



COMPREHENSIVE PRIMARY HEALTH CARE CLINICAL GUIDELINES



Disclaimer

- *Clinical guidelines are designed to be a quick reference guide to Medical officers in Health Services Department, Kerala. They are not intended to be a replacement for standard text books or manuals.*
- *Extracts from several National & State Protocols, Guidelines, Standard textbooks, e-books, e-journals and other online publications were referred for preparing this guideline and are likely to get updated. Medical officers are requested to go through the latest guidelines published by Directorate of Health Services as well as refer latest text books and manuals/research papers for up to date information.*
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K. K. SHAILAJA TEACHER
MINISTER FOR HEALTH, FAMILY WELFARE
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Message

Government of Kerala has undertaken several initiatives to improve the quality of services in primary care centres with emphasis on prevention, promotion, treatment, referral, rehabilitation and palliative care. Improved quality of care at the Government Institutions will definitely help in improving the health outcomes of the state. The Government of Kerala is committed to provide quality care for all as part of the **"Aardram Mission"** and provision of standardized quality healthcare is an invaluable part of this mission.

This initiative of developing standard clinical guidelines for Comprehensive Primary Health Care will enable the Medical Officers to follow an established standard in not only treating the patients but also in proper referral and rehabilitation along with the preventive and promotive activities.

The Health and Family Welfare Department of the Government of Kerala is a forerunner in the provision of health care and a proven leader. This Clinical Guideline for Comprehensive Primary Healthcare is another feather in the cap and I congratulate State Health System Resource Centre, Medical Officers of the Health Services and Medical Education departments, subject experts and academicians for their valuable contribution in developing these guidelines for the State.

K.K.Shailaja Teacher



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Message

Kerala intend to revamp the Primary Care Services in the State to make them more responsive to the current epidemiological profile of our population. Ensuring quality of services we provide is a necessary condition for the success of the proposed Primary Care System.

The publication on Clinical Guidelines for Comprehensive Primary Health Care has been developed at State Health Systems Resource Centre through a consultative process with the support and guidance of various experts, the Medical Officers of the State Health Services Department including the Primary care practitioners, Academicians, Clinicians of Medical Colleges and RCC. This would form the basic document in ensuring quality care at the primary care level. These guidelines will assist the Medical Officers and Staff at the Primary Care Centres to manage patients in a standardised manner, have proper referral services, follow up, and provide rehabilitation and palliative care to those in need. This would be a document in progress as it would get refined based on feedback received at the training period and on reports from the practitioners.

I congratulate the SHSRC and all others who supported the preparation the Clinical Guidelines for Primary health facilities in the State and wish that this document makes a significant contribution to ensuring quality in Primary Care services in Kerala.


Rajeev Sadanandan




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MESSAGE

The State of Kerala has made notable achievements in health sector and has ensured access to health care services through its well thought out policies and investments over the years. In the current scenario it's vital to move towards expanding the range of services and ensure its quality. Ensuring quality of health care has remained a priority agenda for NHM since its inception. Kerala Accreditation Standards for Hospitals (KASH) developed by the State mainly focused on infection control and infrastructural quality. Along with this, now the clinical guidelines with appropriate care and referral pathways are developed by expert groups for commonly seen conditions at a primary care level for maintaining the continuum of health care.

I hope these Comprehensive Clinical guidelines would enable the primary care practitioners of the state in delivering appropriate and effective care to the patients. I appreciate the efforts of Clinical experts in bringing out this guideline and State Health Systems Resource Centre Kerala for coordinating the process


Keshvendra Kumar IAS
State Mission Director
National Health Mission

Healthy Children, Wealthy Family





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Message

The Department of Health and Family Welfare has always strived to ensure quality of health care delivered to the people in an attempt to gain better health outcomes for the state. Standardisations and guidelines are an integral part in any organization to bring uniformity, to assess services, detect deficiencies, evaluate the programme cost, guide the users, satisfy the beneficiaries, compare the performances and identify areas for improvement and so on.

I appreciate the sincere efforts by the Medical Officers in Health services and Medical Education Departments and the various subject experts for developing these clinical guidelines for Comprehensive Primary Health Care which focuses not only on management but also on referral linkages, rehabilitation and palliative care. I hope this publication will help the primary health care practitioners to attend the needs of their patients and to provide appropriate measures. Above all, the patients suffering from similar medical conditions attending Government primary care centres in any part of the state will get the same type of management, referral and follow up.

I congratulate State Health Systems Resource Centre for coordinating the efforts, compiling and bringing out these guidelines and request the primary health providers to go ahead using these guidelines towards our aim for universal quality health care for all.

Director of Health Services

ACKNOWLEDGEMENT

It has been a matter of great pride and pleasure that the task of preparing the Comprehensive Primary Health Care Clinical Guidelines for the Medical Officers of Primary Health Centres in Kerala was entrusted to SHSRC. As the state is moving towards the family based health concept, standard healthcare guidelines have a crucial role. We were privileged to have shared the vision and support of Sri. Rajeev Sadanandan IAS, Additional Chief Secretary (Health & Family Welfare) throughout the making of these guidelines.

We acknowledge the efforts of Dr. Ramesh R. and Dr. Saritha R. L. the former and present Directors of Health Services who have coordinated the entire process of developing these guidelines. Our sincere thanks to Dr. Ramla Beevi, the Director of Medical Education for her wholehearted support.

We are grateful to Dr. Srilatha S., former Additional Director, Health Services who led the editorial board of this guideline. We are thankful to Prof K. Vijayakumar, the former HOD, Community Medicine, Govt. Medical College, Thiruvananthapuram, for guiding us throughout the process of this publication.

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We thank all the Medical Officers of the Expert groups who have devoted their valuable time in preparing the guidelines in different domains.

At this point it is necessary to mention the name of Dr. Mahesh N. Medical Officer, CHC Venpakal for his relentless efforts towards bringing out this publication. These Clinical guidelines have been read through, edited and formatted by a team of dedicated Medical Officers of the State Health Services Department – Dr. Sivakumar M., Dr. Rontgen Saigal, Dr. Joy John, Dr. Ajitha V. and Dr. Vipin K. Ravi and Dr. Srikantan S., Additional Professor Medicine, Medical College, Thiruvananthapuram whose efforts are to be specially appreciated.

We are thankful to Sri. Jaison Joseph, Senior Research Assistant; Public Health Foundation of India who led the technical team for providing continuous support in formats, layout and design of this guideline.

We are highly indebted to each and every member of the expert groups whose tireless and conscientious efforts without which it will not be possible to bring out this guideline.

We dedicate this guideline to all the primary care physicians of the State who are working wholeheartedly for the health of the common man.

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PREFACE

Primary Health Centres play a key role in improving the health status of a community. It is the first level of contact of an individual, family and community with the Health System. An efficient Primary Health Care system will help to prevent diseases and reduce the morbidity and mortality of the community. It also helps to integrate all the other development sectors to provide health care in its totality.

Kerala is experiencing the double burden of Non-Communicable diseases and Communicable diseases. There is an increase in the Non-Communicable diseases like Hypertension, Diabetes, Coronary Artery diseases, Stroke, Mental illness, Obesity, Accidents and Cancers due to the demographic and epidemiological transition in the State. Urbanization has brought environmental pollution, overcrowding, slums, waste menace and issues related to management of sewerage. This has led to an increase in vector borne (mostly mosquito borne), air borne & water borne Communicable diseases. To add to the burden, the influx of migrant labourers from other states has increased the public health challenge. Dengue fever, Leptospirosis, H1N1, and TB still exist as a major public health concern in our state. There is also reemergence of communicable diseases like Malaria, Diphtheria and emergence of newer ones like Kala Azar.

In the 13th Five Year Plan of the State, the Government has given priority to strengthen the Comprehensive Primary Health Care System to ensure that quality health care is delivered at the doorstep, thus reducing the out of pocket expenditure of the people. The Holistic approach of Comprehensive Health Care which includes Preventive, Promotive, Curative, Rehabilitative and Palliative care will help in prevention, early diagnosis and appropriate treatment of diseases at low and affordable cost as well as ensuring rehabilitative and palliative services.

