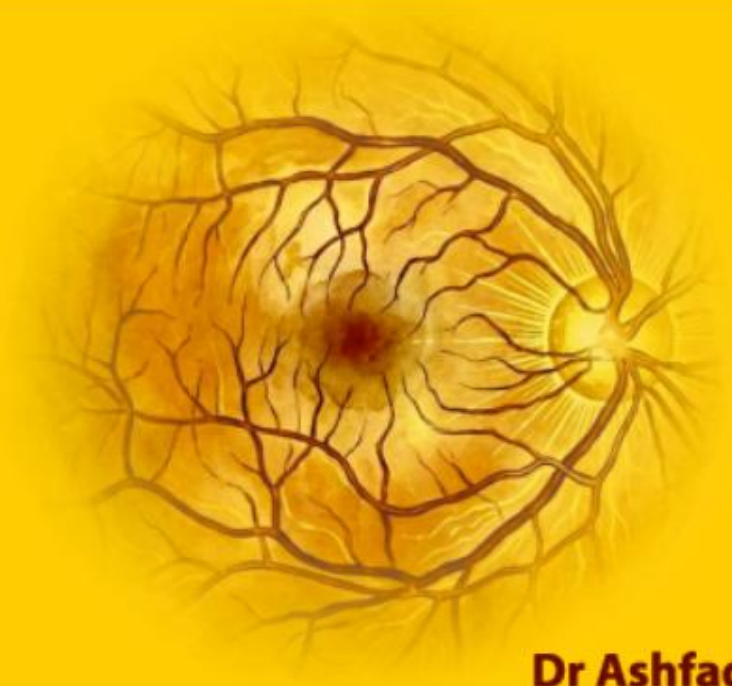
STANDARD EDITION

FMGE BLITZ

FINAL-HOUR POWER REVIEW

ALL 19 SUBJECTS • EXTREME HIGH-YIELD • LATEST FMGE PATTERN

FMGE BLITZ



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MED

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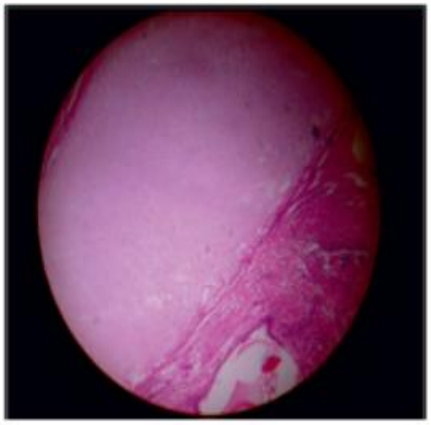
Compression Fracture (Vertebrae)



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Dermoid Cyst Ovary

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Tubercular Knee

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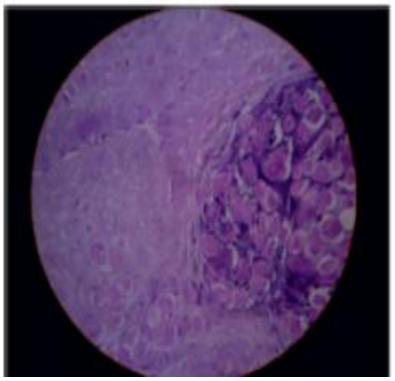
Genu valgum



Q12. A Patient presents multiple purplish macules as shown. His CD 4 Count is very low. Most Likely he is having :

A. Raynauds Lesion
B. Eosinophilic Folliculitis
C. Warts
D. Kaposi Lesions

Ans D. Kaposi Lesions

Kaposi lesions have an Association with HIV Positivity. Patients present with multiple purpulish macules, papules, nodules effecting feet, legs, hands, face and the mucosa of oral cavity. Herpes Hominis Virus HHV 8 is implicated in causation.

Q13. After a severe trauma, a patient presented with severe pain. In the ER Multiple radiographs were taken. The radiograph shown below demonstrates:

A. Colles fracture
B. Gallezis fracture
C. Montegios fracture
D. Bennetts fracture

Most common type of elbow dislocation is: The Radiograph tests the ability of a student to basically know what Monteggias fracture is. An isolated dislocation of the radial head in children or adults is uncommon. When a dislocation occurs, it is almost always associated with a fracture of the proximal ulna (Monteggia's fracture-dislocation). The Exact Opposite of this is the Gallezis Fracture.

Q14. Below is shown a Total Colectomy specimen of a patient with Ulcerative colitis. What is true of this disease mostly?

