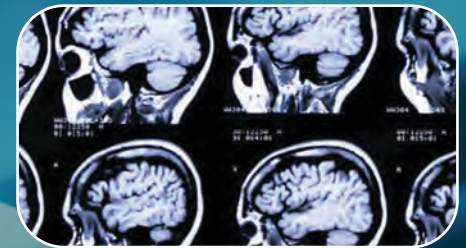
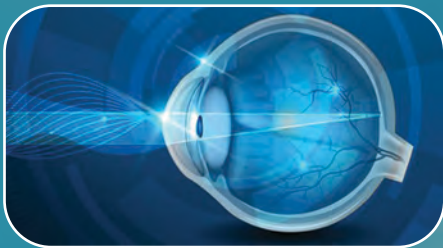


APPENDIX

for PGMEE

FIRST EDITION



ENT ❖ Ophthalmology ❖ Preventive and Social Medicine ❖ Dermatology
Anesthesia ❖ Radio Diagnosis and Radio Therapy ❖ Psychiatry

Useful companion for NEET PG, DNB CET, FMGE, AIIMS, PGI, JIPMER
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Vaibhav Bharat | Aditi Bharat | Ishad Aggarwal

APPENDIX

for PGMEE

Volume 2

First Edition

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KALAM BOOKS

Preface

First of all it is our pleasure and duty to thank all our readers, who have time and again shown faith in our endeavours. It is always encouraging if your work is appreciated and we are grateful to all our readers. We started our Journey in 2011 with DNB CET Review which was an instant success and is our legendary creation till date. The collections of tables in the form of APPENDIX, at the end of the book were much appreciated and is in high demand even today. Hence we decided to recreate the magic of APPENDIX again, this time on a juggernaut scale and precision.

With changing pattern of PGMEET we have included colour pictures in our APPENDIX and made it a totally coloured book in three easy to carry volumes. We have done our level best to come up with up-to-date material, but to err is human, and we are humans too. However we constantly keep in touch with our readers through our website www.medeasyindia.com, and our Facebook fan page <https://www.facebook.com/MedEasyindia/> to keep them updated with any correction, change or improvement in our book.

We heartily invite any suggestions, corrections or discussions of PG Medical entrance material and MCQs on our mail id info@medeasyindia.com

Thanks
Authors/Editors
APPENDIX FOR PGMEET
By Team MedE@sy

Sample Pages

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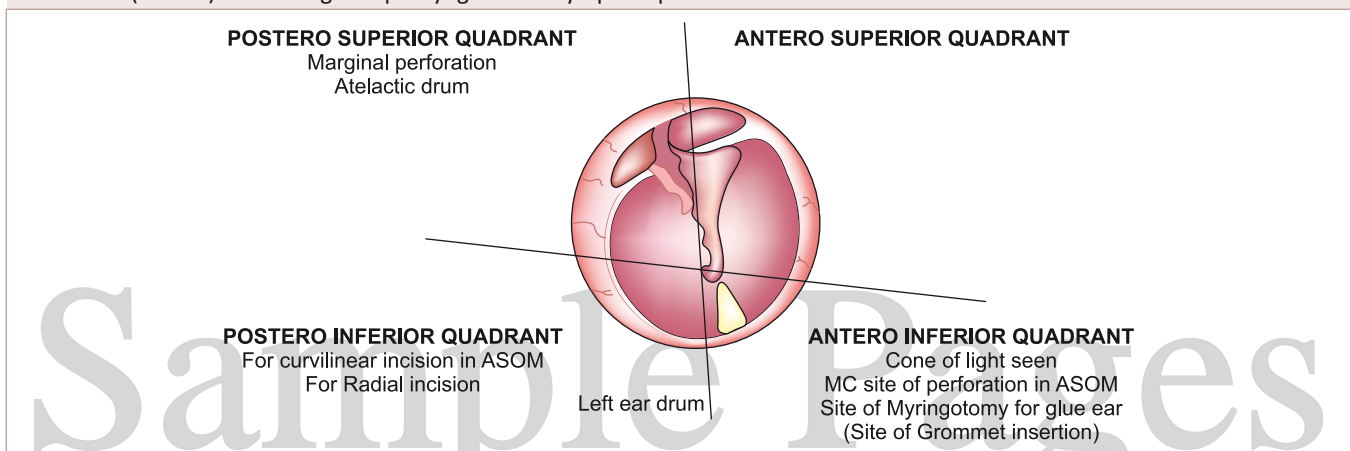
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APPENDIX 4: TYMPANIC MEMBRANE (TM)

- ◆ Tympanic membrane (TM) separates the external ear from the middle ear
- ◆ TM is horizontal in infants
- ◆ Its positioned at angle of 55° with both floor and anterior wall of the EAM
- ◆ Oval in shape 10X8 mm diameter & pearly gray in colour.
- ◆ **Layers-** Outer(Epidermis), middle(fibrous layer ie. Collagen fibres), inner(Mucosal layer, continue with the mucosa of tympanum)
- ◆ **Parts:**
 - i. Pars tensa- larger part, thickened peripherally into fibrocartilagenous annulus which fit into tympanic sulcus.
 - ii. Pars flaccida- no fibrous layer & annulus fits into *notch of Rivinus*
- ◆ **Surface:** Lateral (free & concave), Medial (Convex)
- ◆ **N. Supply:**
 - i. Outer (Lateral) surface & EAC- Aurico temporal N. & Vagus N.
 - ii. Inner (medial) surface – glossopharyngeal N. & tympanic plexus.



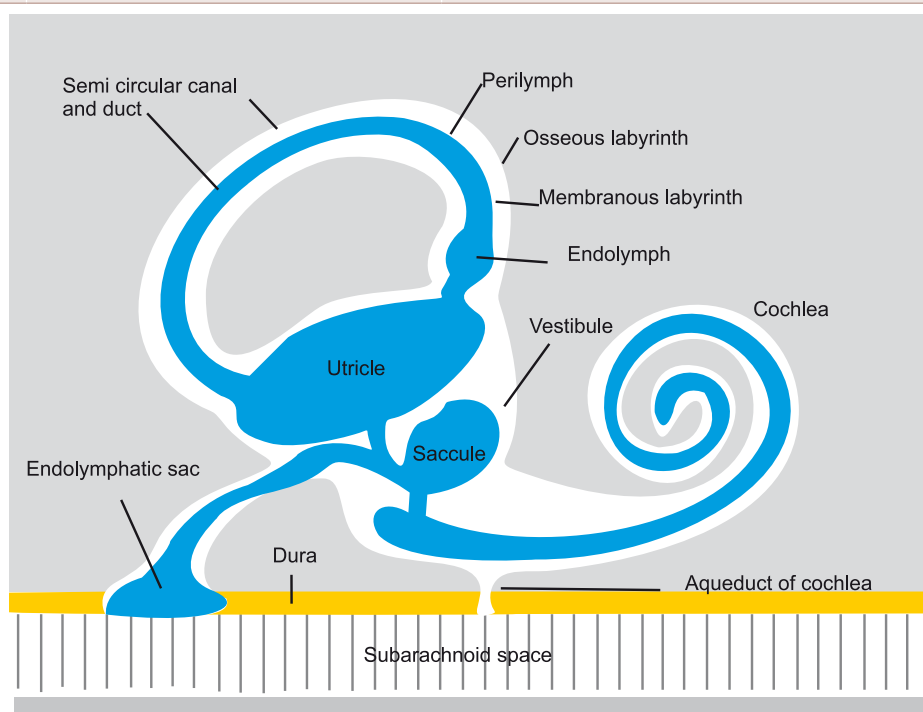
APPENDIX 5: MIDDLE EAR & MASTOID

- ◆ Develops from 1st pharyngeal pouch & dorsal end of 2nd pouch in 4th week of intrauterine life.
- ◆ Development of tympanic cavity completed by 30 weeks.
- ◆ **Mastoid pneumatization** occurs at 33 weeks but bulk of development occur in infancy & childhood.
- ◆ **Mastoid process-** develops after 1st year of life & completed at 19 yrs of age.
- ◆ **Mastoid tip-** develops after 2nd yr of life.
- ◆ Surgery should always be performed above & horizontal to mastoid tip to prevent facial N. which passes just below the tip.
- ◆ **Korner's septum** is bony plate separating the superior squamous cell from deep petrosal cell in mastoid.

Length	1 cm
Quadrants	There are 4 Quadrant with each quadrant possess at least one nerve 1. Anterosuperior : Facial nerve 2. Anteroinferior : Cochlear nerve 3. Posterosuperior: Superior vestibular nerve 4. Posteroinferior: Inferior vestibular nerve & Singular nerve
Surgical Importance	It is used as a surgical landmark for facial nerve identification during translabyrinthine surgery.

APPENDIX 10: INNER EAR FLUIDS

	Endolymph	Perilymph	CSF
Na ⁺ (mEq/L)	5	140	152
K ⁺ (mEq/L)	144	10	4
Protein (mg/dL)	126	200-400	20-50
Glucose (mg/dL)	10-40	85	70
	<ul style="list-style-type: none"> ◆ Resembles ICF, being rich in K ions. ◆ It is secreted by the secretory cells of the stria vascularis of the cochlea, dark cells (present in the utricle) & SCC. ◆ Endolymph production: <ol style="list-style-type: none"> a. Cochlea → Stria vascularis b. Semilunar canal → Planum semilunatum c. Vestibular cells → Dark vestibular cells ◆ Endolymph absorption: Endolymphatic sac 	<ul style="list-style-type: none"> ◆ Resembles ECF and is rich in Na ions. ◆ Fills the space between bony & membranous labyrinth ◆ Found in Scala vestibule & Scala tympani. ◆ It communicates with CSF through the aqueduct of cochlea which opens into the scala tympani near the round window. ◆ There are two views regarding the formation of perilymph: <ol style="list-style-type: none"> 1. It is a filtrate of blood serum & is formed by capillaries of the spiral ligament 2. It is a direct continuation of CSF & reaches labyrinth via aqueduct of cochlea. 	

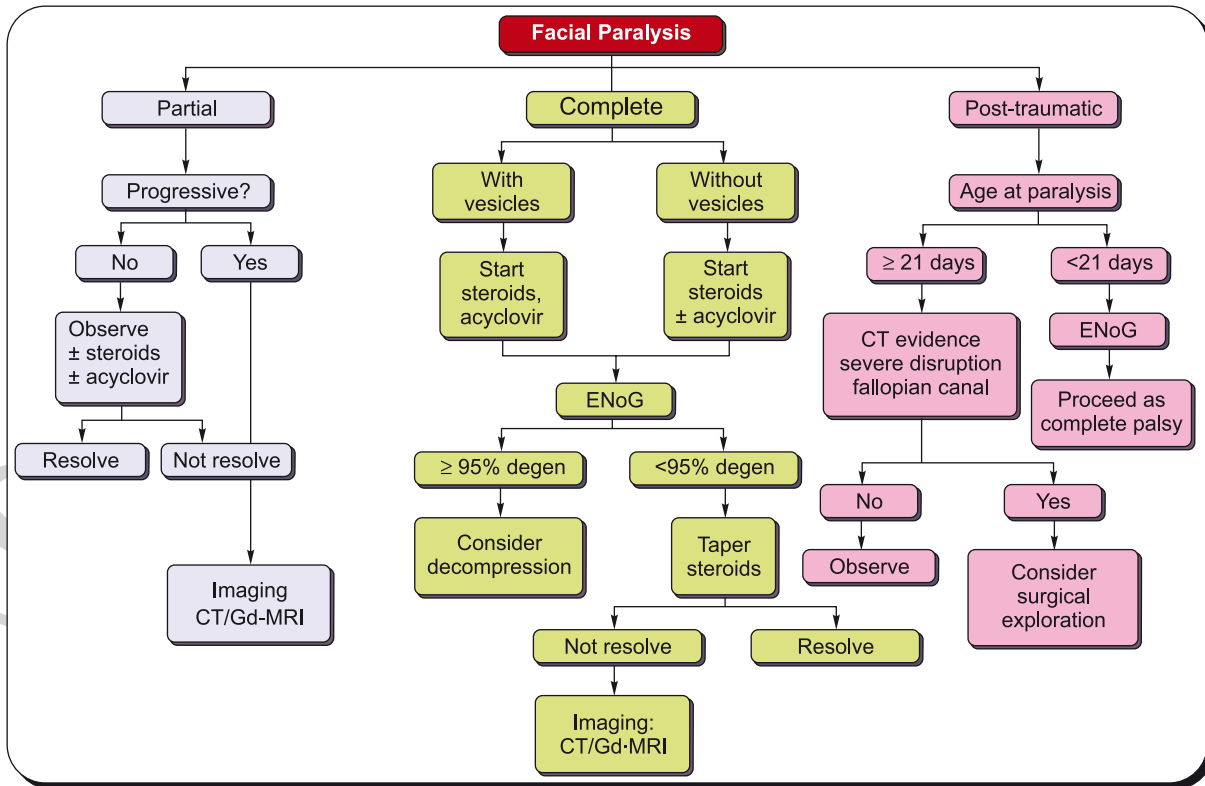


Gradenigo's syndrome consists of triad of (Mnemonic EAR)

1. **E**ar Discharge (Suppurative Otitis Media)
2. **A**bducent nerve palsy (Lateral rectus palsy) = Diplopia (CN 6 in **Dorello's canal**)
3. **R**etro-Orbital Pain (CN 5 and Trigeminal/ Gessarian ganglion at **Meckel's cave**)

Rarely it may also cause Horner's syndrome if sympathetic plexus around internal carotid is also involved.

