
- (C) Optic tract
- (D) Anterior occipital cortex

Correct Answer: (C) Optic tract

SOLUTION:

Localize by two clues: incongruity plus a pupillary defect both point upstream to the optic tract.

The more anterior (closer to the chiasm) a retrochiasmal lesion is, the more incongruous the homonymous hemianopia, because the corresponding fibres from the two eyes have not yet lined up. The optic tract is the most anterior post chiasmal site, so it gives the most incongruous defect.

Crucially, the pupillary light reflex fibres are still travelling within the optic tract here; they leave only just before the lateral geniculate body. A tract lesion thus produces a Wernicke's hemianopic pupil (no reflex when the blind hemiretina is lit) and, later, bow tie optic atrophy.

The optic radiation and occipital cortex lie beyond where pupillary fibres have departed, so their defects are congruous and spare the pupil. Combining an incongruous hemianopia with a hemianopic pupil pins the lesion to the optic tract.

Quick Tip: Which retrochiasmal site still carries pupillary fibres and produces unequal (incongruous) field loss plus optic atrophy?

...

131. A patient presents with proptosis and restriction of eye movements and is euthyroid. What could this be from?

- (A) Orbital cellulitis
- (B) Orbital lymphoma
- (C) Orbital pseudotumor
- (D) Thyroid ophthalmopathy

Correct Answer: (C) Orbital pseudotumor

SOLUTION:

Clinical pearl approach. The trap in this stem is that proptosis plus restricted movements almost screams thyroid eye disease. But examiners hand you a single discriminator: the patient is euthyroid. Strip thyroid ophthalmopathy off the table on that word alone.

Now run option elimination. Orbital cellulitis needs an infective picture. Fever, red swollen lids, pain and systemic upset, none of which is given. Orbital lymphoma is a painless, slowly enlarging salmon-pink lesion, not an acute restricted-movement picture. That leaves orbital pseudotumor, also called idiopathic orbital inflammatory syndrome, a non-infective inflammatory mass that produces painful proptosis with limited motility in a patient whose thyroid is normal.

So the answer that survives is orbital pseudotumor. Remember the mnemonic: euthyroid + painful restricted proptosis = pseudotumor until proved otherwise.

Ref: Comprehensive Ophthalmology, A. K. Khurana, ed, p. 335.

Quick Tip: Thyroid disease is the usual cause, but the patient is euthyroid, so look for the inflammatory mimic.

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132. Which of the following is a prerequisite for sympathetic ophthalmitis?

- (A) Penetrating injury to the eye
- (B) Blunt ocular trauma
- (C) Chemical injury
- (D) Urinary tract infection

Correct Answer: (A) Penetrating injury to the eye

SOLUTION:

Mnemonic-led recall. Think of sympathetic ophthalmia as one eye sympathising with the suffering of the other. For the healthy eye to start sympathising, the first eye must have been opened up so that uveal antigens, normally hidden from immune patrol, leak out and prime a granulomatous autoimmune response. That opening up means a penetrating or perforating injury, classically a pencil,

stick or pen that punctures the globe, or intraocular surgery. This is the prerequisite the question is testing.

Run the distractors: blunt trauma bruises but does not perforate; chemical injury damages the surface, not the uveal tissue; a urinary tract infection has nothing to do with the eye. Only a penetrating injury satisfies the antigen-exposure mechanism. So option A stands. Clinical takeaway: any perforating ocular wound carries a small but real risk of sympathetic ophthalmia in the other eye. Ref: MSD Manuals, Sympathetic Ophthalmia.

Quick Tip: The fellow eye is harmed only after the globe of the first eye is breached open.

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133. The photostress test is used to differentiate between which of the following?

- (A) Lens and cornea
- (B) Macular and optic nerve diseases
- (C) Cataract and glaucoma
- (D) Retinal and vitreous diseases

Correct Answer: (B) Macular and optic nerve diseases

SOLUTION:

Mechanism-first reasoning. The photostress test exploits one simple fact: recovery of vision after a bright bleach depends on the photoreceptors regenerating their visual pigment, and the photoreceptors sit in the macula. So when a patient has unexplained loss of central vision, you bleach the macula with a penlight for about 10 seconds and time how long it takes to read letters again. If the macula is sick, pigment regeneration drags and the recovery time is long. If instead the problem lies in the optic nerve, the photoreceptors are healthy and recovery time is normal, even though acuity is poor.

That clean split, prolonged recovery in maculopathy versus normal recovery in optic neuropathy, is exactly what the test differentiates. Eliminate the other pairs: it says nothing about lens versus cornea, cataract versus glaucoma, or retina

versus vitreous. The answer is macular versus optic nerve disease. Ref: Photostress recovery study, PubMed 836667.

Quick Tip: It tests how fast the photoreceptors bounce back after a bright light, so it isolates the layer that holds them.

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134. Which layer of the cornea helps in the hydration (deturgescence) of the corneal stroma?

- (A) Endothelium
- (B) Epithelium
- (C) Descemet membrane
- (D) Stroma

Correct Answer: (A) Endothelium

SOLUTION:

Pump-leak shortcut. Corneal clarity depends on keeping the stroma slightly dehydrated. Two forces compete: the stroma wants to soak up water (the leak), and something must bail that water out (the pump). The structure that does the bailing is the corneal endothelium.

This single posterior cell layer uses active ion transport to pull fluid out of the stroma. When endothelial cell counts fall, for instance after surgery or in Fuchs dystrophy, the pump fails, the stroma swells and the cornea goes cloudy. That clinical fact alone tells you the endothelium owns hydration control.

Eliminate the rest: epithelium is a passive surface barrier, Descemet membrane is just the basement membrane on which the endothelium rests, and the stroma is the tissue being regulated, not the regulator. Therefore the answer is the endothelium. Ref: Corneal Endothelial Pump literature.

Quick Tip: The innermost single cell layer runs an active pump that keeps the cornea clear.

• • •

135. A 65-year-old man with a history of hypertension and diabetes presents to the OPD with diplopia and squint. On examination, the secondary deviation is more than the primary deviation. Which of the following is the most likely diagnosis?

- (A) Concomitant squint
- (B) Paralytic squint
- (C) Restrictive squint
- (D) Pseudosquint

Correct Answer: (B) Paralytic squint

SOLUTION:

Sign-spotting approach. Lock onto the single discriminating finding: secondary deviation is greater than primary deviation. In a concomitant squint the two are equal, so an inequality immediately marks the squint as incomitant, that is, paralytic.

Why does the secondary deviation overshoot? By Hering's law, when the patient fixes with the weak (paralysed) eye the brain pumps out extra innervation to drive it, and the same surplus floods the healthy yoke muscle, throwing the good eye far off line. Hence secondary > primary.

The clinical backdrop seals it: a 65-year-old with diabetes and hypertension is the textbook candidate for an ischaemic cranial nerve palsy (III, IV or VI) presenting as sudden diplopia and squint. Restrictive squint would come from mechanical tethering, and pseudosquint has no true misalignment. So the diagnosis is paralytic squint. Ref: GPonline, Basics of Strabismus.

Quick Tip Secondary deviation greater than primary is the signature of a nerve palsy, common in a diabetic, hypertensive elder.

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136. Esotropia is commonly associated with which refractive error?

- (A) Myopia
- (B) Hypermetropia
- (C) Emmetropia
- (D) Astigmatism

Correct Answer: (B) Hypermetropia

SOLUTION:

Reflex-chain logic. Esotropia means the eyes turn in. To find its refractive partner, follow the accommodation-convergence reflex: whenever the eye accommodates, it also converges, the two are yoked.

A hypermetrope is farsighted, so the eye is forced to accommodate hard just to bring images into focus, and harder still for near work. All that extra accommodation pulls extra convergence along with it, and the eyes drift inward, giving accommodative esotropia. Correcting the hyperopia with plus lenses often straightens the eyes, which proves the link.

Clear the distractors: a myope accommodates less and tends toward exotropia; an emmetrope has no refractive pull; astigmatism causes blur, not a set convergent turn. The refractive error commonly tied to esotropia is therefore hypermetropia.

Ref: AAPOS, Accommodative Esotropia.

Quick Tip: The far-sighted eye over-accommodates, and accommodation drags convergence with it.

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137. An extra row of cilia (eyelashes) arising posterior to the grey line is called?

- (A) Distichiasis
- (B) Trichiasis
- (C) Madarosis
- (D) Trichiasis

Correct Answer: (A) Distichiasis

SOLUTION:

Definition-matching trick. The stem hands you the exact definition: an extra row of cilia posterior to the grey line. Match it to the vocabulary.

Distichiasis literally is a second, accessory row of lashes sprouting from the meibomian gland openings on the posterior lamella, behind the grey line. That is a word-for-word match, so it is the answer.

Knock out the rest by their own meanings: tylosis is thickening of the lid margin, madarosis is loss of lashes (think of it as madarosis = missing lashes), and trichiasis is normally placed lashes that turn the wrong way and rub the eye, not an extra posterior row. Only distichiasis describes a super-numerary line of cilia behind the grey line. Ref: Medscape, Distichiasis Overview.

Quick Tip: Look for the term that means an extra, accessory row of lashes behind the grey line, not merely misdirected ones.

138. A patient presents with unilateral proptosis and bilateral abducent (sixth) nerve palsy. This could be from a lesion of the?

- (A) Cavernous sinus
- (B) Orbital cellulitis
- (C) Orbital pseudotumor
- (D) Orbital lymphoma

Correct Answer: (A) Cavernous sinus

SOLUTION:

Localize-then-pick strategy. The decisive clue is bilateral sixth nerve palsy. A purely orbital problem affects one orbit, so it can never paralyse the abducent nerve on both sides. That single observation eliminates orbital cellulitis, pseudotumor and lymphoma at once.

What structure can hit both sixth nerves and also cause proptosis? The cavernous sinus. The abducent nerve travels inside the cavernous sinus, and the two

cavernous sinuses are joined across the midline by intercavernous channels. So a cavernous sinus thrombosis spreads to the opposite side and knocks out both abducent nerves, while venous back-pressure pushes the eye forward, first on one side, then often both.

That neat fit of unilateral proptosis plus bilateral abducens palsy points squarely to the cavernous sinus. Ref: Parson's Diseases of the Eye, 22e, p. 497

Quick Tip: Only one structure carries the sixth nerve and connects both sides, explaining a bilateral palsy with proptosis.

...

139. What is the characteristic finding of a fungal corneal ulcer?

- (A) Satellite lesions
- (B) Dendritic ulcer
- (C) Ring abscess
- (D) White hypopyon

Correct Answer: (A) Satellite lesions

SOLUTION:

Pattern-recognition pearls. Each corneal ulcer has its own signature, so match the finding to the bug.

Fungal keratitis is the great seeder: the fungus burrows through stroma and throws off small daughter infiltrates that sit apart from the main lesion, the satellite lesions. Pair that with dry, raised, feathery or serrated margins and you have the classic fungal ulcer, so option A is the characteristic answer.

Quickly fire away the distractors with their own owners: a branching dendritic ulcer screams herpes simplex; a ring abscess in the cornea points to *Pseudomonas* or *Acanthamoeba*; and a hypopyon, while it can appear in fungal disease, is non-specific and shows up in many severe ulcers. The single most characteristic sign of a fungal ulcer is therefore satellite lesions. Ref: EyeWiki, Fungal Keratitis.

Quick Tip: Look for the feature describing small separate infiltrates orbiting the main ulcer.

...

140. A patient with raised intraocular pressure, optic disc changes and ciliary congestion is started on a drug that lowers IOP by increasing uveoscleral outflow. Which drug is this?

- (A) Latanoprost
- (B) Pilocarpine
- (C) Dorzolamide
- (D) Timolol

Correct Answer: (A) Latanoprost

SOLUTION:

Mechanism-sorted shortcut. Anti-glaucoma drugs split into two camps: those that cut aqueous production and those that boost outflow. The stem hands you the exact mechanism, increased uveoscleral outflow, so only one camp qualifies. The prostaglandin analogues are the uveoscleral specialists. Latanoprost binds the prostaglandin FP receptor, relaxes and remodels the ciliary muscle, and opens up the uveoscleral drainage route, dropping IOP. It is a first-line agent precisely for this powerful outflow effect.

Sort the rest by their mechanisms: pilocarpine pulls on the trabecular (conventional) outflow, while timolol (beta-blocker) and dorzolamide (carbonic anhydrase inhibitor) both lower IOP by switching down aqueous production. None of them touches the uveoscleral pathway the way the question demands. So the answer is latanoprost. Ref: DrugBank, Latanoprost (DB00654).

Quick Tip: Only one class works by boosting the uveoscleral pathway: the prostaglandin analogues.

...

141. A patient diagnosed with rheumatoid arthritis was on long-term medication. After 2 years, he developed blurring of vision and was found to have corneal opacity. Which drug is most likely to cause this?

- (A) Sulfasalazine
- (B) Chloroquine
- (C) Methotrexate
- (D) Leflunomide

Correct Answer: (B) Chloroquine

SOLUTION:

Clinical pearl: in any rheumatology patient who turns up with eye complaints, the drug you blame first is the antimalarial.

Eliminate the options. Sulfasalazine is a gut and fertility problem, not an eye one. Methotrexate hits the liver and bone marrow. Leflunomide hits the liver and blood pressure. That leaves chloroquine, the only drug here with a famous eye signature.

Chloroquine and hydroxychloroquine have a strong affinity for melanin, so they accumulate in pigmented ocular tissues. The cornea shows whorl-like deposits (vortex keratopathy) that produce haloes and blurring, while the macula develops the classic bull's-eye maculopathy. Because the patient describes corneal opacity plus blurred vision after 2 years of therapy, chloroquine fits perfectly. This is why guidelines mandate baseline and periodic ophthalmic screening for anyone on these drugs.

Ref: KD Tripathi, Essentials of Medical Pharmacology, 8e.

Quick Tip: Think of the antimalarial DMARD that deposits in the cornea and retina over time.

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142. Regarding nutcracker esophagus, the correct statement is:

- (A) There is extremely forceful peristaltic activity leading to episodes of chest pain and dysphagia
- (B) There is no medical treatment available
- (C) It is a type of oesophageal malignancy
- (D) None of the above

Correct Answer: (A) There is extremely forceful peristaltic activity leading to episodes of chest pain and dysphagia

SOLUTION:

Mnemonic angle: a nutcracker crushes with extreme force, and that is exactly what this esophagus does to a food bolus.

Take the options one by one. It is not a cancer, so rule out option 3. There IS treatment, so option 2 is false. That leaves the description of powerful peristalsis. This is a hypermotility disorder. The peristaltic waves stay coordinated (unlike diffuse esophageal spasm) but the contraction amplitude is abnormally high. The patient feels episodic, squeezing chest pain that is often mistaken for angina, along with intermittent difficulty swallowing both solids and liquids. Diagnosis is by high-resolution manometry. Because the muscle is overactive, smooth-muscle relaxants help, so nitrates and diltiazem form the mainstay, with botulinum toxin or myotomy reserved for refractory cases.

Ref: Davidson's Principles and Practice of Medicine, 23e, p.795.

Quick Tip: The name itself hints at crushing, high-pressure squeezing of the food pipe.

...

143. A patient has chronic liver disease with cirrhosis. Which of the following criteria is used to assess the prognosis of this liver condition?

- (A) Child-Pugh score
- (B) Milan score
- (C) MELD score
- (D) Alvarado score

Correct Answer: (A) Child-Pugh score

SOLUTION:

Option-elimination approach: three of the four scores belong to other diseases, which makes the answer fall out quickly.

Alvarado is purely an appendicitis score, so drop it. Milan criteria are about choosing hepatocellular carcinoma patients for liver transplant, not grading cirrhosis severity, so drop it. MELD is a genuine cirrhosis score, but it is used mainly to rank transplant priority by predicted 3-month mortality. The traditional bedside prognostic classifier for cirrhosis is Child-Pugh.

Remember its components with the mnemonic ABCDE: Albumin, Bilirubin, Coagulation (INR), Distension (ascites) and Encephalopathy. The total places the patient into Class A, B or C, which correlates with one and two year survival and signals when transplantation is needed. The cirrhotic liver in the image is the classic setting for applying this score.

Ref: Harrison's Principles of Internal Medicine, 20e.

Quick Tip: Five variables: bilirubin, albumin, INR, ascites and encephalopathy.

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144. A patient presents with sudden onset of severe headache with neck rigidity. The most likely diagnosis is:

- (A) Intraparenchymal hemorrhage
- (B) Subarachnoid hemorrhage
- (C) Meningitis
- (D) None of the above

Correct Answer: (B) Subarachnoid hemorrhage

SOLUTION:

Pattern-recognition pearl: the word SUDDEN is the key that unlocks this question.

A headache that reaches maximum intensity within seconds is a thunderclap headache, and the number-one cause is subarachnoid hemorrhage from a ruptured aneurysm. Add neck rigidity (from meningeal irritation by blood) and the picture is complete.

Run through the distractors. Intraparenchymal bleed tends to produce focal weakness, speech or sensory deficits that progress, rather than a pure sudden headache with stiff neck. Bacterial meningitis does cause neck stiffness, but its onset is over hours to days with fever and malaise, not an instantaneous thunderclap. So infection does not fit the timeline.

That leaves SAH, which is also a neurosurgical emergency. Confirm with a non-contrast CT, and if negative but suspicion remains, do a lumbar puncture looking for xanthochromia.

Ref: Harrison's Principles of Internal Medicine, 20e.

Quick Tip: Sudden thunderclap headache plus meningism points to bleeding around the brain, not infection.

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145. Vegetation on the mitral valve is most characteristically seen in which condition?

- (A) Libman-Sacks endocarditis
- (B) Infective endocarditis
- (C) Non-bacterial thrombotic endocarditis (NBTE)
- (D) Rheumatic fever

Correct Answer: (B) Infective endocarditis

SOLUTION

Compare-and-contrast angle: the four options are essentially the four classic causes of valvular vegetations, so the trick is matching the buzzword.

The defining feature of infective endocarditis is a bulky vegetation that actually contains microorganisms, formed of platelets, fibrin and bacterial colonies, capable of destroying the valve and throwing septic emboli. That is the lesion the word vegetation evokes first.

Now place the rest. Libman-Sacks endocarditis of lupus gives small sterile warty lesions on either side of the leaflets. NBTE (marantic endocarditis) appears in cancer and severe illness as small sterile clumps along the closure line. Rheumatic carditis produces tiny verrucae along the closure line and, over years, fibrous valve thickening. All three are sterile and smaller.

So when a question simply says vegetation on the mitral valve, the intended answer is infective endocarditis.

Ref: Robbins and Cotran Pathologic Basis of Disease, 10e.

Quick Tip: Which lesion contains living microorganisms within the platelet-fibrin mass?

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146. Water hammer pulse (Corrigan's pulse) is seen in:

- (A) Aortic regurgitation
- (B) Mitral stenosis
- (C) Aortic stenosis
- (D) Left ventricular failure

Correct Answer: (A) Aortic regurgitation

SOLUTION:

Physiology-first angle: a collapsing pulse needs a wide pulse pressure, so ask which valve lesion widens it.

Aortic regurgitation does exactly that. The leaky aortic valve lets blood run back into the left ventricle in diastole, dropping the diastolic pressure, while the enlarged stroke volume pushes the systolic pressure up. A high systolic minus a low diastolic equals a wide pulse pressure, felt as a pulse that bounds up and collapses away, the water hammer or Corrigan pulse, classically demonstrated with the arm raised.

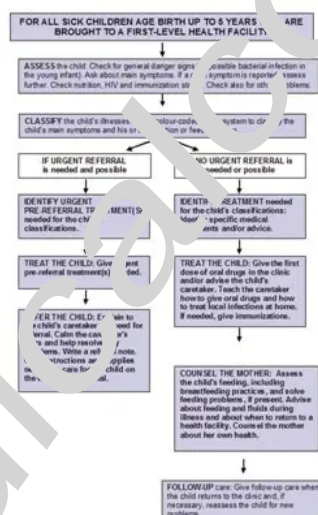
Eliminate the rest on the same logic. Aortic stenosis narrows the outflow, giving a slow, small, sustained pulse (parvus et tardus), the mirror image. Mitral stenosis reduces left ventricular filling, giving a small-volume pulse. Left ventricular

failure also lowers stroke volume, so the pulse is weak, not bounding.
Aortic regurgitation is therefore the single best answer, and it is also linked to signs like Quincke and de Musset.
Ref: Hutchison's Clinical Methods, 24e.

Quick Tip: Which lesion gives a wide pulse pressure with a sharp rise and collapse?

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147. Parents bring their 3-year-old child to a PHC with fever and cough for 5 days. On examination, chest indrawing is present. Under the IMNCI classification, what will you do?



- (A) Give antipyretics only
- (B) Give antibiotics and follow up
- (C) Refer urgently to tertiary care
- (D) Give antibiotics and refer to tertiary care

Correct Answer: (D) Give antibiotics and refer to tertiary care

SOLUTION:

Two-step decision angle: in IMNCI you decide HOW sick and then WHAT to do, and both parts matter for the answer.

How sick: in a 2 month to 5 year old, cough or difficult breathing plus lower chest wall indrawing is classified in the severe band (severe pneumonia / very severe

disease). This is a red category that must leave the PHC.

What to do: the protocol for a severe classification is not bare referral. You give the first dose of an antibiotic right there, so the child is already covered while travelling, and then refer urgently to hospital where oxygen and monitoring are available.

Reject the others. Antipyretics only ignores a potentially serious lung infection. Antibiotics with home follow-up is the action for the milder pneumonia (fast breathing without indrawing), not for indrawing. Refer without giving an antibiotic wastes the chance to treat during transit. Hence the combined action, antibiotics plus urgent referral, is correct.

Ref: IMNCI Chart Booklet, Government of India / WHO.

Quick Tip: Chest indrawing is a severe sign, but do not send the child off empty-handed.

148. Which poison can be detected in the skeleton even after the body has undergone emaciation or has been burnt for a long time?

- (A) Lead
- (B) Arsenic
- (C) Mercury
- (D) Cadmium

Correct Answer: (B) Arsenic

SOLUTION:

Forensic pearl angle: the examiner is testing where a poison hides long after death.

Arsenic is the classic answer because it locks into keratin and mineralised tissue. It is laid down in hair (giving the Mees' lines in chronic poisoning), in nails and crucially in bone. Once it is in the skeleton it stays there, so a forensic toxicologist can still recover it from emaciated, decomposed, exhumed or even cremated remains. This durability is exactly why arsenic was historically the poisoner's

choice and why analysis of bones and hair clinches the diagnosis.

The other metals do not share this skeletal persistence to the same exam-relevant degree. Mercury and cadmium concentrate mainly in the kidneys and soft tissue, which are lost on burning. Lead does enter bone, but the textbook fact tested here, detection in burnt or skeletonised bodies, is attached to arsenic.

So pick arsenic.

Ref: Reddy, The Essentials of Forensic Medicine and Toxicology.

Quick Tip: This metalloid lodges in hair, nails and bone and survives cremation.

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149. An arterial blood gas shows pH 7.2, HCO_3^- 10 to 12 mmol/L and pCO_2 35 mm Hg. This metabolic acidosis is due to:

- (A) K^+ excretion by the kidney
- (B) CO_2 expiration by the lungs
- (C) H^+ excretion by the kidney
- (D) HCO_3^- loss by the kidney

Correct Answer: (D) HCO_3^- loss by the kidney

SOLUTION:

Step-wise ABG reading angle: always name the disorder first, then separate cause from compensation.

The pH of 7.2 tells you the blood is acidemic. The bicarbonate is low (10 to 12), so this is a metabolic acidosis, since a primary fall in HCO_3^- lowers pH. Confirm with the pCO_2 : it is 35, a little below normal. A low pCO_2 raises pH, so the lungs are compensating by hyperventilating. That makes option 2 a description of compensation, not the root cause, so it is out.

Now decide the primary mechanism. The defining abnormality is the dropped bicarbonate. Of the choices, renal bicarbonate loss (as occurs in proximal/type 2 renal tubular acidosis) directly produces a low HCO_3^- and this exact picture. Reduced renal H^+ excretion causes acidosis too, but the option framed as a bicarbonate-lowering loss fits the low HCO_3^- best. Potassium handling is not the

driver here.

So the metabolic acidosis here is best explained by bicarbonate loss by the kidney.
Ref: Ganong's Review of Medical Physiology, 26e.

Quick Tip: Low bicarbonate plus low $p\text{CO}_2$: identify which one is the primary change and which is compensation.

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150. Impaired function of aquaporins (water channels) results in which of the following conditions?

- (A) Liddle syndrome
- (B) Nephrogenic diabetes insipidus
- (C) Cystic fibrosis
- (D) Bartter syndrome

Correct Answer: (B) Nephrogenic diabetes insipidus

SOLUTION:

Channel-to-disease matching angle: each option is a channelopathy, so pair the channel with its disease.

Aquaporins are water channels. The renal star is aquaporin-2 in the collecting duct, which ADH (vasopressin) shuttles to the apical membrane so water can be reabsorbed and urine concentrated. Break that channel (or its V2 receptor) and water cannot follow the osmotic gradient even with plenty of ADH around. The patient pours out large volumes of dilute urine: that is nephrogenic diabetes insipidus, the renal-resistance form of DI.

Now match the distractors to their own channels. Liddle syndrome is an overactive ENaC sodium channel causing low-renin hypertension. Cystic fibrosis is a faulty CFTR chloride channel. Bartter syndrome is loss of the NKCC2 cotransporter in the loop of Henle. None of these are water channels.

So impaired aquaporin function maps cleanly to nephrogenic diabetes insipidus.

Ref: Guyton and Hall Textbook of Medical Physiology, 13e.

Quick Tip: If the ADH-driven water channel fails, the kidney cannot concentrate urine.

• • •

151. Most serious complication of measles is:

- (A) Croup
- (B) Meningo-encephalitis
- (C) Otitis media
- (D) Pneumonia

Correct Answer: (B) Meningo-encephalitis

SOLUTION:

Clinical pearl: rank measles complications by how lethal they are, not how frequent. Otitis media and pneumonia (often from the post-measles immune suppression) are the commonest, so they tempt you, but neither is the most serious. Croup is a feature of other viral illnesses and is not the answer here. The CNS complication, acute meningo-encephalitis, occurs in roughly **0.1%** of cases and carries high morbidity and mortality, which makes it the most serious acute complication. Remember the chronic late counterpart, SSPE, appears years after the infection and is separate from the acute encephalitis asked about. So the single best answer is meningo-encephalitis.

Quick Tip: Think CNS over ear or chest complications when ranking severity.

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152. The most common cause of death in systemic lupus erythematosus (SLE) in children is:

- (A) Lupus nephritis
- (B) Lupus cerebritis
- (C) Libman-Sacks endocarditis
- (D) Anemia and infections

Correct Answer: (A) Lupus nephritis

SOLUTION:

Eliminate the distractors first. Libman-Sacks endocarditis is a classic lupus finding but is usually clinically silent and rarely the cause of death. Lupus cerebritis is serious but far less common than renal disease. Anemia and infections do contribute to mortality, yet they are downstream and combined, not the single leading cause. That leaves lupus nephritis, which is both the most frequent severe organ involvement in children and the chief driver of death through progressive renal failure. Pediatric lupus runs a more aggressive renal course than the adult form, reinforcing why nephritis tops the mortality list. Best answer: lupus nephritis.

Quick Tip: The organ most heavily and early involved in childhood lupus drives mortality.

