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Quick Hints
(FCPS – 1)

Derivatives

- ✓ Extraembryonic mesoderm derived from - **Epiblast**
- ✓ Extraembryonic coelom derived from - **Hypoblast**
- ✓ Intraembryonic coelom derived from - **Lateral plate mesoderm**
- ✓ Adrenal cortex derived from - **Mesoderm**
- ✓ Adrenal medulla derived from - **Neural crest cell**
- ✓ Dura matter derived from - **Mesoderm**
- ✓ Pia and arachnoid matter derived from - **Neural crest cell**
- ✓ Schwann cell Derived from - **Neural crest cell**
- ✓ Oligodendrocytes derived from - **Neural Tube**
- ✓ Renal agenesis result from - **Failure of ureteric bud to reach metanephric mesoderm (Langman)**
- ✓ Two kidney with two ureter and pelvis Result from - **Early division of ureteric bud (Langman)**
- ✓ Hepatocyte Derived from - **Endoderm**
- ✓ Kuffer Cell Derived from - **Mesoderm**
- ✓ Transitional epithelium bladder derived from - **Endoderm**
- ✓ Adrenal Medulla Derived from - **Neural crest cell**
- ✓ Adrenal Cortex Derived from - **Mesoderm**

Ulcer

- ✓ Curling ulcer by - **Inhalation burn**
- ✓ Cushing Ulcer by - **Brain injury (Raised ICP)**
- ✓ Marjolin Ulcer by - **External Burn (Squamous cell carcinoma of Skin)**
- ✓ Mortorelli's Ulcer by - **Hypertension**
- ✓ Most Common location of Duodenal Ulcer - **1st part of Duodenum**
- ✓ Perforation of posterior wall of duodenum Bleed by - **Gastro duodenal artery**
- ✓ Most common location of gastric ulcer near - **Incisura angular is on Lesser curvature.**
- ✓ Perforation of lesser curvature Bleed by - **Left gastric artery**
- ✓ Perforation of posterior wall of stomach Bleed by - **Splenic artery**

Micturition / Defecation

- ✓ Initiation of Micturition reflex - **Stretch receptors in bladder wall**
- ✓ Micturition centre (stimulatory) - **Pons**
- ✓ Micturition centre (Inhibitory) - **Midbrain**
- ✓ Processing of micturition - **Cerebral cortex**
- ✓ Micturition reflex / integration - **Sacral segments of spinal cord**
- ✓ Voluntarily Inhibition - **Activation of Pudendal nerve**

- ✓ Pain and filling sensations of bladder are carried by – **Sympathetic (Guyton)**
- ✓ Defecation is initiated by - **Mass Movement**
- ✓ Defecation is Carried out by - **Sacral Parasympathetic**
- ✓ Defecation Reflex - **RectoAnal**
- ✓ Defecation Reflex in Baby - **Gastrocolic**
- ✓ **Bulbar Urethra Rupture (Below Urogenital Diaphragm)** urine into - **Superficial Perineal Pouch**
- ✓ **Membranous Urethra Rupture (At Urogenital Diaphragm)** urine into - **Deep Perineal Pouch**
- ✓ **Prostatic Urethra Rupture (Above Urogenital Diaphragm)** urine into - **Retropubic Space**
- ✓ **Penile Urethra Rupture** Urine into - **Scrotum > Anterior Abdominal Wall**
- ✓ **Injury above Sacral Segment Cause**
 - Spastic Bladder
 - Automatic Bladder
 - Urge Incontinence
- ✓ **Injury at Sacral Segment Cause**
 - Atonic Bladder
 - Autonomous Bladder
 - Overflow Incontinence

Note: Neurogenic is common term for both spastic and Atonic Bladder.

Aids / HIV

- ✓ Initial Test - **ELISA**
- ✓ Confirmatory Test - **Western Blot**
- ✓ In children Confirmatory - **PCR**
- ✓ Hall mark of HIV - **Proliferation of Virus in T Cell**
- ✓ Hall mark of AIDS - **Progressive Immunodeficiency (Decrease CD4 Count)**
- ✓ Most common opportunistic infection in - **HIV is TB**
- ✓ Most common opportunistic infection in - **AIDS Pneumocystic Jiroveci**
- ✓ Follow up is done by - **CD4 Count**
- ✓ Progression from asymptomatic to Symptomatic stage can be assessed by - **PCR**

GIT

- ✓ Pancreatic Secretion Increased by – **CCK (First Aid)**
- ✓ HCO_3 secretion Increased by – **Secretin**
- ✓ **CCK** increase **Calcium** by - **IP_3 mechanism**
- ✓ Gastric Motility Increased by – **Gastrin**
- ✓ Gastric Motility Decreased by – **Somatostatin**

- ✓ Increase Salivary Flow – Cranial Nerve 7 > 9
- ✓ Increase Small intestine Motility and Decrease Gastric motility - CCK
- ✓ Fundus removed = ↓ Gastric compliance >> ↓ Receptive relaxation
- ✓ Antrum removed = ↓ Gastric acid production
- ✓ Pylorus removed → Solids pass easily
- ✓ Intrinsic factor released by - Fundus of Stomach
- ✓ Colostomy Result in - Secretory Diarrhea
- ✓ Jejunostomy Result in - Osmotic Diarrhea
- ✓ Ileostomy Result in - Osmotic Diarrhea
- ✓ Jejunostomy + ileostomy Result in – Secretory + Osmotic Diarrhea
- ✓ Iron and Calcium absorption – Duodenum
- ✓ Max water + electrolytes absorption – Jejunum
- ✓ Passive (Aldosterone independent) water absorption - Jejunum
- ✓ Absorption of LONG chain FA - Jejunum
- ✓ Vitamin B12 and Bile Salts Absorption - Terminal ileum
- ✓ For B12 Absorption Needed – Intrinsic Factor
- ✓ For B12 Transport Needed – Transcobalamin 2
- ✓ Absorption of SHORT chain FA - COLON
- ✓ Active (Aldosterone Dependent) water absorption - Colon
- ✓ Max Fluid loss – Colon
- ✓ Part of Gut removed that cause Fluid loss – Ilium
- ✓ **Ilium Resection** — Increase water content of feces > Decrease Bile salt absorption

Explanation: Though Max absorption occur in Jejunum but Fluid loss will always from Colon and part of Gut remove which cause Fluid loss is ilium as when Jejunum is removed no Fluid loss will occur because ilium will Start absorbing Fluid but when ilium removed then Colon will be over loaded so ilium Removal will cause fluid loss through Colon (**Bailey and Love**).

- ✓ Carcinoid syndrome – Most common site is small intestine (ileum) > lungs, Trachea and bronchi
- ✓ Most common tumor of appendix – Carcinoid Syndrome
- ✓ Most common site of Carcinoid syndrome overall GIT > Respiratory system
- ✓ Sympathetic is always – Adrenergic
- ✓ Sympathetic is Cholinergic only in – Sweat glands
- ✓ Sympathetic is for Fight and Flight (Pupillary dilation + Bronchodilation + Decreased GIT Motility)
- ✓ Parasympathetic effect on GIT - Relaxation of fundus + Contraction of body of stomach + Relaxation of sphincter + Increased GIT motility
- ✓ **Posterior Duodenal Wall and Pancreatic Rupture Fluid Leaks into**
 - Lesser Sac
- ✓ **Anterior Duodenal Wall Rupture Fluid Leaks into**

- Right Posterior Subphrenic Space (Supine)
- Right Paracolic Gutter > RIF (Erect)
- Greater Sac

Thyroid

- ✓ **Maximum** concentration of thyroid hormone - T₄
- ✓ Thyroid hormone Enter in **Circulation** - T₄
- ✓ Thyroid hormone cause fetal **Brain** development - T₃
- ✓ **Active** form of thyroid hormone - T₃ (Free form or Unbound is Active)
- ✓ Thyroid gland is enclosed by - **Pretracheal fascia**
- ✓ Metabolism of **TSH** in liver - **Demethylation**
- ✓ Metabolism of **Thyroid Hormones** In Liver - **De-iodination**
- ✓ Dyspnea on lying down - **Retrosternal Goiter**
- ✓ Superior Thyroid artery Related to - **ELN**
- ✓ Inferior Thyroid artery Related to - **RLN**
- ✓ Superior Laryngeal Artery Related to - **Internal Laryngeal Nerve**
- ✓ Most Common Nerve injured during **Thyroidectomy** - **ELN**
- ✓ Most Common Nerve injured during **Tracheostomy** - **RLN**
- ✓ Most Common Cause of **Bleed During Tracheostomy** - **Inferior Thyroid Vein**
- ✓ Most Common Cause of **Heavy Bleed During Tracheostomy** - **Anterior Jugular vein > Isthmus**
- ✓ During **Tonsillectomy** Bleed due to - **Tonsillar artery, Palatine vein and ascending Pharyngeal Artery**

Buffer

- ✓ Major blood/Extracellular/Interstitium/Plasma Buffer - **Bicarbonate**
- ✓ Major **RBCs** buffer - **Hemoglobin**
- ✓ Major **Intracellular Buffer** - **Proteins**
- ✓ Major **Renal Buffer** - **Phosphate**
- ✓ Exclusive Renal tubular buffer - **Ammonia**
- ✓ Major **Urinary Buffer(Quantitatively)** - **Ammonium**
- ✓ Major **Bone Buffer** - **Calcium Carbonate**

Malignancy

Microscopic feature of malignant tumor:

- ✓ Metastasis > Invasion of adjacent tissues > pleomorphism > increased N/C ratio
- ✓ **Grading** -- Nuclear differentiation / degree of differentiation / Mitosis
- ✓ **Staging** - Extent of spread / Lymph nodes involvement
- ✓ **Pre-malignant lesion** - Pleomorphism Diagnostic
- ✓ **Pre-malignant condition** - Increased N/C ratio Diagnostic
- ✓ Most **Common** Pre-malignant **lesion** - **Leukoplakia**

- ✓ Most Lethal Pre-malignant lesion - Erythroplakia
- ✓ Most Common Pre-malignant Condition - Submucosal Fibrosis
- ✓ Most Lethal Pre-malignant Condition - Lichen Planus
- ✓ Locally Malignant - BCC > Ambleoblastoma
- ✓ Most common skin CA - BCC (nodular type)
- ✓ Most common site of BCC is - Upper lip
- ✓ Most common after Basal CA - Squamous CA
- ✓ Most common site of SCC - Lower lip
- ✓ Pre-malignant lesion which must be excised - Actinic keratosis (on cheeks)
- ✓ Blue cell tumor in children + releasing catecholamine + gene Amplification - Neuroblastoma
- ✓ Most Aggressive CA- Melanoma
- ✓ Most Common Naveus In Children - Junctional
- ✓ Most Common Naveus In Adult is - Intradermal
- ✓ Highest Malignant Potential - Dysplastic Naveus
- ✓ Male age Less than 40 - Seminoma
- ✓ Male age more than 50 + increased LDH - Lymphoma
- ✓ Tumor containing mature cells - Teratoma
- ✓ AFP raised + Schiller Duval Bodies – Yolk Sac Tumor
- ✓ Call Exner Bodies – Granulosa Cell Tumor
- ✓ Giant cell tumor (Soap bubble appearance) - Epiphysis
- ✓ Osteosarcoma (Codman triangle sunburst appearance) + Osteochondroma (most common benign) - Metaphysis
- ✓ Ewing sarcoma (onion skin) - Diaphysis
- ✓ Osteoblastoma occurs in - Vertebrae
- ✓ Osteoid osteoma - Cortex of long bones + Has radiolucent osteoid core
- ✓ Radio sensitive Phase - G2 - M Phase (M > G2)
- ✓ Radio Resistant Phase - S Phase
- ✓ Chemo Sensitive - S Phase
- ✓ Angiosarcoma in Plastic Factory Worker – Vinyl chloride
- ✓ Angiosarcoma in Farmer – Arsenic
- ✓ Plastic Factory Worker – Liver Angiosarcoma
- ✓ Plastic Factory worker + Smoking – Lung CA > Angiosarcoma
- ✓ Hydrocarbon (Tyre Factory) + Aromatic Amines – Bladder CA
- ✓ Smoking + Hydrocarbon – Lung CA > Bladder
- ✓ Liver CA – Alcohol > Aflatoxin > Smoking

- ✓ Transitional Bladder CA – Smoking > Amines > Hydrocarbon
- ✓ Squamous Cell Bladder CA – Schistostoma > Stones > Indwelling Catheter
- ✓ Acute Effect of Radiotherapy – Desquamation
- ✓ Chronic Effect of Radiotherapy – Endarteritis Obliterans
- ✓ Late Effect of Radiotherapy – Lymphoproliferative Disorder
- ✓ Common method to detect Tumor – Tumor marker
- ✓ Common method to detect Tumor cells – Peripheral smear

Regarding sensitivity to radiotherapy:

- Lymph node tumor > Seminoma > Glioma > Craniopharyngioma
- ✓ Least Radio Sensitive Blood Cell – Platelets
- ✓ Most Radio Sensitive Organ – Skin
- ✓ Least Radio Sensitive Organ – Vagina
- ✓ Most Radio Sensitive Mucosa – Intestinal
- ✓ Radiation induced Brain malignancy – Meningioma
- ✓ Overall radiation induced CA – Leukemia
- ✓ Chemotherapy caused cell death – Apoptosis
- ✓ Chemotherapy induced vomiting is treated by – Ondansetron
- ✓ Virus cause malignancy by
 - Alteration in protein synthesis
 - Alteration in proto – oncogene
 - Have /By Using – Oncogene
- ✓ Radiation cause malignancy by
 - They Have Proto oncogene
 - By Producing Free radicals

TB

- ✓ Initial – Chest X ray
- ✓ Definitive – Sputum Culture (Harrison)
- ✓ Diagnostic – PCR > AFB
- ✓ Microscopic – Caseous necrosis
- ✓ Histological – Epithelioid Cells with Caseating granuloma
- ✓ Type of Hyper Sensitivity – Delayed Type 4 T Cell Mediated
- ✓ Margins – Undermined
- ✓ Antibodies – Cell Bound

Energy

- ✓ Carbs/Protein Give - 4kcal
- ✓ Fats Give - 9kcal
- ✓ Alcohol Give - 7kcal
- ✓ Carbs Required - 50 - 60%
- ✓ Fats Required - 25 - 35%
- ✓ Proteins Required - 10 - 20%
- ✓ Major source of energy - **Adipose Tissue**
- ✓ Max glycogen - **Skeletal Muscles**
- ✓ Max glycogen concentration / per 100 gms - **liver.**
- ✓ Highest energy compound - **ATP**
- ✓ Highest energy molecule - **ATP**
- ✓ Highest energy content - **Starch**
- ✓ Highest Quantity of Unsaturated Fatty Acid - **Sun Flower**
- ✓ Highest Quality of Unsaturated Fatty Acid - **Soya Bean**

In Fasting:

- Upto 48hours - Glucose
- From 48 hours till 72 hours - Fatty acids/TGs
- After 72 hours - Proteins /amino acids

Prostate

- ✓ **Median**-Structurally largest lobe
- ✓ **Lateral**-Anatomically largest lobe
- ✓ **Peripheral**-Largest zone
- ✓ **CA prostate** - Peripheral zone / Posterior lobe + Metastasize to Vertebral column and brain by Anterior Intervertebral venous plexus
- ✓ **BPH** - Median lobe / Transitional zone

