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All Normal Lab Values

COMMON LAB VALUES

CBC - Blood collected in EDTA tube/lavender/ purple color

- TC = 4000 - 11,000/microL
  - Infants (1 yr) = 6000 - 16,000/microL
  - At birth = 10,000 - 25,000/microL
  - Pregnancy = 12,000 - 20,000/microL
- Hb = 13 - 17 (men) g/dL
  - 12 - 15 (female) g/dL
- RBC = 4.5 - 6.5 × 10^{12}/L (males)
  - 3.8 - 5.8 × 10^{12}/L (females)
- PCV = 40 - 54% (men)
  - 37 - 47% (female)
- MCV = 80 - 100 fL
- MCH = 0.4 - 0.5 fmol/cell or 27 - 32 pg
- MCHC = 30 - 35 g/dL
- Normal Reticulocyte Count: 0.8 - 1.5%
- Red Cell Distribution Width (RDW): 11.5 - 14.5%
- Neutrophils = 40 - 75%
- Lymphocytes = 20 - 50%
- Eosinophils = 1 - 6%
- Basophils = 0 - 1%
- Monocytes = 2 - 8%
- ESR = 0 - 9mm/hr (men) [Age/2]
  - 0 - 20mm/hr (female) [Age+10/2] } Wintrobes Method
- ESR = 0 - 15 mm/hr (men)
  - 0 - 20 mm/hr (female) } Westegren Method
- CRP = 0 - 3 g/dL

LFT - Collect blood in Red test tube

- SGOT or AST : <40 units/ml (12 - 38 U/L)
- SGPT or ALT : <40 units/ml (7 - 41 U/L)
- Total Bilirubin = 0.3 - 1.3 mg/dL
- Direct Bilirubin = 0.1 - 0.4 mg/dL
- S. Total Protein = 6.7 - 8.6g/dL
- S. Albumin = 3.5 - 5.5g/dL

- S.ALP = 30 - 120 U/L (adult)
  <350 U/L (child)
- Gamma Glutamyl Trans = 0 - 40 U/L

RFT - Collect blood in Red Test tube

- Urea = 20 - 40 mg/dL or 2.5 - 6.6 mmol/L
- BUN = 7 - 20 mg/dL
- S. Creatinine = 0.6 - 1.36 mg/dL or 60 - 120 mmol/L
- S.Uric acid = 3.1 - 7 mg/dL (males)
  2.5 - 5.6 mg/dL (females)

S. Electrolytes - Collect blood in Red test tube

- S.Na = 136 - 145 mM/L or meq/L
- S.K+ = 3.5 -5.5 mM/L or meq/L
- S.Ca = 8.5 - 10.5 mg%
- S.PO_4 = 2.5 - 4.5 mg/dL
- S.Mg = 1.5 - 2 mEq/L
- S.Cl = 95 - 107 mEq/L or mM/L

Lipid Profile - Collect blood in Red Test tube

Should be done in fasting

- Total cholesterol = 150 - 200mg%
  Borderline = 200 - 239mg/dL
  High = >240mg/Dl
- Triglycerides = 50 - 160mg% (160mg/dL)
- HDL = 40 - 69mg% (desirable >60mg%)
- LDL = 80 - 160mg%
  Desirable = <130mg%
  Borderline = 10 - 159mg%
  High = >160mg%

Coagulation Screening - Collect blood in blue test tube

- Normal Bleeding Time = 2 - 7 min
- Normal Clotting Time = 4 - 9 min
- PT = 12 - 15s
- aPTT = 28 - 31s
- INR = 1

Blood Sugar Monitoring - Collect blood in Grey test tube

- HbA1c = 4 - 6 % → assess the average blood glucose levels for the last two to three months
- FBS = Normal: 70 - 100 mg/dL
  DM: >126mg/dL
- PPBS = Normal: <140mg/dL
  DM: >200mg/dL
- RBS = DM: >200mg/Dl

Other

- S. Amylase = 20 - 96U/L
- S. Lipase = 0 - 160U/L
- S. Vit. B12 = 140 - 980ng/L
- Rheumatoid Factor = <30U/L
- S. Ferritin = 30 - 250ng/mL (males)
  10 - 150ng/mL (females)
- S. Prolactin = 2 - 20ng/ml (males)
  2 - 30ng/ml (females)
  10 - 209ng/ml (pregnant woman)
- LDH = 208 - 460U/L

Plasma Protein

- Albumin: 3.5 - 5.5g/dL
- Globulin: 2 - 3.5g/dL
- Fibrinogen: 0.2 - 0.4g/dL
- A/G: 1.5 - 3.1

TFT

- T_4 : 5.4 - 11.7µg/dL or 70 - 151 nmol/L
- T_3 : 77 - 151ng/dL or 1.2 - 2.1nmol/L
- TSH : 0.4 - 5 µU/ml or 0.4 - 5 mU/L
- FT_3 : 1.4 - 4.2 pg/ml
- FT_4 or Thyroxine : 0.9 - 2ng/dL

URE

- pH = 5 - 9
- Protein excretion(24hr) = <150mg/day
- Red cell = 0 - 2/hpf
- Microalbumin (24hr) = 0 - 30mg

- Epithelial cells = 0 - 2/hpf
- Pus cells = 0 - 5/hpf

Cast in Urine

- Hyaline cast = dehydration, strenuous exercise
- Granular cast = CKD, strenuous exercise
- RBC cast (always pathological) = glomerulonephritis, vasculitis
- WBC cast = inflammation/infection

VACUTAINER TUBES

Color	Anticoagulant	Uses
	No anticoagulant	LFT, RFT, S.Electrolyte Lipid Profile
	Sodium Fluoride	Glucose estimation
	EDTA	CBC, ESR, CRP
	3.2% sodium citrate	Coagulation studies like PT, APTT
	Heparin	Bone Marrow Studies
	Citrate	Blood culture
	(K2)EDTA	Blood Bank Tests, Blood typing, ABO grouping etc.

Stool Examination

- Coproporphyrin: 400 - 1000mg/day
- Fecel fat excretion: <6g/day
- Occult blood: negative (<2ml blood/day)
- Urobilinogen: 40 -280mg/day

Analysis of ABG

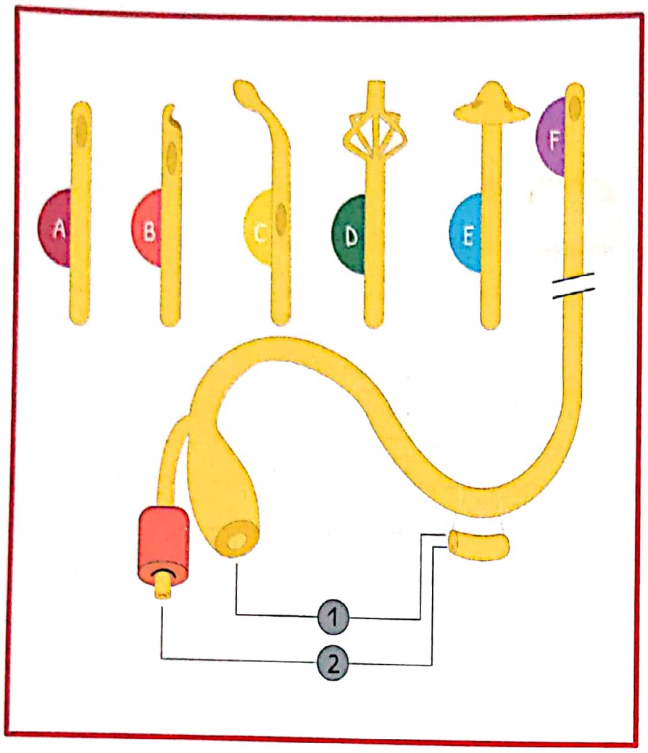
	Reference range	
Analysis	SI Units	Non SI Units
Bicarbonate	21 - 29 mmol/L	21 - 29 meq/L
Hydrogen ion	37 - 45 nmol/L	pH 7.35 - 7.43
$PaCO_2$	4.5 - 6.0 kPa	34 - 45 mmHg
PaO_2	12 - 15 kPa	90 - 113mmHg
Oxygen saturation	>97%	

CSF Analysis

- Opening pressure: 90 - 180 mm H_2O
- Appearance and color: Clear, colorless
- Blood cell count, WBC: <5, RBC: <5
- Glucose: 50 -80 mg/dL or >60% of blood level
- T. protein: 15 - 60mg/dL or <0.45g/dL
- Oligoclonal bands: Negative

Common Instruments

CATHETERS



The type of urinary catheters.

Legend:

A - Simple urethral catheter

B - Open-ended (whistle-tip) catheter

C - Coude Catheter (Tiemann) Catheter

D - Wing-tip (Malecot) catheter

E - Mushroom (de Pezzer) catheter

F - Foley catheter

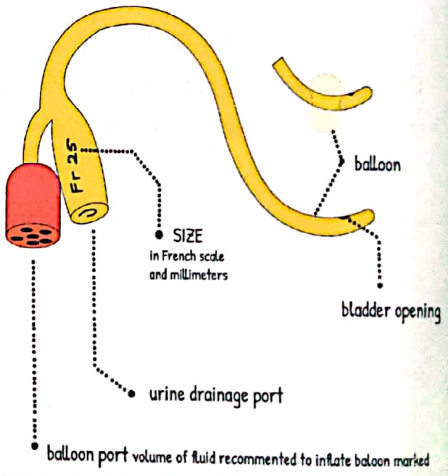
1 - Urine drainage

2 - Balloon inflation

FOLEY CATHETER

- Size of Foley catheter measured by French Scale

$$\text{Diameter (mm)} = \frac{\textit{French size}}{3}$$

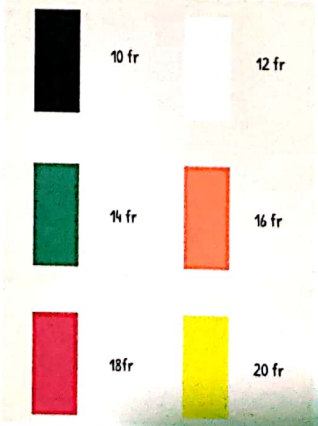


CATHETER FRENCH SIZING CHART

1. F12 (White)
2. F14 (Green)
3. F16 (Orange)
4. F18 (Red)

Commonly available in wards

- Catheter: ↑ French → ↑ Size
- Cannula: ↑ Gauge → ↓ Size



POINTS TO REMEMBER WHILE CATHETERIZING

- During catherization, insert to the hilt; wait until urine emerges before inflating the balloon
- Remember to reposition the foreskin in uncircumcised after the catheter is inserted to prevent massive edema of the glans and paraphimosis.
- In men, stretch the penis perpendicular to the body and then insert the catheter.
- Position of women: knees flexed, hips abducted with heels together.
- Urine output should be >400 ml in 24 hours or >0.5 ml/kg/hr.

RYLE'S TUBE

Steps to Insert Ryle's Tube

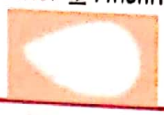
- Place lubricated tube in nostril with its natural curve promoting passage down, rather than up
- Advance directly backwards (not upwards). When the tip is estimated to be entering the throat, rotate the tube by ~180 to discourage passage into the mouth.
- Advance the tube into the esophagus during a swallow
- It may be easier to swallow with a sip of water
- Advance >60 cm

Sizes of Ryle's Tube

- FG12 → White
- FG14 → Green
- FG16 → Orange

CANNULA

- Catheter: ↑ French → ↑ Size
- Cannula: ↑ Gauge → ↓ Size

Color Code	Gauge	Ext. Dia. mm	Length mm	Flow Rate mL/min	Recommend
 Orange	14G	2.1 mm	45 mm	240 mL/min (1 liter ±4 menit) 	• Trauma • Rapid blood transfusion • Surgery
 Gray	16G	1.8 mm	45 mm	180 mL/min (1 liter ±5.5menit)	• Rapid fluid replacement • Trauma • Rapid blood transfusion
 Green	18G	1.3 mm	32/45 mm	90 mL/min (1 liter ±11 menit) 	• Rapid fluid replacement • Trauma • Rapid blood transfusion
 Pink	20G	1.1 mm	32 mm	60 mL/min (1 liter ±17 menit) 	• Most infusions • Rapid fluid replacement • Trauma • Rapid blood transfusion
 Blue	22G	0.9mm	25 mm	36 mL/min (1 liter ±28 menit) 	• Most infusions • Rapid blood transfusion
 Yellow	24G	0.7mm	19mm	20mL/min (1 liter ±50 menit) 	• Most infusions • Rapid blood transfusion • Pediatrics • Neonates
 Purple	26G	0.6mm	19mm	13 mL/min (1 liter ±77menit) 	• Pediatrics • Neonates

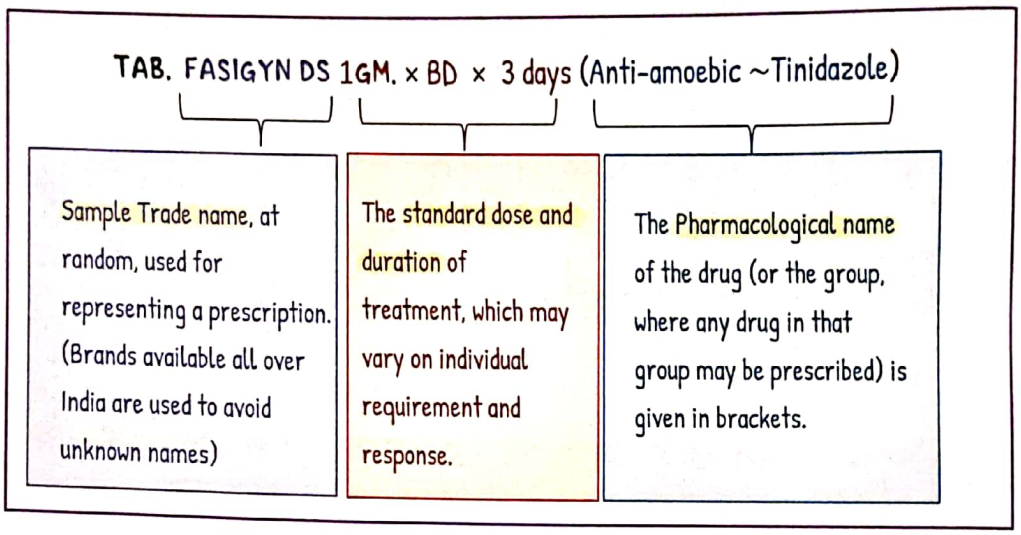
ENDOTRACHEAL TUBE

Adult	Children
6	3
6.5	3.5
7	4
7.5	4.5
8	5
8.5	

VENTURI MASK

Colour	Flow	O_2 %
Blue	2 L/min	24%
White	4 L/min	28%
Orange	6 L/min	31%
Yellow	8 L/min	35%
Red	12 L/min	40%
Green	15 L/min	60%

Prescription Format



Fever

- Normal body temperature → 97.7 - 99.5°F (36.5 - 37.5°C)
- Normal children temperature → 97.4 - 100°F (36.33 - 37.78°C)

Note: °C x 1.8+32 = °F

FEVER TEMPERATURE

- Axillary temperature → ≥ 99.7 - 99.5°F
- Oral temperature → ≥ 99.5 - 99.9°F
- Rectal temperature → ≥ 100.4°F
- Tympanic temperature → ≥ 100.4°F

} Core temperature

CAUSES

1. Pneumonia → Continuous fever (Do not fluctuate more than 1°C in 24 hours) + Chills and rigor
2. Typhoid fever → Continuous fever + Abdominal pain
3. Brucellosis → Continuous fever + Myalgia (Classical for viral fever)
4. Urinary Tract Infection → Recurrent fever + Chills and rigor
5. Malaria → Intermittent fever (Temperature elevation for certain period then returning back to normal)
   i. Falciparum Malaria → Quotidian (Periodicity of 24 hours)
   ii. Vivax and Orale → Tertian (Periodicity of 48 hours)
   iii. Plasmodium Malaria → Quartan (Periodicity of 72 hours)
6. Tuberculosis → Night sweats
7. Infective endocarditis → Remittent fever (Temperature remains above normal throughout the day with fluctuations more than 1°C in 24 hours)

EVALUATION

Evaluation of Fever Patients	
1. Temperature	Axillary temperature >99°F
2. White Blood Cell Count	>12,000 or <4,000 or >10% bands
3. Heart Rate	>90bpm*
4. Respiratory Rate	>24bpm^ or $PaCO_2$ <32mm Hg
Sepsis = SIRS** + Infection	
Severe sepsis = SIRS** + Infection + End organ damage	
Septic shock = Severe sepsis + Refractory hypotension (<90mm Hg or 40% below baseline)	
*beats per minute ^ breaths per minute ** SIRS - Systemic Inflammatory Response Syndrome	

FEVER WORKUP

All patients

1. CBC ↑ ESR/CRP
2. Blood smear → For malarial parasites
3. CXR → PA
   → Lateral
4. URE + Urine Culture
5. Blood culture
6. RFT
7. LFT
8. $S.Na^{+}/K^{+}/Ca^{2+}/Mg^{2+}/PO_4^{3-}$
9. HIV test

Specific Workup

1. Autoimmune workup
   i. RF
   ii. ANA
2. Specific Viral Serologies
3. LP, Thoracocentesis, Anthrocentesis, Paracentesis
4. CT Scan → HEAD
5. Stool culture → Gram stain/ Clostridium difficle/ Toxin etc.
6. Sputum culture/AFB
7. Skin biopsy

SYMPTOMS

Fever Only

1. Malaria → with chills
2. Typhoid fever
3. Leptospirosis
4. Ricketsia
5. Relapsing fever
6. Other viral illness
7. HIV

Neurological Symptoms

1. Cerebral Malaria
2. Meningitis
3. Encephalitis
4. C/C Meningitis → TB/Cryptococcal Meningitis
5. Rabies
6. Japanese Encephalitis
7. West Nile Encephalitis
8. HIV Dementia
9. Toxoplasmosis
10. Trypanosomiasis

Abdominal Symptoms

1. Typhoid
2. Infectious colitis: Shigella/E.Coli/Salmonella Camphylobacter/Amoeba
3. Amoebic Liver Disease
4. Abdominal TB
5. Appendicitis, Pyelonephritis
6. HIV

Fever with Rash

1. Macular

i. Measles
ii. Rubella
iii. Toxoplasmosis

Macule

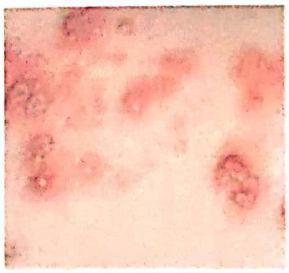
2. Haemorrhagic

i. Meningeococal
ii. Viral haemorrhagic fever

Haemorrhagic

3. Vescicular

i. Chicken pox
ii. Shingles
iii. Herpes Simplex



Vesicles

4. Nodular

i. Erythema Nodosum → TB and Leprosy

Nodular

5. Erythomatous

i. Drug rash
ii. Dengue fever

Erythematous

Haemorrhagic Symptoms	Bone and Joint	Gynaecological Symptoms
• Haematamasis • Malena • Epistaxis • Petechiae • Purpura • Puncture site bleeding 1. Dengue 2. Relapsing fever 3. Ebola / Lassa / Marbung 4. Yellow fever	Fever with joint/bone pain 1. Sickle cell disease 2. Septic arthritis 3. Osteomyelitis 4. Pyomyositis 5. Rheumatic fever 6. Chickungunya 7. Brucellosis	• Pelvic pain • Vaginal discharge 1. PID 2. Tubo-ovarian abscess 3. Postpartum endometritis 4. Septic abortion 5. Ectopic

TREATMENT

T >98.9°F

1. T.PMOL 500 mg 1-1-1-1 × 5 days
   Or
   T.DOLO 650 mg 1-1-1 × 5 days

T >100.4°F

1. Inj. PMOL 2cc (150/1) IM STAT (ATD)
   If allergic to PMOL
   Inj. DOLONEX (Pyroxicam) 2cc IM STAT (ATD)
   Or
   Infusion PMOL 100ml STAT

Paediatric

1. Syp. PMOL (125/5) wt/2 1-1-1 × 3 days
   (250/5) wt/4 1-1-1 × 3 days
2. Tepid Sponging
3. Steam Inhalation
4. T./Syp. Multi Vitamin × OD

N.B:

Absolute CI for PMOL

i. Infants <2kg
ii. Liver disease
iii. Renal disease
iv. Drug allergy

T >100.4°C

>15kg

1. Inj. PMOL 1cc (150/1) IM STAT (ATD)

<15kg (15 mg/weight/dose)

1. Supp. PMOL 80 mg <1 year
   170 mg 1-4 years
   250 mg >4 years

T >102°F

1. Syp. MEFTAL (100/5) $\frac{wt \times 2}{5}$
   (200/5) $\frac{wt}{5}$
   (8mg/kg/dose)

1. Do BRE, ESR/CRP, URE

   If HGF for more than 3 days not resolving with PARACETAMOL

   ↓

   Suspect infection

   ↓

   Give ANTIBIOTICS

2. If antibiotics like MACROLIDES, NSAIDS STEROIDS started, add ANTIULCERANTS

Fever	Classic PUO	Nosocomial	Neutropenic	HIV associated
Examples	• Infections (30%): Tuberculosis, Malaria, Amebiasis, EBV, Lyme, Endocarditis, Intra-abdominal abscess, Osteomyelitis, dental abscess, sinusitis • CTD (30%): Rheumatic fever, PAN, Rheumatoid arthritis, Giant cell arteritis, Temporal arteritis. • Neoplasms (30%): Lymphoma, Leukemia, Cancer (Hepatocellular, Colon, Pancreas, Liver, Secondaries) • Miscellaneous(20%): Drugs, Hematoma, Thyroid or adrenal insufficiency	• Thrombophlebitis • UTI • Sinusitis • Drugs • Clostridium difficile colitis	• Virus, Bacteria, Parasites • Drugs • Aspergillosis • Perianal infection Empiric antibiotics indicated in neutropenic patient: – For fever of unknown origin: Monotherapy with Piper/ Tazo, Ticar/Clav, Imipenem or Ceftazidime or Ceftriaxone – For sepsis or pneumonia, or pseudomonas infection: Combination therapy with antipseudomonal β-lactum, i.e. any of the above drug used in monotherapy with aminoglycoside or fluoroquinolone – For mucositis, catheter site infection: Any drug used above in monotherapy with vancomycin.	• Tuberculosis, Mycobacterium avium-intracellulare infection.

History

Duration	
2 – 5 days	Viral (Dengue, Chikungunya) Protozoal (Malaria) Bacterial (Leptospirosis, Scrub) URTI, LRTI, UTI, Others
5 – 7 days	All of the above + Enteric (Typhoid) fever
>3 weeks	Infections, Neoplasms, CTD

Questions for symptoms and signs/clues	Possible Diagnosis
Anorexia	Hepatitis
Dark colour urine	Jaundice, hepatitis
Chills	Malaria, filarial, UTI, cellulitis, abscess, biliary tract obstruction, pyelonephritis, septicemia, pneumonia, viral infections
Cough, chest pain, breathlessness	Pneumonia
Dysuria, pyuria	UTI
Diarrhea	Enteric fever, colitis, drug-induced diarrhea
Delirium	Meningitis, encephalitis, typhoid, pneumonia
Epidemic	Dengue, influenza
Headache	Sinusitis, otitis media, typhoid, malaria, viral fevers
Pain, body ache	Viral fever
Ear	Otitis
Throat	Tonsillitis
Joints	CTD/Rheumatic fever/Chikungunya
Muscles	Viral fever
Jaundice	Hepatitis A, B, C, Malaria, leptospirosis, dengue, cholangitis
Exanthems/Blisters – Sepsis Rash (apart from exanthems)	Chickenpox (day 1), measles (day 4)
Drug allergy	Ampicillin
Erythema nodosum	Tuberculosis, leprosy, fungal infections, streptococcal infection
Erythema multiforme	Herpes simplex, mycoplasma, drugs
Butterfly rash	SLE
Septicemia	Meningococcal, gonococcal, gram-negative sepsis, staphylococcal toxic epidermolysis
Ecthyma gangrenosum	Pseudomonas infection

Nutrition	Type and source of food. Is food poisoning a possibility?
Sexual history	Any exposure to sexually transmitted infections?
Work	Exposed to pathogens or unusual chemicals at work? Consider work-related exposures to infectious disease if patients work in sewers, laboratories or with live animals (e.g. leptospirosis.
Travel	Recently travelled to hot climate with increase prevalence of tropical infections (e.g. malaria, typhoid, fever)?
Hobbies	Any contact with animals and birds (e.g. psittacosis) or spirochete-infected animal contact, or indirect contact with water or soil with rat urine (e.g. leptospirosis). Have there been any recent tick bites?
Past and current medical problems	Recent infections: Consider abscess formation and recurrence Operations: Recent surgery raises the possibility of postoperative infection or deep venous thrombosis Trauma: Ask about any recent trauma with extensive muscle damage. A resolving hematoma may also cause fever Immunization: Check details about the patent's immunization status
Medication	Drugs caused fever: Is patient taking any drugs (isoniazid, β-lactum antibiotics, procainamide, phenytoin)? Check prescription and over-the-counter medication as well as illicit substances (e.g. doping body building) Antipyretics: Have these been taken? Are they effective in reducing the fever and alleviating symptoms? Antipyretics may also mask the fever and its diurnal pattern Antibiotics: Has the patient taken any antibiotics already, such as those prescribed by another practitioner or leftover. Steroids: Long-term oral steroids increase the risk of infection and may mask symptoms. Chemotherapy and drugs causing neutropenia. Consider neutropenia, if the patient has recently undergone chemotherapy or is taking drugs that any cause blood dyscrasias (e.g. carbimazole)
Allergies	Ask about allergies to any antibiotics needed to be prescribed for treatment of infection
Home	How has home life been affected by the symptoms? Do other people who live in the same accommodation also suffer from fever or other symptoms?

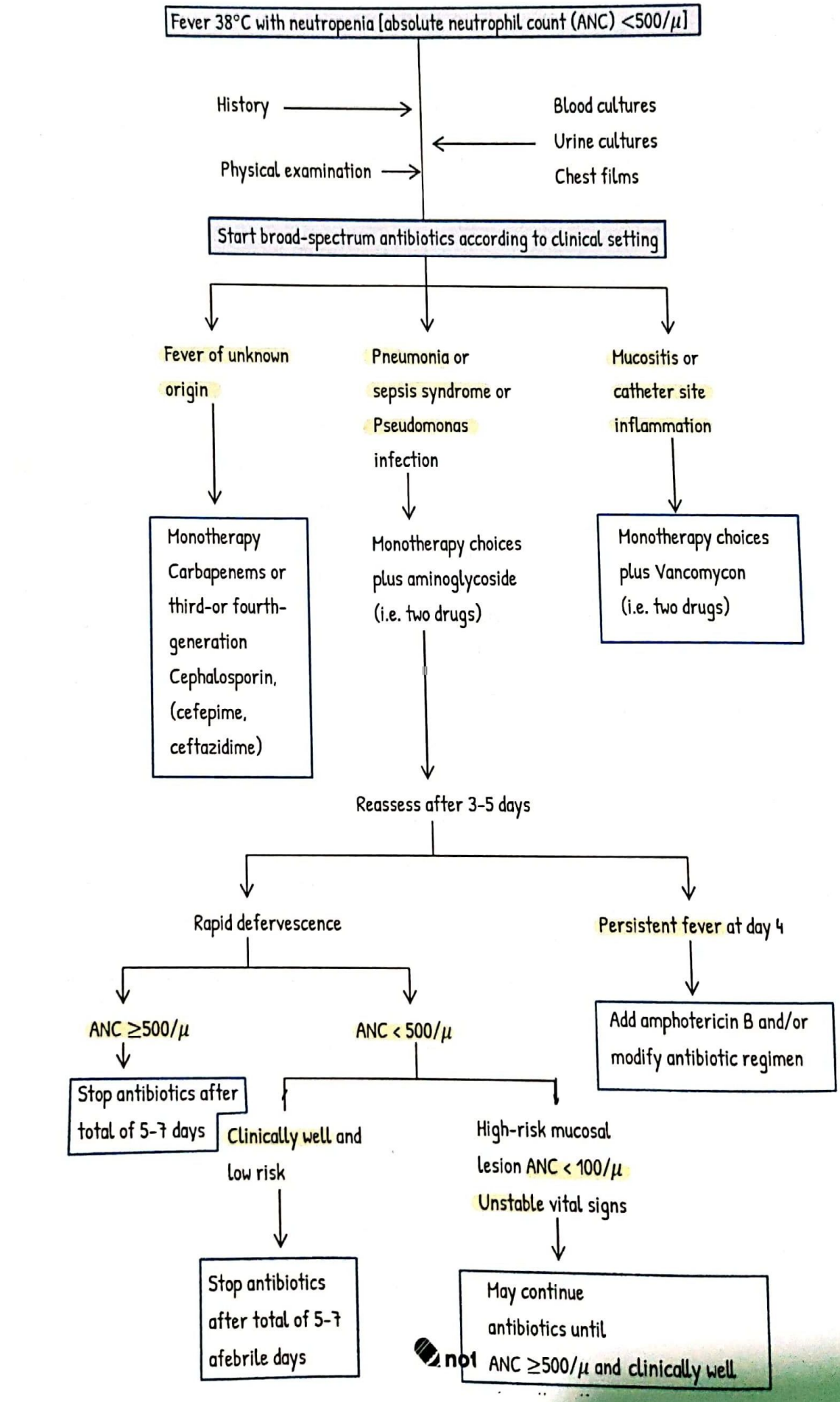
Patient Examination and Clues for Diagnosis of Fever

	Region	Look for	Possible cause of fever
1.	Eyes	Jaundice	Hepatitis
2.	Sinuses	Tenderness	Sinusitis
3.	Teeth	Caries	Dental
4.	Ear	Ear discharge, tenderness	ASOM, CSOM
5.	Throat	Redness, any membrane	Tonsillitis, pharyngitis
6.	Lymph nodes	In neck, axilla, groin	TB, Lymphoma, EBV, Cancer
7.	Skin	Blisters, rash	Chickenpox, measles
8.	Respiratory system	Tachypnea, diminished breath sounds, bronchial breathing, crepitation, rhonchi, rub, dullness	Pneumonia, bronchitis, cavities, pleurisy, effusion, empyema
9.	Cardiovascular system	Heart rate, murmurs, pericardial rub	Endo-/Per-/Myo-carditis
10a.	Abdomen	Tenderness, hepatosplenomegaly, free fluid, mass, right-sided chest wall/intercostal tenderness is liver abscess	Hepatitis, splenomegaly in various infections, intra-abdominal abscesses, peritonitis
b.	Genitalia	Scrotum, testes, vagina, cervix	Orchitis, pyocele, balanoposthitis, STDs abscess
c.	Per rectal	Perianal abscess, prostate and seminal vesicles	Perianal abscess, prostatitis, seminal vesiculitis
d.	Pelvic examination	Tenderness, discharge	PID
11.	Musculoskeletal	Muscle tenderness in shoulders, gluteal region, calf; joint pain, swelling, tenderness; spine tenderness	Dengue, leptospirosis, arthritis, myositis, DVT, etc.
12.	Central nervous system	Altered sensorium, neck stiffness, ocular fundi, neurological deficits	Meningitis, encephalitis, brain abscess

Investigations (Part 1) (Choices Include)

Duration	Probable cause of fever		Investigations (choices include)
2-5 days	Viral fever, malaria, URTI, LRTI, UTI, others		CBC, MP, QBC, dengue, NS1, LFT, Urine routine (none, if clearly viral)
5-7 days	All the above and enteric (typhoid) fever		CBC Urine routine LFT Malarial parasite in blood and malarial card test Culture sensitivity (blood, urine, stool) Serological tests (card tests/ELISA): • Typhipoint (typhoid) • IgM ELISA for leptospirosis, dengue - NS1, IgM, Chickungunya CXR, US, CT
7-15 days	Headache	Sinusitis, otitis, dental sepsis, malaria, meningitis, migraine	Refer investigations (Part 2)
	Cough	Tonsillitis, pneumonia, bronchitis, malaria, tuberculosis	
	Chest pain	Pleural effusion/Empyema, pericarditis, liver abscess, root pain, emphysematous bullae, costochondritis	
	Diarrhea	Enteric fever, colitis, drug induced	
	Pain abdomen	Hepatitis, liver abscess, appendicitis, PID, other intra-abdominal sepsis	
	Consider: Prolonged viral fevers (e.g. infectious mononucleosis, CMV, HIV); malaria, enteric fever or tuberculosis (partially treated or resistant)		

Approach to Patient with Neutropenic FUO



Investigations (Part 2) to Consider in FUO (Pyrexia of Unknown Origin) (Choices Include)

Investigation	Comments
1. Blood tests	
CBC	Leukopenia with relative lymphocytosis = Viral Leukopenia = Typhoid Platelets may be decreased in dengue, leptospirosis and typhoid
ESR	May be elevated in infection, CTD
CRP	May be elevated in infection, CTD
Blood picture	May show malarial parasite
LFT	May be abnormal in liver abscess, dengue, leptospirosis
D-dimer	Increased levels may suggest DVTV/PE
Antinuclear antibodies	ACCP, ANA, RF amy be positive in CTD
Serological tests (CARD/ELISA IgG/IgM test)	**Viral infections:** Dengue, leptospira, chikungunya, HIV **Bacterial infections:** Typhoid, infectious mononucleosis, brucellosis, scrub, syphilis **Protozoal infections:** Malaria, amebiasis
Serum electrophoresis	
Creatinine, electrolytes, calcium	
Serum iron, transferrin, TIBC, Vitamin B_{12}	
2. Urine test	
Urine routine, urine C/S	
3. Imaging	
CXR US (Abdomen, lungs) CT/MRI (abdomen, chest, CNS) Color Doppler (limbs for DVT)	
4. Microbiology	
C/S of blood, urine, sputum, stool, CSF, tissue or pus	
5. Biopsy	Needle biopsy of liver or other tissue indicated by potentially diagnostic clues

Key Points for Clinical Practice

- Simple **viral fevers do not need antibiotics.** No investigations are needed.
- Before labeling a fever as viral, **look for pallor, jaundice and neck stiffness.** Auscultate chest and examine the abdomen for liver/spleen enlargement.
- If fever is not subsiding in 3-4 days of empirical treatment, investigate the patient thoroughly or refer to higher center.

Antibiotics

Note: In general, for mild infections use milder antibiotics

Sl No.	Brand Name	Dosage and Duration	Generic Name	Inference
1.	C MOX or NOVAMOX	500 mg 1-1-1 × 5 days	Amoxicillin	• For RTI including bronchitis • Sinusitis • Otitis media • UTI
2.	C ROSCILLIN	500 mg 1-1-1-1 × 5 days	Ampicillin	• For RTI including bronchitis • Sinusitis • Otitis media • UTI
3.	C or T AUGMENTIN/ AUGPEN/ MOX CV 625/375 T.N:- T MOXIFORCE-CV or MEGA-CV 625, NOVACLAV 625, KID-TAB - 228	1-0-1 × 5 days 20 mg/kg/dose BD	Amox + Clavulanic acid	• For RTI • UTI • Dental • Skin and soft tissue infections • Intra-abdominal and gynecological sepsis • Cat scratches • Infected animal/human bites
4.	C NOVACLOX	1-1-1 × 5 days	Amoxicillin + Dicloxacillin Dramaclox	Ped tab available
5.	C MEGAPEN	1-1-1-1 × 5 days	Ampicillin + Cloxacillin	Kid tab available
6.	C ALDINIR or ZEFDINIR	300 mg 1-0-1 × 5 days	Cefdinir	Very expensive • Pneumonia • a/c exacerbations of c/ bronchitis • ENT • Skin
7.	C PHEXIN/ SPORIDEX	500 mg 1-1-1-1 × 5 days	Cephalexin	• For bone and joint infections • Pharyngitis • Skin and soft tissue • Tonsillitis • UTI
8.	T AZITHRAL or AZEE	500 mg 1-0-0 × 3 days 1 hr before food	Azithromycin	• Specific foe respirato infections • Also for skin

				• STDs • PID • Urethritis • Cervicitis
9.	T ROXID	150 mg 1-0-1 × 5 days 30 min before food	Roxythomycin	• For RTI • ENT • Skin and soft tissue • Genital tract infections
10.	T DROXYL Syp. 125/5 or 250/5 available	500mg 1-0-1 × 5 days 30 mg/kg/day in 2 div doses	Cefadroxil	• Strep throat infections • UTI • Skin
11.	T TAXIM-O/ TOPCEF	50/100/200 mg (DT tab available) 1-0-1 × 5 days	Cefixime	• Respiratory • Urinary • Biliary infections
12.	T CEFTAS-AL	1-0-1 × 5 days	Cefixime +Ambroxol + Lactobacillus spores	
13.	T CIPLOX	500 mg (500/250/750) 1-0-1 × 5 days	Ciprfloxacin	• For UTI • Bone • Soft tissue • Gynecological • Wound infection • Bact gastroenteritis • Respiratory • All other FQ's C/I in children
14.	T NORFLOX	400 mg 1-0-1 × 5 days	Norfloxacin	• For UTI • GIT problems Advise to drink more water Best if taken empty stomach with water, don't take with dairy products
15.	T OFLOX/ZENFLOX	200 mg 1-0-1 × 5 days	Ofloxacin	• c/c bronchitis • other respiratory • ENT
16.	T LEVOBACT or LEVODAY or LOXOF	500 mg 1-0-0 × 5 days	Levofloxacin	Advise to drink more water
17.	T SEPTRAN/BACTRIM D.S, Syp available	1-0-1 ×5 days (200+40)/5 ml	Sulfamethoxazole 800 + trimethoprim 160	Advise to drink more water
18.	T PROFLOX	400mg 1-0-1 × 5 days	Pefloxacin	• For UTI • GIT problems
19.	T CEPODEM/MONOCEF-O/PODOCEF/MACPOD	100/200 mg 1-0-1 × 5 days	Cefpodoxime	• For RTI • UTI • Skin and soft tissue

20.	T KLOX Syp (125/5)	250/500 mg tds/Qid 100-200 mg/kg/day in 4 divided doses	Cloxacillin	• Furuncle • Abscess • Carbuncle • Impetigo • Osteomyelitis • Bites
21.	T CLARITHRO/CLARIBID/ SYNCLAR	250/500 mg 1-0-1 x 5 days	Clarithromycin	• Respiratory • Skin and soft tissue
22.	T ALTACEF	200/500 1-0-1	Cefuroxime	• URI • LRI • UTI

For children and infants, most pediatric medicines are available in syrup/drops.

1-2 years = ½ tsp tds 3-6 years = 1 tsp tds 6-10 years = 2 tsp tds or ½ adult tabs.

This can be used as a rough guideline to prescribe common pediatric medicines. The dose should be adjusted according to the built and weight.

Commonly Used Antibiotics in Children:

Sl No.	Brand Name	Dosage and Duration	Generic Name	Inference
1.	Syp AMOXICILLIN (125/5 or 250/5) T N:- MOX, NOVAMOX DT 125,250 mg available Syp AUGMENTIN/MOX CV 228/5, 158/5, 312/5 available NOVAMOX CV/MOX CV dps	30-50 mg/kg daily in divided doses Q8H or Q12H In practice 15 mg/kg/dose Q8H NOVAMOX Dps (100/1) available	Amoxicillin + Clavulanic acid	Each 1 ml contain amox=80 mg, Clavulanic acid=11.4 mg. Augmentin/Mox CV Syp 457 (400+57)/5ml, 156(125+31)/5ml, 228(200+28)/5ml, 312(250++62) available.
2.	Syp AMPICILLIN (125/5 or 250/5)	50-100 mg/kg/daily in divided doses Q6H		
3.	Syp AZITHROMYCIN (100/5 or 200/5) T N;- AZEE, ATM	Children above 6 months - 10mg/kg/day for 5 days		
4.	Syp CEFIXIME (50/5 or 100/5)	8mg/kg/day in divided doses Q12H Dps 25/1 available		

	T N;- TAXIM-O, TOPCEF			
5.	Syp SEPTRAN	6-10mg/kg/24 hr (TMP) divided into 2 PO (dose calculated in terms of mg OF tmp) Paed tablets: (100+20)	Sulfamethoxazolw 200 + Trimethoprim 40	
6.	Syp AMPOXIN or Syp ROSCILOX		Ampicillin+cloxacillin	
7.	Syp SYNCLAR/MACLAR (125/5)	15mg/kg/day divided into 2 doses	Clarithromycin	• LRTI • URTI • Sinusitis • Otitis media 125 DT available
8.	Syp KEPFOD/MACPOD (50/5 or 100/5)	10 mg/kg/day divided into 2 doses PO	Cefpodoxime	• LRTI • URTI
9.	Syp PHEXIN (125/5 or 250/5)	50-100 mg/kg/day in 3 or 4 doses PO	Cephalexin	DT 125, 250 mg available Phexin Dps 100/1 available
10.	Syp ALTACEF (125/5)	30mg/kg/day divided into 2-3	Cefuroxime	

For pregnant ladies

Amoxicillin, Cephalosporins, Ampicillin and Cloxacillin combination, Amoxicillin and Clavulanate combination, Penicillin G, Azithromycin (Class B)

Antipyretics

Note: In Children, if fever is accompanied by rashes, especially vesicular or maculo popular suspect Chickenpox or Measles respectively. In measles, the child is usually sick looking with, rashes starting from face.

Sl No.	Brand Name	Dosage and Duration	Generic Name	Inference
1.	T CALPOL/PANADOL/DOLO	500 mg/650 mg 1-1-1-1 × 3 days	P'mol or acetaminophen	
2.	T IBUGESIC or BRUFEN	200/400/600 mg 1-0-1 × 3 days	Ibuprofen	
3.	T MEFTAL or PONSTAN	250 mg/500 1-1-1 × 3 days	Mefenamic acid	Ideal for dental pain
4.	T PIROX/DOLONEX	20 mg 1-0-0 × 3 days	Piroxicam	
5.	T IBUGESIC PLUS	1-0-1	Ibuprofen + P'mol	
6.	T MEFTAL FORTE/MEFTAGESIC		Meftal 500 + P/L 450	
For Children				
1.	Syp. P'MOL (125/5 or 250/5) T N: CALPOL, CRCIN, DOLO, FEBRINIL, FEBREX etc.	10-15 mg/kg/dose × 4 times	C/I in less than 2kg Calpol, Dolo, Babygesic, Crocin, Febrinil dps available Nopain dps (15 ml)(100/1) available, Tab 125 available	
2.	Syp. IBUPROFEN (100/5) Syp. IBUGESIC PLUS	8-10 mg/kg/dose × 3 times	 Ibuprofen 100 + P/L 162.5/5 ml)	May precipitate aspirin induced asthma, so don't give to asthmatic or dyspnoeic patients Another formula: dose in ml=wt/2
3.	Syp. MEFTAL (50/5 or 100/5) Syp. MEFTAGESIC	8 mg/kg/dose × 3 times a day	DT-Tab 100 available P/L 125 mg, Mefenamic acid 50 mg/5 ml	Generally not used <6 months Wt×4/10 = dose in ml, applicable only for 100/5 formulation
For Pregnant ladies P'MOL only				

Usual dose: 1 tab od or bd

Sl No.	Generic Name	Generic Name
1.	T BEPLEX FORTE (syp available)	Vit B complex with flic acid, Vit C
2.	T BICOZINC (syp available)	Vit B complex with folic acid, Vit C, Zn sulphate
3.	C BECOSULES (syp available)	Vit B complex with folic acid, Vit C
4.	C NUTROLIN B PLUS (syp available)	Vit B complex with folic acid, Vit C
5.	T POLYBION (syp available)	Vit B complex with folic acid, Vit C
6.	T NEUROBION FORTE (syp available)	Vit B complex
7.	T BC	β-Carotene, Vit E, Vit C- Antioxidants
8.	T CELIN 500 mg OD	Vit C
9.	T MVT OD	Multivitamins
10.	T HEALTH OK	Multivitamins, Multiminerals, Amino acids with taurine and ginseng
11.	T BECOZYM C FORTE OD	Vit B + Vit C

For Children

Sl No.	Brand Name	Dosage and Duration	Generic Name
1.	Syp/Dps A to Z		Vit A, Vit B complex, Vit C, Vit D, Fe, Se, Iodine
2.	Syp ZINCOVIT		Vit A, Vit B complex, Vit D, Vit E, Cu, Se, Zn, Iodine
3.	Syp/Dps Delices		Vit A,B,D,E, amino acids, antioxidants
4.	Syp OSTO-POLYBION D		Vit B12, Vit D3, Ca^{2+}
5.	OH-D3/ULTRA D3/BON D LIGHT dps	400 IU/ml 1 ml OD for Infants	Vitamin D_3 or Cholecalciferol

Iron preparations (can be given in pregnancy)

Sl No.	Brand Name	Dosage and Duration	Generic Name	Inference
1.	T AUTRIN OD		Fe fumarate+folic acid+b12+c	
2.	T MACALVIT/SHELCA OD		Ca carbonate +Vit D3	Syp SHELCAL AND SHELCA kid tab available
3.	T FEFOL-Z OD		Fe sulph+folic acid+b12+c+Zn	
4.	Syp VITCOFOL		Fe fumarate+folic acid+b12	
5.	T OROFER-XT	0-1-0	Elemental Fe+folic acid	Dps/syp available

Antiulcerants

Sl. No.	Brand Name	Dosage and Duration	Generic Name	Inference
1.	T RANTAC/ ZINETAC/ ACILOC Syp RANTAC 75/5	150 mg 1-0-1 30 min before food Ped dose 2 mg/kg/dose ×2 PO, 1-2 mg/kg/dose IV	Ranitidine	
2.	T PANTOCID T PANTOP-IT (with itopride) PANTOP-L (with levosulpiride) Inj. PANTOP 40 mg iv od/bd	40 mg 1-0-0 30 min before food Ped dose 1 mg/kg/dose PO OD	Pantoprazole	
3.	T RABICIP/HAPPI/RAZO Inj. RABICIP 20 mg iv od	20 mg 1-0-0	Rabeprazole - fast acid suppression	
4.	C OMEZ	20 mg 1-0-0 Empty stomach 1 hr before meal	Omeprazole	
5.	C RABICIP D/ROLES-D (with domperidone) Pantop D (with domperidone)			
6.	T LANZOLE	30 mg 1-0-0	Lansoprazole	
7.	T LESURIDE Inj. LESURIDE 25 mg iv od	25 mg 1-0-0		
8.	DIGENE	2tsp tds	Simethicone + $Mg(OH)_2$ + Na carboxymethylcellulose	
9.	GELUSIL MPS	2 tsp tds	Simethicone + $Mg(OH)_2$ + $Al(OH)_2$ + Mg Al Silicate	
10.	RANTAC MPS		Magaldrate+Simethicone	
11.	MUCAINE		$Mg(OH)_2$ + $Al(OH)_2$ + Oxethazaine	
12.	TRICAINE MPS		Simethicone + $Mg(OH)_2$+ $Al(OH)_2$ + Oxethazaine	

13.	Syp SUCRALFATE			Ulcer protective

Antacids: 1-2 ml/kg/dose in infants; 5-15 ml/dose every 4-6 hour in children

Note: Take antacids 2 hr before or after ingestion of the drug to prevent drug interaction

For children

Syp or Tab RANTAC, T PANTOP, T JUNIOR LANZOLE 15 mg OD (1mg/kg/day)

For pregnant women

1. DIGENE 2tsp tds
2. GELUSIL MPS 2tsp tds and other antacids
3. T RANITIDINE, FAMOTIDINE. Inj RANTAC can also be given

Steam inhalation may be with

1. Vicks/Amrutanjan/Tulsi leaves/ 2-3 drops of essential oils like eucalyptus oil, camphor etc.
2. Tincture Benzoin
3. Karvol Plus/ Sinarest/ Nosikind inhalant capsule (camphor, chlorthymol, eucalyptol, menthol, terpineol)

Cough

- Reflux Phenomenon, as a part of Body defence when pathways irritated.
- Most common Cause: INFECTION.
- Can be Dry Cough or a/w Sputum.

COUGH

Dry cough

- URTI
- Viral bronchitis
- Mycoplasma pneumonia
- Whooping cough
- Pleurisy
- Bronchogenic carcinoma

Productive cough

- Bronchiectasis
- Chronic bronchitis
- Pneumonia
- Lung abscess
- Post nasal drip.

Cough > 3 weeks not responding to antibiotics
↓
Chest X Ray PA view & Sputum Culture
↓
R/O TB
Atypical Pneumonia (DOC: MACROLIDES)

GENERAL INSTRUCTIONS FOR COUGH MANAGEMENT

1. Steam inhalations 2-3 times/day.
   Add to water Tinc.Benzoine, Vicks or Amrutanjan.
2. Warm salt water gargles.
3. Take Hot drinks like Hot tea.
4. Severe cough → Advise rest at home (voice rest)
5. Stop smoking
6. Use Lozenges.
7. Cover mouth while coughing.

FOR BRONCHODILATION & EXPECTORATION

1. Syrup ASCORIL /CAPABRON 2TSP TDS x 3days
   (Terbutaline Sulphate + Bromhexine + Guaiphensin)
2. Syrup ASTHALIN → <6yrs :5-10 TID
   (Salbutalmol Sulphate) 6-12 yrs: 10ml TID
3. Syrup AMBROLITE S 2tsp TDS x 3days
   (Ambroxol)
4. Tab MUCOLITE (Ambroxol) 30mg TDS
5. Tab MUCINAC (Acetyl cysteine) 600mg BD/TID in water.

FOR COUGH SUPPRESSION

1. Syrup VISCODYNE D 2tsp TDS x 3 days
   (Dextromethorphan hydrobromide + Chlorpheneramine Maleate)
2. Syrup ALEX 2tsp TDS x 3days
   (Dextromethorphan Hydrobromide, Phenylephrine hydrochloride & Chlorpheneramine Maleate)
   Dosage 1-5 years - 1.25 ml
   6-12 yr - 2.5 ml
   >12 yr - 5 ml TID
3. Syrup AMBROLITE D 2tsp TDS

FOR PREGNANT

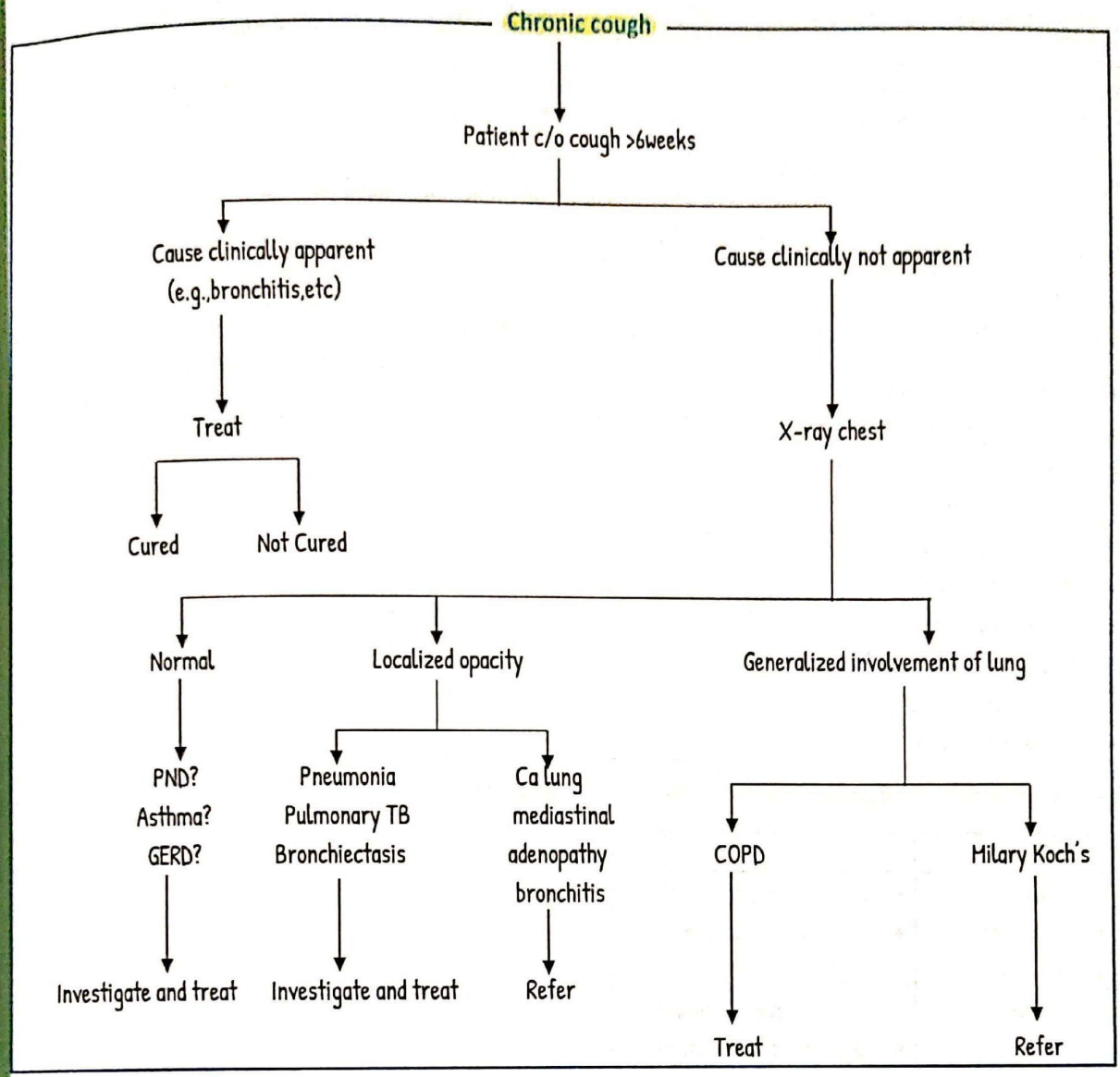
1. Syrup ASCORIL (Terbutaline sulphate + Bromhexine +Guaiphensin)
2. Syrup BENYLIN (Diphenhydramine HCl, Dextromethorphan -Guaiphensin, Dextromethorphan HBR.)

FOR DIABETICS

1. ASCORIL SF: (Bromhexine hydrochloride,guaiphenesin + Terbutaline.)
2. MACBERY XT : (Ambroxol + Guaifenesin + Terbutaline.)
3. BENYLIN Adult: (Diphenhydramine HCl ,Dextromethorphan-Guaifenesin,Dextromethorphan HBR)
4. ALEX sugar Free: (Dextromethorphan Hydrobromide, Phenylephrine, hydrochloride & Chlorpheneramine Moleate)
   - Always ask GERD in case of Dry Cough.

CHRONIC COUGH

- a/w Fever → s/o Infective cause
- a/w Wheezing → s/o Asthmatic bronchitis/chronic bronchitis
- Is it dry /with expectoration
- Character of sputum
- Cough more in lying position → s/o Post nasal drip
  Sinusitis
  GERD
- Sputum Blood stained →s/o Pulmonary TB,Bronchiectasis,Pneumonia,Ca Bronchus
- Cigarette smoker → s/o smokers bronchitis or malignancy
- Loss of weight → s/o TB,HIV,malignancy
- h/o contact with TB Pt → s/o PTB
- Polluted workplace→ s/o Pneumoconiasis,Asbetosis
- Exposure to pets/birds→ s/o Psittacosis
- Edema of feel & Exertional dyspnea → s/o Left ventricular Failur.