A. Pseudopolyps absent and disease is Limited to mucosa and submucosa
B. Pseudopolyps present and disease is not Limited to mucosa and submucosa
C. Pseudopolyps present and disease is Limited to mucosa and submucosa
D. Pseudopolyps absent and disease is not Limited to mucosa and submucosa

Ans C. Pseudopolyps present and disease is Limited to mucosa and submucosa

Features of ulcerative colitis:

- Involves rectum always
- May cause "pancolitis"
- Diffuse involvement
- Retrograde spread to ileum is backwash ileitis
- Disease of continuity
- Pseudopolyps present
- Limited to mucosa and submucosa
- Non caseasting granulomas not seen
- Creeping fat not seen

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IMAGE BASED FMGE

Q1. Identify the condition below: ASKED FMGE 2025

A. Renal Ectopia
B. Horse Shoe Kidney
C. Pelvic Kidney
D. Renal Cancer

Ans B. **Horse Shoe Kidney**

Q2. Below is shown an image of a patient who had intense testicular pain. He developed fever few days back. The Best modality of treatment of the patient is:

A. Only IV Pencillin
B. Wait and Watch.
C. Surgical debridement and aggressive antibiotic Coverage
D. Closed Drainage

Ans C. **Surgical debridement and aggressive antibiotic Coverage**

The figure shows gangrene in the testis. When rotation of the testis on the end of the cord exceeds 90 degrees, there may be compromise of the blood supply, which causes exquisite pain and produces gangrene and subsequent atrophy of the testis unless the torsion is treated immediately.

Pathologically, there is **edema, hemorrhage, and finally venous infarction of the testis.**

Clinically, the torsion causes sudden onset of severe pain with marked swelling of the scrotum.

The testis is **intensely tender.** Surgical debridement and aggressive antibiotic coverage should be started.

Orchiectomy is required in cases that have progressed to necrosis of testicular tissue.

Q3. A Patient had burning pain during micturition with small amount of blood in urine noticed frequently for past few weeks. Radiography was done which is shown below. Identify the condition

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CLINICAL SCENARIOS

- In Frey's Syndrome: Nerve Involved: **Auriculotemporal Nerve.**
- Anterior Drawer Sign is used for **injuries of ACL.**
- Injury at Wristusually effects which nerve: **Median N.**
- Inability to Raise Voice is due to which muscle: **Cricothyroid muscle.**
- Mid Shaft Fracture Humerus: **Radial N injury.**
- Foot Drop is due to injury of: **CPN Injury (Common Peroneal Nerve).**
- Payers Patch are seen in which histology slide: **Ileum.**
- A Patient presents to the Dermatology clinic reporting recurrent skin lesions as seen on the image the patient describe that lesions appear within hours each time he takes NSAIDS. The diagnosis is: **FDE (FIXED DRUG ERRUPTIONS).**
- What is the most likely causative agent for a Tzanck smear showing multinuclear giant cells: **Herpes simplex virus (HSV).**
- A Patient presents with fever after returning from a forest trip on examination. at examining black escahr (lesion) is seen on the back what is the drug of choice: **DOXYCYCLINE.**
- A Female presents with multiple small pink umblicated papules on the face the diagnosis is: **Molluscum contagiosum.**
- A Patient with borderline tuberculoid leprosy represents with the following findings which type of hypersensitivity reaction and nerve is enlarged: **Greater auricular nerve.**
- After Eating Salad, Diahorrea within 3 years due to: **Staph aureus.**
- HIV Positive Individual with CD 4 Count Less than 65: BAL Showed Hat shaped Structure, Ping Pol Ball Appearance: **Pneumocystis Jerovocii.**
- Sporothrix Schenkii Organism with Asteroid Bodies: Culture: **SDA (Saboudards Agar).**
- HIV Positive Individual with Diahorrea with sporocysts: **Cystoisospora.**
- Female Tampoon Use, Patient in Shock: **TSS: Staph Aureus.**
- Myonecrosis is seen commonly with: **Clostridium Perfingens.**
- HPV in Head and Neck: **Oropharyngeal Cancer.**

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RADIOLOGY

ACHALASIA CARDIA

- It is the most common Esophageal Motility Disorder
- It is characterized by Severe spasm of circular muscle fibers of lower esophagus which fails to relax during swallowing.
- Barium meal shows a "Bird Beak esophagus." FMGE 2024
- Manometry is diagnostic

IMPORTANT SIGNS

Pyloric Stenosis

- Double track sign
- String sign
- Teat sign
- Caterpillar sign

Diffuse Esophageal Spasm

- Yo-Yo motion of barium
- "Corkscrew" appearance (esophageal curling) FMGE 2021
- Rosary-bead/sheikh kebab configuration
- Chain of bead appearance

Achlasia Cardia

- Megaesophagus (sigmoid esophagus)

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PSYCHIATRY

DYSTHYMIC DISORDER

- It is a chronic, low intensity 'mood disorder characterized by low energy', alternations in sleeping and eating patterns, low self-esteem, and anhedonia.
- By definition the symptoms must last more than two years.
- Dysthymia responds equally well to psychological and pharmacologic interventions.