Strengthening of the Primary Health Centres is an important component of the new Health Initiative 'Aadram Mission' launched by the Government of Kerala. As a first step, 170 PHCs are being converted into Family Health Centres to provide Family based health Care to all the families residing in the jurisdiction of the Family Health Centre.

Kerala has a good network of Primary, Secondary and Tertiary Care Government Health Institutions with 849 Primary Health Centres, 234 Community Health Centres and 5403 subcentres. These Centres will have adequate Infrastructure, functioning equipments, continuous availability of Essential Medicines, Quality Laboratory Services and most important adequate number of trained Human Resources for provision of services. This will facilitate improved access to the services.

The Intersectoral coordination or Convergence is a prerequisite for effective and efficient primary health care delivery. We have to address many social determinants of health like provision of safe drinking water, good housing facilities, safe environment;

availability of healthy food, increasing the earning capacity of the people, etc. The beneficiaries in the area should have awareness about the local issues, diseases and methods of preventing and controlling them. This needs convergence which is possible through the Local Self Government Institutions. The Local Panchayats can help in implementing projects for addressing the various Social Determinants of Health. The Grama Panchayat can provide a common platform for convergence with the various line departments like Social Justice, Education, Agriculture, Animal Husbandry, Fisheries, Tribal etc for implementing Comprehensive Primary Health Care.

Every PHC has been catering to certain common health problems among its population. These problems could be medical, surgical, gynaecological and paediatric. A standard guideline is needed to identify, investigate, treat these conditions as well as follow standard referral criteria with emphasis on continuum of care through follow-up services including rehabilitative and palliative. This should also include preventive aspects and information of good health.

Capacity Building of Human Resources is an important prerequisite for delivering quality health Care. As a first step, we have prepared the Comprehensive Primary Health Care (CPHC) Clinical Guidelines for the Medical Officers who are the leaders of the Primary Health Care team. This CPHC Clinical Guidelines 2017 have been prepared by an expert group of competent and committed Medical officers either working or retired from the Department of Health Services, Department of Medical Education, National Health Mission, Regional Cancer Centre, Pallium India etc.

The Clinical guidelines have been developed for common symptoms for which the patient approaches the PHC, the common diseases - both Communicable and non-communicable pertaining to all major specialties. This guideline will help to deliver standard treatment in all the centres and also provides knowledge about when and where to refer a case. Based on the Comprehensive Primary Health Care (CPHC) Clinical Guidelines a Training Curriculum, Modules and training plan and logistics is also prepared.

The CPHC Clinical guideline is an evolving process. We solicit all feedback, based on which we will process and refine it further.

METHODOLOGY

An Iterative approach was adopted for forming Clinical Guidelines (CG) for comprehensive primary health care program. The approach integrated the following considerations while developing the guidelines.

1. Minimal drugs
2. Drugs mentioned available in essential drug list
3. Diagnostics suitable for PHC setting
4. Proper information on referrals and back referrals
5. In line with existing National health programs

The whole process of development of the CG can be broadly classified into following three stages.

1. Selection of conditions and formation of sub groups
2. Writing and vetting workshops
3. Peer review

Selection of conditions

An expert committee meeting chaired by the Additional Chief Secretary (Health & Family Welfare) comprising of experts from Medical colleges, Doctors from Primary Health Centers and Officials from the Department of Health Services was held on July 2016. In the meeting it was decided to widen the scope of services and to ensure the quality of service delivered. State Health Systems Resource Centre Kerala (SHSRC-K) was designated as the nodal agency for the program. A Comprehensive list of conditions was identified after the brainstorming exercise and review of clinical records. After identification of conditions Expert Groups (EG) were formed for each condition. Groups were formed by including a clinical expert from Govt. Medical College, Secondary level Government health facility (District Hospital, General hospital) and a Medical officer from Primary Health Centre. In addition to this the group could include subject matter experts or clinicians if required.

Writing and vetting workshops

SHSRC K organized three day writing workshops for expert groups in July 2016 .The group discussion and initial draft preparation of the guidelines for each condition was done in these workshops. A template for preparation of guidelines was prepared and circulated among EGs for developing guidelines. After the workshops the draft was circulated among the EG for corrections and final draft was submitted to SHSRC-K by August 2016. SHSRC-K constituted a vetting committee comprising of clinical experts, Public health experts and officials from Department of health services to vet the guidelines prepared. Vetting workshops were organized in month of September and October 2016 .The suggestions of the expert committee after vetting was send back to EGs for corrections and modification.

Open review

The suggestions of the vetting committee were incorporated by EGs and final draft of Clinical guidelines were compiled .The final draft was circulated to PHC doctors, clinicians and Medical colleges for peer review on December 2016 and was uploaded in the official website of SHSRC-K, Department of Health Services for public review and the suggestions were invited via email. The suggestions received were scrutinized by the editorial committee and the draft was submitted to print on July 2017.

Glossary of Terms

ACEI	Angiotensin Converting Enzyme Inhibitor
ACT	Artemisinin Combination Therapy
ADHD	Attention Deficit Hyperactivity Disorder
AFB	Acid Fast Bacilli
AIDS	Acquired Immune Deficiency Syndrome
ALS	Advanced Life Support
ALT	Alanine Amino Transferase
ANC	Antenatal Care
APH	Antepartum Haemorrhage
ARB	Angiotensin Receptor Blocker
ARDS	Adult Respiratory Distress Syndrome
ARI	Acute Respiratory Infection
ARV	Anti Rabies Vaccine
ASHA	Accredited Social Health Activist
ASOM	Acute Suppurative Otitis Media
AST	Aspartate Transaminase
ASV	Anti Snake Venom
ATD	After Test Dose
ATLS	Advanced Trauma Life Support
BCC	Behaviour Change Communication
BCG	Bacillus Calmette Guerin
BMI	Body Mass Index
BPPV	Benign Paroxysmal Positional Vertigo
BRE	Blood Routine Examination
BT	Bleeding Time
Bti	Bacillus thuringiensis israelensis
CAD	Coronary Artery Disease
CAP	Community Acquired Pneumonia
CBC	Complete Blood Count
CCF	Congestive Cardiac Failure
CHF	Congestive Heart Failure
COPD	Chronic Obstructive Pulmonary Disease
CRP	C Reactive protein
CSF	Cerebrospinal Fluid
CSOM	Chronic Suppurative Otitis Media
CT	Clotting Time
CVT	Cortical Vein Thrombosis
CXR	Chest X-ray
DBP	Diastolic Blood Pressure
DC	Differential Count
DEC	Diethyl carbamazine

DHF	Dengue Haemorrhagic Fever
DIP	Distal Interphalangeal Joint
DLP	Dyslipidemia
DM	Diabetes Mellitus
DMHP	District Mental Health Programme
DMO	District Medical Officer
DPT	Diphtheria Pertussis Tetanus vaccine
DR-TB	Drug Resistant Tuberculosis
DSS	Dengue Shock Syndrome
DUB	Dysfunctional Uterine Bleeding
DVCU	District Vector Control Unit
DVT	Deep Vein Thrombosis
ECG	Electrocardiogram
EDTA	Ethylene Diamine Tetra Acetic acid
ELISA	Enzyme Linked Immunosorbent Assay
ENL	Erythema Nodosum Leprosum
ERIG	Equine Rabies Immunoglobulin
ESR	Erythrocyte Sedimentation Rate
FB	Foreign Body
FBS	Fasting Blood Sugar
FESS	Functional Endoscopic Sinus Surgery
FEV1	Forced Expiratory Volume during first second
FDC	Fixed Drug Combination
GAD	Generalised Anxiety Disorder
GBH	Gamma Benzene Hexachloride
GDM	Gestational Diabetes Mellitus
GERD	Gastro-Esophageal Reflux Disease
GFR	Glomerular Filtration Rate
GOLD	Global initiative for chronic Obstructive Lung Disease
HCT	Haematocrit
HCV	Hepatitis C Virus
HDL	High Density Lipoprotein
HELLP	Haemolysis, Elevated Liver Enzymes, Low Platelet count
HFMD	Hand Foot and Mouth Disease
HIV	Human Immunodeficiency Virus
HPF	High Power Field
HPO	Hypothalamic Pituitary Gonadal Axis
HPV	Human Papilloma Virus
HRIG	Human Rabies Immunoglobulin
HTN	Hypertension
I & D	Incision and Drainage
IBD	Irritable Bowel Disease
ICS	Inhaled Corticosteroids
ICTC	Integrated Counseling & Testing Centre
IEC	Information Education & Communication