Hepatitis

- ✓ Orofecal Route - **Hep A > Hep E**
- ✓ Most lethal Hepatitis - **Hep D**
- ✓ Most common in pregnancy - **Hep A**
- ✓ Most lethal/Remote Area in pregnancy - **Hep E**
- ✓ Most Common virus after blood transfusion - **Hep B > Hep C**
- ✓ Most lethal after transfusion and transplant - **CMV**
- ✓ Most common sexual spread - **Hep B**
- ✓ **HCC** - **Hep B > Hep C**
- ✓ **Cirrhosis** - **Hep C > Hep B**

- ✓ Needle Stick injury Risk – Hep B (30%) > C(3%) > HIV(0.3%)
- ✓ Hep A & E - Naked Viruses

Pelvis

- ✓ Finger couldn't reach sacral promontory - **Android pelvis**
- ✓ If Finger reaches Sacral promontory - **Contracted Pelvis**
- ✓ Pelvis in males - **Android (Heart shaped)**
- ✓ Pelvis in females - **Gynecoid (Rounded shape)**
- ✓ Most favourable pelvis for delivery - **Gynecoid pelvis**
- ✓ Reference point for head during labour - **Ischial spine**
- ✓ Bony landmark for Pudendal nerve block - **Ischial spine**

Cranial Nerve Palsy

- ✓ **In CN3 palsy** – pupils dilation occurs + Ptosis
- ✓ **In Horner syndrome** – Damage to cervical Sympathetic chain + pupil constriction + Ptosis and Anhydrosis
- ✓ **In CN 4 palsy** – Vertical Diplopia (Superior oblique)
- ✓ **In CN 6 palsy** – Horizontal Diplopia (lateral rectus)
- ✓ **In CN3 palsy** – both Vertical and Horizontal Diplopia

HB / Anemias

- ✓ Hemoglobin synthesis starts in -- **Proerythroblast or Early Normoblast**
- ✓ Hemoglobin First appears in -- **Intermediate Normoblast**
- ✓ RBC Nuclei disappear in -- **Late Normoblast > Reticulocytes**
- ✓ Max Production -- **Late Normoblast**
- ✓ Maximum concentration -- **Reticulocytes**
- ✓ Iron Transport form --- **Transferrin**
- ✓ Iron Excess storage form -- **Hemosiderin**
- ✓ Iron Normal Storage Form -- **Ferritin**
- ✓ Iron Fe^{2+} in reduced form binds to -- **Hemoglobin**
- ✓ Heme binds with -- **Hemopexin**
- ✓ Hemoglobin binds with -- **Haptoglobin**
- ✓ Iron is absorbed from -- **Duodenum**
- ✓ Diagnostic for IDA -- **Serum Ferritin**
- ✓ Diagnostic For B12 Deficiency -- **B12 Assay**
- ✓ Diagnostic For Folate Deficiency -- **RBC Folate Level**
- ✓ Diagnostic For Pernicious Anemia -- **Anti Intrinsic Factor Antibodies**
- ✓ Diagnostic feature of Aplastic anemia -- **Fatty marrow > Pancytopenia**
- ✓ Acute Intravascular Hemolysis -- **Decrease Haptoglobin > Reticulocytosis**

- ✓ Chronic Intravascular Hemolysis -- **Hemosidrinuria > Hemoglobinuria**

Defense Lines

- ✓ **Tissue** -- Macrophages
- ✓ **Blood** -- Neutrophils
- ✓ **Surface** -- Skin
- ✓ **Major scavengers** -- Macrophages
- ✓ **Phagocytosis** done by -- Neutrophils
- ✓ **Opsonization** -- C3b
- ✓ Most potent Chemo tactic Factor -- **LTB4 > C5a**
- ✓ **Pain** -- Bradykinin > Prostaglandins E2
- ✓ **IL-1 and TNF** -- **Fever mediator**
- ✓ Prostaglandins F2, E2 and D2 -- **Vasodilation**
- ✓ Late mediator of Inflammation -- **PG & Leukotriens**
- ✓ Initial mediator of inflammation -- **Histamine**

Lesions

- ✓ Dopamine loss in Substantia nigra and Striatum -- **Parkinson Disease**
- ✓ GABA loss in Substantia Nigra and Globus Pallidus -- **Huntington Disease**
- ✓ GABA loss in Caudate Nucleus -- **Chorea**
- ✓ GABA loss in Globus Pallidus -- **Athetosis**
- ✓ GABA loss in Subthalamic Nuclei -- **Hemiballismus**

Embolism/DVT

- ✓ Most common source of emboli -- **femoral vein**
- ✓ Most common site of DVT -- **Popliteal vein**
- ✓ Most common cause -- **Immobilization**
- ✓ D dimers -- **Sensitive for DVT**
- ✓ FDP -- **Specific for DVT**

Neural Tube Defect (NTD)

- ✓ AFP raised in -- **Anencephaly**
- ✓ AFP Decreased in -- **Down syndrome**
- ✓ Specific For NTD -- **Acetyl cholinesterase**
- ✓ Sensitive For NTD -- **AFP**
- ✓ NTD in early Pregnancy Diagnose -- **USG**
- ✓ NTD in Late Pregnancy Diagnose -- **Amniocentesis**

- ✓ Neural tube defects -- most common is **Meningo-myelocele**
- ✓ Neural tube defects occur due to -- **Folic acid Deficiency and vitamin A toxicity**

Collagen/Wound

- ✓ **Type 1 Collagen** - Fibrocartilage + bone + tendons + fascia + **Skin**
- ✓ **Type 2** -- Elastic and Hyaline cartilage + vitreous body
- ✓ **Type 3** -- Blood vessels + Uterus + Reticulin + **Skin**
- ✓ **Type 4** -- Basement membrane + Lens
- ✓ **Early wound healing** + Granulation tissue -- Type 3 collagen
- ✓ **Late wound healing** + Wound strength -- Type 1 collagen
- ✓ **Hyaline cartilage** -- Larynx + articular surfaces of Synovial joints + Trachea
- ✓ **Elastic cartilage** -- Ear pinna
- ✓ **Sesamoid cartilage** -- Ala of nose > Larynx
- ✓ **Sesamoid bone** -- Patella
- ✓ Diet **Deficient** in fruits and vegetables -- **Decreased tensile strength**
- ✓ Diet having **Complete absence** of fruits and vegetables -- **Decreased collagen synthesis..**
- ✓ **Vitamin C** -- Hydroxylation of glycine and proline residues
- ✓ **LOCAL** factor for delayed wound healing -- Infection
- ✓ **Systemic** factor for delayed wound healing -- Anemia & DM
- ✓ **Old age** Decreased wound healing -- Harmonal and endocrinological changes

Coagulation Disorder

- ✓ Factor V mutation(Laden) leads to -- **Thrombosis**
- ✓ Factor V deficiency leads -- **Bleeding**
- ✓ Factor 12 deficiency leads -- **Thrombosis.**
- ✓ Most common acquired thrombotic disorder is -- **Anti-phospholipid syndrome**
- ✓ Most common Inherited coagulopathy -- **VWBD**
- ✓ Most common inherited Thrombotic disorder is -- **Factor V Mutation (Laden)**
- ✓ Natural anticoagulant and anti-thrombotic -- **Heparin**
- ✓ Natural thrombolytic -- **Plasminogen**
- ✓ Extrinsic and intrinsic pathway converge on -- **Stuart factor (Factor 10)**
- ✓ Factor 8 is produced by -- **Endothelium**
- ✓ Clotting factor not completely synthesized in liver is -- **Factor 8**
- ✓ Activation of extrinsic path way by -- **Thromboplastin (Tissue Factor)**
- ✓ Activation of Intrinsic Pathway by -- **Factor 12**
- ✓ Vitamin k dependent factor with **Shortest** half-life is -- **Factor 7**

- ✓ Vitamin k dependent factor having **Longest** half-life is -- **Factor 2**
- ✓ APTT raised only -- **Hemophilia(Intrinsic Pathway)**
- ✓ APTT and BT raised -- **VWBD (Intrinsic Pathway)**
- ✓ APTT and PT raised -- **Vit-K deficiency or liver disease**
- ✓ All 3 raised -- **DIC**
- ✓ Only BT raised -- **ITP (Low Platelets) or Platelets Function Defect (Platelets count normal)**
- ✓ Heparin Inhibit -- **factor Xa**
- ✓ Heparin Act by -- **Anti-thrombin 3**
- ✓ Antidote of heparin is -- **Protamine sulphate**
- ✓ Heparin monitoring is done by -- **APTT (Intrinsic Pathway)**
- ✓ Heparin is given -- **IV**
- ✓ Warfarin acts on and inhibits -- **Vitamin K Epoxide reductase**
- ✓ Warfarin antidote is -- **FFP (Immediate)**
- ✓ Warfarin action is reversed by -- **Vitamin k (long acting)**
- ✓ Warfarin monitoring is -- **INR > PT(Extrinsic Pathway)**
- ✓ Warfarin in given -- **Orally**

End Arteries

- ✓ Functional End Arteries -- **Heart**
- ✓ Anatomical / True End Arteries -- **Retinal Artery**
- ✓ END arteries are present in -- **Central Retinal Artery >> Spleen >> Heart**

Neonates

- ✓ C – shaped Vertebral column
- ✓ Has Circular thoracic cavity
- ✓ Liver has 5% of body weight (largest organ)
- ✓ Sample taken from Radial Artery > posterior tibial artery > Dorsalis
- ✓ Blood volume is 85ml/kg

Myasthenia Gravis

- ✓ **Myasthenia gravis** -- Antibodies' against postsynaptic voltage gated channels
- ✓ Diagnostic test -- **ACH receptor antibodies**
- ✓ Most accurate/confirmatory/gold standard -- **EMG**
- ✓ Initial drug for Myasthenia gravis -- **Neostigmine**
- ✓ DOC For maintained therapy -- **Pyridostigmine**
- ✓ **Physostigmine** -- Crosses BBB immediately and Increase Acetylcholine

- ✓ In Lambert eaten Syndrome – Antibodies are directed against Calcium channels

Exercise

- ✓ During Exercise blood flow increased to -- **Exercising skeletal muscle**
- ✓ During Exercise decreased blood flow to -- **Kidneys > Splanchnic Vessels**
- ✓ During **Strenuous Exercise** decreased blood flow to -- **Skin**
- ✓ During Exercise blood flow to **Exercising muscles** is maintained by -- **Local Metabolites**
- ✓ During Exercise blood flow to **Non-Exercising Muscle** is maintained by -- **Sympathetic Cholinergic (Guyton)**
- ✓ During Exercise there is an increase in -- **Ventricular contractility**
- ✓ **During Exercise subjective** feelings of getting tired is due to -- **Increased Heart rate**
- ✓ **After Exercise** feeling of getting tired is due to -- **Increased Lactic acid**

Pregnancy

Respiratory Changes

Remain Same

- ✓ Respiratory rate
- ✓ Vital Capacity

Increase

- ✓ Tidal volume
- ✓ Minute ventilation
- ✓ Inspiratory Capacity

Decrease

- ✓ TLC
- ✓ Residual Volume

Other Changes

- ✓ Increase GFR – Decrease BUN and
- ✓ Increase Cardiac output
- ✓ Dilutional Anemia
- ✓ Hyper coagulability
- ✓ Increase Lipolysis
- ✓ HCG maintain Pregnancy upto 8-10 Weeks
- ✓ After 10 weeks by Estriol and Progesterone of Placenta
- ✓ HCG In blood – Upto 10 days
- ✓ HCG In Urine – After 10 days
- ✓ Labour Initiated by Fetal Cortisol > Fetal ACTH (Pituitary)

CVS

- ✓ R ventricle Pressure during **Systole** -- 25
- ✓ R ventricle Pressure during **Diastole** -- 0-8
- ✓ R ventricle Pressure at which **Pulmonary Valve** Open -- 8mmhg
- ✓ L ventricle Pressure at which **Aortic Valve** Open -- 80mmhg
- ✓ Max Aortic Pressure -- **Reduced Ejection**
- ✓ Min Aortic Pressure -- **Isovolumetric Contraction**
- ✓ Max Ventricular Pressure -- **Rapid Ejection**
- ✓ Min Ventricular Pressure -- **Rapid Filling**
- ✓ Max Ventricle **Filled** -- **Atrial Systole**
- ✓ Max Ventricle **Filling** -- **Rapid Filling**
- ✓ Max Pulse Pressure – **Dorsalis pedis > Femoral > Popliteal > Aorta**
- ✓ Highest Systolic Pressure – **Renal Artery**
- ✓ Max O₂ – Pulmonary Capillaries
- ✓ Low O₂ – Pulmonary Artery > SVC > Umbilical artery
- ✓ Highest O₂ Saturation – Umbilical Vein
- ✓ Cardiac output unchanged in – **Sleep**
- ✓ Pace Maker activity of SA Node due to – Sodium Channels
- ✓ Action Potential of Pace Maker due to – Calcium Channels
- ✓ Action Potential of Cardiac Muscle due to – Sodium Channels
- ✓ Becks Triad (Cardiac tamponade) -- **Muffled Heart sounds Hypotension and Raised JVP**
- ✓ Rustling Sound /Pericardial Rub -- **Pericarditis**
- ✓ Pain unrelated to Respiration -- **Myocarditis**
- ✓ SA node located in -- **Upper one third Sulcus terminalis**
- ✓ SA node located in -- **Sub Epicardium**
- ✓ AV node located in -- **Endocardium**
- ✓ Conducting System -- **Sub Endocardium**

Heart rate and location of pacemaker:

- -SA node--60-80
- -AV node--40-60
- -Purkinje fibers --20-40
- ✓ **SA node** – Slowest pre-potential / Works as syncytium as it is able to generate impulses at a faster rate
- ✓ **Purkinje Fibers** have highest speed of conduction due to
 - Wide diameter > large no of gap junctions > Large no of sodium Channel > Less no of myofibril > Short refractory period
- ✓ **Speed of conduction :**
 - Purkinje fibers > Bundle of His > Atria > Ventricles > SA node > AV node

- ✓ **Speed of Rate**
-SA Node > AV Node > Purkinji fibers
- ✓ **First Heart Sound** -- Isovolumetric contraction (Closure of mitral and tricuspid valve)
- ✓ **Second Heart Sound** -- Isovolumetric relaxation (Closure of aortic and Pulmonary valve)
- ✓ **Third Heart Sound** -- Rapid ventricular filling (Normal in children, pregnancy and athletes)
- ✓ **Fourth heart sound** -- Atrial Systole
- ✓ **Inferior wall MI (RCA)** -- **Leads 2, 3 and AVF**
- ✓ **Anterior wall MI (LAD)** -- **Leads V1-V6**
- ✓ **Lateral wall MI (LCX)** -- **Leads 1, AVL, V5 and V6**
- ✓ **Best Initial** – ECG
- ✓ **Investigation of choice in First 6 h** - ECG
- ✓ **1-2hr** – Myoglobin
- ✓ **Within 4hr** – CK MB
- ✓ **After 4hr** – Trop
- ✓ **Sensitive** – Trop T
- ✓ **Specific** – Trop I
- ✓ **4h Post MI** – Arrhythmia
- ✓ **4-24h Post MI** – Arrhythmia
- ✓ **1-3 Days Post MI** – Fibrinous Pericarditis
- ✓ **4-7 Days Post MI** – Cardiac Tamponade
- ✓ **Month Post MI** -- Aneurysm
- ✓ **Most Common Congenital/Acyanotic Disorder Child** -- **VSD**
- ✓ **Most Common Acyanotic Disorder in Adults** -- **ASD**
- ✓ **Most common Congenital Cyanotic Disorder** – **TOF**
- ✓ **Most Congenital Cyanotic anomaly at birth** -- **TGA**
- ✓ **Female living at Hill or if baby is premature** -- **PDA**
- ✓ **Cyanotic Heart Disease in Which Shunt is Necessary for Survival** – **TGA**
- ✓ **Preload determine by** -- **EDV (Depends on Venous return)**
- ✓ **After load determine by** -- **MAP**
- ✓ **TPR determine by** -- **Diastolic BP**