APPENDIX 18: FACIAL NERVE PALSY



APPENDIX 19: GRADES OF HEARING IMPAIRMENT

Grade of impairment	WHO 1980	WHO 2008	Ministry of Social Justice	Speech Discrimination Score of Better Ear	Percentage of Disability
No impairment	25 dB or better (better ear)	25 dB or better (better ear)	25 dB or better (better ear)		
Mild impairment	26-40 dB (better ear)	26-40 dB (better ear)	26-40 dB (better ear)	80-100%	< 40%
Moderate impairment	41-55 dB (better ear)	41-60 dB (better ear)	41-60 dB (better ear)	50-80%	40-50%
Moderately severe	56-70 dB (better ear)	Removed from WHO 2008	No such category		
Severe impairment	71-90 dB (better ear)	61-80 dB (better ear)	61-70 dB (better ear)	40-50%	51-70%
Profound impairment including deafness	91 dB or greater (better ear)	81 dB or greater (better ear)	71-90 dB (better ear)	<40%	71-100%

APPENDIX 37: RETROPHARYNGEAL ABSCESS VS PARAPHARYNGEAL ABSCESS

	Retropharyngeal Abscess	Parapharyngeal Abscess (Lateral pharyngeal abscess)
Extent	From skull base to bifurcation of trachea	From skull base to hyoid bone
Boundaries	<ul style="list-style-type: none"> ◆ Anteriorly - Buccopharyngeal fascia covering the constrictors. ◆ Posteriorly - Prevertebral fascia. ◆ Laterally - Carotid sheath 	<ul style="list-style-type: none"> ◆ Shape - Inverted 5 sided pyramid. ◆ Base - greater wing of sphenoid ◆ Anteriorly - Pterygoid muscles & Interpterygoid fascia ◆ Posteriorly - Vertebral & Prevertebral muscles ◆ Laterally - Ramus of mandible & deep lobe of parotid. ◆ Medially - Eustachian tube, pharynx & Palatine tonsil.
Features	<ul style="list-style-type: none"> ◆ it is a potential space which is filled with loose areolar tissue and retropharyngeal lymph nodes. It is divided into 2 lateral compartments space of Gillete. 	<ul style="list-style-type: none"> ◆ Parapharyngeal space communicate with the retropharyngeal, Parotid, submandibular, carotid and visceral spaces.
Aetiology	<p>Acute</p> <ul style="list-style-type: none"> ◆ In children: Suppuration of retropharyngeal lymph nodes due to infection at draining sites-Adenoids, Nasopharynx, Postr nasal sinuses or nasal cavity. ◆ In adults: Penetrating injuries to the postr pharyngeal wall or the cervical oesophagous. <p>Chronic</p> <ul style="list-style-type: none"> ◆ TB of cervical spine ◆ TB of the retropharyngeal lymph nodes 	<ul style="list-style-type: none"> ◆ Tonsillitis ◆ Adenoiditis ◆ Peritonsillar abscess ◆ Petrositis & Bezold's abscess ◆ Penetrating injuries of neck ◆ Dental infection
Clinical features	<p>Acute:</p> <ul style="list-style-type: none"> ◆ Dysphagia ◆ Fever ◆ Difficulty in breathing ◆ Torticollis ◆ Bulge in the postr pharyngeal wall <p>Chronic:</p> <ul style="list-style-type: none"> ◆ Discomfort in throat ◆ Pain & Fever ◆ Neck may show tubercular lymph nodes ◆ Progressive symptoms due to spinal compression 	<p>Anterior compartment:</p> <ul style="list-style-type: none"> ◆ Prolapse of the tonsil & tonsillar fossa ◆ Trismus ◆ External swelling behind the angle of jaw ◆ Marked odynophagia <p>Posterior compartment:</p> <ul style="list-style-type: none"> ◆ Bulge in pharyngeal wall posterior to the posterior pillar ◆ IX, X, XI, XII nerve palsy ◆ Sympathetic chain involvement ◆ Parotid bulge
Treatment	<p>Acute:</p> <ul style="list-style-type: none"> ◆ I & D without general anaesthesia ◆ Antibiotics ◆ Tracheostomy if large abscess causing obstruction <p>Chronic:</p> <ul style="list-style-type: none"> ◆ External drainage through cervical incision 	<ul style="list-style-type: none"> ◆ I & D through a collar incision in the neck ◆ I/V antibiotics

- ◆ **Wagner's granulomatosis** is the most common granulomatous sinusitis with maxillary sinus most commonly involved.
- ◆ Acute sinusitis almost always involves single sinus, with ethmoid sinus being most common in children and maxillary in adults.
- ◆ Maxillary sinus is the most common location of chronic sinusitis in both children and adults closely followed by ethmoid sinus.
- ◆ (Note: To be more particular "Anterior ethmoid cells" are most common site of chronic sinusitis in children but comparing sinuses as a whole maxillary becomes more common than ethmoid)
- ◆ **Mucous retention cyst** (different from mucocele) is most commonly found at maxillary sinus.
- ◆ Most common site of **mucocele** is frontal sinus (60%), least common at sphenoid sinus.
- ◆ "The sinuses commonly affected by mucocele in the order of frequency, are the Frontal> Ethmoidal> Maxillary > Sphenoidal"
- ◆ **Squamous cell carcinoma** is the most common malignant tumor of sinuses with **maxillary sinus** most commonly involved (80%)
- ◆ Most common site of **adenocarcinoma** of sinus is **ethmoid sinus**.
- ◆ **Brain abscess** is the most common intracranial complication of sinusitis (as a whole)
- ◆ **Meningitis** is the most common intracranial complication of acute sinusitis.
- ◆ **Orbital complication** is the most common extracranial and overall complication of sinusitis
- ◆ **Orbital cellulitis** most commonly involve Ethmoidal sinus
- ◆ **Osteomas of paranasal sinuses:** Most commonly seen in **frontal sinus** followed by ethmoidal and maxillary

Complications of maxillary wash:

1. Cheek swelling
2. Orbital injury and cellulitis
3. Puncture of posterior antral wall
4. Bleeding
5. Sudden death due to air embolism

APPENDIX 52: CSF RHINORRHEA

Traumatic CSF Leak		Non- Traumatic CSF Leak
<ul style="list-style-type: none"> ◆ Most common site of traumatic CSF leak is roof of ethmoid sinus (Fovea ethmoidalis)" (# ethmoid > # sphenoid > # petrous temporal bone) ◆ In traumatic CSF leak, when CSF and blood are mixed, double ring sign (or target sign) is helpful. In this sign, discharge collected on a piece of filter paper shows a central spot of blood while CSF spreads out like a halo around it. ◆ Investigation of choice for determining the site of CSF leak is HRCT with or without gadolinium enhancement; however intrathecal injection of fluorescein dye can also be used. ◆ Most reliable method of confirming a CSF leak is to test the clear watery secretion for $\beta 2$ transferrin. ◆ Rx: Post -traumatic cases are managed conservatively by placing the patients in semi- sitting position, avoiding blowing of nose/straining and sneezing. Prophylactic antibiotics are given. ◆ Persistent cases are treated surgically. 		<ul style="list-style-type: none"> ◆ Also known Spontaneous CSF leak syndrome (SCSFL) or Intracranial hypotension syndrome. ◆ Most common cause of CSF rhinorrhea is Spontaneous AKA non traumatic ◆ "Most common site of spontaneous CSF leak is cribriform plate" ◆ A spontaneous CSF leak is idiopathic. ◆ Classified into 2 main types, cranial leaks & spinal leaks. ◆ Causes: Up to 2/3rd are associated with Connective tissue disorders like Marfan syndrome, Ehlers-Danlos syndrome and ADPKD. Other causes are Arnold-Chiari malformations, absent nerve roots, causes of raised ICT (as in pseudotumour cerebri) ◆ Orthostatic headache is major symptom ◆ Empty sella syndrome is robust radiological marker in patient with SCSFL. ◆ Rx: IV Cosyntropin, a corticosteroid.
Pathway of CSF Leak Through the Nose		
ANTERIOR CRANIAL FOSSA	Via	<ul style="list-style-type: none"> ◆ Frontal sinus ◆ Ethmoid/ Sphenoid ◆ Cribriform plate
MIDDLE CRANIAL FOSSA	Via	<ul style="list-style-type: none"> ◆ Sphenoidal sinus ◆ Mastoid air cells ◆ Middle ear ◆ Eustachian tube
POSTERIOR CRANIAL FOSSA		

APPENDIX 61: LE FORT FRACTURES

Type	Description	Mode of Injury	Complications
Le Fort I fractures (horizontal) a.k.a Guerin fracture or 'floating palate'	The fracture extends from the nasal septum to the lateral pyriform rims, travels horizontally above the teeth apices, crosses below the zygomaticomaxillary junction, and traverses the pterygomaxillary junction to interrupt the pterygoid plates.	Result from a force of injury directed low on the maxillary alveolar rim in a downward direction	No sub conjunctival hemorrhage, edema or elongation of face. Motion of anterior nasal spine and palate without motion of maxilla or nasal bones is characteristic.
Le Fort II fractures (pyramidal)	Extends from the nasal bridge at or below the nasofrontal suture through the frontal processes of the maxilla, inferolaterally through the lacrimal bones and inferior orbital floor and rim through or near the inferior orbital foramen, and inferiorly through the anterior wall of the maxillary sinus; it then travels under the zygoma, across the pterygomaxillary fissure, and through the pterygoid plates.	Result from a blow to the lower or mid maxilla and usually involve the inferior orbital rim. Most common	Result in floating maxilla. Motion of nasal pyramid with fixed zygoma and zygomatic arch. Step deformity, circumorbital congestion, infraorbital nerve anesthesia are common. Balloon face , edema and anosmia may be seen
Le Fort III fractures (transverse) are otherwise known as craniofacial dissociation and involve the zygomatic arch	These fractures start at the nasofrontal and frontomaxillary sutures and extend posteriorly along the medial wall of the orbit through the nasolacrimal groove and ethmoid bones. The fracture continues along the floor of the orbit along the inferior orbital fissure and continues superolaterally through the lateral orbital wall, through the zygomaticofrontal junction and the zygomatic arch. Intrasally, a branch of the fracture extends through the base of the perpendicular plate of the ethmoid, through the vomer, and through the interface of the pterygoid plates to the base of the sphenoid	Due to impact to the nasal bridge or upper maxilla. Most severe	Typical triad consists of: Raccoon facies (circumorbital congestion), severe mid facial edema , lengthening of face. Associated with multiple organ injuries.



Le Fort I

Le Fort II

Le Fort III

Clinical Features of maxillary fractures:

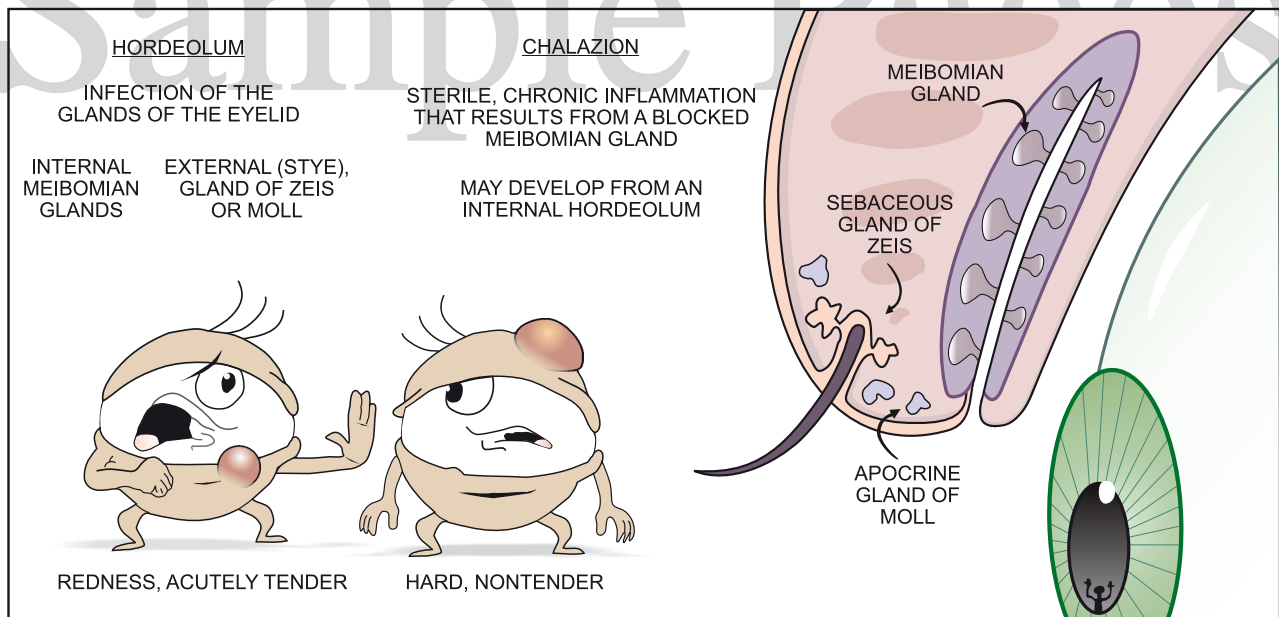
- ◆ Ecchymosis of lid, conjunctiva and sclera
- ◆ Enophthalmos with inferior displacement of the eyeball. This becomes apparent when edema subsides.
- ◆ Diplopia, which may be due to displacement of the eyeball or entrapment of inferior rectus and inferior oblique muscles.
- ◆ Hypoaesthesia or anesthesia of cheek and upper lip, if infraorbital nerve is involved
- ◆ **“Nerve most commonly damaged in maxillary # is Infra-orbital nerve”**

Acetate	-	-	
pH	7.38	7.5	7.35
Osmolality (mOsm/kg)	304	288-323	295
Refractive index	1.336	1.3341	-
Water	99.1%	99%	
Solid	1.1%		
Protein	5-16 mg% (much less than plasma)		6-7g %
Amino acid	5 mg/kg water		

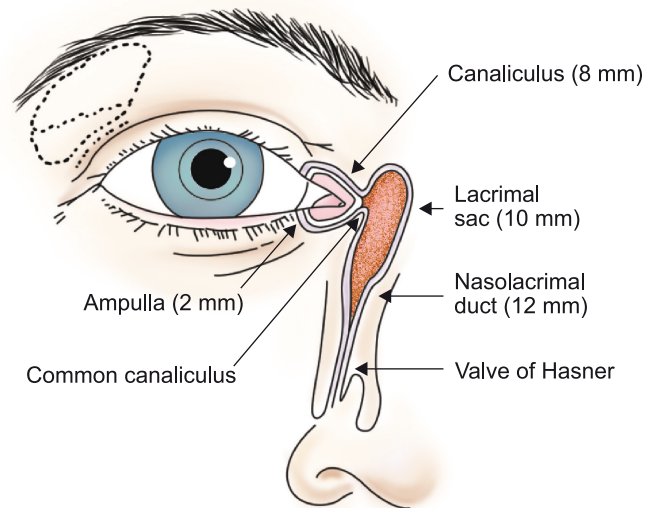
All concentrations are expressed in mmol/l or mEq/l of solution.
 1 millimoles= 1000 micromoles
 Collagen type 2 is most common type of collagen in the vitreous.
 Hyaluronic acid is also in maximum concentration in the aqueous humor