ATYPICAL ANTIPSYCHOTICS HIGH YIELD FMGE

- Function by blocking dopamine and 5-HT2 receptors. These medications have fever EPS side-effects but tend to have more endocrine side effects such as diabetes mellitus and weight gain. Examples include olanzapine, quetiapine, and risperidone.
- Clozapine is a highly effective atypical antipsychotic but can cause agranulocytosis He was probably given this medication during his previous hospitalization and it should not be given again since he developed leucopenia previously.

CONVERSION DISORDER FMGE 2025

Here symptoms focus on deficits that **involve voluntary motor or sensory function and on psychological factors** that initiate or exacerbate the medical presentation.

- Like somatization disorder, the **deficit is not intentionally produced or simulated,** as is the case in factitious disorder (malingering).
- Deficit is proceeded by conflicts/stressors.
- Deficit cannot be fully explained by medical condition or substance use.
- Deficit can cause significant distress/impairment

La Belle Indifference is noted

A 22-year old female experiences a sudden loss of vision, after a fight with her husband but appears unconcerned ("la belle indifference"). She reports that the onset of her blindness, she saw her child going to the street. FMGE 2025

TYPES OF PUPIL

REPEATER FMGE

- **Argyl Robertson Pupil:** Small pupils, irregular in shape which don't react to light but react to accommodation. (ARP: Accomdation Reflex present)
- **Marcus Gunn Pupil (Pupillary Escape):** Illumination of one eye normally produces constriction. In case light source is swung from eye to eye, affected pupil may "paradoxically" dilate. (Marcus Gunn Pupil) (Defect anterior to optic chiasma). ASKED FMGE 2025
- **Aides Pupil:** It is dysfunction of constrictor muscle and hence does not respond to light or to accommodation (Tonic pupil)

ROSETTE CATARACT

HIGH YIELD FMGE

- Rosette shaped cataract ar seen in Trauma. Cataract formation is a common sequale to the blunt trauma. FMGE 2021
- Postulated mechanisms include traumatic damage to the lens fibres themselves and minute ruptures in lens capsule with influx of aqueous humor, hydration of lens fibres and consequent opacification.
- A ring shaped anterior subcapsular opacity may underlie a Vossius ring. Commonly opacification occurs in the posterior subcapsular cortex along the posterior sutures resulting in flower shaped (Rosette) opacity. Cataract formation is a common sequale to the blunt trauma.
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Mc PHERSONS FORCEPS

These forceps have many types. They are used to hold, stitch and retract tissues. Helpful in Opthomology especially in Catract and glaucoma Procedures.

OPHTHALMOLOGICAL TESTS

Direct Ophthalmoscopy	Indirect Ophthalmoscopy
Condensing lens not required	Condensing lens required
Examination close to patient	Examination at a distance
Image is virtual and erect	Image is real and inverted
Magnification is 15 times FMGE 2025	Magnification is 5 times

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OPHTHALMOLOGY

THE DIFFERENT LAYERS OF EYE

- Outer or "Fibrous coat" consists of sclera and cornea
- Middle or "Vascular coat" comprises choroid, ciliary body and iris
- Inner or "Nervous coat", retina

The Refractive Media of eye is formed by:

From before backwards:

- Cornea,
- Aqueous humour
- Lens and
- Vitreous body

Lamina fusca of sclera: It is a thin layer of delicate tissue between choroid and sclera

The structures piercing Sclera

- Optic nerve
- Ciliary nerves and arteries
- Anterior ciliary arteries and
- Venae verticosae

The layers of cornea seen histologically (From before backwards)

- Corneal epithelium (stratified squamous)
- Bowman's membrane
- Substantia propria
- Descemet's membrane and
- Mesothelium

TENON'S SHEATH

It is a thin membranous sheath around the eyeball. Extends from optic nerve to sclero-corneal junction. Eyeball

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ENT

PHARYNGEAL ARCH 1 DERIVATIVE HIGH YIELD FMGE REPEATER FMGE

Pharyngeal Apparatus comprises of:

- **Pharyngeal Arches** are derived from Mesoderm
- **Pharyngeal Clefts** are derived from Ectoderm
- **Pharyngeal Pouches** are derived from Endoderm

Pharyngeal Arch 1 Derivatives: HIGH YIELD FMGE REPEATER FMGE

Meckels Cartilage

Mandible,

Malleus, (AS Asked in Question)

Incus,

Spheno Mandibular Ligament

Muscles: Muscles of Mastication (Medial Pterygoid and Lateral Pterygoid, Masseter,Temporalis)

Two Tensors (Tensor Tympani Tensor Palati)

Mylohyoid, anterior belly of digastrics

Patients with this arch deformity may present with malformed ears, Maxillary Hypoplasia, slanted Palpepral Fisures. FMGE 2022