ECG

- ✓ **Hypokalemia** -- **U wave + inverted T Waves**
- ✓ **Hyperkalemia** -- **Tall T Waves**
- ✓ **Normal ECG is unable to record** - **Electrical activity of SA node**
- ✓ **ECG changes can be seen in the following conditions Except** -- **Sleep**
- ✓ **Saw tooth appearance on ECG** -- **Atrial flutter**
- ✓ **P wave absent + Irregular RR Interval in** -- **Atrial fibrillation**
- ✓ **QRS complex shows** -- **Ventricle Depolarization**
- ✓ **ST Segment shows** -- **Complete Ventricular Depolarization / Plateau phase**

- ✓ Isoelectric line -- **PR segment**
- ✓ Isoelectric period -- **ST segment**
- ✓ TP segment -- **Relaxation of Ventricles**
- ✓ Hypoglycemia increase -- **QT interval**
- ✓ Most specific finding of **Pericarditis** -- **PR depression**
- ✓ Time taken by the impulse to travel from **Endocardium to Epicardium** -- **QRS Complex**
- ✓ Time taken by the impulse to travel from **Epicardium to Endocardium** -- **QT Interval**
- ✓ Absent p waves **Pacemaker In** -- **AV node(Also R Ventricle-Moderator Band)**
- ✓ **PR Segment** on ECG coincides with -- **A wave of JVP**
- ✓ Large A wave -- **Tricuspid Stenosis**
- ✓ Cannon A wave -- **3rd Degree Heart Block & AV dissociation**
- ✓ Tall QRS complex -- **Hypertrophy of Ventricles**
- ✓ Low voltage QRS complex -- **Obesity, Old MI, COPD & Constrictive pericarditis**
- ✓ P-Mitrale occurs in -- **Mitral stenosis**

Endocrinology

- ✓ **Immediate** action of Insulin -- **Entry of potassium into cells**
- ✓ **Intermediate** Action of Insulin -- **Protien Synthesis**
- ✓ **Late** Action of Insulin -- **Lipogenesis**
- ✓ Action of insulin at **Cellular level** is -- **Entry of glucose into cells**
- ✓ Insulin Independent Glucose uptake -- **Exercising Skeletal Muscle > Brain (Guyton)**
- ✓ Anti Ketotic -- Insulin
- ✓ Ketogenic -- Glucagon

Hypoglycemia increases:

-Glucagon > Gastrin > Secretin (Ganong)

GH is increased in:

-Hypoglycemia > Exercise > NREM (Guyton + Ganong)

- ✓ Potent stimulant of Aldosterone -- **Hyperkalemia & Hyponatremia**
- ✓ Potent stimulant of Renin -- **Sympathetic > Hyponatremia > Hypokalemia**
- ✓ Potent Stimulant For ADH -- **Nausea > Increase Plasma Osmolarity**
- ✓ Renin is Inhibited by -- **Increased Angiotensin 2**
- ✓ Thirst center is stimulated by -- **Angiotensin 2**
- ✓ Renin **Increase** by Hypokalemia and **Decrease** by Hyperkalemia (Ganong)
- ✓ Angiotensin 2 cause -- **Vasoconstriction > Thirst Stimulation (Ganong)**
- ✓ Cortisol main function -- **Gluconeogenesis**
- ✓ Glucagon main function -- **Glycogenolysis**
- ✓ Cortisol **Increase** Neutrophil and **Decrease** Lymphocytes

- ✓ ACTH effectively control -- **Cortisol (Hydrocortisone) > Androgens (Guyton)**
- ✓ Excessive Exercise causes -- **Hyperkalemia**
- ✓ **Early Pregnancy Endometrium Sensitive to -- Progesterone**
- ✓ **Late Pregnancy Endometrium Sensitive to -- Oxytocin**
- ✓ In Pregnancy Lactation inhibited by -- **Estrogen + Progesterone > Estrogen > Progesterone**
- ✓ During Lactation Amenorrhea due to -- **Increase Prolactin > Decrease GnRH**
- ✓ **Milk Production -- Prolactin**
- ✓ **Milk Ejaculation -- Oxytocin**
- ✓ In Pre-menopausal Breast Atrophy -- **Decrease Estrogen + Progesterone**
- ✓ In Post-menopausal Breast Atrophy -- **Decrease Estrogen**
- ✓ Most Common Cause of Breast Atrophy -- **Decreased Estrogen**
- ✓ Most Potent Anabolic -- **Testosterone**
- ✓ Potency -- **DHT > Testosterone**
- ✓ Potency -- **Estradiol > Estron > Estriol**
- ✓ Increase Estriol -- **Indicates Fetal Well Being**
- ✓ **Osteoporosis** -- Thin and wide trabeculae + long term use of Steroid
- ✓ **Osteoclasts in -- Howship lacunae**
- ✓ **Osteoblast -- Bone making cells + Produce ALP + Laid Bone Matrix**
- ✓ **Osteoclast -- Bone Resorption**
- ✓ **Osteocytes -- Maintain Bone Matrix & Integrity**
- ✓ **Demineralization of bone done by -- PTH**
- ✓ **Bone Remineralization -- Vit D**
- ✓ **Bone Remodeling -- Vit C**
- ✓ **PTH directly Regulates -- Vitamin D levels**
- ✓ **PTH Indirectly Regulates -- Calcium Absorption from intestine By Vitamin D**
- ✓ **Osteon Has -- Concentric lamellae**
- ✓ Patient has cast applied now has **Decreased muscle mass -- Disuse atrophy + Decreased no of actin and myosin**
- ✓ **Estrogen Function -- Breast Duct Development + Endometrial Proliferation**
- ✓ **Progesterone Function -- Maintain Endometrial Thickness(Proliferation) > Secretory phase > Alveoli and lobule development**

Respiratory

- ✓ **Central Chemoreceptor Respond to (Sequence wise)**
 - 1-CSF PH or Interstitial PH (Increase H ions)
 - 2-Increase CO₂ In Arterial Blood
- ✓ **Peripheral Chemoreceptor (Carotid and Aortic body) Respond to**
 - 1-Decrease O₂

2-Arterial PH (H ions)

✓ Increase A-a Gradient Seen in

- 1-Fibrosis
- 2-V/Q Defect
- 3-R-L Shunt

✓ A-a Gradient Normal Value - 0 -10mmhg

✓ A/a Ratio Normal - 0.8 (> 0.75)

✓ In Airway Obstruction

- 1-V/Q is Less than Normal (Guyton) called R-L Shunt
- 2-Composition of Systemic arterial blood approaches Mixed Venous Blood
- 3-Increase A-a Gradient

✓ In Pulmonary Embolism

- 1-V/Q is Infinite Called Dead Space
- 2-Composition of Alveolar Air approaches Inspired Air

✓ At High Altitude

- 1-Survival due to - Increase Hb Concentration
- 2-Pulmonary Vasoconstriction (Due to Hypoxia)
- 3- Hb-O₂ Curve Shift to Right
- 4- Increase 2,3 DPG Concentration

✓ Exercise Increase

- 1-O₂ Consumption
- 2-CO₂ Production

✓ Small Cell CA associated with

- 1-ACTH (Cushing Syndrome)
- 2-SIADH
- 3-Lambert Eaton
- 4-Poor Prognosis

✓ Squamous Cell CA Associated with

- 1-Smoking
- 2-Hypercalcemia (PTHrP)
- 3- Keratin Pearls and Intracellular Bridges

✓ Chloride Shift occur by - Band 3

✓ Venous Blood have more - HCO₃ & PCV(PCV >HCO₃)

✓ RBC Venous Blood Have more - Chloride Ions

✓ Erythropoietin Produced By - Hypoxia

✓ Erythropoietin Inhibited By - Theophylline

✓ R Shift of O₂ Curve - Bohr Effect

✓ L Shift of O₂ Curve - Haldane Effect

✓ O₂ 100 Percent in -- L-R Shunt

✓ Pulmonary Blood flow and Ventilation Highest at -- Base

✓ Pulmonary Blood flow and Ventilation Lowest at - Apex

- ✓ V/Q and Arterial PO₂ Highest at - Apex
- ✓ V/Q and Arterial PO₂ Lowest at - Base
- ✓ Pulmonary Vasoconstriction Caused By - Hypoxia
- ✓ Pulmonary Vasoconstriction Accentuated by - Increase CO₂
- ✓ Asthma Most Imp Diagnosed By -- FEV₁/FVC
- ✓ In Fibrosis FEV₁/FVC Remain -- Normal
- ✓ In Asthma and COPD FEV₁/FVC - Decreased
- ✓ Lung CA - Smoking > Radon > Asbestos
- ✓ Asbestos - Lung CA > Mesothelioma
- ✓ Primary Tb -- Ghone Complex + Lower Lobe
- ✓ Secondary Tb -- Cavitation + Upper Lobe
- ✓ Activated in Lung - Angiotensin 2
- ✓ Inactivated in Lung - Bradykinin (By ACE) & Serotonin
- ✓ Sarcoidosis Characteristic - Erythema Nodosum (Davidson)
- ✓ Sarcoidosis Diagnosed Histologically by - Non Caseating Granuloma (Robins)
- ✓ Hydrocortisone differ from Dexamethasone Because they - Retain Na

Renal

- ✓ Dilute Urine (Decrease Osmolarity) -- Early DCT (Macula Densa) > Thick Limb
- ✓ Dilute Urine (Decrease Osmolarity) -- Thick Limb >> DCT

Note: Difference between Early DCT and Only DCT

- ✓ In Dehydration (ADH) Concentrated Urine (Increase Osmolarity) - CD (Vasa Racta)
- ✓ Erythropoietin secreted by -- Peritubular capillaries > Mesangial Cells
- ✓ Kidney Podocytes -- At visceral layer of Bowman capsule
- ✓ Crescents -- formed by parietal cells lining Bowman capsule
- ✓ GFR measure Clinically / Best Estimated -- Creatinine clearance
- ✓ GFR best Way to Measure -- Inulin
- ✓ Best way to Measure RPF -- PAH
- ✓ Best test for renal failure -- Creatinine clearance
- ✓ Clearance -- PAH > K > Inulin > Urea > Sodium > Amino acid and Glucose
- ✓ Concentrating urine in summer or during fasting -- ADH
- ✓ Loop diuretics act on -- Thick ascending limb
- ✓ Thiazide diuretics act on -- Early DCT
- ✓ Osmotic diuretics act on -- PCT
- ✓ Renal columns contain -- Interlobar Artery
- ✓ Capsule Contain -- Interlobular Artery
- ✓ Glomerulus Contain -- Interlobular Artery
- ✓ Hilum Contain -- Segmental Artery
- ✓ Medullary rays contain -- Collecting ducts
- ✓ Prone to Ischemia -- PCT

- ✓ Maximum water & sodium absorption -- **PCT**
- ✓ Maximum water & sodium absorption with any hormone -- **PCT**
- ✓ Maximum potassium absorption -- **PCT**
- ✓ Potassium loss due to dietary irregularities -- **Distal tubules**
- ✓ **ADH -- Increase Urea transport to DCT**
- ✓ **ADH -- Inhibited by alcohol**
- ✓ **ADH -- Regulates plasma volume / urine osmolarity**
- ✓ **ADH -- V1 receptors cause vasoconstriction**
- ✓ **ADH -- V2 receptors act on kidney**
- ✓ Highest Tubular transport maximum – **Glucose > PAH > Lactate**
- ✓ Threshold for Glucose – **200 (Guyton)**
- ✓ Sodium Absorption -- **Aldosterone**
- ✓ Sodium excretion -- **ANP**
- ✓ Net SODIUM Absorption -- **Aldosterone & ANP**
- ✓ Renin -- **Produced by JG cells**
- ✓ Renin -- **Long term B.P regulation**
- ✓ Baroreceptor respond maximally to – **Increasing BP (Ganong)**
- ✓ Most Rapid Response to Decrease BP – **Baroreceptor**
- ✓ Most Potent Response to Decrease BP – **CNS Ischemic**
- ✓ CNS Ischemic Activate at – **60 or Below 60mmHg (Guyton)**
- ✓ Maintain During Shock – **Baroreceptor**
- ✓ Maintain as a Whole – **RAAS**
- ✓ Long Term BP Regulation – **RAAS**
- ✓ Over all most important – **RAAS**
- ✓ **Sub-endothelial deposits** -- SLE, Diffuse proliferated GN, Membrane proliferated GN
- ✓ **Sub Epithelial deposits** -- PSGN
- ✓ **Intramembranous Deposits** – Diffuse Proliferated GN, Membrane Proliferated GN type2
- ✓ Focal segmental Glomerulonephritis -- **Massive Proteinuria**
- ✓ Mild Hypomagnesemia Stimulate Parathyroid -- **Hypercalcemia**
- ✓ Severe Hypomagnesemia suppress Parathyroid – **Hypocalcaemia**
- ✓ **Hypermagnesemia Cause -- Hypocalcaemia**
- ✓ Hypokalemia is associated with – **Metabolic Alkalosis**
- ✓ **Hyperkalemia associated with – Metabolic Acidosis**
- ✓ Hypokalemia – **Decrease Nerve Excitability In RMP**
- ✓ Hyperkalemia – **Increase Nerve Excitability In RMP**
- ✓ Hyponatremia – **Decrease Hight of Action Potential**
- ✓ Hypernatremia – **Increase Hight of Action Potential**
- ✓ Hypocalcaemia – **Increase Excitability**
- ✓ Hypercalcemia – **Decrease Excitability**

Micro

- ✓ Ascetic Tap - E-coli
- ✓ Peritonitis - E-coli
- ✓ Pyogenic Peritonitis - Bacterioides
- ✓ Periperal Sepsis - Group B streptococcus > E coli > Bacterioides
- ✓ Nasopharyngeal CA - EBV
- ✓ Oropharyngeal CA - HPV
- ✓ Lung CA - CMV
- ✓ Respiratory Symptoms - Ascaris
- ✓ Fisherman With Anemia + Echymosis -- Vitaminc C deficiency
- ✓ Fisherman With Anemia - B12 Deficiency - Diphyllbothrium
- ✓ Microcytic Anemia - Ankylostoma
- ✓ Conjunctival Swelling - Loa Loa
- ✓ Global Blindness - Cataract > Chlmydia > Glucoma
- ✓ Rectal Prolapse - Trichuris Trichura
- ✓ Muscle(Myalgia) - Trichinella Spiralis
- ✓ Portal HTN - Schistosoma Mansoni + Japonicum (Latéral Spine)
- ✓ Pulmonary HTN - Schistosoma Haematobium (Terminal Spine)
- ✓ Cholangiocarcinoma - Clonorchis Sinesis
- ✓ Hydatid Cyst - Echinococcus
- ✓ Neurocysticercosis (Brain Cyst) - Tenia Solium