APPENDIX 9: INFLAMMATION OF GLANDS OF THE LID

	Hordeolum (Stye)	Chalazion
Gland involved	Zeis gland (Hordeolum externum) Meibomian gland (Hordeolum internum)	Meibomian gland
Location	Near the eyelash follicle	Mostly above the eyelash of upper eye lid
Symptoms	Inflamed and tender	Hard and non tender
Treatment	Spontaneous drainage, Warm compress	Warm compress, Antibiotic eyedrops, Surgery



APPENDIX 12: LACRIMAL SYSTEM- ANATOMY



Structure	Highlights
Puncta	<ul style="list-style-type: none"> ◆ Posterior edge of the lid margin, at the junction of the lash-bearing lateral 5/6ths (pars ciliaris) and the medial non-ciliated 1/6th (pars lacrimalis). ◆ Normally face slightly posteriorly and can be inspected by everting the medial aspect of the lids.
Canaliculi	<ul style="list-style-type: none"> ◆ Pass vertically from the lid margin for about 2 mm (ampullae), then turn medially and run horizontally for about 8 mm to reach the lacrimal sac. ◆ The superior and inferior canaliculi most frequently unite to form the common canaliculus, which opens into the lateral wall of the lacrimal sac. In some individuals, each canaliculus opens separately. ◆ A small flap of mucosa (valve of Rosenmüller) overhangs the junction of the common canaliculus and the lacrimal sac and prevents reflux of tears into the canaliculi. ◆ Treatment of canalicular obstruction is often complicated.
Lacrimal sac	<ul style="list-style-type: none"> ◆ About 10–12 mm long lies in the lacrimal fossa between the anterior and posterior lacrimal crests ◆ The lacrimal bone and the frontal process of the maxilla separate the lacrimal sac from the middle meatus of the nasal cavity ◆ In a dacryocystorhinostomy (DCR) an anastomosis is created between the sac and the nasal mucosa to bypass an obstruction in the nasolacrimal duct
Nasolacrimal duct	<ul style="list-style-type: none"> ◆ 12–18 mm long and is the inferior continuation of the lacrimal sac. ◆ Descends and angles slightly laterally and posteriorly to open into the inferior nasal meatus, lateral to and below the inferior turbinate. ◆ The opening of the duct is partially covered by a mucosal fold (valve of Hasner). Obstruction of the duct may cause a secondary distension of the sac.












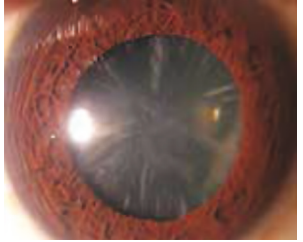
APPENDIX 13: LACRIMAL GLAND TUMORS

Lacrimal gland tumors account for approximately 10% of all orbital tumors. Lacrimal gland tumors can arise from cells of epithelial origin (20%), such as acinar or ductal elements, or from non epithelial cells (80%), such as inflammatory, neural, vascular, or fatty elements. Epithelial tumors are evenly divided into benign (55%) and malignant lesions (45%).

APPENDIX 33: CATARACTS ASSOCIATED WITH METABOLIC DISEASES

- ◆ Galactosemia
- ◆ Galactokinase deficiency
- ◆ Neonatal hypoglycemia
- ◆ Diabetes
- ◆ Lowe's syndrome
- ◆ Hypocalcemia

APPENDIX 34: TYPES OF CATARACT

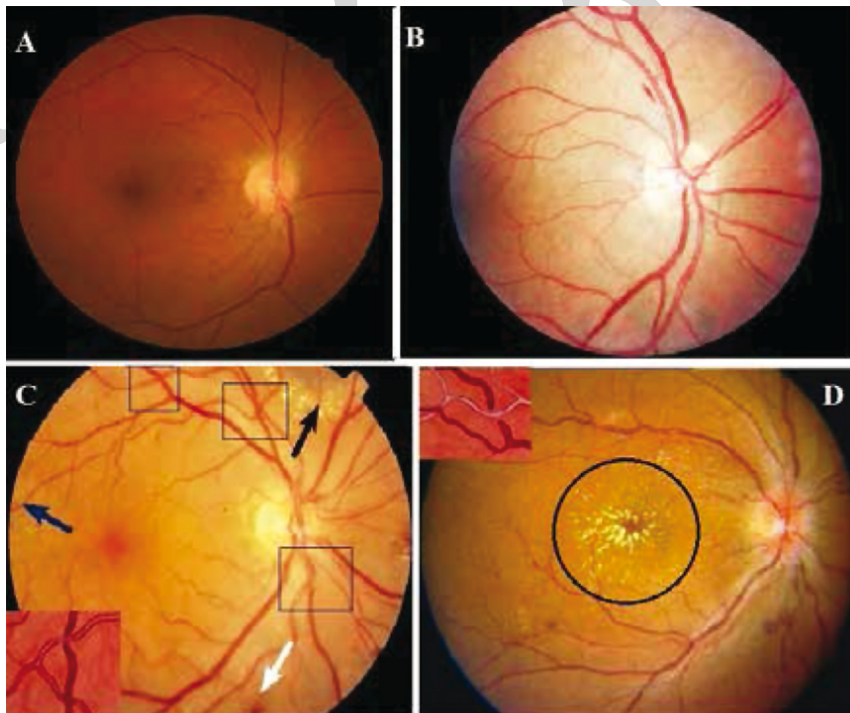
	Nuclear	Posterior subcapsular	Cortical
Age of onset	60-70	40-60	40-60
Symptoms	Myopic shift Blurred vision Central yellow to brown discoloration of the lens Loss of blue/ yellow colour perception	Glare, Halos Progressive loss of vision Monocular diplopia	Glare, Halos Progressive loss of vision Monocular diplopia
Diagrammatic representation AP view	 <p>Nuclear (cloudiness)</p> 	 <p>Posterior Subcapsular (deposits)</p> 	 <p>Cortical Subcapsular (spokes)</p> 
Diagrammatic representation sagittal view			
Slit lamp appearance			

APPENDIX 41: HYPERTENSIVE RETINOPATHY

The appearance of the fundus in hypertensive retinopathy is determined by the degree of elevation of the blood pressure and the state of the retinal arterioles. In mild to moderate systemic hypertension, the retinal signs may be subtle. Focal attenuation of a major retinal arteriole is one of the earliest signs.

Keith and Wegner classification of hypertensive retinopathy

Stage	Description	Hemorrhage	Exudate	Disc edema
Grade I (A)	Subtle broadening of the arteriolar light reflex, mild generalized arteriolar attenuation, particularly of small branches, and vein concealment.			
Grade II (B)	It comprises marked generalized narrowing and focal attenuation of arterioles (increased light reflection) associated with deflection of veins at arteriovenous crossings (Salus' sign in boxes).	±		
Grade III (C)	This consists of Grade II changes plus copper-wiring (insat) of arterioles, banking of veins distal to arteriovenous crossings (Bonnet sign), tapering of veins on either side of the crossings (Gunn sign) and right-angle deflection of veins (Salus sign). Flame-shaped hemorrhages (white arrow), dot blot hemorrhages (blue arrow), and hard exudates (black arrow) may be present	+	+	
Grade IV (D)	This consists of all changes of Grade III and papilloedema. Plus silver-wiring of arterioles can be seen (insat). Sometimes star shaped hard exudate around macula (macular star in circle)	+	+	+



Superior oblique	Trochlear nerve	Sphenoid bone via the Trochlea	Eye (posterior, superior, lateral surface)	Intorsion	Depression	Abduction
Inferior oblique	Oculomotor nerve (inferior branch)	Maxillary bone	Eye (posterior, inferior, lateral surface)	Extorsion	Elevation	Abduction
Levator palpebrae superioris	Oculomotor nerve	Sphenoid bone	Tarsal plate of upper eyelid	Elevation/retraction of the upper eyelid		

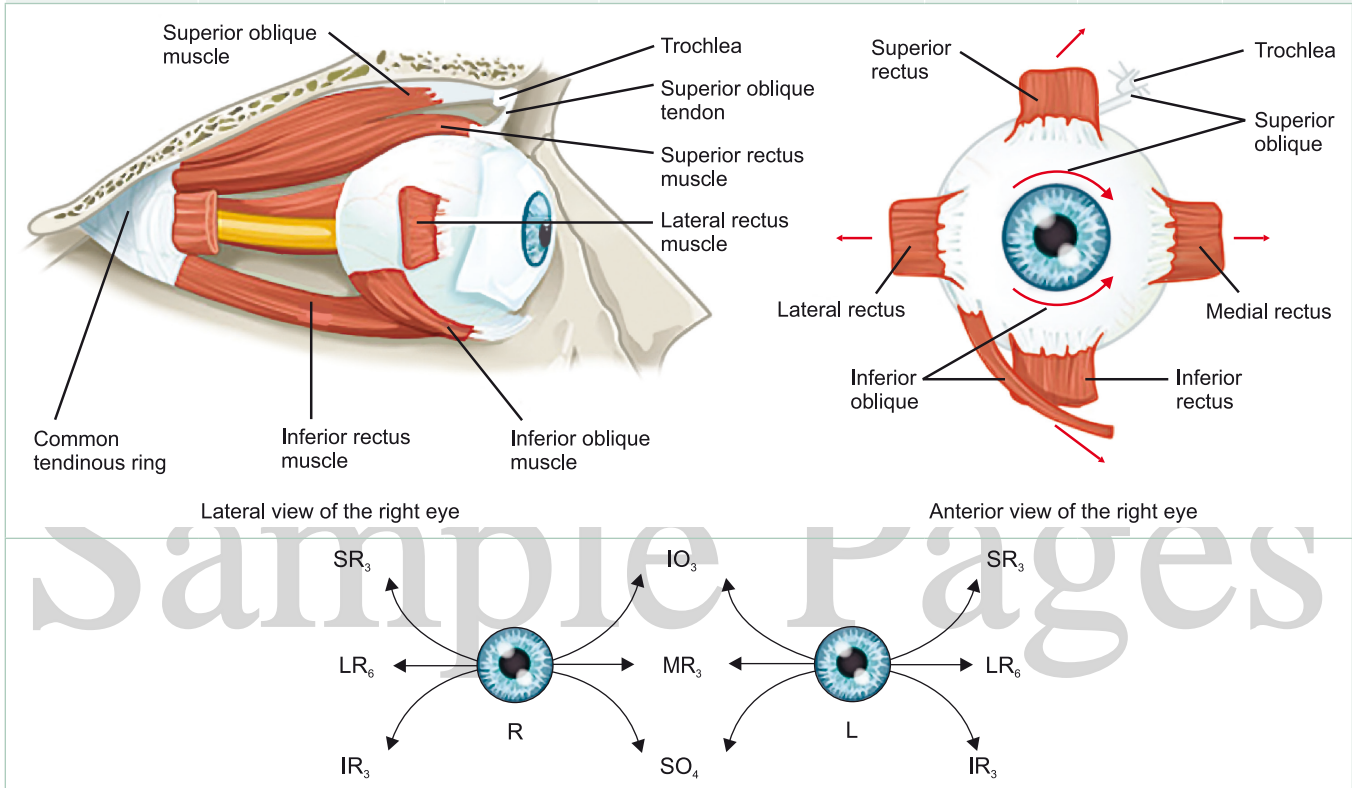


Fig: Schematic demonstrating the actions and cranial nerve innervation (in subscript) of extraocular muscles

Footnote:

Some books mention only Primary and Secondary action, In which case it will be secondary and Tertiary combined.



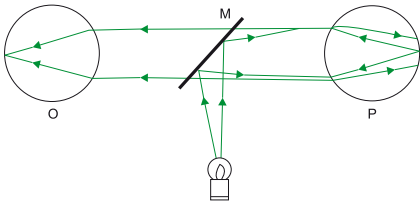
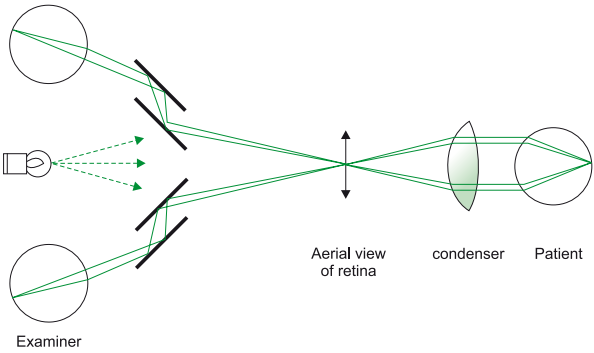
Nerve supply Mnemonic: **SO4 LR6 Rest -3** (SO= Superior Oblique, LR = Lateral Rectus)

Inferior oblique is the only muscle that does not arise from the **Common tendinous ring** (muscular ring) but from the anterior floor of the orbit.