153. A patient has multiple gallstones and imaging shows 8 mm dilatation with 4 stones in the common bile duct (CBD). The best treatment modality is:

- (A) Cholecystectomy with choledocholithotomy at the same setting
- (B) ESWL
- (C) Cholecystectomy and wait for ERCP
- (D) All

Correct Answer: (A) Cholecystectomy with choledocholithotomy at the same setting

SOLUTION:

Frame this as a single-stage versus two-stage choice. ESWL is for renal and select pancreatic stones, not a recommended modality for CBD calculi, so rule it out. Waiting for a separate ERCP after cholecystectomy splits care into two procedures and is a fallback when laparoscopic duct clearance is not available. The ideal, when the surgeon is skilled in laparoscopic CBD techniques, is to remove the gallbladder and clear the 4 ductal stones in one sitting: intraoperative

cholangiogram confirms the stones, then transcystic or choledochotomy extraction clears them. One anaesthesia, one admission, definitive treatment. Therefore cholecystectomy with choledocholithotomy at the same setting is the best answer.

Quick Tip: One-stage clearance of both gallbladder and duct is preferred when expertise allows.

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154. Pulmonary plethora is seen with all of the following except.

- (A) Transposition of the great arteries (TGA)
- (B) Ebstein anomaly
- (C) Hypoplastic left heart syndrome
- (D) Double outlet right ventricle

Correct Answer: (B) Ebstein anomaly

SOLUTION:

Split the options into increased versus decreased pulmonary flow. Admixture lesions such as transposition of the great arteries, hypoplastic left heart syndrome and double outlet right ventricle dump extra blood into the lungs, so the chest film shows plethora. Ebstein anomaly is different: the tricuspid valve is displaced into the right ventricle, right-sided output falls, and blood shunts right to left across the atrial septum. The result is reduced pulmonary blood flow with oligemic lung fields and a strikingly enlarged, box-shaped heart. So the one that does NOT show plethora, and is the answer to this "except" question, is Ebstein anomaly.

Quick Tip: Which lesion obstructs right-sided flow and gives oligemic lung fields?

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155. A 20-year-old man presents with swelling of the wrist for the last two years. Histopathological examination shows spindle-shaped cells and Verocay bodies. What is the diagnosis?

- (A) Lipoma
- (B) Dermoid cyst
- (C) Neurofibroma
- (D) Schwannoma

Correct Answer: (D) Schwannoma

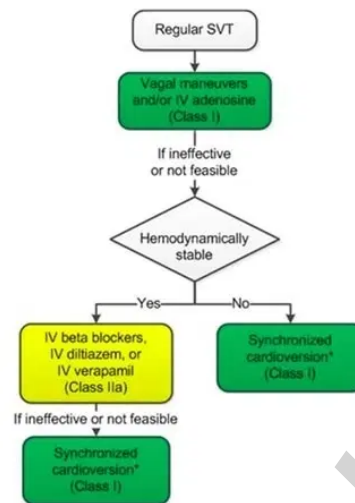
SOLUTION:

Anchor on the buzzword: Verocay bodies equal schwannoma. Lipoma is made of mature adipocytes, and a dermoid cyst is lined by skin with adnexal structures, so neither shows spindle cells with palisading nuclei. The real trap is neurofibroma, the other peripheral nerve sheath tumour, but it has axons coursing through the lesion and does NOT form Verocay bodies. A schwannoma is encapsulated, pushes nerve fibres to its periphery, and shows two textures, the dense Antoni A and loose Antoni B, with the diagnostic palisaded Verocay bodies in the Antoni A zones, plus diffuse S-100 positivity. The diagnosis is schwannoma.

Quick Tip: Palisading nuclei forming a named body point to one nerve sheath tumour.

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156. A hemodynamically unstable patient presents with supraventricular tachycardia (SVT) as shown.



The most appropriate immediate management is:

- (A) IV ibutilide
- (B) IV diltiazem
- (C) Cardioversion
- (D) IV beta-blockers

Correct Answer: (C) Cardioversion.

SOLUTION:

The single word that decides this question is unstable. In a stable SVT you would try vagal maneuvers, then adenosine, then rate-control drugs such as diltiazem or a beta-blocker. But once the patient becomes hemodynamically unstable, with hypotension, shock, altered mentation or ischemic chest pain, the ACLS rule is unambiguous—deliver immediate synchronised electrical cardioversion. Giving IV diltiazem, beta-blockers or ibutilide here wastes time and can worsen the hypotension, so all three drug options are wrong. Electricity acts instantly and restores sinus rhythm. The correct immediate step is cardioversion.

Quick Tip: When the patient is unstable, electricity beats drugs.

157. A female patient on lithium for bipolar disorder for 6 months fasted for several days for religious reasons and later presented with seizures, tremors, confusion and weakness. Which investigation should be done to diagnose her condition?

- (A) Serum electrolytes
- (B) Serum lithium
- (C) ECG
- (D) MRI

Correct Answer: (B) Serum lithium

SOLUTION:

Connect the dots: a patient on lithium, then days of fasting and volume depletion, then neurological symptoms. Dehydration cuts sodium intake, the kidney reabsorbs more lithium to compensate, and serum lithium climbs into the toxic zone, producing tremor, confusion, weakness and seizures. The question asks how to diagnose her condition, so you want the most specific test, which is the serum lithium level. Electrolytes and an ECG help assess the consequences and complications but do not pin the diagnosis, and an MRI has no role in confirming lithium toxicity. The diagnostic investigation is serum lithium.

Quick Tip: Dehydration plus a narrow-index drug: measure the drug itself.

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158. Lithium causes which of the following electrolyte or metabolic effects?

- (A) Hypokalemia
- (B) Hyperkalemia
- (C) Hypocalcemia
- (D) Hypercalcemia

Correct Answer: (A) Hypokalemia

SOLUTION:

Tie the answer to lithium's cardiac signature. The most common ECG change with lithium is T wave depression or flattening, the same pattern you see with low potassium. Because lithium's cardiovascular effects mimic hypokalemia, the matched electrolyte option here is hypokalemia, not hyperkalemia. The calcium options are distractors: hypocalcemia and hypercalcemia are not the classic lithium associations tested in this stem. Round out the picture by recalling lithium's other adverse effects, fine tremor as the commonest, nephrogenic diabetes insipidus, hypothyroidism with goitre, and Ebstein anomaly in the fetus. For this question, the answer is hypokalemia.

Quick Tip: Recall the lithium ECG change and the electrolyte pattern it mimics.

159. A 50-year-old man presents with paresthesia. Hemoglobin is 6.8 g/dl. Peripheral smear shows macrocytosis and neutrophils with hypersegmented nuclei. Endoscopy reveals atrophic gastritis. The most probable diagnosis is:

- (A) Folate deficiency
- (B) Vitamin B12 deficiency
- (C) Riboflavin deficiency
- (D) Iron deficiency

Correct Answer: (B) Vitamin B12 deficiency

SOLUTION:

Work through the options. Iron deficiency causes a microcytic, hypochromic anemia, the opposite of the macrocytosis seen here, so it is out. Riboflavin deficiency does not give this blood picture. That leaves the two megaloblastic causes, folate and B12, both of which produce macrocytosis with hypersegmented neutrophils. The tiebreakers are decisive: the paresthesia signals neurological damage from subacute combined degeneration, which folate deficiency does not cause, and the atrophic gastritis means loss of intrinsic factor and failed B12

absorption. Both findings point squarely at vitamin B12 deficiency, which is the most probable diagnosis.

Quick Tip: Megaloblastic picture with neuropathy and atrophic gastritis narrows it to one vitamin.

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160. All-trans retinoic acid (ATRA) is used in the treatment of a tumour associated with which genetic abnormality?

- (A) BCR-ABL
- (B) PML-RARA
- (C) CMYC
- (D) CEBPA

Correct Answer: (B) PML-RARA

SOLUTION:

Mnemonic anchor: ATRA treats APL, and APL means t(15;17) giving the PML-RARA fusion. The retinoic acid receptor alpha (RARA) part of the fusion is exactly what ATRA acts on, releasing the differentiation block so the arrested promyelocytes mature. Now eliminate the rest: BCR-ABL is the t(9;22) Philadelphia chromosome of CML, treated with imatinib, not ATRA. CMYC dysregulation defines Burkitt lymphoma. CEBPA is a recurrent mutation in some AML cases but is not the ATRA target. Only PML-RARA links to ATRA-responsive leukemia, so the answer is PML-RARA.

Quick Tip: Differentiation therapy targets the leukemia defined by t(15;17).

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161. A patient with renal tubular acidosis has the following arterial blood gas (ABG): pH = 7.24, PaO₂ = 80, PaCO₂ = 36, Na = 131, HCO₃ = 14, Cl = 90, base excess (BE) = -13, glucose = 135. The above ABG picture suggests:

- (A) Respiratory acidosis
- (B) Respiratory alkalosis
- (C) Metabolic acidosis
- (D) Metabolic alkalosis

Correct Answer: (C) Metabolic acidosis

SOLUTION:

Work the ABG in order. First the pH 7.24 is acidemic. Now ask which system is to blame. In a respiratory acidosis the CO₂ would be high, here PaCO₂ is 36, which is low, so respiration is not the culprit. Instead the bicarbonate is the abnormal number: HCO₃ 14 and base excess -13 are both markedly low, the signature of a metabolic acidosis. The slightly low CO₂ is simply Winter's compensation, the lungs hyperventilating to offset the acid load. Clinically this matches renal tubular acidosis, where the kidney cannot reclaim bicarbonate or secrete enough hydrogen ion, producing a non anion gap metabolic acidosis (here Na 131, Cl 90, HCO₃ 14 give a near normal gap). Eliminate alkalosis options outright since the pH is acidic, and eliminate respiratory acidosis since CO₂ is not raised. The answer is metabolic acidosis.

Quick Tip: Low pH plus low HCO₃ with a CO₂ that is only mildly reduced points to a primary metabolic problem.

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162. A patient has pulmonary fibrosis. Which antiarrhythmic drug should NOT be given to this patient?

- (A) Amiodarone
- (B) Flecainide
- (C) Ibutilide
- (D) Lidocaine

Correct Answer: (A) Amiodarone

SOLUTION:

Clinical pearl: of all antiarrhythmics, amiodarone is the one with a signature multi organ toxicity profile, and the lung is its most feared target. Amiodarone pulmonary toxicity ranges from acute hypersensitivity pneumonitis to chronic interstitial fibrosis, and the drug accumulates in lung tissue because of its long half life and lipophilicity. Giving it to someone who already carries a diagnosis of pulmonary fibrosis would pour fuel on the fire. Run the elimination. flecainide is a class IC agent whose main caution is proarrhythmia in structural heart disease, not lung damage; ibutilide is a short acting class III agent used for cardioversion with QT prolongation as its concern; lidocaine is a class IB drug whose toxicity is neurological. None of these three scar the lung. That leaves amiodarone as the drug to avoid.

Quick Tip: One of these drugs is famous for causing the very lung disease in question.

163. A 42-year-old patient presents with obstructive jaundice. Alkaline phosphatase (ALP), gamma-glutamyl transferase (GGT), and haptoglobin are all increased. The most likely cause is:

- (A) Alcohol
- (B) Lead
- (C) Chronic renal failure
- (D) None of the above

Correct Answer: (A) Alcohol

SOLUTION:

Anchor on GGT. Among all the listed exposures, only one is a classic enzyme inducer of gamma glutamyl transferase, and that is alcohol. The triad here, raised ALP, raised GGT, and obstructive jaundice, describes a cholestatic injury, and when GGT climbs to more than double its normal value the clinician should think alcohol first. Remember the companion rule: an AST to ALT ratio of 2 or more

alongside a high GGT is one of the most reliable biochemical fingerprints of alcoholic liver disease. Eliminate the distractors: lead poisoning produces basophilic stippling, microcytic anemia, and a wrist or foot drop, not a cholestatic enzyme rise; chronic renal failure raises urea and creatinine and does not obstruct the biliary tree. Haptoglobin behaving as an acute phase reactant simply reflects the inflammatory hepatic insult. Therefore alcohol is the answer.

Quick Tip: GGT is the enzyme most strongly induced by one of these exposures.

...

164. The differentiating feature between irritable bowel syndrome (IBS) and organic gastrointestinal disease is:

- (A) Diarrhea
- (B) Stool calprotectin
- (C) Abdominal pain
- (D) Mucus in stools

Correct Answer: (B) Stool calprotectin

SOLUTION:

Sort the options into two buckets. Three of them, diarrhea, abdominal pain, and mucus in stool, are symptoms a patient reports, and every one of them appears in both IBS and organic bowel disease, so they cannot draw a line between the two conditions. The fourth, stool calprotectin, is a laboratory biomarker, and that is the giveaway. Calprotectin is shed by neutrophils into the gut lumen wherever there is active mucosal inflammation, so it is high in inflammatory bowel disease and low in the non-inflammatory, functional IBS. That is exactly why clinicians order it: a low faecal calprotectin lets you confidently call a case functional and avoid an unnecessary colonoscopy, while a high value pushes you toward endoscopic evaluation for organic pathology. Other supportive stool markers exist (alpha 1 antitrypsin, lysozyme, lactoferrin), but calprotectin is the workhorse. Hence the answer is stool calprotectin.

Quick Tip: Look for the only option that is an objective marker of mucosal inflammation, not a shared symptom.

...

165. A patient has fatigue but is not gaining weight, and the body feels warm. Investigations are most likely to show:

- (A) Low TSH with raised T3 or T4
- (B) High TSH with normal T3 or T4
- (C) High TSH with a euthyroid state
- (D) Increased uptake of T3 but decreased T4

Correct Answer: (A) Low TSH with raised T3 or T4

SOLUTION:

Translate the symptoms first. Warm skin plus an inability to put on weight equals a body burning energy too fast, the textbook hypermetabolic syndrome of thyrotoxicosis. Now reason from negative feedback, the core principle of the thyroid axis. When the thyroid gland pumps out excess T3 and T4, those hormones feed back onto the anterior pituitary and shut down TSH secretion. So the lab signature of primary hyperthyroidism is the mirror image: thyroid hormones up, TSH down. Scan the options with that rule. Any choice that starts with high TSH belongs to hypothyroidism, where the patient would feel cold and gain weight, so options B and C are out. The decreased T4 with increased T3 uptake option does not fit a hyperthyroid clinical state either. The only internally consistent answer is a suppressed TSH with elevated T3 or T4.

Quick Tip. A warm patient who will not gain weight is running hot; think about what the pituitary does when thyroid hormone is high.

...

166. Rewarming in frostbite should be done at what temperature?

- (A) 37 degrees
- (B) 42 degrees
- (C) 44 degrees
- (D) 46 degrees

Correct Answer: (A) 37 degrees

SOLUTION:

Think about the safety ceiling. The frostbitten part is numb, so the patient cannot feel pain and cannot warn you that the water is too hot, that's why the rewarming bath must stay close to normal body temperature rather than running hot. Frostbite happens when tissue freezes below zero and intracellular and intercellular ice crystals tear the cells, so the goal is to thaw fast but gently. Of the offered values, 37 degrees sits right at core body temperature and is the safe, marked choice, while 44 and 46 degrees are high enough to scald insensate skin and are explicitly criticized for that reason. Supportive measures complete the picture: rewarm in roughly 20 minute sessions and give warm oral fluids to raise the whole body temperature. So pick 37 degrees.

Quick Tip: The water should be warm like the body, not hot enough to scald numb, injured skin.

...

167. Which of the following is NOT seen in pituitary apoplexy?

- (A) Headache
- (B) Hypertension
- (C) Hypotension
- (D) Vomiting

Correct Answer: (B) Hypertension

SOLUTION:

Build the clinical portrait of pituitary apoplexy, then knock out what fits. A sudden bleed or infarct in a pituitary adenoma announces itself with a thunderclap retro orbital headache, vomiting, visual loss, ophthalmoplegia (the swollen gland presses on the cavernous sinus cranial nerves), and a clouded sensorium. The dangerous part is endocrine: ACTH production collapses, cortisol falls, and the patient becomes hypotensive, sometimes frankly shocked, an adrenal crisis that must be treated with steroids. So headache, vomiting, and hypotension are all genuine features and cannot be the exception. That leaves hypertension, which has no place in this picture; if anything the blood pressure goes the other way. The memory based key tagged hypotension, but that contradicts the established physiology and even the source notes hypotension and shock as present, so the medically correct exception is hypertension, option B.

Quick Tip: Acute loss of ACTH drops the blood pressure; ask which blood pressure change does NOT belong here.

• • •

168. Loss of pain and temperature sensation on the ipsilateral face and contralateral body is due to thrombosis in the:

- (A) Posterior inferior cerebellar artery (PICA)
- (B) Posterior cerebellar artery
- (C) Superior cerebellar artery
- (D) None of the above

Correct Answer: (A) Posterior inferior cerebellar artery (PICA)

SOLUTION:

The phrase ipsilateral face, contralateral body for pain and temperature is a buzz word that should fire one diagnosis instantly: lateral medullary syndrome, also called Wallenberg syndrome. Here is the wiring that makes it crossed. Facial pain and temperature run through the spinal trigeminal nucleus and tract, which sits in the lateral medulla on the same side as the face it serves, so a lateral

medullary infarct numbs the ipsilateral face. Body pain and temperature travel in the spinothalamic tract, which has already decussated in the cord, so the same lesion knocks out sensation on the opposite side of the body. The vessel behind it is the vertebral artery most often, but the artery that the exams pin to this syndrome is the posterior inferior cerebellar artery, PICA. Add the supporting cast, vertigo, hoarseness, dysphagia, ataxia, and Horner syndrome, and the diagnosis is sealed. Answer: PICA.

Quick Tip: Crossed face and body pain or temperature loss makes a classic brainstem syndrome with a famous artery.

...

169. All of the following are found in left ventricular failure (LVF) EXCEPT:

- (A) Lung oligemia
- (B) Kerley B lines
- (C) Rales
- (D) Pedal edema

Correct Answer: (A) Lung oligemia

SOLUTION:

Start from the pathophysiology and the answer falls out. When the left ventricle fails, it cannot empty the blood arriving from the lungs, so pressure rises behind it in the pulmonary veins and capillaries. The lungs therefore become congested and waterlogged, the exact opposite of empty. That single idea lets you keep three options and reject one. Kerley B lines are short horizontal septal lines from interstitial fluid, rales are the crackles of fluid filled alveoli, and pedal edema appears as the failure becomes biventricular, all consistent with a congested, fluid overloaded state. Lung oligemia, in contrast, means too little blood in the pulmonary vasculature, the radiological hallmark of pulmonary embolism, not heart failure. Since LVF produces pulmonary plethora rather than oligemia, the exception is lung oligemia.

Quick Tip: A failing left heart floods the lungs; which option means the lungs have too little blood instead?

• • •

170. All of the following show low glucose in pleural fluid, EXCEPT:

- (A) Empyema
- (B) Malignant pleural effusion
- (C) Rheumatoid arthritis
- (D) Dressler's syndrome

Correct Answer: (D) Dressler's syndrome

SOLUTION:

Memorise the short list of low glucose pleural effusions and the exception names itself. The causes that drop pleural fluid glucose below roughly 60 mg/dL are empyema (pus, swarming bacteria consuming sugar), rheumatoid pleuritis (famous for the lowest glucose of all, sometimes near zero), tuberculosis, malignancy (metabolically hungry tumour cells), and lupus pleuritis. The common thread is high cellular glucose consumption plus a pleural membrane too inflamed to shuttle glucose in. Now test each option: empyema, malignant effusion, and rheumatoid arthritis are all on that classic list, so they cannot be the answer. Dressler's syndrome is a post infarction autoimmune pericarditis and serositis, presenting with low grade fever, pleuritic pain, raised ESR, and pericardial or pleural effusion, but its effusion does not run a low glucose. So the odd one out is Dressler's syndrome.

Quick Tip: Three of these chew up pleural glucose through infection, tumour, or rheumatoid inflammation; one is just an immune serositis.

• • •

171. A 25 year old lady with a history of fever for 1 month presents with headache and ataxia. Brain imaging shows dilated ventricles and significant basal exudates. Which of the following will be the most likely CSF finding?

- (A) Lymphocytosis, low glucose, high protein
- (B) Lymphocytosis, normal glucose, high protein
- (C) Lymphocytosis, low glucose, normal protein
- (D) Neutrophilia, low glucose, low protein

Correct Answer: (A) Lymphocytosis, low glucose, high protein

SOLUTION:

Pattern recognition: Fever for a month, headache, ataxia, basal exudates and hydrocephalus together name one disease, Tubercular Meningitis. Once you fix the diagnosis, the CSF answer falls out.

The TBM CSF mnemonic: think Low glucose, High protein, Lymphocytes. Mycobacteria sit in the subarachnoid space for weeks, so the cellular response is lymphocytic rather than neutrophilic; the bugs and trapped cells consume glucose, and the thick basal exudate raises protein sharply.

Eliminate by glucose and protein: Viral meningitis keeps glucose normal, so option B is out. An exudative TB process can never leave protein normal, so option C is out. Pyogenic bacterial meningitis is what gives neutrophils, and it raises protein rather than dropping it, so option D is out. Only option A, lymphocytosis with low glucose and high protein, matches.

Clinical pearl: Basal exudate is the anatomical reason for both the cranial nerve palsies and the obstructive hydrocephalus in TBM, so seeing dilated ventricles plus basal enhancement should immediately steer you to this CSF profile.

Ref: Harrison's Principles of Internal Medicine, 20e.

Quick Tip: Chronic fever with basal exudates and hydrocephalus screams a

granulomatous meningitis that eats glucose.

...

172. Which of the following drugs can be given in patients of primary pulmonary hypertension?

- (A) Icatibant
- (B) Bosentan
- (C) Labetalol
- (D) Sodium nitroprusside

Correct Answer: (B) Bosentan

SOLUTION:

Drug class first: The four approved pillars of PAH therapy are endothelin receptor antagonists, phosphodiesterase-5 inhibitors, prostacyclin analogues and the soluble guanylate cyclase stimulator riociguat. Scan the options for one of these classes.

Option elimination: Icatibant treats hereditary angioedema by blocking bradykinin, no link to lung vessels, so it goes. Labetalol is a routine antihypertensive beta-blocker with no PAH indication, so it goes. Sodium nitroprusside is an emergency systemic vasodilator, not a chronic PAH drug, so it goes. That leaves bosentan.

Why bosentan fits: It antagonises endothelin receptors. Endothelin is up in PAH and drives pulmonary vasoconstriction and remodelling, so blocking it directly targets the disease, which is why it is a licensed therapy.

Exam pearl: Remember bosentan = endothelin blocker = liver monitoring needed, and it is teratogenic, so it is given with contraception in women of childbearing age.

Ref: Harrison's Principles of Internal Medicine, 20e.

Quick Tip: Block the endothelin receptor and you treat pulmonary arterial hypertension at its source.

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173. A patient arrives in the ER following a road traffic accident with hypotension, respiratory distress and subcutaneous emphysema with no entry of air on one side. What will be the best management?

- (A) Needle decompression in the 5th intercostal space in the midaxillary line
- (B) Continue positive pressure ventilation
- (C) Shift to ICU and intubate
- (D) Secure IV line and start fluid resuscitation after insertion of a wide-bore IV line

Correct Answer: (A) Needle decompression in the 5th intercostal space in the midaxillary line

SOLUTION:

Read the vitals: Trauma plus hypotension plus respiratory distress plus surgical emphysema plus a silent hemithorax is the textbook quartet of tension pneumothorax. The hypotension tells you this is obstructive shock, not just a breathing problem.

Treat the cause, not the symptom: The patient is dying because air is trapped under pressure and squeezing the great veins. The only fix is to release that air, so any option that does not decompress the chest is wrong by definition.

Walk through options: Continuing positive pressure ventilation actively pumps in more air, the worst possible move. Moving to ICU and intubating delays the one thing that saves the patient. Fluid resuscitation alone treats the low BP number without touching the trapped air. Only needle decompression empties the pleural space.

Procedure note: Insert a wide-bore cannula to decompress, then place a definitive intercostal chest drain. The classic site is the 2nd space midclavicular

line, while modern ATLS allows the 5th space in the anterior or mid-axillary line, which is the site quoted in the answer here.

Ref: Bailey and Love, Short Practice of Surgery, 27e, Pg 367, 920.

Quick Tip: Air is trapped under pressure; let it out before anything else.

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174. Treatment of renal cell carcinoma of less than 4 cm will be:

T0	No evidence of primary tumour.
T1	Tumour ≤7 cm in greatest dimension, limited to the kidney.
T1a	Tumour ≤4 cm in greatest dimension, limited to the kidney.
T1b	Tumour >4 cm but not >7 cm in greatest dimension, limited to the kidney.
T2	Tumour >7 cm in greatest dimension, limited to the kidney.
T2a	Tumour >7 cm but ≤10 cm in greatest dimension, limited to the kidney.
T2b	Tumour >10 cm, limited to the kidney.
T3	Tumour extends into major veins or perinephric tissues but not into the ipsilateral adrenal gland and not beyond Gerota fascia.
T3a	Tumour grossly extends into the renal vein or its segmental (muscle containing) branches, or tumour invades perinephric and renal sinus fat but not beyond Gerota fascia.
T3b	Tumour grossly extends into the vena cava below the diaphragm.
T3c	Tumour grossly extends into the vena cava above the diaphragm or invades the wall of the vena cava.
T4	Tumour invades beyond Gerota's fascia (including contiguous extension into the ipsilateral adrenal gland).

AJCC: American Joint Committee on Cancer; T: primary tumour; N: regional lymph nodes; *Stant metastasis. Taken from Edge SB, American Joint Committee on Cancer.²⁴

- (A) Partial nephrectomy
- (B) Radical nephrectomy
- (C) Radical nephrectomy + postoperative radiotherapy
- (D) Radical nephrectomy + chemotherapy

Correct Answer: (A) Partial nephrectomy

SOLUTION

Stage the tumour: Less than 4 cm and confined to the kidney is stage T1a. That single fact decides the operation.

Nephron-sparing principle: Modern urology preserves renal tissue whenever it can, because saving nephrons protects long-term kidney function without losing cancer control for small tumours. So a T1a RCC is removed by partial

nephrectomy, not by taking the whole kidney.

Knock out the wrong options: Two facts kill three options at once. First, radical nephrectomy is overtreatment for a 4 cm lesion, so option B is out. Second, RCC is notoriously resistant to both radiotherapy and conventional chemotherapy, so bolting either onto surgery in localised disease, options C and D, adds toxicity with no gain.

Pearl: Partial nephrectomy is mandatory in a solitary kidney, bilateral tumours or poor reserve, and is now the preferred elective choice for any small RCC, deliverable by open, laparoscopic or robotic routes.

Ref: Bailey and Love, Short Practice of Surgery, 27e, Pg 1420.

Quick Tip: Small tumour, spare the nephrons.

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175. Which of the following is NOT seen in the ASEPSIS score?

- (A) Erythema
- (B) Induration
- (C) Serous discharge
- (D) Purulent exudate

Correct Answer: (B) Induration

SOLUTION:

Decode the acronym: ASEPSIS is itself the answer key. Each letter is a wound criterion: A for Additional treatment, S for Serous discharge, E for Erythema, P for Purulent exudate, S for Separation of deep tissues, I for Isolation of bacteria, S for Stay prolonged as inpatient.

Match the options: Erythema, serous discharge and purulent exudate all appear directly in the acronym, so three of the four choices are valid components and

cannot be the negative answer.

The outlier: Induration never features in ASEPSIS, so it is the thing NOT seen, making option B correct.

Why it matters: ASEPSIS turns a subjective wound look into a number, with discharge, erythema and pus scored daily and the extra items added, so the total objectively grades surgical site infection and decides if you escalate to antibiotics, pus drainage or debridement.

Ref: Bailey and Love, Short Practice of Surgery, 27e Pg 4

Quick Tip: Spell out the acronym letter by letter; the odd one out is not in it.

176. Esophageal manometry was performed. It revealed panesophageal pressurization with distal contractile integrity of > 450 mmHg.s.cm pressure in the body. What will be the diagnosis?