Malaria

- ✓ Plasmodium malariae can lead to -- Nephrotic syndrome (Membranous GN)
- ✓ Plasmodium Vivax and ovale has -- Hypnozoite stage (means sleep)
- ✓ Primaquine is DOC to kill -- Hypnozoites.
- ✓ Shortest pre-erythrocytic phase is seen in -- Plasmodium Falciparum.
- ✓ Longest pre-erythrocytic phase is in -- Plasmodium Malariae
- ✓ Species that cause relapse are -- Vivax and ovale
- ✓ Most common non falciparum malaria is -- Plasmodium Vivax.
- ✓ DOC for non-falciparum malaria is -- Chloroquine.
- ✓ Malignant tertian malaria is caused by -- Plasmodium falciparum
- ✓ Benign tertian malaria (48 hours) is caused by -- Ovale/vivax
- ✓ Quartan malaria (72 hours) caused by -- Plasmodium Malariae
- ✓ Quotidian malaria caused by -- plasmodium Knowlesi > Falciparum
- ✓ Anemia in malaria is -- Normocytic normochromic.
- ✓ Dormant phase of malaria -- Hypnozoite
- ✓ Malaria enter into human body as -- Sporozoite

- ✓ **Sporozoite** divide in liver as -- **Merozoite**
- ✓ **New** species of malaria is -- **Knowlesi**
- ✓ **STD by** -- **Chlmydia > Gonorrhea > Syphilis**
- ✓ **Tubovarian mass** -- **Gonorrhea**
- ✓ **Honeymoon Cystitis** -- **E. coli**

Biochemistry

Vitamins

- ✓ **B1 Deficiency** -- Dry Beri beri,,Wet Beri beri ,Wernicke korsakoff
Measured by Transketolase activity
- ✓ **B2 Deficiency** -- Corneal Vascularization
- ✓ **B3 Deficiency** -- Pellagra (Diarrhea,, Dementia , Dermatitis)
- ✓ **B5 Required** -- Co factor for Co enzyme A
- ✓ **B5 Deficiency** -- Adrenal Insufficiency
- ✓ **B7(Biotin)** -- Bind Avidin in egg and **Carrier** of One carbon
- ✓ **B7** -- Role in liver Metabolism
- ✓ **B9(Folic acid)** -- One Carbon **Transfer**
- ✓ **B9 Deficiency** -- **NTD**
- ✓ **B12 Deficiency** -- Megaloblastic Anemia
- ✓ **Vit A deficiency** Early Sign -- Night Blindness (Lippincott)
- ✓ **Vit A Toxicity** -- Scaly Dermatitis > Jaundice,, **NTD**
- ✓ **Optic Neuritis** -- **B12 > B6**
- ✓ **Peripheral Neuritis** -- **B1 > B6 > B12**
- ✓ **Carbohydrate Metabolism** -- **Thiamine**
- ✓ **Protein Metabolism** -- **Riboflavin**
- ✓ **Lipid Metabolism** -- **Biotin**

Amino Acids

- ✓ **Ketogenic** -- Leucine and Lysine
- ✓ **Postive charge** -- **HAL** (Histidine, Arginine & Lysine)
- ✓ **Negative Charge** -- Aspartate and Glutamate
- ✓ **DNA has** -- **Histidine**
- ✓ **Amino Acid deficiency** causes cell injury -- **Glycine**
- ✓ **Amino acid cause injury to cell** -- **Choline**
- ✓ **Amino Acid causing renal stones** -- **Lysine (COLA)**
- ✓ **Amino acid in abnormal metabolism** -- **Tryptophan**

Cell Cycle

- ✓ **INTERPHASE**Chromosomes REPLICATE
- ✓ **INTERPHASE**DNA REPLICATE
- ✓ **INTERPHASE**....Barr Bodies are studied
- ✓ **INTERPHASE is divided into...**
- ✓ **1.G1**
- ✓ **2.S (SYNTHESIS Phase)**
- ✓ **3.G2**
- ✓ **4.Mitosis** (also called M phase & cytokinesis is a part of it)
- ✓ **G1**...Primary Growth , Proteins, Organelles, mRNA Synthesis)
- ✓ **G1**...Also Called growth phase
- ✓ **G1**... Longest phase (8 to 10 Hours)
- ✓ **G1 Check point**...To check if DNA is damaged
- ✓ **S**DNA Replicate
- ✓ **S**....Cytotoxic & cancer drugs act here to destroy DNA
- ✓ **S**....5 to 6 hours
- ✓ **G2**...Secondary growth (between S phase & Mitosis)
- ✓ **G2**...Short (3 to 4 hours)
- ✓ **G2 Check point**... To check if DNA has replicated properly
- ✓ **MITOSIS / M Phase**
- ✓ **M**...Shortest (2 hours)
- ✓ **M**... To see spindle assembly and alignment
- ✓ **M**...Nuclear content divide
- ✓ **M**...genetic material is Chromosome (Genetic material is chromatid when NOT in M phase)
- ✓ **M**... Divided into Prophase, prometaphase, Metaphase, Anaphase, Telophase, Cytokinesis
- ✓ **Prophase**....Spindle fibers appear Chromosome Condensation
- ✓ **Prophase**...Centriole start moving to the opposite end & chromosomes first appear
- ✓ **Prometaphase**....Spindle fibers attach to chromosome & chromosome movement
- ✓ **Prometaphase**....Nuclear membrane dissolve marking the beginning of prometaphase
- ✓ **Metaphase**...Chromosome Allignment at Equatorial Plate
- ✓ **Metaphase**.....Chromosome thickest
- ✓ **Metaphase**.....Chromosome begin to divide
- ✓ **Metaphase**...Karyotyping
- ✓ **Anaphase**.... Division of chromatids & sister chromatids move to opposite side
- ✓ **Anaphase**....NON Disjunction
- ✓ **Telophase**...Spindle fibers disappear & Decondensation of Chromosomes
- ✓ **Telophase**...Complete division
- ✓ **Telophase**....Nuclear membrane formation
- ✓ **Cytokinesis**....Cytoplasm divide
- ✓ **Barr Bodies**....Heterochromatin
- ✓ **Barr Bodies**....Have X chromosome
- ✓ **Barr Bodies**....Seen under light microscope
- ✓ **Barr Bodies**....Absent in Turner
- ✓ **Barr Bodies**....Scanty In Turner
- ✓ **Barr Bodies**....Diagnostic for Turner

One Barr body in Klinefelter:

- ✓ No. of Barr bodies in OX.....No Barr Bodies
- ✓ No. of Barr bodies in XX... 1 Barr Body
- ✓ No. of Barr bodies in XXX...2 Barr bodies
- ✓ Best Test for chromosomal abnormalities is Karyotyping
- ✓ Cell to Cell – Cadherin
- ✓ ECM TO ICM – Intermediate Filament
- ✓ ECM to Cytoskeleton – Integrin
- ✓ Leukocyte Adhesion to Endothelium – ICAM (CD18 Subunit)

Organelles

- ✓ Detoxification of drugs – SER
- ✓ Detoxification of Alcohol in Toxic Dose – SER
- ✓ Detoxification of Alcohol in Normal Dose – Peroxisomes (Oxidase and H_2O_2)
- ✓ Lysosomes Contain – Hydrolytic enzyme
- ✓ SER Originate from – Peroxisome
- ✓ Lysosome Originate from – Golgi Body
- ✓ Continue with Nuclear membrane – RER
- ✓ Nissle Substance in – RER
- ✓ Lydeg Cell Has – SER
- ✓ Mitochondria – Power house + self-replicating + Short chains Fatty acids Metabolism
- ✓ Double membrane bounded organelles – Nucleus and Mitochondria
- ✓ Golgi bodies – Packaging of cells
- ✓ Production of proteins – Ribosomes > RER
- ✓ Centrioles make – Basal body (basal body makes cilia and flagella)
- ✓ Hypertrophy – Increased in size (Increased DNA content)
- ✓ Hyperplasia – Increased in number
- ✓ Hypertrophy and Hyperplasia both together – Uterus in Pregnancy

Cancer Marker

- ✓ Cytokeratin – Carcinoma (Epithelial)
- ✓ Vimentin – Sarcoma (Mesenchymal)
- ✓ Desmin – Muscle

Pharmacology

- ✓ DOC for T. Solium – Praziquantal > Niclosamide > Albendazole
- ✓ DOC for C. Difficile – Metronidazole > Vancomycin (Levinson)
- ✓ DOC for mild C. Difficile – Metronidazole (Levinson)
- ✓ DOC for Severe and resistant C. Difficile – Vancomycin (Levinson)
- ✓ DOC for Traveller Diarrhea – Norfloxacin > Metronidazole

- ✓ 1st Line in AF -- **Beta Blockers (Davidson)**
- ✓ For Rate control in AF -- **Beta Blockers & Digoxin (Davidson)**
- ✓ For Rhythm Control in AF with no Structural Heart Disease -- **Flecainide (Davidson)**
- ✓ For Rhythm Control in AF with IHD or Structural heart disease -- **Amiodarone (Davidson)**
- ✓ DOC For Cardiogenic Shock -- **Dopamine & Dobutamine**
- ✓ DOC for Hypotension Unrecordable BP -- **Dopamine**
- ✓ DOC for Anaphylactic Shock -- **Adrenaline (Epinephrine)**
- ✓ DOC for **Pseudomonas** -- **Ceftazidime**
- ✓ DOC for UTI by **Pseudomonas** -- **Ciprofloxacin**
- ✓ DOC for OCD -- **Clomipramine**
- ✓ DOC for SAH -- **Nimodipine**
- ✓ DOC for acute Pancreatitis -- **Pethidine(Davidson) > Morphine**
- ✓ DOC for Post-Surgery Analgesia in Asthma Patient -- **Pethidine (Oxford Anaesthesia Book)**
- ✓ DOC for Post-Surgery Analgesia-- **Ketorolac > Pethidine**
- ✓ Drug in morning Sickness --**Pyridoxine**
- ✓ Drug in motion Sickness -- **Meclizine**
- ✓ Drug in Mountain Sickness -- **Acetazolamide**
- ✓ DOC for Meningitis Adults -- **Ceftriaxone > Cefotaxime**
- ✓ DOC for Meningitis in Baby -- **Pencillin G**
- ✓ DOC in endometriosis -- **Medroxy progesterone > Leuprolide > Danazole (Ten Teacher)**
- ✓ DOC for Pregnancy induced HTN -- **Labetalol >Methyl dopa**
- ✓ DOC for Pregnancy Hypertensive Emergency -- **Hydralazine > Labetalol**
- ✓ DOC for Eclampsia -- **MgSO₄**
- ✓ DOC in Uterine Atony -- **Oxytocin > Ergometrine (Ten Teacher)**
- ✓ Anti-Thyroid in 1st Trimester -- **PTU**
- ✓ Anti-Thyroid in 2nd & 3rd Trimester -- **Methimazole**
- ✓ Crosses Placenta and affect Fetus -- **Methimazole > PTU**
- ✓ Don't Cross Placenta -- **Thyroxin**
- ✓ Elderly Diabetic -- **Tolbutamide**
- ✓ Obese Diabetic -- **Metformin**
- ✓ Non Obese Diabetic -- **Sulfonylurea**
- ✓ Organophosphate poisoning Antidote -- **Pralidoxime**
- ✓ Organophosphate poisoning Symptoms Reversal --**Atropine**
- ✓ Drug in Liver Decompensation used -- **Lorazepam & Oxazepam**
- ✓ Drug in liver Disease Pre operatively -- **Fentanyl**
- ✓ Drug Contraindicated in Liver Disease -- **Pentazocin > Paracetamol**
- ✓ Hepatic Encephalopathy Progress by -- **Diuretic >Paracetamol**

- ✓ NM Blocker in Asthma – Cisatracurium
- ✓ NM Blocker in Liver disease – Atracurium
- ✓ Pancuronium Eliminated by -- Kidney (80 percent)
- ✓ Rocuronium Eliminated by -- Liver (75-90 percent) & Kidney
- ✓ Diazepam Act through -- Interneuron
- ✓ Morphine Release – Histamine
- ✓ Terbutaline cause – Fetal Hypoglycemia and Maternal Hyperglycemia
- ✓ Analgesic effect of TCA – 1-2 weeks (Davidon)
- ✓ Antidepressant effect of TCA — 3-4 weeks
- ✓ Safe Analgesic dose NO – 25 ppm
- ✓ Safe Analgesic dose NO In 8h – 25 ppm
- ✓ Safe Analgesic dose NO In 24h – 100 ppm
- ✓ Morphine Decrease -- Apnea Threshold
- ✓ Local Anesthesia cross Placenta by – Simple Diffusion
- ✓ Scurfate doesn't Let Cimetidine to absorb
- ✓ Cimetidine Decrease Scurfate Metabolism
- ✓ More Local Anesthetic in Blood in – Intercostal Block
- ✓ Delayed Respiratory Depression – Morphine > Fentanyl
- ✓ Therapeutic Index Determine – Drug Safety
- ✓ Potency Determine -- Dose
- ✓ Benzodiazepine Cause Hypotension in – Hypovolemia > Old age
- ✓ Highly Selective COX2 – Celecoxib
- ✓ Highly Potent COX2 – Meloxicam
- ✓ Irreversible COX 1 & COX 2 inhibitor – Aspirin
- ✓ Reversible COX 1 & COX 2 inhibitor – NSAID
- ✓ Low dose Aspirin inhibit – TXA2
- ✓ Cardiotoxic – Bupivacaine
- ✓ Priapism by – Trazodon
- ✓ Gingival Hyperplasia by – Phenytoin
- ✓ Pulmonary Fibrosis by – Methotrexate
- ✓ Cardiomegalay by – Adriamycin
- ✓ Kernicterus by – Sulphonamide
- ✓ Reversible Oligospermia by – Salfasalazine
- ✓ Indirect Hyperbilirubinemia by – Methyldopa
- ✓ Orange urine by – Rifampicin
- ✓ Gout by – Pyrazinamide
- ✓ Methemoglobinemia by – Procain
- ✓ Red Man Syndrome by – Vancomycin
- ✓ Grey Man Syndrome by – Amidaron
- ✓ Gray Baby Syndrome by – Chloramphenicol

- ✓ Aluminum hydroxide (No receptor in Body) cause – **Constipation**
- ✓ Magnesium Hydroxide cause -- **Diarrhea**
- ✓ **Low** estrogen OCP cause – **Hepatic Adenoma**
- ✓ **High** Estrogen OCP **Prolong/Long** term use cause in post menopausal – **Endometrial CA**
- ✓ **Estrogen** Containing OCP Increase risk of – **Thromboembolism(DVT)**
- ✓ **HRT (Mixed)** cause – **Breast CA(Robins) > DVT**
- ✓ Digoxin Toxicity increase by – **Hypokalemia & Alkalosis**
- ✓ Digoxin Toxicity Cause – **Hperkalemia**
- ✓ **Thiazide** cause – **Hypokalemia> Hyperglycemia > Hyperlipidemia> Hyper uricemia >Hyper calcemia**
- ✓ **Thrombocytopenia** by – **Heparin > Quinidine > Thiazide > Chloramphenicol**
- ✓ **Diazepam** Side effect – **Loss of Beat to beat Variability > Neonatal Hypotonia**
- ✓ **Thiopental** – Action Terminated by **Redistribution** in Tissue and fat(FA)
- ✓ **Ketamine** -- **Increase HR and BP (Sympathomimetic)**