Pharyngeal Arch 2 Derivatives (Word S): HIGH YIELD FMGE REPEATER FMGE

Reicherts Cartilage:

- Styloid process,

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ORTHOPEDICS

FACTORS EFFECTING FRACTURE HEALING

HIGH YIELD FMGE

- **Degree of immobilization** is the **"most important factor".** Repeated disruptions of repaired tissue significantly impairs healing.
- **Age:** Young patients heal rapidly.
- **Nutrition:** Good nutrition plays a vital role.
- **Diseases** like Diabetes Mellitus, Osteoporosis, Immunocompromised states, Marfans syndrome, Ehler Danhlos Syndrome cause delayed healing.
- **Hormones:** Growth Hormone, Calcitonin promote growth healing. Corticosteroids delay healing of fractures.
- **Type of bone:** Cancellous bones heal quickly due to increased vascularity.
- **Severe Degree of trauma** and secondary infection cause delayed fracture healing.
- **Inadequate blood supply** near talus, NOF cause delayed fracture healing..
- **Intraarticular fractures** communicate with synovial fluid which contains collagenases retards fracture healing.
- **Separation of bone ends:** Normal apposition is also important, inadequate reduction, excessive traction or interposition of soft tissue prevents healing.
- **Infection:** Infections cause necrosis and edema, impair healing and increase mobility of fracture site.

SLIPPED CAPITAL FEMORAL EPIPHYSIS

HIGH YIELD FMGE

- Slipped capital femoral epiphysis occurs during adolescent rapid growth period when epiphysis is displaced down and back.
- Slipped capital femoral epiphysis (SCFE) is the most common adolescent hip disorder. Its cause is unknown, but an endocrine basis has been suggested because SCFE is frequently accompanied by abnormalities of growth. FMGE 2024

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OBS GYNECOLOGY

IMPORTANT POINTS SURGICAL GYNAECOLOGY

Pelvic Inlet

It is bounded posteriorly by the promontary and alae of the sacrum, laterally by thelinea terminals and anteriorly by pelvic symphysis.

Mid Pelvic Diameter

- The mid pelvic lies at the level of ischial spines (plane at least pelvic dimensions).
- It is of particular importance following engagement of fetal head in obstructed labour.
- The Interspinous diameter is (10 cms) the smallest diameter of the pelvis.

Pelvic Outlet

The outlet of the pelvis consists of two triangular areas. The apex of posterior triangle is at the tip of sacrum and lateral boundaries are the sacrosciatic ligaments and ischial tuberosities. The anterior triangle is formed by the area under the pubic arch.

Posterior sagittal diameter of outlet: It is greater than 7.5 cms.

IMPORTANT DIMENSIONS

REPEATER FMGE QUESTIONS

- Obstetric conjugate is: 10-10.5 cms
- True conjugate is 11cms
- Diagonal conjugate is 12cms FMGE 2024
- Interspinous diameter is 10 cms
- Intertuberous diameter is 11 cms

Remember:

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DERMATOLOGY

THE SKIN/INTEGUMENT

The Skin forms an important and protective layer for the body surface.

It is composed of:

1. Epidermis made of stratified squamous epithelium
2. Dermis or Sub epithelium
3. Hypodermis or CT Fascia

The Epidermis

Classically Epidermis has four layers:

1. Stratum Germinativium composed of stratum Basale and Stratum Spinosum
2. Stratum Granulosum (granular cell layer)
3. Stratum Lucidum (clear cell layer)
4. Stratum Corneum (horny cell layer)

1. **Stratum Germinativium is also called as Malphigian layer composed of:**

   (a) **Basal Cell layer:** The Basal cell layer is composed of single layer of columnar cells resting on a clear wavy basement membrane. From the basal borders of these cells Cytoplasmic processes extend anchoring the epidermis to dermis

   (b) **Prickle cell layer (stratum spinosum):** The prickle cell layer (stratum spinosum) consists of 4-6 layers of cells which are polygonal and connected together by **tonofilaments** giving them a prickly appearance.

2. **Stratum Granulosum** consists of 3-4 layers of flattened cells rich in keratohyaline granules. The keratohyaline granules eventually fill much of the cell, and it is these granules which give the cells of the **Stratum Granulosum** its granular appearance. The keratohyaline granules contain a protein called **filaggrin**, the function of which appears to be to bind the tonofibrils together, converting them into **keratin.**
3. **Stratum Lucidum** consists of few layers of dead, non nucleated cells without cell boundaries. These cells are rich in **Eleidin** granules.
4. **Stratum Corneum** is the most superficial layer of epidermis. It is made o flat, dead cornified cells which have horny scales. THEY ARE CONTINUOUSLY SHED FROM THE SURFACE and replaced by newer cells.