ILD	Interstitial Lung Disease
ILI	Influenza Like Illness
IM	Intramuscular
IOP	Intra Ocular Pressure
IPV	Inactivated Polio Vaccine
IRS	Indoor Residual Spraying
ISS	Indoor Space Spray
IUCD	Intra Uterine Contraceptive Device
IUD	Intra Uterine Death
IV	Intravenous
IVF	Intra Venous Fluids
IVM	Integrated Vector Management
JE	Japanese Encephalitis
JHI	Junior Health Inspector
JPHN	Junior Public Health Nurse
JRA	Juvenile Rheumatoid Arthritis
JSSK	Janani Shishu Suraksha Karyakaram
JSY	Janani Suraksha Yojana
JVP	Jugular Venous Pressure
KF Ring	Kayser–Fleischer Ring
LA	Local Application
LABA	Long Acting Beta 2 Agonist
LAD	Left Anterior Descending Artery
LAMA	Long Acting Anti-Muscarinic Agent
LBP	Low Back Pain
LCA	Left Coronary Artery
LDL	Low Density Lipoprotein
LFT	Liver Function Tests
LGV	Lympho Granuloma Venereum
LLIN	Long Lasting Insecticidal Nets
LMP	Last Menstrual Period
LSM	Life Style Modifications
LVF	Left Ventricular Failure
LVH	Left Ventricular Hypertrophy
MCP card	Mother – Child Protection Card
MDR TB	Multi Drug Resistant Tuberculosis
MDT	Multi Drug Therapy
MI	Myocardial Infarction
MMR	Mumps Measles Rubella vaccine
mMRC	Modified Medical Research Council
MNREGA	Mahatma Gandhi National Rural Employment Guarantee Act
MO	Medical Officer
MTP	Medical Termination of Pregnancy
MVP	Mitral Valve Prolapse
NG Tube	Nasogastric Tube

NPO	Nil Per Oral
NSAID	Non-Steroidal Anti-Inflammatory Drugs
OGTT	Oral Glucose Tolerance Test
OHA	Oral Hypoglycemic Agent
OPV	Oral Polio Vaccine
PCOD	Poly Cystic Ovarian Disease
PCR	Polymerase Chain Reaction
PCV	Packed Cell Volume
PEP	Post Exposure Prophylaxis
PHC	Primary Health Centre
PID	Pelvic Inflammatory Disease
PIH	Pregnancy Induced Hypertension
PIP	Proximal Interphalangeal Joint
PLHIV	Patient Living with HIV
PMDI	Pressurized Metered Dose Inhaler
PMP	Previous Menstrual Period
PNS	Para Nasal Sinus
PP IUCD	Post Partum Intra Uterine Contraceptive Device
PPBS	Post Prandial Blood Sugar
PPH	Post Partum Haemorrhage
PTSD	Post Traumatic Stress Disorder
PVD	Peripheral Vascular Disease
RA	Rheumatoid Arthritis
RBC	Red Blood Cell
RBS	Random Blood Sugar
RCA	Right Coronary Artery
RFT	Renal Function Tests
RIF	Right Iliac Fossa
RIG	Rabies Immunoglobulin
RMO	Resident Medical Officer
RNTCP	Revised National Tuberculosis Control Programme
RTI	Reproductive Tract Infection
RVH	Right Ventricular Hypertrophy
SABA	Short Acting Beta 2 Agonist
SAMA	Short Acting anti-Muscarinic Agent
SBP	Systolic Blood Pressure
SC	Subcutaneous
SGOT	Serum Glutamic Oxaloacetic Transaminase
SGPT	Serum Glutamic Pyruvic Transaminase
SLE	Systemic Lupus Erythematosus
SR	Source Reduction
STI	Sexually Transmitted Infection
TB	Tuberculosis
TC	Total Count
TFT	Thyroid Function Test

TIG	Tetanus Immunoglobulin
TM	Tympanic Membrane
TM Joint	Temporo Mandibular Joint
TRC	Thai Red Cross Regimen
TSH	Thyroid Stimulating Hormone
TT	Tetanus Toxoid
TTH	Tension Type Headache
UACS	Upper Airway Cough Syndromes
UPT	Urine Pregnancy Test
URE	Urine Routine Examination
URI	Upper Respiratory Infection
URTI	Upper Respiratory Tract Infection
USG/USS	Ultrasound Scan/ Ultrasonogram
UTI	Urinary Tract Infection
VLDL	Very Low Density Lipoprotein
WBC	White Blood Cell
WHO	World Health Organisation
WIFS	Weekly Iron Folic Acid Supplementation

Other Short forms used

h/o	history of
e/o	evidence of
r/o	rule out
c/o	case of
o/e	on examination
OD	<i>omne in die</i> (Once a Day)
BD/BDS	<i>bis die sumendum</i> (2 times a day)
BID	<i>Bis in die</i> (2 times a day)
TDS	<i>ter die sumendum</i> (3 times a day)
TID	<i>ter in die</i> (3 times a day)
HS	<i>hora somni</i> (at bed time)
Q6H	<i>quaque sexta hora</i> (every 6 hours)
Q8H	<i>quaque octava hora</i> (every 8 hours)
stat	<i>Statim</i> (Now/Immediately)

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Approach to common symptoms

FEVER

- The term *Short Febrile Illness* refers to any fever lasting less than 7 days
- General approach based on the time of arrival of patient & onset of fever
 - * First day of fever : History & Supportive care
 - * Fever more than 3 days : May need investigation based approach
 - * Partly treated fever : Investigation based approach

Ask for

- * Duration of fever
- * Associated symptoms like chills and rigor
- * Headache, Body ache, Arthralgia and muscle tenderness
- * Any Rash, redness of skin or other skin lesions like Eschar
- * Respiratory symptoms like sore throat, cough, rhinitis or breathlessness
- * Abdominal pain, dysuria or increased frequency of micturition
- * Diarrhoea or Vomiting
- * Any recent trauma, unhealed wounds, ulcers etc
- * Occupational history e.g.: MNREGA worker, Farmer etc.
- * Associated co-morbid conditions like diabetes, hypertension, CAD, COPD, renal diseases etc.