- (A) Type 1 achalasia
- (B) Type 2 achalasia
- (C) Type 3 achalasia
- (D) Jackhammer esophagus

Correct Answer: (C) Type 3 achalasia

SOLUTION:

Anchor to the number: The single discriminating value is a distal contractile integral above 450 mmHg.s.cm. In the Chicago classification a high DCI means strong, premature, spastic contractions, which is the signature of the spastic subtype.

Confirm it is achalasia: All achalasia types share an impaired lower esophageal sphincter, shown by a raised median IRP with no normal peristalsis, so the

obstruction is at the gastroesophageal junction.

Sort the subtypes by contraction: Type 1 has flat, failed contractions with a low DCI. Type 2 shows panesophageal pressurization but no measurable strong contraction, so DCI is not even reported. Type 3 is the one that pairs the relaxation defect with vigorous spastic contractions, DCI above 450, which exactly matches the stem.

Why not jackhammer: Jackhammer esophagus is also hypercontractile, but its IRP and sphincter relaxation are normal. Because this patient has the relaxation defect, the answer stays inside achalasia, specifically Type 3.

Ref: Bailey and Love, Short Practice of Surgery, 27e, Pg 1096, 1099.

Quick Tip: A high DCI means real spastic contractions, which is the spastic subtype.

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177. What will be the appropriate management for an abdominal aortic aneurysm?

- (A) Monitor till size reaches 55 mm
- (B) Immediate surgery
- (C) USG monitoring till > 70 mm asymptomatic
- (D) No treatment

Correct Answer: (A) Monitor till size reaches 55 mm

SOLUTION:

Risk trade-off: AAA management is a balance between the chance of rupture if you wait and the risk of dying on the table if you operate. Below 55 mm the rupture risk is small, so surveillance wins; at 55 mm and above the rupture risk overtakes the operative risk, so you repair.

Pick the cut-off option: Only option A states the correct 55 mm threshold with ultrasound follow-up below it, so it is the answer.

Reject the rest: Immediate surgery is for the symptomatic, fast-growing or ruptured aneurysm, not a quiet small one, so option B is wrong. Letting it grow past 70 mm before acting exposes the patient to a high rupture risk, so option C is unsafe. Doing nothing abandons a lesion that mandates monitoring, so option D is wrong.

Surveillance pearl: Smaller aneurysms get periodic ultrasound and rapid growth, more than 1 cm per year, or new pain is itself an indication to repair early. Most repairs today are done by EVAR through the groin vessels.

Ref: Bailey and Love, Short Practice of Surgery, 27e, Pg 661.

Quick Tip: There is a well known diameter cut-off in millimetres for elective repair.

178. What is the T stage of a 2.5 cm lung carcinoma, not involving the pleura?

M 8th - Primary tumor characteristics	
T	Tumor not in bronchial washings but not be assessed in imaging or bronchoscopy
T ₀	No evidence of tumor
T _{is}	Carcinoma in situ
T _{1a}	≤ 1 cm, surrounded by lung/visceral pleura, not involving main bronchus
T _{1b}	Minimally invasive carcinoma
T _{1c}	> 1 to ≤ 2 cm
T _{1d}	> 2 to ≤ 3 cm
T _{1e}	> 3 to ≤ 5 cm or involvement of main bronchus without carina, regardless of distance from carina or invasion visceral pleural or atelectasis or post obstructive pneumonitis extending to hilum
T _{2a}	> 3 to ≤ 4 cm
T _{2b}	> 4 to ≤ 5 cm
T ₃	> 5 to ≤ 7 cm in greatest dimension or tumor of any size that involves chest wall, pericardium, phrenic nerve or satellite nodules in the same lobe
T ₄	> 7 cm in greatest dimension or any tumor with invasion of mediastinum, diaphragm, heart, great vessels, recurrent laryngeal nerve, carina, trachea, oesophagus, spine or separate tumor in different lobe of ipsilateral lung
N ₁	Ipsilateral peribronchial and/or hilar nodes and intrapulmonary nodes
N ₂	Ipsilateral mediastinal and/or subcarinal nodes
N ₃	Contralateral mediastinal or hilar; ipsilateral/contralateral scalene/supraclavicular
M ₁	Distant metastasis
M _{1a}	Tumor in contralateral lung or pleural/pericardial nodule/malignant effusion
M _{1b}	Single extrathoracic metastasis, including single non-regional lymphnode
M _{1c}	Multiple extrathoracic metastases in one or more organs

- (A) T1a
- (B) T2
- (C) T1b
- (D) T1c

Correct Answer: (D) T1c

SOLUTION:

Use the simple size ladder: In the 8th edition TNM for lung cancer, a tumour up to 3 cm with no pleural or bronchial involvement is T1, and the only thing that separates T1a, T1b and T1c is size, in 1 cm steps.

Place the 2.5 cm tumour: One centimetre or less is T1a, up to 2 cm is T1b, and over 2 cm up to 3 cm is T1c. A 2.5 cm lesion sits squarely in the over 2 to 3 cm slot, so it is T1c.

Rule out the rest: T1a and T1b cover only tumours of 2 cm or less, so a 2.5 cm mass cannot be either. T2 needs a size above 3 cm or upstaging features such as visceral pleural invasion or main bronchus involvement, and the stem explicitly says the pleura is spared, so T2 is excluded.

Memory hook: For T1, think 1, 2, 3 cm equals a, b, c. Match the number to the letter and the staging is automatic.

Ref: Bailey and Love, Short Practice of Surgery, 27e, Pg 927.

Quick Tip: Within 3 cm the T1 stage is decided by the 1, 2 and 3 cm size bands.

...

179. In the primary survey, which is NOT included?

- (A) CECT to look for bleeding
- (B) Exposure of the whole body
- (C) ABC
- (D) Recording BP

Correct Answer: (A) CECT to look for bleeding

SOLUTION:

Recall the sequence: The primary survey is the cABCDE drill done at the bedside in the first minutes, catastrophic haemorrhage, Airway with C-spine, Breathing, Circulation, Disability and Exposure. Everything in it can be done with hands and eyes and simple monitors.

Spot the odd one out: A contrast CT scan needs the patient to be moved to radiology, which is unsafe while unstable, so it can only happen after stabilisation, in the secondary survey or definitive imaging phase. That makes CECT the step NOT in the primary survey, option A.

Validate the rest: Exposure of the whole body is literally the E of the sequence. ABC is the heart of the protocol. Recording blood pressure is part of judging circulation under C. All three genuinely belong, so none can be the negative answer.

Exam tip: If an option requires a scanner or operating room, it is almost never part of the primary survey, whose whole purpose is rapid bedside life-saving.

Ref: Bailey and Love, Short Practice of Surgery, 27e, Pg 323.

Quick Tip: Imaging in the scanner belongs to a later survey, not the bedside ABCDE.

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180. What is the most common location of gastrinoma in MEN-1 syndrome?

- (A) Duodenum
- (B) Jejunum
- (C) Pancreas
- (D) Ileum

Correct Answer: (A) Duodenum

SOLUTION:

Pin the syndrome to the tumour: MEN-1 (the 3 Ps: parathyroid, pituitary, pancreas) commonly causes pancreatic and duodenal neuroendocrine tumours, and the most common functioning one is gastrinoma, which drives Zollinger-Ellison syndrome.

Location twist in MEN-1: Although people think gastrinoma equals pancreas, in MEN-1 these tumours are characteristically small, multiple and found in the duodenal wall, clustered in the gastrinoma triangle. So the single best answer is the duodenum, option A.

Rule out the rest: The pancreas is the site for sporadic gastrinoma and for the next MEN-1 tumour, insulinoma, but it is not the most common gastrinoma site in MEN-1, so option C is not best. The jejunum and ileum are not recognised primary gastrinoma sites, so options B and D are wrong.

Clinical pearl: Suspect MEN-1 in any patient with multiple duodenal gastrinomas plus hypercalcaemia from parathyroid disease.

Ref: Bailey and Love, Short Practice of Surgery, 27e, Pg 856.

Quick Tip: In MEN-1 the gastrinomas are small, multiple and sit in the first part of the small bowel, not the pancreas.

...

181. A patient presents with a precancerous penile lesion along with abdominal swelling and palpable inguinal lymphadenopathy. The most probable carcinoma associated with this clinical picture is:

- (A) Carcinoma of the penis
- (B) Carcinoma of the testis
- (C) Carcinoma of the prostate
- (D) Carcinoma of the bladder

Correct Answer: (A) Carcinoma of the penis

SOLUTION:

Clinical pearl: match the tumour to the node group.

Inguinal nodes = penis, scrotum, anal canal below dentate line, vulva, lower limb. Of the four options, only the penis drains here, so carcinoma of the penis is the answer.

Elimination: Testis drains to para-aortic nodes (gonadal embryology). Prostate and bladder both seed the pelvic (obturator and iliac) nodes, not the groin. That leaves penis as the single option whose lymphatics reach the inguinal region, and it also has well known precancerous lesions such as erythroplasia of Queyrat that fit the stem. A groin mass, pruritus and a discharging penile lesion are the classic triad. Ref: Bailey and Love, Short Practice of Surgery, 27th edition, 2018.

Quick Tip: Which pelvic organ drains its lymph directly to the inguinal nodes?

182. An intoxicated man fell into a manhole and sustained a perineal injury. He now has a swollen scrotum and upper thigh blood at the urethral meatus, and difficulty passing urine. The injury most likely associated with this trauma is:

- (A) Bladder rupture
- (B) Penile fracture
- (C) Bulbar urethral injury
- (D) Membranous urethral injury

Correct Answer: (C) Bulbar urethral injury

SOLUTION:

Mnemonic approach: Anterior urethra = Astride (Anterior) injury = bulbar.

Think of the two urethral injury patterns. A straddle or fall astride injury hits the ANTERIOR urethra, and the bulbar segment is its most vulnerable part because it is jammed against the lower pubic bone. A pelvic fracture instead shears the POSTERIOR (membranous) urethra.

Reading the clues: butterfly perineal bruising spreading to the scrotum and thigh

is the signature of bulbar rupture, because Colles fascia confines the extravasated blood and urine to that exact territory. Blood at the meatus plus an inability to void completes the picture. The history here is a manhole fall (a straddle mechanism), so the answer is the bulbar urethra, not the membranous urethra. Ref: Bailey and Love, Short Practice of Surgery, 27th edition, 2018.

Quick Tip: A fall-astride mechanism crushes which part of the urethra against the pubis?

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183. A patient with known carcinoma of the bladder presents with dyspnoea, clinical signs of deep vein thrombosis, and tachycardia. According to the Wells score, the risk of this patient developing pulmonary embolism is:

- (A) High
- (B) Medium (moderate)
- (C) Low
- (D) Cannot comment without D-dimer values

Correct Answer: (B) Medium (moderate)

SOLUTION:

Score-it-out approach: The original Wells PE rule gives points for specific features. This patient has clinical signs of DVT (3 points), a heart rate above 100 (1.5 points) and an active cancer (1 point), so the running total is around 5.5.

Banding: the three-level interpretation is low (< 2), moderate (2 to 6) and high (> 6). A total near 5.5 falls squarely in the moderate band.

Why the distractors fail: the figure never crosses 6, ruling out high risk, and is far above 2, ruling out low risk. D-dimer is an investigation ordered AFTER the Wells score sorts the patient, so it cannot be a prerequisite for stating the clinical probability. Hence the answer is moderate (medium) risk. Ref: Bailey and Love, Short Practice of Surgery, 27th edition, 2018.

Quick Tip: Add up DVT signs, tachycardia and malignancy, then place the total in the 2 to 6 band.

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184. Four months after a renal transplant, a patient is most likely to develop infection with which of the following organisms?

- (A) Epstein-Barr virus (EBV)
- (B) Cytomegalovirus (CMV)
- (C) Candida
- (D) Histoplasma

Correct Answer: (B) Cytomegalovirus (CMV)

SOLUTION:

Time-line trick. Group post-transplant infections by when they strike.

First month: surgical and nosocomial bugs, including Candida and line sepsis.

One to six months: the opportunistic and viral phase, where CMV reigns supreme.

After six months: community-acquired infections plus late opportunists.

Apply it: the patient is at four months, which lands in the one to six month bracket, so CMV is the expected pathogen. It is the most common and most clinically significant opportunistic infection of this period and a textbook cause of graft dysfunction. Candida is too early, while EBV-related lymphoproliferative disease and Histoplasma are either later or much rarer. Therefore CMV is correct.

Ref: Bailey and Love, Short Practice of Surgery, 27th edition, 2018.

Quick Tip: Which virus reactivates and peaks in the 1 to 6 month window after solid-organ transplant?

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185. A patient presents with faecal peritonitis, and at laparotomy a perforated diverticulum is found with frank faecal contamination of the peritoneal cavity. According to the Hinchey classification, this corresponds to which stage?

- (A) Stage I
- (B) Stage II
- (C) Stage III
- (D) Stage IV

Correct Answer: (D) Stage IV

SOLUTION:

Ladder of severity. Picture the Hinchey grades climbing from a contained collection to free soiling:

I = pericolic or mesenteric abscess (local).

II = pelvic abscess (still walled off, deeper).

III = purulent peritonitis (pus is now free in the abdomen).

IV = faecal peritonitis (stool is free in the abdomen, the worst).

Match the case: frank faeces in the peritoneal cavity sits at the very top of this ladder, so it is grade IV. The key discriminator from grade III is pus versus stool, and once faeces are free the grade is IV. This stage carries the highest mortality and typically needs a Hartmann resection with end colostomy. Hence stage IV is correct. Ref: Bailey and Love, Short Practice of Surgery, 27th edition, 2018.

Quick Tip: Faecal contamination is the worst, so it must be the highest grade.

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186. A young man met with a motorbike accident sustaining injuries to the ileum and jejunum, following which the entire ileum and part of the jejunum were resected. The patient is most likely to subsequently suffer from:

- (A) Vitamin B12 deficiency
- (B) Atrophic gastritis
- (C) Constipation
- (D) None of the above

Correct Answer: (A) Vitamin B12 deficiency

SOLUTION:

Site-specific absorption rule. Most nutrients can be taken up over a long stretch of small bowel, but two things are absorbed ONLY in the terminal ileum: vitamin B12 and bile salts. The jejunum handles fluids, electrolytes, iron, folate, fat, protein and carbohydrate, yet it cannot rescue B12 because it lacks the dedicated transporters.

Consequence: remove the entire ileum and you remove the sole B12 uptake site, so B12 deficiency is inevitable, and bile salt loss adds fat malabsorption on top.

Rule out the rest: atrophic gastritis is a stomach problem, not an ileal one; loss of the terminal ileum and ileocaecal valve speeds transit and causes diarrhoea, the opposite of constipation; and because a real deficiency does occur, None is wrong. The answer is vitamin B12 deficiency. Ref: Bailey and Love, Short Practice of Surgery, 27th edition, 2018.

Quick Tip: Which vitamin has its only absorption site in the terminal ileum?

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187. A patient presents with epigastric pain after a heavy meal. On examination there is tenderness and rigidity in the upper abdomen, and the chest X-ray shows pneumomediastinum. The most likely cause is:

- (A) Spontaneous oesophageal rupture (Boerhaave syndrome)
- (B) Penetrating foreign body injury to the oesophagus
- (C) Perforated peptic ulcer
- (D) Rupture of an emphysematous bulla

Correct Answer: (A) Spontaneous oesophageal rupture (Boerhaave syndrome)

SOLUTION:

Pattern-spotting on the X-ray. Let the air location tell the story. Free air UNDER the diaphragm means a hollow viscus like a peptic ulcer has perforated; air in the MEDIASTINUM means the oesophagus has torn. This patient shows pneumomediastinum, so the leak is oesophageal.

Confirm with the triad: Boerhaave syndrome runs as vomiting, then chest pain, then surgical (subcutaneous) emphysema, the Mackler triad, with the V sign of Naclerio on the film. The trigger of a heavy meal followed by retching fits perfectly.

Eliminate: no foreign body was swallowed; a perforated ulcer would give pneumoperitoneum, not pneumomediastinum; a ruptured bulla gives a pneumothorax in a COPD patient. So the answer is spontaneous oesophageal rupture. Ref: Bailey and Love, Short Practice of Surgery, 27th edition, 2018; SRB's Manual of Surgery, 4th edition.

Quick Tip: Vomiting then chest pain then air in the mediastinum points to which named syndrome?

188. Transplantation of tissue between two genetically identical individuals (identical twins) is termed:

- (A) Isograft
- (B) Allograft
- (C) Autograft
- (D) Xenograft

Correct Answer: (A) Isograft

SOLUTION:

Four-word ladder by genetic distance. Walk the donor source from nearest to farthest:

Autograft = self (one person, two sites).

Isograft = identical twin (genetically same, two people).

Allograft = same species, different genes (human to human).

Xenograft = different species (animal to human).

Apply it: identical twins are genetically the same yet are two separate individuals, which is exactly the isograft slot, one step beyond autograft. Because the genomes match, an isograft is not rejected, just like an autograft. The key trap

is allograft, but that needs genetic difference, which identical twins do not have. So the correct term is isograft. Ref: Bailey and Love, Short Practice of Surgery, 27th edition, 2018.

Quick Tip: Same species, same genes, but two separate people, what is that graft called?

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189. The Thoracscore is a widely used model to predict operative mortality in thoracic surgery patients. Which of the following is NOT a component of the Thoracscore?

Parameters of thoracscore for predicting in-hospital mortality for patients requiring thoracic surgery.	
Age (<55, 55-65, >65 years)	
Sex	
ASA classification (≤ 2 , ≥ 3)	
Performance status according to Zubrod scale (≤ 2 , ≥ 3)	
Severity of dyspnea according to Medical Research Council Scale (≤ 2 , ≥ 3)	
Priority of surgery (elective, urgent/emergency)	
Extent of resection (pneumonectomy, other)	
Diagnosis (malignant, benign)	
Comorbidity score	

ASA, American Society of Anesthesiologists.

- (A) ASA classification
- (B) Surgery priority (elective vs urgent)
- (C) Performance status
- (D) Expected complications after surgery

Correct Answer: (D) Expected complications after surgery

SOLUTION:

Input versus output logic. The Thoracscore is a preoperative calculator: it takes patient and operative facts and spits out a predicted mortality. So anything that is itself an outcome cannot also be an input.

Run the options: ASA class, WHO performance status and the priority of surgery

are all real preoperative variables that feed the score, alongside age, sex, dyspnoea, comorbidity count, surgical extent and procedure class. Expected postoperative complications, however, is a future outcome, not a measurable preoperative input, so it is NOT a component and is the correct choice here.

Key caveat: the crowd-recalled answer key names surgery priority, but priority is genuinely part of Thoracscore, so by established surgical reference the medically correct non-component is expected complications. Ref: Bailey and Love, Short Practice of Surgery, 27th edition, 2018.

Quick Tip: The model predicts mortality from preoperative variables, so an outcome it tries to predict cannot itself be an input.

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190. Regarding retrosternal goitre, which of the following statements is true?

- (A) All patients should undergo a CT scan of the chest
- (B) All patients require a median sternotomy for removal
- (C) It receives its blood supply from the thoracic (intrathoracic) vessels
- (D) The majority of retrosternal goitres should be operated immediately

Correct Answer: (A) All patients should undergo a CT scan of the chest

SOLUTION:

True/false each line

A) CT chest for all patients: TRUE. The gland sits in the mediastinum, so cross-sectional imaging is mandatory to plan the operation and assess tracheal compression.

B) Median sternotomy for all: FALSE. The great majority are removed through the neck; sternotomy is the exception, not the rule.

C) Blood supply from thoracic vessels: FALSE. Because the goitre descends from the neck, it keeps its cervical pedicle and is fed by the inferior thyroid arteries from the neck.

D) Operate immediately on most: FALSE. These are slow-growing and managed as elective surgery, not emergencies.

Only statement A survives, so the answer is that all patients should undergo a CT scan of the chest. Ref: Bailey and Love, Short Practice of Surgery, 27th edition, 2018; SRB's Manual of Surgery, 4th edition.

Quick Tip: One option about imaging is universally true, the other three overstate surgery or get the blood supply backwards.

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191. All of the following are part of the King's College Criteria used in acute fulminant (non-paracetamol) liver failure to decide for transplantation, EXCEPT:

- (A) Age
- (B) Jaundice for <7 days
- (C) Serum bilirubin >17.5 mg/dl
- (D) INR >3.5

Correct Answer: (B) Jaundice for <7 days

SOLUTION:

Quick mnemonic approach: the non-paracetamol King's College set asks for either a very high INR alone ($\text{INR} > 6.5$) or any THREE of five risk variables. Run the option list against those five variables. Age (extremes, <10 or >40 years) is a variable. $\text{INR} > 3.5$ is a variable. Bilirubin > 17.5 mg/dl is a variable. That leaves the jaundice item. The actual variable is duration of jaundice BEFORE encephalopathy being > 7 days, a marker of a slow, ominous course. The option printed here flips it to < 7 days, so it does not belong to the criteria and is the answer the stem is hunting for. Clinical pearl: longer jaundice-to-encephalopathy interval signals worse prognosis in non-paracetamol ALF, the opposite of the hyperacute paracetamol picture.

Quick Tip: Look closely at the jaundice cut-off: is the real criterion shorter or longer than a week?

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192. A patient is posted for elective inguinal hernia repair. He has a past history of myocardial infarction for which he underwent CABG. What is the appropriate preoperative cardiac assessment?

- (A) History + clinical examination + routine labs + angiography to look for stent patency
- (B) History + clinical examination + routine labs
- (C) History + clinical examination + routine labs + stress test
- (D) History + clinical examination + routine labs + V/Q scan

Correct Answer: (C) History + clinical examination + routine labs + stress test

SOLUTION:

Eliminate by reading each add-on against the patient's history. Option that adds stent-patency angiography assumes he had a coronary stent, but the stem clearly says CABG (grafts, not stents), so that option self-destructs. The option adding a V/Q scan is for suspected pulmonary embolism, an entirely different question, so drop it. 'History, exam and labs only' undersells a known coronary patient going for elective surgery, where you want to know how the heart behaves under demand. That leaves the stress test, which loads the heart and reveals inducible ischaemia and overall cardiac reserve, exactly what perioperative risk stratification needs in a post-CABG patient before an elective hernia repair.

Quick Tip: He had bypass surgery, not a stent, so which functional test tells you how his heart copes under load?

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193. A patient with a stab injury to the right lower chest presents with low BP and low pulse rate. He improves with IV fluids and, after resuscitation in the trauma centre, his BP becomes normal. Chest X-ray shows clear lung fields. What is the next step?

- (A) eFAST
- (B) Keep an immediate chest tube
- (C) CECT abdomen
- (D) CECT chest

Correct Answer: (A) eFAST

SOLUTION:

Clinical-flow reasoning: a right lower chest stab can bleed into the chest, the pericardium, or the abdomen, because the diaphragm rises into the lower thorax. The patient transiently responded and is now stable, so you have a window to investigate rather than reflexively drain. Skip the chest tube, the X-ray shows clear lung fields with no tension or large collection. Between bedside ultrasound and CT, the principle in trauma is the quickest sensitive screen first. eFAST sweeps the pericardium, both pleural recesses and the peritoneal spaces at the bedside without moving the patient, so it is the immediate next step. A positive or doubtful eFAST then earns a contrast CT for detail. Pearl: investigations in torso trauma are driven by haemodynamic status, stable lets you image, unstable sends you to the operating room.

Quick Tip: After resuscitation, what bedside scan screens chest, pericardium and abdomen for blood in seconds?

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194. In a patient operated for parathyroid adenoma, how do we confirm intraoperatively that the correct (culprit) gland has been removed?

- (A) 50% reduction in PTH after 10 minutes
- (B) 50% reduction in PTH after 5 minutes
- (C) 25% reduction in PTH after 10 minutes
- (D) 25% reduction in PTH after 5 minutes

Correct Answer: (A) 50% reduction in PTH after 10 minutes

SOLUTION:

Remember it as the 'Miami 50 at 10' rule. PTH clears from blood in minutes, so once the surgeon plucks out the adenoma the hormone level should plummet. The Miami criterion declares cure when IOPTH falls by more than 50% from the highest baseline value, checked 10 minutes after excision. Map this onto the options: a 25% drop is far too small a fall and could be reassured by a still-active second gland, so both 25% choices are out. Between the two 50% options, the classic Miami end point is sampled at 10 minutes, not 5. Hence, a 50% reduction in PTH at 10 minutes is the confirmation of a successful, correctly targeted parathyroidectomy.

Quick Tip: Recall the Miami criterion: how much PTH must fall, and at which minute mark?

195. Which flap, with its correctly matched vascular pedicle, is commonly used in breast reconstruction?

- (A) DIEP flap based on the deep inferior epigastric vessels
- (B) TRAM flap based on the superior gluteal vessels
- (C) Gluteal flap based on the thoracodorsal artery
- (D) Latissimus dorsi flap based on the inferior epigastric artery

Correct Answer: (A) DIEP flap based on the deep inferior epigastric vessels

SOLUTION:

Treat this as a flap-to-pedicle matching drill. The latissimus dorsi flap rides on the thoracodorsal artery (branch of the subscapular), so the option pairing it with the inferior epigastric artery is false. The gluteal flap takes its blood from the gluteal vessels, so pairing it with the thoracodorsal artery is false. The TRAM flap lives off the superior or inferior epigastric vessels, so the superior gluteal pairing is false. Only the DIEP flap, a true mainstay of autologous breast reconstruction, is correctly tied to the deep inferior epigastric vessels, which is literally what the

acronym (Deep Inferior Epigastric Perforator) spells out. So the right, correctly matched answer is the DIEP flap.

Quick Tip: The flap whose name literally tells you its vessel is the only correctly matched pair.

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196. A 30-year-old man presents with cramping gluteal (buttock) pain after walking 500 m. Which vascular segment is involved?

- (A) Arterial disease with aortoiliac involvement
- (B) Arterial disease with femoral artery involvement
- (C) Femoral venous insufficiency
- (D) None

Correct Answer: (A) Arterial disease with aortoiliac involvement

SOLUTION:

Use the 'one level below' rule of claudication. Exertional cramp that eases on rest is arterial claudication, so must discard the venous option, which produces heaviness and swelling rather than a walking-limited cramp. Now localise: the symptomatic muscle group sits one segment distal to the blocked artery. Calf pain implies femoropopliteal (superficial femoral) disease, the most common site. Thigh or buttock pain implies the inflow above it, the aortoiliac segment. This man's pain is in the buttock after a fixed walking distance, so the lesion is at the aortoiliac level. As a bonus association, aortoiliac occlusion plus impotence in a male defines Leriche syndrome. Therefore the involved vessel territory is aortoiliac arterial disease.

Quick Tip: Claudication is felt one level below the block, so buttock pain points where?

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197. Which is the most common functioning pancreatic endocrine neoplasm?

- (A) Insulinoma
- (B) Gastrinoma
- (C) VIPoma
- (D) Glucagonoma

Correct Answer: (A) Insulinoma

SOLUTION:

Anchor on the clinical syndrome and frequency. Of the functioning islet-cell tumours, the beta-cell insulinoma dominates, making up roughly **70 to 80%**, with gastrinoma a distant second at about **20 to 25%** and VIPoma and glucagonoma being rare. Insulinoma announces itself with Whipple's triad: neuroglycopenic symptoms, documented low plasma glucose, and prompt relief after glucose, usually from a small, benign, solitary pancreatic lesion. Gastrinoma instead causes refractory peptic ulcers (Zollinger-Ellison), VIPoma gives the WDHA watery diarrhoea syndrome, and glucagonoma produces necrolytic migratory erythema with diabetes, all far less common. So the single most common functioning pancreatic endocrine neoplasm is the insulinoma.

Quick Tip: Think of the beta-cell tumour that causes Whipple's triad.