APPENDIX 46: EXTRAOCULAR MUSCLES ACTIONS IN DIFFERENT POSITIONS

Muscle	In primary position	Abducted eye	Adducted eye
Superior oblique	Depression Abduction Intorsion	Only intorsion	Only depression
Inferior oblique	Elevation Abduction Extorsion	Only extorsion	Only elevation
Inferior rectus	Depression Adduction Extorsion	Only elevation	Only intorsion

APPENDIX 71: OPTHALMOSCOPY

	Direct Ophthalmoscopy	Indirect ophthalmoscopy
Magnification	About 15 times	3 times if 20 D lens is used and 4 times if 14 D condensing lens is used 5 times when a +13D condensing lens is used
Condensing lens	Not required	Required
Illumination	Not so bright, so not useful in hazy media	Bright, so useful in hazy media
Examination distance	As close to the patient's eye as possible	At an Arm's length
Diameter of the field of observation view	Smaller (about 10° in diameter) About 2 disc dioptres (DD) 	Wider (about 37° in diameter) About 8 disc dioptres (DD) 
Brightness	There is relatively low brightness	There is relatively greater brightness
Structures seen	Central retina only	Peripheral retina seen (<i>by using a scleral depressor in addition to the indirect ophthalmoscopy itself</i>)
Image of the fundus that is seen	Virtual & erect image	Real & inverted image
Stereopsis	Image formed is not stereoscopic	Binocular indirect ophthalmoscopy provides better stereopsis
Retina anterior to the equator	Not well seen (seen with difficulty)	Seen better
Scleral indentation	Difficult	Can be easily done in binocular indirect ophthalmoscopy
Visualization in hazy media	Poor	Better
Other comments	Image brightness: $1/2 = 4$ watts Working distance: 1-2cm Area seen: 50-70% Stereopsis: None	Investigation of choice to diagnose retinal detachment, ROP, peripheral retinal degenerations - Done in dilated pupil
Optics	 <p>Optical principle of the simplest form of direct ophthalmoscope (O, observer's eye; P, patient's eye; M, semi-silvered mirror)</p>	 <p>The light source mounted above and between the examiner's eyes illuminates the condenser, which images the source at the periphery of the patient's pupil. The illumination does not overlap the observation beam. The condenser lens is handheld; it forms an inverted aerial image of the retina</p>

APPENDIX 5: MEASURE OF CENTRAL TENDENCY

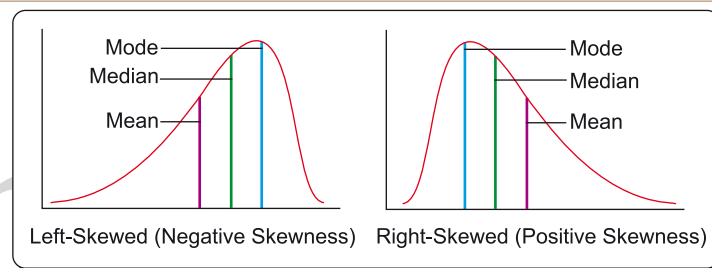
An entire distribution can be characterized by one typical measure that represents all the observations - measure of central tendency, these measures includes Mean, Median and Mode

Mean	The arithmetic average of a distribution of values; calculated as the sum of the individual values divided by the number of observations.
Median	A measure of central tendency of a distribution; calculated as the mid-point of the distribution when individual values are ordered from the smallest to the largest. When distribution has odd number of elements, the median is the middle one.
Mode	A measure of central tendency of a distribution; it is the value that occurs most frequently within the distribution. It is easy to see on the frequency polygon at the highest point of the curve . If there are two modes in a distribution then the distribution is Bimodal , if more than two modes are there in a distribution then it is Multimodal .

“Many textbooks, “teach a rule of thumb stating that **the mean is right of the median under right skew, and left of the median under left skew**. But this rule fails with surprising frequency. It can fail in multimodal distributions, or in distributions where one tail is long but the other is heavy. Most commonly, though, the rule fails in discrete distributions where the areas to the left and right of the median are not equal. However for exam point of view you just have to remember the

Rule of thumb

1. In normal distribution curve: **Mean = Median = Mode**
2. When the histogram is **Negative skewed (left-skewed)** the mean is to the left thus $\text{Mean} < \text{Median} < \text{Mode}$
3. When the histogram is **positive skewed (right-skewed)**, the mean is to the right: $\text{Mean} > \text{Median} > \text{Mode}$



Note: See the tail not the peak

APPENDIX 6: MEASURE OF VARIABILITY

Variability is the property of having a spread of values, which may arise from random sources (viz, the operation of chance) or from systematic influences (viz, bias). There are three important measures of variability

Range	Simplest measure of variability. It is the difference between lowest and highest scores in the distribution. It therefore responds to these scores only
Variance	Calculating variance (and SD) involves the use of deviation scores. Variance is represented by symbol σ^2 for population and s^2 for sample. The deviation score of an element is found by subtracting the distribution mean (\bar{x}) from the element (X). Variance of a distribution is the mean of the squares of all the deviation scores. Variance is therefore obtained by: <ol style="list-style-type: none"> 1. Finding the deviation scores of all the elements ($x = X - \bar{x}$) 2. Squaring each deviation scores (to eliminate minus) 3. Obtaining mean of these $\sigma^2 = \frac{\sum x^2}{N}$ Variance is expressed in square units of measurement limiting its usefulness as a descriptive term
Standard deviation	A measure of the spread of scores away from the Mean. Standard deviation remedies this problem as it is the square root of variance, hence it is expressed in same same unit of measurement as the original data. Standard deviation is expressed as SD or σ . SD is useful in Normal distribution, because the proportion of elements in normal distribution is a constant for a given number of SD above and below the mean of the distribution

APPENDIX 21: SENSITIVITY AND SPECIFICITY

		Patients with bowel cancer (as confirmed on endoscopy)		
		Disease Positive	Disease Negative	
Fecal Occult Blood Screen Test Outcome	Test Outcome Positive	True Positive (TP) = 20	False Positive (FP) = 180	Positive predictive value = TP / (TP + FP) = 20 / (20 + 180) = 10%
	Test Outcome Negative	False Negative (FN) = 10	True Negative (TN) = 1820	Negative predictive value = TN / (FN + TN) = 1820 / (10 + 1820) ≈ 99.5%
		Sensitivity = TP / (TP + FN) = 20 / (20 + 10) ≈ 67%	Specificity = TN / (FP + TN) = 1820 / (180 + 1820) = 91%	

Worked example: Suppose the fecal occult blood (FOB) screen test is used in 2030 people to look for bowel cancer:

Sensitivity: The term sensitivity was introduced by Yerushalmy in 1940s as a statistical index of diagnostic accuracy. It has been defined as the **ability of a test to identify correctly all those who have the disease, that is “true-positive”**. A 90 per cent sensitivity means that 90 per cent of the diseased people screened by the test will give a “true-positive” result and the remaining 10 per cent a “false-negative” result.

$$\text{Sensitivity} = \frac{\text{True positives}}{\text{True positives} + \text{False negatives}}$$

Specificity: It is defined as the ability of a test to identify correctly those who do not have the disease that is, “true-negatives”. A 90 per cent specificity means that 90 per cent of the non-diseased persons will give “true-negative” result, 10 per cent of non-diseased people screened by the test will be wrongly classified as “diseased” when they are not.

$$\text{Specificity} = \frac{\text{True negatives}}{\text{True negatives} + \text{False positives}}$$

Positive predictive value: The PPV of a test is a proportion that is useful to clinicians since it answers the question: ‘How likely is it that this patient has the disease given that the test result is positive?’ Predictive value” reflects the **diagnostic power of the test**. The predictive accuracy depends upon sensitivity, specificity and disease prevalence. The “predictive value of a positive test” indicates the probability that a patient with a positive test result has, in fact, the disease in question. *The more prevalent a disease is in a given population, the more accurate will be the predictive value of a positive screening test.* The predictive value of a positive result falls as disease prevalence declines.

$$\text{Positive predictive value} = \frac{\text{True positives}}{\text{True positives} + \text{False positives}}$$

Negative predictive value: The NPV of a test answers the question: ‘How likely is it that this patient does not have the disease given that the test result is negative?’

$$\text{Negative predictive value} = \frac{\text{True negatives}}{\text{True negatives} + \text{False negatives}}$$

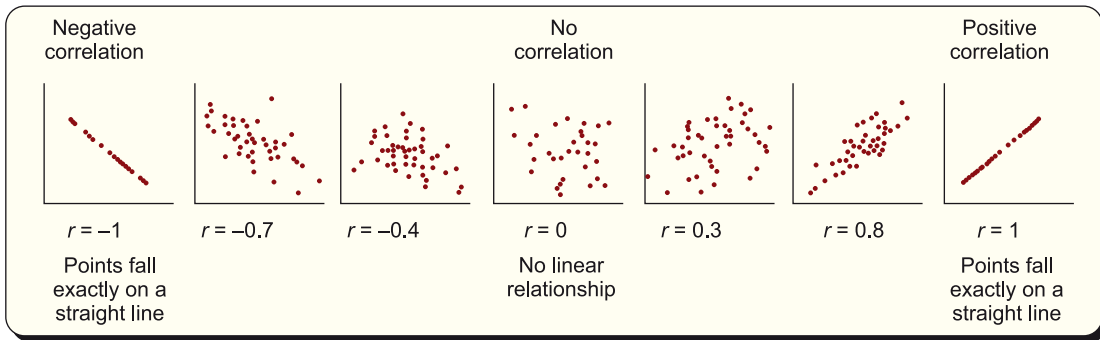
Likelihood ratio: A final term sometimes used with reference to the utility of tests is the likelihood ratio. This is defined as how much more likely is it that a patient who tests positive has the disease compared with one who tests negative.

$$\text{Likelihood ratio} = \frac{\text{Sensitivity}}{1 - \text{Specificity}}$$

APPENDIX 25: CORRELATION COEFFICIENT

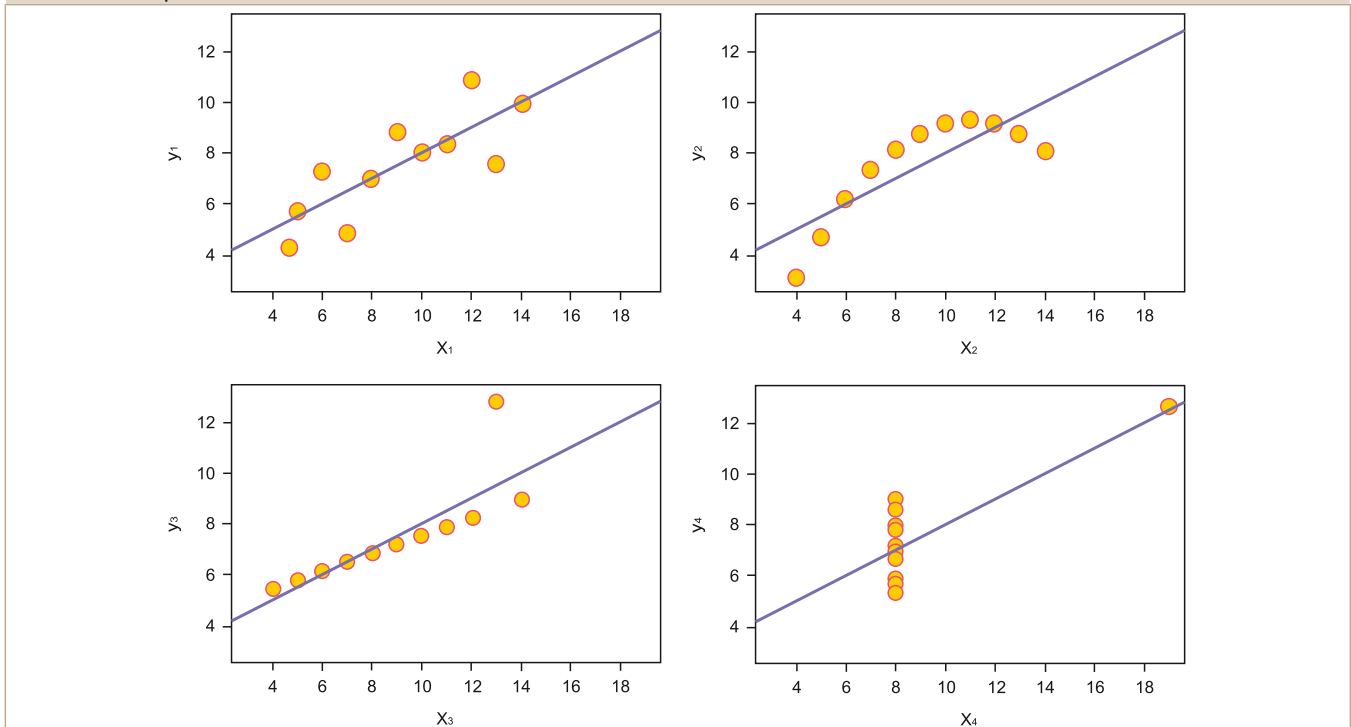
In statistics correlation coefficient is a measure of the linear correlation between two variables X and Y, giving a value between **+1 and -1 inclusive, where 1 is total positive correlation, 0 is no correlation, and -1 is total negative correlation**. There are several correlation coefficients. The most popular coefficient is **Pearson's correlation coefficient**. The correlation coefficient is the slope (b) of the regression line (imaginary) when both the X and Y variables have been converted to z-scores. It characterizes the degree of linear dependence between variables. It is defined as

$$r = \frac{\sum_i (x_i - \bar{x})(y_i - \bar{y})}{\sum_i \sqrt{(x_i - \bar{x})^2} \sum_i \sqrt{(y_i - \bar{y})^2}}$$



Correlation Coefficient of Different Data Set

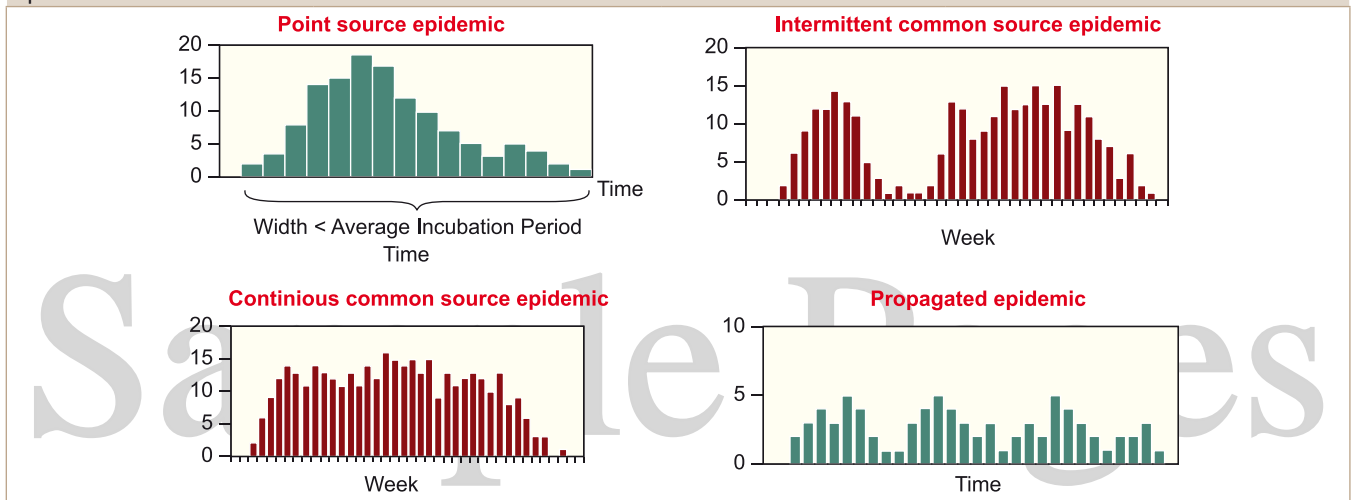
The image shows scatter plots of **Anscombe's quartet**, a set of four different pairs of variables created by Francis Anscombe. The four y variables have the same mean (7.5), variance (4.12) & correlation (0.816). However, as can be seen on the plots, the distribution of the variables is very different. The first one (top left) seems to be distributed normally, and corresponds to what one would expect when considering two variables correlated and following the assumption of normality. The second one (top right) is not distributed normally; while an obvious relationship between the two variables can be observed, it is not linear. In this case the Pearson correlation coefficient does not indicate that there is an exact functional relationship: only the extent to which that relationship can be approximated by a linear relationship. In the third case (bottom left), the linear relationship is perfect, except for one outlier which exerts enough influence to lower the correlation coefficient from 1 to 0.816. Finally, the fourth example (bottom right) shows another example when one outlier is enough to produce a high correlation coefficient, even though the relationship between the two variables is not linear.