Clinical Examination

- Observe the general appearance (normal/sick looking/toxic) and sensorium (awake & alert/ drowsy) of the patient
- Record Temperature, Pulse Rate, Respiratory rate & Blood pressure in all patients
- Assess hydration status
- Tense, bulging Anterior Fontanelle in children
- Signs of meningeal irritation
- Look for any foci of infection
- Examine the skin for any lesions, discolouration, wounds or any Eschar
- Examine eyes for any Conjunctival congestion/ Icterus
- Look for calf muscle tenderness
- Look for signs of local inflammation

Investigations

Usually not required before the 3rd day of fever unless there is a definite indication

- * Blood routine examination
- * Platelet count
- * Peripheral smear for malarial parasite should be done in all patients
- * Urine routine examination
- * LFT/RFT
- * IgM ELISA for Leptospirosis, Dengue Fever, Scrub typhus etc. maybe done if there is clinical suspicion
- * Chest X-ray ; if indicated

Treatment

General Measures

- * Tepid sponging
- * Home available fluids like *kanji* water with some added salt and lime juice; tender coconut water etc.
- * Warm, soft well cooked home available foods in small quantities frequently
- * Rest till the patient is symptom free. Avoid physical exertion

Drugs

Recommended antipyretic is Paracetamol. Adult dose is 500-1000mg TID/QID up to a maximum dose of 4000mg/day. For children recommended dose is 10-15mg/kg/dose TID/QID

- * Injection Paracetamol has no clinical superiority to oral route and hence should be strongly discouraged
- * IV fluids should be used only in cases of persistent vomiting, severe dehydration, shock, or if the patient is too sick to drink
- * Doxycycline can be started in patients presenting with fever and conjunctival congestion/jaundice/severe myalgia/muscle tenderness or if scrub typhus is suspected. Usual dose is 100mg BD for adults and 5mg/kg BD for children more than 8 years of age.
- * In patients presenting with upper respiratory symptoms like sore throat, rhinorrhea, sneezing etc manage according to the ABC guidelines for management of ILI/ARI
- * If any foci of infection is found on examination, appropriate antibiotics should be given
- * All patients should be followed up once in 2-3 days and asked to report if there is no improvement or if any new symptoms appear

Indications for referral

- * Fever not subsiding within expected time frame
- * Getting worse in spite of treatment
- * Tachycardia/Tachypnoea out of proportion to fever
- * Bulging Fontanelle in children
- * Signs of meningeal irritation
- * Hypotension/Shock
- * Seizures
- * Breathlessness
- * Severe dehydration
- * Incessant cry in children
- * Reduced urine output
- * Bleeding manifestations

COUGH

- Cough can be acute, sub-acute or chronic
- Acute cough is defined as one lasting less than 3 weeks. Most commonly associated with viral upper respiratory tract infection. In the absence of significant co-morbidity, an acute cough is normally benign and self-limiting
- Sub-acute cough is defined as one lasting more than 3 weeks but less than 8 weeks.
- Chronic cough is defined as one lasting more than 8 weeks.

Causes of Acute cough

- Infectious (with Fever)
 - * Tuberculosis
 - * Bacterial respiratory tract infection
 - * Viral respiratory tract infection
 - Respiratory syncytial virus
 - Rhinovirus
 - Influenza
 - Adenovirus
- Non Infectious:
 - * Inhaled foreign body
 - * Inhaled toxic fumes
 - * Upper airway cough syndromes (UACS)
- Acute Exacerbation of Chronic Respiratory Diseases
 - * Asthma
 - * COPD
 - * Bronchiectasis
 - * ILD

Acute cough prompting a Chest X-ray & Referral for evaluation

- Haemoptysis
- Severe breathlessness
- Fever >48 hours of antibiotics
- Chest pain
- Weight loss

Physical Examination

- Examine the ear, nose and throat
- Look for rate and pattern of respiration, accessory muscles of respiration
- Look for clubbing, cyanosis, lymphadenopathy and oedema
- Check air entry bilaterally, auscultate for any abnormal breath sounds

Management

Tuberculosis- manage as per RNTCP guidelines

Viral infections - Usually self limiting. Specifically evaluate for H1N1 and treat as per guidelines

Bacterial Infections – treat accordingly (refer guidelines for CAP)

Foreign body - refer for further evaluation and management

Acute exacerbation of chronic respiratory diseases- manage as per guidelines

Causes of Sub-acute cough

- Post-infectious
- Sub-acute bacterial sinusitis
- Asthma
- COPD

Causes of Chronic Cough

- Tuberculosis
- Asthma- especially cough variant asthma
- Chronic Obstructive Pulmonary Disease
- Smoking
- Gastro-oesophageal reflux disease
- Drugs- ACE inhibitors
- Environmental- Exposure to organic or inorganic fumes/ irritants
- Upper Airway Cough Syndrome

Management

- Stop Smoking
 - Avoid exposure to dust / fumes/ allergens
 - Avoid drugs which may cause cough
 - Evaluate for Tuberculosis
 - Treat GERD and sinusitis
- ❖ **Refer all other cases of cough lasting more than 3 weeks for specialist evaluation**

JOINT PAIN

LOW BACK PAIN

- * It is the pain between costal margin and gluteal folds
- * Acute low back pain: pain less than six weeks duration
- * Chronic low back pain: pain more than six weeks duration
- * Acute Sciatica : LBP that radiates past the knee with duration less than 6 weeks
- * Chronic Sciatica: LBP that radiates past the knee with duration >6 weeks

Conditions where Back pain is more than Leg pain

- Mechanical low back pain
- Lumbar disc disease
- Disc herniation
- Spondylolisthesis
- Spinal infections
- Sacroiliac joint syndrome
- Lumbar spondylosis
- Internal disc disruption
- Spondylolysis
- Cancer & Low Back pain
- Coccydynia

Conditions where Leg pain is more than Back pain

- * Lumbosacral radiculopathy
- * Lumbar spinal stenosis

Red Flag Signs

- * Back pain in children < 18 years
- * Loss of anal sphincter tone or faecal Incontinence, Saddle Anaesthesia
- * Low Back Pain above 55 years
- * Progressive neurological weakness
- * History of violent trauma
- * Inflammatory disorders
- * Constant progressive pain at night
- * Gradual onset below 40 years.
- * History of Cancer
- * Marked morning stiffness
- * Use of systemic Steroids
- * Peripheral joint involvement
- * Drug abuse, HIV infection
- * Iritis, Skin Rashes, Colitis, Urethral Discharge
- * Weight loss
- * Structural deformity
- * Systemic illness
- * Difficulty in micturition
- * Persisting severe restriction of motion
- * Intense pain with minimal motion

Important but often missed causes

Vascular	Aortic Aneurysm, Peripheral Vascular disease
Neurogenic	Neurofibroma, Spinal Cord tumors, Diabetic Neuropathy
Spondylogenic	Multiple Myeloma, Osteoid Osteoma, Pathologic fractures, Osteomyelitis, Ankylosing Spondylitis, Secondary malignancies

Indications for X-ray Examination

- * Age > 50 years
- * Unrelenting night pain or pain at rest
- * h/o or suspicion of malignancy
- * Fever > 38°C for more than 48 hrs.
- * Osteoporosis
- * Neuromuscular or sensory defect.
- * Prolonged use of oral steroids.
- * Trauma
- * Failure to respond with 4-6 weeks of conservative therapy
- * Drug or alcohol abuse
- * Ankylosing Spondylitis

Management of Low Back Pain



NECK PROBLEMS

- Cervical axial pain is defined as pain occurring in all or part extending from inferior occiput to the superior interscapular region, localizing to the midline or just paramedian

Common causes

- * Cervical strain and sprains
- * Herniated nucleus pulposus
- * Osteoarthritis
- * Cervical spondylosis
- * Cervical Stenosis
- * Cervical radiculopathy and radicular pain
- * Cervical myelopathy and Myeloradiculopathy
- * Cervicogenic headaches
- * Whiplash syndrome

Management

- * Relative rest
- * Reassurance
- * Cervical collar
- * NSAIDs
- Most patients recover or get relief within 3 weeks. If there is no improvement within 3 weeks, refer.

UPPER LIMB PAIN**Causes**

- * Rotator cuff tendonitis
- * Periarthritis (frozen shoulder, adhesive capsulitis)
- * Tennis elbow
- * Golfer's elbow
- * De Quervain's syndrome
- * Carpal tunnel syndrome
- * Trigger finger
- * Dupuytren's contracture

Rotator Cuff Tendonitis (Supraspinatus Syndrome, Painful Arc Syndrome)

- Clinically pain appears when the arm is raised to 45° and persists till 160° then it disappears

Causes

- * Incomplete rupture of Supraspinatus tendon
- * Supraspinatus tendonitis
- * Calcified deposit in the Supraspinatus tendon
- * Sub acromial bursitis
- * Crack fracture greater tuberosity

Periarthritis

- * Patient develops gradual stiffness of shoulder
- * Usually in elderly, more in males
- * Pain is worse at night
- * Abduction and rotator movements are more involved
- * X-ray is normal
- * Spontaneous recovery in 6-12 months

Tennis elbow

- * h/o abrupt pronation usually present
- * Pain and tenderness located over the front of lateral epicondyle
- * Pain is aggravated by stretching the extensor tendons.
- * Can occur in degeneration of extensor tendon origins

Golfer's Elbow (Medial Epicondylitis)

- * Symptoms similar to tennis elbow
- * Degeneration of origins of flexor tendons

De Quervain's Syndrome

- * Pain and swelling lateral side of wrist
- * Tendons of Abductor Pollicis longus and Extensor Pollicis Brevis affected.