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198. An elderly man has a long-standing mole over the face that is increasing in size and showing irregular borders. What is the most likely diagnosis?

- (A) Superficial spreading melanoma
- (B) Lentigo maligna melanoma
- (C) Acral melanoma
- (D) Nodular melanoma

Correct Answer: (A) Superficial spreading melanoma

SOLUTION:

Sort the four melanoma subtypes by their signature stories. Acral lentiginous melanoma sits on palms and soles, so it is out for a facial lesion. Nodular melanoma is a fast-growing blue-black papule with no long radial-growth phase, which clashes with a long-standing mole, so drop it. That leaves superficial spreading versus lentigo maligna melanoma. Superficial spreading melanoma is the commonest type (around 70%) and the prototype of a pre-existing naevus that creeps along for years and then accelerates, developing the irregular, asymmetric border the stem describes. Lentigo maligna melanoma is tempting because of the elderly, sun-exposed face, but it classically begins as a flat variegated macule on de novo sun-damaged skin rather than as a changing mole. Given the emphasis on a transforming long-standing naevus with irregular borders, the keyed answer is superficial spreading melanoma.

Quick Tip: A long-standing mole that changes slowly then grows, with irregular borders, points to the commonest melanoma subtype.

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199. Which parameter most conclusively rules out malnutrition?

- (A) Edema
- (B) Lean body mass
- (C) Skinfold thickness
- (D) Normal ECF volume

Correct Answer: (B) Lean body mass

SOLUTION:

Pick the marker that is hardest to fake. Oedema and a normal ECF volume are fluid-dependent: kwashiorkor produces oedema in a starving child, while a 'normal' ECF tells you about water balance, not nutrient stores, so neither convincingly excludes malnutrition. Skinfold thickness gauges only subcutaneous fat and can be distorted by oedema or be deceptively normal early on. Lean body

mass, the muscle and organ tissue compartment, is the deeper reserve the body sacrifices in protein-energy malnutrition only after fat is exhausted. Hence intact lean body mass signals that nutritional reserves are genuinely preserved and is the parameter that most conclusively rules out malnutrition.

Quick Tip: When fat runs out, PEM eats into which tissue, so its preservation reassures you most?

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200. A 2-year-old child weighing 6.7 kg has Hb 6 g/dl, total protein 3 g/dl, low albumin, and a distended abdomen but no proteinuria. What is the diagnosis?



- (A) Marasmus
- (B) Kwashiorkor
- (C) Indian childhood cirrhosis
- (D) None

Correct Answer: (B) Kwashiorkor

SOLUTION:

Read the labs as a story of protein starvation, not protein loss. Total protein and albumin are very low, yet there is NO proteinuria, so the kidney is not leaking protein and nephrotic syndrome is off the table. Low intake plus low albumin drops oncotic pressure, fluid leaks out, and the toddler develops the distended, oedematous belly described, the signature of kwashiorkor, an oedematous severe acute malnutrition. Contrast with marasmus, which is non-oedematous wasting with a 'skin and bones' look and comparatively spared albumin, so it does not fit a swollen abdomen with hypoalbuminaemia. Indian childhood cirrhosis is a

progressive liver disease with marked hepatomegaly, not this protein-deficiency oedema syndrome. Therefore the child has kwashiorkor.

Quick Tip: Low albumin plus a swollen belly but no urine protein in a toddler, edematous malnutrition.

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201. In respiratory distress syndrome (RDS) in a child, which cells are found to be defective?

- (A) Type 1 pneumocytes
- (B) Type 2 pneumocytes
- (C) Bronchial epithelium
- (D) None

Correct Answer: (B) Type 2 pneumocytes

SOLUTION:

Clinical pearl: Surfactant equals Type II pneumocytes. Memorise that the alveolus has two cell types: Type I are flat lining cells for gas exchange, Type II are the granular secretory cells that pump out surfactant.

Why Type 2 is correct: Surfactant is mostly dipalmitoylphosphatidylcholine (DPPC / lecithin). It acts like a detergent and keeps alveoli open by reducing surface tension. Premature or sick infants have too few mature Type II cells, surfactant runs short, alveoli collapse, and RDS results.

Eliminating the rest: Type I cells only form the wall and do not secrete surfactant, so a Type I defect would not cause surfactant deficiency. Bronchial epithelium lies in the conducting airways, well above the alveoli, and plays no role in surfactant production. So option d is wrong because there clearly is a defective cell type. The answer is Type 2 pneumocytes.

Quick Tip: Think about which alveolar cell makes surfactant (DPPC).

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202. What is the cause of the greenish-black colour of stool (meconium) in a neonate?

- (A) Meconium
- (B) Biliverdin
- (C) Bilirubin
- (D) Urochrome

Correct Answer: (B) Biliverdin

SOLUTION:

Option-elimination approach:

Option a (meconium) just names the stool; it cannot be the cause of its own colour, so reject it. Option c (bilirubin) is yellow-orange and is responsible for jaundice, not a green hue. Option d (urochrome) is the pigment that colours urine yellow and has nothing to do with stool. That leaves biliverdin.

Why biliverdin: Biliverdin is the green intermediate formed when haem is broken down, sitting one step before bilirubin. Meconium contains bile that is rich in this green pigment, which is why a newborn's first stools look dark greenish-black. The colour shifts to yellow-brown later once milk feeds and normal gut bacteria take over. So the correct answer is biliverdin.

Quick Tip: Which bile pigment is green, not yellow?

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203. A term baby on breastfeeding has a serum bilirubin of 14 mg/dL. Which of the following is true?

- (A) Exchange transfusion
- (B) Continue to breastfeed
- (C) Phototherapy
- (D) None

Correct Answer: (B) Continue to breastfeed

SOLUTION:

Threshold-based reasoning: For a healthy term newborn, phototherapy is usually started when total serum bilirubin is roughly 15 mg/dL or higher (read off the age-in-hours nomogram), and exchange transfusion only at much higher, dangerous levels. Here the value is 14 mg/dL.

Working through the options: Exchange transfusion (option a) is a last-resort move for severe hyperbilirubinemia threatening kernicterus, nowhere near 14 mg/dL. Phototherapy (option c) has not yet crossed its threshold in a well term baby. Stopping feeds is not advised because breast milk supply must be maintained and good feeding actually helps clear bilirubin.

Bottom line: Keep the baby on the breast and increase feed frequency to more than 10 times a day. So continue to breastfeed is the correct answer.

Quick Tip: At 14 mg/dL in a well term baby, is any aggressive therapy due yet?

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204. What is the most common karyotype seen in true hermaphroditism (ovotesticular disorder of sex development)?

- (A) 45 XO with streak gonads
- (B) 46 XX with ovotestis
- (C) 47 XY +9
- (D) 47 XX

Correct Answer: (B) 46 XX with ovotestis

SOLUTION:

Mnemonic-led answer: True hermaphrodite carries the ovotestis, the gonad that holds both ovarian and testicular tissue. Tie that picture to its common sex chromosome pattern, 46 XX, which appears in roughly 9 out of 10 cases.

Ruling out the distractors: 45 XO with streak gonads is the signature of Turner syndrome, a girl with short stature and gonadal dysgenesis, not mixed gonadal tissue. 47 XY +9 is a trisomy aneuploidy unrelated to sex reversal. 47 XX is not a recognised karyotype for this disorder.

So: the option that pairs the ovotestis with 46 XX is the correct one, matching the 90% figure quoted in the literature.

Quick Tip: Recall the gonad named ovotestis and its usual chromosome count.

205. An APGAR score of 3 at 1 minute indicates that the newborn is:

- (A) Mildly depressed
- (B) Further resuscitation not needed
- (C) Severely depressed
- (D) Normal

Correct Answer: (C) Severely depressed

SOLUTION:

Score band recall: Split the APGAR scale into three quick bands. 7 and above equals normal, 4 to 6 equals moderately depressed, 0 to 3 equals severely depressed and a cue to start active resuscitation.

Apply it: A baby scoring 3 at one minute sits in the lowest band, so the infant is severely depressed and needs immediate help, breathing support and possibly more.

Checking the other options: Mildly depressed and normal both describe higher scores, so they are out. Saying further resuscitation is not needed contradicts a score of 3, which is exactly the situation where resuscitation is most needed. Hence the right answer is severely depressed.

Quick Tip: Which APGAR band is 0 to 3 graded as?

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206. A woman develops pain and a crawling sensation in her legs at night, with a clinical history of restless leg syndrome. What is the drug of choice?

- (A) Pramipexole
- (B) Gabapentin
- (C) Vitamin B12
- (D) Iron tablets

Correct Answer: (A) Pramipexole

SOLUTION:

Pattern-recognition: A nocturnal creepy-crawly urge to move the legs that eases with movement screams restless leg syndrome. For drug of choice, link RLS to dopamine agonists.

Why pramipexole: Pramipexole and ropinirole are the FDA-approved dopamine agonists that form first-line therapy, since RLS is tied to dopaminergic dysfunction in the brain. Pramipexole is the only dopamine agonist in this list, which makes it the answer.

Filtering the rest: Gabapentin is a useful alternative, especially with painful or neuropathy-linked RLS, but it is not the prime choice. Iron tablets matter only if ferritin is low (correct the iron, then symptoms improve). Vitamin B12 has no defined role in routine RLS. So pramipexole is the best single answer.

Quick Tip: Which FDA-approved dopamine agonist tops the RLS list?

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207. A patient has arthritis involving the 1st metacarpophalangeal joint, the PIP and DIP joints of the hands, while sparing the wrist and ankle. What is the most likely diagnosis?

- (A) Osteoarthritis
- (B) Rheumatoid arthritis
- (C) Psoriatic arthritis
- (D) Gout

Correct Answer: (A) Osteoarthritis

SOLUTION:

Joint-map approach: The quickest way to crack hand-arthritis questions is to ask which joints are hit and which are spared.

Reading this case: DIP and PIP joints plus the thumb base are involved and the wrist is spared. That distribution, with Heberden nodes at the DIP and Bouchard nodes at the PIP, is textbook osteoarthritis, since the DIP is the commonest OA site in the whole body.

Excluding the rest. Rheumatoid arthritis does the reverse, it loves the MCP, PIP and wrist but classically spares the DIP, so wrist sparing argues against it. Psoriatic arthritis can involve DIP joints but is given away by nail pitting, skin plaques and dactylitis, none mentioned here. Gout favours the big-toe MTP joint. So osteoarthritis is the best fit.

Quick Tip: Which arthritis loves the DIP joints and spares the wrist?

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208. A 12-year-old child is admitted to the ICU with blunt trauma and a femur fracture. PaO₂ stays at 60 mmHg despite 100% oxygen via a non-rebreather mask, the chest X-ray shows clear lung fields, but the patient remains confused. What is the most likely diagnosis?

- (A) Pulmonary contusion
- (B) Fat embolism syndrome
- (C) Hypovolaemic shock
- (D) Pulmonary embolism

Correct Answer: (B) Fat embolism syndrome

SOLUTION:

Triad trigger: Whenever a long-bone fracture is followed by hypoxia, an altered mental state and petechiae, think fat embolism syndrome. Two of the three (lung and brain) are spelled out here.

Why fat embolism: Marrow fat enters the circulation through torn venous channels at the fracture site, plugs pulmonary and cerebral capillaries, and triggers an inflammatory cascade. That explains hypoxia unresponsive to high-flow oxygen and the confusion, classically a day or two after the injury.

Knocking out the others: A pulmonary contusion would light up the chest X-ray, but here the lung fields are clear. Hypovolaemic shock would show low blood pressure and tachycardia from blood loss, not pure refractory hypoxia with confusion. Thrombotic pulmonary embolism is uncommon in a child immediately after trauma and does not tie back to marrow fat. So the answer is fat embolism syndrome.

Quick Tip: Long-bone fracture, hypoxia and confusion with a clear CXR points where?

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209. A 4-year-old child, while playing, was suddenly swung around by the elbow from the maid's hand and is now crying continuously, not allowing anyone to touch the elbow. The child keeps the elbow extended. What is the most likely diagnosis?

- (A) Radial head fracture
- (B) Pulled elbow
- (C) Supracondylar fracture
- (D) Elbow dislocation

Correct Answer: (B) Pulled elbow

SOLUTION:

Mechanism first: Young child plus a sudden longitudinal pull or swing on the arm equals nursemaid's elbow (pulled elbow), a radial head subluxation under the annular ligament. The history alone almost makes the diagnosis.

Classic picture: The toddler keeps the arm quiet by the side, refuses to use it, and cries if anyone touches it, but crucially there is no swelling, bruising or bony deformity. That gentle presentation separates it from a fracture.

Sorting the distractors: A supracondylar fracture and an elbow dislocation come from a fall on an outstretched hand and bring obvious swelling or deformity. A radial head fracture is rare in a 4-year-old and again needs a fall, not a tug. So with this pull mechanism and no deformity, the diagnosis is pulled elbow.

Quick Tip: A sudden pull on a toddler's extended arm with no swelling suggests what?

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210. A sexually active female presents with a profuse, frothy, foul-smelling discharge and intense itching. Examination reveals a strawberry cervix. What is the diagnosis?

- (A) *Trichomonas vaginalis*
- (B) Bacterial vaginosis
- (C) Candidiasis
- (D) None

Correct Answer: (A) *Trichomonas vaginalis*

SOLUTION:

Buzzword spotting: Strawberry cervix plus a frothy, foul greenish discharge is a near-pathognomonic combination for *Trichomonas vaginalis*. The strawberry look comes from punctate haemorrhages on the cervix (colpitis macularis).

Why *Trichomonas*: This motile, flagellated protozoan is sexually transmitted, fits the sexually active history, and causes intense vulvovaginal itching with the typical frothy yellow-green discharge. It is diagnosed on a saline wet mount showing motile organisms and treated with metronidazole for the patient and partner.

Eliminating the rest: Bacterial vaginosis yields a thin grey discharge with a fishy odour and a positive whiff test, but no froth and no strawberry cervix. Candidiasis gives a thick, white, cottage-cheese discharge with itching but no frothy discharge and no strawberry cervix. Hence the diagnosis is *Trichomonas vaginalis*.

Quick Tip: Which organism gives a frothy discharge and a strawberry cervix?

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211. A 23-year-old woman presents to the gynaecology OPD with heavy menstrual bleeding for 6 months. Clinical examination shows no abnormality and ultrasound is also normal. She was tried on non-hormonal treatment, which failed. What is the next step in management?

- (A) Hormonal therapy
- (B) Endometrial sampling
- (C) Hysterectomy
- (D) Endometrial ablation

Correct Answer: (B) Endometrial sampling

SOLUTION:

Clinical pearl: in heavy menstrual bleeding, never give blood hormones after non-hormonal treatment fails. Sample first.

Why option 2 wins: with a normal exam and a normal scan, the only thing left to clarify the cause is the endometrium itself. Endometrial sampling shows hyperplasia, polyp, or carcinoma and confirms the hormonal pattern, letting you treat correctly afterwards.

Eliminating the rest: hormonal therapy (option 1) is premature because it distorts the endometrium and ruins the histology you still need. Hysterectomy (option 3) is irreversible and unjustified without a diagnosis. Endometrial ablation (option 4) is also premature and is contraindicated until malignancy is excluded by biopsy.

Bottom line: tissue before treatment. Ref: Dutta Gynaecology, 6th ed.

Quick Tip: Get a tissue diagnosis before you start any hormones.

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212. In a postmenopausal woman, the first-line drug for osteoporosis is:

- (A) OCP
- (B) Bisphosphonates
- (C) Raloxifene
- (D) Terontium

Correct Answer: (B) Bisphosphonates

SOLUTION:

Mnemonic angle: bone needs the osteoclast switched off, and bisphosphonates are the anti-resorptive that does exactly that, so they head the list for postmenopausal osteoporosis.

Option elimination: OCP (option 1) is contraception, not bone therapy, so out. Raloxifene (option 3) is a SERM that does protect bone, but it is hormonal and sits behind bisphosphonates as second-line. Strontium (option 4) is a later add-on, not first choice.

Why bisphosphonates: drugs like alendronate and ibandronate bind hydroxyapatite, are taken up by osteoclasts, and trigger their apoptosis, cutting resorption. They reduce vertebral and hip fractures, which is why guidelines name them first-line, with extra roles in Paget disease and bone metastases.

Answer: bisphosphonates.

Quick Tip: The drug class that blocks osteoclasts is the standard first choice.

213. Prolactin is secreted maximally at:

- (A) 24 hours after delivery
- (B) REM sleep
- (C) 2 hours of running
- (D) 24 hours after ovulation

Correct Answer: (A) 24 hours after delivery

SOLUTION:

Clinical logic: prolactin's whole purpose is lactation, so its peak lines up with the start of milk production, that is, the first 24 hours after delivery.

Why the others fail: the sleep surge in prolactin is tied to NREM (slow-wave) sleep, not REM, so option 2 is a classic trap. Exercise such as running does bump prolactin, but only modestly, nowhere near the postpartum peak, so option 3 is out. By 24 hours after ovulation, rising estrogen feeds back negatively and pushes prolactin down, ruling out option 4.

The mechanism: during pregnancy high estrogen and progesterone keep the lactotrophs busy but suppressed; at delivery these steroids crash, disinhibiting the lactotrophs and producing a sharp prolactin rise to drive milk synthesis. So the maximum is 24 hours after delivery.

Quick Tip: Think of when the breast needs the most prolactin to start milk.

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214. All of the following are used for postcoital (emergency) contraception EXCEPT:

- (A) CuT (copper IUD)
- (B) RU 486 (mifepristone)
- (C) High-dose estrogen
- (D) Danazol

Correct Answer: (D) Danazol

SOLUTION:

Option-elimination approach: the question wants the odd one out among emergency contraceptives.

Copper IUD (option 1) is in fact the gold standard for emergency contraception when placed within 5 days, with the lowest failure rate, so it stays. Mifepristone or RU 486 (option 2) is an antiprogesterin proven as a postcoital agent, so it stays. High-dose estrogen (option 3), like the older Yuzpe regimen, is a valid if now less-used method, so it stays.

That leaves Danazol (option 4). Danazol is a weak androgen and gonadotropin suppressant used to treat endometriosis, menorrhagia, and fibrocystic breast disease. It has no role in preventing pregnancy after intercourse.

Hence the answer is Danazol. Ref: Dutta Gynaecology, 6th ed.

Quick Tip: One of these is an androgen for endometriosis, not a morning-after option.

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215. A woman delivered at home with a complete perineal tear and presents to the hospital 2 weeks later. What management will you prefer?

- (A) Immediate repair
- (B) Repair 3 weeks post-delivery
- (C) Repair 6 weeks post-delivery
- (D) Repair 3 months post-delivery

Correct Answer: (D) Repair 3 months post-delivery

SOLUTION:

Timing rule: a complete perineal tear is repaired straight away only if it is fresh, within 24 hours of delivery. After that window the local tissue turns oedematous and infected, and any immediate stitch will simply give way.

This patient arrives at 2 weeks, well past 24 hours, so options 1, 2, and 3 (immediate, 3-week, and 6-week repair) are all too early because the area is still not surgically clean. You first control infection with antibiotics, let the wound granulate, and wait for the tissues to become supple and healthy again.

That maturation takes roughly 3 months, which is why definitive delayed repair of a neglected complete tear is scheduled at 3 months. Hence option 4. Ref: Dutta Obstetrics.

Quick Tip: Past 24 hours the tissue is infected, so do not repair now; wait for healthy tissue.

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216. In modern obstetrics, for a sensitized Rh-negative mother, what is preferred to evaluate the fetal condition?

- (A) MCA Doppler peak systolic velocity
- (B) Fetal blood sampling
- (C) Amniocentesis
- (D) Biophysical profile

Correct Answer: (A) MCA Doppler peak systolic velocity

SOLUTION:

Concept first: a sensitized Rh-negative pregnancy is at risk of fetal haemolytic anaemia, and the modern way to track that anaemia without entering the uterus is MCA-PSV Doppler.

The physics: anaemic fetal blood has low viscosity and a high-output state, so it streams faster through the middle cerebral artery. A peak systolic velocity above 1.5 MoM for the gestational age flags moderate to severe anaemia and signals the need for cordocentesis and intrauterine transfusion.

Why not the rest: fetal blood sampling (option 2) and amniocentesis (option 3) are invasive and carry procedure risk, so they are no longer the screening tool of choice and have largely been replaced by serial MCA Doppler. Biophysical profile (option 4) grades overall fetal wellbeing and does not specifically detect anaemia. So the preferred evaluation is MCA Doppler PSV. Ref: Dutta Obstetrics.

Quick Tip: Anaemic blood is thinner and flows faster: which vessel velocity captures that non-invasively?

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217. A 7-week pregnant woman has a single accidental exposure to a diagnostic x-ray. Which of the following should be done?

- (A) Continue pregnancy
- (B) Terminate pregnancy
- (C) Chromosome analysis
- (D) Pre-invasive diagnostic testing

Correct Answer: (A) Continue pregnancy

SOLUTION:

Dose thinking: the harm from radiation in pregnancy is dose dependent, and a single diagnostic x-ray gives only a few millirad, nowhere near a teratogenic level.

The thresholds to remember: worry and counselling about termination begin only above 5 rad in the first trimester, or above 15 rad in the second and third trimesters. One ordinary radiograph sits far below 5 rad.

Why the other options are wrong: terminating the pregnancy (option 2) over a trivial dose is unjustified. Chromosome analysis (option 3) and pre-invasive diagnostic testing (option 4) target genetic or structural concerns and have no role here because a low-dose x-ray does not create such an indication.

So you reassure the patient and continue the pregnancy. Ref: Williams Obstetrics; Dutta Obstetrics.

Quick Tip: One diagnostic film is far below the first-trimester dose that worries us.

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218. A 32-year-old woman complains of amenorrhea since the delivery of a baby 15 months earlier, despite the fact that she did not breastfeed. The delivery was complicated by excessive haemorrhage requiring transfusion of 2.5 litres of blood. She has also been fatigued and has gained 4.5 kg since the baby was born. Laboratory data: serum LH < 1 IU/L (normal 4-24), serum estradiol 5 pg/mL (normal 20-100), serum TSH 0.1 mU/L (normal 0.5-5), serum GH 3 ng/mL (normal < 5), serum ACTH 28 pg/mL (normal 10-50), serum prolactin 2 ng/mL (low). Injection of 500 microgram of TRH failed to produce the expected rise in both serum TSH and prolactin. Which diagnosis most likely explains these findings?

- (A) Hashimoto's thyroiditis
- (B) Isolated gonadotropin deficiency
- (C) Primary amenorrhea
- (D) Sheehan's syndrome

Correct Answer: (D) Sheehan's syndrome

SOLUTION:

Pattern recognition: a young mother with a history of massive postpartum haemorrhage who then cannot lactate, stops menstruating, gains weight, and feels tired is the textbook picture of Sheehan syndrome, that is, ischaemic

necrosis of the anterior pituitary.

Reading the labs as a panel: LH is low and estradiol is low, so the gonadal axis is down (amenorrhea). TSH is low yet there is hypothyroidism, and TRH fails to push TSH up, so the thyroid axis fails at the pituitary level, that is secondary hypothyroidism. Prolactin is low and does not rise to TRH, matching the failure to breastfeed. ACTH is normal, telling you the corticotrophs were partly spared, a common feature.

Eliminating distractors: Hashimoto thyroiditis (option 1) raises TSH, the opposite of this case. Isolated gonadotropin deficiency (option 2) would touch only LH and FSH and cannot account for the low TSH, low prolactin, and flat TRH test.

Primary amenorrhea (option 3) is impossible in a woman who has already given birth.

Several pituitary axes are knocked out together after a haemorrhagic delivery, so the answer is Sheehan syndrome. Ref: Williams Obstetrics.

Quick Tip: Heavy postpartum bleeding plus failure to lactate plus several low pituitary hormones points one way.

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219. Completion of meiosis I (the first meiotic division of the germ cell) occurs in:

- (A) Adult ovary
- (B) Prepubertal testis
- (C) At birth in the ovary
- (D) All of the above

Correct Answer: (A) Adult ovary

SOLUTION:

Timeline approach: the oocyte starts meiosis I before birth but freezes in prophase, and only finishes that first division around ovulation in the reproductive years, so the right site is the adult ovary.

Why not at birth (option 3): at delivery the primary oocyte is still locked in prophase I, so meiosis I is not complete at birth.

Why not prepubertal testis (option 2): in males, the meiotic divisions of spermatogenesis switch on only at puberty, so a prepubertal testis has no completed meiosis to offer.

Because options 2 and 3 are both wrong, the all-of-the-above option (option 4) also fails.

Supporting figures: the germ-cell pool peaks near 6-7 million at about 20 weeks of intrauterine life and drops to roughly 2 million primordial follicles by birth, all still arrested. Hence the completion of meiosis I happens in the adult ovary.

Quick Tip: The oocyte sits arrested for years and only finishes its first division around ovulation.

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220. A woman with DCDA twins at 38 weeks, with the first twin in breech presentation, has BP 140/96 mmHg and 1+ proteinuria. What is the management?

- (A) Immediate LSCS
- (B) Induction at 40 weeks
- (C) Immediate induction and vaginal delivery
- (D) Induction if signs of preeclampsia develop

Correct Answer: (A) Immediate LSCS

SOLUTION:

Two decisions stacked together: when to deliver, and by what route.

When: BP 140/96 with 1+ proteinuria is preeclampsia, and twin pregnancies are already delivered around 37-38 weeks. At 38 weeks with preeclampsia, continuing to 40 weeks (option 2) or merely watching for preeclampsia to appear (option 4) is unsafe, because it is already here and the gestational target is reached. So delivery now is mandatory.

How: the leading first twin is breech. A non-cephalic presenting twin is a recognised indication for caesarean section, so attempting immediate vaginal delivery (option 3) is hazardous due to the risk of interlocking and a difficult breech.

Combine the two and the safe plan is immediate caesarean section. Hence option 1, immediate LSCS. Ref: Dutta Obstetrics.

Quick Tip: Delivery is due now, and a breech leading twin means abdominal route.

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221. A 36-week pregnant lady has a history of one previous twin delivery. What is her obstetric (gravida-para) score?

- (A) G2P1
- (B) G2P2
- (C) G3P2
- (D) G3P3

Correct Answer: (A) G2P1

SOLUTION:

Clinical pearl: count pregnancies, not babies. The trap in this question is multiple gestation.

Gravida (G) = total number of times a woman has been pregnant. One previous twin pregnancy plus the present one gives $G = 2$.

Para (P) = number of deliveries past 20 weeks of gestation. The previous twin birth is a single delivery event, so $P = 1$. Twins do NOT make it P2.

Quick elimination: any option with G3 (options c and d) is wrong because she has only ever been pregnant twice. Between G2P1 and G2P2, the P2 choice wrongly counts each twin as a separate birth, so it is out. That leaves G2P1.

Mnemonic: 'one belly, one bump on the chart' - a multiple pregnancy advances the score by exactly $G+1$ and $P+1$.

Quick Tip: A twin pregnancy is counted as one gravida and one para, not two.

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222. Misoprostol, used in the induction of labour, is an analogue of which type of prostaglandin?

- (A) PG E1
- (B) PG E2
- (C) PG I2
- (D) PG F2 alpha

Correct Answer: (A) PG E1

SOLUTION:

Drug-to-prostaglandin map (memorise this):

Misoprostol = PGE1, dinoprostone = PGE2, carboprost (15-methyl) = PGF2 alpha, epoprostenol = PGI2.

The question asks specifically about misoprostol so the match is PGE1.

Elimination route: PGI2 is prostacyclin, a pulmonary vasodilator with no oxytocic role, so option c is out. PGF2 alpha analogues are reserved for PPH because they raise smooth-muscle tone strongly not the first choice for ripening, and that is carboprost not misoprostol, so option d is out. PGE2 is dinoprostone, a different agent, so option b is out. The only correct stem-drug pairing left is PGE1.