Ketamine

- ✓ **Profound Analgesia**
- ✓ **Anasthetic in Asthma**
- ✓ **Cause Bronchodilation**
- ✓ **Raised ICP(Avoided in Head Injury)**
- ✓ **Used in Burn Patient and Haemodynamically Unstable**

Halothane

- ✓ **Increase Cerebral Blood Flow**
- ✓ **Cause Malignant Hyperthermia**
- ✓ **Cause Skeletal Muscle Contractions**
- ✓ **Dissociates on Light**

Bupivacaine

- ✓ **First Sign of toxicity – Perioral paresthesia > Ringing in Ear**
- ✓ **Intermediate Sign – Hypotension**
- ✓ **Late Sign of toxicity – Arrhythmias**
- ✓ **Serious Side effect Arrhythmia**
- ✓ **Safe Dose 150mg**
- ✓ **Rupivacain preferred over it because of Less CNS toxic**

Neurology

- ✓ CNS -- **Oligodendrocytes**
- ✓ PNS -- **Schwann cells**
- ✓ Repairing cells -- **Astrocytes**
- ✓ Grey matter -- **Protoplasmic astrocytes (overall abundant)**
- ✓ White matter -- **Fibrous astrocytes (abundant astrocytes)**
- ✓ Adult spinal cord -- **Lower border of L1 or upper border of L2**
- ✓ Neonates spinal cord -- **Upper border of L3**
- ✓ **Endoneurium** --- Individual nerve fiber
- ✓ **perineurium** ---- Bundle of nerve fibers
- ✓ **Epineurium** --- Entire Nerve
- ✓ Fasciculus Gracilis -- **Lower limb Sensations**
- ✓ Fasciculus Cuneatus -- **Upper limb Sensations**
- ✓ Loss of light Reflex but intact accommodation reflex -- **Pretectal Nucleus** (Midbrain at the level of superior colliculus)
- ✓ Loss of Accommodation reflex -- **Cerebral cortex**
- ✓ Loss of Accommodation -- **Cerebral cortex**
- ✓ Loss of Accommodation + 3rd CN involvement -- **Midbrain** (Due to Edinger westphal nucleus)
- ✓ Corneal reflex lost -- **Pons**
- ✓ **Heating + Sympathetic effect** – **Post Hypothalamus**
- ✓ **Cooling + Parasympathetic** – **Ant Hypothalamus**
- ✓ Overall temperature regulation -- **Ant Hypothalamus (Preoptic Nucleus)**
- ✓ **FOLIA-- Cerebellum Fold**
- ✓ **HYPERACUSIS** -- **Geniculate ganglion** (medial wall of middle Ear)
- ✓ **Broca aphasia** -- Motor aphasia + Non-fluent + area 44 and 45 + inferior frontal gyrus
- ✓ **Wernicke aphasia** -- Sensory aphasia + fluent + area 22+ superior temporal gyrus
- ✓ **Global aphasia** -- Both Wernicke and broca aphasia + arcuate fasciculus
- ✓ **Anomic aphasia** -- Mild fluent aphasia + failure of word retrieval + angular gyrus
- ✓ **Lesion in DCML(Post White Column)** -- Sensory Ataxia > Asterognosia
- ✓ Loss of Proprioception lesion in – **Posterior Column (DCML)**
- ✓ Loss of Proprioception mechanism is – **Lateral Inhibition (Guyton)**
- ✓ Reduced motivation and depression – **Frontal Lobe**
- ✓ Characteristic of cerebellum lesion -- **Dysdiadochokinesia > Dysarthria**
- ✓ **Resting Tremor-- Substansia Nigra**
- ✓ **Intentional tremors** – **Cerebellum**
- ✓ **IJV after Coming out of Jugular foramen relation** – **ICA**
- ✓ **IJV With in jugular foramen relation** – **Accessory Nerve**
- ✓ **Neostriatum** -- **Caudate + Putamen**
- ✓ **Corpus Striatum** – **Caudate + Lentiform**
- ✓ **Lentiform** -- **Putamen + Globus Pallidus**
- ✓ **Olfactory Cortex location** – **Posterior inferior Temporal Lobe + Uncus**
- ✓ **Olfactory Area location** – **Anterior Perforating Substance**
- ✓ **Fastest fibers** -- **A alpha**
- ✓ **Fast pain fibers** -- **A delta**

- ✓ **Slow pain fibers -- C fibers**
- ✓ **Preganglionic fibers -- Beta fibers (True Autonomic)**
- ✓ **Postganglionic fibers -- C fibers (Autonomic)**
- ✓ **Pain From fingertip by -- A delta**
- ✓ **Proprioception from fingertip -- B fiber**
- ✓ **Type A>B>C affected by -- Pressure**
- ✓ **Type B>A>C affected by -- Hypoxia**
- ✓ **Type C >B>A affected by -- Anesthesia**
- ✓ **Itching -- Slow C fibers**
- ✓ **Itching Track -- Anterior Spinothalamic Track**
- ✓ **Sleep Centre -- Preoptic nucleus**
- ✓ **Circadian Rhythm -- Suprachiasmatic nucleus**
- ✓ **Chorea (Jerky+ quick movements) -- caudate nucleus**
- ✓ **Athetosis (slow + writhing) -- Globus pallidus**
- ✓ **Hemi-ballismus -- Sub-thalamic nucleus lesion**
- ✓ **Fusiform gyrus (Temporal Lobe) -- Face Recognition (Unable to recognize face called propognosia)**
- ✓ **Cingulate gyrus (Limbic System) -- Emotions**
- ✓ **Sexual centre -- Nucleus Acumbens**
- ✓ **Hippocampus -- Short-term memory + recollection in long term memory (long term memory formed by new Protein synthesis)**
- ✓ **Large receptive field -- Pain And temp**
- ✓ **Structure close to crus cerebri -- Substantia nigra**
- ✓ **Medial lemniscus formed by decussation of -- Internal arcuate fibers**
- ✓ **In UMN lesion fibers decussate at the level of -- Pyramid**
- ✓ **Cerebellum connected to Midbrain by -- Superior cerebellar peduncle**
- ✓ **Bleeding from mastoid antrum -- Sigmoid sinus**
- ✓ **Climbing Purkinje fibers originate from -- Inferior olivary nucleus**
- ✓ **Sub-dural hematoma -- Emissary veins >superior cerebral veins + common in Alcoholics and shaken babies + crescent shaped**
- ✓ **Extradural Hematoma -- Middle meningeal artery (branch of maxillary artery) + lucid interval (unconsciousness) + bioconvex shaped**
- ✓ **Subarachnoid hemorrhage -- Rupture of saccular aneurysm + worst headache of life + increase risk for hydrocephalus**
- ✓ **Spinal nerves -- Mixed nerves (both sensory and motor fibers) + formed in intervertebral Foramina + exit intervertebral Foramina**
- ✓ **Spinal ganglia -- Pseudounipolar neurons**
- ✓ **Skeletal muscle -- Multipolar**
- ✓ **Olfactory -- Bipolar**
- ✓ **Dorsal column -- fine touch + pressure + vibrations + proprioception**

- ✓ **Meissner corpuscles**
-Light Touch and Low Frequency Vibration—Upto 40Hz & At fingertips
- ✓ **Paccinian corpuscle** – High frequency Vibrations (40-400Hz) and Deep Touch
- ✓ **Rapidly Adapting** -- Pacinian > Meissner
- ✓ **Ruffini nerve endings** – Deep static pressure
- ✓ **Meckle nerve endings** -- Position + Deep Static touch + Secrete Serotonin
- ✓ **Fine movements of hand** -- Controlled by cerebellum and carried by Corticospinal tracts
- ✓ Centre for direct autonomic reflexes -- **Hypothalamus**
- ✓ MCA (upper limbs + Aphasia) Supplies – Insula and Opercula
- ✓ ACA (lower limbs + aphasia) Supplies – Secondary Somasthetic Area
- ✓ **TABES DORSALIS** -- Atonic bladder
- ✓ Proximal muscle **Flexion** -- Rubrospinal tracts
- ✓ Proximal muscle **Extension** -- Vestibulospinal tracts
- ✓ Inhibitory output in CNS -- **Purkinje cells**
- ✓ Ptosis + Miosis -- **Horner syndrome**
- ✓ Ptosis + Mydriasis -- **3rd Nerve palsy**
- ✓ Ptosis + normal pupil -- **Myasthenia gravis**
- ✓ Site of fusion of binocular vision -- **Visual cortex**
- ✓ Day vision + color Vision -- **Cones**
- ✓ Night vision + increased sensitivity to low light -- **Rods**
- ✓ Anterior layer of retina contains -- **Retinal pigment epithelium**

CSF

- ✓ CSF **Density** is 1.0005.
- ✓ CSF **Specific Gravity** is 1.005.
- ✓ CSF **PH** is 7.33.
- ✓ CSF is isotonic with serum.
- ✓ CSF has Equal sodium as compared to plasma.
- ✓ CSF has **High** magnesium and chloride as compared to plasma.
- ✓ CSF has **More** Creatinine as compared to plasma.
- ✓ Rest everything is **Low** in CSF as compared to plasma (Protein more Low than glucose)
- ✓ CSF is produced by – Ependymal cells
- ✓ CSF Provides nutrition to – CNS
- ✓ Arachnoid granulations are seen by naked eye
- ✓ Indicator for CSF Leak -- **Beta 2 Transferrin**
- ✓ CSF Has **Cushion** like effect
- ✓ **Maximum determinant** of CSF composition is Ependymal cells
- ✓ CSF Pressure – 10-20 cm H₂O or 60-150mm H₂O or 6-15mmHg
- ✓ CSF production – 20ml/h
- ✓ CSF production – 450-500 ml /day
- ✓ CSF in Ventricle – 150ml
- ✓ Lateral ventricle to 3rd via Interventricular Foramina of **Monro**
- ✓ 3rd to 4th via cerebral aqueduct (blockage can cause hydrocephalus)
- ✓ 4th to Subarachnoid space via **Foramen Magendie** and **Foramen Luschka**

- ✓ CSF made by choroid plexus (Ependymal cells) in 4th and lateral ventricle
- ✓ CSF absorbed by arachnoid granulations and then drains into Dural venous sinus

Lamina

- ✓ **Lamina 1-6** – Dorsal (Posterior) Horn
- ✓ **Lamina 8-9** – Ventral (Anterior) Horn
- ✓ **Lamina 7 & 10** – Intermediate Horn
- ✓ **Lamina 1** – High Threshold mechanoreceptor, Noxious stimulus & A delta pain
- ✓ **Lamina 2** – C fiber Pain & Substantia gelatinosa
- ✓ **Lamina 3-4** – Low Threshold mechanoreceptor
- ✓ **Lamina 6** – Deepest Layer, Joint skin Signal
- ✓ **Lamina 7** – Largest Area, Dorsal Nucleus of Clarke
- ✓ **Lamina 10** – Central Canal

Medulla

Upper Medulla:

- Vestibular cochlear
- Inferior olivary
- Spinal trigeminal

Middle Medulla:

- Nucleus ambiguus
- Hypoglossal Nucleus
- Dorsal motor Nucleus Vagus
- Spinal Trigeminal

Lower Medulla:

- Hypoglossal Nucleus
- Dorsal Motor Nucleus Vagus
- Spinal Trigeminal

Anatomy

- ✓ Most Common Bone injured in Body – Clavicle
- ✓ Most Common Long Bone Fracture in Body – Clavicle
- ✓ Most Common Long Bone Fracture in Lower Limb – Tibia
- ✓ Most Common Carpal Bone Fracture – Scaphoid (Radial Artery)
- ✓ Most Common Dislocated Carpal Bone – Lunate (Median Nerve - Carpal Tunnel)
- ✓ Fracture of Hook of Hamate – Ulnar Nerve Damage (Cuboidal Tunnel)
- ✓ Anatomical Snuff box Pain – Radial Artery
- ✓ Fracture of Surgical Neck of Humerus – Axillary Nerve Damage
- ✓ Fracture of medial epicondyle – Ulnar Nerve Damage
- ✓ Fracture of Shaft of Humerus – Radial Nerve Damage
- ✓ Wrist Drop – Radial Nerve Damage

- ✓ Anterior Dislocation of Shoulder joint – Axillary Nerve Damage & Post Circumflex artery Damage
- ✓ Quadrangular Space injury -- Axillary Nerve Damage & Post Circumflex artery Damage
- ✓ Small Muscle of Hand affected lesion in – C8-T1 > Ulnar+Median > T1 > Ulnar
- ✓ Ulnar nerve damage at Elbow – Loss of Sensations in medial 1/3rd palmar and dorsal aspect + Hypothenar wasting
- ✓ Ulnar nerve damage at Wrist – Claw Hand
- ✓ Median nerve damage at Elbow – Hand of Benedict
- ✓ Median nerve damage at Wrist – Carpal tunnel Syndrome (Thenar sensation lost > wasting)
- ✓ In median nerve damage – Opposition and abduction is not possible
- ✓ Abduction of Arm upto 15 Degree – Supraspinatus (Suprascapular Nerve)
- ✓ Abduction of Arm upto 90 Degree – Deltoid (Axillary Nerve)
- ✓ Abduction of Arm Above 90 – Trapezius (Spinal Accessory Nerve) & Serratus Anterior (Long Thoracic Nerve)
- ✓ Scratching of Back – Latissimus Dorsi (Dorsal Thoracic Nerve)
- ✓ Chief Supinator of Hand -- Biceps Brachii
- ✓ Total Claw Hand – Lumbricals Paralysed
- ✓ Tendon Courses through Shoulder Joint – Long Head Biceps
- ✓ Head of Humerus Supplied by – Arcuate > Anterior Circumflex artery
- ✓ Neck of Humerus Supplied by – Posterior Circumflex artery
- ✓ Most commonly dislocated bone in the lower limb is -- Patella
- ✓ Most common neuropathy in the lower limb is -- Compression of common peroneal nerve against neck of fibula
- ✓ Longest muscle in the body is -- Sartorius
- ✓ Thickest nerve in the body is -- Sciatic nerve
- ✓ Largest bone of the body is -- Femur
- ✓ Largest & most complicated Joint in the body is -- Knee joint
- ✓ Largest sesamoid bone in body is -- Patella
- ✓ Strongest ligament in the body is -- iliofemoral ligament
- ✓ Strongest tendon in the body is -- Tendocalcaneus
- ✓ Largest synovial cavity in the body is synovial cavity of the -- Knee joint
- ✓ Most commonly nerve used in the body for grafting is -- Sural nerve
- ✓ Most commonly used vein in body for grafting is -- Great saphenous vein
- ✓ Most commonly used muscle in the body for grafting is -- Plantaris & Palmaris longus
- ✓ Locking muscle for knee is -- Quadriceps Femoris
- ✓ Unlocking muscle for knee is -- Popliteus
- ✓ ACL injured – Anterior Dislocation of Tibia
- ✓ PCL injured – Posterior Dislocation of Tibia
- ✓ ACL injured – Posterior Dislocation of Femur
- ✓ PCL injured – Anterior Dislocation of Femur
- ✓ Ankle Sprain(Inversion) Ligament Injured – Lateral ligament > Anterior Talofibular
- ✓ Excessive Eversion ligament Injured – Tibial Collateral (Medial)