Carpal tunnel syndrome

- * Compression of median nerve when it passes beneath flexor retinaculum
- * Women are more affected
- * Burning pain in hands and fingers are the common symptoms
- * Sensation is not affected.

Trigger finger

- * Difficulty in flexing and extending the fingers
- * Slight force will suddenly release the finger with a snap often with severe pain

Dupuytren's contracture

- * Palmar aponeurosis is thickened and contracted
- * Usually affects the ring finger
- * More in men
- * Proximal phalanx and middle phalanx are flexed

Management

- * Acute Pain is managed with Ice packs, Analgesics and supportive devices.
- * Chronic pain is managed using Local heat, Analgesics, Drugs like Gabapentin, Amitriptyline etc for Neurogenic pain and physiotherapy in selected cases
- * Surgery is done in refractory cases of Carpal Tunnel Syndrome, Tenosynovitis and Dupuytren's contracture.

OSTEOARTHRITIS

- It is the commonest cause for physical disability in the elderly
- Degeneration of the articular cartilage is the principal pathologic feature of osteoarthritis.
- It predominantly affects the weight bearing joints usually knee joints and pain is worsened by activity

Causes: Ageing, Trauma, obesity

Symptoms:

- * Pain at the initiation of movement or exercise
- * Morning stiffness
- * Diminution of joint movement

Signs:

- * Crepitus on moving the affected joints
- * Heberden's nodes and deformed joints in hands
- * Bouchard's nodes in PIP joints of hands
- * Joint swelling, warmth and effusions especially in the knee
- * Osteoarthritis of cervical and lumbar spine may lead to muscle weakness in hands and legs respectively

Investigations:

- * Blood routine examination
- * ESR maybe mildly elevated

Management:

- * Aim of treatment should be to relieve pain, prevent and manage deformities
- * Encourage weight reduction in overweight & obese patients
- * Physiotherapy and specific exercises
- * Analgesics for relief of pain

Indication for Referral

- * Severe cases of osteoarthritis with joint effusion, deformity
- * Nodules
- * Focal tenderness
- * Pain not relieving with analgesics
- * Neurological deficits
- * Anaemia, ESR >40mm/1st hour

Pharmacological Management of Pain

	Name of Drug	Dosage
First Line	Acetaminophen	Up to 1000mg QID; maximum 4g/day
Second Line (NSAIDs)	Ibuprofen	Up to 800mg TID; Maximum 800mg QID
	Diclofenac	Up to 50mg TID
	Naproxen	250 to 500mg BD
	Mefenamic Acid	Up to 500mg TID
	Piroxicam	10 to 20mg OD
	Etoricoxib	Up to 120mg OD
Third Line (Weak Opioids)	Tramadol	Start with 25 to 50 mg TDS, Increased with slow titration up to a maximum of 400 mg/day
Fourth Line (Strong Opioids)	Morphine sulfate	Not recommended for routine use in Primary care
	Fentanyl	

Adjuvants in Pain Management

Adjuvants are used when the pain is neuropathic, neuralgic, myofascial, central, sympathetic or associated with features of depression or anxiety or muscle spasm. Adjuvants are always used along with other analgesics

Tricyclic Antidepressants

- * Used in Depression, myofascial and neuropathic pain
- * Amitriptyline 10 to 100 mg per day
- * Nortriptyline 25 to 150 mg per day

Anticonvulsants

- * Gabapentin: 100 mg HS up to a maximum of 600mg TID
- * Pregabalin: 75 to 300 mg BD

Neurotropic Vitamins

- * Used in Neuralgia And Neuropathy
- * Methyl cobalamine (B12) 1500µg daily
- * Benfotiamine (B1) 300 to 600 mg daily
- * Pyridoxine (B6) 100 to 300 mg daily – usually in drug induced neuritis

Muscle Relaxants

- * Used in Muscle spasm associated with pain
- * Metaxalone 800mg TID - QID
- * Tizanidine 4 to 8 mg TDS
- * Thiocolchicoside 4 to 8 mg BD
- * Methocarbamol 1500mg QID x 72 hours, then 750mg QID

Local Heat Modalities

Superficial Heat	Hot Fomentation
	Hot Water Bags
	Infrared
Deep Heat (Diathermy)	Short wave Diathermy
	Microwave Diathermy
	Ultrasound therapy

THERAPEUTIC EXERCISES

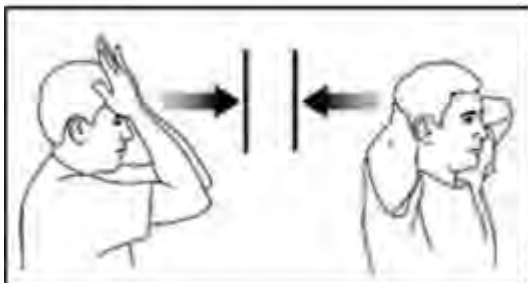
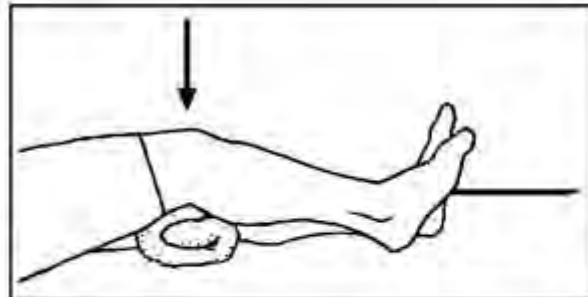


Posterior Pelvic Tilt Exercises: for Chronic LBP

Lie Supine. Place a folded blanket below the lumbosacral spine. Tighten the abdominal and gluteal muscles to pull the spine straight against the blanket

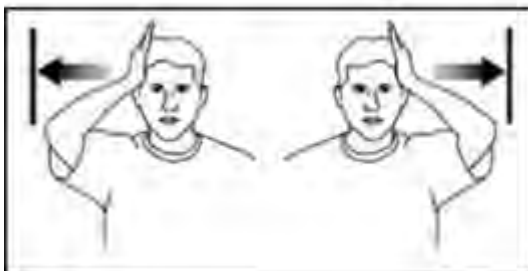
Isometric Quadriceps Exercises: for chronic knee pain as in osteoarthritis of knee

Lie supine. Place a blanket below the knee. Tighten the anterior thigh muscles to pull knee down and press against the blanket



Isometric neck exercises: for chronic neck pain

Sitting position: Place the hands by the sides of the head as shown in the picture. Tighten the neck muscles to push against the hand while hand exerting counter pressure. Actual movement is not required.



DO'S AND DON'TS IN BACK PAIN

Sitting and Getting Up

Do's:

- * Ensure that your lower back is supported well
- * Sit with your back straight, especially while sitting in the car
- * Ensure that your work-desk is at a correct and comfortable height
- * Always keep your knees and hips at the same level
- * Sit only for short intervals
- * While driving for a long period, try to take pit stops as often as possible
- * While getting up, move ahead in the seat, apply pressure on legs, straighten them and then stand up

Don'ts

- * Do not sit on soft couches. That will not enable you to sit straight
- * Do not slouch, this will make the back curl and exert the lower back

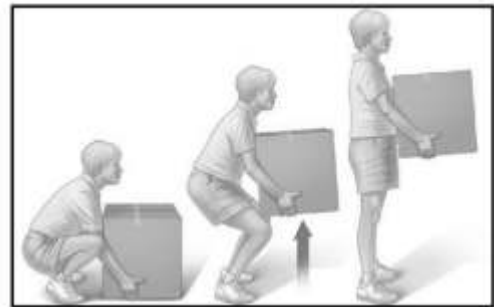
Working:

Do's:

- * While lifting, stand as close to the object as possible, bend only at the knees while keeping your back straight. Secure your grip on the object and lift it by straightening your knees
- * Keep your back straight while doing mopping, using the vacuum cleaner, working with a lawn mower, etc.