Clinical use of misoprostol: cervical ripening, labour induction, medical termination of pregnancy and management of atonic PPH.

Quick Tip: It is the methyl ester analogue, not dinoprostone or carboprost.

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223. In early pregnancy, the clinical sign in which the cervix and the body of the bulky uterus become separated because of a softened isthmus at 6 to 8 weeks of gestation is:

- (A) Goodell's sign
- (B) Chadwick's sign
- (C) Piskacek's sign
- (D) Hegar's sign

Correct Answer: (D) Hegar's sign

SOLUTION:

Sign-by-sign elimination:

Goodell's = cervix feels soft (like lips instead of nose tip): describes texture only, not separation, so out.

Chadwick's = bluish-violet colour of vagina and cervix from venous congestion: a colour sign, not a consistency one, so out.

Piskacek's = lop-sided uterine enlargement at the implantation site: asymmetry, not isthmic softening, so out.

Hegar's = the soft, compressible isthmus at 6 to 8 weeks lets the bimanual fingers almost appose, making cervix and body feel disconnected. This is exactly what the stem describes.

Memory aid: 'Hegar = Hinge.' The soft isthmus acts like a hinge between the firm cervix below and the soft fundus above. That image points straight to option d.

Quick Tip: The key word is the softened isthmus felt between cervix and fundus.

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224. A 13-year-old girl visits the gynaecology OPD with a complaint of not attaining menarche. Her karyotype is 46,XX. On examination, clitoromegaly is seen. Which enzyme is most likely deficient in this condition?

- (A) 21 alpha-hydroxylase
- (B) 11 beta-hydroxylase
- (C) 17 alpha-hydroxylase
- (D) 3 beta-hydroxysteroid dehydrogenase

Correct Answer: (A) 21 alpha-hydroxylase

SOLUTION:

Pattern recognition: 46,XX + clitoromegaly + primary amenorrhea = a virilised genetic female, the classic picture of congenital adrenal hyperplasia.

Now sort the four enzymes by what they do to androgens and BP:

21-hydroxylase deficiency: virilisation + salt wasting, BP low or normal. The commonest CAH (over 90 percent). Fits the clitoromegaly here.

11 beta-hydroxylase deficiency: virilisation + hypertension. Possible but rare; the stem mentions no BP clue, and frequency favours 21-hydroxylase.

17 alpha-hydroxylase deficiency: under-virilisation + hypertension. Would give absent secondary sexual characters, NOT clitoromegaly, so it is the opposite of this case.

3 beta-HSD deficiency: only mild ambiguity, uncommon.

Highest yield and best fit: 21 alpha-hydroxylase. Pick option a.

Quick Tip: Think of the commonest cause of CAH, the one that virilises and salt-wastes.

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225. A mother brings her 16-year-old daughter to the gynaecology OPD with a complaint of not attaining menarche. There is a history of cyclical lower abdominal pain. On examination there is a midline abdominal swelling, and per-rectal examination reveals a bulging mass in the vagina. What is the most common cause?

- (A) Imperforate hymen
- (B) Transverse vaginal septum
- (C) Vaginal agenesis
- (D) MRKH syndrome

Correct Answer: (A) Imperforate hymen

SOLUTION:

Clinical reasoning: the triad of primary amenorrhea + cyclical pain + bulging vaginal mass = obstructed menstrual outflow with hematocolpos.

The question asks for the MOST COMMON cause, so frequency decides:

Imperforate hymen is the commonest congenital lower-genital obstruction. The retained menses bulge the hymen into a tense bluish membrane and form a palpable midline mass. Best fit and commonest, so it wins.

Transverse vaginal septum gives a near-identical story but is rare; not the most common.

Vaginal agenesis and MRKH: here the lower tract is absent, and in MRKH the uterus is rudimentary, so there is typically no functional menstrual blood to accumulate behind a membrane in this classic bulging-introitus way.

Spot diagnosis cue: 'tense bluish membrane at the introitus' is taught verbatim for imperforate hymen. Choose option a.

Quick Tip: Cyclical pain plus a bulging bluish membrane at the introitus is the giveaway.

226. Which of the following is NOT an estrogen-dependent pubertal change?

- (A) Hair growth
- (B) Menstruation
- (C) Vaginal cornification
- (D) Cervical mucus

Correct Answer: (A) Hair growth

SOLUTION:

Hormone-by-change sorting:

Pubic and axillary hair growth (pubarche): ANDROGEN-driven (adrenal DHEA and testes/terone), in both sexes. NOT estrogen.

Menstruation: estrogen builds the proliferative endometrium that later sheds; estrogen-dependent.

Vaginal cornification: estrogen matures and cornifies the vaginal squamous epithelium (basis of the maturation index); estrogen-dependent.

Cervical mucus: estrogen produces the abundant, thin, ferning mid-cycle mucus; estrogen-dependent.

So three options are estrogen effects and only hair growth is androgen-mediated, making hair growth the correct 'NOT estrogen-dependent' answer.

Important note on the key: the crowd-recalled key marks menstruation, but that is medically incorrect because menstruation clearly depends on estrogen primed endometrium, whereas pubarche is androgenic. The defensible answer is option a, hair growth.

Quick Tip: One of these is driven by androgens, not estrogen

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227. A 22-year-old primigravida attends the ANC clinic at 20 weeks of gestation. On examination the uterine height corresponds to a 16-week size. USG shows reduced liquor. What is the most likely diagnosis?

- (A) Renal agenesis
- (B) Fetal anemia
- (C) Bartter syndrome
- (D) Liddle syndrome

Correct Answer: (A) Renal agenesis

SOLUTION:

Fluid-balance logic. From the second trimester onward fetal urine IS the amniotic fluid. So oligohydramnios = a urine-output problem until proven otherwise.

Apply this to each option:

Renal agenesis: no kidneys, no urine, severe early oligohydramnios with uterus smaller than dates. Perfect fit.

Fetal anemia: leads to high-output state and hydrops, which raise fluid (polyhydramnios), not reduce it, so it is the opposite direction and is out.

Bartter syndrome: a salt-wasting fetal tubulopathy classically associated with POLYhydramnios from fetal polyuria, so out.

Liddle syndrome: a sodium-retaining tubular channel disorder, not an oligohydramnios cause, so out.

Bottom line: the only option that abolishes fetal urine and gives marked early oligohydramnios is renal agenesis. Choose option a.

Quick Tip: No fetal kidneys means no fetal urine, and after 16 weeks urine is the liquor.

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228. The most common site for fertilization is:

- (A) Ampulla
- (B) Isthmus
- (C) Intramural part
- (D) Fimbriae

Correct Answer: (A) Ampulla

SOLUTION:

Tube anatomy walkthrough (lateral to medial): fimbriae, then ampulla, then isthmus, then intramural part.

The fimbriae only capture the ovum; they are the pick-up funnel, not where fusion happens, so option d is out.

The isthmus is the narrow muscular segment that the embryo passes THROUGH after fertilization: not the meeting point, so option b is out.

The intramural (interstitial) part lies within the uterine wall, far medial, and the egg has not travelled that far when sperm arrive, so option c is out.

The ampulla is the long, wide, tortuous lateral segment where sperm and ovum actually meet: the standard answer.

Two-for-one fact: the ampulla is BOTH the commonest site of fertilization AND the commonest site of tubal ectopic pregnancy. Lock in option a.

Quick Tip: It is the same widest segment of the tube where most ectopics also occur.

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229. Which distension medium is used for hysteroscopy performed with bipolar cautery?

- (A) Glycine
- (B) Normal saline
- (C) Carbon dioxide
- (D) Dextran 70

Correct Answer: (B) Normal saline

SOLUTION:

One rule solves this: bipolar = ionic (saline), monopolar = non-ionic (glycine, sorbitol, dextran).

Run the options through it:

Normal saline is electrolyte-rich and completes the bipolar circuit safely; it is the correct medium for bipolar cautery. Pick this.

Glycine is an electrolyte-free fluid reserved for MONOPolar resection; using it for bipolar is wrong, and it carries hyponatremia/encephalopathy risk if over-absorbed, so out.

Dextran 70 (Hyskon) is a viscous non-ionic medium, again a monopolar-era fluid, so out.

CO2 is a gas for DIAGNOSTIC hysteroscopy only, not for any cautery, so out.

Clinical pearl: the shift to bipolar instruments is exactly what let surgeons switch to saline and largely abandon the hypotonic glycine that caused TURP-like syndromes. Answer is option b, normal saline.

Quick Tip: Bipolar needs an ionic fluid, monopolar needs a non-ionic one.

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230. The best treatment option for a septate uterus is:

- (A) Tompkins metroplasty
- (B) Jones metroplasty
- (C) Strassmann metroplasty
- (D) Transcervical hysteroscopic resection of the septum

Correct Answer: (D) Transcervical hysteroscopic resection of the septum

SOLUTION:

Old vs new operations: three of these options are open abdominal metroplasties and only one is the modern endoscopic procedure.

Tompkins, Jones, and Strassmann metroplasty all require a laparotomy and incision into the uterine body. They leave a uterine scar, so any future pregnancy mandates an elective cesarean, and they carry more adhesions and morbidity. All three are out as 'best' options.

Transcervical hysteroscopic resection of the septum is done from inside the cavity, leaves no myometrial scar, allows later vaginal delivery, has an 80 to 89 percent success rate, a short stay, and low complication rates. It is today's procedure of choice.

Decision rule: for a septate uterus, cut the septum from within (hysteroscopy), do not open the uterus from outside. Answer is option d.

Quick Tip: Choose the minimally invasive route that avoids opening the uterus.

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231. A pregnant female had meconium-stained liquor and underwent an emergency LSCS. A few days later her condition deteriorated. USG showed edematous bowels. What is the cause?

- (A) Meconium peritonitis
- (B) Paralytic ileus
- (C) Adhesive intestinal obstruction
- (D) Intra-abdominal abscess

Correct Answer: (B) Paralytic ileus

SOLUTION:

Clinical pearl: a deteriorating mother a few days post-LSCS with USG showing swollen, fluid-filled bowel loops is the classic picture of an adynamic (paralytic) ileus, the most frequent bowel complication after caesarean handling and peritoneal irritation.

Eliminate by feature: Meconium peritonitis is a disease of the fetus or newborn (sterile chemical peritonitis from antenatal gut perforation), so it cannot be the mother's diagnosis. Adhesive intestinal obstruction is mechanical with hyperactive then absent sounds and tends to appear weeks to months later, not in the immediate postoperative window. An intra-abdominal abscess presents with spiking pyrexia, tachycardia and a localized tender collection rather than generalized bowel edema.

That leaves paralytic ileus: peristalsis fails, gas and fluid pool in the gut, the abdomen becomes silent and tympanic, vomiting is effortless and there is absolute constipation, all matching the edematous bowel seen here.

Ref: Dutta Obstetrics 8e; Bailey & Love 27e.

Quick Tip: Think of an adynamic bowel that has simply stopped peristalsing after abdominal surgery.

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232. An 18-year-old girl presents with 6 months of amenorrhea, a history of low-grade fever, weight loss, abdominal pain and generalized weakness. On per-rectal examination, a palpable left-sided pelvic mass is felt. The diagnosis is:

- (A) Fibroid with degeneration
- (B) TB pelvis with tubo-ovarian mass
- (C) Ectopic pregnancy
- (D) Granulosa cell tumour

Correct Answer: (B) TB pelvis with tubo-ovarian mass

SOLUTION:

Mnemonic anchor: in a teenager, the triad of evening fever + weight loss + a fixed adherent pelvic mass is genital tuberculosis until proven otherwise.

Work by elimination. A fibroid with degeneration is rare in an 18-year-old and would not produce a wasting, febrile illness. Ectopic pregnancy is acute, needs sexual activity and a positive beta-hCG, and presents over days not six months. A granulosa cell tumour is a sex-cord stromal tumour that pours out estrogen and typically causes abnormal uterine bleeding, breast changes and precocity, not anorexia and night sweats.

What remains fits TB perfectly: the bacilli seed the fallopian tubes, caseation forms a pyosalpinx, peri-salpingitis glues the tube to the ovary, and the result is a matted tubo-ovarian mass with nodules in the pouch of Douglas. The constitutional symptoms (low-grade pyrexia, malaise, anorexia, anemia, weight loss) and secondary amenorrhea complete the clinical fit.

Ref: Dutta Gynaecology 6e.

Quick Tip: Chronic fever, weight loss and a matted pelvic mass in a young girl scream an infective, caseating cause.

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233. A child is born covered with a thick membranous coat. What is the most likely diagnosis?

- (A) Lamellar ichthyosis
- (B) X-linked ichthyosis
- (C) Ichthyosis vulgaris
- (D) Ichthyosis acquisita

Correct Answer: (A) Lamellar ichthyosis

SOLUTION:

Spot diagnosis: thick shiny membrane at birth = collodion baby = lamellar ichthyosis.

Run the options down. X-linked ichthyosis appears in male infants over the first weeks with large, dirty-brown polygonal scales (steroid sulfatase deficiency) but does not present as a membrane-wrapped newborn. Ichthyosis vulgaris, though the most common ichthyosis overall, declares itself later with fine white scales on extensor surfaces and accentuated palmar creases, never a collodion membrane. Ichthyosis acquisita is, as the name says, acquired, seen in adults as a paraneoplastic or drug-related sign, so it is impossible in a neonate.

Lamellar ichthyosis is the autosomal recessive congenital ichthyosis whose hallmark newborn picture is exactly the collodion membrane that later sheds to reveal large plate-like scales. The barrier defect impairs water retention, giving the dry scaly skin and the encasing membrane.

Ref: Arvind Arora Skin 6e.

Quick Tip: The newborn wrapped in a shiny taut membrane has a name: collodion baby.

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234. Mouth-to-mouth respiration provides what percentage of oxygen to the recipient?

- (A) 10%
- (B) 16%
- (C) 21%
- (D) 100%

Correct Answer: (B) 16%

SOLUTION:

Quick logic: inspired room air is 21% oxygen; the rescuer's body uses some, so expired air must be lower, and the textbook figure for that expired air is 16%.

Eliminate the traps. 21% is the answer for an Ambu bag filled with room air, not for breath given by a person. 100% applies only to a high-flow oxygen source such as a cylinder with a reservoir. 10% would be hypoxic and could not sustain a patient.

So 16% is correct. Practically, mouth-to-mouth ventilation pushes about 0.8 to 1.2 L per breath of this 16% oxygen, 4% carbon dioxide mixture, which keeps a patient oxygenated long enough for resuscitation. The AHA notes tidal volumes of roughly 500 to 1000 mL, with smaller volumes preferred to limit gastric inflation. Ref: Resuscitation physiology; AHA CPR.

Quick Tip: The rescuer's lungs have already taken some oxygen out of the 21% room air before it is blown in.

235. A cancer patient undergoes radiotherapy. Pick the true statement regarding radiosensitivity of tissues:

- (A) Rapidly dividing cells are resistant to radiation
- (B) GI mucosa is one of the most radioresistant tissues in the body
- (C) The intensity of radiation is inversely proportional to the square of the distance from the source
- (D) Small blood vessels are least resistant to radiation

Correct Answer: (C) The intensity of radiation is inversely proportional to the square of the distance from the source

SOLUTION:

Option-elimination first. Bergonie and Tribondeau tells us that tissues which divide rapidly and are poorly differentiated are the most radiosensitive. That single rule kills three options: rapidly dividing cells are sensitive (not resistant), the high-turnover GI mucosa is highly radiosensitive (not radioresistant), and slowly dividing structures like small mature blood vessels are comparatively

radioresistant (so they are not the least resistant).

The only survivor is the inverse square law, a fixed physics fact: dose is proportional to $\frac{1}{r^2}$. Move twice as far from a point source and the dose drops to a quarter. This underlies the radiation-protection mantra of maximizing distance from the source.

Hence option 3 is the true statement.

Ref: Inverse square law in medical physics.

Quick Tip: One option is a pure physics law about distance and dose; the others misstate which tissues are sensitive.

236. Which is the most common drug causing dependence worldwide?

- (A) Cannabis
- (B) Cocaine
- (C) Heroin
- (D) Amphetamine

Correct Answer: (A) Cannabis

SOLUTION:

Epidemiology pearl: when a question says most common drug of dependence, it is asking about prevalence of use, and the WHO data put cannabis at the top.

Compare the user numbers. The WHO World Drug Report 2018 counts roughly 235 million people using illicit drugs, of whom about 192 million use cannabis, making it by far the most widely consumed. Opioids such as heroin have a much smaller user base, and cocaine and amphetamine-type stimulants likewise fall well below cannabis in total users.

So although heroin and cocaine are individually highly addictive, the most

common drug of dependence by population is cannabis.

Ref: WHO World Drug Report 2018; Arvind Arora Review of Psychiatry.

Quick Tip: Think sheer numbers of users worldwide, not how addictive a single dose is.

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237. An MBBS student presents with choking, dyspnea, chest tightness, anxiety and an impending sense of doom. On examination all systemic findings are normal, and she is referred to psychiatry. What is the probable diagnosis?

- (A) Panic disorder
- (B) Depression
- (C) Epilepsy
- (D) Asthma

Correct Answer: (A) Panic disorder

SOLUTION:

Clinical pearl: the phrase impending sense of doom plus choking and palpitations, with a normal physical workup, is the textbook description of a panic attack.

Eliminate the rest. Asthma is removed first because the respiratory examination is normal, with no wheeze or distress on auscultation. Epilepsy does not fit, as there is no seizure activity, aura, or post-ictal state, just acute anxiety. Depression is a sustained disorder of mood and anhedonia over weeks, the opposite of a brief explosive episode of fear.

The remaining answer, panic disorder, captures the recurrent, abrupt episodes of overwhelming anxiety with prominent autonomic symptoms (chest tightness, breathlessness, palpitations) and the dread of doom, all in someone whose organic evaluation is unremarkable.

Ref: Arvind Arora Review of Psychiatry.

Quick Tip: A sudden storm of fear with a sense of doom and a completely normal physical exam is the giveaway.

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238. A patient with depression was given imipramine for 2 weeks. Relatives then noticed increased excitement, colourful clothing and increased talking. What is the next step in management?

- (A) Add an antipsychotic and continue imipramine
- (B) Discontinue imipramine and start valproate
- (C) Continue imipramine alone
- (D) Manage with valproate alone

Correct Answer: (A) Add an antipsychotic and continue imipramine

SOLUTION:

Concept first: an antidepressant given to a vulnerable patient can trigger a switch into mania, exposing a bipolar disorder. The patient here, now excited, talkative and dressing flamboyantly after two weeks of imipramine, has done exactly that.

The marked answer adds an antipsychotic while keeping imipramine going, on the logic that the illness now has two poles: the depression that imipramine was treating and the fresh mania that the antipsychotic will calm. Continuing imipramine alone would leave the mania unchecked, while using valproate alone or simply swapping to valproate would, in this framing, undertreat the depressive side.

Worth noting for exams: standard psychiatry teaching often favours stopping the precipitating antidepressant and starting a mood stabilizer plus antipsychotic when a clear manic switch occurs, since a continued antidepressant can sustain the mania. Here, however, the recall key is to add an antipsychotic and continue imipramine.

Ref: Arvind Arora Review of Psychiatry.

Quick Tip: The antidepressant has flipped a depressed patient into mania, revealing a bipolar illness that now needs both poles covered.

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239. A patient falls down often, with behavioral change and enuresis. What is the most likely condition?

- (A) Frontotemporal dementia
- (B) Normal pressure hydrocephalus
- (C) Parkinson's disease
- (D) Alzheimer's disease

Correct Answer: (B) Normal pressure hydrocephalus

SOLUTION:

Mnemonic-led approach: wet, wacky and wobbly is the shorthand for normal pressure hydrocephalus, that is, urinary incontinence (wet), dementia or behavioral change (wacky) and gait disturbance with falls (wobbly). The patient's frequent falls, behavioral change and enuresis map onto all three.

Rule out the distractors. Frontotemporal dementia leads with disinhibition, apathy and language breakdown rather than gait failure plus incontinence. Parkinson's disease centres on tremor, cogwheel rigidity and slowness, not early bladder symptoms. Alzheimer's disease is a memory-predominant amnesic dementia and does not produce the early gait-and-continenence triad.

The complete triad therefore identifies normal pressure hydrocephalus, which is important because it is a potentially reversible cause of dementia treatable with CSF shunting.

Re: Normal Pressure Hydrocephalus (Fritsch et al.); Oxford Textbook of Neurological Surgery.

Quick Tip: Wet, wacky and wobbly: a memorable triad points straight to one CSF

disorder.

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240. A patient has depressive symptoms for 6 months and, in the last 2 weeks, auditory hallucinations. What is the probable diagnosis?

- (A) Psychotic depression
- (B) Schizoaffective disorder
- (C) Manic depressive illness
- (D) Schizophrenia

Correct Answer: (A) Psychotic depression

SOLUTION:

Timeline reasoning: depression has run for 6 months and is the core illness, while the auditory hallucinations are a recent, two-week add-on occurring inside that depressive episode. When psychosis sits entirely within a mood episode, the label is mood disorder with psychotic features, here psychotic depression.

Differentiate carefully. Schizoaffective disorder demands a stretch of psychosis (at least two weeks) when no major mood episode is present; that free-standing psychotic period is missing here, so it is excluded. Manic depressive (bipolar) illness needs a manic or hypomanic episode, which the patient never had. Schizophrenia would have psychosis as the primary, defining process rather than a brief feature trailing a long depression.

Because the hallucinations are confined to and explained by the depressive episode, the diagnosis is psychotic depression.

Ref: Avinid Arora Review of Psychiatry.

Quick Tip: The mood disturbance came first and dominates; the voices appear only within it.

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241. Identify the type of joint shown in the picture.



- (A) Syndesmosis
- (B) Synarthrosis
- (C) Synovial joint
- (D) Symphysis

Correct Answer: (C) Synovial joint

SOLUTION:

Clinical pearl first: ribs articulate with the vertebral column at two synovial joints, the costovertebral joint (head of rib) and the costotransverse joint (tubercle of rib with the transverse process). The image shows the rib tubercle meeting the transverse process, so this is a costotransverse synovial joint.

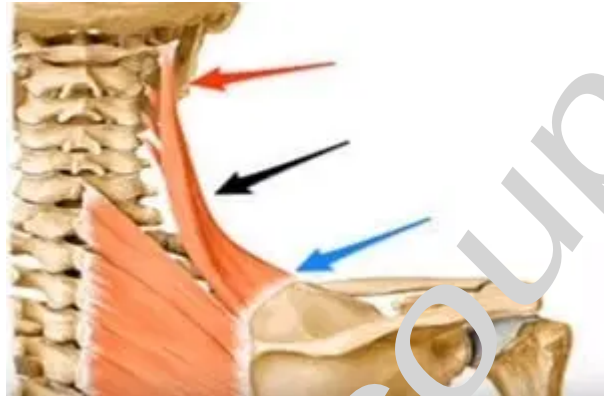
Use elimination to confirm. A syndesmosis is fibrous (think tibiofibular). A synarthrosis is fixed and immovable. A symphysis is cartilaginous (think pubic symphysis or intervertebral disc). All rib-to-vertebra and rib-to-sternum articulations of the plane variety, including interchondral, sternocostal, costovertebral and costotransverse, belong to the synovial group. Therefore the answer is synovial joint.

Ref: BDC, 7th edition, Volume 1, pg 234.

Quick Tip: The joint is between a rib and a vertebral transverse process and permits gliding movement.

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242. Identify the muscle marked in the image. What is its nerve supply?



- (A) Dorsal scapular nerve
- (B) Thoracodorsal nerve
- (C) Spinal accessory nerve
- (D) Suprascapular nerve

Correct Answer: (A) Dorsal scapular nerve

SOLUTION:

Mnemonic angle: the dorsal scapular nerve (C5) is the nerve of the rhomboids and the levator scapulae, the muscles that retract and elevate the scapula. The image shows a trap muscle descending from the cervical transverse processes to the superior angle of the scapula, which is the levator scapulae.

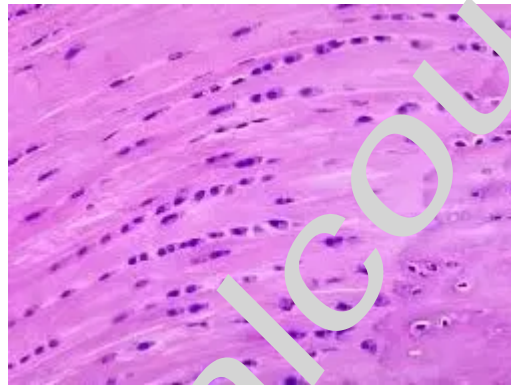
Eliminate the distractors by their targets. Thoracodorsal nerve goes to latissimus dorsi. Spinal accessory (cranial nerve XI) goes to trapezius and sternocleidomastoid. Suprascapular nerve goes to supraspinatus and infraspinatus. Levator scapulae receives C3 and C4 directly and the C5 root through the dorsal scapular nerve, so the dorsal scapular nerve is the correct choice.

Ref: BDC, Textbook of Anatomy, Upper Limb.

Quick Tip: This scapular elevator shares its nerve supply (C5 component) with the rhomboids.

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243. Identify the cartilage shown in the histology slide.



- (A) Hyaline cartilage
- (B) Elastic cartilage
- (C) Articular cartilage
- (D) Fibrocartilage

Correct Answer: (D) Fibrocartilage

SOLUTION:

Pattern recognition: among the three cartilage types, only fibrocartilage shows obvious thick, heavy, densely packed type I collagen bundles running through the matrix with chondrocytes squeezed in rows between them. That is exactly what the image displays, so the answer is fibrocartilage.

Quick differentiator chart. Hyaline cartilage looks smooth and bluish with a uniform matrix and isogenous cell groups (seen in tracheal rings and costal cartilage). Elastic cartilage looks like hyaline but with dark branching elastic fibre meshwork (seen in the pinna and epiglottis). Articular cartilage is simply hyaline cartilage on joint surfaces. Fibrocartilage, with its coarse collagen and absent

perichondrium, sits at sites of stress such as the intervertebral disc and pubic symphysis. The histology here matches fibrocartilage.

Ref: Inderbir Singh's Textbook of Human Histology, 8th edition, pg 56-57

Quick Tip: Look for thick parallel collagen bundles, not a glassy matrix or an elastic fibre network.

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244. Identify the boundaries of the anatomical structure marked in the image.



- (A) Extensor pollicis longus
- (B) Abductor pollicis longus
- (C) Styloid process of the radius
- (D) All of the above

Correct Answer: (D) All of the above

SOLUTION

Spot diagnosis: a small triangular pit on the radial border of the wrist that deepens when the thumb is extended is the anatomical snuffbox. The question asks which listed item forms a boundary, and the trick is that several do.