APPENDIX 34: TYPES OF EPIDEMICS

	Point source epidemics (common source single exposure epidemics)	Continuous common source epidemics	Propagated epidemics
Source	All cases are exposed to same source	All cases are exposed to same source	Each case is a source of infection for subsequent cases
Duration	All cases in one incubation period	Beyond the range of one incubation period	Beyond the range of one incubation period
Exposure & transmission	Brief & simultaneous exposure	Prolonged exposure	Man to man & vector transmission
Epidemic curve	Peak (rises & falls rapidly) with no secondary waves	Sharp rise but tails off gradually with no secondary curves*	Gradual rise & tail off over a long period of time with secondary curves
Secondary attack rate	No	No	High

* **Note:** secondary curves can be seen in intermittent common source epidemics but not in continuous common source epidemics



- ◆ **Epornithic:** An outbreak (epidemic) of disease in a bird population.
- ◆ **Enzootic:** An endemic occurring in animal population
- ◆ **Epizootic:** An epidemic (outbreak) occurring in animal population(often with implication that it may also affect human population)
- ◆ **Zoonoses:** An infectious disease capable of being transmitted under natural conditions from vertebrate animals to man. Eg., rabies, plague, bovine tuberculosis. etc

APPENDIX 112: SOCIOECONOMIC CLASS

Social class is determined on the basis of various scales like Kuppuswamy's scale for Urban and Prasad's scale and Pareek's scale for Rural

Kuppuswami scale is widely used to measure the socio-economic status of an individual in urban community. It is based on three variables namely

1. Education
2. Occupation
3. Income

The modification of Kuppuswami scale meant to determine the socioeconomic status of family based on education and occupation of head of the family and per capital income per month has also been widely used. Recently, Mishra et al have suggested an economic revision of Kuppuswami's scale in order to account for the devaluation of rupee and is proposed to measure the socio-economic status of the family and is neither based on the individual nor on the head of the family.

KUPPUSWAMY SCALE	Score
Education	
Profession or honours	7
Graduate or post graduate	6
Intermediate or post high school diploma	5
High school certificate	4
Middle school certificate	3
Primary school certificate	2
Illiterate	1
Occupation	
Profession	10
Semi - Profession	6
Clerical, shop-owner, farmer	5
Skilled worker	4
Semi-skilled worker	3
Unskilled worker	2
Unemployed	1
Family income per month (in Rs.)	
≥ 2000	12
1000-1999	10
750-999	6
500-749	4
300-499	3
101-299	2
≤ 100	1
Socioeconomic class	
Upper	26-29
Upper middle	16-25
Lower middle	11-15
Upper lower	5-10
Lower	0<5

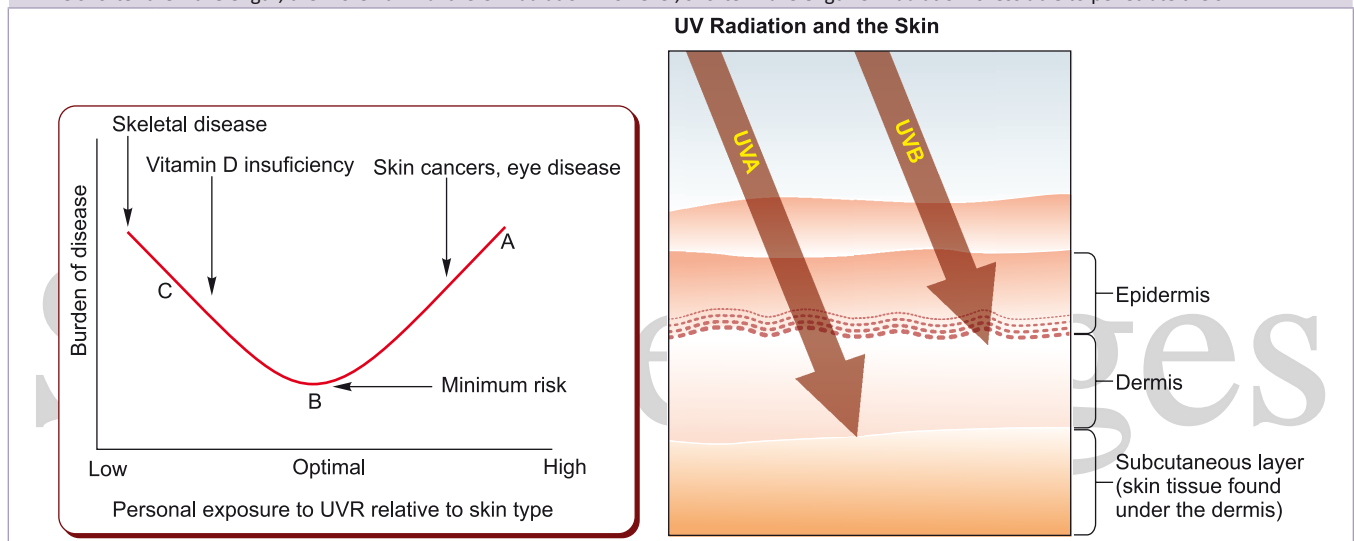
Pareek's Scale: The Socio-Economic Scale (rural) developed by Pareek attempts to measure socio-economic status of a **rural family**. It is based on the **nine items** as follows : Caste; Occupation of head of family; Education; Levels of social participation; Land holding; Farm power (prestige animals); Housing; Material possessions; and, Family type. The combined score for the nine items is graded to indicate socio-economic class categories.

APPENDIX 4: UV LIGHT

UV light	Wavelength	Comments
UV-A	320- 400 nm (UVA I = 340-400 nm and UVA II = 320-340 nm)	The relatively long-wavelength UVA accounts for approximately 95 per cent of the UV radiation reaching the Earth's surface (not absorbed by ozone layer). It can penetrate into the deeper layers of the skin and is responsible for the immediate tanning effect. Furthermore, it also contributes to skin ageing and wrinkling. For a long time it was thought that UVA could not cause any lasting damage. Recent studies strongly suggest that it may also enhance the development of skin cancers
UV-B	280-320 nm	Mostly absorbed by the ozone layer. Medium-wavelength UVB is very biologically active but cannot penetrate beyond the superficial skin layers. It is responsible for delayed tanning and burning; in addition to these short-term effects it enhances skin ageing and significantly promotes the development of skin cancer.
UV-C	100- 280 nm	Short-wavelength UVC is the most damaging type of UV radiation. However, it is completely absorbed by ozone layer and does not reach the earth's surface


Footnote:

◆ The shorter the wavelength, the more harmful the UV radiation. However, shorter wavelength UV radiation is less able to penetrate the skin.



APPENDIX 5: PILOSEBACEOUS UNIT

The hair follicle and a sebaceous gland form a pilosebaceous unit. The sebaceous gland consists of lobes or acini, each with a duct converging on the main sebaceous duct, which opens into the pilary canal. The pilary canals open on to the surface of skin by widely dilated follicular orifices. There are three different types of pilosebaceous units: vellus, sebaceous and terminal. Pilosebaceous units have a rich normal flora (resident microbiota) of bacteria (e.g. *S. epidermidis* and *Propionibacterium* spp. such as *P. acnes*) and fungi (e.g. *Malassezia* spp.) They also harbor *Demodex* mites, which increase in number in older adults and are rarely seen in prepubertal children.

DERM APPENDIX 16: SEXUALLY TRANSMITTED DISEASES						
STD	Syphilis (Hard chancre)	Chancroid (soft chancre)	LGV	Granuloma inguinale	Herpes genital	Condylomata Acuminata (Genital wart)
Eti	Treponema pallidum	Haemophilus Ducreyi	Chlamydia trachomatis L1, L2, L3	Klebsiella granulomatis (Donovania) (formerly known as Calymmatobacterium granulomatis).	HSV -II	HPV-6, 11, 16, 18, 30
IP	9–90 days	3–5 days	3–30 days	8–80 days	3–12 days	Weeks to months
C/F, Mor	Single, Painless, Well demarcated, round, hard punched out/ raised edges, firm indurated base with clean granulation tissue, cartilagenous feel called Nickel in funnel or Button like lesion . Serous exudate, no bleeding on touch	Multiple Painful Soft/ non indurated base, Undermined, soft ragged edges. Bleeds on touch.  MNEMONIC = DUcreyi= Do You Cry = painful ulcer	No ulcer papule/pustule fuses to form Vesicular Herpetiform lesion (painless) which is hardly noticed by patient	Starts as painless papule → which ulcerates to form velvety granulomatous mass with rolled out edges, beefy friable surface which bleeds on touch . Little tendency to heal. Can be seen at genitalia, groin, perineum, thigh. Mimics Epitheliomas	Multiple Painful, erythematous base, Crusts & heal in 1 wk, can be associated with fever & malaise	Multiple Painless Verrucous papillomatous Symptomless
ILN	Generalized LN Pathy; Indolent bubo- rubbery, discrete, mobile, non- tender	U/L Unilocular Tender	Inguinal bubo- U/L Multilocular Tender, Sign of groove	No lymph-adenopathy	Tender LN pathy	No lymph-adenopathy
Lab	Dark ground microscopy, VDRL, TPI, FTABs	Gram –ve School of fish appearance	Immune fluorescence	Donovan bodies in Giemsa	Tzanck smear, viral culture	PCR
Rx	Benzathine penicillin	Ceftriaxone (250 mg IM stat) or Azithro (1 gm oral stat)	Doxycycline (100 mg oral BD for 21 days) or Azithro (1 g orally once weekly for 3 weeks)	Doxycycline 100 mg orally BD for 21 days) or Azithro (1 g orally once weekly for 3 weeks)	Acyclovir 400 mg oral TDS for 7–10 days	Podophyllin or Imiquimod
Rx of Partner	Treat as early syphilis	Treat as if patient	Doxycycline 100 mg orally twice a day for 7 days, Azithromycin 1 g orally single dose		Serological testing	No recommendations

Eti= etiology, Mor= morphology of lesion/ulcer, ILN= inguinal lymph node, Rx= treatment, IP= incubation period
 # Doxycycline should be avoided in the second and third trimester of pregnancy because of risk for discoloration of teeth and bones, but is compatible with breastfeeding

APPENDIX 45: LASERS IN DERMATOLOGY

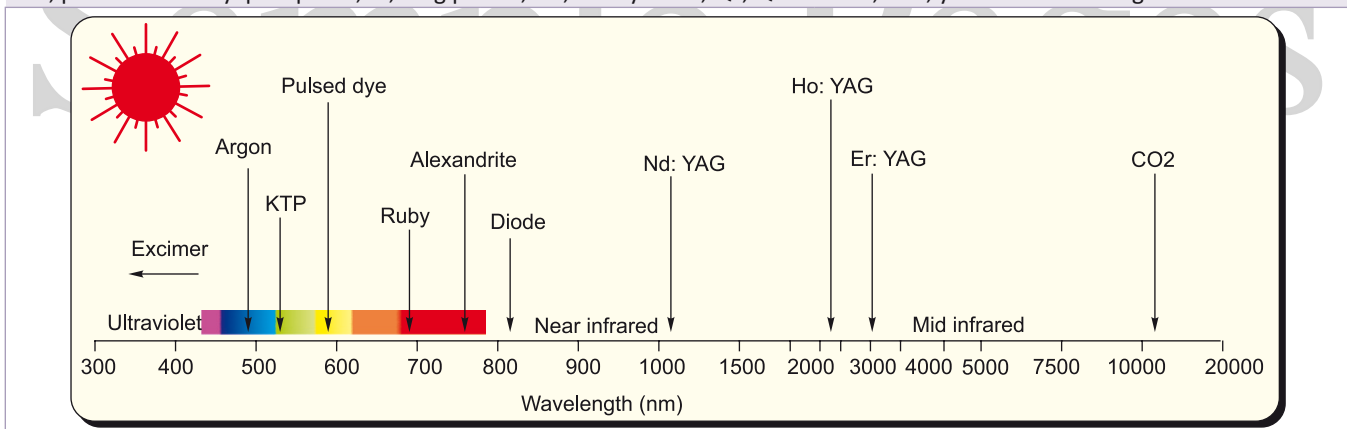
The word “laser” is an acronym for light amplification by stimulated emission of radiation

- ◆ A laser consists of a transparent crystal rod (solid-state laser) or a gas- or liquid-filled cavity (gas or fluid laser) constructed with a fully reflective mirror at one end and a partially reflective mirror at the other. Lasers are sometimes classified according to the pulse characteristics of the beam, which may be continuous, pulsed or quality switched (Q-switched).
- ◆ Continuous wave light consists of an uninterrupted beam of relatively low power, such as is emitted by the CO₂ laser.
- ◆ **Q-switching** is a means of creating a very short pulse (5–100 nanoseconds) together with an extremely high peakpower.
- ◆ Remember that interaction between LASER light in skin is with certain chromophores, that it targets. Important chromophores in skin are:
 1. **Melanin**
 2. **Hemoglobin**
 3. **Water**