X-ray findings in common lung diseases

Disease	X-ray picture
Pneumonic consolidation	Dense relatively homogenous shadow involving part or whole of one lobe. Ill-defined margins. 'Air bronchogram' may be seen.
Bronchopneumonia	Patchy ill-defined areas of dense opacities in the lung fields
Pulm Koch's	Patchy fluffy opacities with or without cavitations. Mainly in the upper lobes. May be associated with pleural effusion and mediastinal lymphadenopathy.
Miliary Koch's	Multiple small pin head-sized nodules seen throughout the lung fields.
Pleural effusion	Homogenous well-defined opacity with concave upper border in the costophrenic angle.
Chronic bronchitis	Increased broncho-vascular markings.
COPD	Over inflated lungs, which appear dark. Tubular heart. Flat domes of diaphragm. Widened intercostal spaces.

Bronchiectasis	Multiple cystic shadows mainly in the lower zones,with or without fluid levels
Bronchogenic carcinoma	Round lesions with irregular margins.Mediactinal adenopathy,erosion of ribs, pleural effusion may be present.
Mediastinal adenopathy	Well-defined ,dense,homogenous,semicircular opacities, projecting from a mediastinal surface.

Conditions where X-ray Chest can be Normal in Chronic Cough:

- Chronic post nasal drip
- Gastro-esophageal reflux
- Asthma
- Chronic bronchitis
- Tropical eosinophilia
- Chronic pharyngitis
- ACE inhibitor induced cough
- Bronchiectasis in 40% of cases
- Early interstitial lung disease
- Psychogenic cough

Conditions where X-ray chest can be abnormal in chronic cough:

Localized opacity	Generalized opacity
• Pneumonia • Pulmonary TB • Bronchiectasis • Neoplasm	• Extensive pulmonary TB • Extensive pneumonia • COPD • Interstitial lung disease • Opportunistic infections.

Macroscopic sputum examination:

Character	Cause
Mucoid	Viral ,chronic irritation of trachea bronchial tree
Yellow or green	Bacterial infection
Black	Coal mine workers
Rusty	Pneumonia
Frothy and Pink	Pulmonary oedema
Casts	Aspergillosis
Profuse & purulent	Chronic Bronchiectasis
Foul smelling	Lung abscess

RED FLAG SIGNS OF COUGH

- Cough with Haemoptysis→ Bronchogenic carcinoma
  Tuberculosis
  Bronchiectasis
  Mitral Stenosis
  LVF.
- Change in nature & character of sputum in chronic Bronchitis→s/o Development of carcinoma bronchus.
- Chronic cough with weight Loss → TB, HIV, Malignancy.

Pearls of Practice: Cough

- Remember the 'silent associates' of chronic cough. In cough due to variant asthma, dyspnea may not be present. In PND, patient may not be aware of the nasal secretions. Only a thorough history will clinch the diagnosis.
- Despite aggressive marketing by pharma companies which promote cough mixtures in a big way, it should be remembered that cough mixtures have a limited role in the treatment of chronic cough.
- Codeine in cough mixtures should be avoided as it can cause addiction.
- Always ask the patient to show you his sputum. It could be diagnostic, and it creates a big impression about you.
- Motivate the smoker to give up smoking.
- The best mucolytic is water. There is no other mucolytic which is totally free of side effects.

Analgesics

NSAIDS

Sl No.	Brand Name	Dosage and Duration	Generic Name	Inference
1.	T VOVERAN/ DICLONAC/ DICLORAN	50 mg bd	Diclofenac sodium	Suppository 12.5 mg, 100 mg available. TN: JONAC
2.	T IBUGESIC/ BRUFEN	400-600 mg tds	Ibuprofen	Other T N:- BRUFEN, IBUFLAMMAR (100 mg/ml susp available
3.	T MEFTAL	250-500 mg tds	Mefenamic acid	Other T N:- PONSTAN,MEDOL (100 mg/5ml susp available
4.	T DOLOKIND	100 mg bd	Aceclofenac	Other T N:- ACECLE, ZERODOL
5.	T KETANOV	10 mg Qid	Ketorolac	• For post operative • Dental • a/c Musculoskeletal • Renal colic • Migraine • Pain due to bony metastasis
6.	T PIROX	20 mg OD	Piroxicam	• For osteo/ rheumatoid/ acute gouty arthritis
7.	T INDOCID/ARTICID	25-50 mg BD-QID	Indomethacin	• Musculoskeletal and • Joint disorders
8.	T ETOSHINE/ETODY	60-120 mg OD	Etoricoxib	• For osteo/ rheumatoid/ acute gouty arthritis

Note: Avoid NSAIDS in Dengue, severe liver/kidney d/s active cerebral hemorrhage, GI Bleeding etc. NSAIDS may also increase the risk of having a stroke or MI in patients with existing cardiovascular disease. In such cases give T NAPROXEN 250/500 mg bd (T.N ARTAGEN)

Opioid Analgesics

Sl No.	Brand Name	Dosage and Duration	Generic Name	Inference
1.	T TRAMBAX or TRAMAZAC	50 mg tds	Tramadol	
2.	T FORTWIN	25 mg Qid	Pentazocin	
Combinations				
1.	T ULTRACET or PALITEX or DOLZERO or ACUVIN		Tramadol + P'Mol	
2.	T DYNAPAR		Diclofenac + P'mol	Inj available
3.	T ZERODOL-P or ACECLO PLUS or HIFENAC-P or DOLOKIND-PLUS		Aceclofenac+P'mol	
4.	T DURAPAIN		Diclofenac sodium SR + Tramadol IR	
5.	T IBUGESIC PLUS/ COMBIFLAM		Ibuprofen + P'mol	

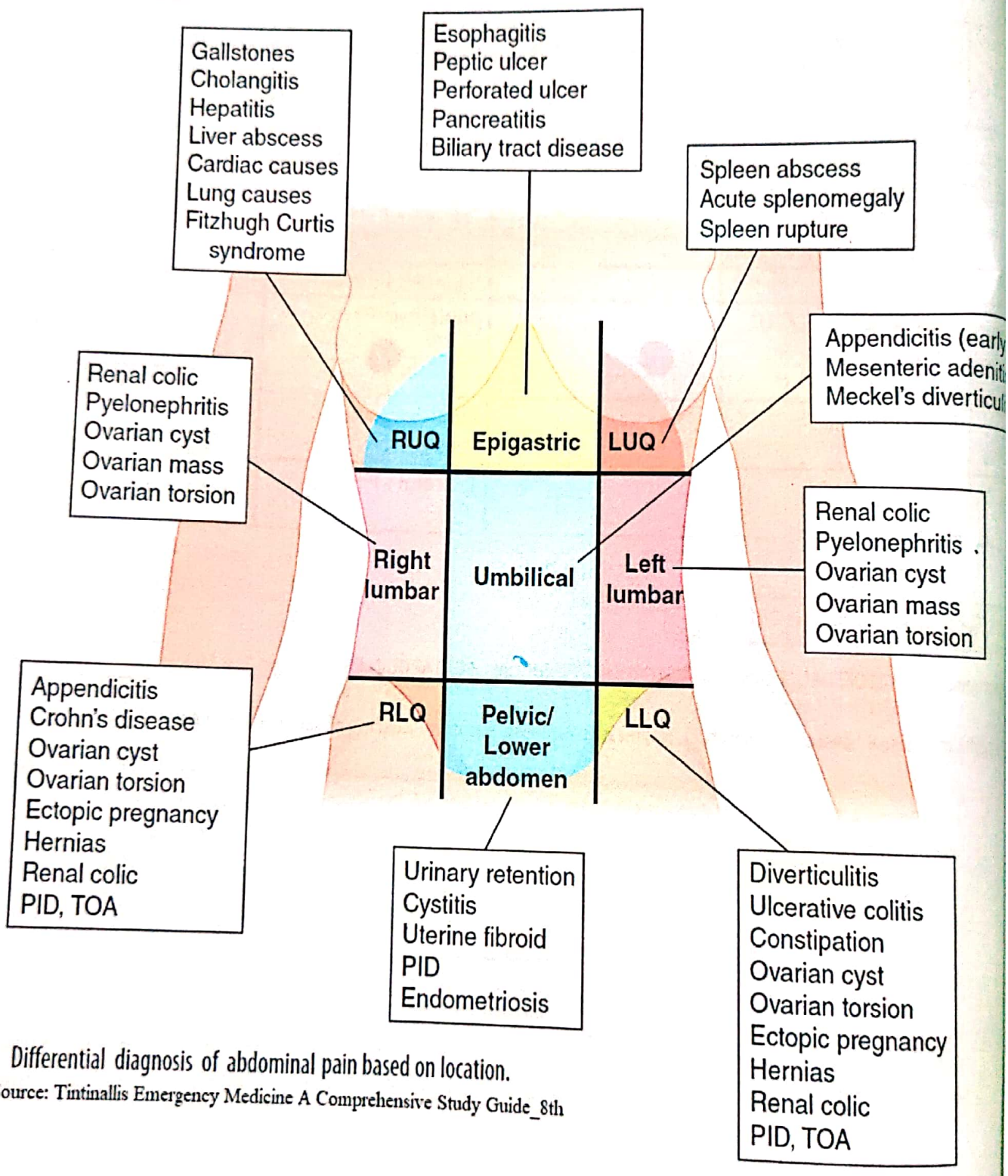
Note: For pregnant ladies give P'Mol only

Injections: P/L, DICLOFENAC, TRAMADOL, KETOROLAC, PIROXICAM, PENTAZOCIN etc.

Tramadol may cause nausea (give emeset), dizziness, sleepiness, sweating, lowering of seizure threshold.

Abdominal Pain

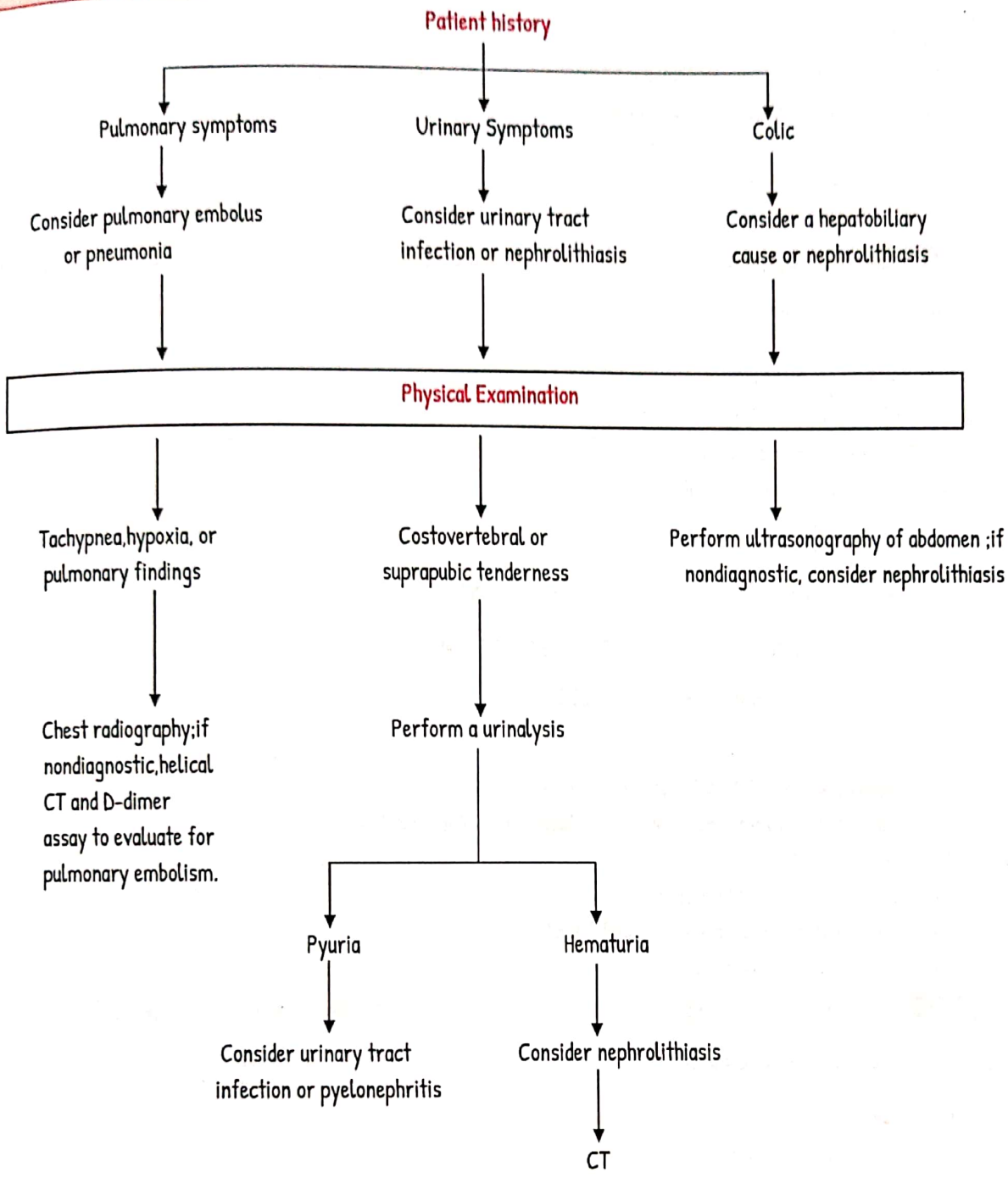
DIFFERENTIAL DIAGNOSES ACCORDING TO LOCALIZATION OF ABDOMINAL PAIN



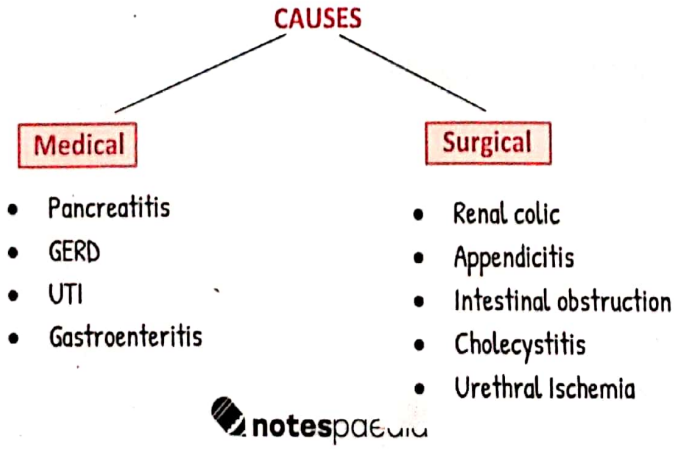
Differential diagnosis of abdominal pain based on location.

Source: Tintinallis Emergency Medicine A Comprehensive Study Guide_8th

ACUTE ABDOMEN ALGORITHM



CAUSES



- Men R/O →Testicular tortion
- Women if no cause found →? Ovarian torsion.
- Any pain above umbilicus → r/o inferior wall MI
  →r/o DKA
- Women R/O Pregnancy

EPIGASTRIC PAIN

- Avoid Chillies & Sour food
  Smoking & Alcohol
- Stop irritant drugs like NSAIDs
- Gelucil MPS 2tsp x TDS x 5days (Antacid)
- TAB HISTAC 150mg BD x 5days (Ranitidine)
- T.BARALGAN 1 TDS if spasmodic pain.

  ↓ If not relieved.

  ➢ Inv: -Gastroscopy -Ultrasonography
  -Ba Meal -S.amylase & lipase
  -Stool Investigation -ECG

- MUCUS or E.Histolytica in stools
  - ➢ T.FLAGYL 400mg x TDS x 7days (Antiamoebic)
  - ➢ T.SECNIL 1gm x 2tab single dose or Tinidazole or combination drugs.
- LIVER PALPABLE & TENDER
  - ➢ Jaundice→ s/o Infective Hepatitis.
  - ➢ CCF? , Heart murmur, neck veins or Edema?
  - ➢ If not ask USG of liver & GB.

INVESTIGATIONS

Use when necessary of clinical suspicion.

i. Sr.Amylase, Sr.Lipase } R/O Pancreatitis
ii. URE, MRE } R/O UTI
iii. USG Abdomen, CECT Abdomen } R/O Mass, foreign Body/growth.
iv. RFT → R/O Renal issues
v. ECG→ R/O Cardiac causes
vi. UPT →R/O Pregnancy.

MANAGEMENT

i. Inj VOVERAN 1amp i/m STAT (Diclofenac)
   (or)
   Inj TRAMADOL 1amp i/m (or) i/v STAT
ii. Inj PANTOP 40mg i/v STAT
iii. Inj CYCLOPAM 2cc i/m STAT (Dicyclomine,anti spasmodic)
   Tab VOVERAN 50mg 1-0-1 (Diclofenac)
   Tab BUSCOPAN 10mg TDS (Hysocine Butyl Bromide, Anti spasmodic)

If severe:

T.VOVERAN 50mg 1-0-1 (Diclofenac)

(or) T.BUSCOPAN 10mg TDS (Hyocine Butyl Bromide ,Anti spasmodic)

(or) T.CYCLOPAM 1-1-1 (SOS in pregnancy) (DIcyclomine HCl 20mg + P/L 500mg)

(or) T.ZERODOL Spas/ Acelo Spas (Aceclo + Drotavarine)

Children:

Syrup Cyclopan (Dicyclomine + Simethicone)	>6 months →upto 5mg/dose. Children→ 10 mg/dose

Send URE →Manage accordingly

If pain persists →USG Abdomen & Pelvis

↓

Rule out Pyelonephritis ,Appendicitis.

Febrile Seizures

- Age 6 months -6 years
- Usually <5mins, Temp>38°C (100.4°F)
- Presents with Up rolling of Eyes, Frank fits, vomiting
- >6 year seizure- need further evaluation & management.

MANAGEMENT

1. Inj Diazepam 0.2mg/kg i/v slowly
   - ➢ Always check Respiratory rate as Benzodiazepine can cause respiratory depression.
   - ➢ In case of Respiratory Depression
     - o Painful Stimulus
     - o Get Ambu bag Ready
2. Tepid sponging + Paracetamol
3. R/O Hypo & Hyperglycemia
4. Left lateral position + Throat suction
5. O_2 Inhalation
6. Clothing around neck should be loose.

Discharge:

1. Syp PARACETAMOL Q/D
2. Syp CALMPOSE (Diazepam) 2/5 for first 2 days of fever (0.2-0.3 mg/kg/dose)
3. Tab FRISIUM (Clobazam) 5/10/20 mg (if diazepam fails)
   >3 years : 5mg OD
4. Syp HOX(125/5) TDS x 5 days (if infection)
5. Syp NUTROLIN B BD x 5 days

   < 1 yr old child febrile seizure need evaluation.

Further management:

1. Symptoms persist - Try another anti-epileptic
   Monitor the pt.
2. ECG if necessary.
3. Further t/t as per the condition & presentation.
4. Recurrent seizure needs evaluation.

❖ Children 1-1 ½ year with 1st episode of febrile seizure.

↓

Refer to High center for L.P after initial t/t.

Vomiting

CAUSES

Differential Diagnosis

i. Gastroentritis
ii. Food Poisoning
iii. Cholecystitis
iv. Appendicitis
v. Hypokalemia
vi. Pyelonephritis
vii. Pregnancy
viii. Alcoholic Gastritis
ix. Peptic ulcer
x. Labrynthine diseases_____
xi. Uremia

- Rule out → Raised ICT,DKA,MI,CVA
  Poisoning - Hypotension, Bradycardia, Weak Pulse, Diarrhoea.

INVESTIGATIONS

1. RFT
2. LFT
3. RBS
4. Sr.Amylase
5. ABG
6. ECG
7. CT Head
8. Sr.Lipase

TREATMENT

1. Inj PERINORM (5mg/ml) 1 amp i/v STAT
2. Inj STEMETIL (Prochlorperazine) (2mg/ml) 12.5mg i/m STAT
3. Inj EMESET (Ondansetron) (2mg/ml) 0.1 mg/kg/dose
4. Inj PANTOP 40mg i/v STAT
5. Check BP→ if low RL/DNS
6. Tab DOMSTAL (Domperidone) 10mg TDS/BD (15-30 min before meal)
7. Tab EMESET 4/8 mg BD
8. Tab PERINOM 10mg TDS.

IN CHILDREN

1. Syrup DOMSTAL (1mg/ml) 0.2mg/kg/dose x 3times
2. Syrup PHENERGAN (5mg/ml) 1mg/kg/dose
3. Syrup ONDENSETRON (2mg/kg)

IN PREGNANT

1. Tab DOXINATE 2 tab HS (Doxylamine +Pyridoxine)
2. Tab AVOMIN SOS & TDS
3. Inj PERINOM (i/v or i/m) or EMESET (i/v) or PHENERGAN (i/m)

- Phenergan in children → Extrapyramidal Symptoms
  ↓
  - Used in t/t of EPS Symptoms
  - Also produce sedation.

Drug induced EPS symptoms

T/t:

i. Antipsychotics →Haloperidol, Chlorpromazine
ii. Antiemetics → Stemetil, Cinnarizine
iii. Stop offending drug
iv. Tab Diazepam 1 st
v. Inj Diazepam 2cc i/m or i/v
OR
vi. Inj Phenergan 2cc i/m or i/v

VOMITING DUE TO MOTION SICKNESS

1) 30min to 1hr < travel
   a) T.DRAMAMINE 50mg 1-2tabs (Dimanlydrinate)
   OR
   b) T.STUGERON 25mg (Cinnanizine)
   OR
   c) T>STUGIL (Cinnarizine +Domperidone)
2) Long/Sea travel
   a) Repeat above drugs after 6hr (SOS)
   b) SCOPOLOMINE skin patch (3days effective)

IMPORTANT POINTS

- Vomiting > Nausea → s/o GI Cause
- Nausea > Vomiting → s/o Systemic Cause
- Infection is the most common cause.
- Vomiting lasting more time without lose of weight →Psychogenic vomiting
- Vomiting in GREEN COLOUR (Bilious) + Abdominal Distention + Colicky Pain → s/o Intestinal Obstruction
- Vomiting of Pt breath has Kerosene/OP smell → Stomach wash
- In female R/O Early Pregnancy
- NO NAUSEA + VOMITING + HEADACHE +FEVER → R/O Meningitis.

REDFLAG SIGNS

1. Projectile Vomiting + Headache → R/O Neck Rigidity→ S/O Meningitis
2. Unexplained Acute onset of vomiting in elderly → s/o MI, ∴do ECg
3. Never miss surgical Abdomen →R/O Peritonitis - Board like Rigidity
   Acute Intestinal Obstruction -Hyperperistalsis.
4. Vomiting in DKA.

Loose stools

HISTORY

- Differentiate whether -
  - Diarrhoea,
  - Pseudodiarhoea
  - Fecal incontinence.

ETIOLOGY

- Infection
- Drugs certain - antibiotics/PPI)
- Acute IBD
- Toxin
- Food intolerance
- Diverticulosis

CLINICAL FEATURES

1. R/o leptospirosis (fever +)
2. Blood pus in stools
3. Abdominal Pain
4. Consistency of stools.

TREATMENT

1. C.ZEDOTT or REDOTIL 100mg - RACECADROTIL,1.5 mg/kg/dose in children
   (or) Redotil 10 (or) 15 (or) 30mg sachet x TDS

   (Or)
2. T.Nutrolin B/C vizylac/c Darolac (lactobacillus combinations) 1-1-1 (Darolac sachet available)
3. T.cyclopam /Buscopan 1 SOS for abdominal pain.
4. Check BP→ If low give IVF RL/Isolyte P+DNS
5. ORS in small sips
   - Unit dose-4.3G packet to be mixed with 200ml & multidose 21.5g packet to be mixed with 1L or 5 glasses of boiled & cooled water.

Dosage after each purge:

- <6 months -50ml or ¼ glass
  6m - 2 years -50-100ml (1/4 - ½ glass)
  2 years -5years -100-200ml (½-1 glass)
  >5 years -as much as able to drink
- If child vomits
  ↓
  Wait for 10 mins
  ↓
  Resume feeding

6. Report blood or pus in stools
   For children ,also give Zn (0.5 mg/kg/day) (or)
   - 2-6 months -10mg daily
   - >6 months -20mg
   - Below 2 months - not indicated

If very severe for adults

↓

Imodium/Lopamide 2mg 2tabs stat then 1 after each episode.

PREGNANT LADIES

- Give ORS
- Daroloc sachet
- Oral fluids

CHILDHOOD DIARRHEA/ADD

No Dehydration :

- Well alert
- Eyes Normal
- Tears Present
- Mouth and tongue moist
- Normal thirst
- Skin pinch goes back

- 100 ml ORS <2years
- 100-200 ml ORS - 2-10 years } per purge
- As much as wanted - >10 years

For some dehydration:

- Restless
- Irritable
- Eyes sunken
- Tears absent
- Mouth & Tongue dry

For severe dehydration:

- Lethargic
- Unconscious
- Eyes very sunken & Dry
- Tears absent
- Mouth and tongue very dry
- Drinks poorly or unable to drink
- Skin pinch goes back very slowly

↓

IV RL 30ml/kg in ½ hour followed by 70 ml/kg in next 2 ½ hour in infants <12 months 1hr & 5 hr respecti

If macroscopic blood
Pus
Mucus
Foul smell
} Treat as Dysentry ↓ Do stool culture

1. CIPLOX + TINIDAZOLE
   (or)
   OFLOX + ORNIDAZOLE
2. C.ZEDOLT/REDOTRIL 100mg (RACECADOTRIL) 1-1-1 x 3 days
3. T.Nutrolin B/C Vizylac/c Darolac (lactobacillus combinations) 1-1-1 (Darolac sachet available)
   (or) Enterogermina
4. T.Cyclopam/Buscopan 1 SOS for abdominal pain.
5. Check BP→ If low give IVF RL/Isolyte P+DNS
6. T.RANTAC 150mg 1-0-1
7. FLUID MANAGEMENT
   IN PEDIATRIC
   ↓
   - COTRIMOXAZOLE
     (or)
   - NALIDIXIC ACID (55mg/kg/day)

   } OLD REGIME

   - CIPROFLOXACIN 15mg/kg
   - CEFIXME

   } NEW REGIME.

Anaphylatic Shock

CAUSES

Drugs	Serum Injections	Dyes:
1. Penicillin 2. Streptomycin 3. Vitamin B1 4. Imferon(Iron replacement product) 5. Xylocaine.	1. Anti Tetanus serum 2. Anti Diphtheria serum 3. Anti Snake venom	Iodine containing used for IVP,CT,Myclogram

ALL ABOVE INJECTIONS GIVEN ONLY AFTER TEST DOSE.

SYMPTOMS

After Precipitating Factors

i. Giddiness
ii. Nausea
iii. Urticaria
iv. Dyspnoea
v. Restlessness
vi. Low B.P.

MANAGEMENT

Immediate:

1. Inj Adrenaline 0.5g i/m or s/c
   Dilution: 1ml amp of 1:1000 solution,1mg/ml
   In children: 0.01 ml/kg (never>0.5 ml/dose)
2. Repeat every 5-10min if patient does not revive.
3. I/V Glucosides 100mg-200mg IV STAT - for severe /recurrent cases.
4. Anti-Histamines (Chlorpheneramine 1020mg) 1ml slow i/v.
5. Pt in reclining position
   O_2 Supply -High Flow
6. CPR if necessary.

Patient with Wheeze

1. Check BP, SpO_2 , RR etc.
2. Any patient with new onset wheeze r/o FB, Take Chest X Ray.

DIFFERNETIAL DIAGNOSIS

Respiratory	Cardiac
1) Asthma	1) 1° P.HTN
2) Pneumonia	2) Pulmonary Embolism
3) Bronchitis	3) ARDS
4) Hyperventilation	
5) MI	
6) Pneumothorax	
7) CCF	
8) Pulmonary Edema	
9) ILD	

Signs of CO_2 Retention: Flapp, Bounding Pulse,Tremor.

INVESTIGATIONS

i. ECG - to r/o cardiac cause.
ii. ABG - to know Blood status.

MANAGEMENT

1. Mild Case : Nebulisation with Salbutamol 1cc in 3-4 cc NS + O_2 x 3times at 20min intervals.
2. Moderate-severe case: Repeat the same after 20 min.
3. Severe Case: SALBUTAMOL + IPRATOPIUM BROMIDE
   (25-5) (0.5mg)
   OR
   DUOLIN
   # IPRAVENT Dosage → <5 yrs: 125 mg (0.5ml)
   >5 yrs : 250 mg (1ml)
4. Inj Deriphyline 1amp i/v STAT
5. Inj Hydrocortisone 100mg i/v STAT
6. Tab Deriphyline Retard 150 mg 1-0-1 x 5 days
7. If Response with Bronchodialator -less
   ↓
   Start Steroids
   - T.Prednisolone 10mg TDS x 3-5 Days
   - Children 1 mg/kg/day 2-3 doses x 3-5 days
8. Cough Syrup (Bronchodialotor + Mucolytics)
9. Add MDI & discharge.

Dog Bite

- If Dog is normal & live at the end of 5days = NO WORRY
- If Dog behaves Abnormal Dies= RABIES
- If Dog is unknown or is killed =Give full immunisation for Rabies.

MANAGEMENT

Applicable for cats, Bandicoot, Monkey, Cattles, Bats, Rats & wild animals.

STEP:

I. Clean the wound site with Running water & Soap solution for 10 minutes.

II. Identify the grade of wound.

Category 1:
- No Exposure
- Touching
- Licks on intact skin

Category 2:
- Exposure
- Nibbling of uncovered skin
- Minor scratches or abrasion without bleeding

Category 3:
- Severe Exposure
- All bites or scratches with oozing of blood on neck,head,face, palms and fingers.
- Lacerated wound on any part of the body
- Multiple wounds 5 or more in number
- Bites from wild animals.

III. Ask the history of Tetanus vaccination within 6months
If negative Inj TT 0.5ml i/m STAT

IV. If IDRV -Inj IDRV 0.1ml I/D both Deltoid on Day 0,3,7,28
If Inj Rabipur (1ml)
Inj Verorub (0.5ml) } On Day 0,3,7,14,28.
(i/m given in immunocompromised pt)

V. Inj EQUIRAB/ERIG 40IU/Kg
Maximum dose at the wound site
Remaining dose at Gluteal area.

VI. Antibiotics to prevent infection.

- Bite wound shouldn't be immediately sutured.
  ↓
  If Required : Minimum no.of loose sutures.
  ↓
  Ideally done after 24-48 hrs under Anti-Rabies serum locally.
- IDRV Day 0,3 dose only if previously fully vaccinated with Rabies Cell culture Vaccine.
- Pre-exposure Prophylaxis :IDRV 0,7,28, 0.1 ml single site.
- Rabies vaccine & RIG are not C/I in Pregnancy.

Suspected or confirmed rabid animal

Non immunised

Previously immunised (Including PrEP)

Pre-exposure prophylaxis:
IM or ID on days 0,7
And either 21 or 28

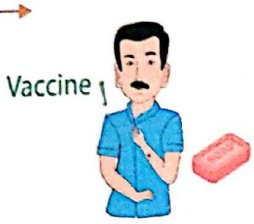
Cat I

Wound washing only

Cat I

Wound washing only

Cat II



Wound washing
+
PEP

Vaccine

Cat II & III

If less than 3 months, only wound treatment.
If exposure after 3 months,
Wound treatment + Booster on days 0 and 3,
ID or IM.
RIG not indicated.

Cat III

Wound washing + PEP + RIG

Post-exposure prophylaxis:
The 5-dose (Essen)regimen
(IM) (1-1-1-1) is administered on days 0,3,7,14 and 28
Or
The Updated Thai Red cross
Regimen (ID) (2-2-0-2) is administered
on 0,3,7 and 28, on two sites.

IM-Intramuscular ID-Intradermal RIG -Rabies immunoglobulin

Injury

RTA

1. Time of arrival
2. Time & place of occurrence of injury
3. Cause of injury
4. 2 ID marks
5. Brought by whom (Address also) should be noted.

TREATMENT

1. C & D (wound toilet)
   Ideally with
   - i. NS
   - ii. Betadine
   - iii. H_2O_2
   - iv. Cetrimide
   - v. SAVLON (Cetrimide + chlorhexidine) etc.
     →Only for contaminated wound.

   ➢ Look for any foreign body in the wound.
2. Inj.T.T 0.5ml im stat (same for all age),if indicated.
3. Inj.TETGLOB (Immunoglobulin,tetanus) 250IU deep IM stat ATD (for deep & large wounds)
4. Exercise all devitalised tissues.

↓

Remove any foreign body in the wound.

↓

If needed →Suture

Suture the wound without any deadspace.

DONOT SUTURE if

a. Underlying tendon is cut.
b. Underlying bone is fractured.
c. Caused by cat bite, human bite , dog bite.

Incase of Fracture → Give Adequate Support/Immobilization of the region.

SUTURING

Material and needle size, type based on type of wound and site of wound.

- Primary Suturing:
  Done within 6 hours should not be done if there is edema/infection/devitalised tissues/hematoma.
- Delayed Primary Suturing :48 hrs - 10 days

↓

This time is allowed for edema and hematoma to subside.

- Secondary Suturing: 10-14 days is done in infected wounds.

5. ANTIBIOTICS:
   - C.MEGAPEN (AMPICLOX)(1-1-1-1)
     or
   - AMPICLO x METROGYL

CHILDREN: Augmentin, Cefixime, Metrogyl 200mg 1-0-1

- Infected wounds,ulcers
  - Mupricorn
  - Fusidic acid
  - Colloidal silver
  - Neosporin powder

  } L/A
- For buccal mucosal injury
  - Metrogyl DG gel
  - Dentogel.

6. ANALGESICS + Serratiopeptidase (anti inflammatory)
   Severe confusion: T.Chymoral forte.
7. Vitamins
8. T.Rantac
9. Fluid and electrolyte balance.
10. Change the dressing once in 2 days. Inspect the sutured wound in 48 hours.

TETANUS PROPHYLAXIS IN WOUND MANAGEMENT

1. Clean,minor wounds
   - If uncertain H/O previous vaccination or fewer than 3 doses: give vaccine.
   - 3 or more previous doses: No need to vaccinate unless ≥10 years since last dose.
2. All other wounds
   - If uncertain H/O previoud vaccination or fewer than 3 doses.give vaccine & tetanus immunoglobulin (TIG)
   - 3 or more previous doses: give vaccine if ≥5 years since last dose.

NOTE: The practise of giving inj. TT every 6 months is wrong ,as frequent TT may decrease immune response.

SIMPLE SUTURE:	MATTRESS SUTURE:
i. Superficial wounds ii. Face iii. Neck	i. Deep wound ii. Upper & Lower limb

FOR INJURIES ASSOCIATED WITH SEVERE BLEEDING,

Do Hb,PCV

FOR PHLEBITIS, THROMBOPHLEBITIS, SWELLED UP INJECTION SITES, HEMATOMA

- Thrombophob oint (Heparin Sodium)
- T.Serrapeptase,warm compresses,rest to the part

HEMATOMA: If minimal may resolve spontaneously, if massive, may require drainage or aspiration.

FOR PERSONAL ECCHYMOSIS (BLACK EYE) & SCH DUE TO TRAUMA

- Eye drops-
  - Moxiflox
  - Gatiflox
  - Ciplox
- Cold Compress
- T.Serratiopeptidase
- Ophthal Consultation

FOR MUSCLE INJURIES

- Ice compression
- Elevation

CRUSH INJURIES

- Look for Degloving
- Compartment syndromes
- Extensive removal of devitaised tissue & Fasciotomy may be required.
- Monitoring of Renal function & Urine Output is needed.
- Give IV fluids generously (6-12L over 24 hours)
- In trauma involving EAR AURICLE

  ↓

  Only skin is approximated and sutured with 5.0 & 4.0 prolene.

- SOFT TISSUES OF THE NECK

  ↓

  - Open wounds are frequently associated with vascular involvement.
  - A patent airway may be compromised by progressive
  - Soft tissue swelling
  - Perform pressure tamponade
  - Tracheostomy may be needed.
  - Injury of Larynx /Trachea are A/W Subcutaneous.
  - Emphysema ,Airway obstruction ,Dysphonia ,Lack of thyroid cartilage prominence.

NOTE ON SPECIFIC LACERATIONS

- SCALP: shaving of the hair has shown to increase the rate of infection & should not be performed.
- HAIR may be trimmed, if needed
- Lacerations of the eye lid margin (or) those involving the medial fifth of lid should be referred to a surgeon or ophthalmologist as improper repair may produce disastrous and disabling consequences.
- Eyebrows must never be shaved because in a small percentage of patients, regrowth may not occur.

Abrasion

I. Inj TT 0.5ml i/m STAT (if indicated)

II. C & D (Dressing not necessary)

Large abrasions/skin loss →

i) CUTICELL → Non medicated

ii) CUTICELL-C

iii) BACTIGRAS →Chlorhexidine

iv) JELONET- Nonmedicated paraffin gauze

v) CUTICELL PLUS- Polymyxin B,Bacitracin Neomycin.

III.

- T.Bact Ointment
- METROGYL PGel
- MEGHAHEAL (Colloidal Silver)
- SEPGARD OINTMENT (feracrylum)
- NEOSPORIN Powder/ointment
- HEALEX Spray

IV. Oral Antibiotics - If diabetic or Multiple abrasion

V. Analgesics + Serratiopeptidase

VI. Vitamin C, RANTAC.

- Check for fluctuation.
- I & D by Hilton's Method.

PROCEDURE

Patient on reclined position

↓

Start IV Lines

↓

Put incision Parallel to neurovascular bundle -HILTON'S METHOD

↓

Drain the content

↓

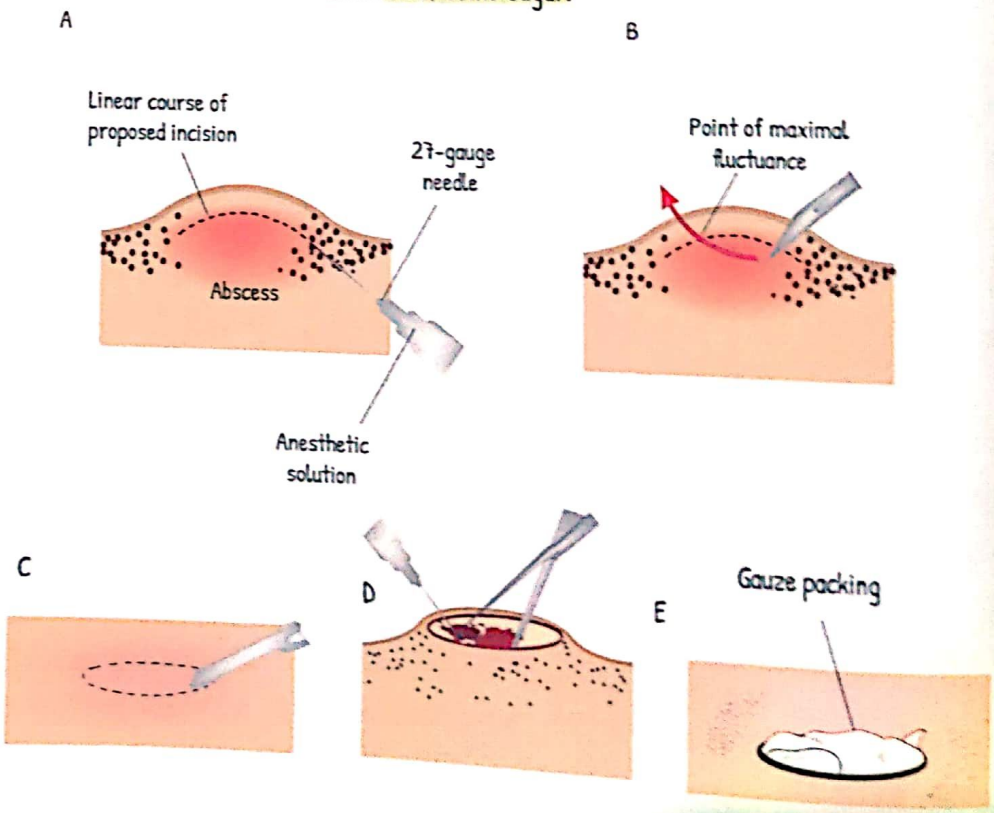
Clean with Betadine

↓

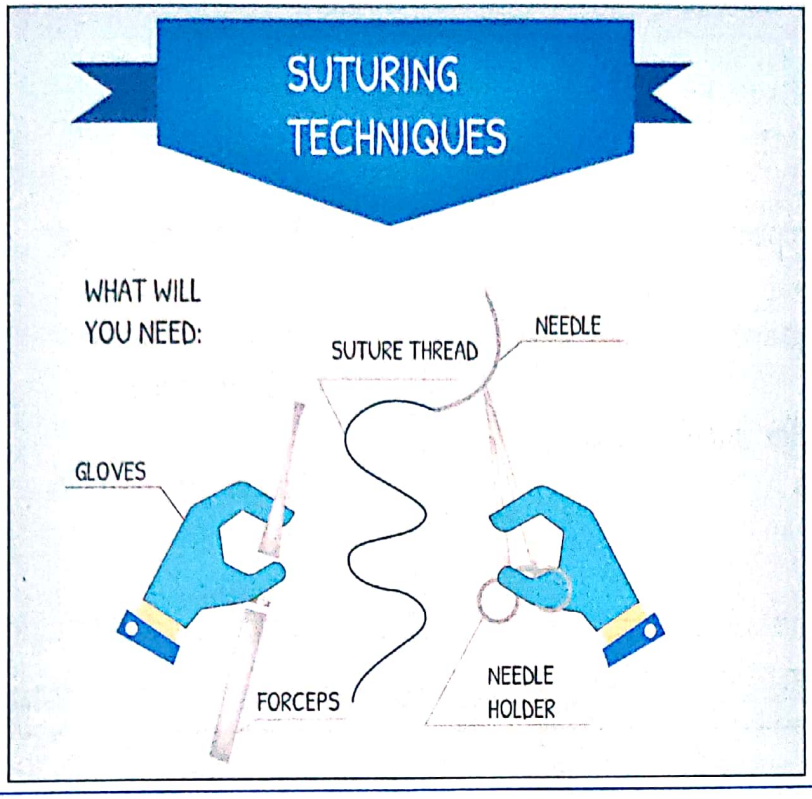
Drain with Glycerine Mag Sulphate (to reduce the edema at the site)

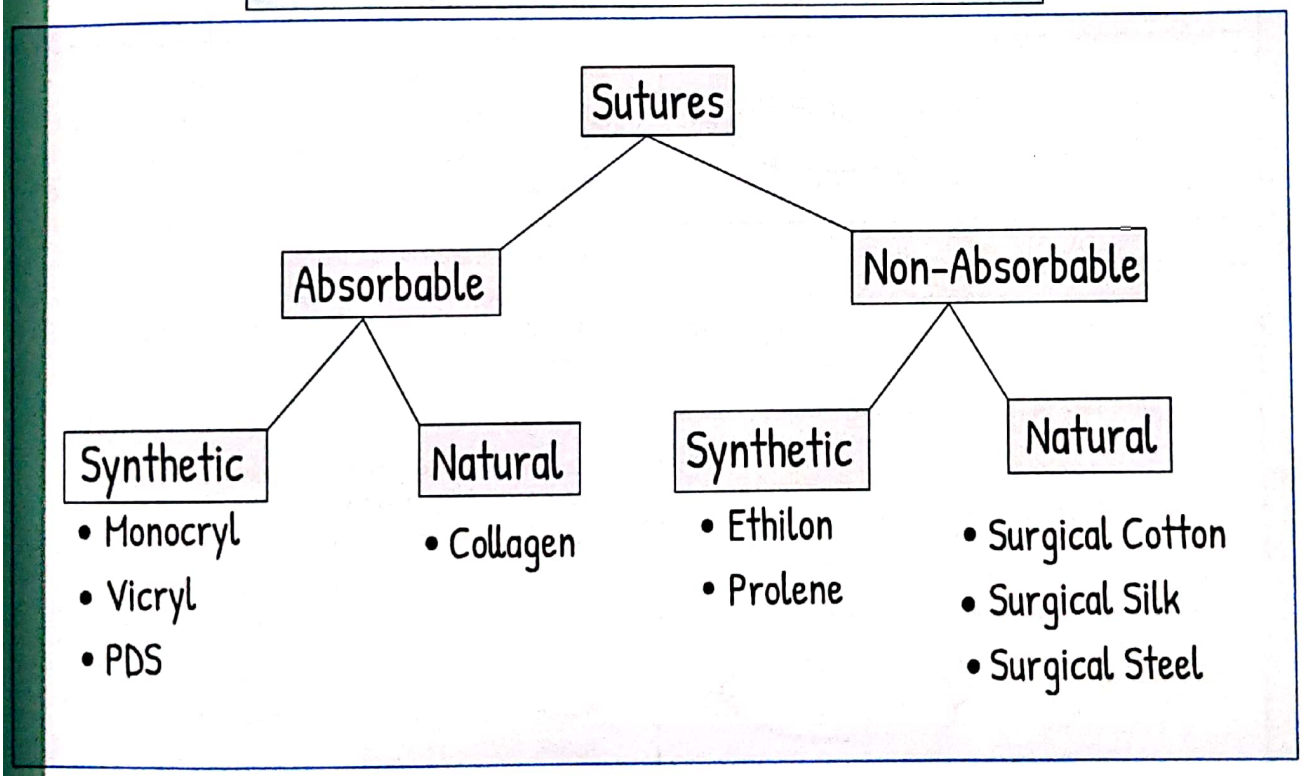
↓

Check RBS/Urine Sugar.



Suture Techniques and Removal

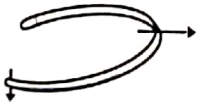
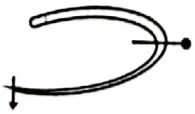
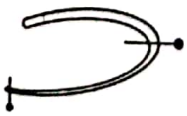




INDICATIONS

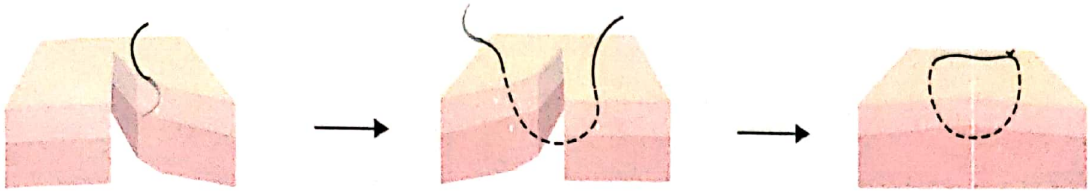
NON ABSORBABLE SUTURES	ABSORBABLE SUTURES
• Skin repair • Faascia under tension • Vascular (blood vessel) repairs	• Subcutaneous repair • Intraoral mucosa (including tongue) • Fascia not under tension

TYPES OF NEEDLES AND INDICATIONS

Cross-sectional shape	Symbol	Shape	Description and use
Cutting			The needle body is triangular in cross-section and has a sharp cutting edge on the inner (concave) curvature along the length of the needle. this is suitable for tough structures, such as skin
Reverse cutting			This is also triangular, but the cutting edge is on the outer (convex) curvature. This minimizes trauma to the tissue and is suited to ocular surgery and closure of muscosal wounds
Taper			The round needle body tapers smoothly to a point. This avoids cutting structures and other sutures as the needle is passed. This is appropriate for tendon repair, microvascular surgery and repair of bowel muscosa
Trocar/taper cut			The needle body is round and taered, but ends in a small triangular cutting point. This is useful for harder tissues, including cartilage
Blunt			Used for suture of friable tissues, such as liver

INTERRUPTED

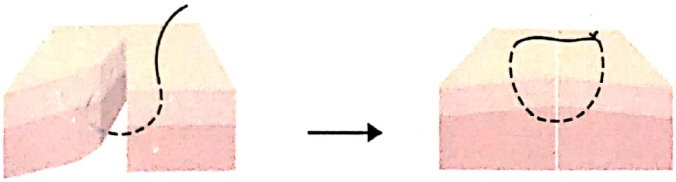
1



Let the needle penetrate about 3mm from the wound

Then on the other side insert the needle in the depth of the tissue.

Tie a instrument square knot and cut the lose ends.

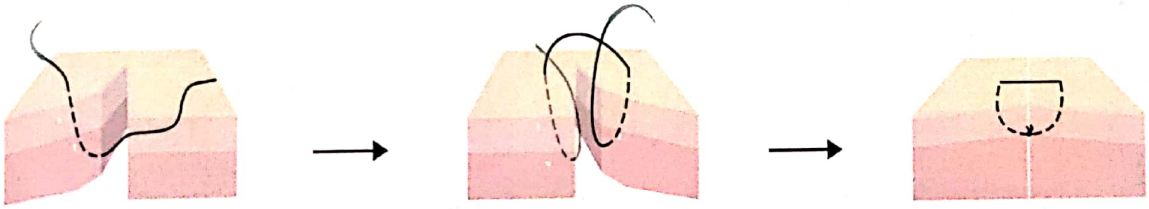


Alternatively you can do all at once:

Tie a instrument square knot and cut the lose ends.

INTERRUPTED-BURIED KNOT

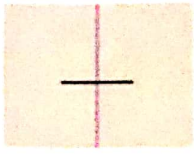
2



Insert the needle the below epithelium and aim it to emerge on the surface of the skin.

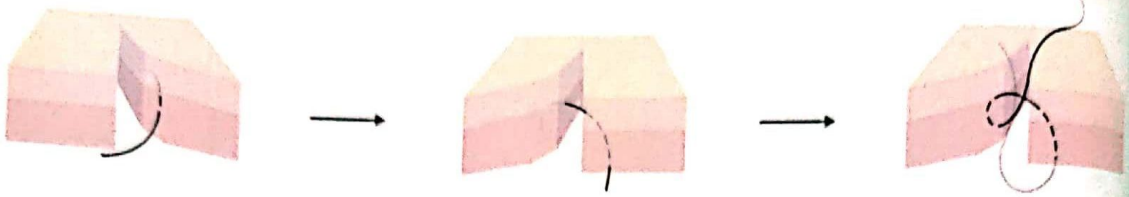
Insert the needle on the otherside, at the oposite point.

Make a square knot and cut the end



In another prespective it should look like this:

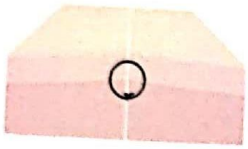
3 SUBCUTANEOUS



Insert the needle in the deep side of the laceration. Penetrating the tissue in an upwards direction letting the needle emerge somewhere below the epithelium.

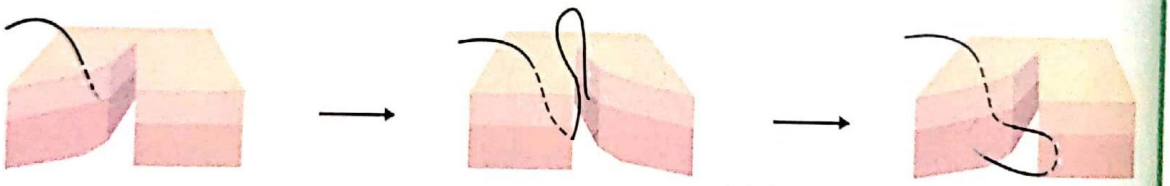
Insert the needle in the opposite spot where the needle emerge previously, directing the needle downwards

Allow a reasonable sectio
the free end of suture th
to remain on the surface.



Make a square knot and cut the ends.

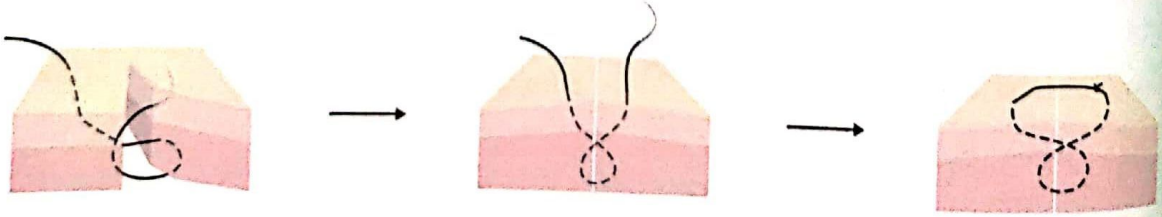
4 FIGURE 8 SUTURES



In sert the needle between five and ten millimeters away from the wound edge.

Take a bit in the depth of the subcutaneous tissue, twisting the needle to let the needle-tip emerge just below the dermis.

Now mirror the bit on the fo
allowing the needle to emer
the depth of the sub-cutane
tissue

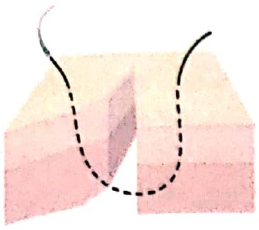


Penetrate the tissue on the other side just below the dermis. Allow the needle tip to emerge about three millimeters away from the edge of the wound.

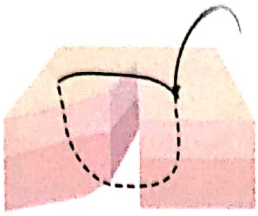
Tie a single or double instrument square knot or a Sugeont's Knot and cut both ends of the suture.

RUNNING/ CONTINUOUS

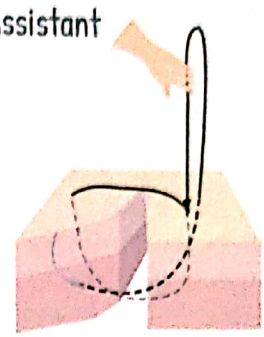
5



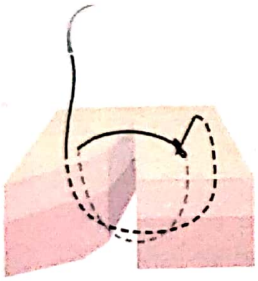
The first suture is place by following the same inicials steps of the interrupted Suture.



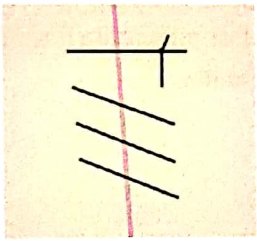
Tie a instrument square knot but instead of cuting both ends only cut the end without the needle



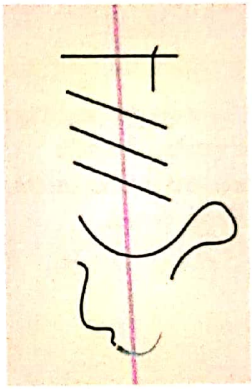
Ask an assistant to hold part of the long end of the suture. Proceed with the next suture loop to the right of the first suture.



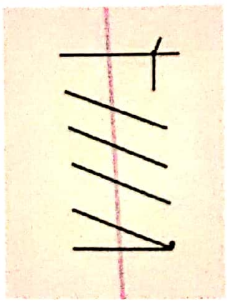
Ask the assistant to relaese the suture as you proceed with tigtening the second suture loop.



Place another suture loop. it should start to look like this.

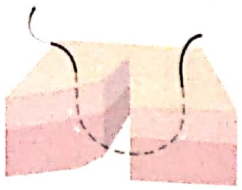


When placing the last stich ask your assistant to release the suture. Make a square knot using suture loop of the penultimate stich and the remaining free or needle end of the suture.

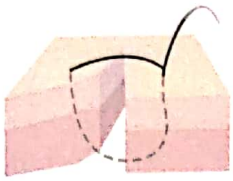


Cut the three ends of the suture

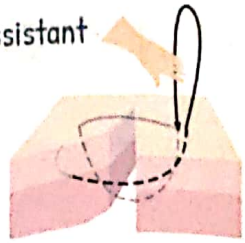
6 RUNNING/CONTINUOUS INTERLOCKING



The first suture is place by following the same incials steps of the interrupted Suture.