Walk the borders. Ulnar (medial) wall is the extensor pollicis longus tendon. Radial (lateral) wall is the paired extensor pollicis brevis and abductor pollicis

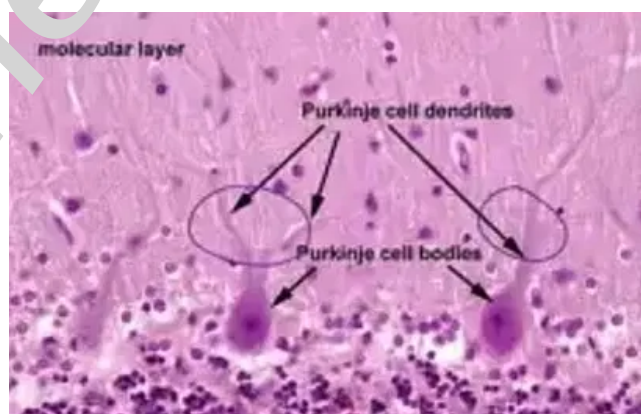
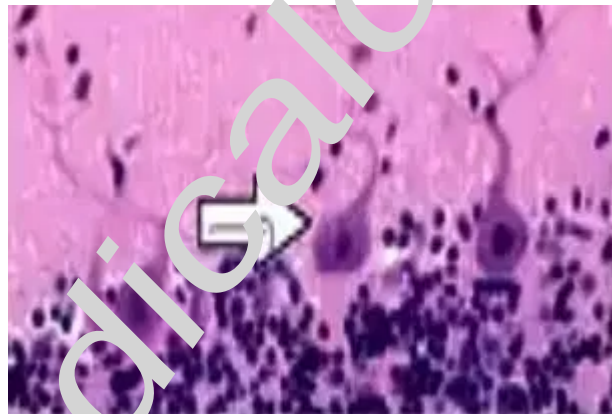
longus tendons. Proximal base is the styloid process of the radius. So extensor pollicis longus (option a), abductor pollicis longus (option b) and the radial styloid (option c) are each true boundaries, which makes All of the above correct. Remember the floor carries the radial artery and the scaphoid, so snuff box tenderness flags a scaphoid fracture.

Ref: BDC, Textbook of Anatomy, Upper Limb.

Quick Tip: This triangular hollow on thumb extension is bounded by three named structures, not one.

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245. Identify the cell type marked in the cerebellum.



- (A) Basket cells
- (B) Granule cells
- (C) Golgi cells
- (D) Purkinje cells

Correct Answer: (D) Purkinje cells

SOLUTION:

Layer-by-layer approach: the cerebellar cortex has three layers: the outer molecular layer, the middle single-cell Purkinje layer, and the inner granular layer. The marked neurons form that one-cell-thick middle row of large pear-shaped bodies, which identifies them as Purkinje cells.

Functional anchor: Purkinje cells are the only output neurons of the cerebellar cortex and they are inhibitory (GABAergic), projecting to the deep cerebellar nuclei. Their massive dendritic fan spreads in the molecular layer to sample thousands of parallel fibres. Contrast with granule cells, the smallest and most numerous neurons crammed into the granular layer whose axons become the parallel fibres, and with basket and Golgi interneurons, which are scattered rather than lined up. The image clearly shows the Purkinje cell row.

Ref: NCBI Bookshelf NPK1065.

Quick Tip: Look for a single row of large flask-shaped neurons with a fan-like dendritic tree

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246. Identify the sleep wave marked in the EEG during the sleep-wake cycle.



- (A) Stage 1 sleep
- (B) REM sleep
- (C) Stage 2 sleep
- (D) Stage 3 sleep

Correct Answer: (B) REM sleep

SOLUTION:

Recognise the paradox: in REM sleep the EEG looks just like the alert waking state, low voltage and fast, even though the person is deeply asleep and skeletal muscles are paralysed. The tracing marked here is desynchronised with saw-tooth waves, the signature of REM.

Map the stages quickly. Stage 1 has theta waves and vertex sharp transients. Stage 2 is identified by sleep spindles and K complexes. Stage 3, slow wave sleep, is dominated by tall delta waves. REM stands apart with beta and reappearing alpha activity, ponto-geniculo-occipital spikes and rapid eye movements on the electrooculogram. The awake-pattern-during-sleep appearance in the image is therefore REM sleep.

Ref: At and Arora Review of Physiology, pg 204-205.

Quick Tip: A low-voltage, fast, awake-looking EEG that occurs during sleep points to a paradoxical stage.

247. Casal's necklace is seen in the deficiency of:



- (A) Vitamin A
- (B) Niacin
- (C) Iron
- (D) Vitamin B12

Correct Answer: (B) Niacin

SOLUTION:

Mnemonic-led: Casal's necklace equals pellagra equals the 4 Ds, and pellagra is caused by deficiency of Niacin (vitamin B3) plus its precursor tryptophan. The necklace itself is the photosensitive hyperpigmented dermatitis that rings the neck where sunlight strikes so the answer is niacin.

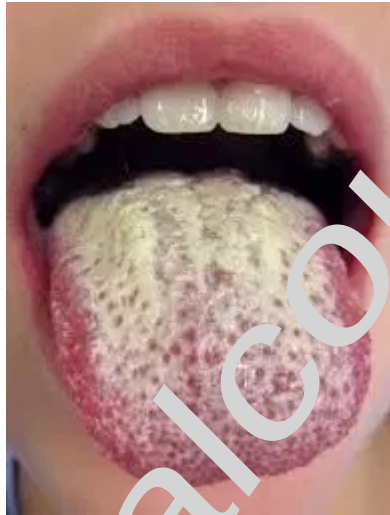
Eliminate fast. Vitamin A loss gives ocular signs, night blindness, Bitot spots and xerophthalmia, not a neck rash. Iron loss gives microcytic hypochromic anaemia with spoon nails. Vitamin B12 loss gives megaloblastic anaemia with neurological deficits. Only niacin deficiency produces the dermatitis, diarrhoea and dementia triad with Casal's necklace, more often in women because estrogen metabolites inhibit tryptophan conversion.

Ref: DM Vasudevan, Textbook of Biochemistry, 6th edition, pg 395.

Quick Tip: Think of the photosensitive dermatitis of the 4 D disease.

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248. An HIV positive patient with a CD4 count of 300/cumm presents with mucosal lesions in the mouth as shown in the figure. On microscopy, budding yeasts and pseudohyphae are seen. The most probable diagnosis is:



- (A) Candidiasis
- (B) Hairy leukoplakia
- (C) Lichen planus
- (D) Diphtheria

Correct Answer: (A) Candidiasis

SOLUTION:

Let the microscopy lead: budding yeasts plus pseudohyphae is a *Candida albicans* signature, so the oral lesion is candidiasis (thrush), the commonest opportunistic mouth infection in HIV. Removable white curd-like plaques over a red base fit perfectly.

Rule out the look-alikes by their hallmark. Oral hairy leukoplakia is an EBV-driven corrugated white plaque on the side of the tongue that will not rub off and lacks fungi. Lichen planus shows reticular Wickham striae with a subepithelial band of T lymphocytes. Diphtheria gives a tough grey pharyngeal pseudomembrane from

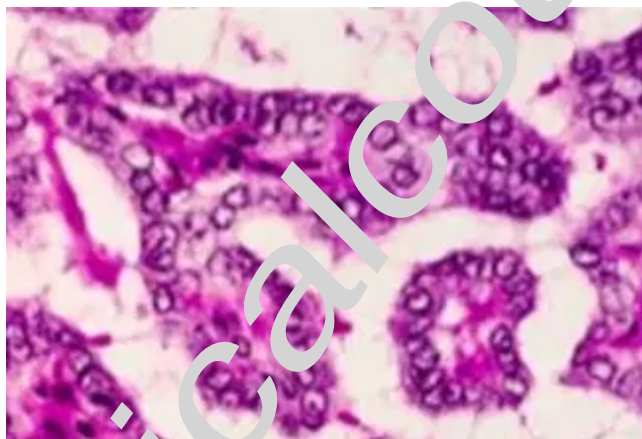
Corynebacterium diphtheriae. Since none of these shows yeasts and pseudohyphae, the answer is candidiasis.

Ref: Robbins Basic Pathology, pg 502-503.

Quick Tip: Budding yeasts plus pseudohyphae name the organism directly.

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249. A 25-year-old male presented with a 2 cm thyroid nodule. A thyroidectomy was done and the histology is shown below. What could be the diagnosis?



- (A) Papillary carcinoma thyroid
- (B) Follicular adenoma
- (C) Graves disease
- (D) Adenomatous goiter

Correct Answer: (A) Papillary carcinoma thyroid

SOLUTION:

Nuclei tell the story: papillary thyroid carcinoma is a diagnosis made on nuclear morphology, not architecture. The slide shows Orphan Annie eye nuclei (empty, ground glass chromatin), nuclear grooves and pseudoinclusions, with psammoma bodies in true fibrovascular-cored papillae. That combination is pathognomonic for papillary carcinoma.

Distinguish the mimics. Graves disease also forms papillae, but they are

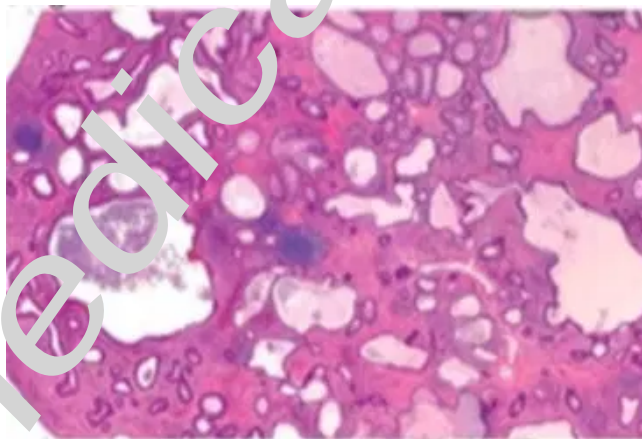
hyperplastic, lack fibrovascular cores and the nuclei are normal. Follicular adenoma is a solitary encapsulated follicular proliferation without papillae or clear nuclei. Adenomatous goitre is a multinodular colloid-rich lesion. None reproduces the optically clear nuclei and psammoma bodies, so the answer is papillary carcinoma of the thyroid, which characteristically spreads via lymphatics.

Ref: Robbins Basic Pathology, 9th edition, pg 736.

Quick Tip: The nuclear features, clear chromatin and psammoma bodies, clinch this thyroid malignancy.

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250. A 5-year-old child presented with a history of blood in the stools. On examination, there was a polypoid mass in the rectum, a biopsy of which is shown below. The most probable diagnosis is:



- (A) Villous adenoma
- (B) Juvenile polyp
- (C) Vascular malformation
- (D) Serrated adenoma

Correct Answer: (B) Juvenile polyp

SOLUTION:

Match the patient to the polyp: a preschool child with painless rectal bleeding from a smooth pedunculated rectal mass is the classic presentation of a juvenile polyp. The biopsy seals it, dilated cystic glands brimming with mucin and inflammatory cells set in an edematous, inflamed stroma.

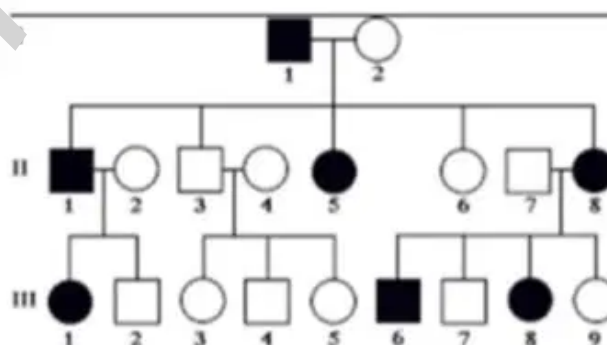
Eliminate adult neoplasms. Villous adenoma and serrated adenoma are dysplastic, premalignant lesions seen in older adults, not five-year-olds, and they show neoplastic epithelium rather than retention cysts. A vascular malformation would show abnormal vessels, not mucin-filled glands. The hamartomatous, cystically dilated glandular architecture in a young child confirms a juvenile polyp.

Ref: Robbins Basic Pathology, 9th edition, pg 592.

Quick Tip: Age under 5 with rectal bleeding and cystic mucin-filled glands points to a hamartomatous polyp.

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251. A 25-year-old man presents for a routine physical examination. The patient is tall and on examination he was found to have an early diastolic murmur. His family pedigree is given below. Which of the following is the mode of inheritance by which the disease is likely to be transmitted?



- (A) AD
- (B) AR
- (C) XLR
- (D) XLD

Correct Answer: (A) AD

SOLUTION:

Quick pedigree drill: when a condition shows up in every generation, hits both sexes, and you can spot a father passing it to a son, you are looking at an autosomal dominant trait. X-linked is killed off by male-to-male transmission, and recessive patterns usually skip generations, so options (b), (c) and (d) all fall away.

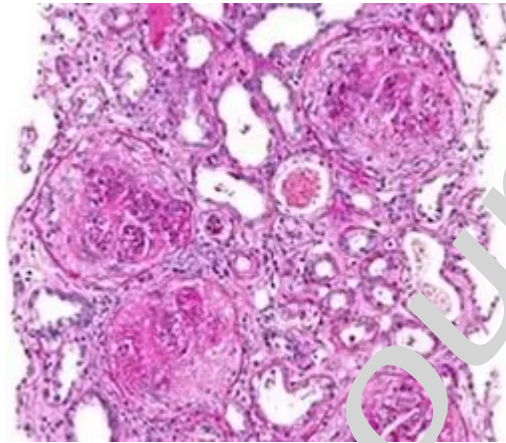
The clinical picture seals it. A tall patient with an early diastolic murmur of aortic regurgitation is a textbook Marfan syndrome presentation, caused by a fibrillin-1 mutation. Marfan is a classic autosomal dominant connective tissue disorder: a single mutant allele is enough to produce disease because it disrupts a structural protein, and the phenotype varies widely between affected family members.

Therefore the inheritance is AD, option (a).

Quick Tip: Trace the pedigree: trait in every generation with male-to-male transmission narrows it to one pattern.

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252. A 51-year-old person came with a complaint of hematuria. On examination he was normotensive and had pedal edema. Investigations revealed the patient had no glucosuria and had a creatinine value of 9 mg%. The renal biopsy is as shown below. Which of the following investigations should one do to identify the etiology of the disease?



- (A) ANA
- (B) Anti-GBM antibodies
- (C) HIV RNA
- (D) Urine immunoelectrophoresis

Correct Answer: (B) Anti-GBM antibodies

SOLUTION:

Pattern-recognition first: on renal immunofluorescence there are three deposit patterns. Linear means anti-GBM (Goodpasture), granular means immune-complex disease (lupus, post-infectious), and pauci-immune means ANCA vasculitis. The biopsy here shows smooth linear IgG, so the diagnosis is anti-GBM disease.

The clinical story fits: a nephritic syndrome with hematuria, edema and a creatinine of 9 mg% reflecting aggressive glomerular damage. To confirm the cause, the single most useful test is the serum assay for **anti-GBM** antibodies, which directly identifies the autoantibody driving the disease.

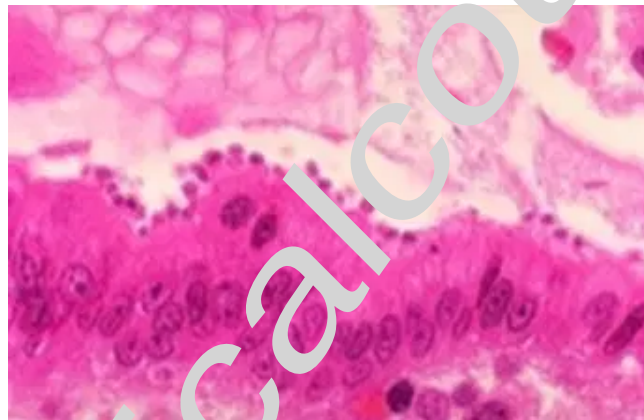
Eliminating the rest: ANA chases lupus, urine immunoelectrophoresis chases

myeloma light chains, and HIV RNA chases HIV nephropathy, but none of these explain a linear IgG biopsy. The answer is option (b), anti-GBM antibodies.

Quick Tip: Linear IgG along the basement membrane on immunofluorescence has one signature antibody.

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253. A 35-year-old heterosexual patient diagnosed with HIV had a history of chronic watery diarrhea. A colonoscopic biopsy is shown below. The most probable diagnosis is?



- (A) Giardia
- (B) CMV
- (C) Microspora
- (D) Cryptosporidium

Correct Answer: (D) Cryptosporidium

SOLUTION:

Clinical pearl: in an HIV patient with profuse chronic watery (non-bloody) diarrhea, think Cryptosporidium first. It is one of the most common AIDS-defining causes of intractable diarrhea once CD4 counts fall.

The biopsy clinches it. Cryptosporidium oocysts appear as small basophilic round structures, roughly 2 to 5 μm , lined up along the apical (brush border) surface of enterocytes, looking like beads stuck to the cell edge while remaining

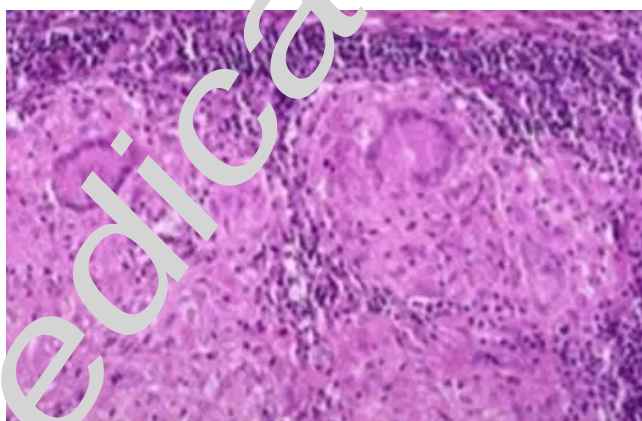
intracellular yet extracytoplasmic. Giemsa highlights them.

Eliminate the others: CMV colitis gives bloody diarrhea with owl-eye intranuclear inclusions, Giardia trophozoites float in the duodenal lumen as pear-shaped flagellates, and microsporidia need modified trichrome to be seen. None reproduce the apical blue-bead look, so the answer is option (d), Cryptosporidium.

Quick Tip: Tiny round organisms hugging the apical surface of enterocytes like blue beads in an HIV patient.

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254. An 11-year-old boy presented with cough for 15 days. On examination he was found to have cervical lymphadenopathy. Lymph node examination showed the finding below. What could be the diagnosis?



- (A) Leprosy
- (B) Sarcoidosis
- (C) TB
- (D) Syphilis

Correct Answer: (C) TB

SOLUTION:

Start from the histology buzzword. A granuloma whose center has soft, structureless caseous necrosis, ringed by epithelioid cells and Langhans giant

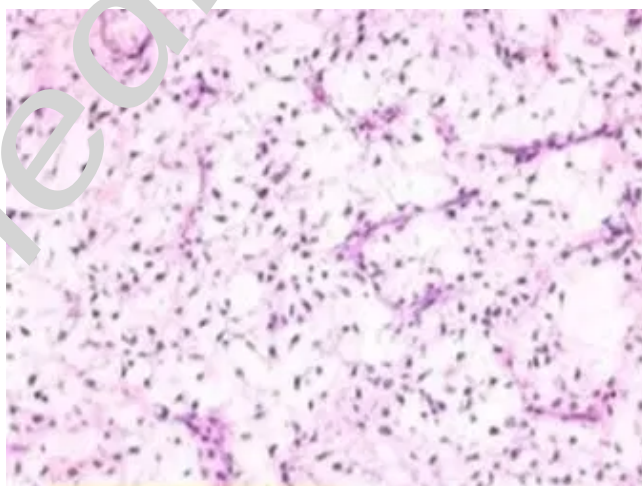
cells, is the signature of tuberculosis. Add the clinical frame, an 11-year-old with weeks of cough and cervical node enlargement (scrofula), and TB becomes the obvious read.

Run the differentials by their granuloma type. Sarcoidosis makes tidy non-caseating granulomas with no necrosis, so the presence of caseation excludes it. Leprosy granulomas track along nerves and carry acid-fast bacilli, while tertiary syphilis forms plasma-cell-laden gummas with obliterative endarteritis. None of these show the central caseation seen here.

Hence the diagnosis is **TB**, option (c).

Quick Tip: A granuloma with central caseous necrosis and Langhans giant cells has one classic cause.

255. A 40-year-old person presented with a 10 x 8 cm swelling in the retroperitoneum. The biopsy from the lesion is as shown below. Molecular analysis demonstrated t(12;16). The most probable diagnosis is?



- (A) Myxoid liposarcoma
- (B) Lipoma
- (C) Synovial sarcoma
- (D) Pleomorphic sarcoma

Correct Answer: (A) Myxoid liposarcoma

SOLUTION:

Treat this as a translocation-matching question. Each soft tissue sarcoma has a fingerprint fusion: synovial sarcoma is t(X;18), Ewing is t(11;22), and myxoid liposarcoma is t(12;16) fusing FUS with DDIT3/CHOP. The stem hands you t(12;16), which points straight to myxoid liposarcoma.

The morphology backs the genetics. Myxoid liposarcoma is built from bland fusiform and stellate cells floating in a mucoid, mucopolysaccharide-rich stroma, threaded by a thin branching capillary meshwork described as a chicken-wire pattern, with occasional lipoblasts. Retroperitoneal location and a 10 × 8 cm mass match a sarcoma rather than a benign tumour.

Lipoma (option b) is benign mature adipose tissue with no fusion gene, and pleomorphic sarcoma (option d) is wildly atypical without t(12;16). So the answer is option (a), myxoid liposarcoma.

Quick Tip: Match the translocation t(12;16) belongs to one specific soft tissue sarcoma.

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256. A 35-year-old woman with a long history of dyspnea, chronic cough, sputum production, and wheezing dies of respiratory failure following a bout of lobar pneumonia. She was not a smoker or an alcoholic. The lung autopsy is shown in the image. Which of the following underlying conditions was most likely associated with the pathologic changes shown here?



- (A) Mutation in dynein arms
- (B) Cystic fibrosis
- (C) Alpha-1 antitrypsin deficiency
- (D) Antibodies against type 4 collagen

Correct Answer: (C) Alpha-1 antitrypsin deficiency

SOLUTION:

The trap-buster here is the phrase not a smoker. Emphysema in a young person who has never smoked is alpha-1 antitrypsin deficiency until proven otherwise, because cigarette smoke is the usual driver and its absence forces a genetic explanation.

Mechanism in one line: alpha-1 antitrypsin is the main inhibitor of neutrophil elastase. Lose it, and elastase digests alveolar walls unchecked, giving panacinar emphysema (often lower-zone predominant) plus, in some patients, liver disease from accumulation of misfolded protein in hepatocytes.

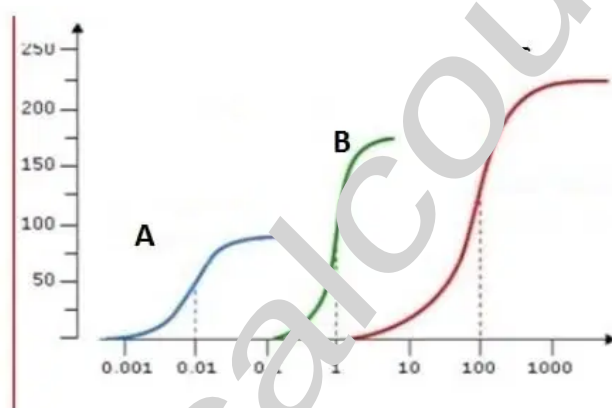
Swamp the options: dynein-arm mutation gives Kartagener primary ciliary dyskinesia with bronchiectasis and situs inversus, cystic fibrosis gives sticky-secretion bronchiectasis, and anti-type-IV-collagen antibodies give Goodpasture

pulmonary-renal syndrome, none of which produce isolated panacinar emphysema in a non-smoker. The answer is option (c), alpha-1 antitrypsin deficiency.

Quick Tip: Emphysema in a young non-smoker points to a missing protease inhibitor.

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257. The graph below shows the dose-response curves of three drugs A, B and C. Which of the following drugs shown in the graph has the highest potency?



- (A) Drug A
- (B) Drug B
- (C) Drug C
- (D) Both Drug A & B

Correct Answer: (A) Drug A

SOLUTION:

Separate the two concepts first. Potency is a horizontal property: how far left the dose-response curve lies, set by the EC₅₀. Efficacy is a vertical property: the maximal height the curve can reach. The question asks for potency, so only left-right position matters.

The rule: leftmost curve equals lowest EC₅₀ equals highest potency, because a smaller dose achieves the half-maximal effect. A curve shifted right needs more drug for the same response and is therefore less potent.

On this graph Drug A is the leftmost curve, so it has the smallest EC_{50} and the greatest potency. Option (d) is wrong because A and B do not share the same curve position, and C lies furthest right. The answer is option (a), Drug A.

Quick Tip: Potency is about how far left the curve sits, not how high it rises.

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258. In the following X-ray of the wrist, what is the exact age.



- (A) 2 yrs
- (B) 8 yrs
- (C) 6 yrs
- (D) 9 yrs

Correct Answer: (C) 6 yrs

SOLUTION:

Approach this as an atlas-matching exercise. Skeletal (bone) age before puberty is read from how many ossification centers have appeared and how wide the epiphyses have grown, weighted most heavily at the distal phalanges, then middle, then proximal, plus the carpal bones.

The maturation rule: each phalangeal epiphysis starts thin and widens until its

transverse width matches the neighbouring metaphysis. Comparing the centers visible on this wrist film against the Greulich-Pyle hand bone age standards placed the child at roughly 6 years.

So among the choices, the closest atlas match is option (c), 6 years.

Quick Tip: Count and size the ossification centers and match them to a hand bone age atlas.

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259. Identify the phenomenon shown in the image



- (A) Electric burn
- (B) Crocodile burn
- (C) Scalds
- (D) Putrefaction

Correct Answer: (D) Putrefaction

SOLUTION:

Sort the options into two camps. Three are heat or current injuries occurring in life (electric burn, crocodile-skin flash burn, scald), and one is a post-mortem change (putrefaction). The picture, with green abdominal discoloration, venous mottling and bloating, is decomposition, not a burn, so putrefaction stands out immediately.

The biology: once the heart stops, gut commensals led by the anaerobic

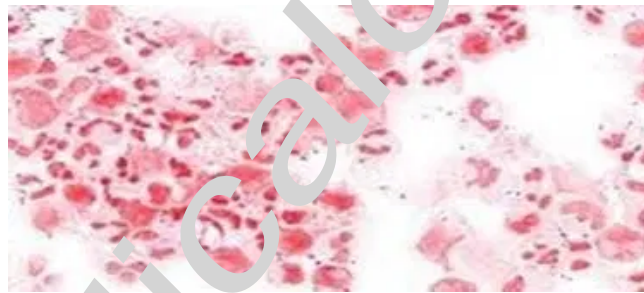
Clostridium welchii spread through the vessels, releasing lecithinase that lyses blood cells and gases that distend the body. The earliest external marker is greenish staining over the right iliac fossa, followed by marbling and skin slippage.

Burns and scalds, by contrast, leave vital reactions, char or moist-heat blistering, none of which match this image. The answer is option (d), putrefaction.

Quick Tip: Greenish abdominal discoloration with marbling is a post-mortem, not a burn, change.

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260. Identify the following image.



- (A) *Neisseria meningitidis*
- (B) *Neisseria cinerea*
- (C) *Neisseria gonorrhoeae*
- (D) *Neisseria polysacchara*

Correct Answer: (A) *Neisseria meningitidis*

SOLUTION:

Recognise the genus from the smear: paired Gram-negative cocci with adjacent flattened faces giving a kidney-bean or coffee-bean look are *Neisseria*. All four options are *Neisseria* species, so the question is really which one is being highlighted.

Two are pathogens (*meningitidis*, *gonorrhoeae*) and two are commensals

(cinerea, polysaccharea), letting you drop options (b) and (d) at once. Between the pathogens, *Neisseria meningitidis* is the encapsulated, fastidious aerobic diplococcus causing meningitis and fulminant meningococemia, classically seen as intracellular bean-shaped pairs inside neutrophils in CSF.

Following the marked meningococcal context, the answer is option (a), *Neisseria meningitidis*.

Quick Tip: Gram-negative coffee-bean diplococci of the meningococcus genus, the encapsulated meningitis-causing species.

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261. Identify the parasite egg shown in the image.



- (A) *Trichuris trichiura*
- (B) *Ancylostoma duodenale*
- (C) *Paragonimus*
- (D) *Strongyloides*

Correct Answer: (A) *Trichuris trichiura*

SOLUTION:

Clinical-image pearl: a parasite egg shaped like a barrel or lemon with a clear plug bulging out of each pole is ***Trichuris trichiura*** every time. Mnemonic: whipworm = two clear corks on a brown barrel.