PEUTZ-JEGHERS SYNDROME FMGE 2025

- This syndrome is characterized by hamartomatous polyps of the gastrointestinal tract (stomach, small bowel, colon) that are associated with mucocutaneous pigmentation (lips, oral mucosa, fingers, forearm, toes, umbilical area).
- The skin pigmentation may fade after puberty, but that of the mucous membrane is retained.

HNPCC FMGE 2025

- The increased risk for these cancers is due to inherited mutations that impair DNA mismatch repair. FMGE 2025
- HNPCC defects in DNA mismatch repair lead to microsatellite instability, also known as MSI-H, which is a hallmark of HNPCC. HNPCC is known to be associated with mutations in genes involved in the DNA mismatch repair pathway
- Amsterdam criteria
- The following are the Amsterdam criteria in identifying high-risk candidates for molecular genetic testing.

Remember:

Alports Syndrome: Hereditary nephritis + nerve deafness FMGE 2024

Brown's syndrome: Congenital anomaly of superior oblique tendon and trochlea function. When the affected eye is adducted it shoots downwards. The condition is usually treated conservatively as some spontaneous recovery may occur.

Bergers Disease: IgA nephropathy causing hematuria in kids, usually following infection

Bernard-Soulier Disease: Defect in platelet adhesion (abnormally large platelets & lack of platelet-surface glycoprotein)

GPIB/ IX Defective. FMGE 2025

VARICOCOELE

Means varicosity of the veins of the spermatic cord. The veins of pampiniform plexus of the spermatic cord become tortous, dilated and elongated.

Varicocele formation has been attributed to one of the three factors:

- Increased venous pressure in the left renal vein.
- Collateral venous anastomosis.
- Incompetent valve of internal spermatic vein.

Absence or incompetence of valves in proximal internal spermatic vein is responsible for majority of cases, left side prominency is caused by the high venous pressure in left spermatic venous system secondary to high venous pressure in left renal vein.

Clinical Features

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SURGERY

SHOCK

Hypovolemic Shock

It results as a result of hemorrhagic losses, such as with:

- GI Bleeds (Gastrointestinal bleeding)
- Plasma volume losses
- Ruptured aneurysms
- Trauma

Shock arising from plasma volume losses may be due to extravascular fluid sequestration as might occur in:

- Bowel obstruction
- Burns
- Excessive fluid losses
- Pancreatitis

Cardiogenic Shock

Is characterized by decreased cardiac output. It can be due to both Cardiac or Extra cardiac dysfunction.

Cardiac causes include:

- Disorders of Cardiac rhythm
- Cardiomyopathy
- Myocardial infarction
- Valvular heart disease

Extra Cardiac causes include:

THE MARFANS SYNDROME FMGE 2025

- It is a dominantly inherited connective tissue disorder characterized by

Musculoskeletal Abnormalities

- Arachnodactyly FMGE 2025
- Tall stature FMGE 2025
- Scoliosis
- Pectus deformities
- Ligamentous laxity
- High Arched Palate FMGE 2025

Cardiovascular Abnormalities

(Mitral valve prolapse [MVP] and regurgitation, aortic valve insufficiency, and aortic dilatation, aneurysm, and dissection), lens dislocation, and myopia.)

- Marfan syndrome results from mutations in the gene (FIBN1) that encodes fibrillin I, located on chromosome 15q21. FMGE 2025
- The major life-threatening complication of the Marfan syndrome is aortic dissection and rupture, and most deaths result from cardiovascular disease when the aorta is untreated. The risk of dissection is correlated with aortic diameter. Myxomatous degeneration of valve leaflets may also occur. The mitral valve cusps may be involved. The chordae tendinea may elongate or rupture, predisposing to mitral valve prolapse, or flail mitral valve with mitral regurgitation.

CEREBELLUM

Cerebellum is the area which coordinates movements. Non ability to do heel shin Test indicates failure to manage fine and well coordinated Movements. Also the Examiner gives a clue of Inability not to Perform Rapid movements. This Indicates a Cerebellar and Not a Cerebral lesion.

Remember:

- The Cerebellum is not a Sensory Organ.
- Removal of cerebellum does not result in loss of any sensation.
- The Cerebellum Is not a motor Organ.

Cerebellar Tests are:

- Positive Romberg's test.
- Positive Heel Shin test.
- Positive Finger Nose test .

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MEDICINE

HYPOKALEMIA

ASKED FREQUENTLY IN FMGE

- Severe hypokalemia (serum K <3 mEq/L) may produce.
- Muscular weakness and lead to paralysis and respiratory failure. Muscular malfunction may result in respiratory hypoventilation, paralytic ileus.