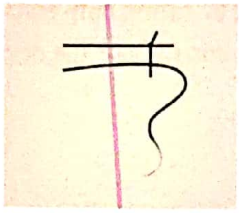


Tie a instrument square knot but instead of cuting both ends only cut the end without the needle

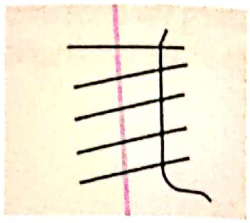


Ask an assistant to hold part o the long end of the suture. Proceed with the next suture lo to the right

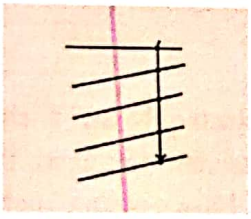
Before tightening the second loop take the open loop from the assistante hand and then put the needle though the loop.



In another prespective it should look like this:

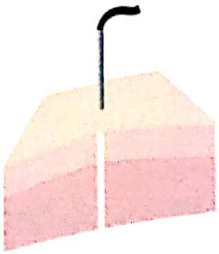


Place a further number of loop

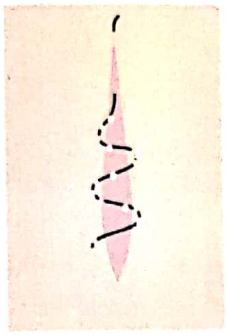


When you are placing the last stich ask your assistant to release the suture. Make a square knot using the suture loop of the penultimate stich and the remaining free or needle end of the suture.
Cut the three ends of the suture.

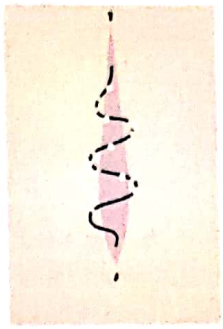
SUB- CUTICULAR 7



Insert the needle about 3mm from the laceration



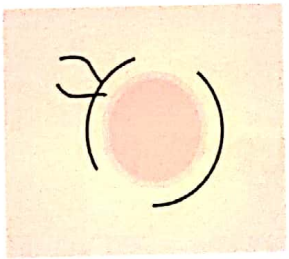
Insert the needle just below the epithelium. Aim for it to emerge inside the laceration



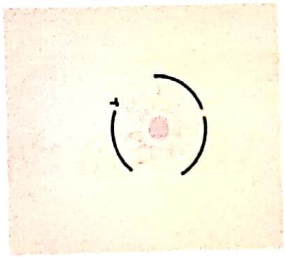
When finishing incert the needle just below the epithelium but aim for it to emerge about 3 mm away from the corner of the laceration. Make a Knot and cut both ends

PURSE STRING 8

Insert the needle a few mm from the edge of the circle wound.



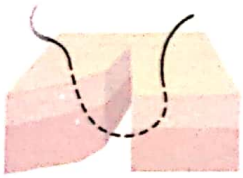
Place a futher number of running sutures in and out along the edge.



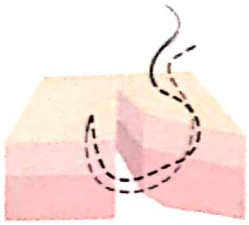
Pull both ends and tie a knot.

In another prespective it should look like this:

9 HORIZONTAL MATTRESS SUTURES

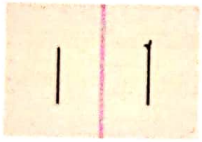


Inser the needle and mirror the course of the needle on the other side.



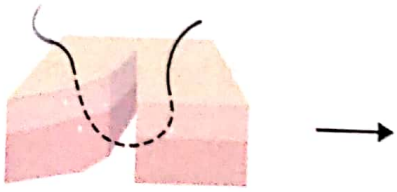
Insert the needle a little to the right side, mirror the course of the needle on the other side

Tie a single or double instrument square knot or a Sugeont's Knot and cut both ends of the suture.



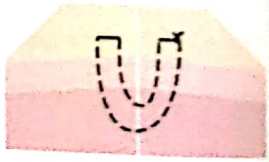
In another prespective it should look like this:

10 VERTICAL MATTRESS SUTURES

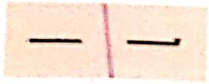


Insert the needle about 4mm from the wound. Emerge it in the exact oposite of the spot.

Insert the needle aproximatly 8mm from the wound and mirror the course of the needle on the other side.



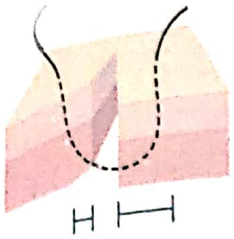
Tie a single or double instru square knot or a Sugeont's K and cut both ends of the su



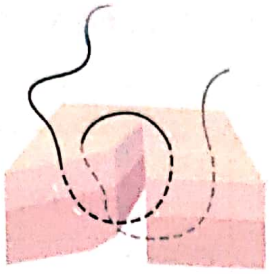
In another prespective it should look like this:

FAR AND NEAR SUTURES

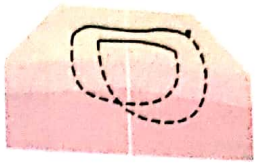
11



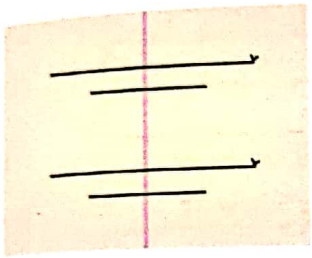
Insert the needle "far" from the wound. aim for the needle to emerge "near".



Now do the reverse, Insert "near emerge IT "far".



Tie a single or double instrument square knot or a Sugeont's Knot and cut both ends of the suture.



In another prespective should look like this :
So don't forget: far-near-near-far

SUTURE REMOVAL

- Usually done 7-10 days after suturing.

Procedure:

Clean with Betadine

↓

Cut close to skin with 11 or 10 number blade.

Avoid thread from outside entering inside.

↓

Remove intermittent sutures to prevent gaping.

Days of Suture Removal:

i. Thyroid: 4-5 days
ii. Scalp:5 days
iii. Inguinal: 8-9 days
iv. Knee: 10 days
v. Ankle,Foot: 14 days
vi. Abdominal : 10 days.

Burns

1°	2°	3°	4°
Superficial Epidermis	Epidermis + Superficial Dermis	Epidermis + Entire Dermis +Skin appendage	Epidermis + Dermis + Skin appendage +Connective tissue Muscle Bone
Red skin texture Normal	Red,Small blisters ,adena Dry,waxy less elastic	Mottled brown white Dry,Leather	White /mottled or brown red Dry,Charred
Capillary refill +	+	-	-
Pain +	+	+	-
Healing 5-10 days	14 days to 8 weeks	Prolonged	
No Scar	Minimal Scar	Scar+ Contracture	Scar +Contracture +needs Skin graft
By Scald/weak acid	Alkali: Flame Strong acid	Electric burn Alkali Flame	

TREATMENT

- Attend only <15% burn
- Large burn refer to surgery Dept
- Do LFT,RFT
- Airway

Breathing (r/o inhalational injury)

Cardiac
Contact removal
Clean the wound

- IV line before odema
- Clean with copious volume of cold water for 20 min,then with Betadine.
- Smear antiseptic ointment
  - Soframycin for face
  - Silverness for trunk & limbs
  - Fusidic acid ointment ,Betadine etc.
- Inj: Fortuvin ICC IM/IV or Tramadol→ Pain relief
- Inj.Morphine 5g IV Q8H} for severe burns

- Inj: TT 0.5CC IM stat
- Inj.Tetglob 250IV -IM stat [AID]
  → Provides short term protection against bacteria that cause tetarus
- Oral Antibiotics (IV Taxin / IV Metrogyl) for severe burns
- IV fluids: RL- preferred

Parkland's formula - 4mL/ % burn /kg of wt /24hrs

½ =First 8 hrs

½ = Next 16 hrs

- Inj .Dexona 2cc IV/IM BD x 2 days
- Inj.Pantop/Rantac to prevent curlings ulcer

Severe Burn

- Admit
- O_2 /RT
- CBD
- Measure Urine output

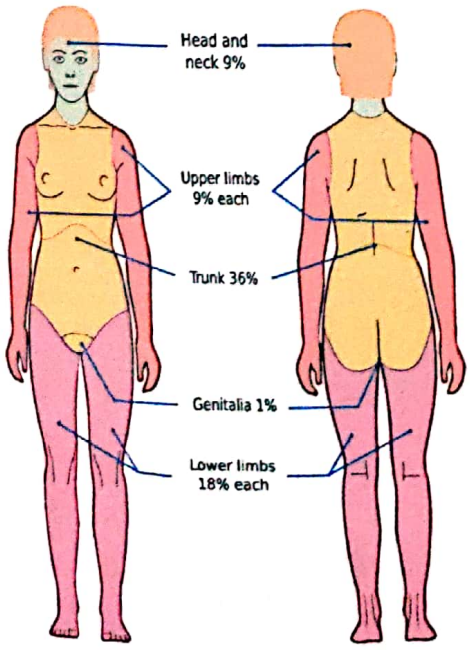
Blister

Large blister -Derooffing with sterile needle/aspirate

Leave blister on palm or sole-intact

Chemical burn / Eye burn → Irrigate with copious Volume of water

Rule of Nine:

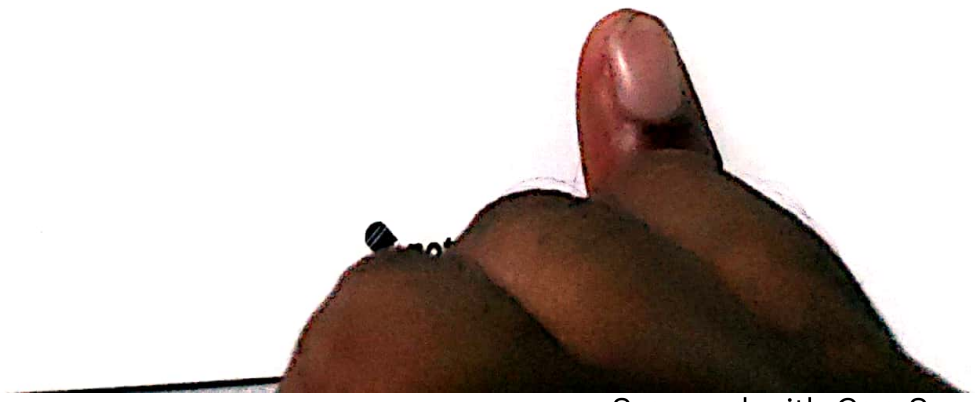


Relative percentage of body surface area (% BSA) affected by growth.

	Age				
Body Part	0y	1y	5y	10y	15y
a=$^1/_2$ of head	$9\,^1/_2$	$8\,^1/_2$	$6\,^1/_2$	$5\,^1/_2$	$4\,^1/_2$
b=$^1/_2$ of one thigh	$2\,^3/_4$	$3\,^1/_4$	4	$4\,^1/_4$	$2\,^1/_2$
c=$^1/_2$ of one lower leg	$2\,^1/_2$	$2\,^1/_2$	$2\,^3/_4$	3	$3\,^1/_4$

When to refer to Hospital:

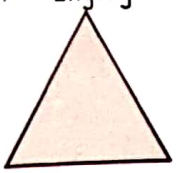
1. If surface area of Burns is >15%
2. If Burns are very deep
3. If face ,neck or eyes are involved.
4. If fumes are inhaled with possibility of lung injury
5. Burns due to boiling oil is considered 3rd degree.



Chest Trauma

RAPIDLY FATAL CONDITIONS

- Tension pneumothorax
- Flial chest
- Open pneumothorax
- Massive hemothorax
- Cardiac tamponade → Engorged veins



Hypotension

Muffled heart sounds

POTENTIALLY FATAL CONDITIONS

- Simple pneumothorax
- Rib fracture
- Scapular / Sternal fracture
- Esophageal Perforation
- Subcutaneous Emphysenia
- Diaphragmatic rupture
- Pulmonary contusion

DIAGNOSIS:

i. History
ii. Physical Examination
iii. X-Ray
iv. CT etc.

⇒Immediately refer the patient to higher centre without any delay.

COPD Acute Exacerbation + LRTI

SYMPTOMS

- Sudden worsening of SOB
- Productive cough
- Wheeze
- RR > 25/min
- HR >110/ in a patient with Emphysema, chronic Bronchitis ± Asthma.

INVESTIGATIONS

1. SPO_2
2. CXR
3. CBC.

TREATMENT

1. Oxygen Inhalation at 2L/min, propped up position ,Q4H Temp chart
2. Nebulisation with Duolin (Ipratropium Bromide + Levosalbutamol) + Budecort
3. Inj.Methyl Prednisolone 120 mg iv stat followed by 60mg iv Q8H
4. Inj.Aminophylline 250/500 mg in 250/500 ml NS/5D Q8H over 4 hour.

Avoid Deriphylline if tachycardia present

↓

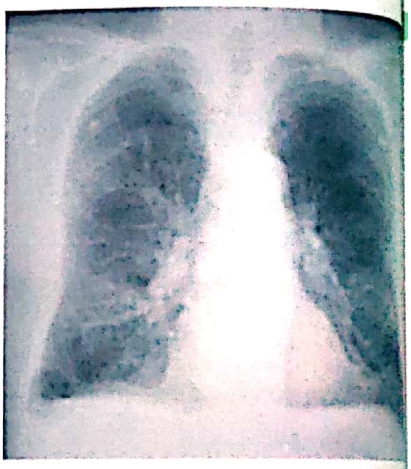
If not improving

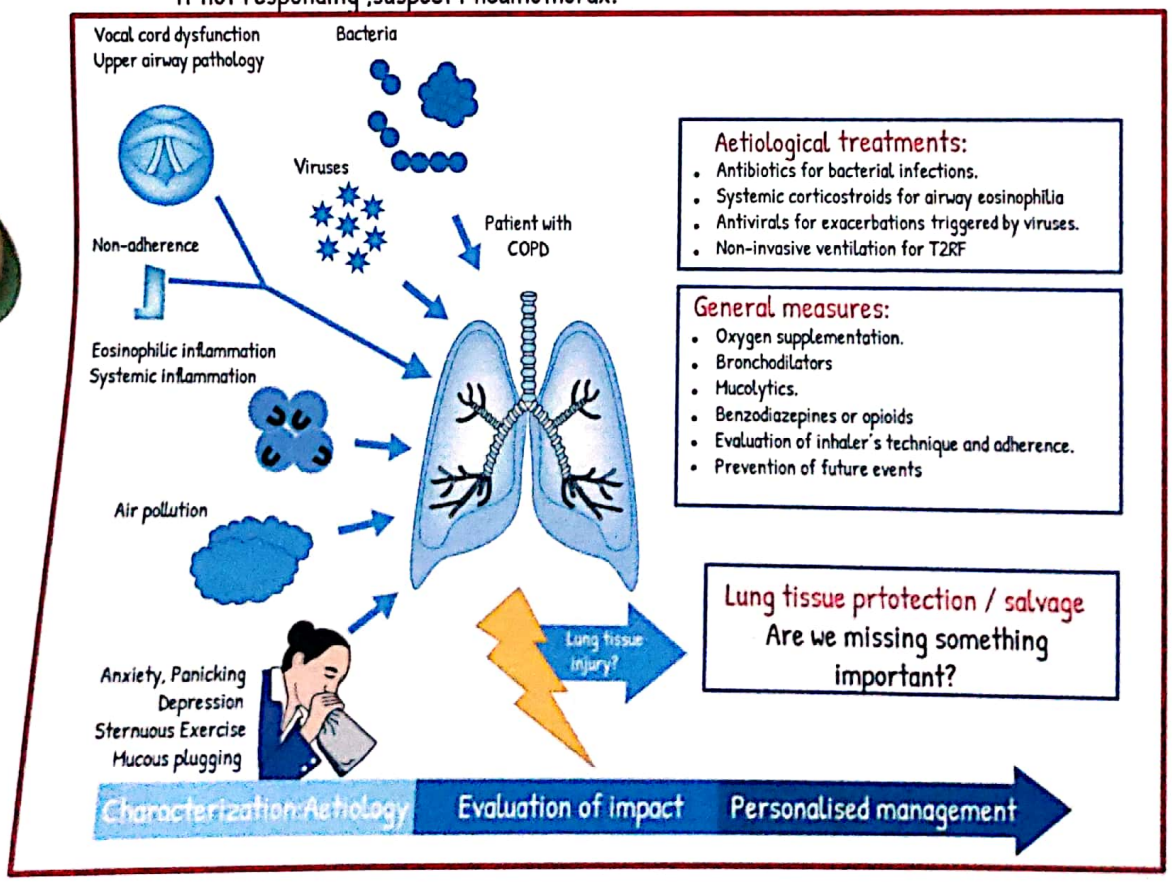
↓

- ➢ Assisted non invasive ventilation
- ➢ Intubation

↓

If not responding ,suspect Pneumothorax.





Laryngo-Tracheo-Bronchitis (viral group)

CLINICAL FEATURES

i. Acute stridor
ii. Barking cough
iii. Hoarseness
iv. Respiratory distress

TREATMENT

1. Oxygen Inhalation
2. Injection Dexamethasone 0.6 mg/kg i.v stat
3. Nebulise with Budesonide 1mg
4. For severe cases ,Nebulise with Adrenaline 1:1000,2.5 ml
5. I/V antibiotics for bacterial croup (Ampicillin or 3rd generation Cephalosporin)
6. Adequate Hydration.

Incessant Crying of Infants/Children

MOSTLY DUE TO

1. Intestinal colic due to hunger, worms, constipation, over feeding, aerophagy, food intolerance.
2. Sepsis/Infection like meningitis, AOM
3. Medications
4. Discomfort from wet diaper
5. Feeling cold
6. Baby needs to be held
7. Nasal block
8. Ear ache
9. Loose stools
10. Intususception
11. Gerd
12. Physiological

ADVISE

1. Remove dress and look for any insect bite.
2. Examine all limbs, trunk, back and orifices.
3. Advise regarding proper feeding of the baby. Feeding, Burping and Carying the baby upright in shoulder may bring relief.
4. Adequate breast feeding: 15-20 min sucking, then 2-3 hours sleep or rest, frequent urination, 1-6 liquid stools per day and gaining weight.

TREATMENT

1. Syp.CARMICIDE or syp.CYCLOPAM (0.5 mg/kg/dose) (or) Syp.P'mol stat
2. Syp.PHENARGAN (5mg/5ml)(1 mg/kg/dose)
   Or
   Syp.PEDICLORYL (0.5 mg/kg)stat.
3. SALINE nasal drops for nasal block 2° Q4H.

Allergy/Pruritus/Itch/Urticaria Hives

ETIOLOGY

- Food/Drug/Insect bite
- Parasites etc.,
- Without rash- Obstructive jaundice
- Fe deficiency ,Gout
- DM, CKD
- Hyper/Hypothyroidism,
- CA (especially bronchial), Lymphoma
- HIV
- Senile pruritis
- Look for difficulty in breathing any stridor.

INVESTIGATION

1. FBC
2. ESR
3. Peripheral Smear
4. TFT
5. LFT
6. Urea
7. Electrolytes
8. Allery testing can be suggested.

TREATMENT

1. Inj: AVIL 1 amp IM stat (if severe)

   or

   Inj: ATARAX 1 amp IM stat (Hydroxyzine)

2. Inj: EFCORLIN /BETNESOL /DEXONA 1 amp IV stat
3. T.PIRITON 2/4/8 mg TDS/BD (CPM)

   0.1 mg/kg/dose x 3

   - 2-6 yr= 1mg Q6H
   - 6-12 yr= 2mg Q6H

   Or

   →T.CETRIZINE 10mg 0-0-1

   Or

   →T.ATARAX 10-25 mg 1-1-1

4. Syp. ATARAX -2mg/kg/day TDS/QID)

   Or

   →T.LEVOCET 10mg 0-0-1

   Or

   (Levocetrizine) or

   ->T.AVIL 25/50 mg.

5. T.RANTAC 150mg 1-0-1 (H_2 Blocker)

6. T.WYSOLONE 0.5mg/kg BD/TDS x 3 days

(If severe) (Prednisolone) or

→WYSOLONE 5/10/20/30 mg BD/TDS

Caladryl lotion/calosoft/calskin/lactocalamine.

For Children-

- Syp.ATARAX (2mg/kg/day x 3-4 doses)

  Or

  →Syp.AVIL (0.5 mg/kg/dose x 3)

  Or

  →Cetrizine/CPM

For Pregnant Ladies-

- CPM/Cetrizine /Diphenhydramine
- FOR ANAPHYLAXIS - Inj.ADRENALINE.

Insect Bite

CLINICAL FEATURES

- Generalised pruritis with rash.

INVESTIGATIONS

i) FBC
ii) ESR
iii) Urea
iv) Electrolytes
v) TFT
vi) LFT
vii) P.Smear

TREATMENT

1. Inj AVIL 1amp im stat (if severe)
   Or
   Inj.ATARAX (hydroxyzine) 1amp im stat
2. Inj.EFCORLIN/betnosol/Dexona 1amp iv stat
3. T.Priton (CPM) →children 0.1 mg/kg/dose
   2-6 yr -1mg Q6H
   6-12 yrs- 2mg Q6H
   (or)
   T.Cetrizine 10mg 0-0-1
   (or)
   T.Atarax 10-25mg TDS
   (or)
   T.Levocet 10mg 0-0-1
   (or)
   T.Avil 25/50 mg
4. T.Rantac 150 1-0-1
5. T.Prednisolone 0.5 mg/kg bd/TDS x 3days severe cases
   (or)
   T.Prednisolone 5/10/20/40 mg BD/TDS
6. Calamine lotion
7. If infected insect bite : Oint.MUPIROCIN for local application.

Epistaxis

ETIOLOGY

1) Trauma
2) Systemic HTN
3) URI
4) Foreign body
5) DNS
6) Drying of mucosa
7) Drugs
8) Septal perforation
9) Liver/Kidney disease
10) Acute General Infection
11) Vit.K.deficiency
12) Malignancy
13) Atherosclerosis etc.

INVESTIGATIONS

1) Check vitals
2) CBC
3) Platelets
4) ESR
5) aPTT
6) PT-INR
7) BT,CT
8) P.Smear
9) RFT,LFT
10) X-ray PNS (water's)

TREATMENT

1. Keep Head elevated
   - ➢ Avoid exertion
   - ➢ Avoid aspirin
   - ➢ Avoid blowing of nose for 24-48 hours reassurance.
2. If severe
   ↓
   Close nose by pinching and breath V/A mouth for 5-10 mins.
3. Cold compress to nasal area keep icecubes in handkerchief over nose.
   If bleeding still present, a cotton gauze impregnated with adrenaline and lignocaine is inserted & nose pinched for another 10 minutes.
   - ➢ Use Gelfoam if discrete point identified.
4. If not controlled
   ↓
   Give Inj.Tranexamic acid 500mg slow IV stat or Etamsylate IV stat
5. Oral antibiotics (Eg: Augmentin or cephalexin)
   Or
   Topical antibiotics to prevent sinusitis.
6. Keep check on pulse, systemic HTN, respiration.
7. Give anti-allergics for mild sedation like avil or cetirizine if required.
8. For benign cases, oxymetazoline nasal spray /DPS (NASIVION)can be given.
9. T.Cosklot 250/500 1-1-1 (etamsylate).

- If not controlled, pressure packing of the nose & admit the patient.
- Refer to ENT.

Nasopharyngitis/Cold/Acute Coryza

i. T.Cetrizine 5mg 1-0-1 (or)
ii. T.Levocetrizine 5mg OD (or)
iii. T.Avil 25 mg 1-1-1 (or)
iv. T.Rupatidine 10mg OD x 3 days (or)
v. T.CPM 4mg TDS (or)
vi. T.Fexofenadine 120/180 mg OD/BD

FOR PEDIATRIC

1. T.Cetrizine
   - 6-12 months- 2.5 mg OD
   - 12 months -6 years initially 2.5 mg OD which may be increased to 2.5mg BD (or)
   - Syp.Cetrizine 5mg/5ml

     ↓

     0.25mg/kg/dose HS/BD
     (or)
   - T.Minic/Alex Drops (CPM 2mg/1ml,phenylephrine)
   - T.Minic Syp (CPM 2mg/5ml,Phenylephrine)

❖ Levocetrizine -effective at half the dose of cetirizine (or) 0.1 mg/kg HS

FOR PREGNANT LADIES

- Cetrizine of Chlopheniramine can be given.

IF NASAL CONGESTION

- Saline Nasal drops
- Oxy Metazoline drops

Nasal Decongestants →Not to be used more than 3 days in a row.

↓ Should be used cautiously in hypertensive patients.

↓ May cause rebound congestion.

- In children-Saline Nasal drops
- Steam Inhalation

SEASONAL ALLERGIC RHINITIS

1. LEVOCETRIZINE + MONTELUKAST
   (or)
   FEXOFENADINE – MONTELUKAST
   PEDIATRIC:Syp.Montre 4mg + LC 2.5mg/5ml
   MONTAIR SACHET:
   - <6 years -4mg Tab/Sachet OD
   - >6 years -5mg OD
   - >12 years -10mg
2. NASAL DECONGESTANTS
3. TOPICAL STEROIDS
   - Budesonide (effective for both allergic & vasomotor rhinitis,nasal polypsis)
   - Azelastine + Fluticasone
   - Azelastine
   - Hometasone
   - Fluticasone
   - Beclomethasone

PRECAUTIONS:

- Avoid carpets
- Woolen clothing
- Fur pets like cats & dogs
- Keep house dusts free.

COLD + FEVER

1. T.WIKORYL or SINAREST or FEBREX PLUS
   (or)
   T.MINIC PLUS
   (or)
   TUSQ-P or ALEX-P 1-1-1 x 3 days
2. T.RINOSTAT or FLUCOLD 1-1-1 x 3 days
3. T.NASIVION
4. T.HATRIC 3

FOR COLD + FEVER + COUGH

1. Syp.FLUZET or ALEX-P
2. Syp.NASAOCARE PLUS or PEDIA 3
3. T.SUDIN
4. Syp.SINAREST.

Sore Throat

ETIOLOGY

1. Infection →Acute pharyngitis - 80% viral,retropharyngeal and parapharyngeal
2. Malignancy
3. Ulcers
4. Trauma
5. Reflux Esophagitis

TREATMENT

1. Antibiotics if associated with infection.
   Eg: Azithromycin,
   Augmentin.
2. Analgesics like PARACETAMOL, ACECLOFENAC.
3. Steam inhalataion, bed rest, plenty of fluids
4. Warm saline gargle x 3 times/day or Betadine Gargle in 10 ml of warm water x 3 times a day
5. LOZENGES.

Parotitis

- Commonly due to stone.

1. Antibiotics→ Ampiclox/cephalexin

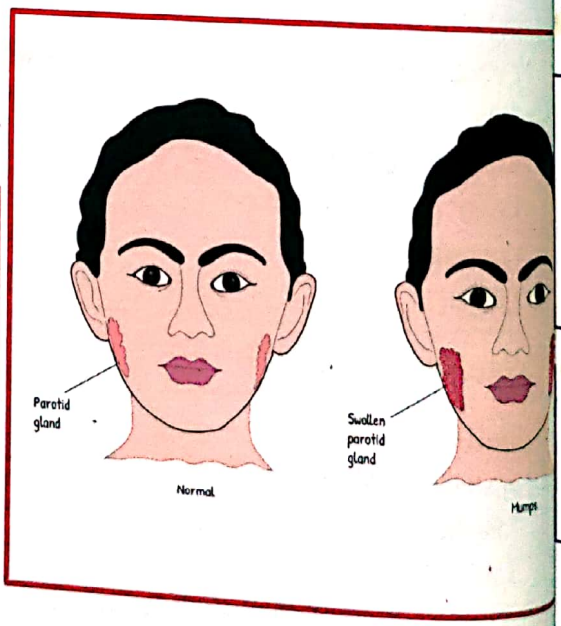
   ↓

   No response→ Taxim

2. Anti inflammatory drugs
3. Adequate hydration, oral hygiene, local heat
4. L/A of Ichthammol glycerine to reduce edema
5. Lime juice and other citrus fruits to promote salivary secretion.

In case of Mumps (viral parotitis)

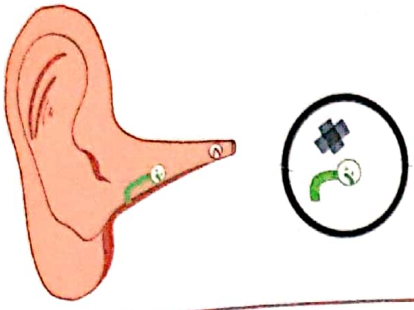
- Hydration
- Rest
- Analgesics
- Hot/Cold compresses over the parotid(to relieve pain)



COMPLICATIONS OF MUMPS

- Orchitis→ Scrotal support and cold compression.
- Ophritis.
- Pancreatitis.
- Aseptic Meningitis.

Foreign Body in Ear



1. **If living** -Insects - Killed first
2. Installing/Spraying lignocaine /NS/ oildrop
3. Later removed with crocodile forceps/suction
4. COMBIDERM can pack- if infected

- **If non-living** -object removed by forceps/syringe
- Smooth objects -No forceps -because they tend to move inward
- Swelling FBs- No syringing
- After FB removal -Examine TM.

Globus Pharyngis

Feeling of lump in the throat.

CAUSES

1. GERD
2. Throat inflammation
3. Postnasal drip
4. Stress
5. Smoking
6. Psychogenic
7. Hypertrophy of base of tongue
8. Inadequate smooth muscle relaxation.

TREATMENT

- T.PANTOP 40mg OD x 5days (Pantoprazole) for GERD.
  If symptoms persist - ENT opinion.

Foreign Body Throat

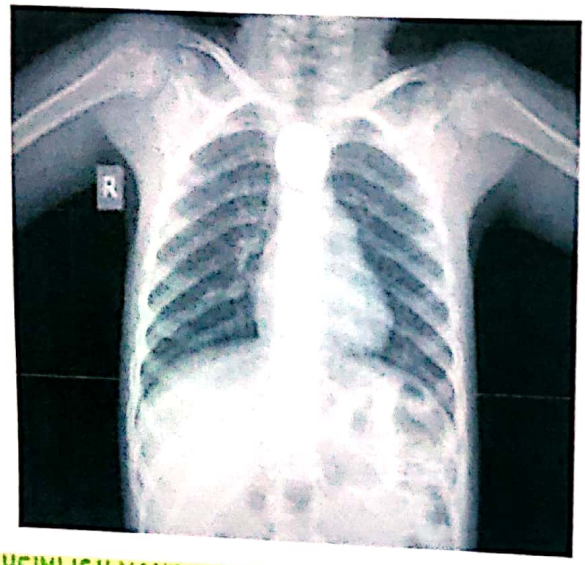
CLINICAL FEATURES

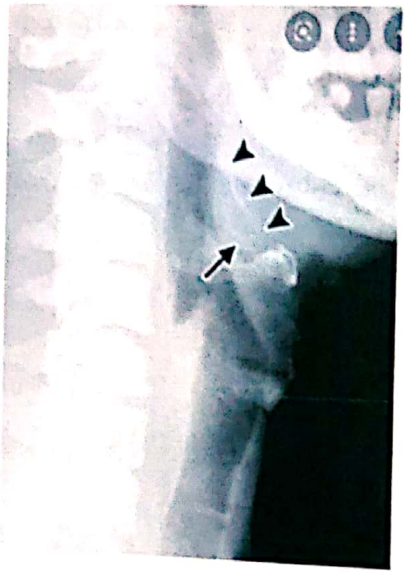
1. Cough
2. Stridor
3. Aphonia
4. Dyspnoea
5. Hemoptysis
6. Hoarseness
7. Respiratory arrest
8. Recurrent Pneumonia
9. Asthma

INVESTIGATIONS

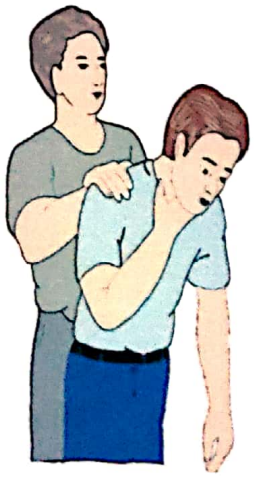
- Chest X-ray
- Digital X-ray soft tissue neck Lateral and AP view
- CT chest

➢ Perform Helmich's Maneuver.



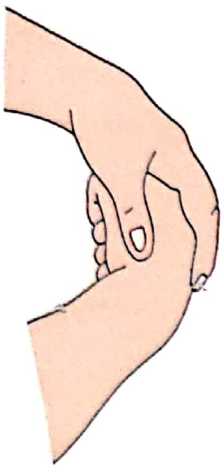


HEIMLICH MANEUVER

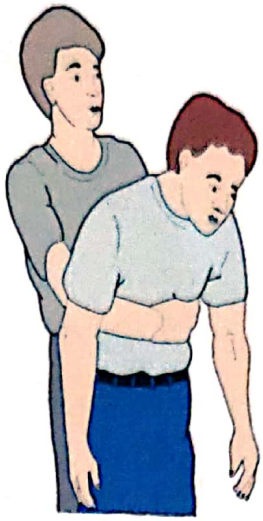


1. Lean the person forward slightly and stand behind him or her.

2. Make a fist with one hand.

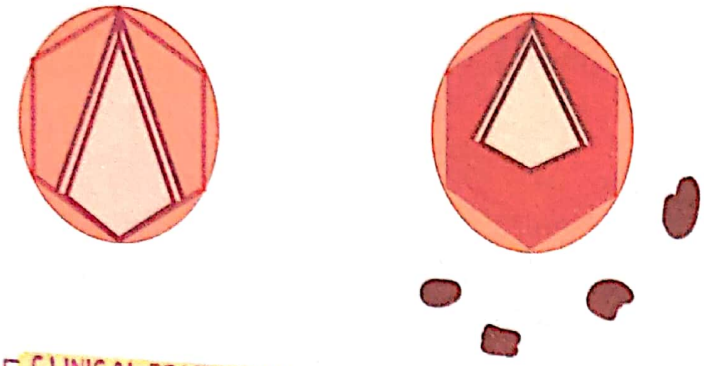


3. Put your arms around the person and grasp your fist with your other hand near the top of the stomach, just below the center of the rib cage.



4. Make a quick, hard movement, inward and upward.

Laryngitis



CLINICAL FEATURES

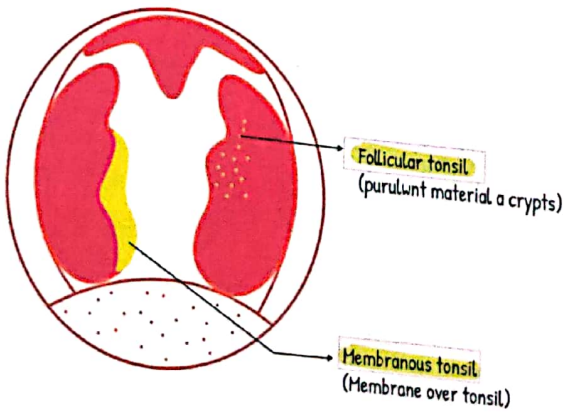
- Hoarseness
- Inability to speak
- Fever
- Cough
- dry throat
- Dysphagia
- Dyspnea
- Hemoptysis
- ↑Saliva in mouth
- Lymphnode in throat, chest, face.

TREATMENT

1. Voice rest
2. Steam inhalation
3. Cough suppressants
4. Plenty of orals
5. Antibiotic -Azithromycin if bacterial infection
6. Rantac/Pantop -if GERD.

Other causes of hoarseness of voice:

1. Vocal cord nodules
2. Thyroid problems
3. Allergies
4. Inhalation of respiratory tract irritants
5. Smoking
6. CA
7. Trauma
8. GERD



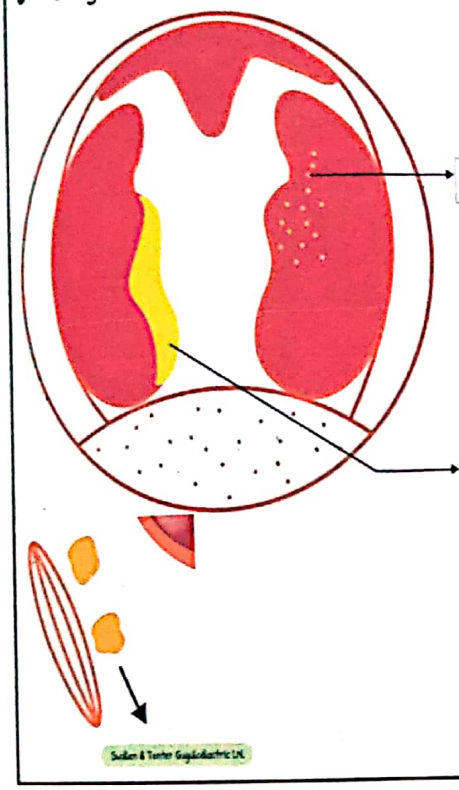
Tonsilitis

CLINICAL FEATURES

- Fever
- Sore throat
- ~~Odynophagia~~

SIGNS

- Enlarged tonsil
- Congestion



CAUSE

- Streptococcus

COMPLICATION

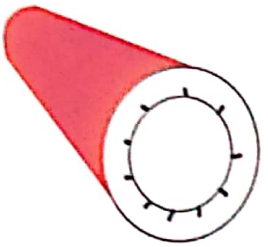
- Rheumatic Heart Disease
  or
  Glomerulonephritis

TREATMENT

1) Plenty of oral fluid
2) Bed rest
3) Warm saline gargle
4) Analgesic
5) Antibiotics -Amoxycillin
   Azethromycin

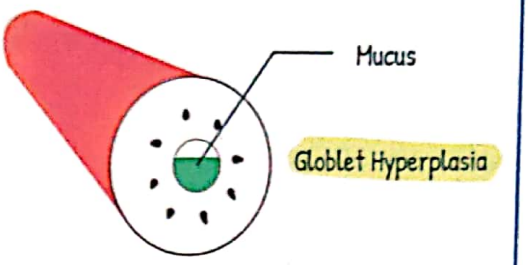
For patients with history of treated recurrent A/C tonsillitis give AUGMENTIN.

Bronchiolitis



Normal-

- Airway
  Bronchiole



- ↓ed Airway Bronchiolitis
  Bronchio/litis
  Inflammation of Bronchioles

CLINICAL FEATURES

1. Respiratory distress
2. Cyanosis
3. Prolonged expiration
4. Fine Crepts/rhonchi

TREATMENT

- O_2
- IV fluids
- Nebulisation -Asthalin, 3% NS,
  Adrenaline
- Antibiotic -Altacef

Quinsy

Inflammed tonsil/oropharynx

Uvula pushed to opposite side.

CLINICAL FEATURES

- Sore throat
- fever
- Dysphagia
- Trismur
- Hot potato voice/Muffled speech

INVESTIGATION

- Swab for pus C & S

TREATMENT

1) IV fluids
2) IV Antibiotic x 7 to 10 days
3) Cephalosporin ±Metronidazole
4) Analgesic
5) Inj.Dexona 8mg IV stat (single dose)

Refer to ENT for pus drainage.

Acute Epiglottitis

- Acute inflammatory condition confined to supraglottic structures

ETIOLOGY

- Children (2-7 yrs)
- m/c organism -Hemophilus influenzae B

CLINICAL FEATURES

1. fever ,
2. sore throat ,
3. dyspnea,
4. rapidly progressive respiratory obstruction,
5. drooling of saliva
6. hyperextended neck

INVESTIGATION

1. Indirect laryngoscopy shows oedema & congestion of supraglottic structures but avoided due to fear of complete obstruction (laryngospasm)
2. Lateral soft tissue x ray : Thumb sign (swollen epiglottis)

TREATMENT

1. Oxygen
2. IV antibiotics (3rd generation cephalosporins)
3. Adequate hydration
4. Inj.dexona
5. Endotracheal intubation or tracheostomy in severe cases.

Foreign Body of Nose

- Usually seen in children
- Children with U/L nasal discharge → always rule out foreign body of Nose.

CLINICAL FEATURES

1. Present immediately if known or later with history of unilateral nasal discharge(foul smelling and occasionally blood stained)
2. Radiograph of nose -may confirm and localised a foreign body if it is radiopaque.

TREATMENT

- If FB can seen →keep head at 45/90° .
- Most of FB can be removed using an eustachian catheter which is passed gently past the foreign body and dragged along the floor.
- If trauma present → Give antibiotics.
- For procedural sedation →Syp.pediclorylt 0.5mL/ kg

COMPLICATIONS

- nasal infection and sinusitis
- Rhinolith formation
- inhalation into tracheobronchial tree.

Nasal Bone Fractures

TYPES

1. Depressed : due to frontal blow
   severe →open book fractures
2. Angulated : due to lateral blow

CLINICAL FEATURES

1. Traumatic epistaxis emphysema,
2. Ecchymoses,
3. Edema,
4. Crepitation
5. Subcutaneous.

INVESTIGATIONS

- Digital xray Nasal bone Rt & Lt Lateral view.

TREATMENT

- If nasal bone fracture and edema present = reduction performed after edema subsides.

(i) C.Mox (amoxicillin)
(ii) T.IYSER-D (diclofenac 5 Serratiapeptidase)
(iii) T. PANTOP (pantoprazole)
(iv) NASILRION nasal drops

Furuncle of the Nose

- Acute infection of hair follicle by staphylococcus aureus.

PREDISPOSING FACTORS

Trauma due to :

a) Picking of nose

b) Plucking of Vibrissae.

CLINICAL FEATURES

1. Lesion : small, tender, Painful
2. May rupture spontaneously
3. May complicate into cellulitis of upper lip and septal abscess and danger of spread to cavernous sinus.

TREATMENT

1. Warm compress
2. Systemic antibiotics -cephalexin ; Tbact ointment for LA.
3. Analgesics
4. Incision & drainage of abscess.

N.B: The furuncle should not be squeezed due to danger of spread of infection to cavernous sinus.

Sinusitis

ETIOLOGY

1. Upper respiratory tract infections
2. DNS
3. Trauma
4. Tooth infection

CLINICAL FEATURES

1. Headache
2. Malaise
3. Nasal block
4. Purulent rhinorrhea
5. URI
6. Fever

In ethmoiditis:

- Lip edema,
- Lacrimation,
- dull headache
- PNS tenderness

INVESTIGATIONS

1. X ray PNS (water's veiw, open mouth) for frontal sinus -Lateral veiw
2. CT scan

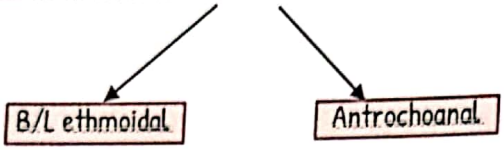
Hazings of Right Maxillary Sinus

TREATMENT

1. T. cetrizine / T. CPM
2. Analgesics
3. antibiotics : Amoxiclav/ Azithro/doxy/ Cefuroxime axetil
4. steam inhalation
5. Nasal decongestants
6. Hot fermentation.

Nasal Polyp

- Non neoplastic masses of Oedematous nasal or sinus mucosa.



ETIOLOGY

B/L ethmoidal:

- Chronic sinusitis
- Asthma
- Aspirin intolerance (Santer's triad)
- Cystic fibrosis
- Allergic fungal sinusitis
- Kartagener syndrome
- Young syndrome
- Churg strauss syndrome

Antrochoanal:

- Nasal allergy with sinus infection
- Seen in Children & Young adults

CLINICAL FEATURES

B/L ethmoidal polyp:

- Nasal stuffiness → Nasal obstruction
- Partial or total loss of smell
- Headache
- Sneezing and watery nasal discharge
- Mass from nostril.

Antrochoanal Polyp:

- U/L nasal obstruction
- Voice become thick & dull due to hyponasality.
- Nasal discharge (mucoid).

TREATMENT

- Anti allergies (oral or nasal spray)
- Analgesics
- Antibiotics (if evidence of infection).

Otalgia

ETIOLOGY

1. Acute otitis media,
2. CSOM,
3. Furuncle,
4. Impacted wax,
5. Otomycosis,
6. Trauma,
7. Myringitis bullosa,
8. Eustachian tube obstruction.

Referred causes :

1. carries tooth,
2. Ulcerative lesions of oral cavity or tongue,
3. Acute tonsillitis ,
4. Peritonsillar abscess.

TREATMENT

If wax:

- Solid wax eardrops 3 times a day x 3 days or glycerine soda bicarb drops (to soften Wax)
- Then clear the canal

If fungal infection :

- Clean the ear
- Candid eardrops x tds till lesions cleared

Furuncle or boil:

- Cap . Bacilox 500mg TDs x 5 days (Antibiotic)
- Analgesic x 3 days
- Otogesic eardrops tds (Anesthetic drops)

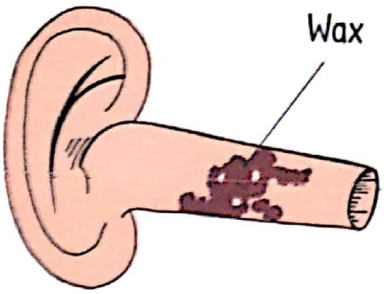
Foreign body :

- Removal using curette
- Otogesic ear drops
- Antibiotic ear drops if infection or bleeding.

Otitis media :

- Inj.CEFENTRAL 500mg Im 12hrly (higher antibiotics)
- T.Combiflam 1 tds
- T.Bidazen 1 tds (anti inflammatory enzymes)
- Otrivin nasal drops tds (xylometazolin)

Wax in Ear/Impacted Wax

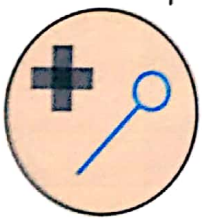


CLINICAL FEATURES

1. Ear ache
2. Itching
3. Reflex cough
4. Dizziness
5. Vertigo
6. Tinnitus
7. Hearing loss

TREATMENT

1. Softening x 5 days
   ↓
   Dewax/Soliwax/ Clearwax /Waxolve
   Otorex/ Waxonil - 3°- 3°- 3°
2. Syringe after few days
3. No ear buds
4. Ear buds for pinna only.



Foreign Body of Nose

- Usually seen in children
- Children with U/L nasal discharge → always rule out foreign body of Nose.

CLINICAL FEATURES

1. Present immediately if known or later with history of unilateral nasal discharge(foul smelling and occasionally blood stained)
2. Radiograph of nose -may confirm and localised a foreign body if it is radiopaque.

TREATMENT

- If FB can seen →keep head at 45/90°.
- Most of FB can be removed using an eustachian catheter which is passed gently past the foreign body and dragged along the floor.
- If trauma present → Give antibiotics.
- For procedural sedation →Syp.pedicloryl 0.5mL/ kg

COMPLICATIONS

- nasal infection and sinusitis
- Rhinolith formation
- inhalation into tracheobronchial tree.

Trauma of EAC

CAUSE

- Instrumentation (Physician /Patient)

CLINICAL FEATURES

- If Bleeding

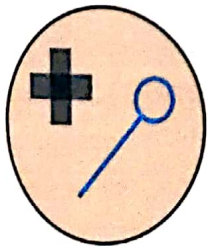
  r/o Fascial Nerve Palsy

INVESTIGATION

- HRCT Temporal Bone

TREATMENT

- Inj.Tranexa (For bleeding)
- Minor laceration → heals
- Major laceration-EAC packing with medicated wicks/antibiotic/steroid (to prevent canal stenosis)



Do not use cotton tipped applications like con buds.

Acute Otitis Externa

- Inflammation of ear canal

ETIOLOGY

- Infection : Staphylococcus aureus , Pseudomonas , fungi.
- Trauma
- Secondary to middle ear infections
- Allergic sensitization to topical ear drops.

CLINICALFEATURES

- Hot burning sensation
- Pain
- serous discharge (later becomes thick and purulent)
- Meatal lining →inflamed & Swollen
- Conductive hearing loss

TREATMENT

- Antibiotics (eg:ampiclox /amoxyclav/ ciplox)
- Analgesics
- local heat
- Ear pack of 10% icthammol glycerine or antibiotic steroid cream remove the pack after 24-48 hrs
- CIPLOX ear drops 2° tds.

Otomycosis

- Fungal infection of ear due to Aspergillus niger.

CLINICAL FEATURES

- Itching pain
- Watery discharge with musty odour
- Ear blockage
- Hard of Hearing

TREATMENT

- Ear toilet/ Suction / mopping ; medicated ear pack / Wicks
- After 24 -48hrs, candid ear drops
- Analgesics (+antibiotics if associated with bacterial infection)
- Avoid antibiotic eardrops
- Ear must be kept dry

Vertigo

DEFINITION

An illusion of movement—is more definite. It is a sensation of rotation, or tipping. The patient feels that the surroundings are spinning or moving. It is distinctly unpleasant and often accompanied by nausea or vomiting.

TYPES

a)Central

Causes : -

1. CVA
2. Migraine
3. Epilepsy
4. Multiple Sclerosis
5. Tumors

b)Peripheral

Causes : -

1. Meniere's ds
2. BPPV
3. Head Trauma
4. Drugs
5. Labrynthitis

Differentiation between central and peripheral vertigo:

Symptoms	Peripheral	Central
Hallucination of motion	Dramatic	Less dramatic
Onset	Abrupt	Less abrupt
Intensity	Usually severe	Seldom severe
Duration of symptoms	Minutes/days/weeks (finite)	Longer
Vertigo induced by change in head position	May be present	Absent
Tinnitus	May be present	Absent
Vomiting	May be present	Absent
Deafness	May be present	Absent
Nystagmus	May be present	May be present
Disturbance of sensorium	Usually absent	Usually present
Neurological deficit	Usually absent	Usually present

INVESTIGATIONS

These are done under the guidance of an ENT specialist.

1. Caloric test :In this test, hot and cold water is directed against the tympanic membrane by a syringe. In vertigo caused by inner ear dysfunction, the vertigo increases.
2. CT scan or MRI of the brain: This is a useful test to diagnose whether the vertigo is caused by disease in the inner ear or there is a brain tumour.

MANAGEMENT

Most of the cases can be diagnosed and treated by a general practitioner.

- The treatment of BPPV, vestibular neuronitis, labyrinthitis and Meniere's disease is outlined in the relevant sections.
  - Cinnarazine (Stugeron 75mg) is an antihistaminic and calcium channel blocker. It is used to treat vertigo associated with motion sickness and in vertigo caused by disturbance in the inner ear. It can cause sedation and if taken with alcohol, sedation increases.The average dose is 75 mg tablet three times a day for vestibular suppression and one to two tablet half hour before travel for travel sickness.
  - Betahistine (Vertin 16mg) is also an antivertigo medication. It is commonly prescribed for balance disorders, for treatment of vertigo associated with inner ear. The average dose is 8 to 16 mg tablet three times a day.
- Vertigo can present suddenly with additional neurological symptoms like diplopia, dysarthria, ataxia, stroke, etc and is due to ischemia of the brain. The patient should be admitted and treated with aspirin, clopidogrel and possibly with low molecular weight heparin followed by warfarin.
- Patients with vertigo/dizziness associated with anxiety, panic attacks, hyperventilation syndrome or rarely depression should be treated with benzodiazepines and antidepressants like citalopram (Citara) ,fluoxetine (Fludac) or sertraline (Daxid).

Drugs used for treating Vertigo:

1. Labyrinthine Suppressants:
   - Antihistaminics: Cinnarzine (Stugeron),cyclizine(Marzine),promethazine(Phenargan), dimenhydrinate(Gravol),diphenhydramime.
   - Antiemetic: Prochlorperazine(Stemetil).
2. Vasodilators, which improve blood flow to labyrinth and brainstem: Betahistine (Vertin),nicotinic acid.
3. Diuretics, which decrease labyrinth fluid pressure: Acetazolamide(Diamox),frusemide(Lasix),
4. Anxiolytic ,antidepressants, which modify response to vertigo; e.g.,Sertaline(Daxid) or alprazolam(Trika).

Sample prescription: Vertigo: Acute Attack

- Bed rest in a dark room.
- Inj.Prochlorperazine (Stemetil)IM stat.
- IV Dextrose 5%,if the patient has severe vomiting.
- Tab Prochlorperazine (Stemetil)12.5mg (or)
  Tab Cinnarazine (Stugeron) 25-75 mg tds (or)
  Tab Betahistine (Vertin) 8 mg tds (or)
  Tab Dimenhydrinate (Gravol) 25 mg tds.

RED FLAGS

Red Flag Signs: Dizziness/vertigo

- Always refer a case of vertigo developing in a case of chronic suppurative otitis media (CSOM).
- Vertigo following head injury could be due to an intracerebral bleed. Request for an urgent CT scan/MRI of the brain.
- If a patient complaining of vertigo has an irregular pulse, this could be due to cardiac arrhythmia. Always refer.
- Vertigo associated with ataxia could be due to vertibrobasillar insufficiency. Always refer.

Perforation of Tympanic Membrane

C/F

- Pain
- Bleeding
- Hearing loss

TREATMENT

- Uncomplicated perforation usually heals by itself
- Perforations not healed by 3 months can be repaired
- Treatment is aimed at controlling otorrhoea

1. Systemic antibiotics and Analgesics/ Antihistamines. Keep ear dry
2. Ear drops are avoided unless contaminated; ENT consultation

Tinittus

AETIOLOGY

1. Wax
2. Fluid in middle ear
3. Otitis media
4. Ototoxic drugs
5. Anemia
6. HTN
7. Hypotension
8. Hypoglycemia
9. Migraine
10. Epilepsy
11. Arteriosclerosis
12. Psychogenic

CLINICAL FEATURE

Ringing sensation in ear

TREATMENT

1. Examine the ear for local pathology. Remove wax, if present.
2. Tab Neurobion 1 bd × 2 - 3 months (Vit B_1, B_6, B_{12})
3. Tab Complamina Retard 1 bd (Xanthinol Nicotinate)
4. Tab Restyl 0.25 mg at Bedtime (Tranquiliser)

Stridor

DEFINITION

- High pitched whistling or granting sound which is produced by upper airway obstruction.
- It usually seen during inspiration, however, can be seen in expiration in intrathoracic tracheobronchial obstruction.

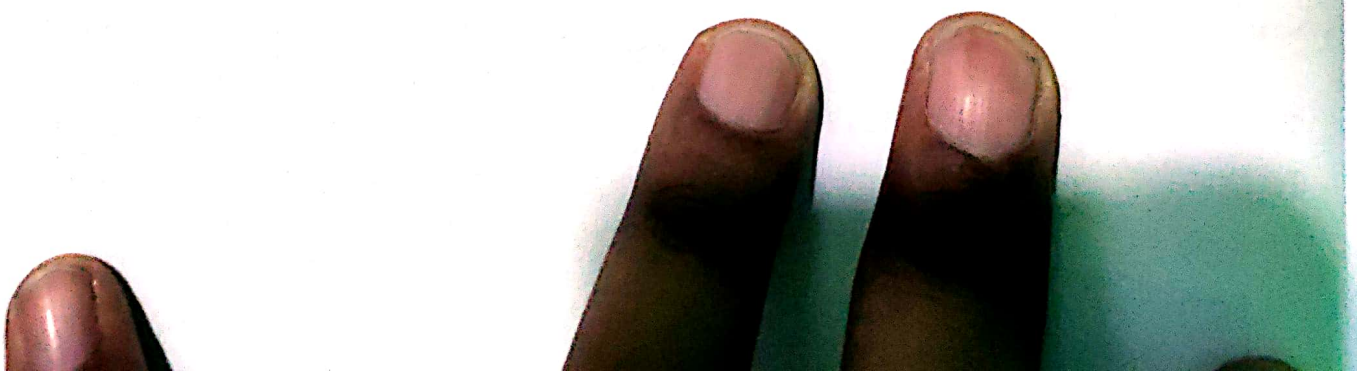
CAUSES

1. Foreign body
2. Vocal cord edema
3. Tracheal compression by tumor
4. Functional laryngeal dyskinesia
5. Epiglottis
6. Acute laryngitis
7. Diphtheria
8. Peritonsillar abscess

TREATMENT

If due to airway edema;

1. Nebulization with racemic adrenaline/epinephrine
   (0.5 to 0.75 ml of 2.25% racemic adrenaline added to 2.5 to 3 ml of normal saline)
2. Dexamethasone 4 - 8 mg IV q 8 - 12 h
3. Oxygen by face mask; propped up position; Inj Deriphyllin may also be given.
   Immediately refer the patient to ENT/Surgery.