- ✓ Saphenous nerve accompany Great saphenous vein
- ✓ Sural nerve accompany small saphenous vein
- ✓ Deep peroneal nerve accompany anterior tibial artery
- ✓ Head of Femur Supplied by in **Adults** – Retinacular > Medial Circumflex artery
- ✓ Head of Femur Supplied by in **Child** – Obturator artery
- ✓ Neck of Femur Supplied by – Medial & Lateral Circumflex artery
- ✓ **Foot Drop** – Common peroneal nerve Injured
- ✓ Left or right dominant supply of heart is determined by -- **Posterior interventricular (Descending) artery.**
- ✓ **Great Cardiac vein** accompany -- **Left ant. Descending Artery**
- ✓ **Middle Cardiac vein** accompany -- **Post. Interventricular artery**
- ✓ **Small Cardiac vein** accompany – **Marginal artery**
- ✓ Ant. Cardiac vein drains directly into -- **RT. Atrium**
- ✓ Left lobe – **5cm**
- ✓ Right Lobe – **2.5cm**
- ✓ Pain of angina from heart is carried by -- **Sympathetic nerves**
- ✓ Pain of pericarditis is carried by -- **Phrenic nerve**
- ✓ Fibrous Pericardium and Parietal layer of Serous Pericardium is supplied by **Phrenic nerve**
- ✓ Mediastinal Pleura Supplied by – **Phrenic Nerve**
- ✓ Visceral layer of serous pericardium is called **Epicardium**
- ✓ **Right border of Heart** formed by -- **Right Atrium**
- ✓ **Right border of Heart** formed on **X-ray** by – **SVC + Right Atrium > SVC**
- ✓ **Base of heart** is formed by -- **Left atrium**
- ✓ **Left border of Heart** formed by -- **Left Ventricle (Apex Beat)**
- ✓ **Anterior (Sternocostal) Surface** formed by – **Right Ventricle**
- ✓ **Inferior (Diaphragmatic) Surface** formed by – **Left Ventricle**
- ✓ **Epicardium** supplied by – **Coronary Artery**
- ✓ **Pericardium** supplied by – **Pericardiophrenic artery**
- ✓ **Anterior 2/3rd IV Septum** supplied by – **LAD (LCA)**
- ✓ **Posterior 1/3rd IV Septum** supplied by – **PDA (RCA)**
- ✓ Left Circumflex supply – **Left and Right Ventricle**
- ✓ Xiphisternum Vertebrae level – **T9**
- ✓ IVC begin at – **L5**
- ✓ True Ribs – **1-7**
- ✓ False Ribs – **8-10**
- ✓ Floating Ribs – **11-12**
- ✓ Upper Esophagus -- **Inferior Thyroid artery**
- ✓ Middle Esophagus – **Descending thoracic aorta**
- ✓ Lower Esophagus – **Left Gastric**
- ✓ **Azygous vein** anterior to **Right root of lung**
- ✓ **Aorta** posterior to **Left root lung**
- ✓ **Phrenic nerve** anterior to **Root of lung**
- ✓ **Vagus Nerve** posterior to **Root of Lung**
- ✓ IVC Blocked Above **Azygous vein** dilation in – **Azygous vein > Left Gastric Vein**

- ✓ IVC Blocked **Upto Azygous** vein dilation in – **Right Ascending Lumber vein & Right Subcostal Vein**
- ✓ IVC Blocked **Below Azygous** vein dilation in – **Ascending Lumber vein**
- ✓ Muscle of **Quite Inspiration** – **Diaphragm and External Intercostal**
- ✓ Muscle of **Forced Inspiration** – **SCM & Serratus Anterior**
- ✓ **Quite Expiration** – **Passive and by Elastic Recoil of Lung**
- ✓ Muscle of **Forced Expiration** -- **Internal Intercostal**
- ✓ **Accessory Muscle of Expiration** – **External Oblique**

- ✓ **T8 - Caval Opening** -- Inferior Vena Cava and Right Phrenic Nerve , Extent of IVC = T8 to L5
- ✓ **T10 -- Umbilicus , Esophageal Hiatus** (Esophagus, Esophageal vessels, and Vagus nerves)
- ✓ **T12 – Aortic Opening** (Aorta, Azygous , and Thoracic Duct)
- ✓ **T3 to T6** – Oblique Fissure of Lung
- ✓ **T4 -- 5** – Bifurcation of Trachea, Dermatome Nipple, Extent of Trachea = C6 to T4
- ✓ **C3** – Hyoid in erect position
- ✓ **C2 - C3 (C2>C3) Tracheal ring** – Tracheostomy Level Adults
- ✓ **C3 - C4 (C3>C4) Tracheal ring** – Tracheostomy Level Children
- ✓ **C6** – Cricoid Level (Esophagus and Trachea Starts)
- ✓ **C2-3** — Supraclavicular
- ✓ **C3-4** – Infraclavicular
- ✓ **Foramen Ovale** -- **Accessory Meningeal** artery pass
- ✓ **Foramen Spinosum** -- **Middle Meningeal** artery pass
- ✓ **Superior Orbital Fissure** -- V1 (Ophthalmic nerve) pass
- ✓ **Foramen Rotandum**-- V2 (Maxillary Nerve) Pass
- ✓ **Foramen Ovale** -- V3 (Mandibular Nerve) pass
- ✓ **Jugular Foramen** – CN 9, 10, 11 (**Accessory part**) & Sigmoid Sinus
- ✓ **Hypoglossal Canal** – CN 12
- ✓ **Foramen Magnum** – Brainstem & Spinal Part of CN11
- ✓ Esophagus Passed through -- **Left Crus of Diaphragm (Big Snell)**
- ✓ **Medial Arcuate ligament** formed by -- **Psoas Muscle**
- ✓ **Median Arcuate ligament** formed by – **Right & Left Crura**
- ✓ **T12** – Celiac Trunk
- ✓ **L2** – Renal Artery
- ✓ **L1** – Superior mesenteric artery
- ✓ **L3** – Inferior Mesenteric Artery
- ✓ **L4** – Bifurcation of Descending Aorta
- ✓ **L5** -- Start of IVC
- ✓ **Transpyloric Plane** – Pylorus of Stomach, Fundus of Gallbladder, Hilum of Kidney, First part of Duodenum, Origin of SMA, Tip of 9th Costal Cartilage, Lower end of Spinal Cord.
- ✓ Right Kidney anteriorly Related to - **Liver**
- ✓ Right Kidney **Hilum** Anteriorly Related to - **2nd Part Duodenum**

- ✓ Posterior to Right Kidney - 12th Rib & Diaphragm
- ✓ Anterior to Left Kidney - Stomach & Pancreas
- ✓ Posterior to Left Kidney - 10th - 11th Ribs & Diaphragm
- ✓ 2nd Part of duodenum Attached posteriorly to - Transverse Mesocolon
- ✓ Right Accessory Hepatic Artery Branch of - SMA
- ✓ Superior Epigastric Artery Branch of - Internal Thoracic Artery
- ✓ Inferior Epigastric Artery Branch of - External iliac Artery
- ✓ Superficial Epigastric Artery Branch of - Femoral Artery
- ✓ Superior Rectal Branch of - Inferior Mesenteric artery
- ✓ Middle Rectal Branch of - Internal iliac artery
- ✓ Inferior Rectal Artery Branch of - Internal Pudendal Artery
- ✓ Bulbourethral Gland - Deep Pouch
- ✓ Greater Vestibular Gland - Superficial pouch
- ✓ Difficulty in Standing from Sitting - Gluteus Maximus Damage (Inferior Gluteal Nerve)
- ✓ Shuffling Gate - Gluteus medius + minimus (Superior Gluteal Nerve)
- ✓ Right Pelvis Sink - Left Gluteus medius + minimus Damage
- ✓ Injection Given in Superior Lateral Compartment to avoid Damage to - Sciatic Nerve (Snell)
- ✓ Mediolateral Episiotomy Damage to - Bulbospongiosus > Superficial Transverse Perineal Muscle
- ✓ Mediolateral Episiotomy Structure at Risk - Levator Ani
- ✓ Median Episiotomy Damage to - External Anal Sphincter
- ✓ During Episiotomy Perineal Body Damage then Muscle Injured - Levator ani
- ✓ Major Support of Uterus - Cardinal (Transverse Cervical) Ligament
- ✓ Dynamic Support - Pelvic Diaphragm

Ureter

- ✓ During Hysterectomy Ureter Damage at A > B > C
 - A-Cardinal Ligament (Uterine Vessel)
 - B-Behind Broad Ligament
 - C-At Pelvic Brim (Ovarian artery)
- ✓ Ureter Damage at Pelvic Brim - While crossing Common iliac Vessel
- ✓ While removing Ovary damage to - Internal iliac Artery
- ✓ Anterior to Ureter - Gonadal Vessel
- ✓ Posterior to Ureter - Iliac Vessel
- ✓ Common Site of Lodging of ureteric stones overall/Adults - Vesico ureteric Junction
- ✓ Common Site of Lodging of ureteric stones in Child - Pelvico ureteric Junction
- ✓ Ureter Narrows at - Vesico ureteric Junction > Where it enters Bladder

Uterus Prolapse

- 1st Degree – Decent of Cervix within Vagina
- 2nd Degree – Decent of Cervix to Introitus
- 3rd Degree – Decent of Cervix Outside Introitus
- 4th Degree (Procidentia) -- Whole Uterus outside Introitus
- In 1st and 2nd Degree – Uterosacral Ligament Damage
- 3rd Degree – Uterosacral > Cardinal Ligament Damage
- 4th Degree – Cardinal Ligament Damage

Random

- ✓ Important Test For Transplant – HLA typing
- ✓ Best Blood Cell for HLA Sampling – WBC
- ✓ Best Site for HLA Sampling – Bucal Mucosa
- ✓ Best Tissue for HLA Sampling – Bone marrow
- ✓ Hyper acute Rejection – Pre formed antibodies (Type 2 Hypersensitivity)
- ✓ Acute Rejection -- CD8 Cells (Type 4 Hypersensitivity)
- ✓ Chronic Rejection -- CD4 Cells (Type 2+4 Hypersensitivity)
- ✓ Graft vs Host Disease – Type 4 Hypersensitivity
- ✓ Dense Granules and IgE receptor – Basophil
- ✓ Granules and IgE receptor – Mast cell
- ✓ Granule and Histaminase enzyme – Eosinophil
- ✓ Most Common complication of DM Over All – Dry Gangrene
- ✓ Most Common Complication in Limb of Diabetic Patient – Dry Gangrene
- ✓ Most Common complication of Diabetic Foot – Wet Gangrene
- ✓ Most Common Complication of 3rd Degree Burn over all – Contracture
- ✓ Most Common Complication of 3rd Degree Burn in Black – Keloid
- ✓ Most common Complication of Burn – Scar
- ✓ Endarteritis Obliterans Associated with – Syphilitic aneurysm
- ✓ Neonatal Recurrent Infection Deficiency of – IgG
- ✓ Child Recurrent Infection Deficiency – IgA
- ✓ Neonatal Infection Diagnosed by -- IgM
- ✓ Mother Affected with Rubella and Baby got Symptoms Diagnosed by – IgM
- ✓ Mother Affected with Rubella and Baby Symptoms less to Sec immunoglobulin – IgG2 > IgG1
- ✓ Rubella in pregnancy complication overall – Deafness > Cataract
- ✓ Rubella in pregnancy complication Within 7 weeks – Cataract
- ✓ Rubella in pregnancy complication After 7 weeks – Deafness
- ✓ After Transplant most Common malignancy – Skin
- ✓ After Transplant Common malignancy in 1 or 5 Year – Lymphoproliferative
- ✓ After Transplant Common malignancy after 10-15 Years – Skin

- ✓ Most Common Manifestation of autoimmune disease - **Hematological**
- ✓ SLE involve most commonly - **Joints (90%) And Skin (85%)**
- ✓ **Potent Antioxidants** - Glutathione > Vit. E > C > A
- ✓ **Radicals** - OH > H₂O₂ > Superoxide
- ✓ **Uninucleate** - Most Cells
- ✓ **Binucleate** - Liver Cells
- ✓ **Multinucleate** - Skeletal Muscle
- ✓ **Cannot Regenerate** - Lens > Skeletal Muscle > Neuron > Cardiac
- ✓ **Cannot Reproduce** - RBC
- ✓ Most Common remnant of Allantois - **Urachal Cyst**
- ✓ **Patent Lumen** of Allantois - **Urachal Fistula**
- ✓ **Stratified Cuboidal** - Sweat Gland Lining Duct
- ✓ **Stratified Columnar** - Salivary Gland Lining Duct
- ✓ **Vertebral Bodies Limited** by - Anterior an posterior Longitudinal Ligament
- ✓ **Vertebral Bodies kept in position** by - Anterior an posterior Longitudinal Ligament
- ✓ **Vertebrae joined** to Adjacent Lamina - **Ligament Flavum**
- ✓ **Hyperextension** of neck Ligament Injured - **Anterior Longitudinal Ligament**
- ✓ **Hyper flexion** of neck Ligament Injured - **Ligament Nuche**
- ✓ **Drowning** - Pulmonary edema
- ✓ **Near Drowning** - Metabolic acidosis
- ✓ **Emboli first go to** - IVC
- ✓ **Emboli first loadge in** - Pulmonary artery
- ✓ **In response to Hemorrhage** - Decrease venous Capacitance
- ✓ **After Compensation of Hemorrhage** - Decrease Heart Rate
- ✓ **Least Circulate in Blood** - Pleuri potent Stem cell > Basophil (Clinical Hematology Book)
- ✓ **Corneal Opacity** - Chloroquine
- ✓ **Retina Deposit** - Thioridazine
- ✓ **Lens Deposit** - Chlorpromazine
- ✓ **Post Infleunza Most Common Organism** - Strep Pneumoniae
- ✓ **Post Infleunza Brown Rusty Sputum** - Strep Pneumoniae
- ✓ **Post Infleunza Yellow thick Sputum** - Staph Aureus
- ✓ **Post Infleunza Current jelly Sputum** - Klebsiella Pneumoniae
- ✓ **After Meal** - Glycolysis occur(FA)
- ✓ **Between Meal** - Glycogenolysis > Gluconeogenesis(FA)
- ✓ **Just Lateral to Xiphisternum** Structure damage - IVC
- ✓ **Just Lateral and Below to Xiphisternum** Structure damage - IVC
- ✓ **Needle passed in 6th ICS on Right** damage to - **Right atrium**
- ✓ **Cut end of Vagus nerve Stimulated** - Decrease HR
- ✓ **Vagus nerve proximal end cut and Central Part Stimulated** - Apnea occur