The characteristic ECG changes:

- ST segment depression,
- Increased U wave amplitude, and
- T wave amplitude <U wave amplitude.
- Severe hypokalemia may produce premature ventricular and atrial contractions and ventricular and atrial tachyarrhythmias. FMGE 2025

HYPERKALEMIA

Hyperkalemia can be the result of:

- False hyperkalemia: Hemolysis of blood sample very common, especially if it is difficult to obtain a venous blood specimen.
- Massive tissue injury that can occur with hemolysis associate with chemotherapy and cell death, or burns; dialysis or diuresis with fluid replacement may be required.
- Type IV RTA.
- Acute or end-stage failure.

PNEUMOCONIOSIS

- Pneumoconiosis results from inhalation of organic dust (e.g., asbestos, silica, metals).

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SOCIAL AND PREVENTIVE MEDICINE (SPM)

CONTRACEPTIVE ADVICE

- For newly married couples oral contraception pill is the method of choice.
- Barrier and Natural methods have high failure rate.
- IUCD are not precribed in nulliparous females due to increase risk of PID and infertility. They may be used in case of unprotected coitus. FMGE 2024
- Condom are suitable for use in old ager for couple who have infrequiuent coitus, during lactation, during holiday, subject who can not tolerate OCP, IUCD.
- In Breast feeding females. Lactational amenorrhoea provides protection.
- In later periods of Lactation, Progesterone only pills are the most effective contraceptive.

CONTRACEPTION

Methods of Contraception

- Barrier method
- Natural contraception
- Oral contraception pill
- Injectables
- Implants
- Devices like IUCD's

  Levonorgestrel IUCD's

  Surgical methods:
  - Female: Tubectomy
  - Male: Vasectomy

Natural Family Planning Methods are:

- Rhythm method/Calendar method

SPOROTHRIX SCHENKII ORGANISM WITH ASTEROID BODIES: CULTURE: SDA (SABOUDARDS AGAR)

FMGE 2025

A woman who pricked her finger while pruning some rose bushes develops a local pustule on upper limb that progressed to an ulcer. Several nodules then developed along the local lymphatic drainage. Disease is sporotrichosis.

FMGE 2025

GIARDIA LAMBLIA

EXPECTANT Q FMGE 2026

- Causes **Giardiasis especially diarrhea.**
- Characteristics of Giardia lamblia: intestional protozoan.
- Pear-shaped, flagellated trophozoites form cysts with four nuclei.
- **Life cycle:** Human ingest cysts, which form trophozoites in small duodenum. Trophozoites encyst and are passed in feces.
- Laboratory Diagnosis of Glardia lamblia is trophozoites attach to wall but do not invade. They interfere with absorption of fat and protein.

SALMONELLA TYPHI

- Causes Typhoid fever.
- Characteristics of Salmonella typhi are facultative gram-positive rods. Non lactose-fermenting. Produces H2S.
- Laboratory Diagnosis of Salmonella typhi is gram-stained smear and culture.
- Non lactose-fermenting colonies on EMB or MacConkey's agar. FMGE 2022
- MacConkey's agar differentiates lactose fermenters and non fermenters. FMGE 2022

PSEUDOMONAS AERUGENOSA

- It is a gram negative, FMGE 2025
- Aerobic,
- Motile bacillus. FMGE 2025
- Cetrimide agar is the selective media for Pseudomonas aerugenosa
- EXOTOXIN A inhibits protein synthesis.

Pseudomonas aerugenosa produces pigments

- pyocyanin,
- pyoverdin,
- pyorubin and

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MICROBIOLOGY

FILARIASIS

Characteristics of Wuchereria bancrofti are:

- They are tissue nematodes.
- **Life cycle:** Bite of female mosquite deposits infective larvae that penetrate bite wound, form adults, and produce microfilariae. These circulate in the blood, chiefly at night, and are ingested by mosquitoes, in which the infective larvae are formed.

Syndromes associated are:

- Weingartens Syndrome
- Meyer Kouwenaar Syndrome
- Laboratory: Diagnosis of Wuchereria bancrofti is microfilariae visible on blood smear.

PLASMODIUM SPECIES (P.VIVAX, P.OVALE, P.MALARIAE & P.FALCIPARUM)

- Causes malaria.

EXPECTANT Q FMGE 2026

Characteristics of Plasmodium Species (P.vivax, P.ovale, P.malariae & P.falciparum)

- Protozoan that infects red blood cells and tissue, e.g., liver, kidney, and brain.
- **Life cycle:** Sexual cycle consists of gametogony (production of gamates) in humans and sporogony (production of sporozoites) in mosquitoes; asexual cycle (schizogony) occurs in humans.
- Sporozoites in saliva of female Anopheles mosquite enter the human bloodstream and rapidly invade hepatocytes (exoerythrocytic phase) . There they multiply and form merozoites (Plasmodium vivax and Plasmodium ovale also form hypnozoites, a latent form) . Merozoites leave the hepatocytes and infect red cells (erythrocytic phase). There they form schizonts that release more merozoites, which infect other red cells in a snchronous pattern (3 days for Plasmodium malariae; 2 days for the others) . Some merozoites become male and female gametocytes, which forms an oocyst containing many sporozoites. These are released and migrate to salivary glands.