AOM

DEFINITION

Acute infection of middle ear cavity usually following an URTI

AETILOGY

1. URI: Upper Respiratory Tract Infection
2. Foreign body
3. Trauma

C/F:

1. Earache
2. Deafness
3. Tinnitus
4. Fever
5. Vomiting
6. Seizure

TREATMENT

1. Antibiotics: Amoxclav/ Azithro/ Cephalexin/ Cefixime/ Cefuroxime axetil etc.
2. Oral decongestants + antihistamines + antipyretics (e.g. Wikoryl/ Hatric-3/ Nasivion)
3. Nasivion ND 20 tds (children <2 yrs: Saline ND, >2 yrs: Nasivion - P ND). Avoid ear drops
4. T/ Syp Vizylac/ Nutrolin-B
5. Dry local heat to relieve pain; ear toilet/ suction if discharge present. Keep ear dry.

Perichondritis of Pinna

ETIOLOGY

1. Secondary to lacerations ,
2. Hematoma & Surgical incisions ,
3. Ear piercing
4. Followed by abscess formation between cartilage & perichondrium with necrosis of cartilage.

CLINICAL FEATURES

1. Fever,
2. Painful red ear,
3. Fluid draining from the wound,
4. Swollen ear etc .
5. History of trauma to the ear and the ear is med and very tender.

TREATMENT

1. IV antibiotics → Inj.CIPLOX, Inj.METROGYL x 7days
2. Daily local dressings at early stage
3. If abscess formed → incision given & necrosed cartilage is removed.

Constipation

DEFINITION

Constipation is defined as "difficult passage of small hard stools." The frequency does not matter-a person passing stools everyday but with difficulty is constipated. A person who passes soft stool every 2-3 days is not constipated.

CAUSES

COMMON CAUSES:

- Diet lacking in fibre
- Sedentary lifestyle
- Irritable bowel syndrome
- Hypothyroidism
- Stool holding in children
- Laxative abuse(Kayam churn, other over the counter drugs)
- Drugs-opiates, anticholinergies, antacids

UNCOMMON CAUSES

- Autonomic neuropathy especially due to DM
- Inflammatory bowel disease with stricture
- Ca.rectum with mass pressing on colin
- In children-Hirschsprung's disease.

Practice Tips:

- Diet is the single most important factor for causing constipation. Western food lacks fibre.
- Unusuallly shaped stools (small pallets or ribbon like) suggest irritable bowel syndrome.
- Obesity with constipation-rule out hypothyroidism.
- Recent onset constipation in elderly should be taken seriously -it may be a symptom of malignancy in the rectum, especially when accompanied by weight loss, rectal bleeding or alternating diarrhea with constipation.
- In children, Hirschsprung's disease can present late. Consider this diagnosis in children with distended abdomen for early detection.
- Bleeding with constipation-piles may not be the only cause. Rule out carcinoma rectum, which may be present along piles.
- Check the drugs used by the patient-Over the counter drugs, opiates, drugs used for Parkinson's disease, antacids,etc
- Many people have the habit of taking ayurvedic preparations like "kayam churn" for constipation. This may lead to dependence, which in turn leads to constipation.
- "Stool holding" in children is an important cause of constipation.
- Always do a digital PR examination to rule out malignancy. It is a must in the elderly.
- Proctoscopy, sigmoidoscopy or colonoscopy may be required for diagnosis of the cause of constipation.

TREATMENT

a) For Acute constipation:

If patient has acute discomfort,

First rule out intestinal obstruction or peritonitis.Then

1. Soap water enema with 500ml soap water.
   Or Glycerine syringe (30ml Glycerine)
   Or Neotonic enema.

If there is no acute discomfort

1. Liquid paraffin 30ml after dinner/ at bedtime (Lubricant)
   Or Tab Dulcolax 2 HS (Bisacodyl=stimulant)
   Or Syr Duphalac 15ml at bedtime (Lactulose)
2. If not effective, Castor oil 15-30ml early morning (Purgative)

If there local pain at anus?

1. Painful fissure
   i) Xylocaine Oint. Locally -tds and after defecation.
   ii) Cap Baciclox 500mg tds x 5 (Antibiotic)
   iii) Tab Combiflam 1 bd (Anti inflammatory)
   iv) Liquid paraffin 30 ml HS (Stool softener)
   v) If pain is severe, refer to surgeon for anal dilatation.
2. If Perianal abscess refer to surgeon for incision.
3. If elderly or bedridden patient, Do per rectal (P.R.) examination for impacted, hard stools. Do manual removal o stools with gloved hands and Vaseline.

- If acute constipation is accompanied by colicky pain in abdomen, abdominal distenstion or vomiting, suspect intestinal obstruction, and Refer early to a surgeon.
- Strong Purgatives like castor oil or Mist alba should never be given in Pregnancy. They may induce uterine contractions.
- Always palpate the abdomen. If there is tenderness, never give Enema or strong purgatives like castor oil.

b) For Chronic Constipation

1. Regular walking and abdominal muscle exercises.
2. More roughage in diet.
   E.g: Green Vegetables, Fruits, Raw Bananas.
3. Drink more water -1.5-2 Litres/day.
4. Avoid Tobacco Chewing, mawa & Smoking.
5. If drugs like anti-hypertensives, antacids, Iron or NSAIDs are causing constipation ,change the drug.
6. Use Laxatives if and when required. First preference for Isabgol preparations paraffin preparations or Tab Dulcolax/ Laxicon
   Donot give same laxative for long time.
7. Triphala churna, kayam churna-Ayurvedic preparations are very useful.

8. Tab Mosa 5mg tds x 1-2 months,if habitual constipation (Mosapride) OR Tab Ganatone 50mg bd(Itopride)
9. Dulcolax suppository in the morning,whenever there is discomfort (Bisacodyl) -self administration at home.

- If patient has pain at anus,
  do per rectal examination and look for fissure,anal stricture or Growth.
- If patient has bleeding or intermittent diarrhoea,
  Ask for sigmoidoscopy or colonoscopy to rule out malignancy in rectum and colon.
- In Bedridden patients with constipation, give Enema or Glycerin Syringe on alternate mornings.
- Rotate the Laxatives. Avoid use of same laxative for months.

Bitter Taste in Mouth

TREATMENT

1. Stop the drug causing it. Eg, Flagyl, Tinidazole, antibiotics, Choroquine, etc.
   Use enteric coated tablets if available or give injectable form.
2. Digene 2 tsp x 4 hrly (Antacid)
3. Tab Perinorm 10 mg tds if nausea (Anti-emetic metoclopramide)
4. Chew cardamom, Chocolates, to mask the bitter taste.

While prescribing drugs like Flagyl, Cholroquine etc. instruct the patient about the after taste in the mouth.

Anorexia

AETIOLOGY

1. Gastrics
2. Carcinoma
3. TB
4. CCF
5. Renal/respiratory failure
6. Drugs
7. Alcohol
8. Infective fevers
9. Hyperparathyroidism
10. Physiological
11. Psychogenic

TREATMENT

1. Inj. Neurobion 2 cc IM ×on alternate days × 5 (Vit B)
2. Syr. Aptivate 2 tsp × 2 times/day (General Tonic)
3. Syr. Practin 1 tsp × 3 times/day × ½ hr before meals (Cypro-heptidine)
4. Tab Longifene 25 mg bd ½ hr before food (Anti-histaminic = Bucilizine)
5. Tab Zentel 400 mg 1 tab stat (Antihelminthic)

General Treatment

6. Good food rich in Proteins, Fresh fruits
7. Proteinules × 2 tsp in a glass of milk × bd (Proteins)
   OR Threptin Biscuits 2 bd
8. Regular exercises
9. Change in climate, especially for convalescent patients
10. Stop smoking, and drinking alcohol

If Anemic

Cap. Autrin 1 daily × 3 months (Iron)

For Extreme Cases with Poor Intake

I.V. Glucose saline 1000 ml

I.V. 25% glucose 4 amps

Other Drugs to Try

- T. Unienzyme 1 bd × 15 (Digestive enzymes)
- Inj. Decadurabolin 50 mg IM × every wk × 3 (Anabolic steroid)

If there is no response to treatment

Investigate

- Blood - Hb%, S. Bilirubin, BI, Urea, S. Creatinine
- Urine-for bile salts
- X-ray Chest for TB and Malignancy
- Gastroscopy and Ultrasound of abdomen in elderly patients

NOTE

Important points that may be missed

- Is he taking drugs causing anorexia-Metformin, Digitalis, anti-hypertensives, Metronidozle.
- In female patient

  Is she pregnant? Are there any problems at home with in laws or children?
- In school going children

  Are there any psychological or study related problems at school?
- In adult males

  Is he alcoholic? Is he eating excess of Tobacco, Mawa, Pan Parag? Could it be malignancy anywhere? Particularly of Liver/Stomach.
- Pulmonary Tuberculosis may present with only Anorexia.
- In old patient with severe anorexia, first think of carcinoma of stomach
- If anorexia is so severe, that patient does not feel like looking at food, think of Infective Hepatitis. The icterus may develop after 1-2 days.

Hiccups

AETIOLOGY

1. IWMI
2. DKA
3. Aortic aneurysm
4. Mediastinitis
5. CVA
6. Renal/Hepatic/Respiratory failure
7. Liver abscess
8. Hepatitis
9. Cholecystitis
10. Alcohol ingestion
11. Pericarditis
12. Pneumonia
13. Empyema
14. Esophageal obstruction

TREATMENT

1. Mucaine gel 2 tsp Q2 - 4H (Oxethazaine, Mg hydrox, Aluminium hydrox)

   Note: Mucaine can also be used for gastroesophagitis, heart burn
2. T Perinorm/Cyclopam/Buscopan or T Baclofen (most effective) (T.N - Liofen) 5 or 10 mg tds
3. T Largactil 50 mg st and tds (preferred for intractable hiccough)
4. C Pantop 40 OD
5. Breathing in and out in a plastic/paper bag. Breath holding as long as possible. Drink ice cold water.

If Severe

1. Inj Metoclopramide 2 cc iv or Haloperidol, 2-10 mg IM or Largactil (chlorpromazine) 2 cc IM/IV
2. Xylocain viscous (Lignocaine) 30 ml to drink.

Flatulence

- Rule out - Inferior wall M.I

INVESTIGATIONS

1. Stools (for Amoebiasis, Giardiasis, Tapeworms etc)
2. Hb% (for anemia), Blood sugar
3. Ultrasonography - Gall bladder
4. Sigmoidoscopy & Gastroscopy if indicated

TREATMENT

1. Avoid oily foods. Avoid aerated drinks. Avoid smoking and pan chewing. Avoid overeating. Avoid onions, peas, beans,
2. Tab Bestozyme 1 bd ×5 (Digestive enzymes)
3. Tab Gastractive 1 tds × before meals (Domeperidone)
4. Tab Ganatone 50 mg tds (Prokinetic Itoprde)
   OR Tab Kinetix 5 mg tds (Mosapride)
5. Tab Albendazole 400 mg 1 stat (Deworming)
6. A teaspoonful of soda or ENO slat in water after meals. (For symptomatic relief)
7. If mucus stools, T. Flagyl 400 mg tds × 5 (Anti amoebic = 1F/Tinidazole/Ornidazole)
8. If constipation, Liq. Paraffin 15 - 30 ml HS (Laxatives)
9. Regular exercises, to improve the tone of abnormal muscles.
10. Regular moderate meals. Avoid over eating.

OTHER DRUGS TO TRY

1. Gelusil MPS tsp tds (Antacid with MPS)
2. Vibact/Lactiflora Sachet 1 × bd × 5 days (Lactobacillus)
3. Sorbiline tsp tds (Choline)
4. Carmicide liquid tsp tds (Carminative)
5. Tab Enteroquinol 1 bd × 10 (Antiamoebic)
6. Tab Gasex × 1 tds (Ayurvedic) or Kayam churna 1 tsp at bedtime

Epigastric Pain

CAUSES

Causes of Epigastric Abdominal Pain	
Epigastric	Clinical features
Acute myocardial infarction	May be associated with shortness of breath and exertional symptoms
Acute pancreatitis	Acute onset, persistent upper abdominal pain radiating to the back
Chronic pancreatitis	Epigastric pain radiating to the back
Peptic ulcer disease	Epigastric pain or discomfort is the most prominent symptom
Gastroesophageal reflux disease	Associated with heartburn, regurgitation, and dysphagia
Gastritis/gastropathy	Abdominal discomfort/pain, heartburn, nausea, vomiting and hematemesis
Functional dyspepsia	The presence of one or more of the following: postprandial fullness, early satiation, epigastric pain, or burning
Gastroparesis	Nausea, vomiting, abdominal pain, early satiety, postprandial fullness and bloating

TREATMENT

1. Avoid chillies and sour food, smoking and alcohol
2. Stop irritant drugs like NSAIDs, if patient is taking them
3. Gelusil MPS 2 tsp × tds × 5 days (Antacid)
4. Tab Histac 150 mg bd × 5 days (Ranitidine)
5. Tab Baralgan 1 tds if spasmodic pain

- If pain is not relieved completely

  Ask for investigations
  1. Gastroscopy
  2. Ba Meal (if gastroscopy is not available)
  3. Stool examination
  4. Ultrasonography
  5. S.Amylase and Lipase
  6. ECG

- If there is mucus or E. Histolytica in stools

  Tab Flagyl 400 mg × tds × 7 days (Anti amoebic) or Tab Secnil 1 gm × 2 tabs single dose or Tinidazole or combination drugs

- If Liver is palpable and tender, see
  - Is there Jaundice? Infective Hepatitis?
  - Is there C.C.F? Heart murmur, neck vein or edema?

    If not, ask for ultrasonography of Liver and GB.

Dyspepsia

DEFINITION

ROME III CRITERIA FOR DYSPEPSIA

≥1 of the following:

1. Postprandial fullness
2. Early satiation (inability to finish a normal-sized meal)
3. Epigastric pain or burning

TREATMENT

1. Syp. Carmicide 2.5 – 5 ml tds in children and 5 – 10 ml tds in adults (sodium citrate + citric acid + alcohol)
2. C. Aristozyme 1 tds (diastase, pepsin). Diastase is a digestive enzyme; also has antiflatulent action. Aristozyme Syp and Dps available.

Rectal Bleeding

DEFINITION

- Melena is the passage of black, tarry stools due to altered blood (blood should remain in the gut for 14 hours approximately). It usually means bleeding episodes from sites above the ligament of Treitz. However, even up to middle of transverse colon can produce melena. It takes 60 ml or more of blood in the stomach to turn stools black. One episode of bleed can produce 5-7 episodes of melena.
- Hematochezia is the passage of fresh blood per anus, usually in or with stools.

CAUSES

Colonic Bleeding (95%)	Small Intestinal Bleeding (5%)
• Diverticular disease	• Angiodysplasia
• Anorectal disease (Hemorrhoid, anal fissure, fistula in ano, solitary rectal ulcer, etc.)	• Crohn's disease and infectious disease
• Neoplasia (Polyp, ulcerated lesions)	• Neoplasia (Polyp, Ulcerated lesions)
• Inflammatory bowel disease	• Radiation
• Infectious collitis	
• Angiodysplasia	• Meckel's diverticulum
• Radiation colitis/proctitis	• Aortoenteric fistula
• Other	• Mesenteric ischemia

INVESTIGATION

1. FBC
2. U & E
3. LFT
4. Coagulation profile

TREATMENT

Medicine/ Surgery consultation

Anal Itching

AETIOLOGY

- Infection
- Dietary irritants
- Anxiety
- Dermatitis
- Diarrhea
- Poor hygiene

GENERAL INSTRUCTIONS

1. Wash hands, nails and perianal area with soap and water, after passing stools.
2. In villages, avoid open air defecation.
3. Wash vegetables thoroughly before cooking or eating
4. Use boiled or filtered water for drinking.

TREATMENT

Dosage of broad spectrum Antihelminthics:

1. Tab Mebendazole 100 mg bd × 3 days
2. Tab Zentel 400 mg × single dose (Albendazole)
3. Tab Combantrin 250 mg ×3 tabs single dose (Pyrantel)
4. Tab Dewormis 150 mg × single dose (Levamisole)
5. Tab Sta-500 1 tablet ×single dose (Mebendazole + Levamisole)

For Thread Worm infestation

T. Albendazole 400 mg × bd × 3 days or T. Mebex 100 mg × bd × 15 days

For Round Worm infestation

Piperazine Citrate 30 ml at bedtime on 3 consecutive days. (75 mg/kg body wt./day) or any of the broad spectrum anthelmintics.

For Hydatid Cyst

Tab Albendazole 12 mg/kg/day × 1 month

Joint Sprain

Commonly involve ankle and wrist joints

C/F:

1. Pain
2. Swelling
3. Restriction of movement
4. Contusion

TREATMENT

1. RICE
   - Rest
   - Ice application
   - Compression (using dressing/crepe bandages)
   - Elevation

   Crepe bandage (in cm):

   - Adult:
     Knee 15
     Ankle 10
     Wrist 8
   - Children:
     Knee 10
     Ankle 8
     Wrist 6

2. Analgesics

Musculoskeletal Pain

TREATMENT

1. Foment with hot water bag 3 times per day for c/c pain
2. Local ice application for acute inflammation
3. DICLONAC/VOLINI (diclofenac)/ KETOROL/KETANOV (ketorolac), DOLONEX/PIROX(piroxicam) for LA
4. T IBUGESIC PLUS BD/PIROX 20 mg OD/KETOROL 10 mg Qid/ ETOSHINE (etoricoxib) 60 mg/90 mg or 120 mg OD
5. T BIDANZEN or FLANZEN or LYSER FORTE 10 mg tds (serrapeptase) or T CHYMORAL FORTE Qid ½ hr before food (trypsin, chymotrypsin) or T ZYMOFLAM/RUTOHEAL (trypsin, bromelain,rutoside) if contusion present.
6. Inj MYORIL (thiocokchicoside) 4 mg IM st for muscle spasm

MUSCLE RELAXANTS +NSAID COMBINATIONS

1. T ROBINAX 500 mg Qid (methocarbamol)
2. T MYORIL 2/4/8 mg (Thiocolchicoside)
3. IBUGESIC-M (Ibuprofen + Methocarbamol)
4. XYKAA MR 4/8 mg (P mol + Thiocolchicoside)
5. ROBINAXOL (Methocarbamol 350 + P mol 250)
6. VOLITRA MR
7. BRUSPAZ (Diclo + Thiocol)
8. MOBISWIFT -D or Myospas D (Metaxalone 400 + Diclo)
9. ORTHOKIND-P 400 (etodolac 400 + P/L 500)
10. Aceclo-MR (Aceclo + P mol + chlorzoxanoe)
11. THIOCECLO SR/Thiox OD (aceclo + Thiocol)
12. ROBINAXOL-D (Methocarbamol + P/L + Diclofenac)
13. ESTOSHINE MR (etoricoxib + Thiocol)

Neck Pain

CAUSES

Deformities: Infantile torticolis	Infections of bone: TB of cervical spine. Pyogenic infection of cervical spine	Tumors: Benign and malignant tumors in relation to cervical spine and nerve tools
Arthritis of spinal joints: Rheumatoid arthritis-ankylosing spondylitis (RA-AS) Cervical spondylosis	Mechanical derangement: • Prolapsed cervical disc • Cervical spondylolisthesis • Whiplash injury • Cervical spine fracture • Neck muscle strain • Neck sprain	Referred pain: • Ear • Throat • Brachial plexus • Angina (pain extends to neck) • Aortic aneurysm • Meningismus

TREATMENT

1.Suspect Cervical Spondylitis if

1. Pain and stiffness of back of neck in mornings
2. Neck pain radiating to arm or shoulder
3. Tingling numbness in one hand
4. Elderly patient with giddiness, especially on looking upwards

2.Ask for

1. An X-ray of cervical spine - AP and Lateral, if pain is severe or radiating or not responding to drugs
   A young patient = Look for Cervical Rib in AP view
   In lateral view = Look for Reduction in intervertebral space and, osteophytes
2. If neurological symptoms, MRI of C Spine

3.General advise

1. Sleep on firm mattress
2. Stop using pillow or use thin firm pillow
3. Neck exercises to strengthen the Neck and shoulder muscles, and to keep the cervical spine mobile.
   i. Full range of flexion, extension, side flexions and circumduction × 10-20 times
   ii. Forceful movements in all directions against resistance provided by fisted hand.

4.Drug treatment

1. Cervical Traction × 10 days (4-5 kg, wt × 5-10mins)
2. Cervical collar for constant use, during daytime
3. Inj. Diclonac 3 cc IM × alt days × 3 (Injectible NSAID)
4. Tab Diclonac - 50 mg tds × 7 × after food, then 1 bd × 10-15 days (Any NSAID)
5. Tab Dafnacort 6 mg bd × 5 × after food, (Short cause stroid if acute pain)
6. Gelusil MPS 2 tsp × tds × 7 (Antacid Acid Inhibitors) to counter gastritis produced by NSAID and STER
7. Methyl Salicylate oint locally (Counter Irritant) or Pirox gel locally (local NSAID)

If shoulder muscles are tender and in spasm, Add

8. Tab Robinax 500 mg × Qid × (Muscle relaxants) or Tab Carisoma 1 tds, Tab Tizanidin 1 tds, Tab Ibuflamar-MX 1
   etc.
9. Tab Calmpose 5 mg bd × 5 (Tranquiliser)
10. S.W.D. (Diathermy) × 10 days for neck.

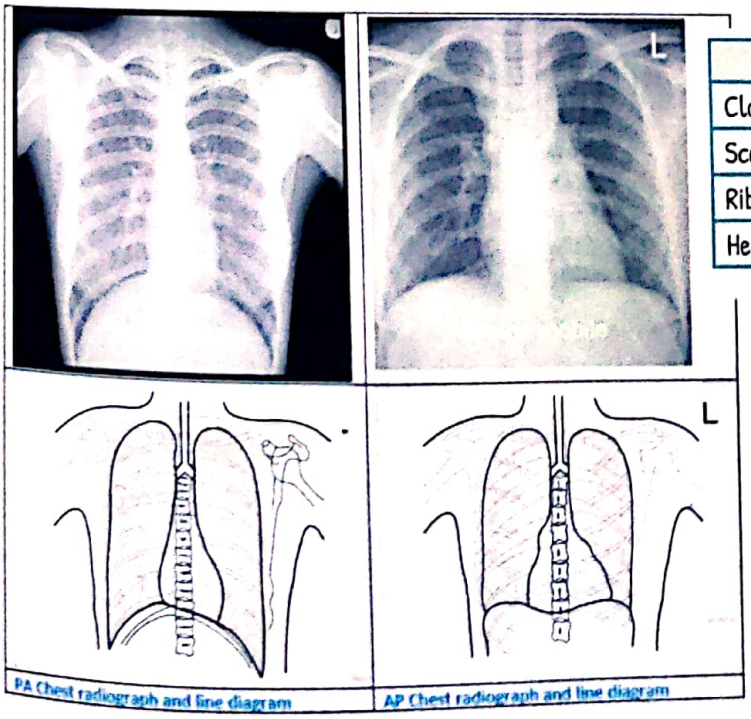
X Ray Views

- Ankle/elbow/shoulder/ hip/knee, forearm, leg, wrist - AP/lateral Foot/hand/- AP/
- oblique
- C spine/T-L spine/ L-S spine- AP/lateral
- Chest- PA view
- Acromioclavicular Jt- AP view
- X-ray pelvis with both hips- AP view

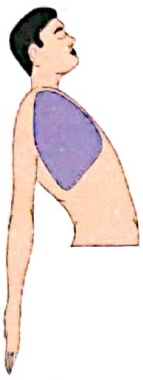
Common X-Ray views:

- Schuller's view: Mastoid and temporal bone
- Open mouth view: Odontoid
- Waters' view: Paranasal sinuses
- Swimmers view: Cervicothoracic junction
- Stryker notch view: Hillsach's lesion
- West point axillary view: Bankart's lesion
- Zanca view: Acromioclavicular joint
- Oblique view: Scaphoid
- Judet view: Acetabulum
- Shenton's arch: Pelvis
- Von Rosen view: Developmental dysplasia of hip.
- Skyline view: Patella
- Mortise view: Talus
- Broden's view: Subtalar joint
- Kite's view : CTEV.

PA vs AP view

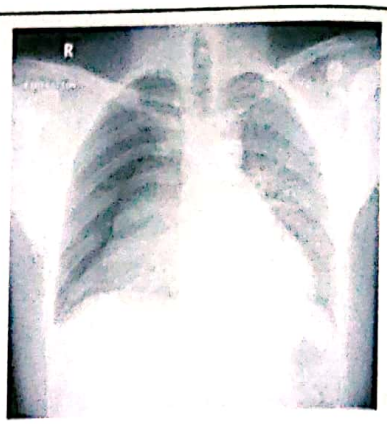


	PA view	AP view
Clavide	Over lung fields	Above lung apex
Scapulae	Away from lung fields	Over lung fields
Ribs	Posterior ribs distinct	Anterior ribs distinct
Heart		Relatively enlarged



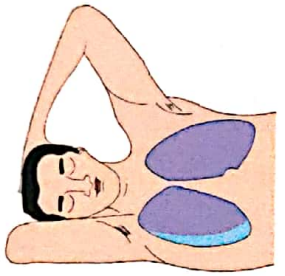
Lordotic view

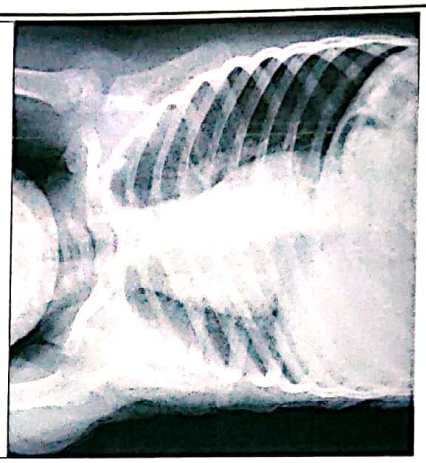
FOR EXAMINATION OF THE LUNG APEX



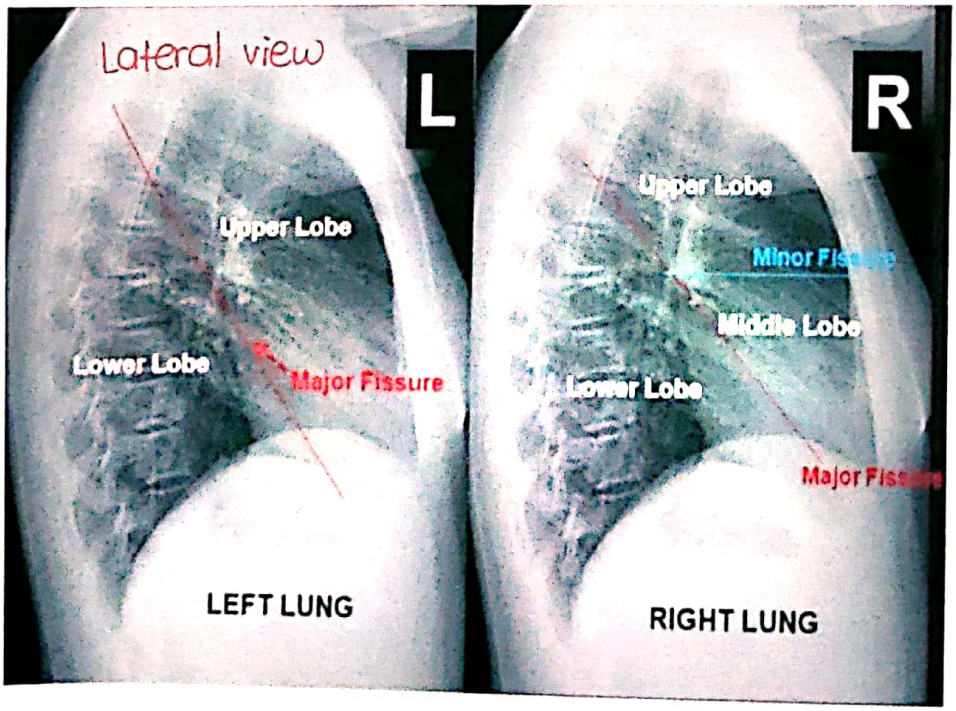
Expiratory view

FOR DIAGNOSIS OF BRONCHIAL ASTHMA

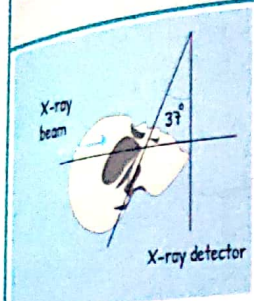
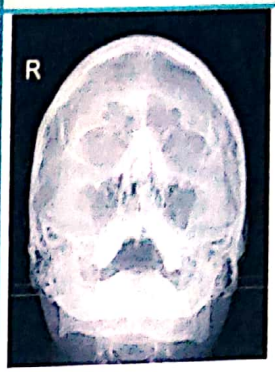
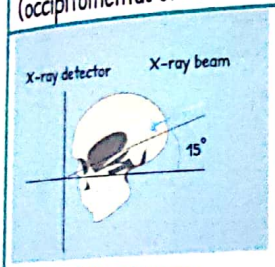
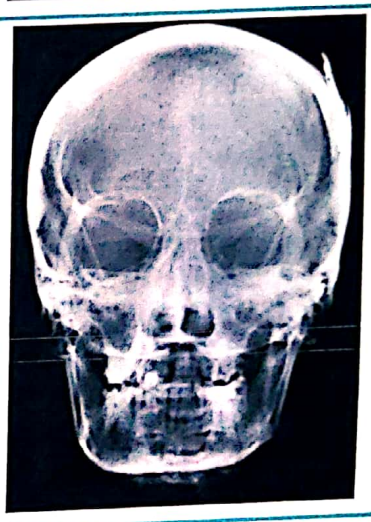
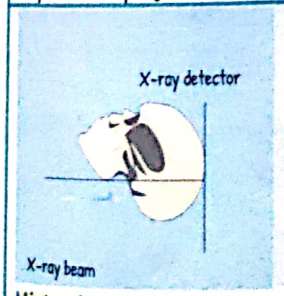


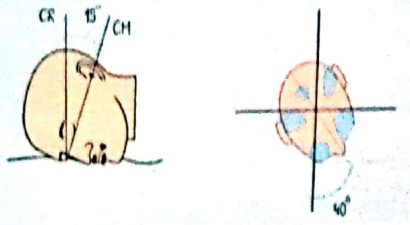


Lateral Decubitus view



RADIOGRAPHIC VIEWS OF PARANASAL SINUSES AND MASTOID:

X-ray projection	Structure seen/Clinical application	Radiology
 **Water's view*** (occipitomental or nose-chin position)	Maxillary sinuses(main) Frontal sinuses Ethmoidal sinuses Sphenoid sinus* (open mouth)	
 **Caldwell's view** (occipitofrontal view or nose-forehead position) The view is taken with the nose and forehead touching the film and the X-ray beam is projected 15-20° caudally.	Frontal sinuses(main) Ethmoid sinuses Maxillary sinuses	
 **Hirtz view** (submentovertical) Vertex near the film and X-ray beam projected at right angles to the film from the submental area.	Sphenoid sinus(main)	



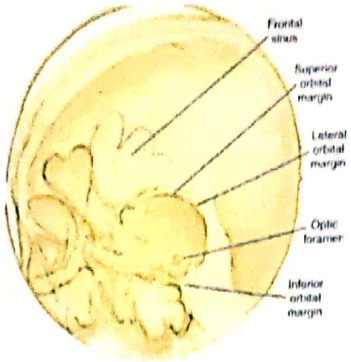
Rhese's view

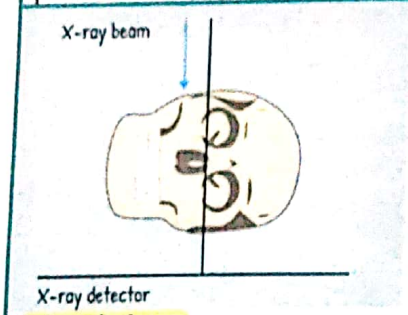
(lateral oblique)

The zygoma,nose,chin should touch the casette.X-ray beam directed postero-anteriorly at 40° to the mid-sagittal plane.

Ethmoid sinus

(main)

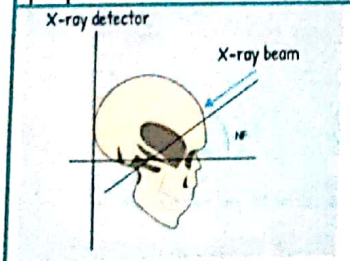




Lateral view

Lateral side of the skull lies against the film and X-ray beam is projected perpendicular from either side.

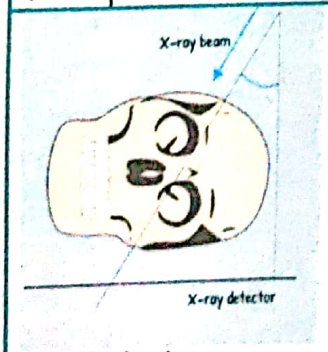
Frontal, ethmoid, sphenoid, maxillary sinuses.



Towne's view

(anteroposterior view)

Both internal auditory canals are seen.It is used in acoustic neuroma,apical petrositis.



Schuller's view

(30° Lateral oblique)

Cholesteatoma,post mastoidectomy cavity,mastoid abscess.

USES

Musculoskeletal	Infectious
• Nonspecific musculoskeletal backpain • Spondylolysis/ Spondylolisthesis • Scoliosis • Scheuermann disease • Disc degeneration and/or prolapsed	• Discitis • Vertebral osteomyelitis including tuberculosis (Pott disease) • Epidural abscess • Sacroiliac joint infection
Others	**Nonspinal infection**
• Intervertebral disc calcification • Congenital absence of pedicle • Vertebral apophyseal fracture • Aneurysmal bone cyst • Sacroiliac joint stress reaction • Idiopathic juvenile osteoporosis	• Paraspinous muscle abscess • Pyelonephritis • Pneumonia • Pelvic inflammatory disease • Endocarditis • Viral myalgias
Inflammatory	**Neoplastic**
• Ankylosing spondylitis • Psoriatic arthritis • Inflammatory bowel disease-associated arthritis • Reactive arthritis	• Osteoid osteoma • Leukemia or lymphoma • Solid malignancy, primary or metastatic • Other benign tumor: Neurofibroma, vascular malformation
Others	
• Appendicitis • Sickle cell pain crisis • Syringomyelia • Cholecystitis • Pancreatitis	• Chronic recurrent multifocal osteomyelitis • Psychosomatic illness • Nephrolithiasis • Ureteropelvic junction obstruction

INVESTIGATIONS

- Hb% - X-ray LS Spine - AP and Lateral (for Osteoarthritis, disc prolapse, TB spine , Osteoporosis etc.)
- In females, refer to Gynaecologist if X-ray is normal, to rule out Gynaec causes.
- Ultrasonography, for Renal stone or Pancreatitis.
- If osteoporosis, Dexascan
- If weakness, wasting, loss of sensation or severe pain in the legs, MRI of LS spine.

TREATMENT

In Acute Pain

1. Complete bed rest
2. Inj. Voveran 3 cc IM × alternate days × 3 (NSAID = Diclofenac)
3. Tab Voveran 50 1 tds × after food × 7 (Any NSAID e.g. Brufen, Arflur, Indocap, Meftal, Dolonex, Tobitil, Nimulid, Zolandin, Suganril etc.)
4. Tab Wysolone 5 mg × tds × 5 (Short course steroid)
5. Gelusil MPS 2 tsp tds (Antacid/Acid inhibitor) or Cap Omez 10 mg OD
6. S.w.d. (Diathermy) for Lumbar spine × 5-10 days
7. Tab Alprazolam 0.25 mg bd in acute phase (Tranquiliser)

Once the Acute Pain Subsides

1. Tab Voveran-SR 1 daily × after food. (Maintenance dose of NSAID e.g. Froben SR, Indocap SR, Pirox, Tobitil etc.)
2. Tab Ostocalcium 2 bd × 30 (Calcium)
3. Cap. Autrin 1 OD × 30 (Iron)
4. Back exercises: to increase back muscle tone.
    i. Leg raising in Dorsal recumbent position × 10-20 times × 2 times/day
    ii. Push ups
    iii. Swimming
5. General instructions
    i. Maintain straight back posture while standing or sitting
    ii. Avoid bending forwards and lifting weights
    iii. Sleep on hard mattress
    iv. Gentle massage with Rubefacient ointments (3D-1 to 4)
6. Use Lumbosacral belt to support the spine and prevent bending.

WHEN TO REFER?

When to refer to a Orthopedic Surgeon?

1. If no relief with routine treatment.
2. If pain is very severe or S.L.R. test is Positive
3. If there is any Neurological deficiency in legs, earliest being weakness of dorsiflexion of great toe.
    - Lack of exercise and bad posture cause most of the backaches in young patients as seen in General practice
    - SLR test and EHL weakness must be tested in every case of backache
    - All patients on NSAIDs should be instructed specifically to take the drugs after food, and to stop the drug immediately, if it causes epigastric burning.
4. If there is shooting pain along one leg, these patients will require Pelvic Traction, Epidural injections, Myelography MRI or surgery.

Heel Pain

AETIOLOGY

1. Plantar fascitis
2. Achilles tendonitis
3. Heel spurs
4. Stress fractures
5. Bursitis

INVESTIGATION

X-ray foot

TREATMENT

1. Foment 2 times/day in a tub of hot water
2. Apply Methyl Salicylate oint 2-3 times/day (Rubefacient or NSAID Ointment)
3. Inj. Voveran 1 amp IM × alt × 3 (Injectable NSAID)
4. Tab. Voveran-50 1 tds × 7 (any NSAID)
5. Cap Proxyvon 1 tds × 3-5 days × after food × in acute phase (low dose Steroid), with antacid

If there is no relief

Ask for X-ray heel-lateral, and refer to orthopedic surgeon.

1. L.H.C. injection into plantar facial insertion
2. If no relief, Plantar fasciotomy
3. Plantar fasciitis is a self-limiting condition. It will subside by itself in 4 to 6 months. So have patience.
4. Use of correct footwear, with soft concavity in the heel part of the sole, gives tremendous relief.

- L.H.C. injection in heel, must be given with great aseptic precautions, preferably in Operation theatre. Because infection in the heel could be disastrous. But the L.H.C. gives dramatic results.

First Aid in Fractures

MANAGEMENT

First Aid

1. Inj. Fortwin 1 cc IM/I.V. stat (Strong Analgesic)
2. If B.P is low, start a fast I.V. drip of DNS or RL
3. If there is an open wound near the fracture site, clean it thoroughly and cover it with sterile dressing.
4. Immobilize the limb with a wooden splint. Splint should be long enough to fix one joint above and one joint below t fracture.
5. Shift the patient to a Orthopedic surgeon.
6. If you suspect fracture of spine = severe backache or limb weakness or paraphlegia, supervise patient shifting personally. Three persons should lift the patient without moving the spine and patient should be kept on a hard wooden board.

Care After Plaster

1. First 2-3 days, watch for distal edema on Fingers/Toes. Keep the limb elevated, and if edema does not subside with elevation refer back as-? Tight plaster - for slitting.
2. If there is increasing pain, or if fingers show change of colour to white or blue, consider it an absolute emergency. Take the patient immediately & personally to orthopedic surgeon for immediate removal of plaster. Delay of 2-3 hours may cause gangrene.
3. Encourage the patient to keep his muscles active.
   a) Joints that are outside the plaster, should be moved through full range, repeatedly.
   b) Patient should concentrate and contract the muscles that are inside the plaster to minimize their wasting and preserve their power.

DEFINITION OF ANEMIA

Anemia is defined as decrease in circulating red blood cell (RBC) mass. It is characterized by decrease of hemoglobin concentration (Hb)/RBC count/hematocrit (packed-cell volume (PCV)) below normal for patient's age, sex, and altitude residence.

Normal adult hemoglobin level is in the range of 13–17 g/dL in males and 12–15 g/dL in females.

CLUES FOR ETIOLOGY OF ANEMIA

Iron Deficiency Anemia	
Specific symptoms	Pica, dysphagia, restless leg syndrome, and melena
Specific signs	Bald tongue Koilonychia Blue sclera
Peripheral smear	Microcytic hypochromic red cells
Other specific investigation	Iron studies, BM staining for iron, stool/urine for occult blood, and endoscopy
Megaloblastic Anemia	
Specific symptoms	Tingling and numbness Sensory ataxia
Specific signs	Glossitis, knuckle pigmentation, absent deep tendon reflexes (DTRs), sensory loss, and positive Romberg's test
Peripheral smear	Macrolytic RBCs, hypersegmented neutrophils, and pancytopenia
Other specific investigation	Serum Vitamin B_{12} levels, red cell folate levels, bone marrow examination, and schillings test
Anemia of Chronic Disease	
Specific symptoms	Symptoms of chronic kidney, liver disease, and connective tissue disorders
Specific sign	• Hypertension, arteriovenous (AV) fistula-chronic kidney disease (CKD) • Signs of liver cell failure-chronic liver disease (CLD) • Signs of rheumatoid arthritis, systemic lupus erythematosus (SLE),etc.
Peripheral smear	Normocytic normochromic anemia ± pancytopenia
Other specific investigation	Renal function test, liver function tests, autoantibodies, and raised serum ferritin
Hemolytic Anemia	
Specific symptoms	History of associated jaundice, developmental delay, family history positivity, recurrent blood transfusions, and gallstones
Specific signs	• Traid of anemia + Jaundice + Splenomegaly • Hemolytic (Chipmunk) facies • Hyperpigmentation, short stature, and leg ulcers
Peripheral smear	• Micrlytic hypochromic (Thalassemia) • Microspherocytes (hereditary spherocytosis)

	• Sickle cells • Reticulocytosis
Other specific investigations	Hemoglobin electrophoresis, Coombs test, sickling test, and osmotic fragility
Aplastic Anemia	
Specific sypmtoms	Recurrent infections Bleeding manifestations
Specific signs	Signs of Pancytopenia No organomegaly
Peripheral smear	Pancytopenia
Other specific investigation	• Bone marrow examination • Cytogenetics

TREATMENT

If Pallor is severe or if Liver/Spleen are palpable. Then ask for Hb% WBC and peripheral smear before starting treatment

For Nutritional or Iron Deficiency Anemia

1. Cap. Autrin 1 daily × 3 months (Iron + Folic acid)
2. Tab Mebex 1 bd × 3 days, to be repeated after 10 days (Ante-helminthic for Hookworms)
3. Good food, with Green vegetables, milk, beans and peas, and in Non-vegetarians-meat, eggs, Liver and Kidney.
4. Proteinules 2 tsp in milk 2 times/day (Protein)
5. Inj. Vitcofol 2 cc IM × alt days × 5-10 injections (Bplex)
   OR Inj. Neo-hepatex 2 cc IM × alt × 5 (Liver extract)
6. If patient gets nausea or constipation with oral iron
   i. Try another compound of iron like Ferrous ammonium citrate (Dexorange), Ferrous Glycine sulfate (Fezocar), Ferrous succinate (Hematrene) etc.
   ii. Give injectable (Parenteral) Iron
   Three ways to give parenteral Iron:
   a) Inj. Imferon 2 cc × deep IM by Z-technique with 21 No. needle. × after ½ ml deep IM test dose × daily × 1 days (Injectible Iron)
   b) I.V. Imferon drip:
   Give Inj. Imferon ½ cc deep IM on previous week as test dose. If patient gets joint pain, I.V. Imferon is avoided.
   Start I.V. 5% dextrose drip Inject 1 cc Imferon very slowly intravenously as I.V. test dose.
   Wait for 5 minutes.
   If any reaction or hypotension, give Inj. Decadron 2 cc and Inj. Mephentin 2 cc with fast I.V. drip. If no reaction, add 30 ml Imferon to the drip and let it run slowly over 3-4 hours.
   With any iron preparation oral or injectable, Hemoglobin rises by 1 gm% per week or 1 % per day.

c) Iron Sucrose I.V. Injection:

Inj. Uniferon or Imferon-S 2 amps = 200 mg (10 ml) I.V. × in 100 ml NS × 3 times/week × till total dose is given.

Or as a weekly drip,

5 amps in 500 ml N. Saline IV × over 4 hours × every week × 4-6 weeks

d) Ferric Carboxy Maltose IV:

Inj. Orafer - FCM 500 mg 1 amp in 100 ml NS drip.

Calculation of total dose of Imferon

Total dose of Iron = 2.38 ×body weight in kg ×(15-Hb in gm%)

To this add 1000 mg for replenishing Iron stores.

E.g. 60 kg patient with 6 gm% Hb needs 2.38×60×(15-6)+1000 mg = 2285 mg of Iron

This is equivalent to -

= 45.7 ml of Imferon

= 22 ampoules of Uniferon

If satisfactory response is not seen, Refer to a physician

1. Look for the source of blood loss: Hook worms, piles, PV, Bleeding, malignancies.
2. If anemia is severe, Refer for blood transfusion
   If Hb<6 gm%, advise Transfusion of packed cells
   If Hb% 3 gm%, advise Transfusion of packed cells.
3. In refractory cases, give anabolic steroids or erythropoietin-
   - Inj. Deca-durabolin 50 mg IM× every 4 th day ×3 to 5 injections (Nandrolone Decaonate)
   - Inj. Epofer 2000 iu (25-100 iu/kg) × thrice weekly × subcut/Slow IV × 4-8 weeks (Erythropoetin) for CRF, suppressed bone marrow, with chemotherapy and refractory anemias.

- Anemia exaggerates practically all the vague complaints like joint pains, chest pain, backache, weakness, anorexia, digestive digestive disturbances, edema, breathlessness, palpitations, Tingling limbs etc. So you must look for pallor in tongue and conjunctiva of every patient and prescribe iron in addition to the symptomatic treatment.
- Anemia is very common and Hemoglobin of more than half the patients, even in well-to-do families is below normal
- Give anthelmintic to every patient with pallor.
- Oral Iron capsules are preferred to liquid preparations which are costlier and stain the tongue black.
- Refer to Physician immediately, if patient is very very pale, if Liver/ Spleen is enlarged or if bleeding tendencies like epistaxis/bleeding gums are seen.

Impaired Consciousness

COMPARISON OF ALTERED STATES OF CONSCIOUSNESS

State of Consciousness	Definition	Pathophysiology	Time course	Disposition
Delirium	Acute confusional state, with impaired attention, perception, thinking and memory	Always has an organic cause • Primary intracranial disease • Systemic disease • Exogenous toxins • Drug withdrawal	Acute	Often stable when underlying etiology is addressed
Dementia	Implies a loss of mental capacity; short-term memory is particularly affected, as well as cognitive abilities.	Most are idiopathic (e.g. Alzhimer's Parkinson's, vascular dementia)	Usually chronic and progressive	Usually not reversible, but can be treated symptomatically to a limited extent: only 10-20% have a reversible condition
Coma	Reduced state of alertness and responsiveness in which the patient cannot be aroused.	Complex with many different sources	Usually acute or subacute	May be reversible if source is rapidly identified; the more time a patient spends in a coma, the less favorable the prognosis.

MNEMONIC FOR DIFFERENTIAL DIAGNOSIS OF ALTERED LEVEL OF CONSCIOUSNESS

MOVESTUPID

- Metabolic: Inborn errors of metabolism (eg. Urea cycle defects, propionic academia)
- Oxygen insufficiency: Hypoxemia of cardiopulmonary etiology, hypercarbia, carbon monoxide poisoning
- Vascular/ cardiac causes: Cerebrovascular accident, vasculitis (including myocardial infarction), ventriculoperitoneal shunt malfunction
- Endocrine/electrolytes: Diabetic ketoacidosis, hypoglycemia, electrolyte abnormalities
- Seizures/Sepsis/Shock
- Tumor/Trauma/Temperature/Toxins
- Uremia: Renal failure, liver failure
- Psychiatric/Porphyria
- Infection/Intussusception
- Drugs/Drama

AETIOLOGY

1. Orthostatic hypotension
2. Carotid sinus syndrome
3. Neuro cardiogenic syncope
4. Cardiac arrhythmias
5. Structural heart disease
6. Parkinsonism
7. Arthritic changes
8. Neuropathy
9. Neuromuscular disease/ Vertibular disease
10. Visual impairment
11. Dementia
12. Post prandial hypotension
13. Urinary incontinence
14. Low blood pressure
15. Hypoglycemia
16. Emotional distress
17. Lack of sleep
18. Hyper ventilation
19. Head trauma
20. ICH
21. Seizure disorder
22. DKA
23. Alcohol/drug intoxication
24. Dehydration
25. CO inhalation
26. Hyponatremia
27. Hypo/Hyper calcemia
28. High G force
29. Uremic/Hepatic/Hypertensive
30. Encephalopathy
31. Medications:
    - Polypharmacy
    - Sedatives
    - Cardiovascular medications
32. Hyper/Hypothermia
33. SAH

INVESTIGATION

- CT head if any head injury to R/o SAH
- Vomiting/Seizure - CT head should be done
- Check BP
- O_2 saturation
- GRBS - R/o Hypoglycemia

TREATMENT

1. 1° R.L/N.S
2. Symptomatic treatment
3. Refer the patient.

Fatigue

AETIOLOGY

a) Physiological
b) Psychogenic
c) Organic

Organic conditions

Organic conditions include:

1. CCF
2. MI
3. AS
4. MR
5. C/C Fatigue syndrome (CFS)
6. Myocarditis
7. P. HTN
8. Hypothyroidism
9. Hyperthyroidism
10. COPD
11. Anemia
12. C/C Renal/Liver disease
13. Drugs
14. Hypotension
15. Dehydration
16. Infection/fever
17. IE
18. IMN
19. CVA
20. Depression
21. Electrolyte disturbance like hyponatremia
22. Hypokalemia
23. DM
24. Occult malignancy
25. Hypoglycemia
26. TB
27. HIV
28. Hepatitis

INVESTIGATION

1. Check BP
2. Check GRBS

TREATMENT

1. Regular exercise + Walking in fresh air, regularize working hours.
   Regularize sleep for 7-8 hours.
   Yoga for relaxation if stressed.
2. Inj. Neuobion 2cc IM × alt days × 5-10 Injs (B_1 B_6 B_{12})
3. Cap. Becadexamin 1 bd (Multi-vitamin)
4. Syr. Elsoma 2 tsp bd (any General Tonic)
5. Cap. Ginsec 1 bd for elderly patients (Ginseng)
6. Proteinules powder 2 tsp in Milk daily (Protein supplement)

If no relief, examine and investigate thoroughly to look for common causes

1. Auscultate Heart for Valve lesions. ECG and Echo to rule out IHD/RHD.
2. Hb% for anemia
3. Blood sugar - Fasting & BP for Diabetes
4. S. Electrolytes - especially if leg cramps
5. Blood urea & S. Creatinine - for CRF
6. X-ray chest for TB
7. HIV test - For aids
8. Look for features of myoxedema - Serum T3, T4 & TSH
9. Polysomnography for Obstructive Sleep Apnoea, if H/O Snoring

If all tests are normal, try

1. TAB Eltroxin 1 OD x 30 (Therapeutic trial)
2. Cap Fluodep 30 mg OD×30 (Antidepressant Fluoxetin = 4F-3) or Tab Depsonil 25 mg tds x 30 (Imipramine)

If excessive daytime sleepiness

1. If it is due to shift duty or drug induced drowsiness, give 1 Tab Modafinil 100 mg 1-2 tabs x OD in the morning a single dose.
2. If patient snores loudly at night, investigate for Sleep Apnoea.
3. If associated with muscle pains, memory impairments, lack of concentration, and fatigue not relieved by sleep > 6 months, fever for Chronic Fatigue Syndrome.

DEFINITION

Insomnia is the complaint of inability to sleep long enough or maintain sleep despite the patient having adequate amount of time to devote to sleep. It is associated with impairment of daytime functioning or mood symptoms.

ETIOLOGY

Primary Sleep Disorders

- Idiopathic insomnia
- Periodic leg movements
- Restless legs syndrome

Secondary Sleep Disorders

- **Psychiatric or psychological problems:** Mood disorders (e.g. mania, depressive and anxiety disorders); delirium and dementia

Use or misuse of drug/substance abuse: Consumption or discontinuation of drugs/substances. Withdrawal of addictive drug (e.g. alcohol, benzodiazepines); stimulant drugs (e.g. caffeine, nicotine, amphetamines); prescribed drugs (corticosteroids, dopamine agonists)

- **Physical/medical disorders:** Chronic pain (e.g. Carpal tunnel syndrome); nocturia (e.g. prostatism); malnutrition, chronic obstructive pulmonary disease, asthma, menopause, and neurologic disorders.

TREATMENT

1. Walking or exercise in the evening.
2. Early dinner and a glass of milk before sleeping.
3. Reading books, particularly Philosophical books at night.
4. Try to engage the mind in some work, which will be useful to the family or the society, or in some religious activity.
5. Sedative drugs - should be prescribed only if necessary.
   E.g. Tab Calmpose 5 mg ½ to 1 HS (Diazepam) or
   Tab Ativan 1-2 mg HS (Lorazepam) or
   Tab Alprax 0.25 mg HS (Alprazolam) or
   Tab Gardenal 30-60 mg HS (Phenobarbitone) or
   Tab Hypnotex 5-10 mg HS (Nitrazepam = For induction of sleep)

Use sedatives in rotation. Do not use the same sedative for long periods.

- As age advances, sleep becomes less. And the old person, with no active work to do, feels restless without sleep. This fact must be understood by the patient and he/she should engage his/her mind somewhere.
- If there is difficulty to fall asleep, use Nitrazepam. If patient gets at 2-4 am and stays awake, use Alprazolam, Diazepam etc.

Aggressive Psychiatric Patient

MANAGEMENT

1. Inj. LORAZEPAM 2/4 mg IM st

   Or

   Inj. SERENACE (haloperidol) 2cc IM st

   Or

   Inj. CALMPOSE (diazepam) 2cc iv

   Or

   Inj. OLANZAPINE 10mg IM st

   Inj. SERENACE 5 mg + Phenergan 12.5, serenace + lorazepam can be given for severe cases.

2. T DIAZEPAM 5 mg tds

   Or

   T LARGACTIL 25 mg tds

3. Psychiatry consultation

For Pregnant Ladies

Haloperidol

Chronic Alcoholic with Tremors

MANAGEMENT

For Withdrawal Symptoms

- Anxiety
- Sweating
- Tremor
- Impairment of sleep
- Convulsions
- Hallucinations

1. Inj LORAZEPAM or DIAZEPAM or CHLORODIAZEPOXIDE 1 amp deep im or slow iv st
2. Inj THIAMINE 1 amp iv st
3. T LORA 2mg 1-1-2 or 1-1-1-2 or T CALMPOSE 5mg (1-1-2) or T LIBRIUM (Chlordiazepoxide) 25mg 1-1-1-2 × 5-7 days
4. T THIAMINE 100mg od/bd (T BENALGIS) × 5-7 days
5. T BACLOFEN 5mg 1-1-1 (to decrease craving).