Wavelengths and Targets of Lasers

Laser	Wavelength	Target chromophore
Argon	488, 514 nm	Melanin, hemoglobin
Frequency-doubled Nd:YAG/KTP	532 nm	Vascular (LP); melanin/tattoo pigment (QS)
Pulsed dye	585–600 nm	Vascular
Ruby	694 nm	Melanin/tattoo pigment
Alexandrite	755 nm	Melanin/tattoo pigment
Diode	800 nm	Melanin, hemoglobin
Nd:YAG	1064 nm	Hemoglobin (LP), melanin/tattoo pigment (QS)
Erbium: YAG	2940 nm	Water
Carbon dioxide	10600 nm	Water

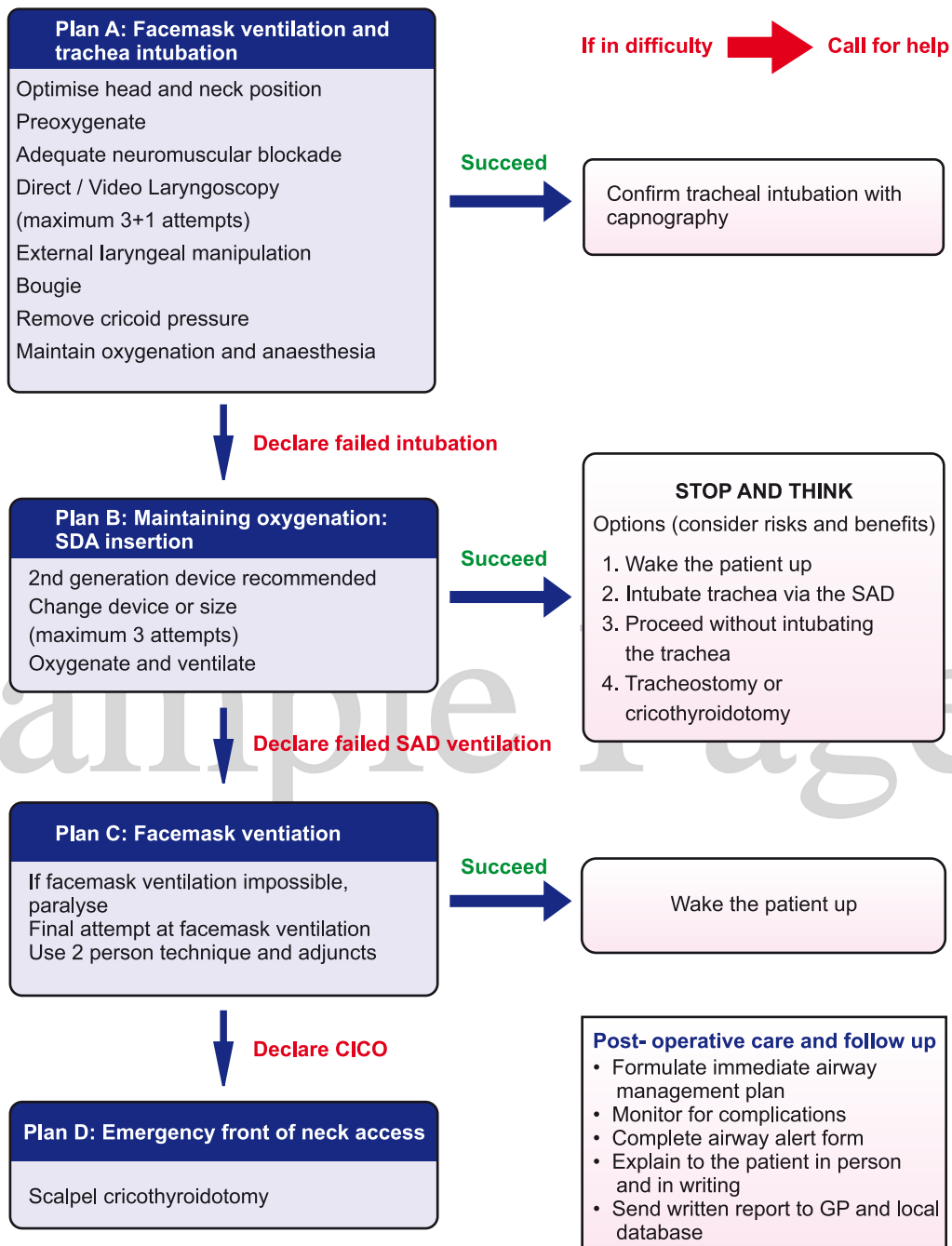
KTP, potassium titanyl phosphate; LP, long pulsed; Nd, neodymium; QS, Q-switched; YAG, yttrium aluminum garnet



APPENDIX 46 MECHANISMS OF LASER EFFECTS

1. **Photocoagulation:** The principal lasers used in ophthalmic therapy are the thermal lasers, in which tissue pigments absorb the light and convert it into heat, thus raising the target tissue temperature high enough to coagulate and denature the cellular components.
2. **Photodisruption:** Photodisruption lasers release a giant pulse of energy with a pulse duration of a few nanoseconds. When this pulse is focused to a 15–25 μm spot, so that the nearly instantaneous light pulse exceeds a critical level of energy density, “optical breakdown” occurs in which the temperature rises so high (about 10,000 $^{\circ}\text{K}$) that electrons are stripped from atoms, resulting in a physical state known as a plasma. This plasma expands with momentary pressures as high as 10 kilobars (150,000 psi), producing a cutting effect upon the tissues.

APPENDIX 6: ALGORITHM OF UNANTICIPATED DIFFICULT AIRWAY
(DIFFICULT AIRWAY SOCIETY 2015 UPDATE)



#SAD = Supraglottic airway device (e.g. LMA)

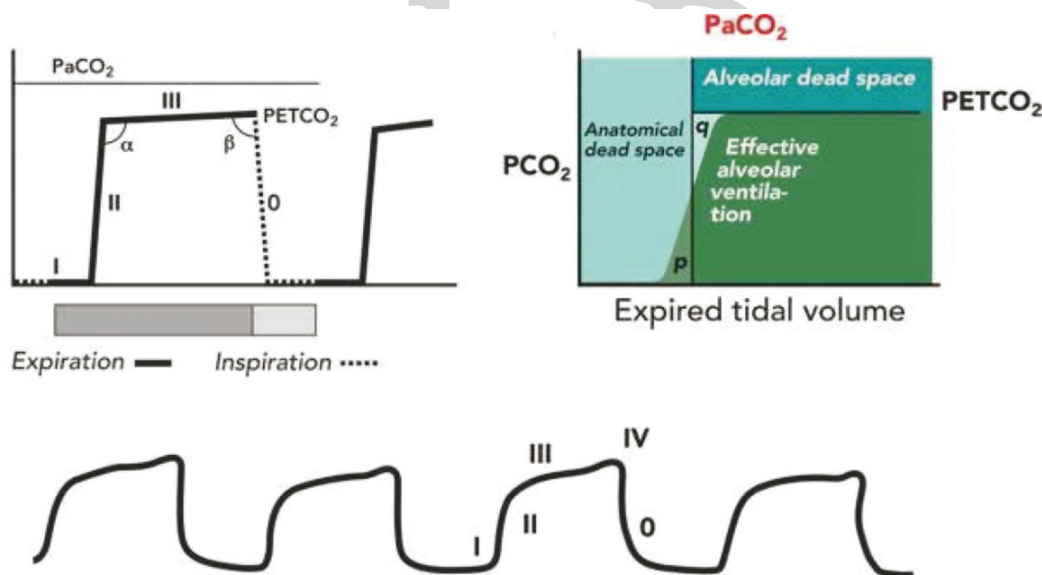
APPENDIX 14: CAPNOGRAPHY

In 1965, end-tidal CO_2 monitoring was introduced by Bethune and Brechner

Definition	Continuous measurement of end tidal carbon dioxide (ETCO_2) and its waveform
Principle	Infrared light is absorbed by the CO_2
Characteristic	Characteristics of the normal capnogram include a) Rapid increase from B to C, b) Nearly horizontal plateau between C and D, c) Rapid decrease from D to E to zero, and d) A zero baseline (EA AB)

Phases of Capnography

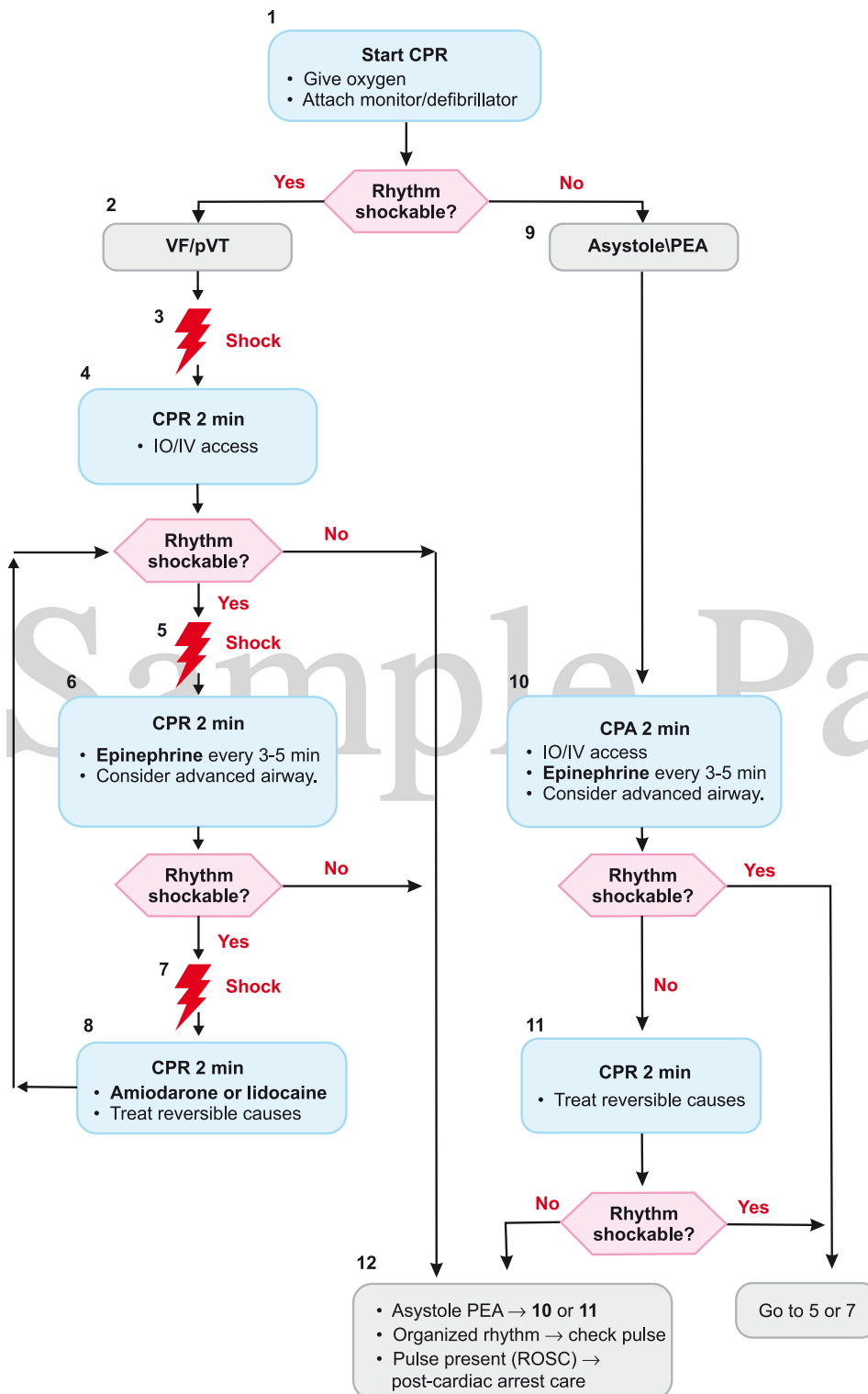
Phase I (Inspiratory baseline)	EA in the graph. It is the latter part of inspiration or beginning of expiration , during which the CO_2 level remains at zero.
Phase II (Expiratory upstroke)	BC in the graph. Represents mixing of dead space with alveolar gas i.e. the emptying of connecting airways and the beginning of the emptying of alveoli. As exhalation continues, gas from alveoli in regions with relatively short conducting airways appears and mixes with dead space gas from regions with relatively long conducting airways, resulting in an increasing CO_2 level.
Phase III (Alveolar plateau)	CD in the graph. Shows the alveolar plateau . Because of uneven emptying of alveoli, the slope continues to rise gently. Point D shows the best approximation of alveolar CO_2 (end of expiration, beginning of inspiration).
Phase IV (Inspiratory downstroke)	DE in the graph. As the patient inhales, CO_2 -free gas enters the patient's airway, and the CO_2 level abruptly falls to zero at the onset of inspiration



Uses of Capnography

1. **Surest confirmatory sign of endotracheal intubation**, as esophageal intubation will lead to zero ETCO_2
2. Intraoperative **displacement or blockage of ET tube** will also lead to Zero ETCO_2
3. In **malignant hyperthermia** $\text{ETCO}_2 > 100$ mm Hg
4. In **pulmonary embolism** there is sudden fall of ETCO_2
5. In cardiac arrest also ETCO_2 falls to zero
6. **Cardiac arrest**: In intubated patients, failure to achieve an ETCO_2 of greater than 10 mm Hg by waveform capnography after 20 minutes of CPR may be considered as one component of a multimodal approach to decide when to end resuscitative efforts, but it should not be used in isolation

APPENDIX 39: PEDIATRIC CARDIAC ARREST- ADVANCED CARDIAC LIFE SUPPORT (ACLS) ALGORITHM 2015 UPDATE

**CPR Quality**

- Push hard ($\geq \frac{1}{3}$ of anteroposterior diameter of chest) and fast (100-120/min) and allow complete chest recoil.
- Minimize interruptions in compressions.
- Avoid excessive ventilation.
- Rotate compressor every 2 minutes, or sooner if fatigued.
- If no advanced airway, 15:2 compression-ventilation ratio.