- ✓ Patient Naked heat loss by -- Radiation
- ✓ Patient Naked and lying on Surface(Table) heat loss by - Conduction
- ✓ Patient Naked and Temp Mention heat loss by - Radiation + Conduction
- ✓ Patient Naked and Humidity mention heat loss by - Convection
- ✓ Remodeling of tissue by - Metalloproteinase > Collagenase > Elastase
- ✓ Asthma Involve - Medium sized bronchioles
- ✓ Infarction Involve - Small sized Bronchi
- ✓ Line of Zahn seen in
 - Coralline Thrombus
 - Pre mortem Thrombus
 - Arterial Thrombus
- ✓ Chicken Fat Appearance seen in - Post Mortem Thrombus
- ✓ Post traumatic epilepsy - With in 2 Year (Current Medicine Textbook)
- ✓ Amoeba Produce Lesion in - Caecum (Davidson)
- ✓ Cavernous Sinus Infection - Superior ophthalmic vein (KLM)
- ✓ Cavernous Sinus Thrombosis - Superior ophthalmic vein (KLM)
- ✓ Cushing Syndrome Differ from Obesity by - Proximal Myopathy
- ✓ Longest Incubation Period - Latent HIV > Hep. B > IM > HIV
- ✓ Pure Serous - Parotid
- ✓ More Mucinous + Few Serous - Sublingual
- ✓ More Serous + Few Mucinous - Submandibular
- ✓ True Conjugate - Sacral Promontory to upper pubic Symphysis (11cm)
- ✓ Obstetric Conjugate - Sacral Promontory to middle or posterior pubic Symphysis (12cm)
- ✓ Diagonal Conjugate - Sacral Promontory to Lower pubic Symphysis (10.5cm)
- ✓ Antigen Presenting cells in Skin - Langerhan
- ✓ Spleen Filtration function - Red Pulp (FA)
- ✓ Spleen Immunological Function - White Pulp
- ✓ High Karyo pyknotic Index - Increase Estrogen activity > Cervical Dysplasia
- ✓ Cell Membrane Bond - Hydrophobic + Hydrogen > Hydrophobic + Covalent
- ✓ Integral Protein in cell membrane joined by - Hydrogen > Hydrogen + Hydrophobic
- ✓ Integral protein in cell membrane joined to Lipid of membrane - Hydrophobic
- ✓ Peripheral Protein by - Electrostatic Interactions
- ✓ Coccygeal Segment - L1
- ✓ Coccygeal Ligament - S2 - Cocyx 1
- ✓ Mural Thrombi Arise From - Left Ventricle >> Left Atrium
- ✓ Dialyzing Fluid has more Glucose and HCO₃ as compared to plasma
- ✓ Tear Has High Sodium in its composition
- ✓ Tear Compare to plasma Has Equal Sodium
- ✓ Tear Compare to plasma has Low Glucose and Urea

- ✓ Tear Compare to plasma has **More K, Cl, Ca & Amino acids**
- ✓ Foreign Body in **Supine** – Apical (Superior) Segment of Right Lower Lobe
- ✓ Foreign Body in Sitting/Standing (**Upright**) -- Posterior basal Segment of Right Lower Lobe
- ✓ Foreign Body in **Right Lateral** – Posterior Segment of Right Upper Lobe
- ✓ Foreign Body in **Left Lateral** – Inferior Lingular of Left Upper Lobe
- ✓ Carboxy Hb Half-life at Room Air (21%) – 4-5 H
- ✓ Carboxy Hb Half-life at 100% O₂ – 90min
- ✓ Carboxy Hb Half-life at Hyperbaric O₂ – Less than 30 min
- ✓ Zero Order Kinetic Drugs – **Phenytoin, Ethanol & Aspirin**
- ✓ Zero Order Kinetic – **Half Life Increase with increase Dose**
- ✓ First Order Kinetic – **Half Life Constant with Increase Dose**
- ✓ Uncoupling Oxidative Phosphorylation – **NE > Thyroxin > Epinephrine**
- ✓ Anti-Tumor Cell – **NK Cells**
- ✓ Anti-Cancer Nature Mechanism – **Apoptosis**
- ✓ Drug Worsen Angina – **Vasopressin > Theophylline**
- ✓ Glucose Transport in **Placenta** (Facilitated) and **Kidney** (Secondary Active-Biport)
- ✓ Typhoid Reside in Payer patches(1-4weeks) & Gall Bladder (>4 weeks)
- ✓ Lymphoid Tissue and Simple **Cuboidal Epithelium** – **Payer patches**
- ✓ Lymphoid Tissue and Simple **Squamous Epithelium** – **Palatine Tonsil**
- ✓ Ovary – Simple Cuboidal
- ✓ GIT – Simple Columnar
- ✓ Conjunctiva – Stratified Columnar
- ✓ **Central Venous Pressure Increased in (Ganong)**
 - Decrease HR
 - Increase Blood Volume
 - Straining
 - Cardiogenic Shock
 - Decrease in Compliance of veins
 - Increase peripheral vascular Resistance
- ✓ **Bicep Jerk – C6**
- ✓ **Tricep Jerk – C7**
- ✓ **Knee Jerk – L3**
- ✓ **Knee Cap – L4**
- ✓ **Ankle Jerk – S1**

Bio-State

Case Control Study:

- Disease vs Non Disease
- Related to ODD Ratio

Cohort Study:

- Group with Risk Factors and Group without Risk Factors
- Related to Relative Risk
- Cause to Effect
- Forward Study

Cross Sectional Study:

- Disease and Risk Factors

Sensitivity (True Positive):

- Detect Disease and Rule out Disease (FA)

Specificity (True Negative):

- Detect Non Disease and Rule in Disease (FA)

Attrition Bias – Related to follow up and Prognosis**Berkson Bias** – Related to Different Exposure**Normal Distribution (Gaussian) Curve** – Mean=Median=Mode**Positive Skew** – Mean >Median >Mode**Negative Skew** – Mean <Median <Mode**Confidence Interval** – Mean and Standard Error**Confidence Limit** – Standard Error and T value**T Test** – Mean of 2 groups**Anova Test** – Mean of 3 or more groups**Chi Square** – 2 by 2 Table and Categorical Data**Pie Chart** – Related to Percentages**Confidentiality** – Break When Patient Allows You

Transport

- ✓ **Glucose** transport across membrane due to its concentration difference – **Facilitated Diffusion**
- ✓ **Glucose** is absorbed in **renal tubules** through -- **2ndry Active Transport**
- ✓ **Amino acids** are absorbed from **kidney** to blood by -- **2ndry Active Transport**
- ✓ **Glucose** transported to **placenta** by -- **Facilitated Diffusion**
- ✓ **Chloride and Urea** transported by -- **Passive Diffusion**
- ✓ **Oxygen** taken up to lung through -- **Simple Diffusion > Passive Diffusion**
- ✓ **Local Anesthesia** crosses **Placenta** by -- **Simple Diffusion > Passive Diffusion**
- ✓ The membrane protein **Clathrin** is involved in -- **Receptor mediated Endocytosis**
- ✓ Transport through cell membrane involving **Actin, Myosin and clathrin** -- **Pinocytosis**
- ✓ If a drug molecular weight is **less than 1000** Transport occurs via -- **Diffusion**
- ✓ If a drug molecular weight is **more than 1000** Transport occurs via -- **Pinocytosis**

Endocarditis

- ✓ Most common cause of **Acute Endocarditis (No Heart Disease)** – **Staph Aureus**
- ✓ Most common cause of **Sub Acute Endocarditis (with Heart Disease)** – **Strep. Viridans**

- ✓ Libman mainly Involve Mitral and aortic but can involve any valve
- ✓ Flat Small Vegetation - Libman Sac Endocarditis
- ✓ Friable small Vegetation - NBTE
- ✓ Large Irregular Vegetation - IE
- ✓ SLE associated with - Libman
- ✓ NBTE associated with - Terminal Neoplasm

Breast Lymph (KLM + BD)

- ✓ Axillary lymph nodes - 75%
- ✓ Internal thoracic(mammary) or Parasternal - 20%
- ✓ Posterior intercostal - 5%
- ✓ Axillary lymph node include Anterior or pectoral (Mainly), posterior, central, apical and lateral
- ✓ Sequence of major lymph node parallel along which vessel -- Anterior axillary to pectoral
- ✓ Sequence of lymph node parallel along which vessel -Internal thoracic
- ✓ Nipple drainage -- Ant. axillary (Pectoral)
- ✓ Upper lateral -- Ant. axillary mainly
- ✓ Lower lateral(Inferior) -- Ant. axillary + Sub diaphragmatic + Internal mammary.
- ✓ Medial Quadrant -- Mainly to Internal mammary (Internal thoracic)
- ✓ Lower Inner Medial Quadrant -- Inferior Phrenic (Sub Diaphragmatic)
- ✓ Tail of Breast -- Posterior (Scapular) Lymph Node
- ✓ Path of Axillary lymph flow --Anterior and posterior
- ✓ Quadrant of Breast Lymph -- Medial and lateral

Prolactin

- ✓ <1000 -- Stress or Drugs
- ✓ Between 1000 - 5000 -- Microprolactinoma
- ✓ >5000 -- Macroprolactinoma
- ✓ Prolactin cause - Milk Production
- ✓ High Prolactin cause - Infertility and Galactorrhea
- ✓ High prolactin cause - Decrease GnRH so inhibit Ovulation

Pancreas

- ✓ Posterior to Head of pancreas -- IVC
- ✓ Posterior to Uncinate process --Aorta
- ✓ Posterior to neck of pancreas -- Portal vein And SMV
- ✓ Anterior to uncinate process -- SMA
- ✓ Superior to pancreas -- Splenic Artery
- ✓ Most abundant cells in Pancreas -- B cells
- ✓ Type of necrosis in pancreas -- FAT necrosis
- ✓ Tail of pancreas lies in -- Spleno renal (Lino renal) ligament
- ✓ CA most common in -- Head of Pancreas

Influenza

- ✓ H1N1 Swine Flu
- ✓ H2N1 and H3N1 Common Flu
- ✓ H5N1 Avian Flu

Facial Nerve

- ✓ Facial nerve enters temporal region -- Internal acoustic meatus
- ✓ Facial Nerve Enter Posterior cranial Fossa -- Stylomastoid foramen
- ✓ Facial nerve exits posterior cranial fossa -- Internal acoustic meatus
- ✓ Facial Nerve exits Skull -- Stylomastoid foramen
- ✓ Facial Nerve give chorda tympani which carries anterior 2/3rd Tongue taste
- ✓ Facial Nerve normally causes closing of eye and Damage to Facial nerve result in Opening of Eye and Vice versa for 3rd Nerve

Amyloidosis

- ✓ Amyloidosis visualized by -- Congo stain
- ✓ Most common organ affected in Primary Amyloidosis is -- Kidney
- ✓ Most Common cause of death in Primary amyloidosis is -- Cardiac Failure
- ✓ Amyloidosis best confirmed by -- Rectal biopsy
- ✓ Dialysis & Carpal tunnel related amyloidosis -- Beta 2 Microglobulin
- ✓ AA(Secondary) amyloidosis associated with Chronic inflammation like -- IBD and RA, Familial Mediterranean Fever and Protracted infection
- ✓ Senile amyloidosis -- Normal (Wild Type) Transthyretin
- ✓ Systemic(Primary) AL amyloidosis -- Multiple myeloma
- ✓ Alzheimer's Disease -- Beta amyloid protein
- ✓ Diabetes Associated -- Islet Amyloid Polypeptide(Amylin)
- ✓ Familial Amyloid Cardiomyopathy -- Mutated Transthyretin
- ✓ Familial Amyloid Polyneuropathies -- Mutated Transthyretin

Dead Space

Increased Dead Space:

- ✓ Emphysema
- ✓ Pneumonia
- ✓ ARDS
- ✓ Smoking
- ✓ ETT intubation
- ✓ Bronchitis
- ✓ Asthma
- ✓ Cardiac Failure
- ✓ Pulmonary Embolism
- ✓ Neck Extension
- ✓ Standing

- ✓ Hypotension
- ✓ Bronchodilation

Decreased Dead Space:

- ✓ Atelectasis
- ✓ Tracheostomy
- ✓ Sleep
- ✓ Maxillectomy
- ✓ Hyperventilation
- ✓ Neck Flexion
- ✓ Supine Position
- ✓ Bronchoconstriction

Estrogen/Progesterone

Progesterone: (1 > 2 > 3)

1. Maintain Endometrial Proliferation(Thickness)
2. Secretory Phase
3. Alveoli and Lobule Development
4. Increase Basal Body Temperature

Estrogen:

1. Endometrial Proliferation
2. Breast Duct Development
3. Development of female Secondary Sex Characteristics
4. Stimulate Prolactin Secretion however it Blocks Prolactin action on Breast(During Pregnancy)
5. Maintain Calcium Homeostasis (Decrease Bone resorption and increase Linear Bone growth)

Heat Production (Ganong)

- 1) **Resting Heat:** Heat Given off at Rest
- 2) **Initial Heat:** Heat produced in Excess of resting Heat during Muscle Contraction. It is made up of Activation Heat and Shortening Heat
 - a) **Activation Heat:** Heat Produced whenever muscle Contracts
 - b) **Shortening Heat:** Heat Produced when Muscle shortens (Change in Structure)
- 3) **Recovery Heat:** Heat Produced when return to its Pre contraction state muscle. It is equal to Initial Heat.
- 4) **Relaxation Heat:** Extra Heat produced in addition to Recovery Heat.

Sleep

(Guyton, Ganong & FA)

REM sleep:

- ✓ Occur every 90 min (4-6 period occur in Night)

- ✓ Most Dream Occur (**Can be recalled**)
- ✓ Eye movement , **Loss of Muscular Tone**, pupil constriction and Penile Erection occur
- ✓ Associated with Mark Brain Activity
- ✓ Difficult to arouse from Sleep
- ✓ 80% in Premature infant, 50% in Mature Neonate and 25 % in old Adult
- ✓ Sleep Centre is Locus Coeruleus and Neurotransmitter is Acetylcholine
- ✓ Beta waves appear (14-80Hz) -- High Frequency and low Amplitude
- ✓ Also Called **Paradoxical Sleep** because person can still be Asleep despite Marked Brain Activity
- ✓ Also Called **Desynchronized Sleep** Because there is lack of synchrony in firing of Neuron Despite Marked Brain Activity

NREM:

- ✓ Also Called **Slow Wave Sleep**
- ✓ Divided into 4 Stages and specifically stage 4 is more Slow Wave
- ✓ Sleep Centre is Raphe Nucleus and Neurotransmitter is Serotonin > GABA
- ✓ Dream May occur (**Cannot be Recalled**)
- ✓ **N1: Light Sleep**
- ✓ **N2: Deeper Sleep and Bruxism occur**
- ✓ **N3: Deepest Sleep, Sleep walking, Night Terror, Bed Wetting and loss of Vascular Tone**
- ✓ **N4: Maximum Slowing occur Here**

EEG Waveforms:

- ✓ **Awake and Eye Close : Alpha Wave**
- ✓ **Awake and Eye open : Beta Wave**
- ✓ **N1: Theta Wave (4-7Hz)**
- ✓ **N2: Sleep spindles (12-14Hz) and K complexes (High Voltage biphasic waves)**
- ✓ **N3&4: Delta Wave (0.5-4Hz) – Low Frequency and High Voltage Wave**
- ✓ Theta wave may occur during Stress, N 2 & 3 but Predominantly in N1
- ✓ Delta Wave occur during Deep sleep, Infancy and Organic Brain Disease
- ✓ Spindle may Occur During N1 but Predominantly in N2

Compliment

- ✓ **Classic Pathway Activated by – IgM > IgG**
- ✓ **Alternative Pathway by – Microbe Surface molecule**
- ✓ **Opsonization – C3b and IgG**
- ✓ **Anaphylaxis – C3a, C4a ,C5a**
- ✓ **Neutrophil Chemotaxis – C5a**
- ✓ **Cytolysis – C5b – 9 (MAC)**
- ✓ **Early Complement Deficiency (C1-4) – Increase Risk of Recurrent Pyogenic sinus , Respiratory infection and SLE**
- ✓ **Terminal Complement Deficiency (C5 – 9) – Increase Risk of Neisseria Bacteremia**
- ✓ **C1 Esterase Inhibitor Deficiency – Result in Angioedema, Increase Bradykinin and Low C4 Level**

Hypersensitivity (Robins)

Type 1:**Examples Include:**

- ✓ Anaphylaxis
- ✓ Bronchial Asthma
- ✓ Allergic Rhinitis (Hay Fever)
- ✓ Food Allergy
- ✓ Blood transfusion usually causes Type 2 Hypersensitivity but IgA Deficient Patient has Anti IgA when Blood Containing IgA Transfused in such Patient Anaphylaxis Reaction occurs which is Type 1 Hypersensitivity.