Don'ts:

- * Do not lift heavy objects as far as possible
- * Do not jerk and lift anything.
- * Do not Bend to lift anything



Sleeping And Waking Up:

Do's:

- * Try sleeping supine with knee slightly bent with a pillow under the knee or on the side with your knees slightly bent and a comfortable pillow placed between the knees
- * Ensure that the mattress is firm enough to support the curvature of your spine

Don'ts:

- * Do not get up from the bed with a start. Take time, stretch a little in the bed, then slowly turn over to the side and get up by using the elbow of one arm and the palm of the other hand for support.

Walking or Standing**Do's:**

- * Ensure that the shoes are of the right size, hug and cushion feet comfortably
- * There should be a thumb width gap between the big toe and the end of the shoe
- * Keep your back straight and maintain a good posture while walking or standing

Don'ts:

- * Do not stand for long periods
- * Do not wear high heeled or uncomfortable shoes

DO'S AND DON'TS FOR NECK PAIN**Do's:**

- * Do turn to one side while getting up from supine position.
- * Use towel roll under the neck during supine lying.
- * Use pillow of normal thickness in side lying position.
- * Arms should be supported

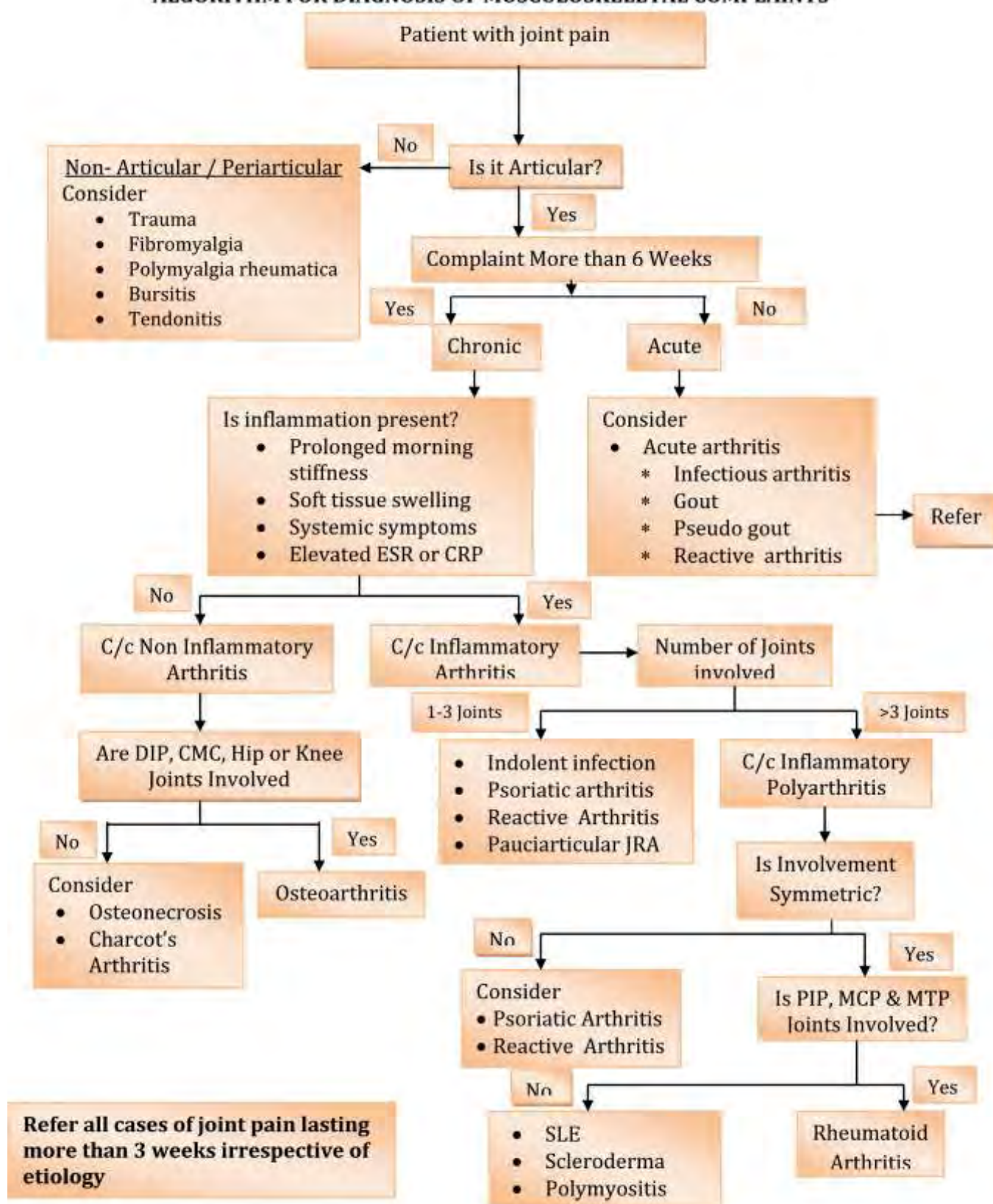
Don'ts:

- * Don't sit with a bend neck for long time as while using smart phones and video games.
- * Avoid hanging of arms.
- * Do not lift heavy weights on head or back
- * Do not drive for long hours; take breaks.
- * Avoid habit of holding the telephone on one shoulder and leaning at it for a long time.

Arthritis

Monoarticular Arthritis	Transient (<2weeks)	Initial Phase of Polyarthritits Palindromic Rheumatism Intermittent Hydroarthrosis Acute Periarthritis
	Acute	Infection – Septic Arthritis Gout ; Pseudo gout Rheumatoid Arthritis or variants Trauma
	Sub acute - Chronic	Infection – Granuloma, TB Gout ; Pseudo gout Rheumatoid Arthritis or variants Tumor Neuropathic (Charcot's Joint) Chronic Periarthritis
Polyarthritits	Inflammatory	RA, RA like SLE, Polymyositis, Polyarteritis Sarcoidosis Viral (Hepatitis, Rubella, Mumps)
	RA Variants	Reiter's disease Psoriasis Ankylosing Spondylitis Ulcerative Colitis Crohn's disease
	Degenerative	Osteoarthritis Rheumatoid Arthritis Haemophilia Acromegaly
	Acute Metabolic	Gout Pseudo gout
	Chronic Metabolic	Chronic Gout Hyperlipidemia Amyloidosis
Neurodystrophies		Shoulder Hand syndrome Sudeck's dystrophy Transient Osteoporosis

ALGORITHM FOR DIAGNOSIS OF MUSCULOSKELETAL COMPLAINTS



ABDOMINAL PAIN

Onset and Duration

Sudden Onset	Gradual Onset
<ul style="list-style-type: none"> • Ureteric/renal colic • Gastritis • Acute pancreatitis • Perforation peritonitis • Torsions • Volvulus • Intussusception • Cholecystitis 	<ul style="list-style-type: none"> • Peptic ulcer disease • Appendicitis • Strangulated hernia • Mesenteric Lymphadenitis • Chronic pancreatitis • Cystitis • PID