Acute Alcoholic Intoxication

CONSEQUENCES

Acute Alcohol Intoxication

- Disturbances in emotional and behavioral state
- Medical symptoms: Due to hypoglycemia, aspiration of vomit, respiratory depression
- Complication of other medical problems
- Accidents, injuries developed in fights

Consequences of Harmful Alcohol Use

Medical

- Neurological: Peripheral neuropathy, dementia, cerebral hemorrhage, cerebellar degeneration, Marchiafava-Bi syndrome, subacute combined degeneration of the cord myopathy, ventricular enlargement and cognitive impairment.
- Hepatic: Fatty change and cirrhosis, hepatocellular carcinoma
- Gastrointestinal: Esophagitis, esophageal varices, Mallory-Weiss syndrome, esophageal carcinoma, gastritis, malabsorption, pancreatitis, parotid enlargement
- Skin: Palmar erythema, spider naevi, Dupuytren's contractures, telangiectasis
- Cardiac: Cardiomyopathy, hypertension
- Respiratory: Pneumonia, tuberculosis
- Musculoskeletal: myopathy, fractures
- Endocrine and metabolic: Pseudo-Cushing's syndrome, hypoglycemia, gout
- Reproductive: Hypogonadism, infertility, fetal alcohol syndrome

FEATURES OF ALCOHOL WITHDRAWAL SYNDROME

- Psychological: Restlessness, anxiety, panic attacks
- Autonomic: Tachycardia, sweating, pupil dilatation, nausea, vomiting
- Delirium tremens: Agitation, hallucinations, illusions, delusions
- Seizures

Psychiatric and Cerebral

- Depression
- Alcoholic hallucinosis
- Alcoholic 'blackouts'
- Wernicke's encephalopathy
  - Nystagmus
  - Ophthalmoplegia
  - Ataxia
  - Confusion

- Korsakoff's syndrome
  - Short-term memory deficits
  - Confabulation

CLINICAL PRESENTATION

Presents with:

- Hypotension
- Gastritis
- Hypoglycemia
- Collapse
- Respiratory depression

R/O SDH

TREATMENT

1. Gastric lavage only if patient is brought immediately after ingesting alcohol, Maintain patent airway and prevent aspiration of vomitus. Maintenance of fluid and electrolytic balance.
2. Correction of hypoglycemia by glucose infusion till alcohol is metabolized
3. Inj THIAMINE 100mg in 500 glucose infusion
4. T THIAMINE 1-0-1 × 5-7 days
5. T LIBRIUM 10/25 (1-1-2)

Shivering

CAUSES

I. Hypothermia
II. Post Operative Patient.

TREATMENT

1. Cover with blanket
2. Drink warm non-alcoholic beverages (Prevent Dehydration)
3. Inj Dexona/Efcorlin 1amp i/v STAT

   Or

   Inj Avil 1amp i/m STAT
4. Inj Tramadol 1amp i/m (for post operative shivering)
5. Blood/Saline infusion induced Rigor →Antihistaminics have prophylactic value.

Hypotension

DEFINITION

Hypotension is defined as blood pressure that is lower than 90/60 mmHg.

CAUSES

Younger adult	Any adult age group	Older adult
• Pregnancy • Vasovagal syncope • Situational syncope • Primary amyloidosis • Primary autonomic failure	• Chronic liver disease • Diabetic autonomic neuropathy • Secondary amyloidosis • Addison's disease • Hypopituitarism • Severe hypothyroidism	• Parkinson's disease • Dysrrhythmia • Micturition syncope • Carotis sinus syndrome • Vitamin B_{12} deficiency

POSTURAL HYPOTENSION/ORTHOSTATIC HYPOTENSION

- A drop in blood pressure (hypotension) due to a change in body position (posture) when a person moves to a more vertical position, i.e. from sitting to standing or from lying down to sitting or standing.
- Postural (orthostatic) hypotension is diagnosed when, within 2-5 minutes of quiet standing (after a 5-minute period of supine rest), one or both of the following is present:
  - At least a 20 mm Hg fall in systolic pressure
  - At least a 10 mm Hg fall in diastolic pressure

CLINICAL FEATURES

- Fainting
- Light headedness
- Dizziness
- Blurred vision
- Increased thirst
- Nausea

MANAGEMENT

1. Give head a low position
2. Start intravenous drip of NS or RL or DNS, fast infusion
3. Dopamine is given if there is associated cardiac failure/cardiogenic/septic shock.
   Dopamine 400 mg in 5% Dextrose @ 10 dps/mt, check BP half hourly and increased or decreased number of dps.
   Dopamine contraindicated in hypovolaemic shock.
4. Address the underlying problem (e.g. sepsis, MI, blood loss, adrenal insufficiency etc.)

Oedema

DEFINITION

Abnormal accumulation of fluid in interstitium.

TYPES OF OEDEMA

Pitting		Nonpitting (Brawny edema)
Rapid recovery	Slow recovery	
Recovers in <40 seconds	Recovery takes >40 seconds	• Does not pit or recover in few seconds • Nontender • Skin shows hyperkeratosis
Mechanism: ↓ oncotic pressure	Mechanism: ↑ hydrostatic pressure	Mechanism: Lymphedema
Low serum protein	(N) serum protein	Lymphatic obstruction
Causes: Increased protein loss • Burns • Nephrotic syndrome • Bowel disease Decreased intake or synthesis • Kwashiorkor • Malabsorption • Liver disease	Causes: Systemic venous hypertension (HTN) • Congestive heart failure (CHF) • Pericarditis • Tricuspid valve diseases Local venous HTN • Deep venous thrombosis (DVT) • Inferior vena cava syndrome	Causes: Myxedema - Hypothyroidism Pretibial myxedema - Grave's disease Upper limb • Breast cancer • Radiation induced Lower limb • Aplasia cutis • Congenital (praecox, tarda, milroy's disease, and Meigs disease) • Filariasis • Recurred streptococcal infection • Malignancies

AETIOLOGY

- Generalized cardiac failure
- Cor pulmonale
- Liver/renal disease
- Malnutrition
- Angioedema
- Myxedema
- Drugs causing Na retention like steroids
- Localized-infection
- Trauma
- Burns
- Insect bites/stings
- DVT
- Thrombophlebitis
- Varicose vein
- Venous obstruction
- Gout

INVESTIGATION

- Chest X-ray
- BRE
- URE
- LFT
- RFT
- TFT
- USS of the local site

TYPES OF EDEMA

Unilateral Edema

Causes

1. Cellulitis

   Diffuse swelling of one leg with severe tenderness

   Treatment:

   - Start antibiotics
   - Analgesics

2. DVT

   Swelling of legs maximum tenderness on the calf

   Treatment:

   - Admit for heparin therapy

3. Filariasis

   Long standing pitting edema on one leg, which is non tender.

   Intermittent fever with rigors

   Treatment:

   - DEC
   - Elastocrepe bandage
   - Elevation of leg
   - Paracetamol

4. Gout

   Tender swelling behind great toe.

Generalized edema

1. Cardiac oedema

   Over legs in a patient of known heart disease

   Refer to physician

2. Angioneurotic edema/ Drug induced edema

   Sudden onset with itching, urticarial, hoarse voice, dyspnea

   Sudden onset of swelling of face including lips, eyelids and feet following drug intake

Treatment:

- Withdraw the drug
- Give antihistamines
- Steroids

3. Myxedema or Hypothyroidism

Non pitting oedema

Puffiness of face

Weight gain

Hoarse voice

Lethargy

Treatment:

- Do T3, T4, TSH

4. Premenstrual edema

Restrict salt

Give Lasix

5. Renal

Generalized oedema more on face and in the morning

Do urine examination

Treatment:

- T. DYTOR 10mg (1-0-0)(Torasemide)

  Or
- T LASIX 40mg (1-0-0)(Furosemide)
- Restrict salt
- Syp Potklor, if diuretics are given for a long period.
- Nephrology consultation

6. Hepatic oedema

Known alcoholic develops ascites and oedema over legs

Treatment:

- T Aldactone
- IV human albumin if S. Albumin low

7. Anemia with hypoproteinaemia

Seen in poor patients

Pallor

Stomatitis

Puffiness of face etc.

Treatment:

- Treat anaemia

8. Idiopathic oedema

MANAGEMENT

If Premenstrual Edema

1. Restrict salt in diet
2. Tab. Lasix 1 daily in premenstrual period
3. Tab B-Long 100mg OD × 10 days prior to M.C. (Pyridoxin)

Symptomatic Treatment

1. Salt restricted diet, or Salt free diet
2. Elevate the legs at night
3. If edema appears on prolonged standing, apply elastocrepe bandage or stockings.
4. Tab Lasix 40 mg ½ to 1 daily as single dose in morning or 2 doses before 2 pm. Frusemide = Diuretic)
5. Syr Potklor 1 tsp × tds × with water × if Lasix is given for a long period
6. If edema is not controlled within a week, refer to Physician

- Potassium supplements are required when following Diuretics are given for more than 1 week-Lasix, Hythaltone, Esidrex, Xipamid, Clopamide & Bumet
- Potassium sparing Diuretics= Spironolactone, Ditide, Biduret and their combinations with Furosemide

If Edema of one leg

1. Inspect legs in standing position for varicose veins.
   i. Elastocrepe bandage (6") from toes to thigh, to be worn throughout the day or varicose vein stockings.
   ii. Refer for surgery, if repeated leg ulcers, pain or unsightly veins.
2. Examine inguinal nodes and lower abdomen for mass causing lymphatic or venous obstruction
3. If no visible cause? Filariasis – Add
   i. T Hetrazan 50 mg tds × 21 days (Diethylcarbamazine)
   ii. T Wysolone 5 mg bd × 15 days (Prednisolone)

If edema face is more prominent

1. Ask for detailed renal investigations and Urine for Albuminuria
2. Confirm that patient is not on steroids. E.g. patients of asthma, eczema
   – Taper off steroids, changing to alternate drugs.
3. If pulse is slow, voice is hoarse or laziness,
   – Ask for serum T_3, T_4 and TSH for Myxedema or
   – Therapeutic trial with T.Eltroxin 1 OD × 30

If the patient is very pale, Add

1. Cap Autrin 1 OD × 3 months (Iron)
2. Inj. Imferon 2 cc deep IM (by Z. Technique) × daily × 10 (Injectible Iron)

   OR

   Orofer IV drip: 2 amps Orofer in 100 ml NS over 1 hour.
3. Blood transfusion, if Hb is less than 6gm%

If Ascites is more prominent, with palpable spleen and portal Hypertension, then add

1. Tab Aldactone 100 mg OD (Spironolactone)
2. Tab Ciplar 10 mg bd (Beta blocker) to reduce portal pressure
3. High protein diet

   GRD Powder 2 tsp in milk × bd (Proteins)
4. Stop Alcohol completely (if alcoholic)
5. Treat Cirrhosis-Tab Essential, Liv52, Sorbiline.
6. IV Human Albumin 20% × 50 ml daily if S. Albumin is low. (Refer Ascites for details)

If congestive cardiac failure i.e. breathlessness, tender liver and heart murmur, then add

1. T. Lanoxin 0.25 mg 1 daily × 6 days week
2. T Amifru 40 mg × 1 OD in morning (Diuretic=)
3. T Cardace 1.25 mg OD (Ramipril = 6AD-4)
4. Ask for ECG, X-ray Chest, and cardiologist's opinion

Left Ventricular Failure

CLINICAL FEATURES

Symptoms	Signs	
Left Ventricular Failure		
Dyspnea • Exertional dyspnea • Orthopnea • Paroxysmal nocturnal dyspnea • Acute pulmonary edema Cough Fatigue Decreased urine output	Cardiac sign • Enlargement of LV • Gallop rhythm S_3 • Systolic murmur in apex Pulmonary sign • Crepitations Pleural effusion	Think FACES: Fatigue, Activities limited, Chest congestion, Edema or ankle swelling, and Shortness of breath.
Right Ventricular Failure		
Leg swelling Symptom of gastrointestinal - Anorexia Symptom of renal origin - Oliguria Pain in right hypochondrium Dyspnea	Raised JVP Hepatojugular reflux positive Hepatomegaly Edema Pleural fluid and ascites	

DIAGNOSIS

Framingham Criteria for Diagnosis of Heart Failure

The diagnosis of heart failure should not be made on history and clinical findings alone. It requires evidence of cardiac dysfunction (by investigation) and identification of the underlying cause of heart failure in all cases.

Criteria for Diagnosis of Heart Failure: One major + two minor

Framingham Criteria for Diagnosis of Heart Failure	
Major	**Minor**
• Paroxysmal nocturnal dyspnea • Distension of neck vein • Rales • Cardiomegaly • Acute pulmonary edema • S_3 gallop • Increased venous pressure (>16 cm H_2O) • Positive hepatojugular reflux • Weight loss ≥4.5 kg over 5 days treatment	• Extremity edema • Night cough • Dyspnea on exertion • Hepatomegaly • Pleural effusion • Vital capacity reduced by one-third from normal • Tachycardia (≥120 beats per minute)

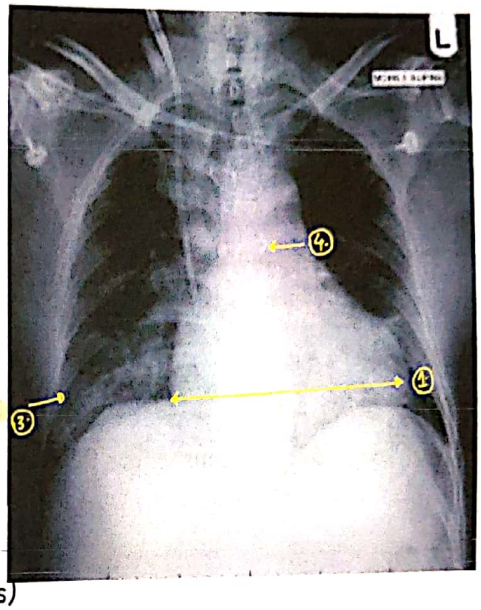
INVESTIGATIONS

- CBC
- Urea
- Electrolytes
- ECG
- CXR

CXR in LVF:

Features can be remembered as ABCDE

- Alveolar edema
- Kerley B Lines
- Cardiomegaly
- Dilated prominent upper lobe vessels
- Pleural effusion



The CXR shows classic evidence of left ventricular failure.

1. Cardiomegaly (cardiothoracic ratio 50%)
2. Upper lobe pulmonary venous diversion
3. Kerley B lines (which indicate .distension of lymphatics)

In addition, there is evidence of

4. Sternotomy wires, suggesting previous coronary artery bypass surgery (CABG)
5. Following diuresis, the pulmonary infiltrates have cleared.

Only fluid and blood on the chest radiograph can clear rapidly (within days).

6. This patient also has a right internal jugular central venous line.

MANAGEMENT

General Instructions

1. Bed rest. Sitting position with cardiac table, if dyspnoeic.
2. Oxygen by nasal catheter, if dyspnoeic.
3. Salt free diet. Avoid heavy meals.
4. Restricted fluid intake.
5. Avoid NSAIDs
6. H. influenza and Penumococcal Vaccines

Basic Treatment

5. Tab Lasix ½ - 1 daily, till edema subsides. Then 1 tabb 1-2 times every week (Diuretic)
6. Tab Cardivas 3.125 mg BD, upto 25 mg BD (Beta blocker = Carvedilol)
7. Tab Cardace 1.25 mg OD to BD (Rampril=6AD-4)
   Start ACE inhibitor, even if patient is asymptomatic, eg. Ramipril/Enalapril/Captopril
8. Tab Lanoxin 1 daily × 6 days per week. (Digitals = no loading dose in CCF)

Watch pulse for bradycardia and irregular rhythm.

Start Lanoxin if symptomatic, if 35%, and if Atrial fibrillation.

Additional Treatment

1. Tab Imnit 30 mg OD, if associated IHD or Pulmonary congestion. (Oral Mono-nitrate)
2. Tab Dytor 10 mg OD, if severe (i.e. Class III-IV failure) (Torasemide)
3. If the Diuretic is to be given for more than 5 days, Give Potassium sparing diuretic like Lasix + Amilorade or Lasix + Spironolactone or Torasemide + Spironolactone
4. Tab Calmpose 5 mg 1 bd × in acute phase (Tranquiliser)
5. Cap Autrin 1 OD × till Hb is normal (Iron)
6. Naturolax ½ to 1 sachet daily × if constipation (Isapghul laxative) Use commode. Avoid straining.

If acute Exacerbation & Breathlessness

1. Inj. Aminophylline +25% glucose 10 cc each × slow I.V.
   Or Inj. Deriphyllin 2 cc IM or I.V. (Bronchodilatr)
2. Inj Lasix 2 ml IV slow stat and SOS
3. Inj Cetil 750 mg IV 8 hrly (Antibiotic for respiratory infection)
4. Oxygen by nasal mask
5. Refer to Cardiologist for ICCU Management. (Dopamin, Nitroglycerin)
6. If renal dysfunction, Dialysis and ultrafiltration to remove excess fluid.

If severe Refractory CCF, EF< 40%

Biventricular Pacemaker, Implantable Defibrillator.

In select centres, such patients are considered for Cardiac Transplant

Note:

- Refer every patient of C.C.F. to a cardiologist for detailed investigations, Echocardiography and in suitable cases- corrective valve surgery. Give the treatment under cardiologist's guidance.
- If a patient on Lanoxin complaints of Nausea, stop Lanoxin for 2-3 days, then start again 1 tab daily. Same action if pulse <60/min or if new irregularities develop in the pulse during treatment.
- If the cause is Rheumatic valve disease, advise Inj. PP4 IM × ATD × every 21 days
- Left Heart Failure=ACE inhibitors + Diuretics

  Right Heart Failure= Lanoxin + Dobutamine + Nitroglycerine.

Hypoglycemia

- Blood Glucose level <70 mg/dl.

CAUSES

A) WITHOUT DIABETES

1. EXERCISE
2. Alcohol
3. Underlying conditions
   - Hepatic ,Renal,cardiac failures
   - Sepsis
   - Inantion.
4. Hormone deficiency
   - Cortisol
   - Growth hormone
   - Glucagon & Epinephrine.
5. Non Islet cell tumors
6. Endogenous hyperinsulinism
7. Disorders of gluconeogenesis & FA oxidation

B) WITH DIABETES

1. ↑Insulin
2. ↑OHA

SYMPTOMS

Neuroglycopenic symptoms:

i. Behavioural changes
ii. Confusion
iii. Fatigue
iv. Seizure
v. Loss of consciousness
vi. Cardiac arrhythmias

Neurogenic/Autonomic symptoms

I. Adrenergic symptoms (by NE Release)
   i. Palpitation
   ii. Anxiety
   iii. Tremor

II. Cholinergic Symptoms (By Ach Release)
   i. Sweating
   ii. Hunger
   iii. Parosthesias

SIGNS

1. Diaphoresis
2. Pallor

HYPOGLYCEMIA → ⊕ Pro inflammatory / Pro Coagulant / Pro atherothrombotic → Response → ↑Platelet Aggregation, ↓ Fibrinolytic Balance, ↑Intravascular coagulation.

TREATMENT

1. Check GRBS → if low
   - i. Pt can take orally→ Glucose containing Fluids /Candy/Food
     Initial dose of 25-30gm of Glucose.
   - ii. Pt can't take orally→ i/v 25% Dextrose 3 or 4 amp (1amp =25ml)
     ↓ Followed by
     5% D infusion
     (∵Insulin has prolonged action)
     RBS Repeat every 10min upto >100 mg/dl
   - iii. If i/v Not practical →s/c or i/m Glucagon (1.0 mg in adults)
     - Useful in TIDM
     - Alcohol induced hypoglycaemia -it's ineffective as glycogen store is depleted.
     - Glucagon stimulates insulin secretion.
       ↓
       ∴Less useful in T2DM.
2. In Sulphonyl urea induced hypoglycaemia → OCTREOTIDE.
3. ALL CASES OF UNEXPLAINED HYPOGLYCEMIA →Take ECG
4. Dose for Infants : 2ml/kg 25% D/DID
   Children: 4ml/kg 25%D/DID
   } If RBS<40

Hyperglycemia

DIAGNOSTIC CRITERIA

FBG (84)	24h OGTT (75g)	HbA1C	Interpretation
<100	<140	<5.7%	Ⓝ
100-125	140-199	5.7-6.4%	Pre-diabetic
≥126	≥200	≥6.5%	DM

RBS ≥ 200+Classic Symptoms → DM

HbA1C(glycated Hb) → Mean blood glucose→ (33.3 x HbA1C)-86 mg/dL
(2-3 months)

→Affected by lifespan of RBC

→Monitored once in 3months.

SUSPECT DIABETES IN

i. ↑Frequency of urine, thirst & Appetite.
ii. Loss of weight in absence of systemic symptoms
iii. Fatigue,Tiredness
iv. Delayed healing wound
v. Balanoposthitis→ Male
Vulval itching→ Female
vi. Tingling of limbs

PREDIABETES

1. Lifestyle modification→ Balanced hypocaloric diet to achieve 7% weight loss in over wt pt.
-Regular Exercise of ≥150min per week.

Check Blood sugar after 15 days.

If NORMAL → Check every 6 months

If still High → T.Metformin 500mg ½ tab OD AF(Obese)
T.Glibenclamide 25mg 1 tab OD BF (Thin pt)

Good control maintained → Stop the drug & Observe

If FBS Normal
PPBS High → Tab Acarbose 50mg TDS with 1st morsel of meat.
↓ NR
Tab Glibenclamide /Glipizide 5mg/Glizide.

INVESTIGATION

- Fasting urinalysis for Glucose, Ketone, Albumin
- FBS/PPBS, HbA1c
- LFT, RFT, TFT
- BP Monitoring → Target BP <130/801 mmHg

Control with ACE ⊖/ARB

↓ NR

Add Diuretics

- Enquire about Hypoglycemic episodes
- Eye examination
- Lower limb & Feet examination.
- **Lipid targets:**

LDL: <100 mg/dl

T.Cholesterol : <150 mg/dl

HDL : >40 mg/dl in men

>50 mg/dl in women

Pt with known CVS disease/two risk factor in addition to DM→ LDL <70 mg/dl →using high dose Aspirin Therapy.

TREATMENT

- **Monotherapy:**

Obese pt →Tab Metformin 500mg (1-0-1) AF

Thin pt→ 2nd Gen SU: Glibenclamide

Glipizide

Glimepiride

- **Combination Therapy**→ if monotherapy unsuccessful.

Piogliatzone→ Second line therapy with Metformin/

Third line therapy with SU & Metformin

- **Voglibose:** Used for lowering PPBS.

INSULIN THERAPY

Indication:

Type I : Juvenile /IDD

Type II: Maturity onset /NIDDM

If oral drugs fails to control the sugar

(PPBS > 160 mg%

HbA_{1c} >7%)

A) For a new & Complicated case

- Start with 0.5 U/kg/day

Eg: 60kg

BB	BL	BD
10u	10u	10u

↓

Check Urine sugar

Red	40U
Orange	30U
Yellow	20U
Green	10U
Blue	Omit

B) Once controlled Change to Mixtard (30:70) Insulin.

↓

Dose is 2/3 of total unit of Plain Insulin

- If daily dose is >30U → Split to 2/3 before Breakfast
  1/3 before Dinner
- If Urine sugar is more before lunch → Add plain Insulin to morning dose.
- If total insulin requirement >80-100U → Use H.insulin (consider Insulin Resistance)

Department of Health & Family Welfare

TREATMENT PROTOCOL FOR TYPE 2 DIABETES MELLITUS

Screen all individuals above 30 years and if diagnosed

1. Advice Life Style Modifications (LSM) & Assess for complications

   Start T. Metformin 500mg OD or BD

   Monitor FPG/PPPG monthly

2. Review in 1 month, if FPG,PPBG values are high,

   Intensify T. Metformin 1000mg BD

   Along with LSM

3. Review in 1 month, if FPG,PPBG values are high

   Add T. Glimepiride 1 mg OD

   (½ hour before breakfast and reduce to 0.5 mg/day depending if there is hypoglycemia.)
   Along with LSM, T.Metformin 1000mg BID. Give hypoglycemia training.

4. Give hypoglycemia training.

   Intensify T.Glimepiride 1 mg BD up to 2mg BID

   (½ hour before meals)
   Along with LSM, T.Metformin 1000 mg/day BID.

5. If plasma glucose not under control after second drug and if any complications present,
   Refer to District hospital

6. If there is no complications, Continue LSM, Metformin 1 gm BD, Tab. Glimepiride 2mg BD,

   Add T.Pioglitazone 7.5 mg OD

   (to a maximum 15 mg once daily)
   Avoid in cardiac failure, fluid overload patients

7. If plasma glucose not under control

   Refer to District hospital

If patient is under control by any of the above steps, continue same treatments if no complications is identified and follow up shall be done every month with FBG and 2hour PPBG

Diagnosed diabetes with symptoms & FPG ≥ 250 mg/dL at presentation.

Repeat testing once a week and start combination therapy with Tab. Metformin 500 mg BD & Tab Glimepiride 1mg daily , up titrate , monitor weekly and to start Insulin if not getting controlled. Refer if not controlled

Hypoglycemia

Symptoms
Cold sweat, trembling of hands, hunger, palpitation, confusion etc

Treatment
Ingestion of glucose or carbohydrate containing foods. Consume 15 gms of glucose i.e. 1 tablespoon sugar, fruits, next meal & recheck blood glucose after 15 minutes, repeat if hypoglycemia continues

If any of the following complications are present, ***refer*** to higher centre.

- Uncontrolled plasma glucose with symptoms
- Visual symptoms
- Foot ulcer
- Nephropathy/ frothing of urine
- Painful neuropathy
- Infections/sensis.

LIFE STYLE MODIFICATIONS

- Restrict sugar & sweets
- Restrict fried and oily foods
- Increase fiber in diet (green leafy vegetables, lentils or peas, whole grains, apple, banana)
- Regular consumption of seasonal vegetables
- Brisk walking for 30 minutes daily
- 5 minutes warm up
- 5 minutes cool down
- Avoid Tobacco and Alcohol

Base Line Lab Investigations	Target mg/dL
Urine Albumin	FPG: 80-130
Blood Urea	PPPG: >180
Serum Creatinine	

STATE NCD DIVISION

Diabetic Ketoacidosis

CLINICAL FEATURES

- Anorexia, Nausea, Vomiting ,Polyuria ,Feeling thirsty
- Abdominal Pain, Flushed hot, Dry skin
- Altered Sensorium/Coma ,Blurred vision
- Kussmaul's Breathing-Fruity odour in breath due to acetone.
- Features of Volume depletion, dehydration or co-existant infection may be present.

DIAGNOSIS

- Ketoacidosis →pH<7.3
- Hyperglycemia → RBS>250 mg/dl
- Bicarbonate → <15mmol/L
- Moderate Ketonemia or ketonuria (+++)

INVESTIGATION

1. RBS
2. Urine Sugar & Acetone
3. BRE
4. URE
5. S.Na^+ ,K^+ ,Urea, Creat
6. ABG
7. Serum Amylase
8. ECG

TREATMENT

i. IVF NS 1L over 30min (If cardiac function Normal)
1L over 1 hour
1L over 2 hour
1L over Next 2-4 hours

➢ Age > 65/with CCF →Needs loss saline more cautiously.

ii. Once Blood glucose ↓to 200-250 mg/dl → start IVF DNS at 50-100 ml/hr over a parallel line.

iii. Inj Regular Insulin 10-15 U i/v STAT (0.15 U/Kg)

➢ S/C Absorption reduced in DKA d/t dehydration.

iv. Continous Regular Insulin infusion 10NS at 5-10 U/hr (0.1 U/Kg/hr)

↓

Check BG Initially

Decrease in BG levels of 50-70 mg/dl/hr -is an appropriate response.

↓

If no reduction in 1st hour →↑ dose 50-100% until appropriate response or Repeat i/v loading dose.

➢ Excessive Reduction→ >100mg/dl/hr → Osmotic Encephalopathy.

↓

Once BG level ↓to 250mg/dl→ Insulin Rate ↓to 0.05 U/Kg/hr to prevent hypoglycaemia.

↓

Maintain Insulin infusion rate of 1-2 U/hr Untill pt clinically improved.

↓

Discontinue i/v route,start oral/s/c route.

- Give a s/c dose (~10U) of insulin ½ hr-1hr prior discontinuing insulin infusion.

- RBS every 1-2 hr/urine sugar acetone chart/electrolyte every 4hrs.
- Antibiotic if infection suspected.
- ECG
- Cathetarisation if pt unconscious.
- RT for unconscious pt.
- K^+ Replacement

  R/O Hyperkalemia , Renal Failure, Oliguria.

  ↓

  If Hypokalemia →add K^+ in 2nd/3rd Litre of fluid replacement

  If K^+ <3.3 mmol/L →Don't start insulin therapy until K^+ >3.3 mmol/L

COMPLICATIONS OF DKA

- Cerebral Edema -d/t Excessive Rapid correction of DKA.
- Rebound Ketoacidosis -d/t Premature cessation of i/v insulin infusion (or) Inadequate s/c insulin after insulin infusion discontinues.
- Lactic acidosis- d/t Prolonged dehydration , shock, infection.
- Arterial Thrombosis
- Shock
- Aspiration Pneumonia.

UTI

CLINICAL FEATURES

1. Fever with chills
2. Burning micturition → s/o Urethritis
3. ~~Frequency~~
4. Suprabic Pain
5. Frequency
6. Dysuria

→ s/o Cystitis

7. High Fever
8. Toxicity
9. Flank pain
10. Tender Renal Angles

→ s/o Pyelonephritis

11. Palpable kidney Swellings → s/o Hydronephrosis.

INVESTIGATION

1. Urine RE & ME
2. RFT
3. C & S: must for
   - Recurrent infection
   - Children
   - Pregnancy
   - DM
   - Indwelling catheter
   - Older People
   - Failure of initial therapy.

TREATMENT

- Tab P/L 500mg TDS x 3days for Ureteric /Renal colic
  (or)
  Tab Cyclopam

  → For Ureteric/Renal Colic
- Tab Norflox 400mg 1-0-1 x 5-7 days ⇒ for Uncomplicated UTI
- Tab Furudantin 50/100 mg 1-0-1 → for Resistant for Recurrent UTI
  (Nitrofurantoin)
- For Upper UTI → Give antibiotivs for 7-14 days
  - Norflox, Ofloxacin, Nalidixic acid, Ciplox - C/I in Pregnancy & Children
- Syrup Citralka (Disodium Hydrogen Citrate) 2 tsp in 1tumbler of water TDS
- T.Pyridium (Phenazopyridine) 200mg 1-1-1 x 2days
  - Give Reddish discolourisation to urine.
    Not to be used for >2days.
    C/I Pregnancy
- Plenty of Oral fluids.

TEST RESULT: of urine

1. Bacteria ⊕
2. Pus cells >10
   pH : ↑
   Ⓝ pH:4.5-8.

Hematuria

CAUSES

- UTI
- Pyelonephritis
- Trauma
- Hemorrhagic Cystitis
- Nephrolithiasis
- Kidney Injury
- A/C Prostatitis
- Urethral structure
- Drugs: Penicillin
  Anticoagulant- Heparin
  Aspirin
  Anticancer drugs
- Food dyes like Beetroot
- Neoplasm
- TB
- Traumatic Urethritis
- Allergy
- Strenous exercise
- Viral Illness
- Glomerulonephritis
- Excessive Coagulation Therapy
- Urethral FB
- Renal Infarction
- Myoglobinuria
- Hemoglobinuria

INVESTIGATION

- URE
- BRE
- RFT
- USG Abdomen

TREATMENT

- Advice Nephrology Consultation.

Hyperventilation

CAUSES

1. Stress or Anxiety
2. Stroke
3. Head Injury
4. DKA
5. Metabolic Acidosis
6. Bleeding
7. Heart/Lung disease
8. Drugs
9. Pregnancy
10. Severe Pain
11. Infection.

TREATMENT

1. Breath into a paper/plastic bag.
2. O_2 inhalation.
3. Propped up position
4. Diazepam if necessary.

Hypertension

	SYSTOLIC BP	DIASTOLIC BP	TREATMENT
NORMAL BP	<120	<80	-
ELEVATED BP	120-129	<80	On pharmacological Treatment
STAGE-I HTN	130-139	80-89	10 year cardiovascular Risk
STAGE-II HTN	≥140	≥90	Pharmacological Treatment

Anyone value if present -indicates HTN.

HISTORY

1. Duration of HTN
2. Previous therapies
3. Family h/o HTN & CVS diseases
4. Dietary & Psychosocial history
5. Alcohol consumption
6. Evidence of 2° HTN
7. Evidence of End organ damage.
8. Other comorbidities.

PHYSICAL

1. Body Habitus
2. Blood pressure in both arms
3. Supine & standing BP
4. Fundoscopic Examination
5. Quality of femoral & pedal pulses
6. Vascular & Abdominal bruits
7. Cardiac rate & Rhythm
8. Characteristics of 2° HTN.

INVESTIGATIONS

1. Renal :
   - Microscopic urinalysis
   - Albumin excretion
   - Serum BUN & Creatinine
2. Endocrine : Sr, Na^+ ,Ca^{2+} ,TSH
3. Metabolic: FBG,T.cholesterol,HDL,LDL,TGs
4. Other: CBC,ECG

TREATMENT

- **Lifestyle modifications**
  - Weight loss → keep BMI <25 kg/m^2
    Every 1kg weight loss= ↓SBP in 1mm Hg (Upto 10mmHg possible)
  - DASH Diet
    Low sodium <1.5 g/day
    High Potassium >3.5-5g/day
  - Stop smoking
  - Alcohol Consumption (Limited)
    Upto 2 drinks/day → in males
    Upto 1drinks/day→in females

Pharmacological treatment

- 1st line
  - ACEI/ARB
    - Diabetic & Diabetic complication pt especially in white population
  - CCB(Dihydropyridine)
    - Pt with Angina
  - Thiazide
    - In Black population (as more Na^+ Retention)
- Others
  - βBlockers →Metoprolol,Carvedilol,Bisoprolol
    - In Angina,CAD,HF
  - αBlockers
    - In Pheochromocytoma,BPH
  - Nitrates
    - In Angina,HF with Hydralazine
  - Central α ,Agorist – Clonidine
    - In Resistant HTN
  - Loop diuretics
    - In volume overload pt.
  - Mineralocorticoid Receptor Antagorist
    - 1° Hyperaldosteronism,HF
  - Hydralazine
    - In HF with Nitrates.

1st LINE DRUGS + OTHERS → Single pill combination Therapy

- Reduces drop outs
- High compliance

Diabetes and Dyslipidemia are NOT contraindications For using Thiazide Diuertics.	
3-6 Months No improvement	-Refractary or Non Responsive.

IN PREGNANCY

- α-Methyldopa
- Labetarol
- Nifedipine
- Hydralazine
- DIUERTICS
- ACE inhibitors/ARBs

} contraindicated in pregnancy. (Fetal Renal Failure,Oligohydramnios)

β-Blockers can cause IUGR in pregnancy.

RESISTANT HYPERTENSION

- BP ≥140/90 mm Hg despite taking ≥3Drugs (atleast 1-Diuretic drug)
- BP <140/90 mm Hg BUT ≥4 drugs (atleast 1-Diuretic Drug) to control HTN.

PSEUDORESISTANCE (Rule out)

- Improper cuff size (Small →Higher BP)

SECONDARY CAUSES OF HTN (Rule out)

↓

Still Resistant HTN

Emperically Add:

1. MRA,
2. β-blockers (Labetelol,carvedilol,Nebividol)
3. α-Blockers
4. Hydralazine.

HYPERTENSIVE CRISIS

HYPERTENSIVE CRISIS

BP≥ 180/120

With Target organ damage

HYPERTENSIVE EMERGENCY

- Neurological : Stroke /PRESS/Papillidema

-Cardiac: ACS/HF

Aortic Dissection

-Renal: AKI

Scleroderma Renal Crisis

-Microamgiopathic Hemolytic Anemia

-Pure Ecclampsia /Ecclampsia

Without Target Organ damage

HYPERTENSIVE URGENCY (Not urgent)

↓

- OPD Treatment
- Short term follow up

Thyroid storm patients have HYPOTENSION and SHOCK.

OVERALL RULE

BP should Decrease by
25% in 1hour
(Target) 160/100 in 2-6 hours
(Target) Normal BP in 24-48 hours.

↓

GRADUAL REDUCTION should be done.
As Organs adapted to
Hypertension undergoes
Hypotension suddenly.

AORTIC DISSECTION

SBP to <120 → ASAP

Conditions to Reduce BP Faster

- Pheochromocytoma
- Elampsia
- Preeclampsia

} SBP <140 →ASAP

ISCHEMIC STROKE

(within 72 hours of onset of stroke)

BP >185/110 mmHg → Relative contraindication to Thrombolysis.

In window period (<4.5hr)
+No C/I to Thrombolysis

Outside window period (>6hrs)
(or)Absolute contraindications to Thrombolysis.

Decerease BP-ASAP
And proceed to Thrombolysis.

Decrease BP only if BP is >220/120 mmHg.

Target BP: <185/110 mmHg (Better: <180/105)

Drugs in Hypertensive Crisis:

1. Labetalol(I.V) -Aortic Dissection
   ACS
   Stroke
   Eclampsia
2. Esmalol -Aortic Dissection
   ACS
3. Nicardipine/Clavidipine - Stroke
   AKI
   Pheochromocytoma
   Eclampsia(Nicardipine)
   Pulmonary Edema (clavidipine)
4. NTG -ACS
   Hypertensive pulmonary Edema
5. Nitroprusside -Pulmonary Edema
6. Phentolamine - Pheocrisis
7. Fenoldopam - AKI
8. Hydralazine I.V -Eclampsia.

Government of Kerala

Hypertension Protocol

Screen **all adults** over 18 years.

High BP: **SBP > 140** or **DBP > 90** mmHg

Step 1

If BP is high

Check S. Creatinine and Urine Protein

Start on lifestyle modifications for 3 months. Review every month.

If BP is high at monthly review, start on drug treatment

Step 2

Review in 3 months. If BP is high

***Start* Amlodipine 5mg (CCB)**

Step 3

Review in 1 month. If BP is high

***Add* Telmisartan 40mg (ARB)**

Along with Amlodipine 5mg

Step 4

Review in 1 month. If BP is high

***Intensify* Telmisartan to 80mg**

Along with Amlodipine 5mg

Step 5

Review in 1 month. If BP is high

***Intensify* Amlodipine to 10mg**

Along with Telmisartan 80mg

Step 6

Review in 1 month. If BP is high

***Add* Chlorthalidone 12.5mg (diuretic)**

Along with Amlodipine 10mg and Telmisartan 80mg

...

Review in 1 month. If BP is high

Confirm **compliance** to treatment. If confirmed, **refer** to specialist.

Blood pressure measurements

At least 2 readings at an interval of 2 minutes. If readings differ by more than 5mm Hg, take a third reading. The lower of the readings should be taken as the representative SBP and DBP.

If SBP ≥ 180 and/or DBP ≥ 110
Refer immediately to higher centre after starting treatment.

If SBP ≥ 160-179 and/or DBP ≥ 100-109
- Do basic investigations: ECG, S. creatinine.
- Start on lifestyle modifications.
- Start drug treatment.

If SBP ≥ 140-159 and/or DBP ≥ 90-99
Start on lifestyle modifications.

Measuring blood pressure

- Use a mercury sphygmomanometer or electronic digital oscillometric device that is validated using a standard protocol and calibrated regularly.
- Patient should relax for 5 minutes before measurement.
- Patient should not have had caffeine in the past hour or smoked in the past 30 minutes.
- Patient should be seated comfortably with back supported, arm at heart level, and legs uncrossed.
- Appropriate cuff size: length of bladder 80% of arm circumference, width 40% of arm circumference.

Lifestyle modification

All patients require lifetime lifestyle modification.

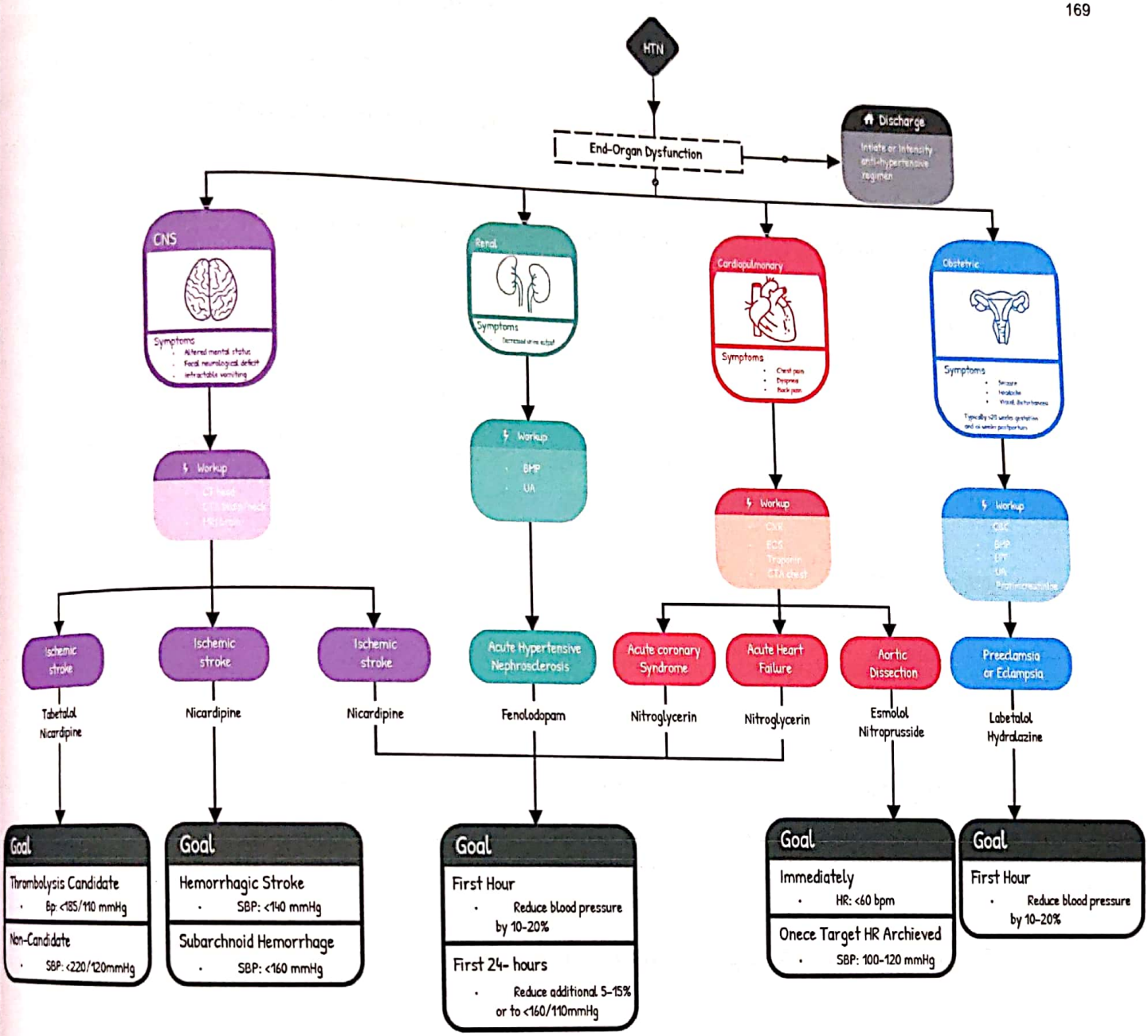
Change diet
Salt restricted (<5g/day), low-fat diet.

Reduce weight
Target BMI 18.5 - 22.9 kg/m²

Regular exercise
Moderate intensity, 30 minutes, 5 days a week

Alcohol and Smoking
Avoid unhealthy intake of alcohol. Stop smoking.

India Hypertension Management Initiative: Kerala 1.00-6-7



Palpitations

DEFINITION

Palpitation is the term used to describe an uncomfortable increased awareness of one's own heartbeat or the sensation of slow, rapid or irregular heart rhythms.

- Palpitations do not always indicate the presence of arrhythmia and conversely, an arrhythmia can occur without palpitations.
- Palpitations are usually noted when the patient is quietly resting.
- Palpitation can be either intermittent or sustained and either regular or irregular.
- A change in the rate, rhythm or force of contraction can produce palpitations.

CAUSES OF PALPITATIONS

Cardiac Causes

- Cardiac arrhythmias
  - Premature atrial and ventricular contractions
  - Supraventricular and ventricular arrhythmias
- Structural heart diseases
  - Atrial myxoma, valvular heart disease
  - Congenital heart disease, cardiomyopathy
  - Mitral valve prolapse, pacemaker

Psychosomatic Disorders

- Generalized anxiety, major depression, panic disorder

High Output States

- Anemia, beriberi, fever, pregnancy, thyrotoxicosis

Drug Induced

- Alcohol (use or withdrawal)
- Atropine
- Amphetamines
- Caffeine, nicotine
- Cocaine
- Beta agonists, theophyline

Endocrine

- Hyperthyroidism, hypoglycemia, pheochromocytoma

- Emotional stress, hyperventilation, premenstrual syndrome, strenuous physical activity

DURATION AND FREQUENCY OF PALPITATIONS

- Duration may be either short-lasting or persistent.
- Note the onset and offset of palpitations
- Frequency: It may occur daily, weekly, monthly, or yearly

TYPES OF PALPITATIONS

Extrasystolic palpitations	Ectopic beats, usually produce feelings of 'missing/skipping a beat' and/or a 'sinking of the heart' interspersed with periods during which the heart beats normally. Patients report that the heart seems to stop and then start again. It can often even be seen in young individuals, usually without any disease of the heart, and generally benign.
Tachycardiac palpitations	These are the rapid fluctuation like 'beating wings' in the chest. It may be regular (e.g. in atrioventricular tachycardia, atrial flutter, or ventricular tachycardia) or irregular or arrhythmic (e.g. in atrial fibrillation)
Anxiety-related palpitations	They are usually associated with anxiety episodes. They benign and end gradually.

APPROACH TO PALPITATIONS

- Anxiety is the commonest cause for palpitations
- First rule out
  - Anemia
  - Hyperthyroidism
  - RHD
  - LVH
  - Arrhythmias
- Palpate the pulse (during an attack if possible) for tachycardias and arrhythmias
- If pulse rate is >90/min, look for thyroid enlargement.
- Then auscultate the heart for murmurs and look for heaving apex beat of Left ventricular Hypertrophy.

1. Tab Ativan 1 mg × 2-3 times/day (Tranquiliser) or
   Tab Alprazolam 0.25 mg × 2-3 times/day
2. Tab Ciplar 10 mg tds (Propranolol)
3. Santevini 2 tsp bd (Tonic with Bplex)
4. If pale, Cap Autrin 1 OD × 2 months (Iron)

5. Instructions:

   Avoid excess of tea and coffee

   Avoid alcohol and smoking

   Avoid mental strain

   Avoid Salbutamol in asthmatics

If no response to treatment

1. Hb for Anemia
2. Serum T3,T4 and TSH - To rule out Thyrotoxicosis
3. If Diabetic, rule out Hypoglycemia attacks.
4. ECG - To rule out LVH and Arrhythmias like SVT or AF
5. X-ray Chest for Cardiomegaly. If these tests are normal, Refer to Cardiologist
6. Echo-cardiography for LVH, RHD and Valve lesions
7. Holter monitor Test, if intermittent arrhythmias are suspected.

Note:

- If pulse is normal and heart is normal, then palpitations are due to anxiety and will respond to Tranquilisers and Beta-blockers.
- If palpitations are due to left ventricular hypertrophy, explain to the patient that the forceful beat is going to persist and he should learn to accept it.

Chest Pain

AETILOGY

1. A/c MI
2. Angina
3. Aortic dissection
4. Tension pneumothorax
5. Pulmonary embolism
6. GERD
7. Pericarditis
8. Pneumonia
9. Chest wall pain
10. Pleurisy
11. Empyema
12. Bronchitis
13. Cervical spondylosis

INVESTIGATIONS

1. ECG
2. CXR
3. Trop T/ Trop I/CPK MB

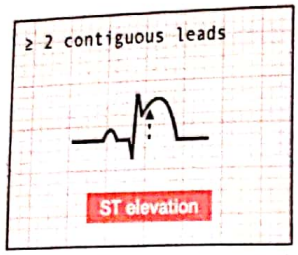
TREATMENT

Immediate treatment of anginal pain

1. Stop physical activity immediately, and sit quietly
2. Tab Isordil/Sorbitrate 5-10 mg Sublingual (Isosorbide dinitrate)
   Or Tab Angised 0.5 mg Sublingual (Nitroglycerine)
   Or GTN/Nitrocin Lingual spray 0.4 mg sublingually (Nitro-glycerine spray)
3. Always keep sublingual tablets at hand-in pocket, in the bedroom, in the bathroom and toilet, on the office table, in the travel kit etc.
4. If pain does not subside, repeat sublingual tablet after 5 minutes. If no relief after second tablet, give 1 tab of Disprin, and refer immediately to cardiologist.

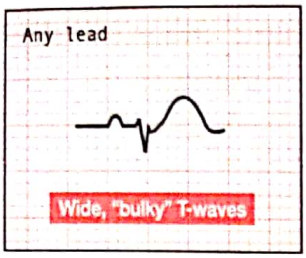
DIFFERENT ECG PATTERN

STEMI PATTERNS



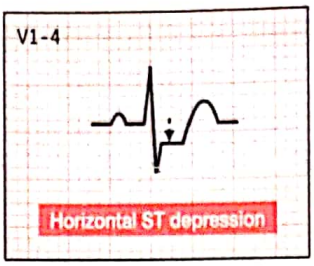
V2-3: ≥ 2.5 mm ST elevation in males under 40, ≥ 2 mm in males over 40, ≥ 1.5 mm in females
Other leads: ≥ 1 mm ST elevation

Traditional STEMI



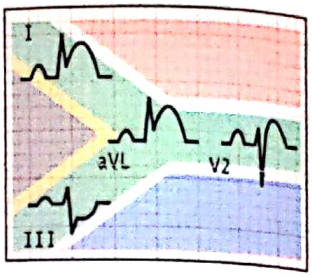
Measure in proportion to preceding QRS complex.
Area under curve is more useful than height

Hyperacute T-waves



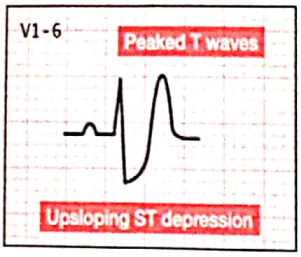
ST depression maximal in V1-4 without progression to V5-6

Posterior OMI



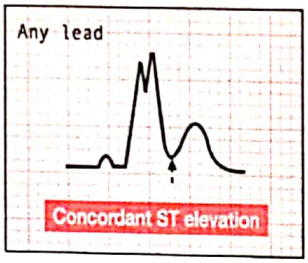
"South Africa Flag" Sign: ST elevation in I, aVL +/- V2, with reciprocal change inferiorly

High Lateral OMI



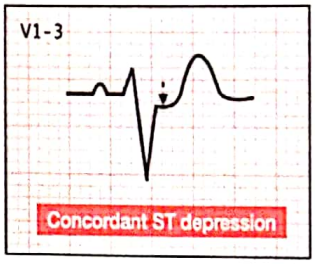
Anterior STEMI equivalent seen in 2% of acute LAD occlusions

De Winter T-wave



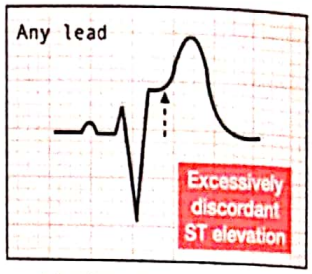
≥ 1 mm in any lead in LBBB or ventricular paced rhythm

Sgarbossa 1



≥ 1 mm in ≥1 lead of V1-3 in LBBB or ventricular paced rhythm

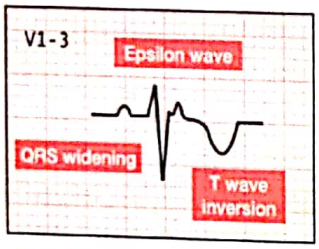
Sgarbossa 2



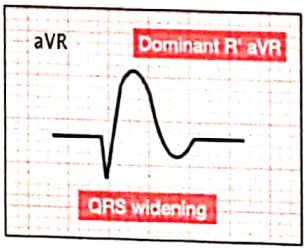
≥ 25% of depth of preceding S-wave in any lead in LBBB or ventricular paced rhythm

Sgarbossa 3

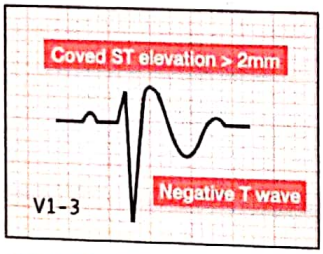
KILLER ECG PATTERNS



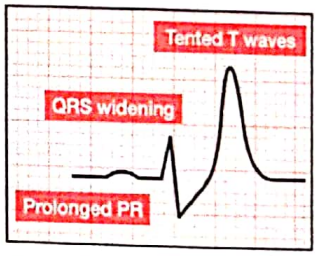
Arrhythmogenic Right Ventricular Dysplasia



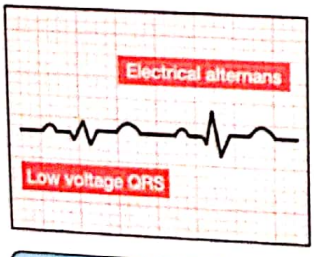
Sodium channel blockade



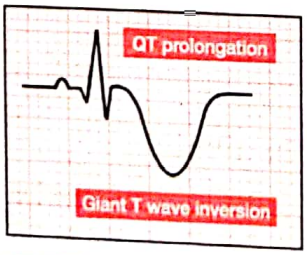
Brugada Syndrome



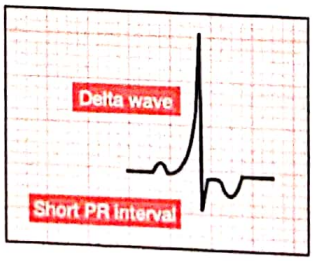
Hyperkalaemia



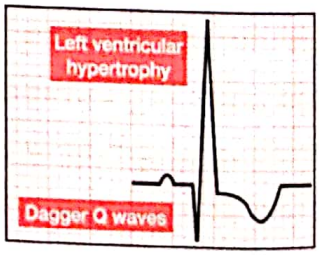
Massive pericardial effusion



Intracranial haemorrhage



Wolff-Parkinson-White Syndrome



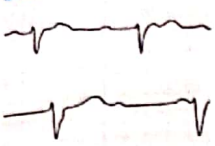
Hypertrophic Cardiomyopathy

Can't Miss ECG Findings

Christian Rose, MD; Robert Goodnough, MD

P

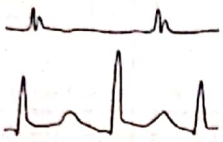
Third Degree AV Block



Complete AV dissociation
Common causes
- Ischemia
- Electrolyte abnormality
- Toxins

QRS/QTc

Pericardial Effusion



Low Voltage ECG criteria
- Precordial QRS: <10mm
- Limb QRS: <5mm

Electrical alterans
- Alternating tall-short QRS

Complications
- Pericardial tamponade

ST

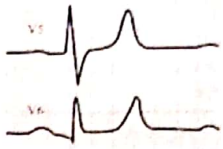
ST Elevation MI

ACCF/AHA 2013 definition:
STE in 2 contiguous leads
STE heigh in lead V2 or V3
- Men >/= 2 mm
- Women >/= 1.5mm

STE height in all other leads
- Everyone >/= 1mm

T

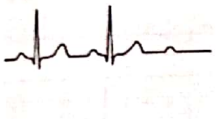
Peaked T Wave



High risk causes
- Ischemia (early sign)
- Hyperkalemia (does not predict K value)

Other Hyperkalemia findings
- PR/QRS interval prolongation
- AV block

Mobitz II



ECG criteria
- Dropped QRS without progressive PR prolongation

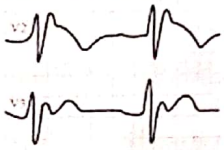
Complications
- High grade AV block

Wide Interval

ECG Criteria
- QRS width >/= 120 msec

Common causes
- Hyperkalemia (assume until proven otherwise)
- Ischemia
- Conduction disease
- Medication and toxins

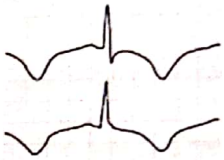
Brugada Sign



Type 1: Coved STE >2mm in >/= lead of V1-V3 followed by negative T wave
- This ECG finding + clinical criteria needed to diagnose Brugade syndrome, which is high risk for sudden death

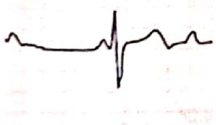
Type 2: Saddleback shaped STE>2mm; less specific

Inverted T Wave



Normal in leads aVR and V1
Causes for precordial inverted Ts
- Acute Ischemia
- Cardiomyopathy (CMP)
- Conduction disease
- RV strain (e.g. PE, ARVD)
- CNS catastrophe

Mobitz I

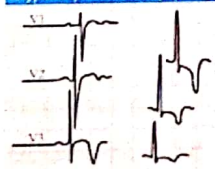


ECG Criteria
- Dropped QRS with progressive PR prolongation

Less risk than MOBITZ II

HCM

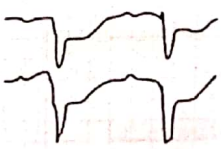
Hypertrophic cardiomyopathy



ECG Criteria
- Left ventricular hypertrophy
- Narrow "dagger" Q waves in lateral/inferior leads
- Deep T wave inversions

High risk for syncope, atrial fibrillation (CVA risk), progressive heart failure, VT/VF arrest

ST Depression



If in anterior leads:
- Consider posterior MI

If in lateral leads:
- Likely LVH with strain, if with high QRS voltage

Consider ACS if ST depression in any leads with chest pain or shortness of breath

ARVD

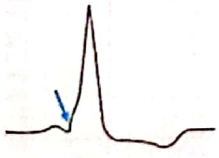
Arrhythmogenic RV dysplasia

ECG criteria
- Variable
- May see epsilon wave, a small positive deflection at QRS end (arrow)

High risk for syncope, arrhythmia, heart failure, sudden cardiac death

WPW

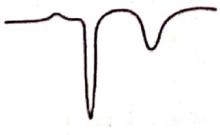
Wolff-Parkinson-White



ECG criteria
- Short PR <120 msec
- Delta wave (arrow)
- Wide QRS >/= 120 msec
- Secondary ST repolarization

High risk for arrhythmia and mimicking / masking ischemia

Q Wave



ECG criteria for pathological Qs
- Q wave in any V1-V3 lead
- Any other lead when width >/= 30msec or depth >/= 1mm

Common Cause
- Acute MI
- Cardiomyopathy
- WPW

J Wave

Osborn Wave

ECG criteria
- Positive deflection at J point most often seen in precordial leads

May be seen in hypothermia
Associated with higher risk for arrhythmia (bradycardia, VF) and STEMI

QTc Prolongation

Higher risk ECG criteria
- QTc > 500 msec

Normal QTc interval
- Men < 440 msec
- Women < 460 msec

Common causes
- Electrolyte abnormality
- Medication and toxins
- Familial

Heartburn/Epigastric Pain

CAUSES OF HEARTBURN

Causes of Epigastric Abdominal Pain	
Epigastric	Clinical features
Acute myocardial infarction	May be associated with shortness of breath and exertional symptoms
Acute pancreatitis	Acute onset, persistent upper abdominal pain radiating to the back
Chronic pancreatitis	Epigastric pain radiating to the back
Peptic ulcer disease	Epigastric pain or discomfort is the most prominent symptom
Gastroesophageal reflux disease	Associated with heartburn, regurgitation, and dysphagia
Gastritis/gastropathy	Abdominal discomfort/pain, heartburn, nausea, vomiting and hematemesis
Functional dyspepsia	The presence of one or more of the following: postprandial fullness, early satiation, epigastric pain, or burning
Gastroparesis	Nausea, vomiting, abdominal pain, early satiety, postprandial fullness, and bloating.