Shock Energy for Defibrillation

- First shock 2 J/kg, second shock 4 J/kg, subsequent shock ≥ 4 J/kg, maximum 10 J/kg or adult dose.

Drug Therapy

- **Epinephrine IO/IV dose:** 0.01 mg/kg (0.1 mL/kg of 1:10000 concentration). Repeat every 3-5 minutes. If no IO/IV access, may give endotracheal dose: 0.1 mg/kg (0.1 mL/kg of 1:1000 concentration).
- **Amiodarone IO/IV dose:** 5 mg/kg bolus during cardiac arrest, may repeat up to 2 times for refractory VF/pulseless VT.
- **Lidocaine IO/IV dose:** Initial: 1 mg/kg loading dose. Maintenance: 20-50 mcg/kg per minute infusion (repeat bolus dose if infusion initiated > 15 minutes after initial bolus therapy).

Advanced Airway

- Endotracheal intubation or supraglottic advanced airway
- Waveform capnography or capnometry to confirm and monitor ET tube placement
- Once advanced airway in place, give 1 breath every 6 seconds (10 breaths/min) with continuous chest compression.

Return or Spontaneous Circulation (ROSC)

- Pulse and blood pressure
- Spontaneous arterial pressure waves with intra-arterial monitoring.

Reversible Causes

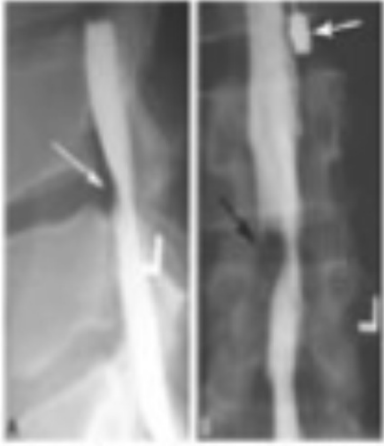


- Hypovolemia
- Hypoxia
- Hydrogen ion (acidosis)
- Hypo-/hypercalcemia
- Hypothermia
- Tension pneumothorax
- Tamponade, cardiac
- Toxins
- Thrombosis, pulmonary
- Thrombosis, coronary

LYMPHO SCINTIGRAPHY	Tc 99 labelled colloid For unexplained limb swelling & lymphatic hypoplasia
DACRO SCINTIGRAPHY	Tc 99 DTPA For epiphora (lacrimal drainage)
MONOCLONAL ANTIBODY SCAN	Tc 99 Acritumomab for colorectal cancer 99 Nofetumomab Merpentan (NR-LU-10) for small cell lung cancer
DVT SCAN	Tc 99 Apcitide peptide imaging
CEA SCAN	Technetium (99mTc) arcitumomab Diagnostic imaging of colorectal cancer.
V/Q SCAN:	For pulmonary embolism Ventilation scan = Krypton 81 gas (same day), Xenon 133 gas + 99m-Tc aerosol (separate days) Perfusion scan = 99mTc-MAA (macroaggregated albumin) Ventilation scan is done first

Foot note:

◆ In ^{99m}Tc the superscript M denotes that the technetium 99 is not in its ground state but a long lived metastable excited state”

APPENDIX 20: SPINAL TUMORS

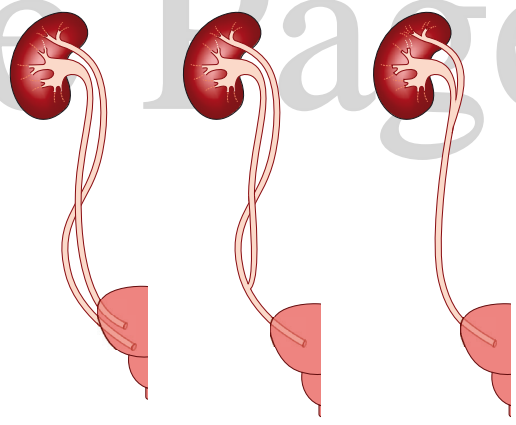
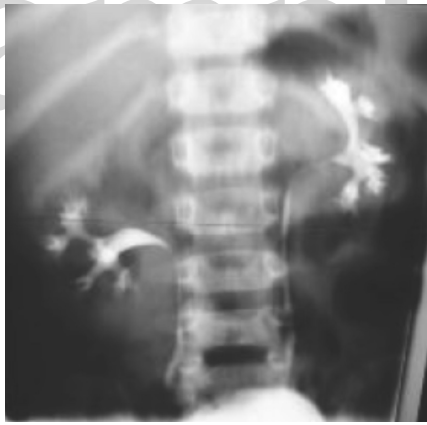
Extramedullary (outside the spinal canal)		Intramedullary
Extradural (Outside dura)	Intradural (in subarachnoid space)	Always intradural (with in spinal cord)
50% of the spinal tumours are extradural	40 % are intradural extramedullary	10% are intradural intramedullary
Displacement or compression of the spinal cord, but they result in narrowing of both the ipsilateral and the contra lateral subarachnoid spaces	Displace the cord away from the tumor, Widening the ipsilateral subarachnoid space, Narrowing the contralateral subarachnoid space	Fusiform enlargement of the cord, Circumferential narrowing of the adjacent subarachnoid space
		
Feathered appearance	Meniscus sign, Widening of ipsilateral subarachnoid space	Widening of the cord, Trouser leg appearance
Metastasis Osteoblastoma Osteochondroma Chondrosarcoma Giant cell tumor Myeloma, Neuroblastoma, Ganglioneuroma, Lymphoma	Metastasis Nerve sheath tumors; Schwannoma, Neurofibroma, Meningioma, subdural empyema	Ependymoma Astrocytoma Teratoma, Infarct, Hematoma, Hemangioblastoma

APPENDIX 36: CONTRAST STUDY OF KUB

Anterograde technique	Retrograde techniques
Done with voiding cystourethrogram or excretory urography	Folder catheter passed through urethra and radio contrast injected
Best for evaluating posterior urethra	Best for anterior urethra

APPENDIX 37: SIGNS OF URETERAL DUPLICATION

Complete Duplication Of Ureters	Partial Duplication Of Ureters
<ul style="list-style-type: none"> ◆ Due to second ureteral bud arising from Mesonephric duct ◆ There are two ureters draining as per “Weigert- Meyer rule” which states that <u>“Ureter from upper pole moiety inserts in a more inferior and medial location than lower pole moiety”</u> ◆ Radiological findings of complete duplication of ureter are: <ol style="list-style-type: none"> 1. Non visualization (non opacified) of relatively large renal area (severely obstructed upper renal segment) 2. The classic sign “drooping lily” sign (reminiscent of a lily flower that is wilting or drooping) due to downward lateral rotation of lower pole secondary to hydronephrotic upper pole which is non opacified. 3. Dilated, often refluxing laterally displaced ureters 	<p>Due to early division of ureteral bud</p> <ul style="list-style-type: none"> ◆ It can be blind ending if there is no contact with blastema ◆ When duplicated ureter enters the main ureter at a distinct angle, there is characteristic “Ureteroureteral reflux/Saddle reflux/Yo-Yo reflux”. It refers to the refluxed contrast first entering one moiety, draining and then entering the other moiety of the duplicated pelvicalical system.



APPENDIX 38: CAUSES OF MULTIPLE PUNCHED OUT OSTEOLYTIC DEFECTS IN SKULL BONES

◆ Multiple Myeloma	◆ Dermal Sinus
◆ Sarcoidosis	◆ Dermoid Cysts
◆ Reticuloendotheliosis	◆ Emissary Veins Foraminae
◆ Tuberculosis	◆ Hemangioma
◆ Epidermoid Tumor	◆ Hyperparathyroidism
◆ Fibrous Dysplasia	◆ Lacunar Skull
◆ Generalized Phlebectasia	◆ Arnold Chiari Malformation
◆ Aneurysmal Bone Cyst	◆ Lymphoma And Leukemia
◆ Neurofibromatosis	◆ Metastasis
◆ Burr Holes	◆ Urticaria Pigmentosa
◆ Cephalohematoma	◆ Pachyionian Granulation
◆ Convolutional Markings	

APPENDIX 39: SIGNS OF RAISED INTRA CRANIAL TENSION

1. **Suture diastasis:** first and most important sign in children, Not seen in adults
2. **Sellar erosion:** First sign in adults
3. **Pineal displacement:** more in adults
4. **Copper/silver beaten appearance:** Gyri make prominent markings on the skull (Increased convolutional marking), Also seen in craniostosis, so not much diagnostic

APPENDIX 40: INVESTIGATION OF CHOICE

CONDITION	INVESTIGATION
Single Bone Metastasis	CT
Multiple Bone Metastasis	Bone scan
Spine Metastasis	MRI
Bone Density/Osteoporosis	DEXA (Dual energy X-ray absorptiometry)
Avascular Necrosis	MRI
Temporal Bone	HRCT
Paranasal sinuses	CT scan
Aneurysm/AV Fistula	Angiography
Dissecting Thoracic Aneurysm (Stable)	MRI
Dissecting Thoracic Aneurysm (Unstable)	Transoesophageal USG
Abdominal aortic aneurysm	CECT (CT Angiography)
Abdominal aortic aneurysm with renal failure or contrast sensitivity	MR Angiography
Interstitial lung disease (sarcoidosis)	High resolution CT (HRCT)
Solitary Pulmonary Nodule	High resolution CT (HRCT)
Pulmonary Embolism	CECT > Pulmonary Angiography > V/Q Scan
Posterior Mediastinal Tumour	MRI
Pancoast's Tumour (Superior Sulcus Tumour)	MRI
Minimum Ascites/Pericranial effusion/Pleural effusion	USG
General Obstetrical examination	USG

AURA	1) Warning sensations, such as automatisms, fullness in the stomach, blushing, and changes in respiration; cognitive sensations, and mood states usually experienced before a seizure . 2) A sensory prodrome that precedes a classic migraine headache
AUTISTIC THINKING	Thinking in which the thoughts are largely narcissistic and egocentric, with emphasis on subjectivity rather than objectivity, and without regard for reality; used interchangeably with autism and dereism. Seen in schizophrenia and autistic disorder
BLUNTED AFFECT	Disturbance of affect manifested by a severe reduction in the intensity of externalized feeling tone; one of the fundamental symptoms of schizophrenia, as outlined by Eugen Bleuler .
BRUXISM	Grinding or gnashing of the teeth, typically occurring during sleep. Seen in anxiety disorder
CATALEPSY	Condition in which persons maintain the body position into which they are placed; observed in severe cases of catatonic schizophrenia . Also called waxy flexibility and cerea flexibilitas .
CATAPLEXY	Temporary sudden loss of muscle tone, causing weakness and immobilization; can be <i>precipitated by a variety of emotional states and is often followed by sleep</i> . Commonly seen in narcolepsy
CATATONIC STUPOR	Stupor in which patients ordinarily are well aware of their surroundings
CIRCUMSTANTIALITY	Disturbance in the associative thought and speech processes in which a patient digresses into unnecessary details and inappropriate thoughts before communicating the central idea. Observed in schizophrenia, obsessional disturbances, and certain cases of dementia. See also tangentiality
CLANG ASSOCIATION	Association or speech directed by the sound of a word rather than by its meaning; words have no logical connection; punning and rhyming may dominate the verbal behavior. Seen most frequently in schizophrenia or mania
CLOUDING OF CONSCIOUSNESS	Any disturbance of consciousness in which the person is not fully awake, alert, and oriented. Occurs in delirium, dementia, and cognitive disorder
COMPULSION	Pathological need to act on an impulse that, if resisted, produces anxiety; repetitive behavior in response to an obsession or performed according to certain rules, with no true end in itself other than to prevent something from occurring in the future
OBSESSION	Persistent and recurrent idea, thought, or impulse that cannot be eliminated from consciousness by logic or reasoning; obsessions are involuntary and ego-dystonic.
CONFABULATION	Unconscious filling of gaps in memory by imagining experiences or events that have no basis in fact, commonly seen in amnesic syndromes (e.g. Alcohol use disorders) ; should be differentiated from lying.
CONVERSION PHENOMENA	The development of symbolic physical symptoms and distortions involving the voluntary muscles or special sense organs; not under voluntary control and not explained by any physical disorder. Most common in conversion disorder
COPROLALIA	Involuntary use of vulgar or obscene language. Observed in some cases of schizophrenia and in Tourette's syndrome .
DEJA VU	Illusion of visual recognition in which a new situation is incorrectly regarded as a repetition of a previous experience.
JAMAIS VU	Paramnesic phenomenon characterized by a false feeling of unfamiliarity with a real situation that one has previously experienced.
DELIRIUM TREMENS	Acute and sometimes fatal reaction to withdrawal from alcohol, usually occurring 72 to 96 hours after the cessation of heavy drinking; distinctive characteristics are marked autonomic hyperactivity (tachycardia, fever, hyperhidrosis, and dilated pupils), usually accompanied by tremulousness, hallucinations, illusions, and delusions. Called alcohol withdrawal delirium in DSM-IV-TR.
DELUSION	False belief, based on incorrect inference about external reality, that is firmly held despite objective and obvious contradictory proof or evidence and despite the fact that other members of the culture do not share the belief.
DELUSION OF PERSECUTION	False belief of being harassed or persecuted; often found in litigious patients who have a pathological tendency to take legal action because of imagined mistreatment. Most common delusion .

APPENDIX 26: INTELLIGENCE QUOTIENT

IQ= Mental age/Chronological age x 100

I.e. If Mental age is same as Chronological age, then IQ is Normal (100%)

E.g. A 6 year old child with an IQ of 50 is most likely to perform activity of a 3 year old child like copy a triangle

Level Of Intelligence	IQ Range
Idiot	0-24
Imbecile	25-49
Moron	50-69
Borderline	70-79
Low normal	80-89
Normal	90-109
Superior	110-119
Very superior	120-139
Near Genius (Termites)	140 and above

APPENDIX 27: MENTAL RETARDATION/ INTELLECTUAL DISABILITY

- ◆ Mental retardation as “significantly sub-average general intellectual functioning, existing concurrently with deficits in adaptive behavior and manifested during the developmental period, that adversely affects a child’s educational performance
- ◆ The most commonly used medical diagnostic criteria for mental retardation are those contained in the American Psychiatric Association’s (APA’s) Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision.