Option elimination: hookworm (*Ancylostoma*) eggs are colourless ovals with a

thin shell and an early-cleavage embryo inside, never plugged. Paragonimus (lung fluke) eggs are large, ovoid and operculated, with the operculum sitting in a shallow shoulder. Strongyloides is diagnosed from its rhabditiform larvae in fresh stool, not from a characteristic egg.

The brown colour comes from bile staining of the thick triple shell; the polar plugs stay colourless. The egg is roughly 50 µm by 25 µm and floats in concentrated salt flotation, which is how it is concentrated from faeces. Ref: Jawetz Medical Microbiology, 27e, p.724.

Quick Tip: Look for a barrel shape with a clear, transparent plug at each end.

...

262. Identify the organism causing the infection shown on the upper arm.



- (A) Tinea corporis
- (B) Tinea capitis
- (C) Tinea cruris
- (D) Tinea manus

Correct answer: (A) Tinea corporis

SOLUTION:

Spot diagnosis by location: dermatophyte names track the body region they infect. A ring on the trunk or limbs (corpus = body) is **Tinea corporis**. The image shows exactly that, an annular scaly patch with central clearing and an active erythematous rim on the upper arm.

Quick elimination: capitis = scalp and hair, cruris = groin (jock itch), manus = hand and fingers, pedis = foot. None of these fits an arm lesion, so corporis is the only answer.

Pathology pearl: the fungus stays in dead keratin, but its metabolites diffuse out to inflame the living epidermis, producing the raised vesicular border. Because the leading edge has the live hyphae, scrapings for KOH and culture are taken from the advancing margin, not the cleared centre. Ref: Jawetz Medical Microbiology, 27e, p.668.

Quick Tip: Name the dermatophytosis by its site: this lesion is on glabrous body skin, not scalp, groin or hand.

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263. The immunoglobulin shown in the image is:



- (A) IgA
- (B) IgG
- (C) IgM
- (D) IgE

Correct Answer: (A) IgA

SOLUTION:

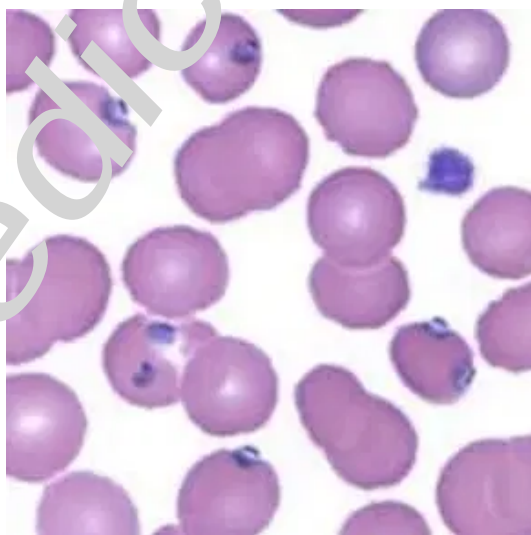
Count the units, then read the extras. The picture is two Y-shaped monomers linked at their bases, with a J chain and a curling secretory component. That exact build = **secretory IgA**.

Elimination by valency: IgM is a five-unit pentamer (also J-chain linked, but clearly bigger and circular), IgG is a lone monomer, and IgE is a monomer too. Only IgA appears as a two-unit dimer in secretions, so a dimer with a secretory piece can be nothing else.

Function pearl: IgA guards mucosal surfaces (gut, respiratory tract, tears, saliva, colostrum). The secretory component, picked up during transcytosis across the epithelium, protects the antibody from digestive enzymes once it reaches the lumen, while the J chain holds the two monomers together. Ref: Jawetz Medical Microbiology, 27e, p.138.

Quick Tip: A two-unit dimer carrying a J chain and a secretory piece points to one class only.

264. A 15-year-old boy presented with fever and chills for 3 days. On examination he had a delayed skin pinch time and dry oral mucosa. A peripheral blood smear revealed the following picture. Identify the pathogen involved.



- (A) Babesia
- (B) Plasmodium vivax
- (C) Plasmodium falciparum
- (D) Salmonella typhi

Correct Answer: (C) Plasmodium falciparum

SOLUTION:

Read the smear like a checklist. Banana or crescent gametocytes, fine ring forms only one-sixth the cell size, double-chromatin headphone rings, two or more parasites crammed into one normal-sized red cell, and applique rings sitting on the cell edge all spell **Plasmodium falciparum**.

Important key note: the crowd-recall answer says B, but the same recall text names falciparum and the morphology it describes is purely falciparum. Since falciparum is listed as option C here, the medically correct choice is C, not B.

Elimination: *P. vivax* enlarges the red cell, stipples it with Schuffner dots and forms big amoeboid trophozoites, none of which is shown. Babesia produces a tetrad Maltese cross and never makes gametocytes or malarial pigment.

Salmonella typhi is a blood-culture organism and is invisible on a Giemsa malaria film. The dehydration (delayed skin pinch, dry mucosa) is just from the febrile illness. Ref: Paniker's Textbook of Medical Parasitology, 8e, p.73; Jawetz Medical Microbiology, 27e, p.721.

Quick Tip: Banana-shaped gametocytes and several delicate rings in one red cell point to one species.

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265. A patient complains of painful blisters around the angle of the mouth. Identify the condition.



- (A) Herpes labialis
- (B) Herpangina
- (C) Herpes zoster
- (D) Epstein-Barr

Correct Answer: (A) Herpes labialis

SOLUTION:

Location plus morphology nails it. Tight clusters of small painful blisters sitting on the lip and its angle are the classic cold sore, **herpes labialis** from HSV-1. A prodrome of burning or itching before the vesicles appear is a useful giveaway. Rule out the rest: herpangina puts its vesicles and shallow ulcers on the soft palate and tonsillar area (back of the mouth), not on the outer lip. Herpes zoster erupts in a single dermatome and would not be confined to the mouth corner. Epstein-Barr virus drives glandular fever with exudative tonsillitis and posterior cervical nodes, again no lip vesicles.

Natural history pearl: the virus stays latent in the trigeminal ganglion and reactivates with stress, sunlight or fever, recurring on the same lip site; recurrences become less frequent after the mid-thirties. Ref: NCBI/PMC2602638.

Quick Tip: Recurrent grouped vesicles right on the lip suggest a herpes simplex cold sore.

...

266. A patient presents with the feature shown in the image. The patient has another 3-year-old sibling at home who is fully immunized as per the immunization schedule. What is the best measure to prevent diphtheria in the sibling of this diphtheria case?



- (A) Give diphtheria toxoid booster
- (B) Give a full course of DPT vaccine
- (C) Give prophylactic erythromycin
- (D) Nothing is required to be done

Correct Answer: (D) Nothing is required to be done

SOLUTION:

Frame it as a contact-management problem. The picture is the classic diphtheritic pseudomembrane, but the marks are for the sibling, not the patient. The sibling is 3 years old and fully immunized.

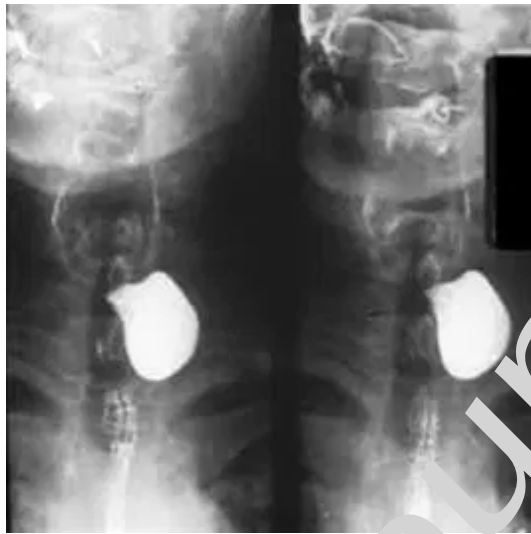
Schedule check: in the national programme the DPT booster lands at 16 to 24 months and again at 5 years. So a fully covered 3-year-old has received the 16 to 24 month booster very recently and already has protective antitoxin. That immunity is current.

Choosing the action: an extra toxoid booster (A) or a fresh full DPT course (B) is redundant in someone already up to date, and antibiotic prophylaxis (C) is meant for unimmunized or incompletely immunized contacts, or carriers, not for a recently boosted child. With protection in place and the booger not due until age 5, the right move for exam purposes is to do nothing extra, option D. Ref: Park's Textbook of Preventive and Social Medicine, 25e, p.174.

Quick Tip: The contact is fully immunized and got a booster within the last 2 years: think about whether anything extra is needed.

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267. The most common site of origin of the pharyngeal diverticulum seen in the barium swallow shown below is:



- (A) Between stylopharyngeus and palatopharyngeus
- (B) Between middle and inferior constrictor
- (C) Between inferior constrictor and esophagus
- (D) Between thyropharyngeus and cricopharyngeus

Correct Answer: (D) Between thyropharyngeus and cricopharyngeus

SOLUTION:

Identify the pouch, then place the gap. A posterior barium-filled sac arising from the hypopharynx is **Zenker's diverticulum**, a pulsion diverticulum that pushes mucosa out through a muscular weak spot called Killian's dehiscence.

Anatomy pearl: Killian's dehiscence lies between the two parts of the inferior constrictor muscle, the obliquely-running thyropharyngeus above and the horizontal cricopharyngeus below. Because the cricopharyngeus fails to relax in time, pressure forces the mucosa out exactly here, so the answer is between thyropharyngeus and cricopharyngeus (option D).

Clinical correlate: typical in the elderly, it causes dysphagia, regurgitation of stale food, gurgling in the neck and bad breath, with aspiration pneumonia as a complication. Treatment is endoscopic stapling or open diverticulectomy with cricopharyngeal myotomy. Ref: Scott-Brown's Otorhinolaryngology, Vol 3, p.746.

Quick Tip: This pharyngeal pouch herniates through Killian's dehiscence: recall which two muscle fibres border that gap.

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268. The image shows bluish-purple discolouration behind the mastoid. Identify the sign.



- (A) Battle sign
- (B) Bezold abscess
- (C) Both A and B
- (D) None of these

Correct Answer: (A) Battle sign

SOLUTION:

Match the colour and the spot. Purple bruising sitting over the mastoid prominence behind the ear is the **Battle sign**, a soft-tissue marker that a basilar (middle fossa or petrous) skull fracture has bled into the mastoid region.

Distinguish the distractor: a Bezold abscess is not a bruise at all. It is pus tracking from the mastoid tip into the upper neck along the sternocleidomastoid in advanced mastoiditis, felt as a firm tender neck mass, so it cannot be what a retroauricular ecchymosis shows.

Because the image is purely retroauricular discolouration, the only correct label is Battle sign (option A); Both A and B and None are therefore wrong. Battle sign often appears a day or more after the injury, alongside raccoon eyes, CSF rhinorrhoea or otorrhoea in basal skull fracture. Ref: StatPearls, Battle sign.

Quick Tip: Mastoid ecchymosis after head injury has a single eponymous name suggesting a base-of-skull fracture.

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269. A patient presents with fever and dysphagia. The image shows the tonsil being pushed. What is the diagnosis?



- (A) Parapharyngeal abscess
- (B) Retropharyngeal abscess
- (C) Peritonsillar abscess
- (D) Ludwig's angina

Correct Answer: (C) Peritonsillar abscess

SOLUTION:

Read the displacement. The tonsil shoved downward and medially with the uvula pushed to the opposite side and a swollen soft palate is the textbook look of a **peritonsillar abscess**, also called quinsy.

Anatomy: the pus collects in the peritonsillar space between the tonsillar capsule and the superior constrictor, so the swelling bulges into the anterior pillar and soft palate. Classic clues are fever, odynophagia, trismus, drooling and a hot-potato voice.

Elimination: a parapharyngeal abscess pushes the whole tonsil and lateral wall medially but produces a neck swelling behind the angle of the jaw; a retropharyngeal abscess bulges the back wall of the pharynx and is mostly a small-child diagnosis; Ludwig's angina is a brawny submandibular swelling that

lifts the floor of the mouth and tongue rather than moving the tonsil. The intraoral picture of a deviated tonsil and uvula seals the answer as peritonsillar abscess, option C. Ref: NCBI Bookshelf NBK519520.

Quick Tip: A unilateral bulge pushing the tonsil down and the uvula across is the classic quinsy.

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270. This patient gives a history of toothache for one week. What is the diagnosis?



- (A) Acute parotitis
- (B) Angioneurotic edema
- (C) Ludwig's angina
- (D) Parapharyngeal abscess

Correct Answer: (C) Ludwig's angina

SOLUTION:

Link the toothache to the space. A spreading, firm swelling of the floor of the mouth and submandibular area after a week of dental pain is **Ludwig's angina**, a cellulitis of the submandibular space whose commonest cause is dental caries.

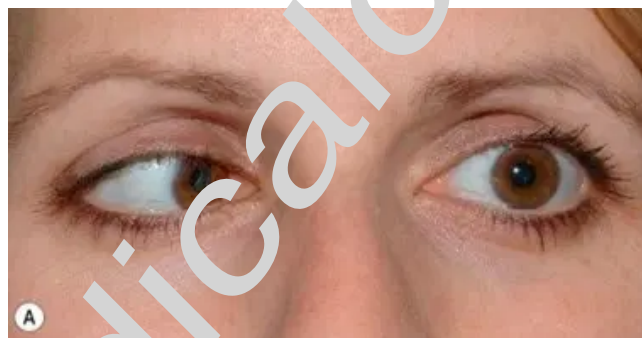
Anatomy pearl: the mylohyoid (oral diaphragm) splits the submandibular space into the sublingual space above and the submaxillary and submental spaces below. Infection from a premolar drains into the sublingual space, while carious molars seed the submaxillary space; either way the tongue is pushed up and back, threatening the airway.

Elimination: acute parotitis gives a tender swelling over the angle of the jaw and cheek with pus at the Stensen duct, not the floor of the mouth; angioneurotic (angioneurotic) oedema is a sudden, painless, allergic swelling of lips and face with no dental trigger; a parapharyngeal abscess presents as a lateral neck mass with medial bulging of the pharyngeal wall. The dental origin plus hard floor-of-mouth swelling confirms Ludwig's angina, option C. Ref: Scott-Brown's Otorhinolaryngology, 8e, Vol 3, p.628.

Quick Tip: A week of toothache leading to a hard floor-of-mouth swelling that lifts the tongue points to one space infection.

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271. Look at the eye movement shown in the image. The movement is lost in:



- (A) Third nerve palsy
- (B) Trochlear palsy
- (C) Sixth nerve palsy
- (D) Facial nerve palsy

Correct Answer: (B) Trochlear palsy

SOLUTION

Clinical pearl: CN IV = superior oblique = SO4 (Superior Oblique is supplied by cranial nerve 4). The superior oblique intorts and depresses the eye, and depression is strongest when the eye is adducted. A defect in this exact movement points straight to the trochlear nerve.

Quick elimination: the third nerve runs most extraocular muscles and the lid, so

its palsy gives ptosis and a down-and-out dilated-pupil eye, not an isolated movement loss. The sixth nerve is lateral rectus only, so failure shows up as loss of abduction. The facial nerve has nothing to do with eyeball movement; it moves the muscles of facial expression and closes the lids.

Remember the unique trochlear trivia, which examiners love: smallest cranial nerve, longest intracranial path, and the only one leaving the brain stem from the back (dorsal exit). It comes from the midbrain and curves forward to the superior oblique. Putting the muscle action together with these features makes trochlear palsy the answer.

Quick Tip: Which single muscle depresses and intorts the eye, and which nerve drives it?

272. Identify the condition shown in the image below:



- (A) Peutz-Jeghers polyp
- (B) Juvenile polyp
- (C) Villous adenoma
- (D) Hyperplastic polyp

Correct Answer: (B) Juvenile polyp

SOLUTION:

Spot diagnosis: a child plus painless rectal bleeding plus a smooth, glistening, cherry-red ball on a stalk equals a juvenile polyp. The look alone, the so-called cherry tumour, is enough to name it.

Run the options out: Peutz-Jeghers is the one you tie to dark spots on the lips and buccal mucosa with multiple small-bowel hamartomas, not a solitary shiny rectal ball. A villous adenoma is the opposite picture, a broad, sessile, cauliflower-like growth in an older adult that can mimic a secretory diarrhoea and carries real malignant risk. Hyperplastic polyps are the trivial, tiny, pale bumps you ignore.

The clinical course of a juvenile polyp fits a young child: it bleeds, and if the stalk is long it can prolapse out of the anus during straining and hurt. It is a hamartoma and is benign. So the bright red pedunculated sphere in a child is the juvenile polyp. Ref: Bailey & Love, 27th ed

Quick Tip: A bright red, glistening, pedunculated rectal 'cherry' in a child.

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273. A barium swallow examination is shown below. What is the most probable diagnosis?



- (A) Esophageal carcinoma
- (B) Esophageal ring
- (C) Esophageal tear
- (D) Achalasia cardia

Correct Answer: (A) Esophageal carcinoma

SOLUTION:

Pattern recognition on barium: the single most useful sign here is shouldering. An irregular, ragged narrowing with abrupt overhanging margins and a destroyed mucosal line screams malignancy, that is oesophageal carcinoma.

Compare the look-alikes. Achalasia is the smooth, symmetric, tapering bird-beak at the lower end with a hugely dilated oesophagus above and an air-fluid level, the geometry is gentle, not ragged. A Schatzkin ring is a fine, shelf-like, smooth concentric band right at the gastro-oesophageal junction, often linked to dysphagia for solids. A tear or perforation does not narrow the lumen at all, you instead see contrast spilling outside it.

Add the epidemiology: a mid-oesophageal lesion is most often squamous cell carcinoma, while lower-third lesions are more often adenocarcinoma. So the irregular shouldered mid-oesophageal stricture is the cancer. Ref: Bailey & Love, 27th ed.

Quick Tip: Irregular narrowing with shouldered margins, not a smooth taper.

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274. Identify the condition shown in the image below:



- (A) Chronic lymphedema
- (B) Cushing syndrome
- (C) Osteoporosis
- (D) None

Correct Answer: (A) Chronic lymphedema

SOLUTION:

One sign seals it: Stemmer's sign. If you cannot pinch up a fold of skin over the base of the second toe because the subcutaneous tissue is fibrosed, the swelling is lymphoedema, not ordinary oedema. Pair that with the buffalo-hump fullness on the dorsum of the foot, the lost submalleolar hollows, and the squared-off toes, and the diagnosis is chronic lymphedema.

Why the distractors fail: Cushing syndrome gives central obesity, moon face, a dorso-cervical fat pad on the neck and abdominal striae, a whole-body endocrine picture, not an isolated foot. Osteoporosis is a silent bone-density problem that does not change the soft-tissue contour of the foot at all. 'None' is wrong because there is a clear, named condition.

So the constellation of buffalo hump, square toes, lost ankle contour and a positive Stemmer's sign is chronic lymphoedema of the foot. Ref: Bailey & Love, 27th ed.

Quick Tip: Buffalo hump on the foot dorsum and skin you cannot pinch over the toes.

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275. Identify the condition shown in the imaging below:



- (A) MCU with bulbar urethral stricture
- (B) MCU with penile stricture
- (C) FGU with membranous stricture
- (D) FGU with prostatic stricture

Correct Answer: (A) MCU with bulbar urethral stricture

SOLUTION:

Read it by location: the narrowing sits in the bulbar urethra, the part of the anterior urethra most often strictured after straddle trauma and chronic inflammation, so this is a bulbar urethral stricture.

Sort the urethral anatomy to clear the distractors. The anterior urethra runs penile then bulbar; the posterior urethra runs membranous then prostatic. A penile-segment stricture sits further distally than the lesion shown. Membranous and prostatic strictures belong to the posterior urethra and typically follow pelvic-fracture disruption or prostate surgery, a different segment from the one narrowed here.

On causes, keep the four buckets handy: inflammatory (urethritis, BXO), traumatic (bulbar straddle injury, pelvic-fracture disruption), iatrogenic (catheter, instrumentation, prostatectomy, radiotherapy) and idiopathic. Matching the narrowed bulbar segment to its commonest site gives the bulbar urethral stricture. Ref: Bailey & Love, 27th ed

Quick Tip: Anterior urethra: locate the narrowed segment along the bulb.

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276. What is the use of the instrument given in the image below?



- (A) Laparoscopic sterilisation
- (B) Removal of ectopic pregnancy
- (C) Termination of pregnancy
- (D) Laparoscopic procedures to create pneumoperitoneum

Correct Answer: (A) Laparoscopic sterilisation

SOLUTION:

Name the gadget: a slim cone-shaped applicator carrying a tiny stretched silastic band is the Falope ring (Yoon ring) applicator, and its single job is female sterilisation by tubal occlusion.

Mechanism in one line: pull a knuckle of tube into the cone, slip the contracting silastic ring over its base, and the strangled loop loses its lumen – the tube is blocked.

Knock out the wrong uses: an ectopic pregnancy is removed by salpingostomy or salpingectomy, not by this ring. Termination of pregnancy uses suction evacuation or medical abortifacients, again unrelated. Pneumoperitoneum at the start of laparoscopy is created with a Veress needle (or open Hasson entry), which looks nothing like a ring applicator. So the instrument's only role here is laparoscopic sterilisation.

Quick Tip: A pre-loaded silastic ring that contracts around a loop of fallopian tube.

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277. Identify the contraceptive device shown in the image below:



- (A) Female condom
- (B) Male condom
- (C) Chaaya
- (D) Today

Correct Answer: (A) Female condom

SOLUTION:

Two rings give it away: a loose polyurethane sleeve with one flexible ring at each end, roughly 17 cm long, is the female condom (Femidom). The small inner ring sits at the closed end to anchor it near the cervix; the wide outer ring stays out and shields the vulva.

Clear the rest fast. A male condom has only one rolled rim and sheaths the penis, so a double-ringed pouch cannot be it. 'Chhaya' is a once-weekly oral pill (ormeloxifene / centchroman) promoted by the national family-planning programme, it is a tablet, not a barrier device. 'Today' is the vaginal contraceptive sponge, a soft round sponge with spermicide, again not a ringed pouch.

Because it lines the vagina, covers the external genitalia and has the characteristic two flexible rings, the device is the female condom. Ref: Dutta's Gynaecology, 6th ed.

Quick Tip: A polyurethane pouch with a flexible ring at each end.

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278. What maternal condition is associated with the fetal anomaly shown in the image below?



- (A) ACE inhibitor use
- (B) Gestational diabetes mellitus
- (C) Pregestational diabetes mellitus
- (D) Valproate use

Correct Answer: (C) Pregestational diabetes mellitus

SOLUTION:

Anomaly to cause: an absent sacrum with a stunted lower spine is caudal regression syndrome, and the classic association tested here is pregestational diabetes, roughly a 25-fold higher risk.

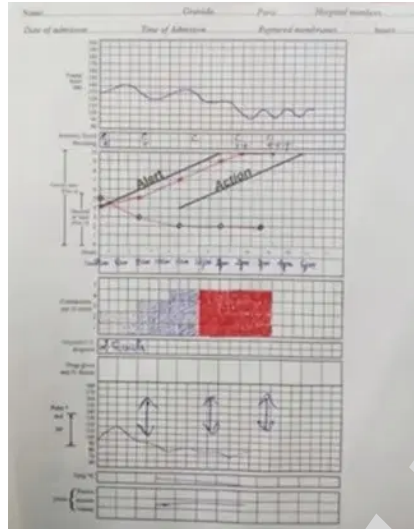
The reason GDM is the trap answer: gestational diabetes only develops in the second half of pregnancy, well after organogenesis is finished, so it raises macrosomia and neonatal hypoglycaemia risk but is not strongly teratogenic. Caudal regression is an early-embryo defect, so it needs hyperglycaemia present at conception, that is pregestational (even) diabetes with poor periconceptional control.

Eliminate the drug options on their own signatures: ACE inhibitors in the second and third trimesters cause oligohydramnios, renal tubular dysgenesis and calvarial hypoplasia. Valproate is tied to neural-tube defects such as spina bifida and to cardiac and facial defects, not to an absent sacrum. On ultrasound look for the short spine ending above shield-like, close-set iliac wings. So the answer is pregestational diabetes mellitus. Ref: Williams Obstetrics, 24th ed.

Quick Tip: Absent sacrum: which diabetes is present from before conception?

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279. Interpret the partogram shown below and identify the most likely diagnosis.



- (A) Cephalopelvic disproportion (CPD)
- (B) Maternal exhaustion
- (C) Inadequate uterine contractions
- (D) Rupture uterus

Correct Answer: (A) Cephalopelvic disproportion (CPD)

SOLUTION:

Logic of the partogram: the partogram plots two things, cervical dilatation and head descent, against time, and the contradiction here is the clue. Dilatation moves nicely from 4 to 10 cm, but descent stalls, the head sticks at 2/5 for the last few hours despite contractions that are recorded as strong.

Now apply the 1-hour-arrest rule. Arrest of descent in the face of good, adequate contractions means the power is fine but the passage or passenger is the problem, that is mechanical obstruction, and its commonest cause is cephalopelvic disproportion.

Eliminate the rest: inadequate uterine contractions would be charted as weak or infrequent waves, but here the contractions are strong, so the power is not the issue. Maternal exhaustion is a clinical state, not what the descent line shows.

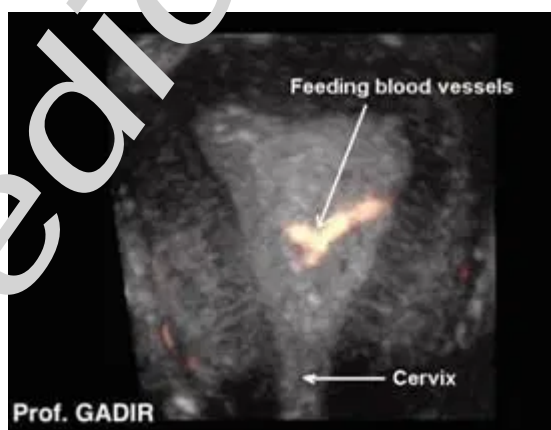
Uterine rupture announces itself dramatically, sudden severe pain, cessation of contractions, vaginal bleeding, fetal distress and a rising pulse, none of which fits

a steadily progressing dilatation curve. The stalled descent with strong contractions therefore points to CPD. Ref: WHO partogram guidance.

Quick Tip: Strong contractions but the head is stuck at 2/5: think mechanical obstruction.

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280. A 60-year-old woman presents with a history of intermittent bleeding. Her ultrasound is shown below. What is the diagnosis?



- (A) Endometrial polyp
- (B) Carcinoma endometrium
- (C) Submucosal fibroid
- (D) None

Correct Answer: (A) Endometrial polyp

SOLUTION:

The vessel sign decides it: on Doppler and 3D ultrasound, a focal endometrial mass fed by one prominent central vessel is the textbook picture of an endometrial polyp. That solitary feeding artery, running into soft stroma with back-to-back glands, is what makes a polyp bleed on and off, matching this woman's intermittent bleeding.

Separate it from its mimics. Endometrial carcinoma in a 60-year-old is a worry, but it usually shows a thick, heterogeneous, irregular endometrium with multiple chaotic vessels and a blurred or breached endo-myometrial junction, not a clean single-pedicle lesion. A submucosal fibroid arises from the myometrium, indents the cavity, looks hypoechoic with posterior shadowing, and carries circumferential rim vascularity rather than one central stalk vessel.

Because the scan demonstrates a discrete fundal endometrial lesion with a single central feeding vessel, the diagnosis is an endometrial polyp. Note that postmenopausal bleeding still warrants histology to exclude malignancy. Ref: gynaecological ultrasound.

Quick Tip: A single central feeding vessel running into a focal endometrial lesion.

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281. What will be the hysteroscopic finding in the given image?