TREATMENT

1. Avoid chillies and sour food, smoking and alcohol
2. Stop irritant drugs like NSAIDs, if patient is takng them
3. Gelusil MPS 2 tsp × tds × 5 days (Antacid)
4. Tab Histac 150 mg bd × 5 days (Ranitidine)
5. Tab Baralgan 1 tds if spasmodic pain

- If pain is not relieved completely, ask for investigations
    1. Gastroscopy
    2. Ba Meal (if Gastroscopy is not available)
    3. Stool examination
    4. Ultrasonography
    5. S. Amylase and Lipase
    6. ECG
- If there is mucus or E. Histolytica in stools -

  Tab Flagyl 400 mg × tds × 7 days (Anti amoebic) or

  Tab Secnil 1 qm × 2 tabs single dose or

  Tinidazole or combination drugs
- If liver is palpable and tender, see-
    - Is there Jaundice?
    - Infective Hepatitis?
    - Is there C.C.F.?
    - Heart murmur, neck veins or

  If not, ask for ultrasonography of Liver and GB.

Note: 10% cases of discomfort due to cardiac causes are improved with antacids. Avoid overweight, avoid lying down soon after a meal, avoid late meals, avoid smoking, avoid tight fitting clothes, elevate the head end of bed, avoid foods that trigger heartburn.

Unstable Angina

THREE PRINCIPAL PRESENTATIONS INCLUDE:

- Rest angina: Angina occurring at rest and prolonged, usually >20 minutes
- New-onset angina: New-onset angina of at least CCS Class III severity.
- Increasing angina: Previously diagnosed angina that has become distinctly more frequent, longer in duration, or lower in threshold (i.e., increased by >1 CCS) class to at least CCS Class III severity.

TREATMENT

1. O_2 inhalation
2. Absolute bedrest. Later graded ambulation 2 min in the morning and 5 min in the evening.
3. 300 mg disprin (don't give ecospirin as it is enteric coated and thus delayed release) st followed by 75 mg/150 mg ecospirin 0-1-0
4. If normal BP s/l sorbitrate (isordil) 5 mg/10 mg st and 1-1-1
5. T Clopidogrel (clopilet/clopikind) 75 mg ×4 tab and 1-0-0
6. If severe pain persists, IV morphine 2-3 mg/pethidine 50-100 mg (may cause vomiting)
   Note: C/I asthmatics, COPD, already in hypotension
7. Metoclopramide 10 mg/Phenergan 25 mg for nausea/vomiting associated with Morphine
8. If BP low, don't give Lasix
9. β blockers. E.g. T Metoprolol 25/50 1-0-1 (Monitor Pulse Rate) or T Carvedilol 3. 125-25 mg (Cardivas) bid or nebivolol 5-40 mg daily (Nebicard)
10. ACE inhibitors, eg. T Envas (enalapril) 2.5/5 mg 1-0-1 (monitor BP, RFT)
11. T Atorvastatin 40 mg st and 10 mg 0-0-1
12. Heparin/LMW Heparin (clexane) i.e. Inj Heparin 5000 U s/c Q6H × 5 days or Inj Clexane (enoxaparin) 0.6 ml s/c BD (if RFT normal)
13. Syp Cremaffin HS (as stool softener); semi solid diet.
    In those patients not tolerating Sorbitrate, we may give T. Monotrate 20 mg 1-1-0

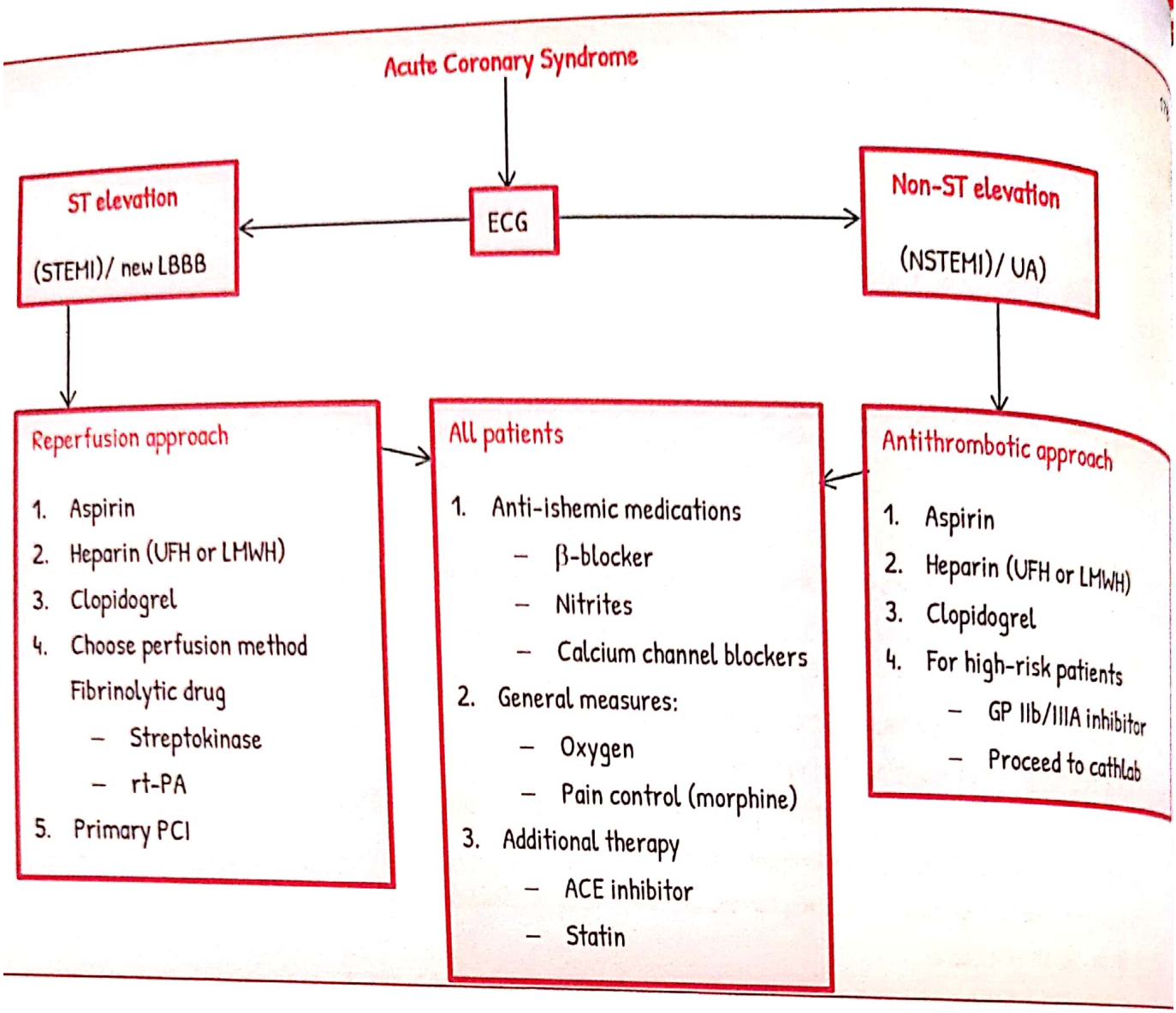
Aspirin + Clopidogrel Combinations: T. Complatt, T Deplatt-A, T.Cidogrel-A, T. Complatt CCU - A unique combination with high loading doses of Aspirin and Clopidogrel for initiating therapy in cases of emergency. Consists of 2 tabs, one of which has to be dispersed in water and the other to be swallowed whole.

Note:

Unstable angina: ST depression or new T inversion and Trop -ve,

NSTEMI: ST depression or T ↓ and Trop +ve.

STEMI: ST elevation and Trop +ve.



Nocturnal Leg Cramps

ETIOLOGY

- Peripheral artery disease
- Spinal stenosis
- Drugs (like stains, diuretics, BP drugs)
- DM
- Dehydration
- Diarrhoea
- Fatigue
- OA
- Pregnancy
- Hyper/Hypothyroidism
- CKD
- Cirrhosis
- Electrolyte abnormalities
- B complex deficiency
- Dialysis
- Idiopathic

TREATMENT

1. Analgesics
2. Vit B12 (Cap Meganeuron OD Plus 0-0-1)/ T SHELCAL OD/ C EVION 400mg OD.
3. T GABAPENTIN (Gabantin) 300mg od
4. Plenty of oral fluids, stretching, massage

Status Epilepticus

DEFINITION

Occurrence of Seizures for more than 20min or fits occurring in succession without regaining consciousness in between.

CAUSES

- Stoppage of current Anti-epileptic medication.
- Metabolic conditions like Hypoglycemia, Hyponatremia
- Infections like Meningitis, Encephalitis
- Other causes of seizures like ICSOL, Trauma etc.

TREATMENT

The aim of treatment is to control seizure first and then identify any correctable cause and treat it if possible

- Maintenance of airway + throat suctioning
- Maintain iv line and draw blood for metabolic work up
- Intravenous antiepileptic medications

1. Lateral position
2. Inj Lorazepam 4 mg iv st/inj diazepam 10 mg iv st over 2 minutes
3. Send RBS
4. Inj 25% dextrose 100 ml iv st
5. Inj thiamine 100 mg iv st
6. Inj phenytoin (eptoin) loading dose 10-20 mg/kg (20 mg/kg first dose as 50 mg/min in running NS). Usually it is given as Inj eptoin 600/800/1000 mg in 100 ml NS (1 pint NS if dose > 1000 mg) over 20 min.
   Phenytoin should not be injected through the same cannula as lorazepam because of the possibility of crystallization. IV lines should be flushed prior to and after the administration of phenytoin. Watch for hypotension and arrhythmia during infusion. Don't exceed 50 mg/min infusion rate as this may cause hypotension /cardiovascular collapse.
7. Later inj Phenytoin 100 mg Q8H or inj Levipil (levitiracetam) 500 mg or inj Na valproate 250 mg iv Q8H
8. If even after step 6, no improvement, repeat diazepam and ½ dose phenytoin. If still no improvement refer the patient to physician/neurologist.

MANAGEMENT OF STATUS EPILEPTICS

First 5 minutes

- Check emergency ABCs
- Give O_2
- Obtain IV access
- Begin ECG monitoring
- Check finger stick glucose
- Draw blood for serum electrolytes, RFT, magnesium, calcium, phosphate, CBC, LFTs, AED levels, ABG, troponin.
- Toxicology screen (urine and blood)

6 – 10 minutes

- Thiamine 100 mg IV; 50 ml of D50 IV unless adequate glucose known
- Lorazepam 4 mg IV over 2 minutes; if still seizing, repeat × 1 in 5 minutes
- If no rapid IV access give diazepam 20 mg PR or midazolam 10 mg intarnasally, buccally or IM

10 – 20 minutes

- If seizures persist, begin fosphenytoin 20 mg/kg IV at 150 mg/min, with blood pressure and ECG monitoring, OR
- Phenytoin 15 – 20 mg/kg at 30 – 50 mg/min

Reasonable to bypass this step, or perform subsequent step simultaneous with fosphenytoin loading

10 – 60 minutes

One (or more) of the following 4 options (intubation usually necessary except for valproate):

1. Continues IV midazolam: Load 0.2 mg/kg; repeat 0.2-0.4 mg/kg boluses every 5 minutes until seizures stop, up to a maximum total loading dose of 2 mg/kg. initial rate: 0.1 mg/kg/hr. continuous IV range: 0.5-2.9 mg/kg/hr.
   OR
2. Continuous IV profolol: Load: 1 mg/kg; repeat 1-2 mg.kg boluses every 3-5 minutes until seizures stop, up to maximum total loading dose of 10 mg/kg. Initial continuous IV rate: 2 mg/kg/h. Continuous IV dose range: 1-15 mg/kg/kg. Avoid >48 hrs of >5 mg/kg/h (increased risk of profolol infusion syndrome)
   OR
3. IV Valproate: 40mg/kg over ~10 minutes. If still seizing, additional 20 mg/kg over ~5 minutes.
   OR
4. IV phenobarbital: 20 mg/kg IV at 50-100 mg/min.

60 minutes

- Continuous IV phenobarbital. Load: 5 mg/kg at up to 50 mg/min; repeat 5 mg/kg boluses until seizures stop. Initial continuous IV arte: 1 mg/kg/hr. Continuous IV-dose range: 0.5-10 mg/kg/hr; traditionally titrated to suppression-burst on EEG.

Perform neuroimaging when convulsive activity is controlled.

- Begin continuous EEG, if patient does not awaken rapidly or if continuous IV Rx is used
- Treat metabolic abnormalities and hypothermia
- Lumbar puncture and antibiotics can be considered if infection is suspected.

SE not controlled even with anesthetic agents is called super refractory SE, for which IV Ig/pulse steroid can be tried as last report.

Hemoptysis

DEFINITION

Hemoptysis is defined as coughing of blood originating from below the vocal cords. Hemoptysis can range from blood-streaking of sputum to the presence of gross blood in the absence of any accompanying sputum.

CAUSES

Clinical Causes	Suggested Diagnosis
Anticoagulant use	Medication effect, coagulation disorder
Tobacco use	Acute bronchitis, chronic bronchitis, pneumonia, lung cancer
Dyspnea on exertion, fatigue, orthopnea, paroxysmal nocturnal dyspnea, frothy pink sputum	Congestive heart failure, left ventricular failure and mitral stenosis
Fever, productive cough	Upper respiratory tract infection, acute bronchitis, pneumonia, lung abscess
History of cancer (e.g. breast, colon or kidney)	Endobronchial metastasis from carcinoma
History of chronic lung disease, recurrent lower respiratory tract infection, cough with copious purulent sputum	Bronchiectasis, lung abscess
Pleuritic chest pain, calf tenderness	Pulmonary embolism or infarction
Toxic symptoms	Tuberculosis
Weight loss	Emphysema, lung cancer, tuberculosis, bronchiectasis, lung abscess
Melena, alcoholism, chronic use of non steroidal anti-inflammatory drugs (NSAIDs)	Gastritis, gastric or peptic ulcer, esophageal varices
Association with menses	Catamenial hemoptysis
Cachexia, clubbing, hoarseness	Lung cancer, small cell carcinoma

Note:

- In India, Hemoptysis is due to pulmonary Tuberculosis unless proved otherwise
- Hemoptysis is always precipitated by a secondary infection. So always give a strong antibiotic
- Auscultate for Cardiac Murmur (Mitral Stenosis)
- In elderly patients, or if X-ray shows shadow close to hilum or if there is no response to anti-TB drugs rule out Carcinoma of bronchus

MANAGEMENT

If Bleeding is in Small Quantities

1. Inj. Cefantral-S 1 gm × 12 hourly × 5 (Antibiotic) or any higher antibiotic like Levofloxacin or Cephalexin
2. Grillinctus 1 tsp tds × 7, (Cough suppressant)

3. Tab Calmpose 5 mg tds 7, S.O.S. Inj. (To relieve anxiety, Tranquilisers) Hemostatic drugs: Till bleeding stops.
4. Tab C.V.P. 1tds (Rutin, Calcium) or Tab Sylate 500 mg 6 hourly (Ethamsylate) or Tab Clip 500 mg tds (Tranexamic acid)
5. Tab Celin 500 mg bd (Vit C)
6. Inj Calcium gluconate 10 CC I.V. + Inj. Dicyene 250 mg/2ml I.V.(Ethamsylate) or Inj Clip 500 mg/5 ml IV
7. Bed rest, in semi-reclining position. If side of lesion is known, turn on the affected side, to minimize aspiration into normal side.
8. Refer the patient for: Hb, WBC, Platelet count, ESR, Coagulation profile, Sputum for AFB and malignant cells, X-ray Chest, CT scan Thorax, and if a hilar lesion is seen – Bronchoscopy.

If Hemoptysis is in Large Quantities

1. Give Inj. Fortwin 30 mg IM/IV stat.
2. Inj. Calcium gluconate 10 cc + Dicyene 250 mg/2ml I.V.
3. Reassure the patient and take the patient urgently to a hospital where blood transfusion can be given. Followed by Bronchial artery embolization or surgery.

Drugs Predisposing to Renal Dysfunction

DRUGS PREDISPOSING TO RENAL DYSFUNCTION

1. NSAIDs
2. ACE Inhibitors
3. Lithium
4. Radiographic contrast media
5. Aminoglycosides
6. PPI
7. Penicillin
8. Chemotherapy

Systemic Hypertension

BP CLASSIFICATION

AHA 2017 Classification			
Blood Pressure (BP) Category	Systolic BP		Diastolic BP
Normal	120 mm Hg	And	<80 mm Hg
Elevated	120-129 mm Hg	And	<80 mm Hg
Stage 1 hypertension	130-139 mm Hg	Or	80-89 mm Hg
Stage 2 hypertension	≥140 mm Hg	Or	≥90 mm Hg

STEPS TO MEASURE BP

Steps of Examination Blood Pressure	
Key Steps	Specific Instructions
Step 1: Properly prepare the patient	• The patient should rest comfortably for 5 minutes prior to the measurement in the seated position with their back supported. The patient's legs should be uncrossed with feet flat on the floor • The patient should avoid caffeine, exercise, and smoking for at least 30 minutes before measurement • Ensure that the patient has emptied his/her bladder • Neither the patient nor the observer should talk before or during the measurement • Measurements made while the patient is sitting or lying on an examining table do not fulfill these criteria.
Step 2: use proper technique for BP measurements	• Use a BP measurement device that has been validated, and ensure that the device is calibrated periodically. • The arm should be bare, supported and kept at heart level • Position the middle of the cuff on the patient's upper arm at the level of the right atrium (the midpoint of the sternum) • Use a cuff with an appropriate bladder size: Bladder width should be close to 40% of the arm circumference and length should cover 80-100% of the arm circumference. The lower edge of the cuff should sit 3 cm above the elbow crease with the bladder centered over the brachial artery. • Either the stethoscope diaphragm or bell may be used for auscultatory readings
Step 3: Take the proper measurements needed for diagnosis and treatment of elevated BP/hypertension	• At the first visit, record BP in both arms. Use the arm that gives the higher reading for subsequent readings. • Repeat blood pressure measurements should be taken 1-2 minutes apart • Increase the pressure to 30 mm Hg above the level at which the radial pulse is extinguished • Place the bell or diaphragm of the sthethoscope over the brachial artery • Open the control valve so that the rate of deflation of the cuff is 2 mm Hg per heart beat

	• Systolic blood pressure is the appearance of the first Korotkoff sound • The diastolic blood pressure is the point at which the sound disappears (phase 5 Korotkoff) • If Korotkoff sounds continue as the level approaches 0 mm Hg, listen for when the sound becomes muffled to indicate the diastolic blood pressure
Step 4: Properly document accurate BP readings	• Record BP to the closest 2 mm Hg on the sphygmomanometer, as well as the arm used and the position of the patient (supine, sitting or standing) • Note the time of most recent BP medication taken before measurements
Step 5: Average the readings	• Use an average of ≥2 readings obtained on ≥2 occasions to estimate the individual's level of BP • In presence of atrial fibrillation, minimum of 3 BP readings have to be estimated
Step 6: Provide BP readings to patient	• Provide patients the SBP/DBP readings both verbally and in writing

Fig. 2B.20: Demonstration of BP measurement

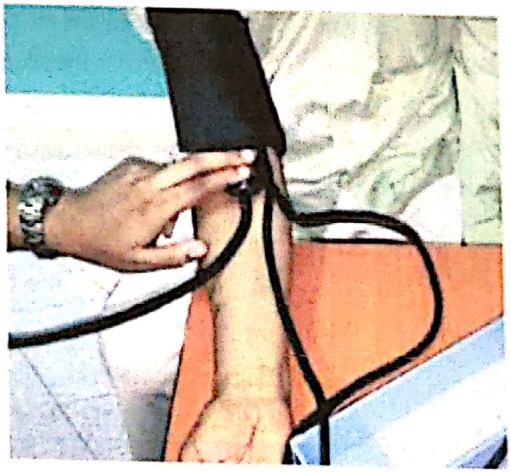


Fig. 2B.21: Demonstration of placement of BP cuff

YPERTENSION

vestigation for all Patients

1. Urinalysis for blood, protein and glucose
2. Blood urea
3. Electrolytes and Creatinine
4. Blood glucose
5. S. total and HDL Cholesterol
6. 12-Lead ECG (LVH, CAD)

rug treatment is recommended in:

1. In patients with sustained SBP≥160 Hg or sustained DBP≥100 mm Hg
2. In patients with sustained systolic BP in the range 140-159 mm/Hg, and/or diastolic BP in the range 90-99 mm/Hg, the decision depends on the risk of coronary events, presence of diabetes or end-organ damage (i.e. renal impairment etc)

TREATMENT

Mild HTN

I. Mild Hypertension (120-140/80-90 mm)

1. Salt restricted diet. Avoid extra salt and pickles. Salt in cooking may be allowed. If possible, low sodium salt should be used.
2. Low fat diet. Avoid oil, ghee, deep fried foods i.e. less of saturated fats
3. Reduce weight, if overweight, by regular exercise
4. Regularize working hours and sleep for 8 hours
5. Yoga for relaxation of mind. Daily aerobic exercises. Brisk walking for 45 min.
6. Tab Alprazolam 0.25 mg HS × 10 days (Tranquiliser = 4D-8)
7. Check B.P every week

If not controlled

1. Tab Aten 25 mg 1 daily (Beta Blocker=6AB-2)
   OR
   Tab Teima 20 mg OD
   (Telmisartan = 6AF-2)

Moderate HTN

II. Moderate Hypertension (140-160/90/100 mm)

Start with a Beta-blocker (or angiotensin II antagonist or ACE inhibitor or calcium channel blocker or alpha blocker) e.g.

- Tab Atenolol 50 mg 1-2 daily (avoid if bronchospasm)
  Or Tab Lopressor 50 to 100 mg daily (Betablocker = 6AB)
  Or Tab Losagard 25 to 50 mg OD (Losartan=6AF)
  Or Tab Telma 20 to 40 mg OD (Telmisartan=6AF). Drug of choice
  Or Tab Envas 2.5 mg to 10 mg OD (ACE Inhibitor=6AD)
  Or Cap Depin 10 mg OD to tds (Nifedipine=6AC)
  Or Tab MinipressXL 2.5 to 5 mg OD (Prazosin=6AE)

If not controlled

1. Add a Diuretic (6B)
   Tab Hydrochlorthiazide 12.5 mg OD
   - Most anti-hypertensive drugs are available in combination with Hydrochlorothiazide 12.5 mg e.g. Envas-H, Losacar-H, Telma-H, Aten-H
   - If there is edema, or CCF, add a stronger diuretic
     Tab Dytide ½ -1 OD
     Or Tab Lasilactone 1/2 - 1 OD
     Or Tab Esidrex × 1 OD
2. Combine 2 drugs e.g. Beta blocker + Ca blocker, or ACE inhibitor + Beta blocker, or Ca blocker + ACE inhibitor, or Alpha blocker + ACE inhibitor etc.

Severe HTN

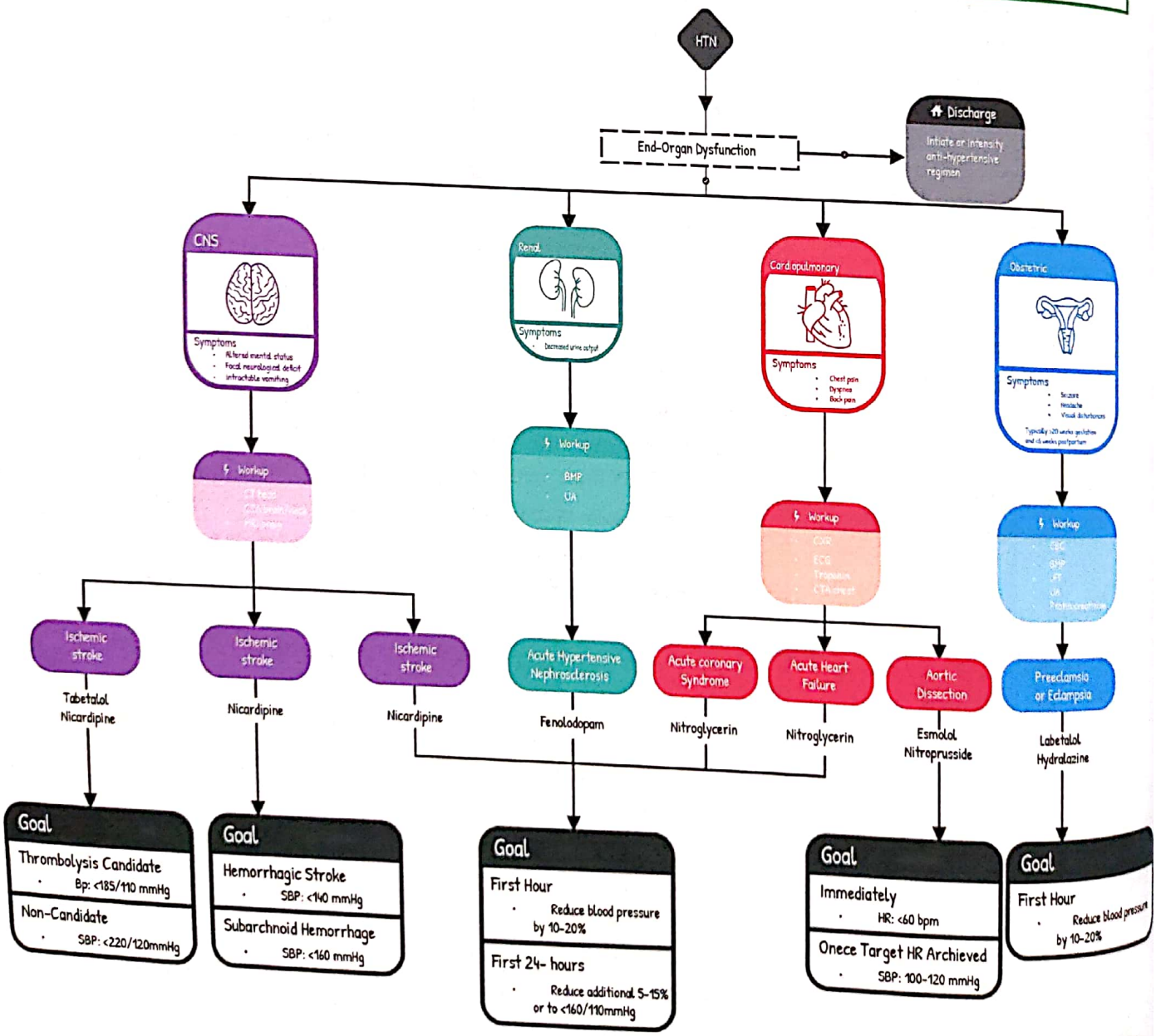
III. Severe Hypertension (160-180/100-110 mm)

1. Start with a combination of 2 drugs e.g.
   i. Amlodipine+Lisinpril - Tab Amlopres-L 1 OD to BD
   ii. Amlodipin+Metaprolol - Tab Stamlo-Beta 10D to BD
   iii. Telmisartan+Ramipril - Tab Telmisartan-R 1 OD to BD
2. Tab Dytor 10 mg 1 OD (Diuretic= 8B-11)
3. Tab Restyl 0.25 mg HS (Alprazolam = 4D-8)

- If severe, uncontrolled Hypertension si seen in younger patients (below 30 yrs). Refer the patient to a physician or Nephrologist to investigate for Renal Hypertension
- It is the General practitioner's duty to see that the patient takes the drugs regularly and keep BP under control. Many patients believe that if they have no headache, then BP is under control, and take tablets only when symptomatic. Urge them to take tablets regularly.
- If the patient is asthmatic, do not give Beta-blockers. And if the patient on anti-hypertensives, complaints of chronic mild cough, check whether he is receiving Beta-blcker
- Keep sublingual Nifedipine at hand for Hypertensive emergencies.

If BP is above 200 mm systolic or 120 mm diastolic

	3. Stop salt intake completely, even the salt in cooking 4. Bed rest- if necessary, hospitalize 5. Refer to a physician for advise and investigations if above measures fail to control the BP Check the following regularly 1. BP every month (more frequently, if fluctuating) 2. S. Cholesterol and Blood sugar - every year 3. X-ray Chest, ECG and Echo-for baseline readings	1. Give Depin 10 mg sublingually (Nifedipine = 6AC-2) 2. Bed rest 3. If not lowered within 10 to 15 minutes, repeat Depin sublingual and refer to a physician 4. To be given in ICU setup only Inj Labil 50 mg slow IV or 2 mg/min infusion (Labetolol) Or Inj Esmolol 500mg slow IV stat, or NTG Drip.



DIET

1. Low Salt Diet

i. Total salt intake should not exceed 2½ qms per day.
ii. No extra salt should be taken during meals.
iii. Use Losalt, where salt is essential.
iv. Avoid salt rich foods - pickles, papads, sauce, cheese, salted butter, salted biscuits, wafers, popcorns, salted peanuts cashews, salted butter milk.
v. Take potassium rich foods like grapes, mosumbi.

2. Low Fat Diet

i. Avoid saturated oils - coconut oil,dalda, butter, ghee, cream.
Use monosaturated oils like - olive oil, mohari oil or polyunsaturated oils like - sunflower, corn, karadi (safflower oil).
ii. Avoid all deep fried foods, unskimmed milk, meat.
iii. Increase fiber intake i.e. leafy vegetables, salads, fruits, pulses and lequmes.
iv. Use skimmed or double toned low fat milk.
v. Be very strict about low fat diet, if S.cholesterol is high, or lipid profile is abnormal, or if I.H.D. is associated.

Hyperlipidaemia

- Elevated levels of fat that are lipids, cholesterol, triglycerides or all.

**NOTE:

- LDL - damaging effects on health
- HDL - carries excess cholesterol back to liver for excretion

IDEAL CHOLESTEROL LEVELS	
OVERALL CHOLESTEROL	Under 200 mg/dl
HDL CHOLESTEROL	Men : > 40 mg/dl Women : > 50 mg/dl
LDL CHOLESTEROL	Healthy people : < 100 mg/dl People with heart disease / diabetes / poorly controlled risk factors : < 70 mg/dl
TRIGLYCERIDES	< 150 mg/dl

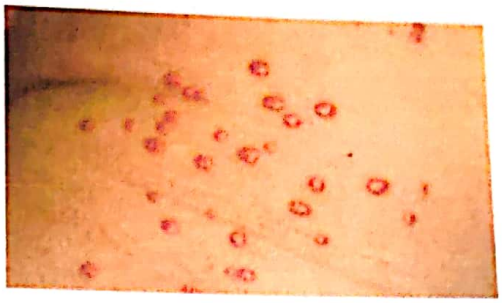
HISTORY

- Past medical history : diabetes, CAD, heart failure, stroke, TIA, renal disease,hypertension, gall stones, hypothyroidism, HIV.
- HYPERTRIGLYCERIDAEMIA :
    1. Pancreatitis
    2. Chylomicronemia syndrom
    3. Hyponatremia
    4. Transaminitis
    5. Milky plasma
- HYPERCHOLESTEROLEMIA :
    1. Premature atherosclerosis
    2. Aortic sclerosis / stenosis

PHYSICAL

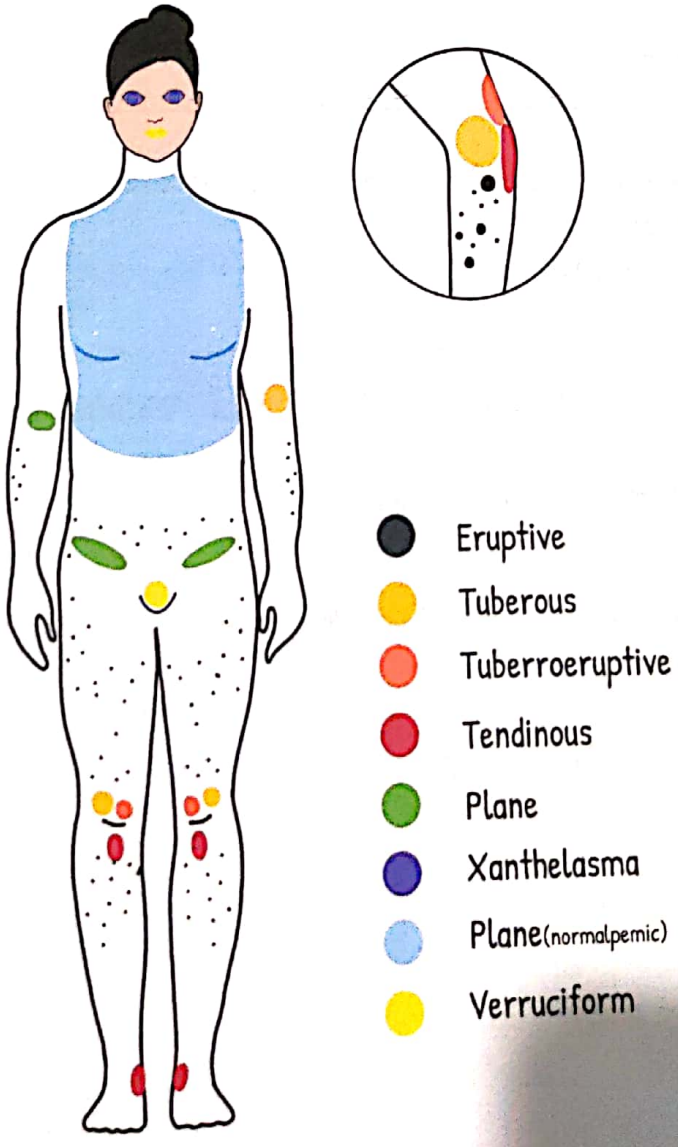
- HYPERTRIGLYCERIDAEMIA :
    - Lipemia retinalis (when TGL >22.6 mmol/L)
    - eruptive xanthomas (when TG 11.3-22.6 mmol/L)
    - Hepatosplenomegaly
- HYPERCHOLESTEROLEMIA :
    - Tendon xanthomas
    - Xanthelasma
    - Tuberous xanthomas
    - Corneal Arcus (premature when < 40 years of age)

LIPEMIA RETINALIS



ERUPTIVE XANTHOMAS

XANTHELASMA



CORNEAL ARCUS

ETIOLOGY

1. Primary (familial) - genetic disorders
2. Secondary (acquired)
   - unhealthy diet
   - **Medication :** amiodarone, glucocorticoids
   - Hypothyroidism
   - Uncontrolled diabetes

PATHOPHYSIOLOGY

- Elevated LDL - atherosclerosis and vascular disease
- Polygenic in inheritance.

TESTS

- LABORATORY - lipid panel or lipid profile
- 12-hour fasting lipid profile, TFT,RFT,RBS

****NOTE:**

- adults aged 20 yrs or older - screening for hypercholesterolemia should be done.
- fasting lipid measurement is indicated if;
  1. cholesterol is >200 mg/dl [OR]
  2. HDL cholesterol is < 40 mg/dl

TREATMENT

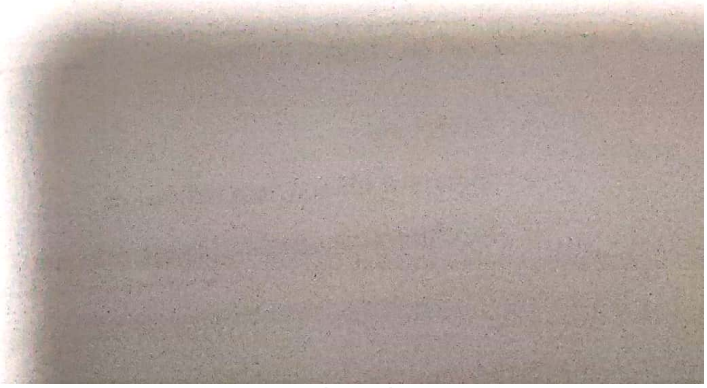
- 1st line therapy : Statins.
- 2nd line therapy : Fibrin / cholesterol absorption inhibitors.

****NOTE:**

- Statins are associated with myalgia, myositis, abdominal pain, derangement in LFT , raised CPK
- For associated muscle pain - T Levocarnitine

- Drugs containing levocarnitine: C EVION- LC, T NUROKIND-LC
- General measures;
  1. Fat free diet
  2. Reduced quantity of cooking oil
  3. Exercise
  4. Isovac x 1-2 teaspoon in water x BD

- Elevated cholesterol & LDL levels (statin)
  1. Tab ATORVA : 10mg x 1-2 tabs x after dinner
     [OR] Tab SIMVOTIN : 10-40mg x after dinner
     [OR] Tab ROZUCOR : 10-40mg x after dinner
  2. If not controlled add Tab Ezedoc-10 : 1 OD
- Elevated triglycerides & VLDL (fibrate)
  1. Cap LIPICARD : 160 mg OD
     [OR] Tab NORMOLIP : 300 mg , 1-2 tabs BD , 30 mins before meal
  2. If not controlled add Tab EZEDOC-10 : 1 OD
  3. If not controlled add Tab NIALIP : 500mg x 1-2 tabs OD x after lunch.
- Elevated cholesterol and triglyceride levels - One statin + one fibrate + EZETIMIBE.
- In familial hyperlipidaemias.
  1. Tab FOLVIT 1 OD lifelong - if plasma homocysteine levels are high.
  2. Tab NIALIP 500mg 1-2 BD after food - if lipoprotein-A is high.
- Detected incidentally during general check-up
  1. Advise general measures.
  2. >40 yrs with other risk factor - drug treatment to achieve target LDL levels.
  3. Patient with IHD/hypertension/diabetes - treatment must be given.



Hyperuricemia

ETIOLOGY

- Renal d/s
- Drugs (e.g. diuretics, immunosuppressive drugs)
- Alcohol
- Starvation
- Hypothyroidism
- Obesity
- Psoriasis
- Purine rich diet (organ meat, seafood, dried beans, dried peas, mushrooms)
- Vit B3
- Genetic

CLASSIFICATION

Urate Overproduction

- Primary hyperuricemia
  - Idiopathic
  - Complete or partial deficiency of HGPRT
  - Superactivity of PRPP synthetase
- Secondary hyperuricemia
  - Excessive purine consumption
  - Myeloproliferative or lymphoproliferative disorders
  - Hemolytic diseases
  - Psoriasis
  - Glycogen storage diseases: Types 1,3,5 and 7

Uric Acid Under Excretion

- Primary hyperuricemia
  - Idiopathic
- Secondary hyperuricemia
  - Decreased renal function
  - Metabolic acidosis (ketoacidosis or lactic acidosis)
  - Dehydration
  - Diuretics
  - Hypertension
  - Hyperparathyroidism
  - Drugs including cyclosporine, pyrazinamide, ethambutol and low-dose salicylates
  - Lead nephropathy

Overproduction and Under Excretion

- Alcohol use
- Glucose-6-phosphatase deficiency
- Fructose-1-phosphate-aldolase deficiency

TREATMENT

- T FEBUXOSTAT (Febutaz/Febuget) 40/80mg 1-0-0 (monitor S. Creatinine)

Steroid Tapering

- If steroids are tapered too quickly, withdrawal symptoms can occur, such as joint pain, fatigue, dizziness, muscle pain, vomiting, shortness of breath, fainting, headaches, low blood sugar, fever, nausea, etc.
- One view is that tapering is not necessary in short term therapy (14 days or less)
- Gradual withdrawal of systemic corticosteroids is advisable in patients who have received more than 2 weeks treatment or have history of adrenal suppression or have had repeated courses of steroids or received doses at night or have received Prednisolone >40mg daily or equivalent (e.g. dexamethasone 6mg) for any length of time.

PREDNISOLONE TAPERING

- A decrease in dose is usually made every 2-3 days
- Reduce dose by 2.5 to 5.0 mg decrements every 3-7 days until physiologic dose (5 to 7.5 mg of prednisolone per day) is reached.
- Other recommendations state that decrements usually should not exceed 2.5 mg every 1-2 weeks.

DEXAMETHASONE TAPERING

- In patients who have received less than 14 days f dexamethasone therapy, treatment may be abruptly discontinued without adverse events, because the HPA axis is not suppressed.
- Dexamethasone tapering schedules are often prescribed for short-term therapy, and usually consists of a reduction in dose of 2-4 mg every 1-3 days, by either reducing the dose and/or the interval.

Hypothyroidism

- Also known as UNDERACTIVE THYROID
- A condition in which the thyroid gland does not produce enough thyroid hormones.
- Deficiency of thyroid hormones can disrupt:
    1. Heart rate
    2. Body temperature
    3. other aspects of metabolism
- Prevalent in older women

HISTORY

- Thyroid surgery
- Family history
- I-131 treatment
- Therapeutic radiation of neck or thorax (mantle)
- Excess Iodine : Aminodarone, contrast, kelp, cough syrup
- Medications : Lithium
- Iodine deficiency
- Pregnancy : recent, complicated

SIGNS AND SYMPTOMS

- Weight gain, cold intolerance, tiredness, fatigue, depression
- Neck enlargement
- Dry, puffy, yellowish skin
- Thin, brittle hair; alopecia
- Constipation, abdominal pain
- Sluggish, tiredness
- Bradycardia, hypothermia
- Delayed deep tendon reflexes, proximal muscle weakness, myalgias, cramps
- Puffiness of face and extremities
- Goiter
- Rare Manifestations : carpal tunnel syndrome, deafness, hypoventilation,pericardial or pleural effusions.

NECK ENLARGEMENT

TEST

LABORATORY

1. Basic blood tests : free T4, TSH
2. Specific diagnostic tests
   - ➢ Anti-TPO antibody, antithyroglobulin antibody, lipid panel, CPK,sodium.

IMAGING

1. MRI of pituitary region if free T4 low and TSH low or normal
2. I-123 uptake and scan not needed
3. ECG

DIAGNOSIS

TSH

- Normal value - not primary hypothyroidism
- Elevated value (>20 μU/mL) - diagnosis confirmed
- Mild elevation(<20 μU/mL) - primary hypothyroidism
  1. Impaired thyroid functions
  2. Increased TSH secretion
  3. Free T4 levels
- Non-specific symptoms are seen
- mild increase in S.cholesterol & LDL
- Moderately elevated TSH - measure Plasma free T4
- Low free T4 - Suspected secondary hypothyroidism, treatment carried.

DIFFERENTIAL DIAGNOSIS

Primary hypothyroidism (low T4, high TSH):

- Hashimoto disease
- Subacute thyroiditis : viral, silent, postpartum
- Status post-thyroidectomy or I-131 therapy
- Goitrogen induced: lithium, PTU, MTZ
- Iodine induced: amiodarone, contrast, kelp
- Rare causes: iodine deficiency, Riedel struma, enzyme defect

Secondary hypothyroidism (low T4, low or normal TSH):

- Pituitary or hypothalamic tumors
- Status post-pituitary or hypothalamic surgery
- Granulomatous diseases
- Postpartum necrosis
- Other pituitary and hypothalamic disorders

MANAGEMENT

1. Assess degree of severity using clinical presentation, extent of free T4 lowering or TSH elevation.
2. General measures - Assess for;
   - Associated disorders
   - Hypothermia
   - Hyponatremia
   - Mental status
   - Hypoventilation

SPECIFIC TREATMENT

- Drug of Choice ; Thyroxin
  - Average replacement dose - 1.6µg/kg PO daily
  - Average range of dosage - 75 and 150 µg/d
  - Elderly patients - lower dosage

**NOTE:

- Emphasize need for lifelong therapy
- Intake - 30 mins before meal, preferable - morning

- Initial Dosage;
  1. Young & middle-aged adults - 100µg/d
  2. Elderly patients - 50 µg/d
  3. patient with cardiac disease - 25 to 50 µg/d
     - monitor for exacerbation of cardiac symptoms.
- Hydrocortisone: use if secondary hypothyroidism / myxedema coma present
- Passive warming if hypothermia present.

**NOTE: excessive sedative drugs and fluids -> hyponatremia and coma

FOLLOW-UP

Primary hypothyroidism :

- Goal - maintain plasma TSH within the normal range
- TSH assessment : 6 to 8 weeks after initiation of therapy
- Dose adjustment (thyroxin) : 12- to 25- µg , Interval : 6 to 8 weeks
- Annual TSH measurement.

Secondary hypothyroidism :

- TSH cannot be used to adjust therapy.
- Goal - maintain free T4 (near middle of reference range).
- Dose adjustment (thyroxin) Interval : 6 to 8 weeks.

Patients with CAD

- May be exacerbated by the treatment.
- Thyroxin dosage - should be slowly.
- Worsening of angina, heart failure, or arrhythmia should be observed.

COMPLICATIONS AND PROGNOSIS

Complications

- Myxedema coma: Rare and requires intensive care.
- Ischemic heart disease may be worsened by levothyroxine (synthetic thyroxin).
- Levothyroxine alone may precipitate adrenal crisis.
- Hyponatremia may result from poor free water clearance.

Prognosis

- Myxedema coma: upto 50% mortality.
- Euthyroid state easily achieved except when Ischemic heart disease present.

**NOTE:

- Increase of thyroxin dosage during pregnancy - 50%
- Use thyroxin for Subclinical hypothyroidism if;
    1. Symptoms compatible with hypothyroidism.
    2. Goitre.
    3. Hypercholesterolemia.
    4. Plasma TSH is >10μU/mL
- Untreated patients;
    1. Monitor annually.
    2. Start thyroxin if s/s develop [OR]
    3. S.TSH increases to >10μU/mL.

Sensory Disturbances

IT INCLUDES:

1. Pins and Needles
2. Pricking
3. Band like
4. Lightning pain
5. Knife like
6. Twisting
7. Pulling
8. Tightening
9. Burning
10. Aching
11. Numbness
12. Other raw sensations

AETIOLOGY

a) Neurological: PNS or CNS lesions

b) Non neurological: Hyper ventilation, Hypocalcemia, Hysterical/non organic

PERIPHERAL NEUROPATHY CAUSES

- Direct trauma
- Compression
- Entrapment
- DM,
- Leprosy,
- HIV,
- Alcohol,
- Vitamin deficiency,
- Hypothyroidism,
- Drugs (like FQ, Metronidazole, Phenytoin, Linezoild,),
- Paraneoplastic,
- Liver failure,
- Renal failure etc.

FOR PERIPHERAL NEUROPATHY/NEUROPATHIC PAIN/FIBROMYALGIA

1. T CARBAMAZEPINE 200mg 1-1-1 (Tegrital, Epilep, Zen, Mazetol etc) or
   T AMITRYPTILLINE 10mg HS (Tryptomer) or
   T DULOXETINE 30mg (Dulane, dutin) 0-0-1 or
   C MAXGALIN (Pregabalin) 75/150 mg od or
   C GABANTIN (Gabapentin) 300mg od
   C MAXGALIN-M/ PREGASTAR M (Pregabalin + Methylcobalamin),
   GABAMAX GOLD/ PREGASTAR PLUS (B Complex, Pregabalin),
   T NUROKIND-G (Mecobalamin + Gabapentin)
2. Analgesics - Mefanamic Acid (PONSTAN, MEFTAL)
3. T BC or NEUROBIONE FORTE or other multivitamins with Vit B12 or
   T BENALGIS (Benfotiamine) 100mg 1-1-1
   T BENALGIS can be given for Sciatica, Diabetic Neuropathy/ Nephropathy/ Retinopathy, and other painful nerve conditions.
4. Physician Consultation

Pattern of Sensory Loss	Site of the lesion
Hemisensory loss – same side face and body	Internal capsule/ thalamus
Crossed sensory – one side face, opposite side body	Lateral medulla
Ascending sensory loss – lower limbs →upper limb	Extramedullary compressive myelopathy
Descending sensory loss – upper limbs → lower limb	Intramedullary compressive myelopathy
Dissociative sensory loss (only pain and temperature lost, posterior column sensations preserved)	Intramedullary compressive myelopathy Lateral medullary syndrome Anterior cord syndrome
Definite sensory level (below which all sensations lost)	Suggestive of spinal cord disease
Graded sensory loss – glove and stocking	Suggestive of peripheral neuropathy

Facial Nerve Paralysis

PATHOPHYSIOLGY

The mechanism of paralysis of the facial nerve is dependent on the cause. Due to the facial nerve running through a narrow bony canal within the intratemporal course, any cause of inflammation or growth of the nerve will result in ischaemic changes through compression. The nerve is narrowest at the labyrinthine segment; therefore, compression is most likely to occur at this point. Any cause of skeletal abnormality or trauma may result in disruption of the relationship between the facial nerve and its bony canal, causing paralysis.

CAUSES

- cause may be central or peripheral
- peripheral lesion are more common

CENTRAL	INTRACRANIAL PART	INTRATEMPORAL PART
Brain abcess Multiple sclerosis poliomyelitis	Acoustic neuroma Meningioma meningitis	Bell palsy ASOM CSOM Trauma Neoplasm
EXTRACRANIAL PART	**SYSTEMIC DISEASES**	
Surgery of parotid Neonatal facial injury	Diabetic diseases Hypothyroidism Uraemia, leprosy	

BELL'S PALSY	MELKERSSON SYNDROME	HERPES ZOSTER OTICUS
-60-70% -Idiopathic, peripheral facial paralysis -Males= females affected -Risk more in diabetic patients, pregnant women. **AETIOLOGY** -Viral infection[Herpes simplex,EBV,HZ] -Hereditary -Vascular ischemia	-Triad of facial paralysis,swelling of lips ,fissured tongue. -Recurrent	-Ramsey hunt syndrome -(+)vesicular rash in EAC, pinna -Anesthesia of face,gidiness.

BELL'S PALSY SYMPTOMS

- Inability to furrow brow
- Drooping eyelid & cannot close eye
- No muscle tone in cheek
- Drooping mouth & cannot smile or pucker lips.

CLINICAL FEATURES

- Loss of wrinkles
- Wide palpebral fissure
- Epiphora
- Absent of nasolabial fold
- Drooping of angle of mouth

DIAGNOSIS

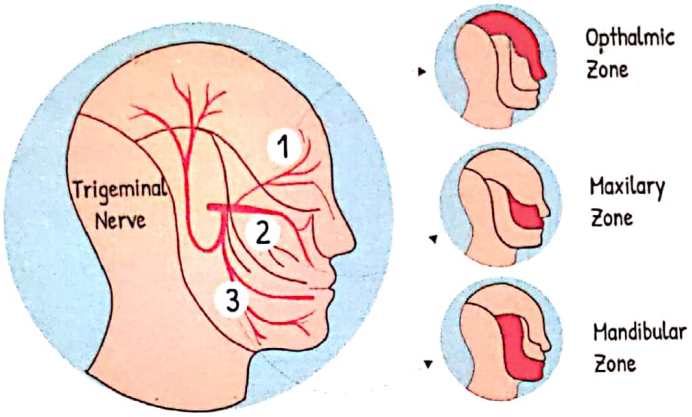
- Always by exclusion
- X ray studies
- Nerve excitability test
- Localizing the lesion

TREATMENT

1. Antibiotics[In cases of DM always give strong antibiotics]
2. Analgesics
3. Steroid—wysolone 40mg 1-0-0 X 5-7 days, tailing by 10 mg/day
4. In cases of Bell's Palsy give Acyclovir 800mg 5 times daily x 7-10 days
5. Lubrex/refresh (carboxymethylcellulose) Eye drops;
6. Pad & bandage eye; use dark glasses.

Trigeminal Nueralgia

- also known as tic douloureux
- often described as stabbing, lancinating or electrical in sensation
- men >women



CAUSES

1. Spontaneously,
2. Facial trauma,
3. Dental procedures,
4. Vascular compression,
5. Multiple sclerosis

SYMPTOMS

1. Episodes of sharp, intense, stabbing pain in the cheek or jaw
2. Periods of relief between episodes
3. Most commonly, it is felt in the lower part of the face.