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PATHOLOGY

CELL INJURY

Reversible Cell Injury

- Cellular swelling
- Loss of microvilli
- Formation of cytoplasmic blebs
- ER swelling
- Ribosomal detachment
- Myelin figures
- Clumping of nuclear chromatin.

Irreversible Cell Injury:

- Flocculent, amorphous densities in mitochondria FMGE 2025
- Swelling and disruption of lysosomes
- Plasma membrane damage
- Nuclear changes:
- Pyknosis (nuclear condensation)
- Karryorexhis (nuclear fragmentation)
- Karyolysis (nuclear dissolution)

X-LINKED RECESSIVE TRIATS

Vitamin B1 Thiamine REPEATER FMGE

- Active form of Thiamine is Thiamine Diphosphate.
- The active form (Thiamine Diphosphate) acts as a coenzyme in enzymatic reactions of transferring an activated aldeyde unit.
- **This reaction is of two types:**
  - **Transketolase reactions:** In PPP Pentose phosphate pathway.
  - **Oxidative decarboxylation of -keto acids:** As Alpha ketoglutarate, Pyruvate.
- Its requirement increases in carbohydrate rich diet
- Its deficiency is diagnosed by in **erythrocyte transketolase activity**
- Deficiency of thiamine causes **Beriberi & Wernicke's encephalopathy.**
- **Beriberi is characterised by** High cardiac output failure and Biventricular failure
- **Wernicke-korsakoff syndrome** is most common in alcoholics

Vitamin B2 Riboflavin EXPECTANT Q FMGE 2026

- Decomposes in visible light.
- Yeast, liver & kidney are a good source Riboflavin is synthesized by plants & microorganism but not by mammals.
- Active form of riboflavin is FMN (Flavin Mono Nucleotide) & FAD (Flavin Adenine Dinucleotide) .
- FMN & FAD acts as prosthetic group in Oxidoreductase enzymes. These enzymes are called Flavoproteins.
- Many flavoproein enzymes contain one or more metals (like iron or molybdenum) as cofactors and hence they are known as Metallo flavoproteins.
- Deficiency of Riboflavin causes Angular stomatitis, Cheilosis, Glossitis, Seborrhea and Photophobia.

Vitamin B3 Niacin REPEATER FMGE

- In body synthesized from tryptophan
- High doses used To treat hyperlipidemia
- In overdose causes cholestatic jaundice
- NAD and NADP act as coenzyme for Oxidoreductase enzyme.
- Can be generated in body from tryptophan.
- **Deficency causes Pellagra:**
  - Diarrhea ASKED FMGE 2022
  - Dermatitis ASKED FMGE 2022
  - Dementia ASKED FMGE 2022

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BIOCHEMISTRY

DNA AND FMGE QUESTIONS

HIGH YIELD FMGE 2026

- DNA is the site of genetic information.
- DNA is located in nucleus. DNA is also present in mitochondria
- Most accepted model for DNA structure is "Watson and Crick" model.
- DNA is a double-stranded molecule. Each strand is a polymer of nucleotides (deoxyribonucleotides). Each strand possesses a polarity. It has a 3' end and a 5' end. The two strands are antiparallel, i.e., they are parallel but run in opposite directions.
- The sugar of DNA is deoxyribose.
- The purine bases in DNA are adenine (A) and Guanine (G)
- The pyrimidine bases are thymine (T) and cytosine (C).
- Uracil (U) , a pyrimidine, is not found in DNA. FMGE 2024

Purine Ring is a Simple Structure. It is formed by Glycine +glutamine + Aspartate. FMGE 2024

AMINO ACIDS

FAQ FMGE

Amino acids are usually classified into 5 types based on the properties of their side chains (R groups) , in particular, their polarity, or tendency to interact with water at biological pH (near pH 7.0) . The polarity of the R groups varies widely, from nonpolar and hydrophobic (water-insoluble) to highly polar and hydrophilic (water-soluble).

- **Nonpolar, Aliphatic R Groups:** Glycine, Alanine, Proline, Valine, Leucine, Isoleucine and Methionine.
- **Nonpolar, Aromatic R Groups:** Phenylalanine, tyrosine, and tryptophan
- **Polar, Uncharged R Groups:** Serine, Threonine, Cysteine, Asparagine, Glutamine.
- **Polar, positively Charged (Basic) R Groups:** Lysine, Arginine and Histidine.