Type 2:**Antibody Mediated Cellular Destruction:**

1. Complement Activation or Phagocytosis
2. Antibody Dependent Cellular Cytotoxicity

Examples:

- ✓ Transfusion Reaction
- ✓ Erythroblastosis Fetalis
- ✓ Autoimmune Hemolytic Anemia
- ✓ Immune Thrombocytopenia

Antibody Mediated Inflammation:

- ✓ Good Pasture Syndrome
- ✓ Rheumatic Fever
- ✓ Hyper Acute Graft Rejection

Antibody Mediated Cellular Dysfunction:**Hypo function**

- ✓ Myasthenia Gravis

Hyper function

- ✓ Graves' Disease
- ✓ Pemphigus Vulgaris

Other

- ✓ Type 2 DM
- ✓ Pernicious Anemia

Type 3 (Immune Complex Mediated)**Examples:**

- ✓ SLE
- ✓ Post Streptococcus GN
- ✓ PAN
- ✓ Reactive Arthritis
- ✓ Serum Sickness
- ✓ Arthus Reaction

Type 4 (Cell Mediated)**Examples:**

- ✓ Multiple Sclerosis
- ✓ Contact Dermatitis
- ✓ Psoriasis

- ✓ IBD
- ✓ Type 1 DM

Visual Lesion:

- ✓ **Middle Optic Chiasma Lesion – Bitemporal Heteronymous Hemianopia**
- ✓ **Optic Track Lesion – Homonymous Hemianopia**
- ✓ **Right Optic Track Lesion -- Left Homonymous Hemianopia**
- ✓ Pituitary Tumor with **Homonymous** hemianopia – **Optic Track lesion**
- ✓ Pituitary Tumor with **Heteronymous** hemianopia – **Optic Chiasma Lesion**
- ✓ Right Optic Track Lesion causes – Right Temporal and Left Nasal **Fibers loss**
- ✓ Right Optic Track Lesion Causes – Right Nasal and Left Temporal **Vision loss**
- ✓ **Right Optic Track is made up of** – Right Temporal fibers(which See Nasal Vision) and Left Nasal Fibers(which See Temporal Vision) so Fibers loss and vision loss are Separate things
- ✓ Patient is Blind on testing but have no Insight of Vision loss – **Cortical Blindness**
- ✓ Cortical Blindness due to Blockage in -- **PCA**

Brain Lobe Lesion

Frontal Lobe

It Result in

- ✓ Expressive (Broca) Non-fluent Aphasia
- ✓ Poor Social Behave
- ✓ Release of Sucking and Grasp Reflex
- ✓ Lack of Concentration

Parietal Lobe

It result in

Gerstmann Syndrome which Include

- ✓ Right and left Confusion
- ✓ Finger Agnosia
- ✓ Dysgraphia and Dylexia
- ✓ Dyscalculia

Other findings

- ✓ Dressing Apraxia
- ✓ Construction Apraxia
- ✓ Astereognosis
- ✓ Contralateral Inferior Quadrantanopia(Upper Retina Involved)

Temporal Lobe

It result in

- ✓ Receptive(Wernicke) Fluent Aphasia
- ✓ Contralateral Superior Quadrantanopia(Lower Retina Involved-Meyer Loop)
- ✓ Olfactory and Gustatory Hallucination
- ✓ Anosmia

- ✓ Klaver Bucy Syndrome
- ✓ Prosopagnosia

Occipital Lobe

It Result in

- ✓ Bilateral Lesion causes Cortical Blindness
- ✓ Unilateral Lesion causes Contralateral Quadrantanopia

Aphasia

Motor Aphasia

- ✓ Lesion of Broca Area(Dominant) 44 and 45
- ✓ Lesion of Inferior Frontal Lobe
- ✓ Expressive or Non Fluent Aphasia
- ✓ Cannot Speak or Write
- ✓ Comprehension Intact

Sensory Aphasia

- ✓ Lesion of Wernike area 22
- ✓ Lesion of Superior temporal Lobe
- ✓ Receptive or Fluent Aphasia
- ✓ Can Speak but make No sense

Anomic Aphasia

- ✓ Lesion of Angular Gyrus area 39
- ✓ Lesion of Non Dominant Broca Area
- ✓ Lesion of Arcuate Fasciculus
- ✓ Mild Fluent Aphasia
- ✓ Cannot express the words they want to use

Global Aphasia

- ✓ Lesion of Broca and wernike area

Jejunum Vs illium

Jejunum	Ilium
Deeper red	Paler pink
Thick and heavy	Thin and light
Greater vascularity	Lesser vascularity
Few Long Vasa recta	Many small Vasa recta
Less fat in mesentery	More fat in mesentary
Few Lymph nodules	Many Lymphoid nodules(Payer patches)

Liver Pathology Marker

- ✓ **Viral:** ALT > AST
- ✓ **Drug :** ALT
- ✓ **Alcoholic:** AST > ALT
- ✓ **Non Alcoholic:** ALT > AST
- ✓ **Non Alcoholic (Cirrhosis or Fibrosis):** AST > ALT
- ✓ **Cholestasis Plus bone disease:** ALP Raised
- ✓ **Hepatobiliary:** Both ALP and GGT Raised
- ✓ **Liver disease plus pregnancy:** Check GGT always

Conjugated Hyper bilirubinemia

- ✓ Biliary disease (Stones)
- ✓ Dubin Jonson
- ✓ Rotor syndrome

Un conjugated Hyper bilirubinemia

- ✓ Hemolysis
- ✓ Newborn
- ✓ Crigler Najjar
- ✓ Gilbert

Mixed Hyperbilirubinemia

- ✓ Hepatitis
- ✓ Cirrhosis

Cytokines

- ✓ **IL_1, IL_6, TNF_alpha** -- fever and sepsis
- ✓ **Fever** -- IL1 > IL6
- ✓ **Pseudomonas Fever** -- TNF
- ✓ **IL1** -- Osteoclast activating factor
- ✓ **IL2** -- Stimulates T cells
- ✓ **IL3** -- Stimulates Bone marrow
- ✓ **IL4** -- Stimulate growth of B cells
- ✓ **IL4** -- Stimulates IgE production
- ✓ **IL5** -- Stimulates IgA production
- ✓ **IL6** -- Stimulates acute phase reactant formation
- ✓ **IL8** -- Major chemotactic for neutrophil
- ✓ **IL10 & TGF Beta** -- Anti inflammatory cytokines
- ✓ **TNF Alpha** -- Cachexia in malignancy
- ✓ **IFN_Gamma** -- Induce granuloma formation
- ✓ **IL12** -- Facilitates granuloma formation
- ✓ **TNF_Alpha** -- Maintain granuloma

Duodenum 1st Part

Arterial Supply

1. Right Gastric artery

2. Supraduodenal artery of Wikie
3. Retroduodenal Branches of Gastroduodenal artery
4. Branches of Right Gastroepiploic artery

Note**Gastroduodenal has following branches**

- ✓ Retroduodenal Branch which supplies 1st part Duodenum
- ✓ Right Gastroepiploic which supplies 1st part Duodenum
- ✓ Superior pancreaticoduodenal which supply 2nd part Duodenum mostly

Omphalocele vs Gastroschisis**Omphalocele**

- Umbilical Defect
- Through Umbilical
- Midline
- Peritoneum covering present
- Associated with trisomy (13,18,21) , VSD , ASD and TOF

Gastroschisis

- Para umbilical defect
- Lateral to Umbilical(Right mostly)
- Not Midline
- No Peritoneum covering
- No associated Disease

Kwashiorkor VS Marasmus

Kwashiorkor	Marasmus
Deficient Proteins	Deficient Proteins and Calories
Hair changes present	Hair changes not present
Fatty liver common	No fatty liver
Edema present	Edema not present
Subcutaneous fat present	Subcutaneous fat not present
Poor appetite	Good appetite
No muscle wasting	Severe muscle wasting

Thyroid CA**Papillary CA**

- Associated with Radiation
- Psomomma bodies and Orphan anie eye nucleus
- Slow Growing
- Spread Via Lymphatic
- Best Prognosis

Follicular CA

- Invade Capsule
- Vascular Spread
- 2nd Best Prognosis

Medullary CA

- Release Calcitonin
- MEN 1 and MEN 2 associated
- Poor Prognosis

Anaplastic CA

- Very Poor Prognosis
- Highly undifferentiated

RECEPTORS**Ruffini**

- Deep static "Pressure"
- Detect warmth
- Encapsulated
- Large receptive field

Miessner

- Light "Touch"
- Low frequency Vibration
- Upto 40Hz Frequency
- Abundant on Fingertip
- On Hairless Skin
- Encapsulated

Pacinian

- High frequency Vibration
- From 40 to 400 Hz Frequency
- Detect Tuning fork Frequency(128Hz)
- Deep "Touch "
- Encapsulated
- Onion like on Subcutaneous Skin

Merkel Disc

- Deep "Static Touch"
- Non Capsulated

Krause

- Detect Cold

Large Receptive Field -Ruffini**Long Receptive Field - Lateral Spinothalamic track****Small Receptive Field -DCML****Maximum 2 point Discrimination on - Lips**

Minimum 2 point Discrimination on -Scapula

Maximum 2 point Discrimination Distance on -Scapula

Minimum 2 point Discrimination Distance on -Lips

HB-O2 Curve

Right Shift:

Right shift mean Decrease affinity for O₂ and increase delivery to tissue (Bohar effect) thus increase P50.

Causes:

- Increase CO₂
- Decrease PH
- Increase Temperature
- Increase 2, 3 DPG

Left Shift:

Left shift mean Increase affinity for O₂ and decrease delivery to tissue (Haldane effect) thus decrease P50

Causes:

- Decrease CO₂
- Increase PH
- Decrease Temperature
- Decrease 2, 3 DPG
- HbF
- CO Poisoning

Fibers

A Alpha

- Fastest
- Largest
- Ia(Muscle Spindle afferent)
- Ib(Golgi Tendon)

A Beta

- Detect Touch and Pressure
- II Sensory Fibers

A Delta

- Detect Fast pain , Temperature , Touch and pressure
- Carry Cold Sensation
- III Sensory Fibers

B Fibers

- Preganglionic Autonomic Fibers

C Fibers

- Detect Slow Pain and Temperature(Unmyelinated)
- Carry Itch Sensation
- Carry Warmth Sensation
- Postganglionic Autonomic Fibers
- IV Sensory Fibers

JVP Waveform

C Wave

- ✓ C wave - Right ventricle contraction (Closed tricuspid valve bulging into atrium)

A Wave

- ✓ A wave - Shows Atrial Contraction
- ✓ Prominent A wave - Seen in T.S, P.S And Pulmonary HTN
- ✓ Giant A wave - Seen in AV Dissociation, Complete Heart block

X Descent

- ✓ X descent - Closed Tricuspid Valve downward displacement during rapid ventricular ejection phase
- ✓ Absent X descent - Due to RHF and T.R

V Wave

- ✓ V wave - Increase Right atrial pressure due to filling against closed tricuspid valve
- ✓ Prominent V wave - Seen in T.R

Y Descent

- ✓ Y descent - RA emptying into RV
- ✓ Slow Y descent - Due to T.S
- ✓ Rapid Y descent - Due to Constrictive pericarditis
- ✓ Absent Y descent - Due to Cardiac tamponade

Heart Bands

During Contraction

- I Band Decrease
- Sarcomere Decrease
- A Band Unchanged
- H zone Disappear

Heart Conducting System (KLM+Grey's)

- SA Node - Upper 1/3rd of Sulcus Terminalis and Upper Right atrium
- AV Node - Lower part of Inter atrial septum or Atrioventricular septum
- AV Bundle - Membranous IV septum
- RBB - Septo Marginal Trabaculæ
- LBB - Muscular Part of IV septum
- SA Node - Sub Epicardium
- AV Node - Endocardium
- Conducting system - Sub Endocardium

Heart Borders and Surfaces (KLM+BD)

Borders

Four Borders

- Right Border formed by -- Right Atrium and on Xray by SVC + Right atrium

- **Left Border** formed by – **Left ventricle**
- **Superior Border** formed by – **Right and Left Atria**
- **Inferior Border** Formed by – **Right Ventricle > Left Ventricle**

Surfaces

Four Surfaces

- **Anterior (Sternocostal)** Surface formed by – **Right Ventricle**
- **Inferior (Diaphragmatic)** Surface formed by – **Left Ventricle > Right Ventricle**
- **Right Pulmonary** Surface formed by – **Right Atrium**
- **Left Pulmonary** Surface (Cardiac Impression) formed by – **Left Ventricle**

Apex

- Formed by Inferolateral part of Left ventricle
- Posterior to left 5th ICS 9cm from Median plane

Base

- It is Heart Posterior Aspect
- Formed by Left Atrium > Right Atrium

Heart Circulation (KLM+BD+Snell)

Right Coronary Artery

Origin: Right Aortic Sinus

Branches:

SA Nodal artery – Supply SA Node and Pulmonary trunk

Right Marginal artery – Supply Right ventricle and Apex

Posterior Interventricular (Descending) Artery (67%) - Supply Right and left Ventricle and Posterior 1/3rd IVS

AV Nodal artery – Supply AV Node

Left Coronary Artery

Origin: Left Aortic Sinus

Branches:

SA Nodal artery – Supply Left atrium and SA Node

Left Anterior Interventricular (Descending) Artery – Supply Right and left Ventricle and Anterior 2/3rd IVS, Bundle of His and Apex (More than Right Marginal)

Circumflex Artery – Supply Left atrium and Left Ventricle

Left Marginal - Supply Left Ventricle

Posterior Interventricular (Descending) Artery (33%) – Supply Right and left Ventricle and Posterior 1/3rd IVS

Conclusion

RCA Supplies

- ✓ Right Atrium
- ✓ Most Right Ventricle
- ✓ Part of Left Ventricle (Diaphragmatic Surface)

- ✓ Posterior 1/3rd IVS
- ✓ SA Node (60%)
- ✓ AV Node (80%)
- ✓ Some Part of Left Bundal Branch

LCA Supplies

- ✓ Left Atrium
- ✓ Most Left Ventricle
- ✓ Part of Right Ventricle
- ✓ Anterior 2/3rd IVS including AV Bundle (Right Bundal Branch + Part of Left Bundal Branch)
- ✓ SA Node (40%)

=====