Site

Right		Left
Gallstones Stomach Ulcer Pancreatitis	Stomach Ulcer Heartburn/ Indigestion Pancreatitis, Gallstones Epigastric hernia	Stomach Ulcer Duodenal Ulcer Biliary Colic Pancreatitis
Kidney stones Urine Infection Constipation Lumbar hernia	Pancreatitis Early Appendicitis Stomach Ulcer Inflammatory Bowel Small bowel Umbilical hernia	Kidney Stones Diverticular Disease Constipation Inflammatory bowel disease
Appendicitis Constipation Pelvic Pain (Gynae) Groin Pain [Inguinal Hernia]	Urine Infection Appendicitis Diverticular disease Inflammatory bowel Pelvic pain (Gynae)	Diverticular Disease Pelvic pain (Gynae) Groin Pain (Inguinal Hernia)

Generalized pain

- Gastritis
- Early appendicitis
- Orchitis
- Peritonitis
- Enteritis
- Metabolic
- Irritable bowel syndrome

Type of Pain

- Dull aching – visceral pain, malignancies
- Pain of GERD is relieved on sitting up
- Renal colic – Aggravated by lying still
- Peritonitis- Aggravated by movement

Associated Symptoms

Fever	Jaundice	Loose Stools	Melaena	Constipation	Missed Periods
Liver & Biliary infections	Hepatitis	Enteritis	Peptic Ulcer	Intestinal Obstruction	Ectopic pregnancy
Pancreatitis	Biliary Obstruction	Colitis	Portal - Hypertension	Fissure in ano	
Appendicitis	Cholecystitis	IBD	Vascular - malformation	Fistula	
UTI	Pancreatitis				
PID					
Orchitis					
Enteritis/ Colitis					
Pneumonia					
Peritonitis					

History of Trauma

Menstrual History

- Last Menstrual Period
- History of dysmenorrhoea

Personal History

- Food intake
- Alcohol

Drug History

- Routine medications
- Recent medications if any

Physical Examination

Examination	Finding	Differential Diagnosis
Inspection	Distended Abdomen	<ul style="list-style-type: none"> * Ascites * Intestinal obstruction * Peritonitis * Pancreatitis * Intra abdominal abscess
	Visible Swelling at hernial Orifice	<ul style="list-style-type: none"> * Inguinal Hernia
	Scar of previous Surgery	<ul style="list-style-type: none"> * Adhesions * Foreign bodies(Suture stitch granulomas)

Palpation	Generalized Tenderness	* Peritonitis
	Localized Tenderness	* Rovsing's Sign : Appendicitis * Murphy's Sign : Cholecystitis * Renal angle tenderness : Renal colic * RIF tenderness & Rebound tenderness : Appendicitis * Testicular tenderness : Epididymo-orchitis, torsion testis
Percussion	Obliteration of liver dullness	* Bowel perforation
	Resonant percussion note	* Intestinal obstruction
	Dull percussion note	* Ascites
Auscultation	Absent bowel sounds	* Intestinal obstruction

- Per-rectal examination:
Maybe done for diagnosis of
 - * Fissure in ano
 - * Hemorrhoids
 - * Rectal masses
 - * Faecal impaction
 - * Enlarged prostate
 - * Carcinoma prostate (Hard Nodular prostate)
 - * Intestinal obstruction (ballooning of rectum)
- Per-vaginal examination
 - * Vaginal tenderness seen in Vaginitis
 - * Cervical tenderness seen in Pelvic inflammatory disease

Indications for Referral

- Tachycardia
- Shock
- Distention compromising respiration
- Guarding/Rigidity/Rebound Tenderness
- Absent bowel sounds
- Irreducible hernia
- Faeculent vomiting
- Absolute constipation

Common Causes of Pain Abdomen

Condition	Clinical features	Investigations	Treatment	Indications for Referral
Urinary Tract Infection	<ul style="list-style-type: none"> • Urgency • Frequency • Dysuria, Hesitancy • Dribbling • Nocturia • Sensation of incomplete voiding • Suprapubic tenderness 	Urine Routine- > 10 pus cells / HPF (Female) >5 pus cells /HPF (Male)	Tab. Ciprofloxacin 500 mg BD Or Tab. Norfloxacin 400mg BD Or Tab. Ofloxacin 200mg BD Or Tab. Levofloxacin 500 mg OD or <ul style="list-style-type: none"> • Nitrofurantoin 100 mg BD • Continue antibiotics for 10-14 days • Drink plenty of oral fluids • Keep perineal area clean • Pass urine at regular intervals 	<ul style="list-style-type: none"> • STI • Recurrent UTI • Pyelonephritis • Cases not responding to treatment
Gastritis	<ul style="list-style-type: none"> • Epigastric discomfort aggravated by eating • Burning pain in epigastrium • Nausea • Bloating • abdominal fullness • vomiting • haematemesis • mild epigastric tenderness 	Haemoglobin may be low in pernicious anaemia	<ul style="list-style-type: none"> • Inj. Ranitidine 50 mg IV stat & 150 mg BD orally Or • Inj. Pantoprazole 40 mg IV stat & Tab 40 mg OD plus • Antacid 30 ml before meal and at bedtime Or • Syp. Sucralfate 10ml Q4-6H on empty stomach • Bland diet • Discontinue NSAID • Smoking and Alcohol cessation 	Refer if haematemesis or no relief with medical management
Renal or Ureteric Colic	<ul style="list-style-type: none"> • Acute severe dull aching visceral pain, flank pain. • Pain radiating from loin to groin or testes • Diaphoresis • Nausea, Vomiting • Mild tenderness in lumbar region, anxious, writhing in bed, unable to sit still • Smoky urine 	<ul style="list-style-type: none"> • Urine RE may show numerous RBCs • CBC to rule out infection 	<ul style="list-style-type: none"> • Inj. Diclofenac 75 mg deep IM ATD followed by Tab. Diclofenac 50 mg TID • Antispasmodic: Dicyclomine 10mg TID oral or IM • Plenty of water • IV fluids if needed 	Refer all cases after initial management of colic

BPH with Retention	<p>Frequency, Urgency Nocturia Urge incontinence Hesitancy Dribbling Incomplete voiding UTI Impotence Distended bladder on percussion Enlarged prostate on per-rectal examination</p>	<ul style="list-style-type: none"> • <u>Urine RE</u> WBCs - UTI RBCs - Calculi • <u>USG Abdomen</u> Residual urine 	<ul style="list-style-type: none"> • Catheterization if acute urinary retention 	All cases should be referred for evaluation
Epididymo-Orchitis	<ul style="list-style-type: none"> • Unilateral scrotal pain & swelling • Dysuria • Increased frequency • Elevation of testis reduces pain (<i>Prehn's sign</i>) • Epididymis indistinguishable from testis and is tender 	<ul style="list-style-type: none"> • Urine RE • Blood RE (Leucocytosis) 	<ul style="list-style-type: none"> • Bed rest, Scrotal support • Tab. Doxycycline 100mg BD x 14 days Or • Tab. Ciprofloxacin 500 mg BD x 14 days plus • Tab. Diclofenac 50 mg TDS x 5 days • Tab. DEC 100 mg TDS x 3 weeks 	All cases of acute scrotum should be referred for evaluation
Appendicitis	<ul style="list-style-type: none"> • Young patient • Fever • Anorexia • Nausea, Vomiting • RIF tenderness • Tachycardia • Peri-umbilical pain later shifting to RIF • Guarding • Rigidity • Rebound tenderness in RIF 	<p><u>Urine RE</u> pus cells may be present <u>Blood RE</u> Leucocytosis with Neutrophilia</p>	<ul style="list-style-type: none"> • NPO • IV Fluids • Inj. Diclofenac 75mg IM stat ATD • Inj. Hyoscine 20mg IV stat 	Refer at the earliest