Diagnostic Criteria For Mental Retardation

- Significantly sub-average intellectual functioning: an IQ score of ≈ 70 or below on an individually administered IQ test (for infants, a clinical judgment of significantly sub-average intellectual functioning).
- Concurrent deficits or impairments in present adaptive functioning (i.e., the meeting the standards expected for his or her age by his or her cultural group) in at least two of the following areas: communication, self-care, home living, social/interpersonal skills, use of community resources, self-direction, functional academic skills, work, leisure, health, and safety.
- The onset is before age 18 years.

Classification of mental retardation

	Mild MR	Moderate MR	Severe MR	Profound MR
IQ	50-70	35-50	20-35	<20
Mental age	9–12 yr	6–9 yr	3-6 yr	<3 yr
Quality of life	Educable	Trainable	Dependent Needs continuous support and supervision	Needs life support, needs complete custodial & nursing care
Progress	Class 6	Class 2	–	–

DSM-5 Changes in Mental Retardation

APPENDIX 54: SUBTYPES OF SCHIZOPHRENIA		
Basis for Subtyping	Types	Characteristics
Psychopathology (DSM IV)	Paranoid	Most common form, Late onset A. Delusions (Delusion of persecution, reference, jealousy, grandeur) or auditory hallucinations B. None of the following is prominent: disorganized speech, disorganized or catatonic behavior, or flat or inappropriate affect.
	Disorganized (Formerly Hebephrenic)	Worst prognosis, early onset A. All of the following are prominent: 1. Disorganized speech like Neologism 2. Disorganized behavior like grimacing, mannerism (mirror gazing) 3. Flat or inappropriate affect B. The criteria are not met for catatonic type.
	Catatonic (minimum of two symptoms)	Best prognosis (best response to ECT), Late onset A type of schizophrenia in which the clinical picture is dominated by at least two of the following: 1. Motoric immobility as evidenced by catalepsy (including waxy flexibility) or stupor 2. Excessive motor activity (that is apparently purposeless and not influenced by external stimuli) 3. Extreme negativism (an apparently motiveless resistance to all instructions or maintenance of a rigid posture against attempts to be moved) or mutism 4. Peculiarities of voluntary movement as evidenced by posturing (voluntary assumption of inappropriate or bizarre postures), stereotyped movements, prominent mannerisms, or prominent grimacing 5. Echolalia or echopraxia
	Undifferentiated	A type of schizophrenia in which symptoms that meet Criterion A are present, but the criteria are not met for the paranoid, disorganized, or catatonic type.
	Residual	A type of schizophrenia in which the following criteria are met: A. Absence of prominent delusions, hallucinations, disorganized speech, and grossly disorganized or catatonic behavior. B. There is continuing evidence of the disturbance, as indicated by the presence of negative symptoms or two or more symptoms listed in Criterion A for schizophrenia, present in an attenuated form (e.g., odd beliefs, unusual perceptual experiences).
ICD-10	The 10th revision of the International Statistical Classification of Diseases and Related Health Problems (ICD-10), in contrast, uses nine subtypes: paranoid schizophrenia, hebephrenia, catatonic schizophrenia, undifferentiated schizophrenia, postschizophrenic depression, residual schizophrenia, simple schizophrenia, other schizophrenia, and schizophrenia, unspecified	
Duration	Acute Chronic	Recent appearance or exacerbation of positive symptoms Persistent disability for 2 years or longer
Genetics	Familial	+ Concordance rate of 46% in monozygotic twins + Concordance rate of 14% in dizygotic twins + Family history of psychosis
	Nonfamilial	– Family history of psychosis + Evidence for neurodevelopmental symptoms
Symptomatology	Positive Negative Disorganized	+ Delusions, hallucinations + Flat affect, alogia, anhedonia, avolition + Disorganized speech or behavior, inappropriate affect

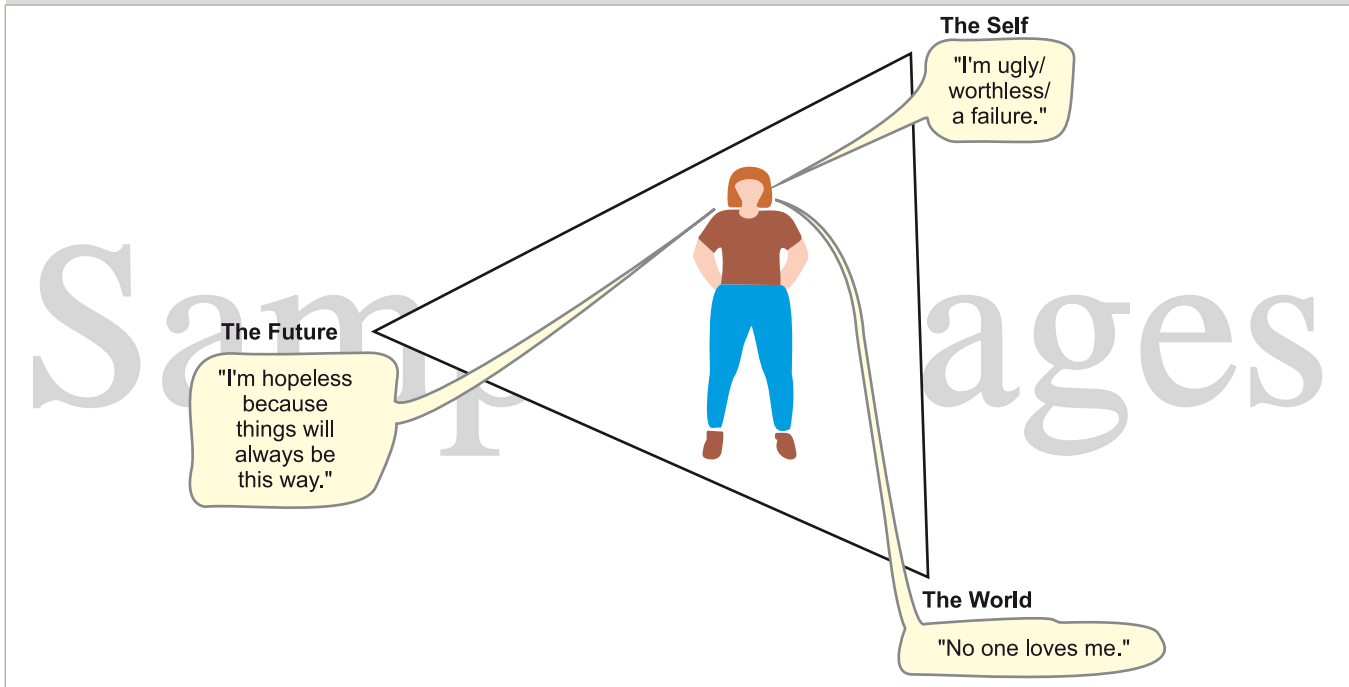
Pyrophobia	Fear of fire
Shy Bladder	Fear of urinating in public lavatory and public places
Xenophobia	Fear of strangers
Zoophobia	Fear of animals

APPENDIX 60: COGNITIVE THEORY OF DEPRESSION/COGNITIVE TRIAD OF BECK

According to cognitive theory, depression results from specific cognitive distortions present in persons susceptible to depression. Those distortions, referred to as depressogenic schemata, are cognitive templates that perceive both internal and external data in ways that are altered by early experiences.

Aaron Beck postulated a cognitive triad of depression that consists of

1. **Views about the Self:** a negative self-precept;
2. **About the Environment:** a tendency to experience the world as hostile and demanding, and
3. **About the Future:** the expectation of suffering and failure. Therapy consists of modifying these distortions.



APPENDIX 61: DEPRESSION

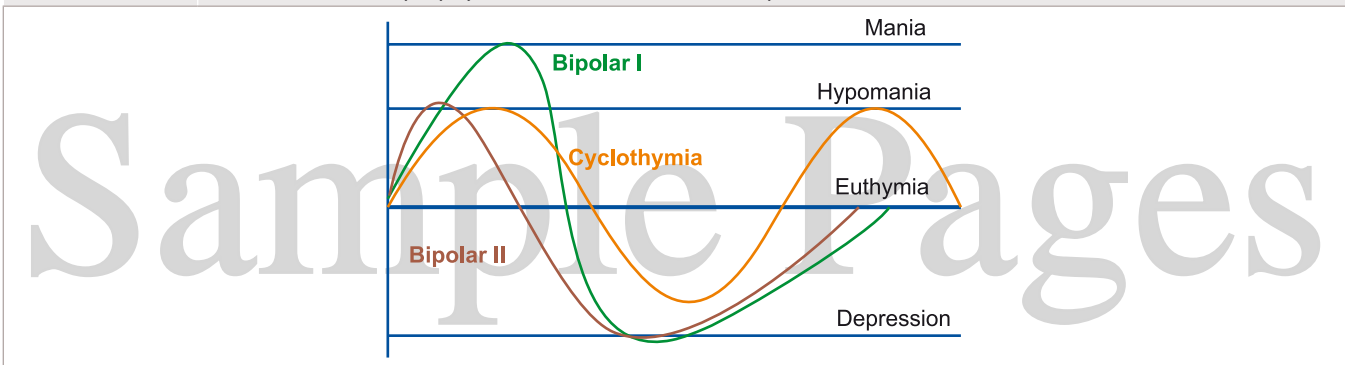
Epidemiology	Common in middle aged females
Clinical features	<ul style="list-style-type: none"> ◆ Most important feature is sadness or loss of interest in all activities ◆ Early morning awakening, loss of appetite and weight, psychomotor agitation or retardation, loss of sexual drive ◆ In severe depression there may be Anhedonia (inability to experience pleasure), Suicidal ideas, Social withdrawal, Delusion of nihilism
Neurotransmitters	Norepinephrine (↓), serotonin (↓), dopamine (↓)
Drug causing depression	Steroids (Most common)
Latest modalities for resistant depression	<ul style="list-style-type: none"> ◆ TMS (Transcranial magnetic stimulation) ◆ VNS (Vagus nerve stimulation) ◆ DBS (deep brain stimulation)

Brief psychotic disorder (postpartum onset)	0.1%–0.2%	Within 2–3 weeks after delivery	Up to 1 month	Psychotic symptoms not better accounted for by mood disorder with psychotic features, Mother may harm infant
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APPENDIX 65: BIPOLAR DISORDER

Bipolar disorder is a psychiatric diagnosis that describes a category of mood disorders defined by the presence of one or more episodes of abnormally elevated energy levels, cognition, and mood with or without one or more depressive episodes.

Types	<p>Bipolar disorders can be conceptualized into three distinct entities:</p> <ol style="list-style-type: none"> Bipolar I disorder, consisting of episodes of mania cycling with depressive episodes Bipolar II disorder, consisting of episodes of hypomania cycling with depressive episodes. Hospitalization is not required Cyclothymic disorder, consisting of hypomania and less severe episodes of depression. Widely considered to be a milder or subthreshold form of bipolar disorder. Very few patients have only manic episodes.
Treatment	<p>Manic phase (Acute manic episode)- Lithium is Drug of Choice Depressive phase — Lamotrigine & Lithium Rapid cyclers — Carbamazepine is DOC Lithium is used for prophylaxis & treatment of manic episode</p>

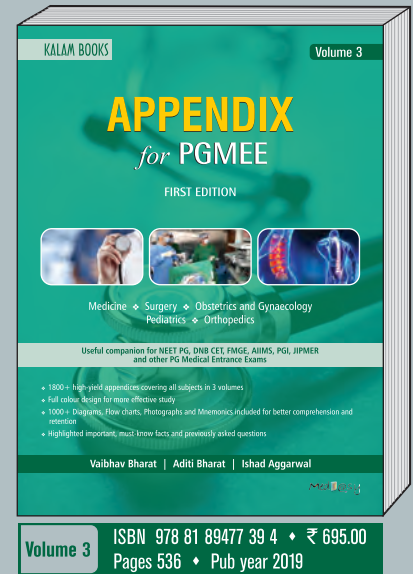
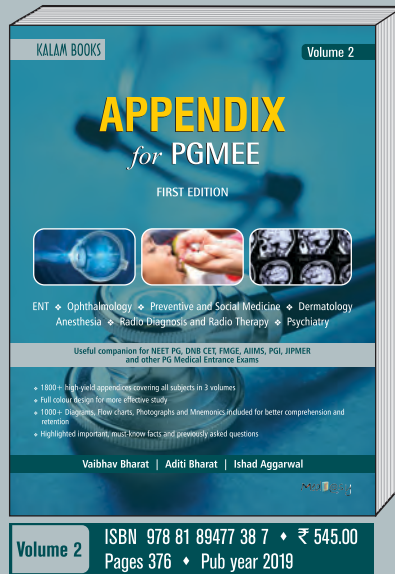
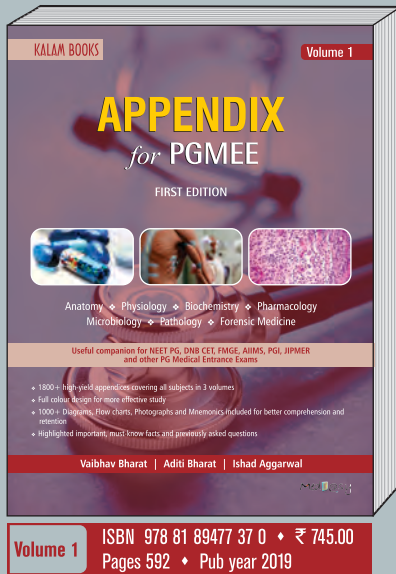


Footnote:

- ◆ **Rapid cyclers:** more than 4 episodes per year. 70-80% of all rapid cyclers are women
- ◆ **Ultra-rapid cycling:** phases of mania and depression alternate very rapidly (e.g. in matter of hours or days)

APPENDIX 66: EVALUATION OF SUICIDE RISK

Variable	High Risk	Low Risk
Demographic and Social Profile		
Age	> 45 years male, > 55 years female	Below 45 years
Sex*	Male	Female
Marital status	Divorced or widowed	Married
Employment	Unemployed	Employed
Interpersonal relationship	Conflictual	Stable
Family background	Chaotic or conflictual	Stable
Health		
Physical	Chronic illness	Good health
	Hypochondriac	Feels healthy
	Excessive substance intake	Low substance use



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