DIAGNOSIS

1. Physical examination
2. CT scan,high resolution MRI

TREATMENT

1. Antibiotics. In cases of DM always give strong antibiotics
2. Analgesics
3. Steroid—WYSOLONE 40mg 1-0-0 X 5-7 days, tailing by 10 mg/day
4. DoC is Carbamazepine 200mg TDS
5. LUBREX/refresh (carboxymethylcellulose) Eye dps;
6. Pad & bandage eye; use dark glasses
7. Surgery
    i. Rhizotomy,
    ii. Microvascular decompression surgeries,
    iii. Steriotactic radiosurgery

Syncope / Giddiness

DEFINITION

- Syncope is defined as a **transient loss of consciousness** due to inadequate cerebral blood flow with loss of postural tone.
- It is associated with spontaneous return to baseline neurologic function without any resuscitative efforts.

Presyncope

- Presyncope is the term used for light headedness in which the individual thinks he/she may blackout

Classical Vasovagal Syncope

- Syncope triggered by emotional or orthostatic stress such as venipuncture (experienced or witnessed), painful or noxious stimuli, fear of bodily injury, prolonged standing, heat exposure, or exertion.

CAUSES

Cardiac causes	Non cardiac causes
• **Cardiac arrhythmias**: Ventricular tachycardia, paroxysmal supraventricular tachycardia, long QT syndrome, Brugada syndrome, bradycardia (Mobitz type II or 3rd degree heart block) • **Structural cardiac or cardiopulmonary disease**: Cardiac valvular disease (AS, MS, PS), obstructive cardiomyopathy, atrial myxoma, acute aortic dissection, pericardial disease/tamponade, pulmonary embolous/pulmonary hypertension, acute myocardial infarction/ischemia.	• **Neurocardiogenic syncope 'vasovagal or vasodepressor syncope'**: Classical vasovagal syncope, situational syncope, carotid sinus syncope, glossopharyngeal neuralgia, micturition syncope. • **Orthostatic hypotension:** Autonomic failure which may be primary (e.g. pure autonomic failure, multiple system atrophy, Parkinson's disease with autonomic failure) or secondary (e.g. diabetic neuropathy) • **Neurovascular syncope**: Vascular steal syndromes.

TREATMENT

General Advise

1. Bed rest in dark room. Avoid movements of the head, if giddiness is severe.
2. Stop smoking and alcohol.
3. Check whether any drug that the patient is causing sedation (e.g. anti-histaminic), or postural hypotension (e.g. anti-hypertensives).
4. If patient is on In. Streptomycin, stop it immediately
5. X-ray Cervical spine. Use Cervical collar, if cervical spondylitis.
6. Check ECG for arrhythmias.
7. Audiometry if impaired hearing or Tinnitus.
8. SOS MRI for vertebra-basilar insufficiency.

Drug Treatment

1. Tab Stugeron 25mg 1 tds till giddiness is controlled (Cinnarizine) or Tab Stemetil 1 tds (Prochlorperazine 5mg)
2. Inj. STEMETIL 2cc IM stat for severe giddiness (may be repeated 8-12 hours)
3. Inj. NEUROBION 2cc IM × A.T.D. × daily × 5-10 Inj. (B_1, B_6, B_{12})
4. Cap Becosules 1 bd × 15 (B Complex)
5. If there are cochlear symptoms (Tinnitus & Deafness), add-Tab Vertin 8mg tds (Betahistine HCl)

Note: Whenever a patient is brought with c/o unconsciousness rule out head injury.

Motion Sickness

SYMPTOMS

- Cold sweats
- Dizziness
- Fatigue
- Headache
- Irritability
- Inability to concentrate
- Increased saliva, nausea and vomiting
- Pale skin
- Rapid breathing or gulping for air

TREATMENT

1. T AVOMINE 25mg about 1-2 hours before journey (Promethazine theoclate)
2. Avoid alcohol, dietary excess, reading.
3. Position themselves where there is least motion, a supine/recumbent position with the head braced is best.
4. Keeping the axis of vision at an angle of 45 above horizon may reduce susceptibility

Memory Deficits and Forgetfulness

- DEMENTIA - progressive deterioration of thinking ability and memory of brain
  1. Reversible
  2. Irreversible

DIFFERENTIAL DIAGNOSIS

Primary progressive dementia

- Alzheimer's
- Vascular
- Parkinson's
- Lewy body
- Front temporal
- Prion disease - Creutzfeldt-Jakob disease

Potential reversible dementia (<1%)

- Metabolic : Alcoholism, Vitamin B12, Hypothyroidism
- Structural : NPH, subdural hemorrhage, neoplastic, vascular
- Infections : Chronic meningitis, HIV, neurosyphilis, Whipple's
- Inflammatory : Vasculitis, Hashimoto, Encephalitis, Multiple sclerosis

DEMENTIA MIMICS

1. Depression
2. Delirium
3. Developmental disorders
4. Age-associated memory

DISTINGUISHING FEATURES BETWEEN VARIOUS TYPES OF DEMENTIA

	Alzheimer's	Vascular	Fronto-temporal
Physical findings	Relatively normal	Focal neurological deficits	Disinhibited or passive,primitive reflexes.
MMSE	Memory recall affected early on,Language and visuospatial deficits.	Patchy changes	May be normal.
MOCA,Clock drawing,FAB,Exit test.		Early executive loss	Early executive loss
CT head	White matter changes	White matter changes	Frontal temporal atrophy

Abbreviations: FAB,Frontal Assessment Battery;MOCA,Montreal Cognitive Assessment.

TREATMENT

Potential reversible dementia (<1%)

1. T CITICHOLINE (strocit) 500 mg 1-0-1 [OR]
2. T PIRACETAM 400 mg 1-1-1; T strocit plus(citicholine+ piracetam) [OR]
3. T DONAMEM 0-0-1 (donepezil 5 or 10 mg + memantine 5 mg)

Forgetfulness

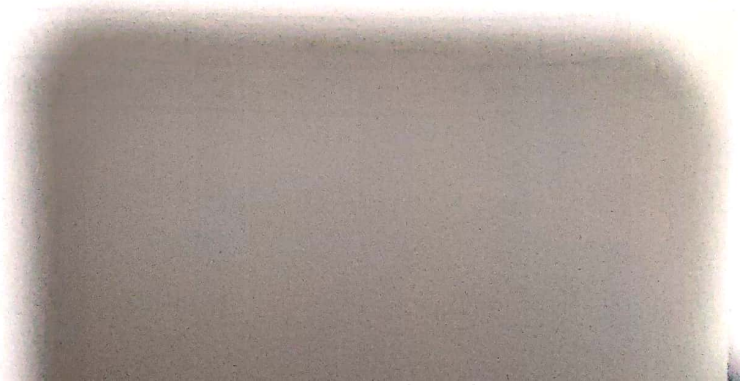
1. Tab NEURACETAM 400mg 1 tds x 1-6 months [OR]
   Tab ENCEPHABOL 200mg tds [OR]
   Tab HYDERGINE 1mg tds [OR]
   Tab GINKOCER 50mg ODS
2. Cap BECOSULES 1 OD [OR] Cap Becozine OD
3. Early Alzheimer - Tab DONECEPT 5mg HS

****NOTE:**

- Long term treatment with cerebral activators causes improvement in some patients.

ALZHEIMER'S

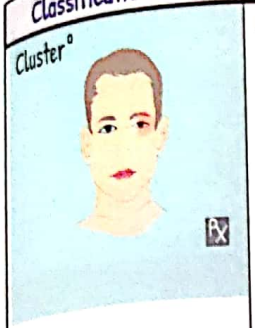
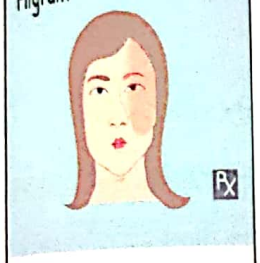
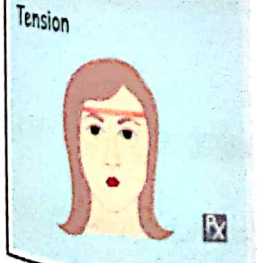
- **Vitamin supplement ;**
  1. Cap BECADEXAMINE 1 OD
  2. Cap BIO-E 400mg 1 OD
- **Specific treatment;**
  1. Tab GALAMER 1.5-3mg BD [OR]
  2. Tab DOPEZIL 5-10mg HS.



Headache

HEADACHES

Pain due to irritation if intra-or extracranial structures (eg, meninges, blood vessels). Primary headaches include cluster, migraine, and tension; migraine and tension headaches are more common in females. Secondary headaches include subarachnoid hemorrhage, meningitis, hydrocephalus, neoplasia, giant cell (temporal) arteritis.

Classification	Localization	Duration	Description	Treatment
Cluster° 	Unilateral	15 min - 3 hr, repetitive	Excruciating periorbital pain ("suicide headache") with autonomic symptoms (eg, lacrimation, rhinorrhea, conjuctival injection). May present with Horner syndrome. More common in males	Acute, sumatriptan, 100% O_2, Prophylaxis verapamil.
Migrain 	Unilateral	4-72 hrs	Pulsating pain with nausea, photophobia, and/or phonophobia. May have "aura". Due to irritation of CN V, meninges, or blood vessels (release of vasoactive neuropeptides (eg, substance P, calcitonin gene-related peptide))	Acute: NSAIDs, triptans, dihydroergotamine, antiemetics (eg. Prochlorperazine, metochlorpramide). Prohylaxis: lifestyle changes (eg, sleep, exercise, diet), β-blockers, amitriptyline, topiramate, valproate, botulinum toxin, anti-CGRP monoclonal antibodies. POUND - Pulsatile, One-day duration, Unilateral, Nausea, Disabling.
Tension 	Bilateral	>30 min (typically 4-6 hr); constant	Steady, "bandlike" pain. No photophobia or phonophobia. No aura	Acute: analgesics, NSAIDs, acetaminophen. Prophylaxis: TCAs (eg, amitriptyline), behavioral therapy.

Compare with trigeminal neuralgia, which produces repetitive, unilateral, shooting/shocklike pain in the distribution of CN V. Triggered by chewing, talking, touching, certain parts of the face. Lasts (typically) for seconds to minutes, but episodes often increase in intensity and frequency over time. First-line therapy: carbamazepine.

PRIMARY HEADACHE SYNDROMES

1. Migraine with (classic) or without (common) aura
2. Tension headaches
3. Cluster headaches
4. Rebound headaches
5. Trigeminal neuralgia
6. Temporal arteritis

SECONDARY HEADACHE

Have specific etiologies and symptoms vary depending on underlying pathology, i.e., SAH, HTN, sinusitis, tumour, glaucoma, SDH, meningitis, encephalitis, vasculitis, obstructive hydrocephalus, intracerebral hematoma, cerebral ischemia or infarction, dental problems, pseudomotor cerebri, optic neuritis.

Systemic causes include fever, viremia, hypoxia, CO poisoning, hypercapnia, allergy, anemia, caffeine withdrawal etc.

CLINICAL PRESENTATION

The sudden onset of severe headache (worst ever headache) or a severe persistent headache that reaches maximum intensity within a few seconds or minutes warrants immediate investigation for possible SAH

There may be loss of consciousness at the onset of SAH

PHYSICAL EXAMINATION

1. Check BP
2. Pulse
3. Look for possible bruits
4. Check temporal arteries
5. If neck stiffness and meningismus (resistance to passive neck flexion, headache etc) present, then consider meningitis
6. Check sinus tenderness over maxillary and frontal sinuses
7. If papilledema observed, consider an intracranial mass, meningitis or idiopathic intracranial HTN

INVESTIGATIONS

CT Brain to exclude secondary etiologies

TREATMENT

1. Tab Dispirin 1 tds (Analgesic) or proxyvon or paracetamol or Tramadol or analgesic - anti-inflammatory combination
2. Tab Calmpose 5 mg ½ - 1 HS (Tranquiliser)

3. Inj. Ketanov 1 ml IM if pain is severe or Inj. Tramadol 2 cc IM
4. Take rest in a dark, quiet room. Massage and press the scalp. Apply counter irritants like Methyl Salisylate, Vicks/Amrutanjan to forehead.

IF HEADACHE IS RECURRENT AND CHRONIC

1. Check eyesight first. refer to ophthalmologist for refraction
2. Check BP, sinus tenderness and spondylitis as above
3. If sinus tenderness, refer to X-ray or CT of PNS, and ENT opinion
4. If it has started following Head injury refer to X-ray skull and CT scan
5. If patient is Diabetic, is he getting hypoglycemia?
6. If headache is severe and progressive, refer for CT scan or MRI scan
7. If there is any neurological sign such as weakness of cranial nerves or limbs, convulsions etc. Then refer immediately for CT or MRI scan and Neurologist's opinion.

HEADACHE DUE TO ALCOHOL HANGOVER

1. Take 2 glasses of water (Plenty of water and fluid intake)
2. Tab Disprin or Proxyvon 1 stat. (Analgesic)
3. Take fruit juice, or tea or coffee with plenty of sugar (To counter Hypoglycemia)
4. Have a full meal

PREVENTION OF HANGOVER

1. Avoid excess alcohol. Stay within your limits. Avoid cocktails.
2. Do not drink on empty stomach. Eat something along
3. Take a glass of water after each drink.
4. Do not drink too fast
5. Tab Disprin 1 before sleep.
6. Tab B-long 100 mg tab (Pyridoxin)

Migraine

- Headaches of varying intensity.
- Accompanied by nausea & sensitivity to light and sound.

CLINICAL FEATURES

- Throbbing / pulsating nature
- Chronicity
- Duration U/L or B/L
- Presence of nausea and vomiting
- Photophobia
- Phonophobia
- Aura;
  - ➢ Visual blackouts
  - ➢ Displasia
  - ➢ Nasal block
  - ➢ Giddiness
  - ➢ Fortification spectra
- Precipitation factors : TV, Food, Alcohol, Caffeine, Mental stress, Sleep deprivation.

ETIOLOGY

- Exact cause unknown
- Results from abnormal brain activity temporarily affecting;
  1. Nerve signals
  2. Chemicals &
  3. Blood vessels of brain
- Migraine triggers
  1. Hormonal changes
  2. Emotions
  3. Physical
  4. Dietary
  5. Environmental
  6. Medicines

TREATMENT

1. Inj MIGRANIL
   - ➢ 1mg iv over 2-3 min/im stat
   - ➢ C/I in pregnancy, lactation, HTN,CAD

[OR] T.MIGRANIL 2 tabs

**NOTE:

- Ergotamine preparations should be best avoided since they easily lead to dependence.

2. Inj Paracetamol 2cc IM stat
3. Nausea : Inj Phenergan 25mg [or] Perinorm [or] Stemetil

4. Tab .Alprax 0.5mg stat
5. Tab Metoclop-P st(Metoclopramide + P mol) [or] Tab Domstal-P(Domperidone + P/L)
6. T Headset st & SOS
   - Only for acute migraine & cluster headache attack
   - In elderly, avoid sumatriptan due to risk of CVA, MI.
7. T CLOTAN 200 mg st & SOS
8. Headache calendar.

- Prophylaxis is considered if a pt has at least 3 disabling migraines per month
  1. Tab Flunarizine 10 mg HS x 2 weeks-1 month [OR]
  2. Tab Inderal 20mg 1-0-1 [OR]
  3. Tab Sodium valproate 200 mg 0-0-1 x 1 week f/b 1-0-1 [OR]
  4. Tab Amitriptylline 25 mg HS.

Tremor

AETIOLOGY

1. Alcohol withdrawal tremors
2. Drug induced (Salbutamol, Deriphylline, Metoclopramide)
3. Hyperthyroidism
4. Parkinsonism
5. Senile tremors
6. Hypoglycemia
7. Stress induced
8. Vitamin deficiency (thiamine, B12)
9. CKD
10. Liver failure
11. Stroke
12. Traumatic brain injury
13. Hypocalcemia
14. Hyponatremia
15. Caffeine or alcohol induced

Resting (static)		
• Tremors are present mainly during relaxation (e.g. with the hands in the lap) • Attenuate when the part is used • Rest tremor is seen primarily in PD and other Parkinsonian syndromes		
Action Tremors		
Postural Tremors become evident when the limbs are: Maintained in an antigravity position (e.g. arms outstretched) Types of postural tremor: • Enhanced psychological tremor (EPT) • Essential tremor (ET)	Kinetic Tremor: Appears when making a voluntary movement May occur at the beginning, during or at the end of the movement. For example, intention (terminal) tremor seen primarily in cerebellar disease	Task specific tremor: Occurs when performing highly skilled, goal-oriented tasks. For example, while writing or speaking.

INVESTIGATIONS

1. TFT
2. RFT
3. LFT
4. S. electrolytes

TREATMENT

1. T CIPLAR 40 mg 1-0-1 (for essential tremors). Dose has to be tapered gradually over several days. C/I in RAD, bradycardia. AV block, shock, severe hypotension, etc.
2. T ALPRAX 0.25 mg 1-0-1 for stress induced tremor.
3. C GABAPENTIN OD

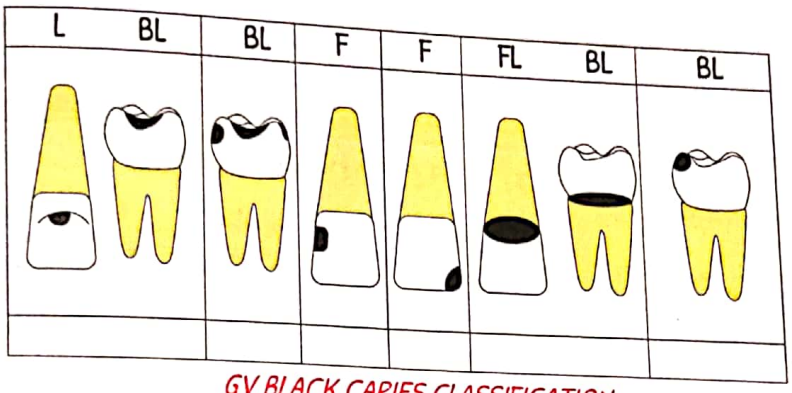
For tremors due to parkinsonism give T SYNDOPA (levodopa+cardiopa) bd, T PACITANE or PARKIN 2mg (trihexyphenidyl) bd

Caries Tooth

- Bacterial induced progressive destruction of mineral & organic constituents of enamel & dentine.
- Develops when there is a susceptible tooth exposed to pathogenic flora (bacteria) in the presence of substrate.

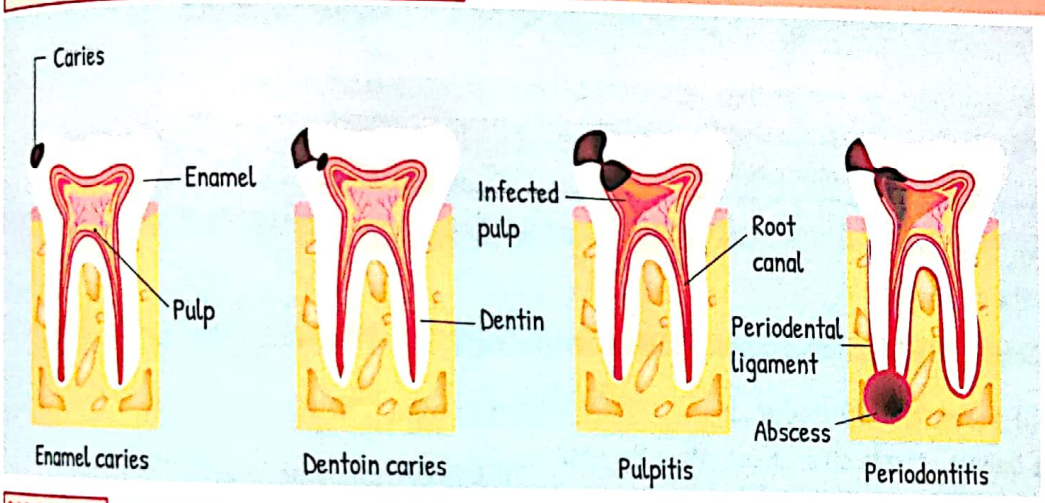
ETIOLOGY

- Bad oral hygiene
- Lack of fluoride



GV BLACK CARIES CLASSIFICATION

THE STAGES OF CARIES DEVELOPMENT



DIAGNOSIS

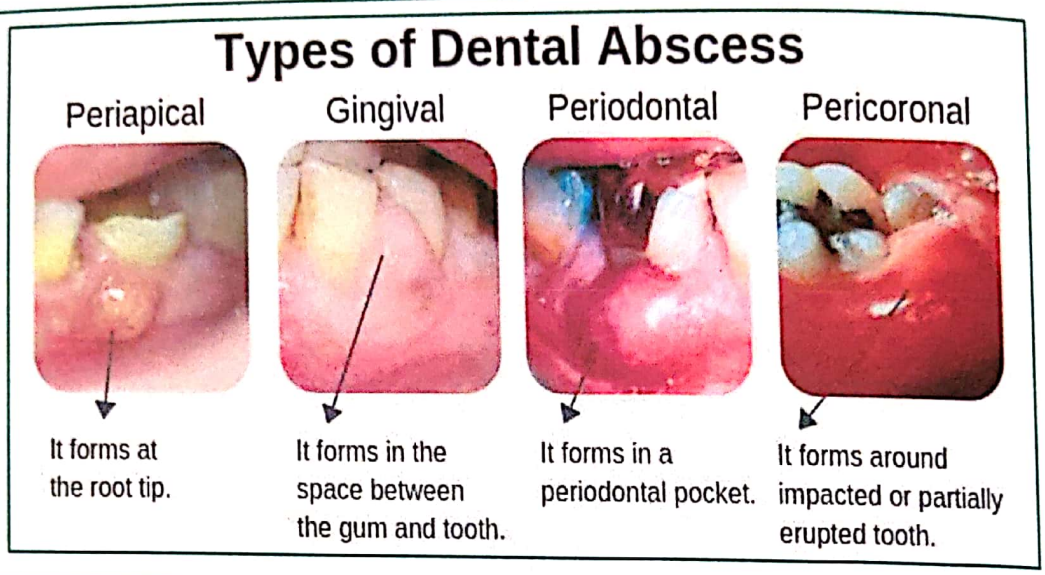
1. Visual tactile
2. Quantitative Light-induced Fluorescence (QLF)
3. DIAGNOdent (DD)
4. Fibre-optic Transillumination (FOTI)
5. Electrical Conductance (EC)

TREATMENT

1. Analgesics : BRUFEN
2. Antibiotics : Amoxicillin, Metronidazole
3. Dental consultation.

Gum Abscess

- Bacterial infection in the space between the teeth and the gums
- **Symptoms** :
  - Sensitivity to heat or cold foods and drinks
  - Pain while chewing
  - A loose tooth
  - Bad taste in the mouth (from pus discharge)
  - Pus discharge
  - Fever



ETIOLOGY

- Bacteria invade the dental pulp

DIAGNOSIS

- **X-ray** : Source of disease and affected areas
- **CT scan** : If the disease affects other areas within the neck
- **Thermal tests** : To determine the health of pulpal tissues

TREATMENT

- **Analgesics** : Vitamin C
- **Antibiotics** : Amoxicillin, Metronidazole
- Warm saline gargle
- Refer to dentist for I and D
- **Surgical Interventions** :
  1. Incision and drainage - pus drained via a small incision.
  2. Root canal - replacing infected pulp with gutta-percha.
  3. Tooth extraction - for increased severity of infection.

Gingivitis

- Diseased inflammation of gums.

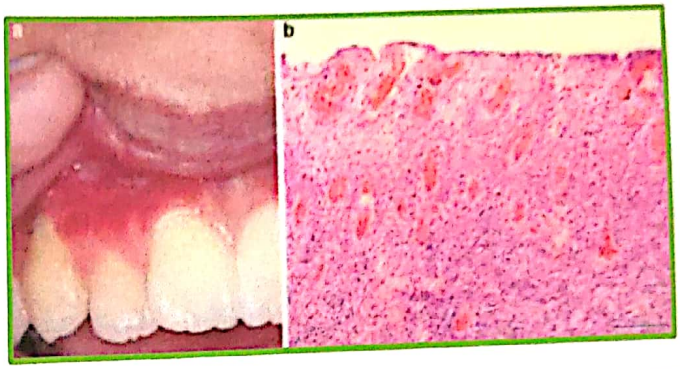
ETIOLOGY

Pathogenic Bacteria tunnels : tooth to microcolonies.

- Poor dental hygiene
- Old age.

PATHOLOGY

- Bacterial plaque formation enters the gingival sulcus.



- Immune response:
  - Blood delivered to damaged tissue
  - bacteria obtain nutrients
  - Osteoclasts activated
  - Bone dissolves and tooth loosens

CLINICAL FEATURES

- Redness, swelling and bleeding after brushing / flossing.
- May be asymptomatic in early infection.

DIAGNOSIS

- X-ray : Bone level, Depth of sulcus.
- Physical : Probing.

TREATMENT

1. CLOHEX PLUS oral rinse(chlorhexidine)
2. Vitamin C
3. Antibiotics
4. Analgesics.

- Progressive ulceration of inter dental papillae - ACUTE NECROTIZING ULCERATIVE GINGIVITIS.

ESSENTIALS OF DIAGNOSIS

- Anaerobic gram-negative organisms are involved.
- Pain is dull boring in character.
- Bad breath (halitosis) and unpleasant metallic taste.
- Spontaneous gum bleeding.
- Grey pseudo-membrane lies over gingival tissues.
  - Profuse bleeding on removal
- Common features : Pyrexia, malaise & cervical lymphadenopathy.

TREATMENT

1. Irrigate the tissues.
2. Chlorhexidine mouth rinse.
3. Metronidazole 200 mg TDS x 5 days.
4. Scale / Polish after acute phase.
5. Advise patient to avoid smoking.
6. SURGICAL INTERVENTION : removal of affected tissue.

Cheilosis/Angular Somatitis

- Inflammation and painful crackling of the saliva of the mouth.

ETIOLOGY

- Iron / vitamin B12 deficiency
- Infection
- Maceration of skin from overexposure to saliva
- Underlying disorders;
    1. Poor dental hygiene.
    2. perioral infection.
    3. Allergic or irritation reaction to hygiene products or dental materials.

SIGNS AND SYMPTONS

- Red, edematous, painful patches
- Mild;
    1. pink discoloration
    2. burning sensation
    3. itching.
- Exposure to moisture;
    1. Maceration and erosion of skin
    2. Small, Scaly lesion
    3. Bordered by red mucosa
- Severe;
    1. Cracked skin
    2. Eczematous
    3. Fissured
    4. Ulceration and bleeding (rare)
- Caused by bacteria;
    1. Honey-colored
    2. Exudates
    3. Pustules
    4. Purulent exudates

DIAGNOSIS

- Characteristic skin lesions
- Bacterial culture - test for infection (like Candida).

TREATMENT

1. Cap BECOSULES Z/ BEROCIN CZ [vit B-complex, C & Zinc] 1-0-1 x 5days, then 0-0-1
    - Other drugs with vitamin B12 : Matilda forte, ME-12, trinerve.
2. Antibiotics like septran / Erythromycin may be given
3. Inj TRINEUROSOL H/ NEUROBION FORTE(Vit B1 100mg, B6 50mg, B12 1000mcg) IM OD.

Halitosis

- Also known as BAD BREATH.
- Unpleasant odour from mouth.

ETIOLOGY

- Tobacco
- Food
- Sepsis
- Dry mouth
- Poor Dental hygiene
- Crash diets
- **Drugs** : Disulfiram, Chloral hydrate, Dimethyl sulphoxide
- Mouth, nose, and throat conditions
- Pathogens
- **Diseases** : Caries Tooth, etc

DIFFERENTIALDIAGNOSIS

- Ketoacidosis
- Bowel obstruction
- Bronchiectasis
- Aspiration pneumonia

PATHOPHYSIOLOGY : Volatile Sulfur Compounds of anaerobic microbes-protein (food) interaction.

DIAGNOSIS

- **Halimeter** : sulfur detection
- **Gas chromatography** : measure sulfur volatile compounds (H2S, methyl mercaptan, and dimethyl sulfide)
- **BANA test** : specific enzyme measurement
- Beta-galactosidase test

TREATMENT

- Metrogyl DG gel (chlorhexidine gluconate, metronidazole) [OR] Hexidine mouth wash [OR] Betadine Mouth Gargle.
  - Severe case - T Metrogyl
- Proper oral hygiene.
- Tongue cleaning twice daily.
- Chewing gum help in production of saliva, preventing dry-mouth.
- Holding 2 curry leaves in the mouth for 5-7 minutes decreases bad breath.

Apthous Ulcer

INTRODUCTION

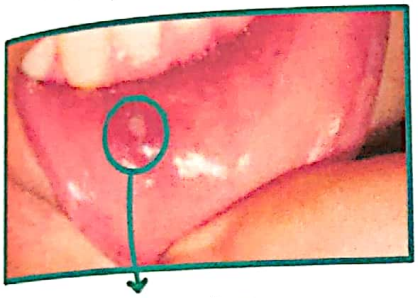
- Also known as CANKER SORE
- Common cause of oropharyngeal dysphagia
- Affect superficial, movable mucosa[inner lip, buccal mucosa, tongue, floor of mouth, soft palate]
- Spare mucosa of hard palate, gingiva

SYMPTOMS

- One or more painful ulcer in mouth
- Burning or tingling sensation in mouth
- Ulcer appears- round, small, white-yellowish with red border

AETIOLOGY

- Unknown
- May be due to autoimmune process, nutritional deficiency [Vitamin B12, Folic Acid, Iron], Viral / bacterial infection, Food allergy, Stress, Acidic foods.
- Complex canker sore is seen in AIDS, crohn's disease, celiac disease, ulcerative colitis.



APTHOUS ULCER

TYPES

- Minor
  - more common
  - 2-10 mm, multiple
  - central necrotic area, red halo
  - heal within in 2 weeks, no scar
  - mostly in anterior stoma[inside lower lip]
- Major
  - >1 cm
  - heal with scar
  - posterior stoma[soft palate, pharynx]

DIFFERNTIAL DIAGNOSIS

- Cold sore/fever blister
- Caused by HSV 1 or HSV 2
- Highly contagious

TREATMENT

- Hydrocortisone Hemi Succinate pellet[ETCORLIN pellet] sucked 3-4 times a day

  Or

  Triamcinoline acetonide in carboxymethylcellulose paste[KENACORT oral paste] apply 3-4 times on ulcer
- Tab.Betamethasone 0.5 mg[BETNESOL] dissolved in 15 ml water-4 times day
- Severe:250 mg Tetracycline dissolved in 50 ml water;mouth rinse then to be swallowed,QDS.

Oral Candidiasis

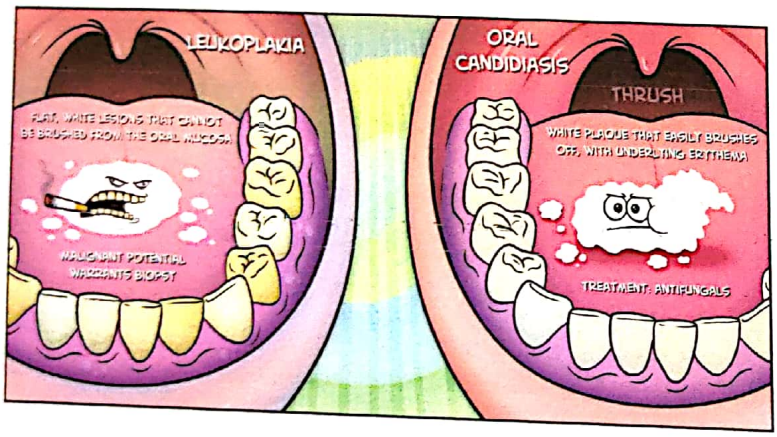
- Also known as moniliasis
- Caused by Candida albicans

PREDISPOSING FACTORS

1. Change in microbial flora,
2. smoking,
3. radiation therapy,
4. diabetes,
5. lymphoma,
6. malnutrition status

TYPES

THRUSH	CHRONIC HYPERTROPHIC CANDIDIASIS
-White grey patches -Infants, children -Seen in adults taking steriods,cytotoxic drugs	-Also known as candidal leukoplakia -White patch -Most common in anterior buccal mucosa.



Leukoplakia

Oral Candidiasis

TREATMENT

1. CANDID mouth paint[clotrimazole]
2. Chlorhexidine oral rinse
3. Vit C

HYPERTROPHIC FORM USUALLY REQUIRES EXCISION SURGERY.

PROGNOSIS

- Good for oral candidiasis with appropriate and effective treatment.

Dry Mouth

- Dry mouth is perceived when salivary flow is reduced by 50%

CAUSE

- Drugs
  - i. Anticholinergics,
  - ii. Diuretics,
  - iii. Alfa, Beta, Calcium channel blockers,
  - iv. Antidepressants
- DM, AIDS, sjogrens syndrome, radiation therapy

CLINICAL FEATURES

1. Swallowing difficulty,
2. Sore mouth,
3. Loss of taste,
4. Lubated tongue

COMPLICATION

1. Dental carires,
2. Candidiasis

TREATMENT

1. Diabetes control,
2. Treatment of candidiasis,
3. Sugar free chewing gum,
4. Adequate hydration,
5. Avoid alcohol containing oral rinses,
6. Avoid salty/dry foods/alcohol/caffeine etc.
7. E-SALIVA oral spray 3 to 4 times(Na carboxymethylcellulose,sorbitol, KCL,Nacl,Mgcl2, CaCl2,K dihydrogen PO4).

- Regardless of the type of ophthalmic solution, not more than a drop needs to be instilled into the conjunctival sack at a time.
  - Fluid capacity of conjunctival sac (at a time) - 10-15 microliters.
  - Average volume of 1 drop of fluid - 60 microliter.
- Only the frequency of instillation needs to be adjusted depending on the clinical condition.
- If an eye drop & ointment needs to be instilled at the same time, instill the drop first followed by the ointment.
- Subjective examination of the eye;
  1. Visual acuity - Snellen's test
  2. Field of vision - limits of peripheral / indirect vision
  3. Color vision - discrimination of primary colors [R G B]

Conjunctivitis

- Inflammation of conjunctiva
- Associated with discharge [watery, mucoid, mucopurelent/purulent]

TYPES

Infective conjunctivitis

- Bacterial conjunctivitis
- Viral conjunctivitis[adenovirus, enterovirus]
- Opthalmia neanotorum
- Granulomatous conjunctivitis

Allergic conjunctivitis

- Simple allergic conjunctivitis
- Vernal kerato conjunctivitis
  -Toxic

CAUSES

- Environment
  - Allergies
  - Eye fatigue
  - Chemical irritation
  - Prolonged contact lens use
- Conjunctivitis
- Blepharitis
- Corneal Abrasion
- Corneal ulcers
- Foreign body
- Subconjunctival Hemorrhage
- More serious condition
  - Uveitis
  - Glaucoma

Clinical Signs	Bacterial	Viral	Allergic	Chlamydial
Congestion	marked	moderate	Mild to moderate	Moderate
Chemosis	++	+/-	++	+/-
Subconjuctival hemorrhages	+/-	+/-	++	+/-
Discharge	Purulent/mucopurulent	Watery	Watery	Mucopurulent
Follicles	-	+	-	++
Psuedomembrane	+/-	+/-	-	-
Pannus	-	-	-	+
Periauricular lymph nodes	+	++	-	+/-

TREATMENT

- Moxiflox /Gatilox / Ciplox(not preferred) eye drops 1°QIH-Q4H as per severity.
- Frequent Washing. Dark glasses, if photophobia. NEVER PAD & BANDAGE.
- TOCIN(tobramycin) eye ointment at night to prevent gluing of the eyelashes in the morning
- If severe -> Antihistamines, Analgesics, Antibiotics[Oral] e.g. Ciplox
- Note: no role for prophylactic topical antibiotics in unaffected eye. In children give tobramycin eye drop.

Scleritis

INTRODUCTION

- Inflammation of sclera proper
- Common in elderly(40-70 years),females > males.

ETIOLOGY

- 50% associated with systemic diseases including connective tissue disease like rheumatoid arthritis[most common], wegner granulomatosis, polyartertis nodosa, gout.

PATHOLOGY

- Fibrinoid necrosis, destruction of collagen with infiltration of polymorphonuclear cells, lymphocytes etc.

CLASSIFICATION

- Immune mediates non infectious
  - -Anterior scleritis[98%]
    Non necrotizing/necrotizing
  - -Posterior scleritis[2%]
- Infectious scleritis

Scleritis in a patient with eye pain and exquisite globe tenderness.

SYMPTOMS

- Pain
- Redness
- Photophobia

COMPLICATION

- Sclerosing keratitis, keratolysis, secondary glaucoma

INVESTIGATION

- TLC,DLC,ESR,FTA-ABS,VDRL
- Serum uric,urine analysis,serum level of complement[C3],immune complexes

TREATMENT

Systemic therapy is always required.

- Oral NSAIDs like indomethacin (100 mg od).
- Steroid + Antibiotics e/d

  Eg: BETNESOL-N[betamethasone sodium phosphate, neomycin sulphate] e/d or
  TOBA-DM [dexamethasone,tobramycin] e/d or
  MICROFLOX-DX [ciprofloxacin hydrochloride, dexamethasone] e/d

Superficial Punctate Keratitis

INTRODUCTION

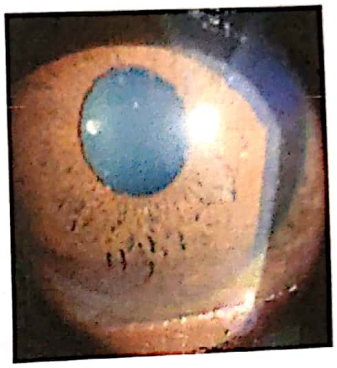
- Multiple, spotty lesions in superficial layer of cornea.

CAUSE

- Viral infections; chief cause [herpes zoster,adenovirus,herpes simplex]
- Chlamydial infections; trachoma
- Dry eye syndrome : Keratoconjuctivitis sicca
- Photo-opthalmia
- Acne rosacea

MORPHOLOGICAL TYPES

- Punctate epithelial erosion
- Punctate epithelial keratitis
- Punctate sub epithelial keratitis
- Punctate combine epithelial and sub epithelial keratitis
- Filamentary keratitis



Slit-lamp photograph in diffuse illumination showing punctate epithelial lesions with a "stuck-on appearance" on the cornea.

CLINICAL FEATURES

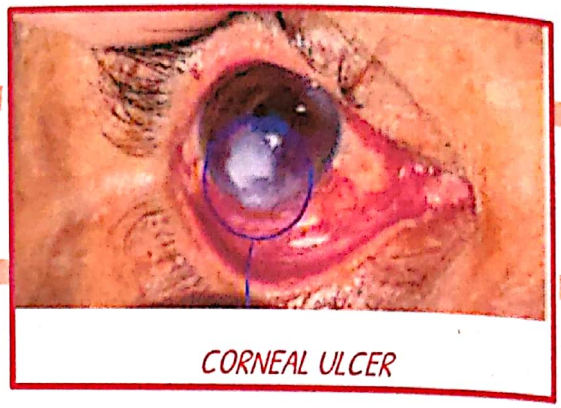
- Acute pain
- Photophobia
- Lacrimation

TREATMENT

- ACIVIR or ZOVIRAX or HERPEREX eye drops 1 drop Q4H
- Topical steroids
- Tobramycin [EYEBREX,TOBA,TOCIN] or moxiflox (MILFLOX)e/d to prevent 20 infection
- Artificial tears like Refresh eye drops.

Corneal Ulcer

- Open sore on cornea



CORNEAL ULCER

CAUSE

- Infection[bacterial,viral]
- Corneal abrasion, Severe dry eyes, Vitamin A deficiency

CLINICAL FEATURES

1. Redness,
2. Pain,
3. Watering,
4. Photophobia,
5. Redness,
6. Foreign body sensation.

TREATMENT

- Pad & bandage; hot fomentation; dark goggles
- Moxiflox /Ciplox/ Tobra eye drops; if the corneal ulcer is not responding to above treatment in two days time or the ulcer is more than one mm size at the time of presentation fortified antibiotic eye drops(cefazolin & gentamycin)should be given.
  Fortified Cefazoline (Reflin) e/d 10 Q1H-Q2H;
  Fortified gentamicin (13.6 mg/ml) e/d Q1H-Q2H;
- Vit C; Analgesics & antiinflammatory drugs.
- 1% atropine or 2 % homatropine e/d tds to relieve ciliary spasm.

Never prescribe steroid eye drops if corneal ulcer is suspected, as it will lead to rapid corneal perforation.

Fungal Corneal Ulcer

DEFINITION

Breach in continuity of epithelium with surrounding necrosis

ETIOLOGY

- Filamentous fungi
- Yeast
- Dimorphic fungi

MODES OF INFECTION

- Injury by vegetative material
- Injury by animal tain
- 2° fungal ulcer

Role of antibiotic and steroids

SYMPTOMS

- Less marked
- Pain
- Photophobia
- FB sensation
- Watering
- Redness

SIGNS

- Dry looking
- Pigmented
- Feathery finger like extension
- Sterile immune ring
- Small satellite lesion
- Big hypopyon
- Endothelial plaque - Fibrin + leucocyte
- Perforation
- Corneal vascularization

DIAGNOSIS

- Typical clinical manifestation and vegetative trauma history
- Ulcer worsening despite Rx
- Lab investigation : Sample by
  - Corneal scrapping
  - AC paracentesis
  - Corneal biopsy
- Confocal microscopic examination
- PCR

RX

1. Specific Rx
   - Topical antifugal eyedrops - 6-8 weeks
     - Natamyan (5%)
     - Nystatin (3.5%)
   - Intracameral and intracorneal / Intrastromal administration of voriconazole
   - Systemic antifungal - for 2-3 weeks
2. Non specific Rx
   - Hot fomentation
   - Dark goggles
3. Therapeutic penetrating keratoplasty
   1. Natamycin (5%) e/d (Natamet) hourly during day time and Q2H during night or Ketoconazole eye drops (Phytoral) or Voriconazole e/d × 6-8 weeks
   2. Atropine e/d tds
   3. T. Flucan/Syscan 150 mg OD (Fluconazole) × 2-3 weeks
   4. Analgesics, Vitamins, hot fomentation, dark goggles (for photophobia) etc Simp

Simple Allergic Conjunctivitis

INTRODUCTION

- Mild,non specific allergic conjunctivitis
- Acute/sub acute urticarial reaction

ETIOLOGY

- Type 1 hypersensitivity reaction mediated by IgE and mast cell activation on exposure to airborne allergens

TYPES

- Seasonal allergic conjuctivitis
  - -due to seasonal allergens
  - -associated with hay fever
  - -acute
- Perennial allergic conjunctivitis
  - -Perennial allergens[house dust,animal dander]
  - -Sub acute

SYMPTOMS

- Intense inching, burning sensation, watery discharge, mild photophobia

SIGNS

- Chemosis, hyperaemia
- Mild papillary reaction
- Edema of lids

TREATMENT

- Antihistamines, NSAIDs, cold compress
- WINOLAP/OPTIHIST PAT (olopatadine) 0.1 % e/d , 1 or 2 dps bid at an interval of 6-8 hrs.
- Dexamethasone e/d 0.05% qid.(SOLODEX-J, Low-Dex)

Note: Steroid e/d should be used only in severe & non-responsive cases & for short duration.

Hordeolum Internum, Externum, Chalazion

DEFINITION:

- Disorder of the eyelid.
- It is an acute focal infection (usually staphylococcal) involving either the glands of Zeis (external hordeolum, or styes) or, less frequently, the meibomian glands (internal hordeola).
- Most hordeola eventually point & drain by themselves.

RX

1. Antibiotic eye Oint/drops[moxiflox/tobra] to be applied to affected lid margin.
2. P'mol / BRUFEN.
3. Hot sponging.
4. Oral antibiotics if severe; Amoxyclav/Ciplox.

1. CHALAZION (TARSAL/MEIBOMIAN CYST)

1. **Definition:** Chronic noninfective (non suppurative) lipogranulomatous inflammation of meibomian gland.
2. **Etiology**
   - Predisposing factors (same as style)
   - Pathogenesis
3. **Symptoms**
   - Painless swelling in eye lid
   - Mild heaviness
   - Blurred vision
   - Watering due to eversion of lower puntum
4. **Signs**
   - Nodule - away from lid margin,
     Firm to hard.
     Non tender,
     Generally on upper lid
   - Reddish purple area- seen on palpebral conjuctiva
   - Projection of main bulk of swelling on skin side
   - Marginal chalazion occur occasionally as small reddish grey nodule.
5. **Clinical course & complications**
   - Complete Spontaneous resolution
   - Slow ↑ in size
   - Fungating mass of granulation.
   - 2° infection
   - Calcification
   - Malignant change
6. **Rx**
   - Conservative Rx.
   - Intralesion long acting steroid injection.- Triamselone
   - Incision and curettage
     - Surface anesthesia - 2% Xylocaine
     - Incision - Vertical on Conjuctiva
       Horizontal on skin
     - Curettage - by Chalazion scoop

- Carbolic acid cautery - followed by neutralization with methylated spirit
- Patching of eye - for 6-12 hrs
- Post -OP Rx (general measures)

- Diathermy - for marginal chalazion
- Oral tetracycline. - as prophylaxis

2 EXTERNAL HORDEOLUM (STYE)

1. Definiton : acute suppurative inflammation of lash follicle and its associated glands of zeis or moll
2. Etiology
   - Predisposing factor
     - Age - no bar, > in children
     - Habitual rubbing
     - Metabolic factor
   - Causative organism.- Stap aureus
3. Symptoms
   - Swelling of lid
   - Mild watering
   - Pain
   - Photophobia.
4. Signs
   - Stage of cellulitis- localized , firm , red, tender swelling at lid margin a/w marked edema
   - Stage of abcess formation.- visible pus point on lid margin
5. Rx
   - Hot compress- 2-3/ day
   - Evacuation of PUS- by epilating cilia
   - Surgical incision- for large abcess
   - Antibiotic eye drop- 3-3 times a day
   - NSAIDS, analgesics
   - Systemic antibiotics.

Blepharitis

DEFINITION:

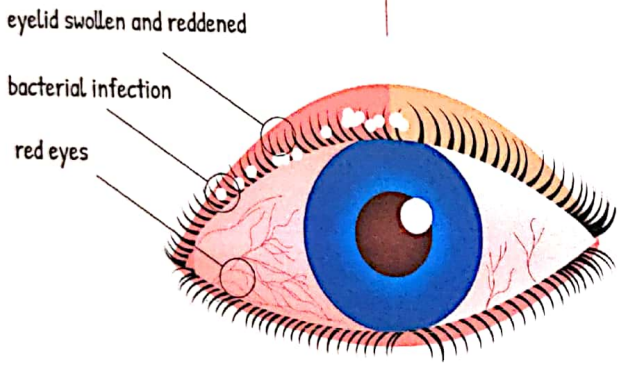
- Inflammatory d/s of eyelid usually chronic & involves the part where the eyelashes grow.

RX

1. Steroid + antibiotic eye oint application at lid margin.
   Eg.ciplox+ dexamethasone (ciplox-D),tobramycin+ dexa (tobaren-D) bd x 2 weeks.
2. Antibiotic e/d.
3. Oral antibiotics.
4. Treat scalp dandruff.

Symptoms

Belpharitis | Normal



Corneal Abrasion

C/F:

1. Pain
2. Watering of eyes
3. Photophobia

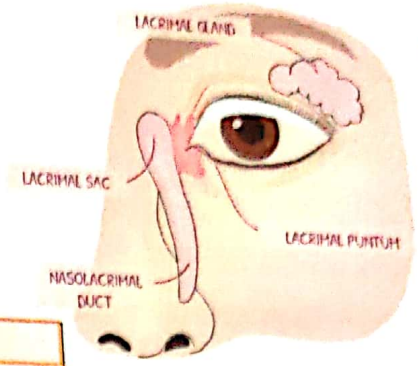
RX

1. Wash with NS if FB's are present.
2. Instill Homatropine eye drops(T.N Homide) followed by antibiotic eye ointment.
3. Pad & Bandage.
4. Advice to instill antibiotic eye drops eg.Moxiflox Q4H at home.
5. R/w next day.

Dacrocystitis

BACKGROUND

- Infection of Lacrimal sac
- Most common in infants,adults> 40yrs,
- those assigned female at birth, & Lacrimal sac tumors.



CLASSIFICATIONS

TYPE	CAUSES
Acute	• Bacterial Infection ➢ Abrupt onset
Chronic	• Chronic Nasolacrimal Duct Observation
Acquired	• Repeated Trauma • Surgery • Medication • Neoplasms
Congential	• Membranous Obstruction in Distal Nasolacrimal Sac.

TREATMENT

- Oral or IV antibiotics
- Drops or Ointment
- Dacryocystorhinostomy (DCR)
- Crigler Massages
- Warm Compress.

ACUTE DACROCYSTITIS

1. **Defintion** (Painful swelling)

2. **Etiology**
   - As acute exacerbation of chronic D
   - As acute pendacryocystitis due to direct involvement of neighbouring structures.
   - Casuative organisms- Strepto,Stap,Pneumoo.

3. **C/F**
   - **Stage of Cellulitis I**
     - ➢ Painful swelling,epiphora,fever,malaise.
   - **Stage of lacrimal abscess II**
     - ➢ Sac filled with pus,pericystic swelling,large fluculant swelling.
   - **Stage of fistula formation III**
     - ➢ External fistula below medial palperbral ligament rarely internal fistula.

4. **Complications**
   - Orbital cellulitis
   - Acute conj.
   - Corneal abrasion
     - ➢ Ulcer
   - Lid abcess
   - Osleomytitis of lactimal boro.

5. **Treatment**
   - Of Stage I
     - ➢ Antibiotics,anti inflammatory analgesis,NSAIDS,hot foment.
   - Of Stage II
     - ➢ Stage I + drainage with small incision →gently squeeze out with betadine soaked roll gauze.
   - Of Stage III
     - ➢ Fistulectory with DCT or DCR.

1. Foment repeatedly,with a handkerchief dipped in warm water.
2. Cap.Odoxil 500 mg tds x 5days (Antibiotic =7A)
3. Tab.Combiflam 1 tds x 3-4 days.(Anti-inflammatory=3C)
4. Gatifloxacin/Ofloxacin/Gentamycin eyedrops 4 hrly (Antibiotic eyedrops=13A-1)
5. If the pus points,refer for incision and drainage.
6. After the acute infection subsides,refer to ophthalmic surgeon for Surgery -Dacryocystectomy or Dacryo-cysto-Rhinostomy.

Foreign Body in Eye

- Commonly seen on the cornea.

MANAGEMENT

1. First ask the patient to splash water & try to rub it out.
2. Then ask to take water in the hollow of hand,dip the eye in it, and open-close the eyes under the water.
   If these measures fail,examine the eye in bright light.
3. If the F.B. is in the conjunctival sac,it hides under the upper or lower lid.Retract the lower lid and inspect,then evert the upper lid and inspect.If the FB is seen,touch it with a wet cotton swab.The FB will usually stick to the swab or may have to be gently teased out.
4. If the F.B. is in the cornea, isntill Xylocaine drops in the eye,and wait for 5 minutes.Then,ask the patient to look at a fixed point on the ceiling and first try to gently remove it with a cotton swab.It will come on the swab,if it is superficial.But if it is embedded,then it is better to send the patient to ophthalmologist,who under operating microscope,will gently life it with the tip of a 24 no.needle,without damaging the cornea.

Blunt Injury to Eye

For mild injuries topical cyclopegics eg;Homatropine e/d bd & topical steroids QID would suffice.
If IOP is raised, T Acetazolamide 250 mg TDS is also given.
The eye is patched to protect the eye from further trauma.

Note:
In penetrating injuries wound has to be repaired under LA/GA; Gently pad the eye without instilling any e/d or ointment.
Broad spectrum parenteral antibiotics should be started eg; CIPLOX, GENTA.

BLUNT TRAUMA

Modes of Trauma

- Direct blow to eyeball by fist
- Accidental Trauma.

Mechanisms of forces of Blunt Trauma

- Direct Impact on Globe
- Compression wave force
- Reflected Compression wave force.
- Rebound compression wave force.
- Indirect force.

Mechanisms of damage

- Mechanical tearing.
- Damage to tissue.
- Vascular damage.
- Tropic changes.
- Delayed complications.

TRAUMATIC LESIONS OF BLUNT TRAUMA

- Closed Globe Injury.
- Globe Rupture.
- Extraocular lesions.

A. **Closed Globe Injury**

I. Cornea
   - Simple Abrasion
   - Recurrent Erosions
   - Partial Corneal Tears
   - Tears in descment's Memb.
   - Acute corneal Edema
   - Blood Stained Cornea.

II. Sclera

III. Anterior Chamber
   - Traumatic Hyphema
   - Exudates

IV. Iris,Pupil,Ciliary Body
- Traumatic Meiosis
- Traumatic Mydriasis
- Rupture of Pupillary margins
- Radiating tear in Iris stroma
- Iridodialysis
- Anteflexion of Iris.
- Retroflexion of Iris
- Traumatic Amiridia
- Angle Recession
- Inflammatory changes

V. Lens
- Vossius Ring
- Concussion cataract
  - Discrete Subepithelial opacities
  - Early Rossette cataract (Punctate)
  - Late Rossette cataract
  - Traumatic Zonular cataract
  - Diffuse concussion cataract
  - Early Maturation of senile cataract
- Traumatic Absorption of lens
- Dislocation of lens

VI. Vitreous
- Liquifaction & Appearance of Clouds
- Detachment
- Vitreous H'ge
- Vitreous Herniation

VII. Choroid
- Rupture of choroid
- Choroidal H'ge
- Choroidal detachment
- Traumatic choroiditis

VIII. Retina
- Commotio Retinae
- Retinal H'ge
- Retinal tear
- Traumatic proliferative retinopathy
- Retinal Detachment
- Concussion changes at Macula.

IX. Extraocular Pressure changes at Macula
- Traumatic Glaucoma
- Traumatic Hypotony

X. Traumatic changes in Refraction
- Myopia
- Hypermetropia.

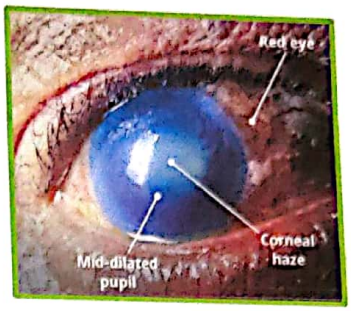
Acute Congestive Glaucoma

- Ophthalmic emergency
- Rise in Intra ocular pressure (IOP)

ETIOLOGY

a) **Predisposing factors :**

- Anatomical factors :
  - ➢ Hypermetropia eyes with shallow anterior chamber
  - ➢ Narrow angle of anterior chamber
  - ➢ iris-lens diaphragm placed anteriorly .
- General factors :
  - ➢ 5th decade of life
  - ➢ Females > males (1 : 4) , nervous individuals
  - ➢ Rainy season
  - ➢ Family history



b) **Precipitating factor:**

- Dim illumination
- Emotional stress
- Use of atropine, tropicamate, cyclopentolate (mydriatics)

CLINICAL FEATURES

Symptoms :

- Pain : Sudden onset, Severe, radiates along branches of 5th nerve
- Nausea ,Vomiting , Prostrations
- Rapidly progressive impairment of vision
- Redness, photophobia, lacrimation
- Past history

Signs:

- Lids :Oedematous
- Conjunctiva : Chemosed, Congested
- Cornea : edematous
- Anterior chamber:Shallow, aqueous flare may be presented.
- Angle of anterior chamber closed
- Pupil -Semi dilated, vertically oval & fixed
  Not reactive to light and accommodation.
- IOP-elevated
- Optic disc: edematous
- Fellow eye has Shallow anterior chamber & narrow angle.