TRYPTOPHAN

EXPECTANT Q FMGE 2026

- It is precursor for Serotonin, Niacin. FMGE 2024
- Aromatic amino acids are the only amino acids that absorb light.
- Tryptophan contains indole ring.

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PHYSIOLOGY

LYSOSOMES

ASKED FREQUENTLY IN FMGE

- Lysosomes are spherical, membrane-limited vesicles that may contain more than 50 enzymes each and function as the cellular digestive system. Their characteristic enzyme activities distinguish them from other cellular granules.
- The enzyme most widely exploited for their identification is acid phosphatase, because it occurs almost exclusively in lysosomes. Other enzymes common in lysosomes are ribonucleases, deoxyribonucleases, cathepsins, sulfatases, P-glucuronidase, and phospholipases and other proteases, glucosidases, and lipases.

FMGE 2022

LYSOSOMAL STORAGE DISORDERS

REPEATER FMGE

- Certain individuals with hereditary enzyme deficiencies are incapable of completely degrading various macromolecules into soluble by-products. As the insoluble intermediaries of these substances become amassed within the lysosomes of their cells, the size of these lysosomes increases sufficiently to interfere with the abilities of these cells to perform their function.
- Most commonly known of these conditions is Tay-Sachs disease. These children display a deficiency in the enzyme hexosoaminidase and cannot catabolize GM2 Gangliosides. Although most cells in these children
- accumulate GM2 Gangliosides in the lysosomes, it is the neurons in their central and peripheral nervous systems that are most problematic.

Proteins in Vesicular Transport

AP 1 clathirin:	Involved in transportation from Golgi bodies to lysosomes.
AP 2 clathirin:	Involved in transportation to endosomes.
CO-PI:	Coating proteins in vesicles for transportation between endoplasmic reticulum and Golgi apparataus.
CO-PII:	Coating proteins in vesicles for transportation between endoplasmic reticulum and

Muscle	Action	Nerve supply
Vastus medialis	Prevents lateral displacement of the patella	
Vastus intermedius		

Gluteal Region

Muscle	Action	Nerve supply
Gluteus maximus	Chief extensor of the thigh at the hip	Inferior gluteal FMGE 2021
Gluteus medius	Abductor of thigh	Superior gluteal FMGE 2023
Gluteus minimus	Abductor of thigh	Superior gluteal
Piriformis	Lateral rotator of thigh	Ventral ramus of S1,2.
Gamellus superior	Lateral rotator of thigh	Nerve to obturator internus
Gamellus inferior	Lateral rotator of thigh	Nerve to quadratus femoris
Obturator internus	Lateral rotator of thigh	Nerve to obturator internus
Quadratus femoris	Lateral rotator of thigh	Nerve to quadratus femoris
Obturator externus	Lateral rotator of thigh	Posterior division of obturator nerve

Tensor fascia lataAbductor and medial rotator of thigh Superior gluteal

TRENDELENBURG TEST HIGH YIELD FMGE 2026

- This test is employed for testing the stability of the hip joint. A positive test indicates a defect in osseomuscular stability expecially abductors of hip joint and the patient has a lurching gait. If the patient is asked to stand on one leg. If the abductors of thigh are paralysed on that side, they will be unable to sustain the pelvis against the body weight and pelvis tilts downwards on unsupported side. FMGE 2021
- Injury of the hip joint in which sciatic nerve likely to be damaged
- It is likely to be injured in the posterior dislocation of the hip joint associated with fracture of the posterior lip of the acetabulum, to which the nerve is closely related. ASKED FMGE 2022 FMGE 2022

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ANATOMY

JOINTS

HIGH YIELD FMGE 2026

Fibrous Joints

- **Sutures:** Skull
- **Syndesmosis:** Inferior Tibiofibular joint
- **Gomphosis:** Tooth in socket

Cartilaginous Joints

Primary cartilaginous (Synchondrosis):	✓ Joint between epiphysis and diaphysis ✓ First costochondral joint.
Secondary cartilaginous (Symphisis):	✓ Symphisis pubis, Manubriosternal join
Syndesmosis:	✓ Inferior tibiofibular joint FMGE 2021
Hinge joint:	✓ Elbow, ankle, IP joint
Pivot Joint:	✓ Sup and inf radioulnar joint
Condyloid joint:	✓ TM joint FMGE 2022
Ellipsoid joint:	✓ Wrist joint, MCP
Saddle/ sellar joint:	✓ Ist Carpometacarpal joint, sterno clavicular
Ball and Socket variety:	✓ Shoulder, Hip

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ALL 19 SUBJECTS • EXTREME HIGH-YIELD • LATEST FMGE PATTERN

Dr Ashfaq Ul Hassan
(Assoc Prof and Head Histology)

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STANDARD EDITION

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