- (A) Bilateral hydrosalpinx
- (B) Bilateral cornual block
- (C) Normal HSG
- (D) Bicornuate uterus

Correct Answer: (A) Bilateral hydrosalpinx

SOLUTION:

Read the HSG by following the dye: dye enters the uterine cavity, then travels into both tubes. Where it stops or pools tells you the diagnosis.

Eliminate the options: A cornual block stops the dye right at the tube origin, so the tube never fills, ruled out here because the tubes are clearly filled. A normal study shows free spill of dye into the pelvis, but this image has NO spill. A bicornuate uterus would show a heart-shaped two-horned cavity, not the case here.

What is left: both tubes are dilated and club-shaped at the far (fimbrial) end and the dye is trapped inside with no spillage. That trapped, ballooned tube is hydrosalpinx, and since both sides show it, the answer is bilateral hydrosalpinx. Clinical pearl: hydrosalpinx is a common tubal-factor cause of infertility and lowers IVF success, so salpingectomy is often advised before IVF. Ref: DC Dutta's Textbook of Gynecology, 6th Edition.

Quick Tip: Both tubes are distended at the fimbrial end with no peritoneal spillage.

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- Correct Answer:** (B) OHSS

Pattern-match the story: infertility treatment + bilaterally enlarged ovaries + third-space fluid (ascites and pleural effusion causing dyspnea) = ovarian hyperstimulation syndrome until proven otherwise.

Knock out the test: PCOS is a chronic anovulatory state, not an acute fluid-shift emergency. Theca lutein cysts come from very high hCG (hydatidiform mole, multiple gestation), not gonadotropin injections. A mucinous cystadenoma is a slow-growing benign tumour, a single huge cyst, not bilateral cystic ovaries with ascites. Everything points to OHSS.

Quick Tip: Bilateral enlarged ovaries plus ascites soon after gonadotropin stimulation.

...

283. A 5-year-old male child presents to the clinic with a history of recurrent infection. On examination he is found to have the rashes shown below. On routine blood investigation, a low platelet count is found. What will be the diagnosis?



- (A) Wiskott-Aldrich syndrome
- (B) Job's syndrome
- (C) Chediak-Higashi syndrome
- (D) None

Correct Answer: (A) Wiskott-Aldrich syndrome

SOLUTION:

Mnemonic first: Wiskott-Aldrich = WATER, think Wiskott-Aldrich Thrombocytopenia, Eczema, Recurrent infections. A boy with all three is the exam giveaway.

Genetics anchor: the defect is in the WAS gene on the X chromosome (Xp11.23), so it is X-linked recessive and shows up in male children. A hallmark lab clue is small platelets on the smear, with a low count causing bleeding.

Why not the others: Job's syndrome (hyper-IgE) features the FATED picture, coarse Facies, cold Abscesses, retained Teeth, raised IgE, Dermatitis, but platelets are normal. Chediak-Higashi shows oculocutaneous albinism and giant cytoplasmic granules in neutrophils, not the eczema-plus-low-platelet

combination. So the answer stays Wiskott-Aldrich syndrome.
Ref: Robbins and Cotran Pathologic Basis of Disease, 9th Edition.

Quick Tip: Recall the X-linked triad of eczema, thrombocytopenia and recurrent infection in a boy.

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284. The patient is presenting with the deformity of the finger as shown. The PIP joint is involved but the DIP joint is spared. What is the diagnosis?



- (A) Osteoarthritis
- (B) Rheumatoid arthritis
- (C) Psoriatic arthritis
- (D) Ankylosing spondylitis

Correct Answer: (B) Rheumatoid arthritis

SOLUTION:

Name the deformity: the finger shows a swan-neck, PIP hyperextended and DIP flexed. Spotting this plus the line PIP involved, DIP spared is the whole answer.

Joint map as a sieve: rheumatoid arthritis loves the MCP and PIP and spares the DIP, exactly the pattern given, and its deforming synovitis is what creates swan-neck and boutonniere fingers. So this is RA.

Cross off the rest by their joint signature: osteoarthritis hits the DIP

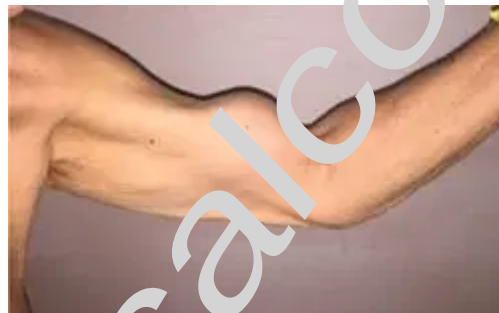
(Heberden) and PIP (Bouchard) with bony nodes, not soft-tissue swan-neck, and it does not spare the DIP. Psoriatic arthritis prefers the DIP with nail pitting and a pencil-in-cup look. Ankylosing spondylitis is a spine and sacroiliac disease, not a finger deformity. Rheumatoid arthritis is the fit.

Ref: Medscape.

Quick Tip: Which inflammatory arthritis spares the DIP and produces swan-neck deformity?

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285. What is the most likely diagnosis given in the image?



- (A) Popeye's sign
- (B) Griesinger sign
- (C) Rising sun sign
- (D) Winner sign

Correct Answer: (A) Popeye's sign

SOLUTION:

Picture the cartoon: when the long head of biceps tendon ruptures, the muscle belly retracts and balls up low in the arm, looking just like Popeye's bulging forearm, hence the name Popeye sign.

Confirm: the bulge grows more obvious on flexing the elbow because the freed muscle contracts into a lump. That clinches the diagnosis.

Rule out the distractors: Griesinger sign is postauricular swelling in lateral sinus

thrombosis, an ENT sign, not an arm finding. Rising sun sign is an eye sign, not relevant to an arm bulge. Winner sign is not a standard eponym. The arm photo can only be the Popeye sign.

Ref: QJM.

Quick Tip: A ball of biceps muscle in the lower arm after tendon rupture.

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286. The patient is presenting with pain around the base of the thumb. The tendons involved are:



- (A) APB and EBL
- (B) APL and EPB
- (C) APB and EPB
- (D) APL and EPL

Correct Answer: (B) APL and EPB

SOLUTION:

Identify the condition: radial-sided wrist pain at the thumb base with a positive Finkelstein test is De Quervain's tenosynovitis, an overuse inflammation of the first dorsal compartment.

Memorise the compartment: the first dorsal compartment carries exactly two tendons, abductor pollicis longus (APL) and extensor pollicis brevis (EPB). These are the inflamed structures, so the answer is APL and EPB.

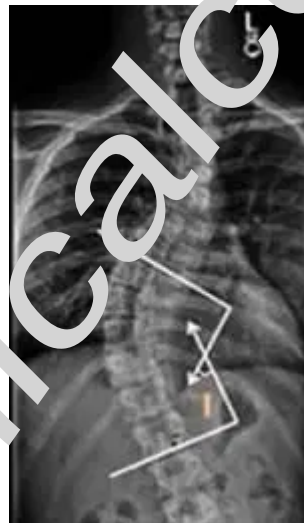
Trap-busting: do not confuse APL with APB, the abductor pollicis brevis is a thenar muscle of the palm, not a wrist compartment tendon. Do not pick EPL either, the extensor pollicis longus sits in the third compartment and bounds the snuffbox. The clean pair is APL and EPB.

Ref: Physiopedia.

Quick Tip: Which two tendons share the first dorsal wrist compartment over the radial styloid?

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287. The angle shown in the image is known as:



- (A) Cobb's angle
- (B) Bohler's angle
- (C) Ferguson angle
- (D) Baumann's angle

Correct Answer: (A) Cobb's angle

SOLUTION:

Spot the spine: the image is a sideways curve of the vertebral column, which immediately signals scoliosis, and the angle used to quantify scoliosis is the Cobb angle.

How it is drawn: pick the most tilted vertebra at the top and bottom of the curve, draw a line along the top endplate of the upper one and the bottom endplate of the lower one, drop perpendiculars, and the angle where they cross is the Cobb angle. Above 10 degrees defines scoliosis.

Match angle to bone: Bohler's angle belongs to the heel (calcaneus), Baumann's angle to the child's elbow, and Ferguson is a different scoliosis method. The spine curvature with endplate lines is the Cobb angle.

Ref: Physiopedia.

Quick Tip: Standard angle for measuring the magnitude of a scoliotic spinal curve.

288. What is the diagnosis of a 55-year-old woman with a chronic low backache?



- (A) Osteoporosis
- (B) Hurler's syndrome
- (C) Paget's disease
- (D) Renal osteodystrophy

Correct Answer: (A) Osteoporosis

SOLUTION:

Demographic shortcut: a post-menopausal woman in her 50s with chronic low back pain and thinned-out bones on imaging is the textbook setting for osteoporosis, driven by oestrogen withdrawal speeding up bone resorption.

Why the back hurts: weak, low-density vertebrae undergo microfractures and compression, which is the source of the persistent backache and loss of height.

Eliminate the rest: Hurler's is a childhood storage disorder, wrong age entirely. Paget's disease shows enlarged, thickened bone with a high alkaline phosphatase, a different picture. Renal osteodystrophy needs underlying chronic kidney disease with calcium-phosphate disturbance, not implied here. Osteoporosis is the best answer.

Ref: NCBI Bookshelf.

Quick Tip: Post-menopausal age plus low bone density with back pain.

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289. Identify the condition shown in the image.



- (A) Ichthyosis vulgaris
- (B) Syndromal ichthyosis
- (C) Leprosy
- (D) Sarcoidosis

Correct Answer: (A) Ichthyosis vulgaris

SOLUTION:

Read the skin: diffuse dry, fish-scale (ichthyosiform) scaling all over the body is ichthyosis. The single most common variant by far is ichthyosis vulgaris.

The defect to remember: ichthyosis vulgaris comes from reduced filaggrin in the stratum granulosum, which wrecks the skin barrier and lets moisture escape, producing the dry, scaly look likened to fish or alligator skin.

Sort out the options: syndromal ichthyosis is rarer and carries systemic associations, so it is not the default for plain scaly skin. Erythroderma presents with anaesthetic hypopigmented patches and thickened nerves, not generalised scaling. Sarcoidosis makes infiltrated granulomatous plaques. The classic generalised scaling is ichthyosis vulgaris.

Ref: Arvind Arora Skin, 6th Edition.

Quick Tip: The commonest genodermatosis with fish-scale skin and filaggrin deficiency.

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290. The patient came with a history of bullae involving > 30% of the body surface area along with erosions of the lips and other mucosae for the past 7 days. What is the most probable underlying aetiology?

- (A) Bacterial infection
- (B) Viral infection
- (C) Drugs
- (D) Malignancy

Correct Answer: (C) Drugs

SOLUTION:

Classify by area first: bullae and detachment over more than 30% of body surface plus mucosal erosions of the lips equals toxic epidermal necrolysis (Lyell's syndrome), the most severe form on the SJS-TEN spectrum. Recall the rule: <

10% is SJS, 10-30% overlap, > 30% is TEN.

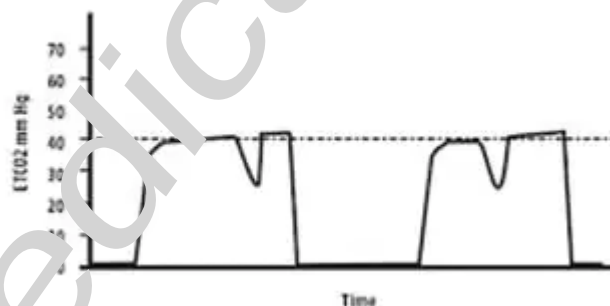
Link to cause: the dominant trigger of this spectrum is drugs. The high-yield culprits are sulpha drugs, anticonvulsants (carbamazepine, lamotrigine, phenytoin), allopurinol and NSAIDs.

Weigh the alternatives: infections like Mycoplasma or herpes can occasionally set off SJS, mostly in children, but they are not the usual cause of TEN-range disease, and malignancy does not produce this acute blistering. The best single answer is drugs.

Ref: Standard dermatology texts.

Quick Tip: Which is the commonest trigger of the SJS-TEN blistering spectrum?

291. Which of the following does the capnograph image below depict?



- (A) During inspiration.
- (B) Inspiration with cardiac oscillations
- (C) During expiration
- (D) Spontaneous respiration

Correct Answer: (D) Spontaneous respiration

SOLUTION:

Clinical pearl: The curare cleft is the capnograph's way of telling you the paralysis is fading.

Picture the alveolar plateau (phase III) as a flat-topped box. When a notch suddenly carves into that flat top, the diaphragm has fired on its own and briefly diluted the expired CO₂, so the trace dips. This is the curare cleft, and its presence on a ventilated patient signals spontaneous respiratory effort returning, classically as a neuromuscular blocker wears off.

Option elimination: A capnograph trace at true inspiration sits near zero, not on the plateau, so 'during inspiration' is out. 'Inspiration with cardiac oscillations' would give tiny, regular, heartbeat-timed ripples rather than one deep cleft. 'During expiration' just names a phase and does not explain the notch. That leaves spontaneous respiration as the answer.

Mnemonic: Curare notch = the curarised patient is starting to breathe back.

Ref: Miller's Anesthesia, 8th edition.

Quick Tip: A single notch dipping into the phase III plateau points to returning patient effort.

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292. Identify the device shown in the image.



- (A) Nasopharyngeal airway
- (B) Endotracheal tube (cuffed)
- (C) Guedel airway
- (D) Laryngeal mask airway

Correct Answer: (D) Laryngeal mask airway

SOLUTION:

Spot diagnosis: Tube plus spoon-shaped inflatable mask equals laryngeal mask airway.

The LMA is a supraglottic device, meaning it secures the airway from above the glottis. Its cuffed elliptical mask is pushed through the mouth and down until it rests over the laryngeal inlet, where the cuff inflates to make an airtight seal, all without entering the trachea or touching the vocal cords. This intermediate position, between a simple face mask and a tracheal tube, is why it keeps a spontaneously breathing or unconscious patient's airway open during anaesthesia.

Option elimination: A Guedel (oropharyngeal) airway is solid plastic and curved with no mask, so rule it out. A nasopharyngeal airway is a thin soft tube with a flange. A cuffed endotracheal tube has a tiny cuff at the far end and goes through the cords, not a broad mask sitting over them. Only the LMA carries a mask-and-cuff at its end.

Pearl: Also called the Brain mask after its inventor Dr Archie Brain. Its main limitation is that the seal does not guarantee protection from aspiration.

Quick Tip: An elliptical cuffed mask or a tube that seals over, not through, the glottis.

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293. Identify the condition in the X-ray given below.



- (A) TGA
- (B) TAPVC
- (C) TOF
- (D) Ebstein's anomaly

Correct Answer: (C) TOF

SOLUTION:

Pattern recognition: Boot-shaped heart plus dark lungs equals Tetralogy of Fallot.

The upturned cardiac apex comes from right ventricular hypertrophy, and the concave upper-left heart border comes from an underdeveloped pulmonary artery. Together they carve the coeur en sabot or boot shape. Because the right ventricular outflow is obstructed, less blood reaches the lungs, so the pulmonary vasculature looks sparse and the lung fields appear lucent.

Option elimination by silhouette: Egg-on-a-string with a thin vascular pedicle would be TGA. A snowman or figure-of-eight contour with plethoric lungs would be supracardiac TAPVC. A grossly dilated, wall-to-wall, box-like heart would be Ebstein's anomaly. None of those match a boot.

Pearl: Echocardiography confirms TOF, and elective repair is typically at 4 to 6 months.

Ref: Bailey and Love, 27th edition.

Quick Tip: Upturned apex, concave pulmonary bay, dark lungs, think of the shape of a boot.

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294. A chest radiograph obtained in a male with hypertension. What will be the diagnosis?



- (A) Tetralogy of Fallot
- (B) Ebstein's anomaly
- (C) TAPVC
- (D) Coarctation of aorta

Correct Answer: (D) Coarctation of aorta

SOLUTION:

Clinical link first: A hypertensive young man with a chest film showing rib notching means coarctation of the aorta until proven otherwise.

In coarctation the aorta is narrowed, so blood detours through the intercostal arteries to reach the lower body. These overworked, dilated vessels press on the rib undersurfaces and scallop them, producing inferior rib notching. At the narrowing itself the aortic shadow kinks into a 3-shape, the pre-stenotic dilatation forming the top curve and the post-stenotic dilatation the lower curve, the classic figure-3 sign. The heart is usually normal in size in older children.

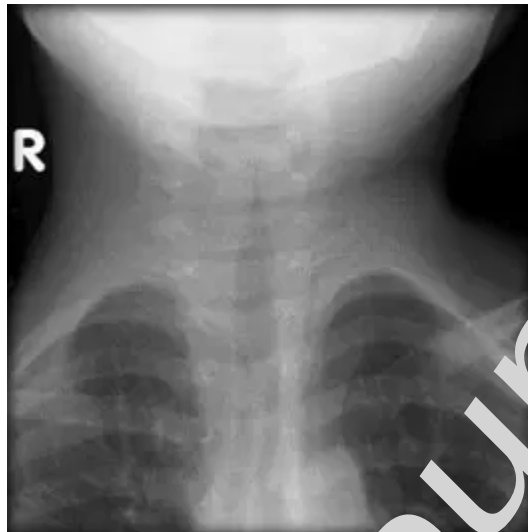
Eliminate the rest: A boot-shaped heart with dark lungs is TOF, a wall-to-wall box heart is Ebstein's, and a snowman silhouette is supracardiac TAPVC. Only coarctation pairs systemic hypertension with rib notching and the figure-3 sign.

Ref: Bailey and Love, 27th edition.

Quick Tip: Young hypertensive male: look at the rib undersurfaces and the aortic knuckle for a number 3.

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295. Steeple sign, seen in the image below, is seen in which of the following conditions?



- (A) Acute epiglottitis
- (B) Acute laryngotracheobronchitis
- (C) Laryngeal papillomatosis
- (D) Bilateral abductor paralysis

Correct Answer: (B) Acute laryngotracheobronchitis

SOLUTION:

Sign to disease: Steeple sign equals croup, that is acute laryngotracheobronchitis.

On a front-on neck X-ray the air column in the subglottis normally has shoulders; in croup the mucosa swells and the air column tapers smoothly to a point, exactly like the spire of a church steeple (also called the wine-bottle or pencil-tip sign). Croup is usually viral, hits toddlers under 2, comes on gradually, and produces biphasic stridor, hoarseness, and a barking cough.

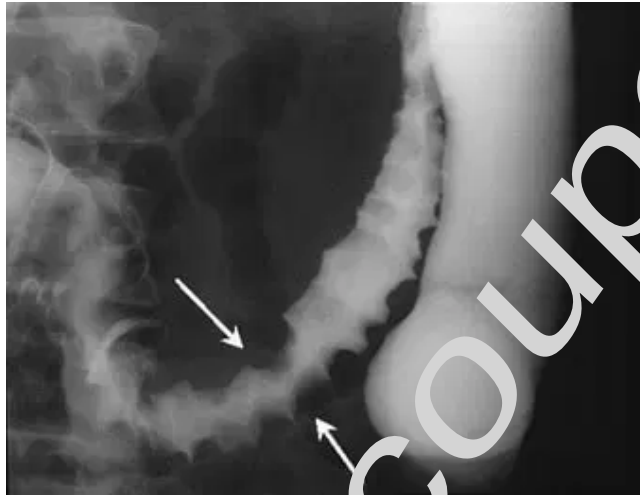
Contrast trick: Do not confuse it with the thumbprint sign of acute epiglottitis, which is a swollen epiglottis on a lateral film and is a more sudden, toxic, drooling illness. Laryngeal papillomatosis would show nodular soft-tissue shadows, and bilateral abductor paralysis is diagnosed by laryngoscopy, neither giving a steeple.

Ref: Bailey and Love, 27th edition.

Quick Tip: A pencil-tip narrowing of the subglottic trachea goes with a barking cough.

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296. Identify the radiological sign given below.



- (A) Diverticulitis
- (B) Ischaemic colitis
- (C) Appendicitis
- (D) None

Correct Answer: (B) Ischaemic colitis

SOLUTION:

Sign-led reasoning: Rounded scalloped indentations on a barium enema are thumbprinting, and thumbprinting at the splenic flexure means ischaemic colitis. When colonic blood supply fails, the submucosa fills with oedema and blood and bulges into the lumen as smooth, regular bumps that look as if a thumb were pressed into dough. The favourite site is the splenic flexure and descending colon, the watershed between the superior and inferior mesenteric territories, which is the first to suffer when perfusion drops. Plain radiographs may show splenic-flexure irregularity and a thickened bowel wall.

Option elimination: Diverticulitis would show sac-like outpouchings, not symmetric indentations. Appendicitis is a clinical and CT diagnosis, not a barium-enema thumbprint. 'None' is wrong because the sign is specific. So ischaemic

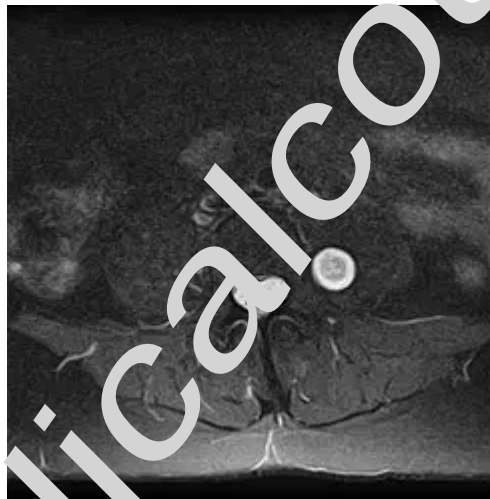
colitis is the answer.

Ref: David Sutton, Textbook of Radiology and Imaging, 7th edition.

Quick Tip: Smooth scalloped indentations at the splenic flexure watershed point to poor blood supply.

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297. A middle-aged man has a swelling over the neck since childhood, with the overlying skin not intact, which had a bag-of-worms or worm-like appearance with a black spot in the middle. What will be the diagnosis?



- (A) Cirroid aneurysm
- (B) Varicocele
- (C) Plexiform neurofibroma
- (D) Lymphangioma

Correct Answer: (C) Plexiform neurofibroma

SOLUTION

Buzzword decode: 'Bag of worms' on the body wall plus lifelong history equals plexiform neurofibroma.

This lesion is a rare form of neurofibromatosis type 1. Tumours sprout along several nerve trunks at once, swelling and distorting them so the mass feels like a tangle of ropes or worms under the skin, often with overlying skin changes. Because it is part of NF-1, hunt for the company it keeps: many small cutaneous

neurofibromas and brown cafe-au-lait macules scattered over the trunk and arms.

Distinguish the look-alikes: A varicocele also feels like a bag of worms, but it lives in the scrotum, not the neck, so it is out. A cirroid aneurysm is a pulsatile, compressible tangle of vessels, classically on the scalp, and would thrill on palpation. A lymphangioma or cystic hygroma is a soft cystic neck lump that lights up brightly on transillumination, unlike a solid nerve tumour. Hence plexiform neurofibroma.

Ref: NF-1 plexiform neurofibroma literature.

Quick Tip: A lifelong 'bag of worms' mass with cafe-au-lait spots points to a nerve sheath tumour of NF-1.

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298. Identify the radiological image given below.



- (A) Intussusception
- (B) Carcinoma colon
- (C) Sigmoid volvulus
- (D) Diverticulitis

Correct Answer: (A) Intussusception

SOLUTION:

Image-first read: A target-like mass in the lumen with contrast feathering into a coiled-spring pattern is intussusception.

Intussusception is one bowel segment sliding into the one ahead of it, like collapsing a telescope. On a contrast enema this produces a filling defect with a meniscus or claw of contrast cupping its apex, and as contrast tracks between the inner and outer tubes it outlines stretched mucosal folds as a coiled spring. Clinically think infant, intermittent screaming and drawing-up of legs, and redcurrant-jelly stool; the plain film may show an empty right iliac fossa with a soft-tissue mass.

Eliminate the rest: An apple-core or napkin-ring stricture is colonic carcinoma. A coffee-bean shaped dilated loop rising out of the pelvis is sigmoid volvulus. Sac-like outpouchings with focal inflammation are diverticular. None of these is a telescoped target, so intussusception is the answer.

Ref: David Sutton, Textbook of Radiology and Imaging, 7th edition.

Quick Tip: Coiled-spring folds and a crescent of contrast around a luminal mass mean one bowel loop has telescoped.

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299. Name the sign represented in the image given below.



- (A) Mickey mouse sign
- (B) String sign
- (C) Tillaux sign
- (D) Stemmer's sign

Correct Answer: (A) Mickey mouse sign

SOLUTION:

Shape recognition: Three round vessels arranged like a cartoon mouse head equal the Mickey Mouse sign.

On a transverse groin ultrasound just below the inguinal crease, the common femoral artery and common femoral vein form the round face and the great saphenous vein forms an ear, the classic Mickey Mouse silhouette. It is the go-to landmark for locating the saphenofemoral junction when scanning leg veins in chronic venous disease.

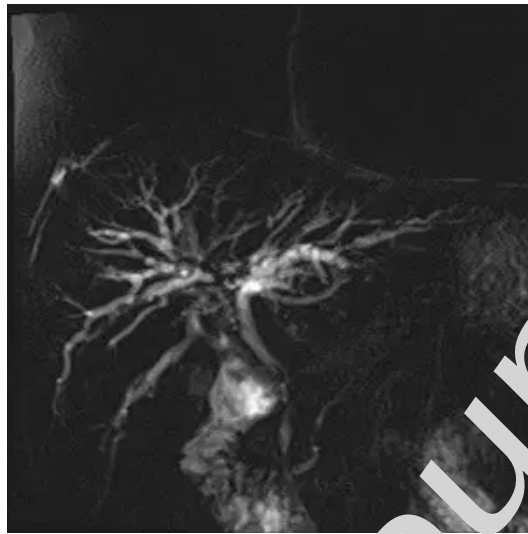
Option elimination: The string sign is the thread-like barium column of stenosed terminal ileum in Crohn's disease, not an ultrasound triad. Tillaux's sign describes a mesenteric cyst that moves freely in a line perpendicular to the root of the mesentery. Stemmer's sign is the bedside lymphoedema test where you cannot pinch the skin at the base of the second toe. None involve three round groin vessels, so Mickey Mouse sign is correct.

Ref: UIP consensus on lower limb vein duplex ultrasound.

Quick Tip: Three round vessels at the groin like a head with two ears mark the saphenofemoral junction.

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300. A 35-year-old male presents with recurrent episodes of abdominal pain, jaundice, and fatigue and underwent MRCP. What will be the most likely diagnosis?



- (A) Primary biliary cirrhosis
- (B) Caroli's disease
- (C) Primary sclerosing cholangitis
- (D) Oriental cholangitis

Correct Answer: (C) Primary sclerosing cholangitis

SOLUTION:

MRCP pattern: Multifocal strictures with intervening dilatation that beads the whole biliary tree equal primary sclerosing cholangitis.

In PSC, repeated inflammation and fibrosis pinch the bile ducts at many points, both inside and outside the liver. Between the pinches the ducts dilate, so the cholangiogram looks like a string of beads. The typical patient is a young or middle-aged man, often with ulcerative colitis, who has recurrent right-upper-quadrant pain, intermittent jaundice, and fatigue. Cholangiography (MRCP first, ERCP if needed) is the cornerstone of diagnosis.

Eliminate the rest: Primary biliary cholangitis attacks tiny ducts in middle-aged women and is AMA-positive, with no large-duct beading. Caroli's disease shows ballooned cystic intrahepatic ducts with the central dot sign. Oriental cholangitis shows ducts crammed with pigment stones and is endemic to East Asia. The beaded large-duct pattern fits only PSC.

Ref: Bailey and Love, 27th edition.

Quick Tip: Beaded ducts with multifocal strictures in a young man, think of the biliary disease tied to IBD.