TREATMENT

- IOP lowered immediately.
- IV HANNITOL 20% ,200ml in 20 minutes.
- T.DIAMOX (acetazolamide) 250 mg tds.
- Dexamethasone eye drops Q4H to tackle uveitis.
- Timold eyedrops 0.5% bd.

Acute Iridocyclitis

SYMPTOMS

- Pain
- Redness
- Photophobia
- Blepharospam
- Lacrimation
- Detective vision

SIGNS

a) Lip edema

b) Circumcorneal congestion

c) Cornea signs
- Corneal edema
- KP's
  - Mutton fat
  - Small & medium (granular)
  - Fine
  - Old
- Post-corneal opacity

d) Ant.chamber sign
- Aq.cell
- Aq.fibre
- Hypopyon
  - Dense immobile
  - Bhechet
  - Hemorrhage
- Depth & Shape
- Angle

e) Iris Signs
- Loss of normal pattern
- Changes in iris colour
- Iris nodules
  - Koppe's
  - Busacca
- Post.Synechiae
  - Segmental post.synechiae
  - Onnular post syndrome (ring)
  - Total post syndrome
- Rubeosis iridis

f) Pupillary signs
- Narrow pupil
- Irregular festooned pupil
- Ectropial pupil
- Pupillary reaction
- Occlusio pupillae

g) Changes in lens
- Pigment dispersal
- Ecxudates
- Complicated cataract

h) Changes in vitreous & retina
- Exudates & infl.cells
- Cystoid Macular edema.

i) Changes in IPS
- ↑
- ↓
- Constant

COMPLICATIONS & SEQUELAE

- Complicated cataract
  - 2° Glaucoma
  - Early
- Late
- Cyclitic membrane
- Choroiditis
- Retinal complication
- Papillitis
- Bond shaped keratopathy
- Ptthtisis bulbi
  - Stage of atrophic bulbi without shrinkage
  - Stage of atrophic bulbi with shrinkage
  - Atrophic bulbi with disorganisation

DD

- Acute red eye

INVESTIGATIONS

- Hematological
  - ILC
  - DLC
  - ESR
  - Blood sugar
  - Blood uric acid
  - Serological
  - Anti nuclear ab.
- Urine
- Stool
- Radiological
  - X-Ray
  - CT
  - MRI
- Skin test

TREATMENT

1. Atropine e/d tds
2. Prednisolone acetate e/d Q2H-Q4H depending on severity to be tapered over a period of 4-6 weeks

   Note:Never stop topical steroids abruptly as it will precipitate uveitis.
3. Dark goggles.

Liver Abscess

C/F:

1. Fever, chills.
2. Jaundice.
3. Weight Loss.
4. Tender hepatomegaly.
5. Intercostal tenderness.
6. Dry cough.
7. Pain in the right shoulder.

INVESTIGATIONS:

1. CBC
2. LFT
3. Blood C&S
4. Coagulation profile
5. Stool RE
6. CXR
7. USG abdomen
8. CCT

RX

a) **For pyogenic liver abscess:** iv antibiotics e.g cephalosporin (3rd gen) ± gentamycin

b) **For amoebic liver abscess/Amoebiasis:**

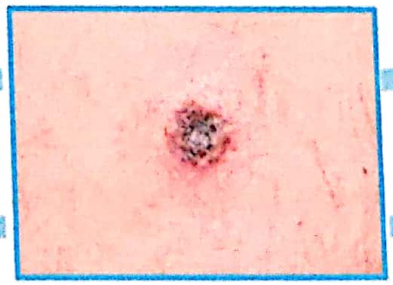
1. Inj METROGYL 500 iv Q8H x 7-10 days or T METROGYL 400/800 mg tds or T Tinidazole /ornidazole 2g daily x 3-5 days(After 10 days give T DILOXANIDE 500 mg tds x 10 days)+ Inj CP 10 LU iv q6H ATD x 5 days.
2. T CHLOROQUINE 250 2-0-2 x 2 days followed by 1-0-1 x 10-14 days

Needle aspiration for large abscess or if the response to chemotherapy is not prompt. Prevention is by avoiding fresh uncooked vegetables or drinking unclean water.

Scrub Typhus

C/F:

1. High grade continous fever with HSM
2. Lymphadenopathy
3. Eschar in a hidden wet area of the body.



INVESTIGATIONS :

1. IgM,
2. IgG Scrub

TREATMENT:

C DOXY 100 1-0-1 x 5-7 days.

Treatment guideline for Scrub typhus

Etiology	Primary treatment	Alternative regimen	Remarks
Scrub typhus infection	Doxycycline 100ng per dose administered twice daily (orally or intravenously) for adults or 2.2mg per Kg for children less than 45.5kg for 7 days to a maximum of 15 days.	Chloramphenicol (500mg 4 times a day orally for 7 days in adults or 150mg per kg per day for 5 days in children (been proven effective in treating scrub typhus and preventing relapse). Rifampicin or azithromycin or clarithromycin are effective in doxycycline resistant strains of scrub typhus.	India where tuberculosis is endemic monotherapy with rifampicin is strongly discouraged.

Rheumatoid Arthritis

- M/C persistent inflammatory arthritis.
- Persists lifelong with exacerbations and remissions.

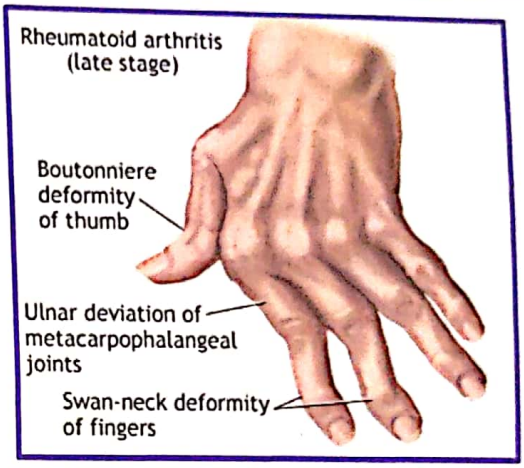
ETIOLOGY

- Females > Males = 3 : 1.
- Family History → HLA DR-4
- Concordance rates → Monozygotic twins > Dizygotic twins

CLINICAL FEATURES

Symptoms:

- Gradual onset symmetrical arthralgia and synovitis of small Joints.
- Florid morning stiffness, poly arthritis, Pitting edema.



On Examination:

- Symmetrical swelling of metacarpophalangeal & proximal interphalangeal Joints - Tender on pressure
- **Deformities:** Occurs on long-standing disease
  - Swanneck
  - Boutonniere
  - Z deformity of tongue.

Extra auricular Manifestations:

- Anorexia, Weight loss, Fatigue
- Anemia
- Rheumatoid nodules on pressure sites
- Dry eyes (Secondary Sjogren's syndrome)
- ↑ed risk of atheroma and cardiovascular disease
- Carpal tunnel syndrome -Median nerve compression.

INVESTIGATIONS

- ESR and CRP - ⊕
- ACPA⊕-70% Cases → highly specific for RA
- RF⊕ - 70% Cases
- Ultrasound and MRI → to detect synovitis and early erosions.

TREATMENT

- **General measures :**
  - Education,
  - exercise,
  - diet (lipid lowering, fibre rich),
  - Physiotherapy.

- **NSAIDs:**
  - Eg : Indomethacin 25/50mg 1-1-1 ,
  - Lornoxicam 4-8mg 1-0-1 ,
  - EROTOCOXIB 90-120mg OD

    Or
  - Naproxen 250/500mg BD etc .
- **DMARDS:**
  - T.Hydroxy chloroquine 200 -400mg OD
  - Methotrexate,
  - Sulphasalazine,
  - Leflunomide .
- **T.Wysolone:**
  - (Check CBC,LFT,RFT,CXR , Visual acuity before giving DMARDS).

Suspected Weils

- Leptospirosis with Jaundice.
- Renal impairment and Hemorrhages.

CLINICALFEATURES

- Fever
- Myalgia
- Conjunctival Congestion
- Calf tenderness
- Oliguria
- Icterus

INVESTIGATIONS

- BRE,
- URE ,
- ECG,
- CXR,
- LFT,
- RFT ,
- Blood culture and sensitivity ,
- Peripheral Smear,
- Weils IgM
- Investigate for Dengue,
- Malaria,
- Typhoid,
- Scrubtyphus
- ESR↑,
- TC↑ ,
- Polymorphs ↑ ,
- SGOT/ PT↑,
- Urea ,
- Creatinine ↑ ,
- S. Bilirubin↑.

TREATMENT

- Temperature , I/O chart, daily platelet count chart,RFT
- Inj C.P / Inj.Taxim/ Inj.Doxycycline x 5 days
  Or
  T.Doxy -1 100mg BD x 5- 7 days (after food)
- If not taking orally ,IVF like DNS with polybion
- Inj.Paracetamol 2cc Im SOS ; Tepid sponging SOS
- Inj.PANTOP 40mg IV OD
- Syp. LOOZ 1oz (30ml) tds

Suspected Dengue

- Dengue flavivirus is spread by vector mosquito Aedes aegypti.
- Ip following mosquito bite : 2-7 days.

CLINICAL FEATURES

- Fever
- Headache
- Gastroenteritis
- Myalgia
- Conjunctival Congestion
- Bleeding manifestations, rash, altered levels of consciousness, syncope.

INVESTIGATIONS

- BRE, URE
- ECG
- LFT, RFT
- Blood culture and sensitivity
- peripheral smear
- serial platelet count
- NS1 antigen +ve by 1st week, IgM +ve by 2nd week , IgG +ve by 3rd week
- Classical picture:
  - PCV ↑,
  - TC↓ ,
  - lymphocytic dominance ,
  - ESR Ⓝ,
  - Platelet count ↓ when fever subsides
- Dengue hemorrhagic fever
- Dengue shock syndrome

TREATMENT

- Temp. chart,I/O chart,Platelet count chart, RFT
- To PARACETAMOL 500mg 1-1-1 and inj.PARACETAMOL 2cc im sos /Tepid Sponging
- If not taking orally,IVF like NS and RL
- Inj Pantocid 40 mg IV od
- Platelet transfusion SOS (PLC <10,000 without bleeding or <50,000 with bleeding)
- Adequate bed rest.

Suspected Meningitis

CLINICAL FEATURES

- Fever + Vomiting + Headache
- Altered sensorium (more common in encephalitis)
- Cranial nerve Deficits
- Neck stiffness + Kernig's/ Brudzinskin sign

INVESTIGATIONS

- BRE
- URE
- RFT, LFT
- LP
- CT Brain (prior to LP if signs of raised ICT or FND)
- Blood culture and sensitivity
- Urine c/s
- Sputum AFB

TREATMENT

- 4th hourly temperature chart, I/O chart
- Inj C.P 40 LU iv Q4H ATD or Inj Monocef 2g iv bd ATD
- Inj Mannitol 20% 100 ml iv Q8H
- Inj Thiamine 100 mg iv bd
- If not taking orally, IVF DNS or NS, as dehydration is common
- Inj Pantocid 40 mg iv od
- Inj Paractemol sos
- If Encephalitis suspected add Inj ACYCLOVIR 500 mg iv Q8H × 14/21 days
- If H. Influenza infection established, prophylaxis is needed for contacts
  - T. Rifampicin 600 mg single dose × 4 days
- If Meningococcal infection suspected or established - chemoprophylaxis
  - T. Rifampicin 600 mg bd × 2 days
- In Pediatric cases, treat with Inj. CEFTRIAXONE 100 mg/kg/day
- First antibiotic dose should be given on clinical suspicion, prior to all investigations.

Suspected Enteric Fever

CLINICAL FEATURES

- Fever with splenomegaly
- Headache
- Lethargy
- Abdominal pain
- Dry cough
- Poor appetite
- Generalized aches
- Constipation followed by diarrhea
- Epistaxis
- Melena

INVESTIGATIONS

- Routine investigations (leucopenia with relative lymphocytosis)
- Widal test -2 Samples 7-to days apart
- O titre > 1/160 & H titre > 1/320 is significant
- Blood culture and sensitivity
- Clot culture.

TREATMENT

- Drug of choice is ciprofloxacin
  - ➢ other drugs used :Ceftriaxone , Cefotaxim,Cefixime, Azithromycin
- Temp chart ,I/O chart
- Inj CIPLOX 200 mg iv bd x 10-14 days / Inj Monocef 1-2g iv bd ATD
  T.CIPLOX 500 -750mg bd for 10-14 days can also be given
- Inj or Tab.PARACETAMOL SOS + Tepid sponging.
- If not taking orally,IVF DNS,NS,RL,Isolyte-P as required.
- Watch for signs of perforation ,other complications like arthritis etc. and get expert opinion and management.
- Blood transfusion SOS.

Tetanus

- Tetanus is an infection caused by CLOSTRIDIUM TETANI.
- More common in developing countries (warm climate , rural areas, human and animal population are in close association)
- Clostridium tetani produces tetanospasmin toxin which is responsible for painful muscle contractions.

LAB DIAGNOSIS

- **Microscopy**: unreliable and demonstration of typical drumstick bacilli is not diagnostic.
- **Culture** : clostridium tetani Shows swarming motility
  Toxigenic Cl.tetani show hemolysis around colonies.

CLINICAL FEATURES

- Diagnosis is clinical
  - Trismus
  - Tonic spasms
  - Opisthotonos
  - H/O injury

TREATMENT

- keep in a quiet, darkroom with minimal handling
- O_2 inhalation and respiratory support SOS
- Inj. TELGLOB 5000 IU I.M
- Inj.DIAZEPAM 0.2 mg/kg Q4H or more
- Muscle relaxants
- INF -DNS or NS; Ryle's tube feeding, care of bladder.
- Immunization after recovery
- Tracheostomy and Mechanical ventilation SOS.
- Prophylaxis:
  i. Surgical attention
  ii. Antibiotics
  iii. Immunisation
    - Passive -anti tetanus serum
    - Active -plain toxoid or adsorbed toxoid
    - Combined immunisation

Infective Endocarditis Prophylaxis

PROPHYLAXIS IS RECOMMENDED FOR FOLLOWING CONDITIONS:

- Prosthetic Valves
- Previous endocarditis
- CHD (not all)
- Cardiac transplant recipients with valvular heart disease.

PROPHYLAXIS IS GIVEN ONLY FOR:

- Dental or upper respiratory tract disorders
- Procedures on infected Skin,
- Skin structures,
- Musculoskeletal system.

STANDARD PROPHYLAXIS

- Amoxycillin 2 mg PO 1 hour before the procedure
- Unable to take Po:
  - Ampicillin 2g IM
    Or
  - Cephazolin/Ceftriaxone 1g IM or IV within 30min before procedure.
- If allergic to penicillin:
  - Clindamycin 600mg PO or Cephalexin 2g PO
    Or
  - Azithromycin/Clarithromycin 500mg PO 1 hour before procedure.
- Penicillin allergic and unable to take Po:
  - Clindamycin 600mg IV
    Or
  - Cephazolin/Ceftriaxone 1g IV within 30min before procedure.

TB Prophylaxis

- In <6years ->T INH 10mg/kg OD X 6months.
- In adults, there is no proven benefit for prophylaxis.

Post Exposure Prophylaxis in HIV

Exposure to blood or other potentially infectious body fluid should be considered as a medical emergency

OBJECTIVE

To prevent infection with HIV and HBV

STEPS FOR MANAGING AN EXPOSURE

1. Give first aid: Immediately wash the wound and the surrounding skin r the mucous membrane with water
2. Assess the risk of HIV: Determine the risk of exposure by HIV status of the source and nature of the body fluid
3. Counsel exposed individual and try to reduce anxiety
4. Give prophylaxis for HIV and administer HBV vaccine and/or immunoglobulins depending on the risk as determined by the type of exposure, status of source and immune status for HBV
5. After obtaining informed consent and a pre-test counseling, the exposed individual should be asked to undergo tests to know HIV, HBV and HCV status
6. Follow up exposed individuals at 6 weeks, 12 weeks and 6 months for HIV, HBV and HCV status.

Step 1	0 hr o min	Manage the exposure site	Wash wound and surrounding skin with water and soap OR Irrigate exposed eye with water or normal saline OR Rinse the mouth thoroughly using water or saline and spit again Refer to physician
Step 2	As soon as possible	Establish eligibility for PEP	Assess exposure and source code Exposure within 72 hours Determine risk of transmission
Step 3		Counsel for PEP	Provide information on HIV and PEP Obtain consent for PEP Offer special leave
Step 4	Ideally within 2 hours not more than 72 hours	Prescribe PEP	Assess source patient HIV status Check for pregnancy if female Explain side effect of ARV drugs Explain post exposure measures against HBV and HCV
Step 5		Laboratory evaluation	Provide HIV pre-test counseling Check immunization status for Hepatitis B Offer HIV, HBV and HCV test Test for CBC, Liver function test if needed Provide HIV post-test counseling
Step 6	6 month	Follow up and monitor adherence	Record keeping Follow up visit for clinical assessment at 2 week and hepatitis B vaccination if needed

			HIV test at 3 months and 6 months

WHEN TO START PEP?

If there is situation of high risk exposure to blood or other potentially infectious body fluids as a result of

1. Needle stick injury
2. Splashing of blood on mucous membranes of the eye or mouth
3. Blood contact with non-intact skin i.e. skin with abrasions, cuts, open wound or afflicted with dermatitis

PEP FOR HIV

- The need to prescribe PEP for HIV is determined by exposure and source code

HIV EXPOSURE CODE

Type of exposure	When the infective material is blood/bloody fluids/other potentially infected material (OPIM) or instrument contaminated with one of this		Exposure code
Mucous membrane or skin integrity is compromised	Volume or infectious material/duration of exposure	Small volume, few drop/short duration	EC1
		Large volume, major splash/long duration	EC2
Percutaneous exposure	Severity of exposure	Less severe	EC2
		More severe	EC3

HIV SOURCE CODE

HIV status code	Definition of risk in source	Source code
HIV Negative	Source is not HIV infected but consider HBV or HCV	No PEP required
HIV Positive	Low viral titre, asymptomatic, high CD4	HIV SC 1
HIV Positive	High viral titre, advanced disease, low CD4	HIV SC 2
HIV status unknown	Risk in generalized HIV epidemics and those among key affected population	HIV SC unknown

NACO RECOMMENDATIONS OF PEP FOR HCP BASED ON EXPOSURE AND HIV SOURCE CODES

Exposure code	Source code	Recommendation of PEP	Duration
1	1	Not warranted	
1	2	Recommend PEP	28 days
2	1		
2	2		
3	1 or 2		

2/3	Unknown	Consider PEP if HIV prevalence is high in given population and risk categorization	28 days

WHEN PEP IS NOT NEEDED?

- If the exposed individual tests HIV positive at the baseline, start antiretroviral therapy and not prophylaxis
- When source is established HIV negative
- Exposure to body fluid that does not pose significant risk like tears, non blood stained saliva, urine and sweat
- Exposure on intact skin

RECOMMENDED PEP REGIMEN

Dosages of the drugs for PEP for adults	Recommendation for PEP and Duration	
Tenofovir (TDF) 300 mg + Lamivudine (3TC) 300 mg + Dolutegravir (50 mg) FDC	One tab immediately within 2 hours of accidental exposure	Next day one tab OD, continue for 4 weeks

ALTERNATE REGIMEN

Tenofovir (TDF) 300 mg + Lamivudine (3TC) 300 mg (FDC) + Lopinavir (200 mg) + Ritonavir (50 mg) (FDC)	One tab immediately within 2 hours of accidental exposure + Two tab immediately within 2 hours of accidental exposure	Next day one tab once OD + Two-tab BD, continue for 4 weeks
Tenofovir (300 mg) + Lamivudine (300 mg) + Etavirenz (600 mg) (FDC)	One tab immediately	Next day one tab once OD, continue for 4 weeks

As per upcoming guidelines in consideration by NACO

Post Exposure Prophylaxis in Hepatitis B

PASSIVE IMMUNISATON

Hepatitis B Immunoglobulin (HBIg)

- Dose: 0.05-0.07 ml/kg
- 2 doses given 1 month apart
- Given in cases of known exposure, within 6 hours and not later than 48 hours.

ACTIVE IMMUNIZATION

Recombinant virus vaccine

- **CHILDREN**
  - Dose: 0.5 ml im in anterolateral aspect of left thigh.
  - At birth (within 24 hours) 6, 10 and 14 weeks
  - Under national immunization schedule - given to all children < 1 year
- **ADULTS**
  - Dose: 1 ml im injections
  - 3 doses: 0, 1, 6 months
  - Given at high risk cases
  - Safe in pregnancy

ACCIDENTAL EXPOSURE TO HEPATITIS B

- HBIg + HBs antibody testing
- Hepatitis B Vaccine

HEPATITIS B VACCINE IS NOT GIVEN WHEN:

- HBs antibody > 10 mIU/ml
- Known case of HBsAg positivity

IMMUNOGLOBULIN AND VACCINE CAN BE GIVEN TOGETHER IN:

1. Diphtheria
2. Rabies
3. Tetanus
4. Hepatitis B, A

Upper GI Bleed

VARIOUS CAUSES OF UPPER GASTROINTESTINAL (UGI) BLEEDING

Esophageal Causes

- Esophageal varices (e.g. due to portal hypertension) usually occur from the lower 5 cm of esophagus.
- Erosive esophagitis
- Esophageal carcinoma
- Mallory-Weiss syndrome

Gastroduodenal Causes

- Peptic ulcer (gastric and duodenal) disease
- Erosive gastritis (e.g. after ingestion of NSAIDs and alcohol) or duodenitis
- Stress ulcers occurring with shock, sepsis, or severe trauma
- Curling ulcers in the proximal duodenum with severe burns or trauma
- Carcinoma stomach
- Gastric antral vascular ectasia (GAVE), also described as watermelon stomach, Dieulafoy's lesion
- Angiodysplasia or vascular malformations (Heydes syndrome in aortic stenosis)
- Rupture of aortic aneurysm or aortic duodenal fistula following aortic graft. Cushing ulcer associated with elevated intracranial pressure.

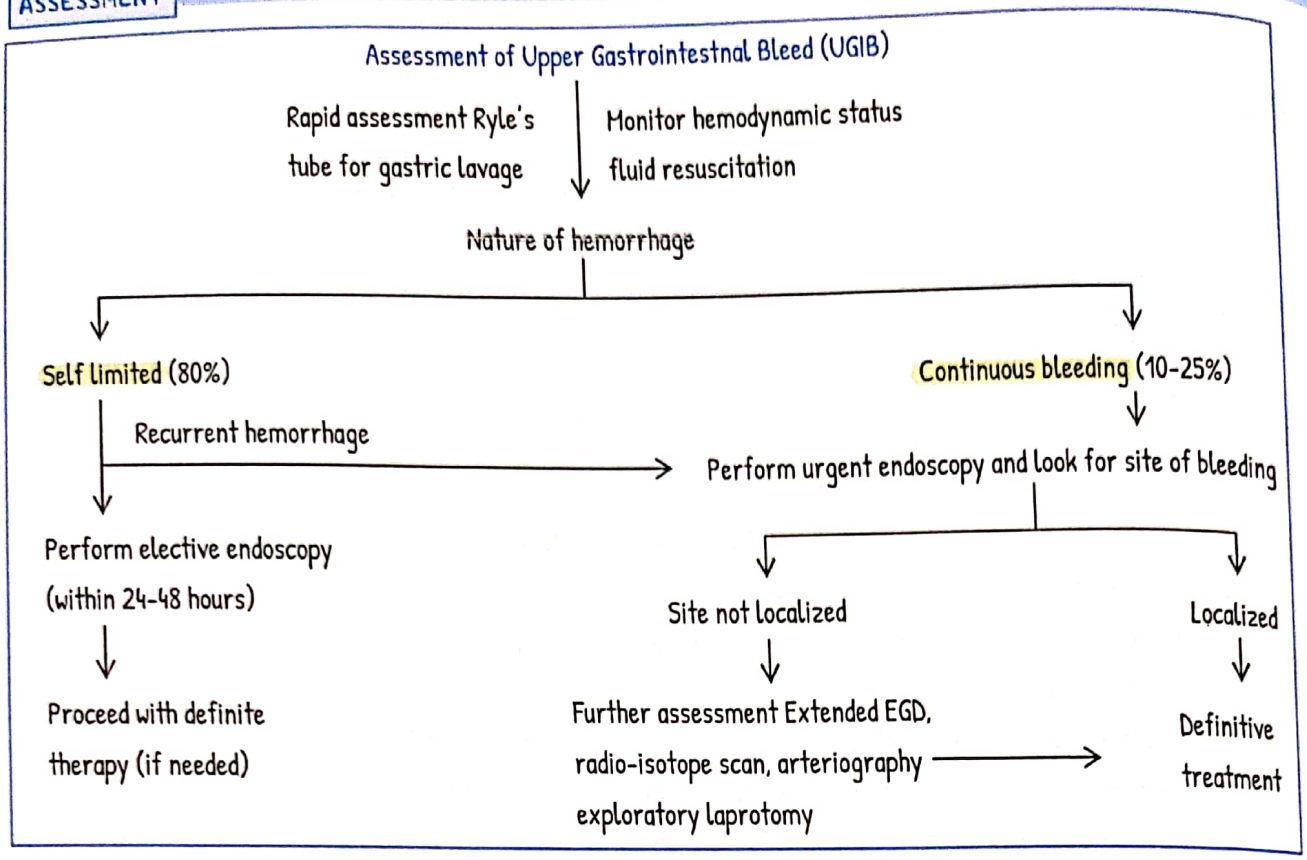
Other causes

- Coagulation defects.
- Cameron's lesions: Linear erosions or ulcerations in the proximal stomach at the end of large hiatal hernia, near the diaphragmatic pinch
- Hemobilia
- Hemosuccus pancreaticus

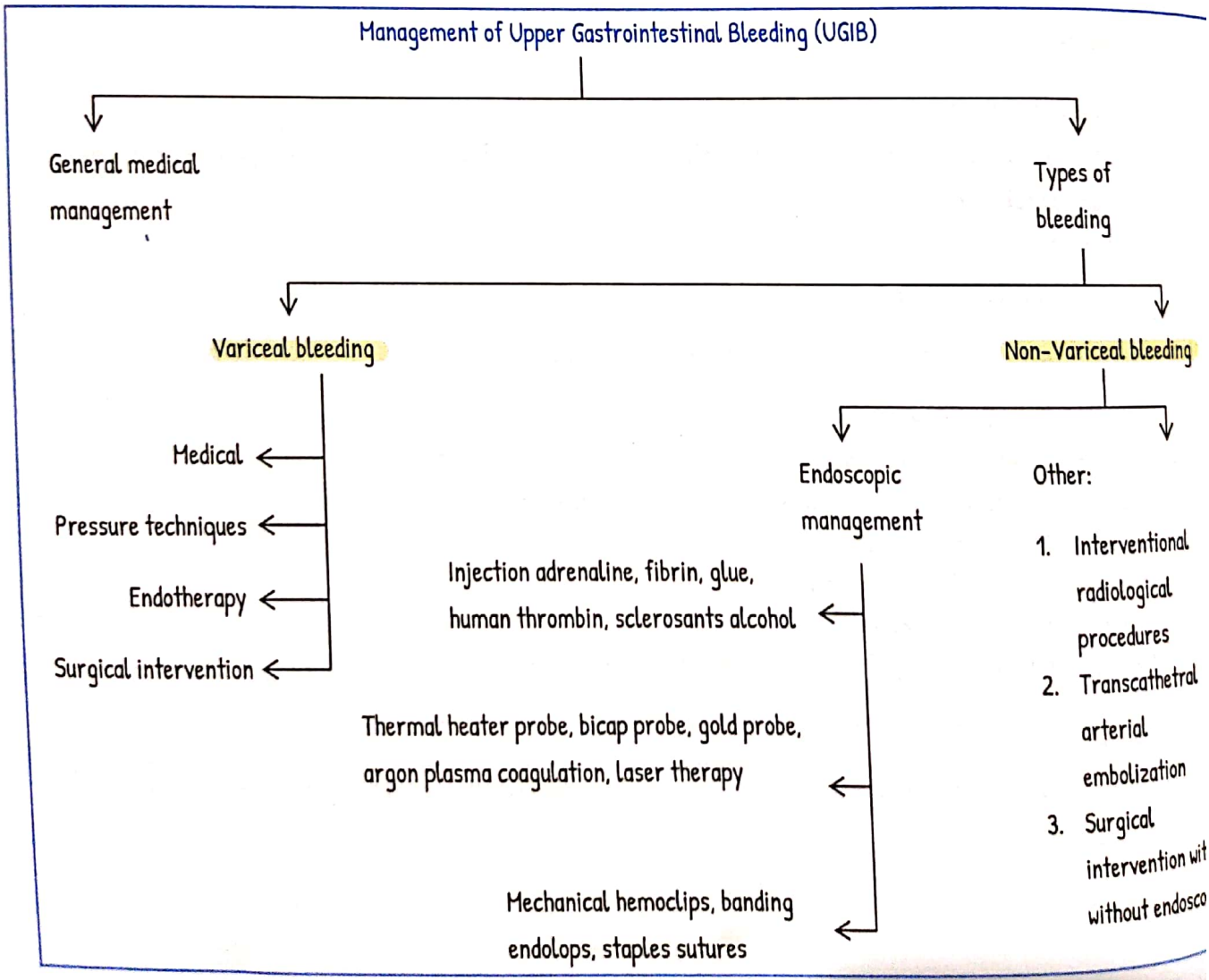
FEATURES SUGGESTING PROBABLE SOURCE OF UPPER GI BLEEDING

History of	Probable Source of Bleeding
• Features suggestive of peptic ulcer	Peptic ulcer disease
• Jaundice, pedal edema, abdominal distension, splenomegaly, ascites, dilated abdominal veins • Features of liver cell failure, e.g. spider nevi, palmar erythema, jaundice and gynecomastia	Esophageal varices
• Alcohol or drug (NSAIDs) ingestion, trauma, burns or sepsis	Gastric erosions
• Heavy alcohol intake or vomiting	Mallory-Weiss tear
• Dysphagia and weight loss prior to bleeding • Tenderness or a mass	Malignant (stomach or esophageal cancer)/intra-abdominal tumor

ASSESSMENT



MANAGEMENT



INVESTIGATION

1. Hb
2. PCV
3. Blood grouping and cross matching
4. RFT
5. LFT
6. HBsAg
7. Anti HCV
8. USS
9. Abdomen
10. OGD scopy

TREATMENT

1. Nil per orally (NPO)
2. Ryles tube aspiration
3. Inj Octreotide 50microgram iv st, followed by 25microgram/hour infusion till 4 hours
   After bleeding stops or till patient is taken to endoscopy. Or Inj terlipressin 1mg (1mg/10mL) iv q8H (it is very costly ~1500 per 10mL)
4. Inj Pantop 40mg iv od or Inj Omez (omeprazole) 80mg iv st f/b 8mg/hr infusion
5. IVF2DNS, 2NS, 2%5Din24hrs
6. Blood transfusion/FFP sos.
7. Inj Vit K1 amp (10mg) iv/sc OD × 3 days
8. Bowel wash with lactulose BD
9. Syp lactulose 30ml tds (if not NPO)
10. Inj Taxim 1g iv Q8H
11. T Misoprostol 20mg 1-0-1 (if thought to be associated with irritant drugs like NSAIDs. Also stop offending drugs)

Irritable Bowel Syndrome

DIAGNOSTIC CRITERIA

Rome III Diagnostic criteria for irritable bowel syndrome

Rome III diagnostic criteria for irritable bowel syndrome.

Recurrent abdominal pain or discomfort at least 3 days per month in the last 3 months (with symptom onset at least 6 months prior to diagnosis) associated with two or more of the following:

1. Improvement with defecation.
2. Onset associated with a change in frequency of stool.
3. Onset associated with a change in form (appearance) of stool.

Symptoms that support the diagnosis of irritable bowel syndrome.

- Abnormal stool frequency :≤ 3 bowel movements per week or >3 bowel movements per day
- Abnormal stool form: Lumpy/hard stool or loose/watery stool
- Defecation straining
- Urgency
- Feeling of incomplete bowel movement
- Passing mucus
- Bloating or feeling of abdominal distention.

TREATMENT

1. High fiber diet, rich in soluble fiber, with plenty of water.(Diet is the mainstay of IBS treatment.)
2. Reduce mental stress .Anxiety, tension , Fear are typical triggering factors for diarrhoea. Change in lifestyle ,Regular aerobic exercise, Yoga and Mental relaxation techniques are a great help.

IF DIARRHOEA PREDOMINANT IBS

1. Tab Colospa/morease 135 mg tds 20min before meals (Mebeverine) OR Tab Spasmopriv 100mg tds (Fenoverine) For diarrhoea & cramps-long term maintenance therapy.
2. For Acute exacerbations,Tab Lopamide 2 mg bd(Loperamide)
   Or Tab Lomotil 2.5 mg bd (Diphenoxylate)
   Temporary effect, but very useful.
   Take 2 tabs in morning to avoid symptoms during travel or on special occasions.
3. Tab Shelcal 500 mg 1.OD(Calcium carbonate helps to slow down bowel movements)
4. Tab Depsonil 25 mg tds (Tricyclic anti-depressant-Imipramine)
5. Isabgul Husk 2 tsp in warm water, at bedtime (to provide solid bulk)
6. Strictly avoid the foods that trigger loose motions-spicy foods, coffee, alcohol, artificial sweeteners etc.
   a. Keep a food diary and try to find out which foods trigger diarrhoea.
   b. Try excluding specific foods and see if it works.
      Eg.
      i) Wheat & gluten: Chapati,Phulka,Bread,Pasta
      ii) Milk & dairy products
      iii) Sweets & chocolates.

CONSTIPATION PREDOMINANT IBS

Avoid anti-spasmodics & Tricyclic anti-depressants, as they increase constipation.

1. Gentle Laxatives, but don't make it a habit. Stimulant laxatives like Senna, Dulcolax should not be given for long. Prefer osmotic laxatives: Isaphghul powder 2 tsp with water at bedtime.
   OR Lactulose 15 ml at bedtime.
   OR ~~Cremaffin 2 tsp~~.
2. Cap Loftil 20 mg OD (SSRI anti-depressants-Fluoxetine)
3. Tab Morease-1 tds (Mebevarine +Isabghul) for chronic colicky pains.

FOR OTHER SYMPTOMS

1. If abdominal cramps is the prominent symptom:
   Tab Eldicet 50 mg 1 bd to tds (Pinaverium)
2. If bloating, fullness is distressing:
   Tab Unienzyme 1 bdx 10 (Digestive enzymes)
3. To correct the intestinal flora:
   Econorm sachet 1 BD x 5-10 days(S.Boulardii)
4. If mucuc in stools +Diarrhoea, initial Anti-amoebic course will help;
   Tab Fasigyn 500 mg bd x 5(Tinidazole).

Hepatic Encephalopathy

IDEALLY REFER TO HIGHER CENTER

FACTORS WHICH PRECIPITATE HEPATIC ENCEPHALOPATHY

1. Uraemia - spontaneous or diuretic induced
2. Drugs like Sedatives, Hypnotics or antidepressants
3. GI Bleeding
4. Excessive protein intake
5. Large volume paracentesis
6. Hypokalemia
7. Infections
8. Constipation
9. Trauma, development of portosystemic shunts

INV

1. BRE
2. Platelet count
3. PCV
4. Peripheral smear
5. Blood grouping
6. URE
7. LFT
8. RFT
9. ECG
10. PT-INR
11. APTT
12. Blood Ammonia levels
13. HBsAg
14. AFP (alpha feto protein)
15. Serum Ferritin (to r/o secondary haemochromatosis)
16. USS abd
17. OGD
18. Scopy
19. RBS

DIET IN HEPATIC ENCEPHALOPATHY

1. Restrict proteins
2. Fluid intakes should be such that the daily weight loss is more than 1 kg
3. Carbohydrate rich diet.

CORRECTION OF METABOLIC ABNORMALITIES

1. Hypokalemia (K+ <3.5 mEq/L): If S. K + >2.5 give Syp Potklor (Pottassium Chloride) 1-2 meq/kg/day in 1 glass water (15 ml = 20 meq = 1.5 g) if normal urine output. Oral doses of 40 mEq are generally well tolerated and can be given as often as every 4 hours. Traditionally, 10 meq of potassium are given for each 0.10 mEq/L decrement in S. K +. Monitor S. K + every 4 hour. Monitor ECG, urine output. If S. K + < 2.5, give iv potassium. Administer 4 g of Inj KCL in 100 ml of NS over 4 hours. Replace at 10 - 20 mEq/hr if urine output is normal.
2. Hypocalcemia: Inj Calcium gluconate 10 ml 10% slow iv over 10 minutes. Also check phosphorus (for hyperphosphatemia) and Mg (for hypomagnesemia).
3. Hyponatremia: Fluid restriction (hypertonic saline is reserved for very severe cases)

Rx

1. Ryle's tube aspiration (for upper GI bleed), NPO, I/O chart
2. Packed cell transfusion sos
3. Give NS if BP is low. Once BP is rectified, NS is not to be given
4. Inj Octreotide 50 microgram st, followed by 25 microgram/hour infusions, ideally till OGD scopy is done and endoscopic sclerotherapy is done. It is tp be given in 5% Dextrose, Never in NS
5. Inj Vit K 1 amp s/c or iv od × 3 days
6. Inj Pantop 40 mg iv od or Inj Omez (omeprazole) 80 mg iv st f/b 8 mg/hr infusion
7. Inj Thiamine 100 mg (Trineurosol H) iv bd × 7 days if alcohol related liver disease.
8. Inj Ampicillin 500 mg iv Q6H ATD/ Inj Taxim
9. T Rifagut (rifaximine) 400 1-1-1 (gut sterilizer) (thru Ryle's tube, or orally if there is no hematemesis and sensorium is normal)
10. Bowel wash with lactulose enema bd
11. Syp Looz 30 ml tds (if not NPO) (r/o ileus/bowel obstruction before oral lactulose)
12. Inj Hepamerz/analiv (L-ornithine L-aspartate) 5 g (10 ml) iv bd if RFT is normal
13. If vomiting present, Inj Emeset 4 mg iv Q8H
14. Inj Mannitol 20% 100 ml iv Q8H, if RFT is normal
15. IVF DNS 2 pint, NS 2 pint, 5% D 2 pint in 24 hours. Fresh blood/ FFP transfusion
16. If stable after OGDscopy, propranolol (to decrease portal HTN) may be started at a dose of 20 mg 1-0-1. Dose may be adjusted so as to cause of 25% decrease in pulse rate
17. T Monotrate 20 mg 1-0-1 (isosorbide mononitrate) (Px for variceal bleeding)
18. If Ascites is present give T Aldactone 25 (1-0-1)(spironolactone)(to decrease fluid overload) or T Lasilactone (furosemide + spironolactone) 1-0-0
    Refractory ascites means no response to Aldactone.
19. If viral Hepatitis was the cause of CLD give T Lamivudine 100 mg od or tenofovir, probably long term.
20. Clinical worsening of the patient may due to the development of spontaneous Bacterial Peritonitis. The patient may present with suddenly developing abdominal pain, with rebound tenderness, absent bowel sounds and fever. In such cases, do a diagnostic tap and send for cytology study. Diagnosed if PMN > 250 cells/μL or if > 50% polymorphs, cloudy nature of fluid and positivity on culture → mostly E. Coli. A culture of mixed organisms may indicate a hollow viscus perforation. Give Inj Taxim 2 g iv Q8H till clinical improvement (for a minimum of at least 5 days). Other options include AmoxClav or other 3rd generation Cepholosporins or Genta
21. If Ascites is present do therapeutic tap, ideally only after giving Human Albumin intravenous infusion or FFP
22. Any CLD patient with ascites, give long term prophylaxis with T Norflox 400 mg once daily to prevent SBP.

Viral Hepatitis

C/F

1. Fever
2. Malaise
3. Fatigue
4. Anorexia
5. Nausea
6. Arthralgia
7. Jaundice
8. Pruritus
9. Headache
10. Abdominal pain

INVESTIGATIONS

1. Hep A: AST and ALT rise 22-40 d after exposure, and usually return to normal over 5-20 weeks. IgM rises from day 25 and signifies recent infection. IgG remains detectable for life.
2. Hep B: HBsAg (surface antigen) is present from 1 to 6 months after exposure. HBeAg is present for 11/2-3 months after the acute illness and implies high infectivity. The persistence of HBsAg for >6 months defines carrier status. Antibodies to HBcAg (anti-HBc) imply past infection. Antibodies to HBsAg (anti HBs) alone imply vaccination.
3. HCV: anti-HCV antibodies, SGOT:SGPT <1:1 until cirrhosis develops.

ADMIT IF

1. >15 Bilirubin, prolongation of PT
2. Enzymes grossly elevated, Coagulopathies
3. Significant Vomiting, abdominal pain, malaise
4. Ascites and Encephalopathy, Hypoglycemia, Co-morbid conditions

Among investigation, the prolongation of PT is the earliest marker. If the test value exceeds the control value by >4sec, it is considered abnormal.

TREATMENT

Mainly supportive

1. Absolute bed rest, avoid alcohol
2. Protein and fat restricted, carbohydrate rich diet.
3. T SILYBON (silymarin, herb derivative used as hepatoprotective) 140mg 1-0-1
4. T UDIHEP/UDILIV/URSOCHOL (ursodeoxycholic acid/ursodiol) 300mg 1-0-1

   Note: URSODIOL used in cholestasis, cirrhosis, other hepatic disorders)
5. Inj Vit K 1 amp s/c od × 3 days if coagulopathy is suspected
6. Avoid P'MOL. Do tepid sponging for fever
7. Hepatic drip (Usually in children if oral feeds are not well tolerated. (100ml NS 400ml 10% glucose + 5ml 15% KCL + 2ml Polybion)

   Note: Fulminant hepatitis, C/c Hep B, a/c or c/c Hep C may require specific antivirals.

ADD/ Gastroenteritis

ETIOLOGY

Viral:

- Rotavirus
- Norovirus
- Enteric virus
- Adenovirus 40, 41

Bacterial:

- Shigella
- Salmonella
- E. Coli
- Vibrio

Parasite:

- Giardia
- Ameobiasis

CLINICAL FEATURES

- Diarrhea
- Vomiting
- Abdominal discomfort
- Fever

INVESTIGATIONS

- BRE
- RFT
- Electrolytes
- Stool routine examination
- Culture and sensitivity

TREATMENT

- 4th hourly temperature chart, I/O chart
- Inj CIPLOX 200 mg IV BD (Ciprofloxacin) or T Ciplox 500 mg BD
- Inj METROGYL 500 mg iv Q8H
- Inj RANTAC 50 mg iv tds
- Inj PARACETAMOL 2cc im sos
- Inj CYCLOPAM/ BUSCOPAN 1 amp sos
- Plenty of oral fluids
- C HYDRAL or REDOTIL 1-1-1

Malaria

- Malaria is caused by Plasmodium falciparum, P.Vivax, P.ovale and P.Malariae
- Transmitted by bite of Anopholes mosquito.

CLINICAL FEATURES

- Fever
- Shivering
- Headache
- Joint pain
- Vomiting
- Convulsions
- Hepatosplenomegaly

INVESTIGATIONS

- Rapid malaria testing
- Peripheral smear for malarial parasite
- RFT, LFT

TREATMENT

- 4th holy temperature chart
- For uncomplicated malaria: chloroquine 250mg 4 tabs - 2tabs after 6hours, 24 hours and 48 hours.
- For P.ovale and P.vivax → Same as above +T.Primaquine 15mg 1-0-0 ×14days
- For uncomplicated P.Falciparum → T.Artesunate 4 tab daily x 3days
- For severe cases -Artesunate 2.4mg/kg/IV/IM given on admission, then at 12 hours and 24 hours and then OD.
- Inj.Dextrose (25%) 100 ml IV Q8H
- Inj.Pantoprazole 40mg IV OD

Chemoprophylaxis: Doxycycline 100mg OD in adults (1.5 mg/kg for children > 8 years) 2 days before travel and continued for 4 weeks after leaving the malarious area.

Influenza

- Acute systemic viral illness affecting respiratory system
- Caused by influenza A or B Virus.

CLINICAL FEATURES:

- Respiratory droplet spread
- Incubation period = 1-3 days
- Fever, Malaise, Cold, Sore throat , Muscle pain, Headache , Tiredness etc
- Myositis , myocarditis, Pericarditis and encephalitis are the complications.

TREATMENTS :

1. Antipyretics, Analgesics , Cough medications, Antibiotics for 2° infection.
2. Antiviral agents : T.Oseltamivir 75mg bd x 5 days
   Syp .Oseltamivir (12mg/ml).
3. Prophylaxis : T.Oseltamivir 75mg OD x 10 days.

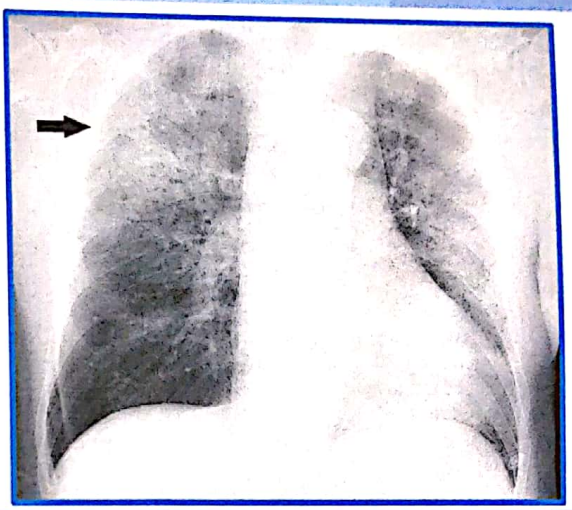
Pneumonia

ETIOLOGY

- **Community acquired Pneumonia:**
  - Streptococcus pneumoniae,
  - Hemophilia influenza,
  - Mycoplasma
- **Hospital acquired pneumonia:**
  - Escherichia
  - Pseudomonas
  - Klebsiella,
  - staph.aureus / MRSA
  - TB

CLINICAL FEATURES

- Fever
- Chestpain
- Dyspnea
- Hemoptysis
- Productive cough
- Malaise,chills, rigors
- **Nonspecific features:**
  - Myalgia ,
  - Headache,
  - Abdominal pain,
  - Nausea,
  - Vomiting,
  - Diarrhea
  - Weight loss,
  - Altered Sensorium



INVESTIGATIONS

- CXR,
- CBC,
- ABG,
- Pulse oximetry ,
- LFT,
- UKE,
- Blood culture and CRP

TREATMENT

- Mild community acquired pneumonia → amoxicillin
- **IP,non ICU pts , choose one option from below :**
  - β lactam IM/IV + macrolide iv/oral (Azithromycin)
  - β lactam IM/IV + doxycycline iv/oral
  - FQ(Anti pneumococcal) IV/IM (levoflox)

  Patient is <65 years and no risk factors for drug resistant organisms- Macrolide IV/Oral.
- **For ICU Pts, choose one from below:**
  - β lactam IV + Macrolide IV
  - β lactam IV + FQ (Anti pneumococcal IV)
  - β lactam allergy: Administer IV FQ (Anti pneumococcal) + Azetronam (IV)
- **For Pts with increased risk of infection with Pseudomonas, choose one from below:**
  - Anti pseudomonial β-Lactam iv (Piptaz,Meropenem,Imipenem) + Anti pseudomonal FQ (Ciprofloxacin,Levofloxacin)
  - Anti psudomonal β lactam iv + Aminoglycoside iv + Macrolide iv/FQ.
  - β lactam allergy: Azetronam IV + Aminoglycoside iv + FQ iv.

SUPPORTIVE TREATMENT

- Rest,Adequate hydration
- Symptomatic treatment for fever,bodyache ,pleuritic chest pain.
- O_2 inhalation
- Nebulization with salbutamol for 20 min Q6H
- Inj.Deriphylline
- Syp.Ambroxyl
- Chest Physio therapy

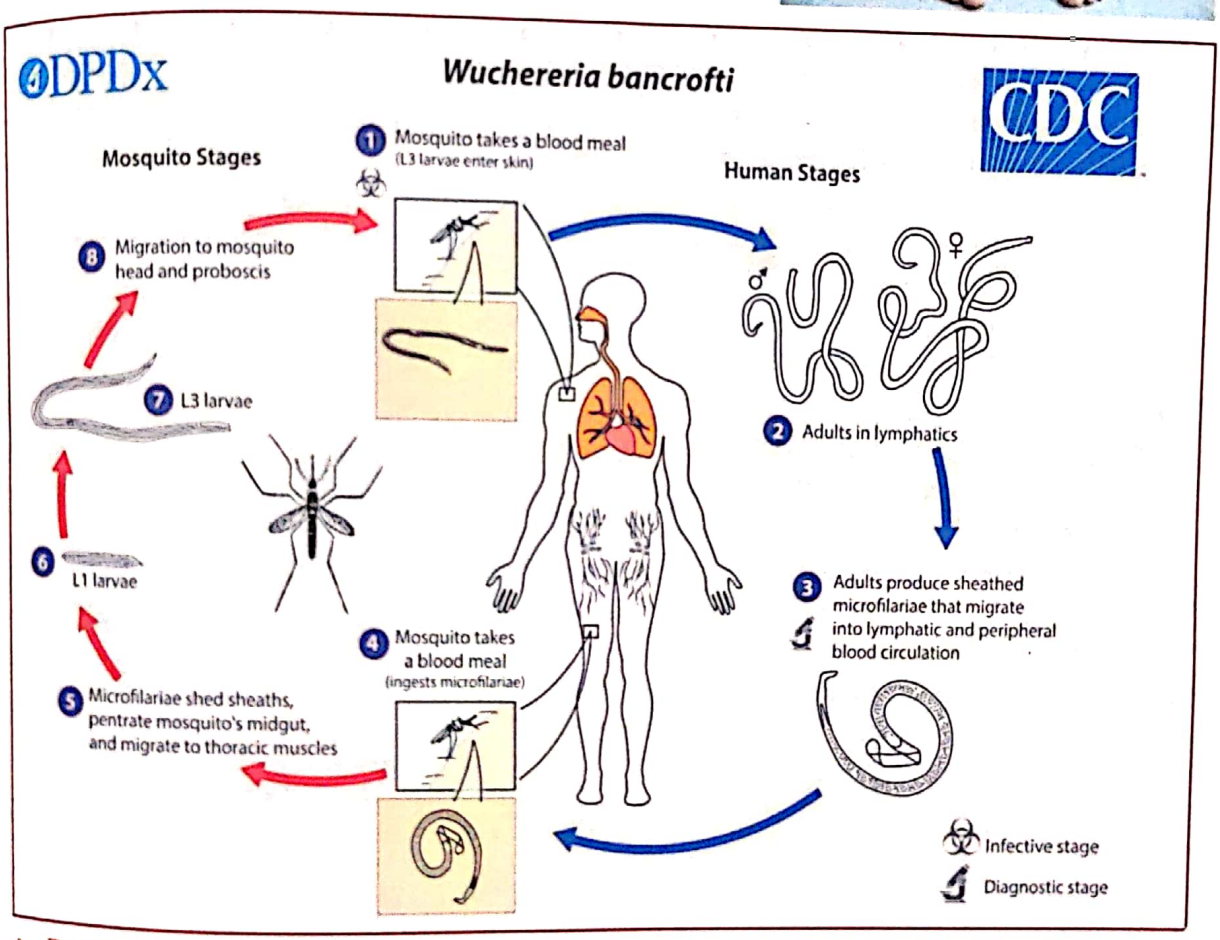
- **Atypical Pneumonia:** Azithomycin
- **Aspiration Pneumonia:** Cephalosprin + Metromidazole + Respiratory FQ.

Filariasis

- Caused by W.Bancrofti
- **Infective form:** Actively motile third stage filariaform larva
- Mode of transmission : Bite of culex mosquito.

CLINICAL FEATURES

- **Acute Adenolymphangitis:**
  - Fever,
  - Lymphatic inflammation,
  - Transient local edema
- **Hydride:** Accumulation of fluid due to obstruction of lymph vessels of the spermatic cord.
- **Lymphorrhagia:**
  - Chyluria,
  - Chylous diarrhea,
  - Chylous ascites and Chylothorase
- **Elephantiasis:** Non pitting brawny edema & thickened skin on leg.



- **Trophical eosinophilia:**
  - Cough aggraving at night ,
  - Asthmatic attacks ,
  - Weakness,
  - Weight loss,
  - Fever,
  - Enlarged spleen,
  - Prominent Lymph node in neck.

TREATMENT

- **Acute lymphangitis & lymphadenitis ,Tropical eosinophilia :**
  - T-DEC 100 mg TDS x 3 wks.
- **Prophylaxis :**
  - T.DEC 300mg + Albendazole 400 mg one dose yearly.

Chronic Lower Limb Ischemia

CAUSES

- Atherosclerosis
- Arteriopathies
  - Buerger's disease,
  - Raynaud's disease,
  - Takayasu disease.
- Diabetes
- Scleroderma

ADVICE

1. **Care of the foot**
   - Inspect the foot daily for accidental injury
   - Ensure cleanliness of foot,socks, footwear
   - Look for any ulceration or inflammation , avoid tight shoes.
   - Avoid overheating, I cooling of foot
   - Do not walk barefooted.
2. Stop smoking and start walking
3. Lose weight , if overweight/ obese
4. Look for hyperlipidemia,anemia,DM
5. T.TRENTAL 400mg 1-1-1 (Pentoxifylline)
6. T.PLETOZ 50 -100mg 1-0-1 (Cilastazol) (c/I in CCF)
7. T.NIALAP 375mg 1-1-1 (Nicotinic acid)
8. Surgery consultation if
   1) Advanced ischemia.
   2) DM.
   3) If leg pain during exertion.
   4) Interferes with patients occupation.

Lumps

- Examine the lump / Swelling as well as the regional lymph nodes.
- If lump is a node , examine its area of drainage.

ETIOLOGY

- Lipomas
- Cysts
- Lymph nodes
- Sebaceous cyst
- Fibromas
- Cutaneous abscesses
- Rheumatoid nodules
- Dermoid cysts
- Ganglia
- Neurofibromas
- Keloid
- Granuloma
- Papilloma.

INVESTIGATIONS

- BRE
- Microbiological investigations for appropriate suspected infections
- Cyst aspiration followed by microscopy culture and cytology
- FNAC
- Excision biopsy
- USG doppler
- CT /MRI
  - ➢ Surgery Consultation.

Head Injury

- Ask for history of LOC, vomiting, seizure, bleeding from ear, nose, mouth
- Assess pupillary reaction
- Ask for level of consciousness using GCS
- Examine the scalp for wound, deformity, tenderness
- Observe for bleeding or CSF leak from nose
  (# base of skull - Raecoon's eye, Battle sign)
- If BP low, search for intra-abdominal bleeding
- Suspect associated cervical spine injury in an unconscious head injury patient.

TREATMENT

- NPO, monitor vitals
- Anti-meningitic regime (if skull # or pneumocephalus etc)
  - Inj CEFTRIAXONE 1 g IV Q12H × 21 days
  - Inj AMIKACIN 500 mg IV Q12H × 21 days
  - Inj METROGYL 500 mg IV Q8H × 21 days
- Inj MANNITOL 20% 100 ml IV Q8H (not given in EDH, Pneumcephalus)
- Inj EPTOIN 100 mg IV Q8H
- Inj THIAMINE 100 mg IV bd × 5 days
- Put Ryle's tube and catheterize patient
- Start IV fluids, if patient is in shock
- Daily RBS, Na^+, K^+
- Repeat CT if GCS fails