Constipation	<ul style="list-style-type: none"> • Passing motion once in three days, less than thrice in a week 		<ul style="list-style-type: none"> • Laxatives • Tab. Bisacodyl 10 mg 2 HS Or • Syp. Lactulose 30 ml HS • High fibre diet • Adequate fluid intake 	No relief with symptomatic treatment – for evaluation
Parasitic Worm Infestation	<ul style="list-style-type: none"> • Anaemia • Failure to gain weight • colicky abdominal pain • vomiting • Abdominal examination normal 	<ul style="list-style-type: none"> • Stool Routine Examination 	<ul style="list-style-type: none"> • Tab. Albendazole 400mg HS Or • Tab. Mebendazole 100mg BD x 3 days • Iron supplementation • Personal hygiene 	<ul style="list-style-type: none"> • Suspicion of Intestinal perforation or obstruction • Severe anaemia
Acute Salpingo-Oophoritis (PID)	<ul style="list-style-type: none"> • Pain lower abdomen, associated with dysuria, vaginal discharge • Tenderness in lower abdomen • Per vaginal examination shows tenderness in cervix 	<ul style="list-style-type: none"> • <u>Urine RE</u>: Pus cells, RBC • <u>Blood RE</u>: Leucocytosis 	<ul style="list-style-type: none"> • Inj. Diclofenac 75mg IM ATD Plus • Tab. Ciprofloxacin 500mg BD Plus • Tab. Tinidazole 500 BD in mild infection 	<ul style="list-style-type: none"> • Pregnancy • Immunocompromised • suspicion of Tubo-ovarian mass
Ectopic Pregnancy	<ul style="list-style-type: none"> • Amenorrhoea • severe lower abdominal pain • may have spotting • tenderness RIF/LIF • Ruptured ectopic may present with shock, severe pallor, restless, tachycardia, tachypnoea, hypotension 	<ul style="list-style-type: none"> • Urine pregnancy test 	<ul style="list-style-type: none"> • IVF • Inj. Tramadol 50 mg IM stat 	<ul style="list-style-type: none"> • Refer at the earliest

Infective Causes of Abdominal Pain

Condition	Investigation
Gastroenteritis	Stool examination
Amoebic colitis	Stool examination
Enteric fever	Blood culture, Widal test
Tuberculosis	Sputum AFB, Mantoux, ESR
Dengue fever	NS1 Ag, IgM ELISA
Weil's disease	Leptospiral antibody, LFT
Intra-abdominal abscess	USG abdomen

Extra Abdominal Causes of Abdominal Pain

Condition	Investigation
Myocardial Infarction	ECG
Myocarditis	ECG
Basal Pneumonia	Chest X-ray ; if available
Pleuritis	Pleural Rub on Inspiration Chest X-ray ; if available
Uraemia	Blood Urea
Diabetic Ketoacidosis	RBS, Urine ketone
Herpes Zoster	Clinical Examination

HEADACHE

Based on a etiology headaches may be classified into primary headaches and secondary headaches.

Primary headaches are those in which headache and its associated features are the disorder in itself. E.g. -Tension type headache, Migraine

Secondary headaches are those caused by exogenous disorders. E.g. - meningitis, subarachnoid haemorrhage, epidural or subdural haematoma, glaucoma, brain tumour, purulent sinusitis, vascular disorders etc.

- * Life-threatening headache is relatively uncommon, but vigilance is required in order to recognize and appropriately treat such patients
- * *In all patients with headache a detailed history of the pain should be taken which includes Site, onset, character, severity, duration, frequency of attacks, postural or diurnal variation, exacerbating or relieving factors and associated symptoms.*

Based on the clinical presentation headaches may be:

1) Acute new onset headache

2) Chronic daily headache - headache on 15 days or more per month

3) New daily persistent headache - headache on most if not all days, and the patient can clearly, and often vividly, recall the moment of onset. This headache does not remit

Differential Diagnosis of New Daily Persistent Headache

Primary	Secondary
Migrainous type	Subarachnoid Hemorrhage
Featureless (tension- type)	Low CSF volume headache
	Raised CSF pressure headache
	Post traumatic headache
	Chronic meningitis

Clinical Evaluation of Acute, New-Onset Headache

In new-onset and severe headache, the probability of finding a potentially serious cause is considerably greater than in recurrent headache.

Red Flag Signs

- First Severe headache
- Worst headache ever
- Vomiting that precedes headache
- Pain associated with local tenderness
e.g. : temporal arteritis
- Sub acute worsening over days or weeks
- Pain induced by bending, lifting, cough
- Pain that disturbs sleep or presents immediately upon waking
- Known systemic illness
- Onset after age 55
- Fever or unexplained systemic signs
- Abnormal neurologic examination

While examining a patient with new onset headache, the following should not be omitted

1. Blood pressure, temperature, level of consciousness and orientation
2. Neck stiffness and pain on passive neck movements
3. Palpation of cranial arteries
4. Examinations of eyes- look for pupils (size, reaction to light & symmetry), redness and lacrimation, visual acuity, visual field and eye movements. Do a fundoscopic examination if possible
5. Nervous system examination for any focal neurological deficit
6. Cranial sinus tenderness

Typical clinical presentations of some of the serious causes of secondary headaches

If suspected, refer the patient to a tertiary care centre without delay

Meningitis

- * Present as acute, severe headache with fever, neck stiffness and vomiting
- * Often there is striking accentuation of pain with eye movement.

Intracranial Haemorrhage

- * Acute, severe headache(thunderclap headache) with neck stiffness & vomiting but without fever is suggestive of sub arachnoid hemorrhage

Brain Tumour

- * Intermittent deep, dull aching pain of moderate intensity, which may worsen with exertion or change in position and may be associated with nausea and vomiting.
- * The headache of brain tumor disturbs sleep in about 10% of patients.
- * Vomiting that precedes the appearance of headache by weeks is highly characteristic of posterior fossa brain tumors.
- * A history of amenorrhea or galactorrhea - suspect a prolactin-secreting pituitary adenoma.
- * Headache arising de novo in a patient with known malignancy suggests either cerebral metastases or carcinomatous meningitis, or both.
- * Head pain appearing abruptly after bending, lifting, or coughing can be due to a posterior fossa mass, a Chiari malformation, or low cerebrospinal fluid (CSF) volume

Temporal Arteritis

- * The average age of onset is 70 years, and women account for 65% of cases
- * Typical presenting symptoms include headache, polymyalgia rheumatica , jaw claudication, fever, and weight loss
- * Headache is the dominant symptom and often appears in association with malaise and muscle aches
- * Pain is located temporally in 50% patients
- * Pain usually appears gradually over a few hours before peak intensity is reached; occasionally, it is explosive in onset
- * Usually a dull and boring pain, with superimposed episodic stabbing

- * Scalp tenderness is present (brushing the hair or resting the head on a pillow may be impossible because of pain)
- * Headache is usually worse at night and often aggravated by exposure to cold
- * Additional findings may include reddened, tender nodules or red streaking of the skin overlying the temporal arteries, and tenderness of the temporal or the occipital artery
- * The erythrocyte sedimentation rate (ESR) is often, although not always, elevated.
- * Visual loss may occur

Glaucoma

- * Glaucoma may present with a prostrating headache associated with nausea and vomiting
- * The headache often starts with severe eye pain
- * On physical examination, the eye is often red with a fixed, moderately dilated pupil.

Primary Headache Disorders

- * Includes Migraine, Tension type headache, Trigeminal autonomic cephalalgias and other primary headache disorders.
- * Among these, Migraine and Tension type headache may be diagnosed and managed at the PHC with reasonable level of confidence.

Migraine

- * Usually an episodic headache associated with certain features such as sensitivity to light, sound, or movement; nausea and vomiting often accompany the headache
- * Headache can be initiated or amplified by various triggers, including glare, bright lights, sounds hunger; let-down from stress; physical exertion, dehydration; stormy weather or barometric pressure changes; hormonal fluctuations during menstruation; lack of or excess sleep and alcohol ; foods like cold, sweets, nuts, ajinomoto salt, chocolates, citrus fruits, cheese etc

Simplified diagnostic criteria for Migraine

Repeated attacks of headache lasting 4-72 hours in patients with a normal physical examination and no other reasonable cause of headache and

At least two of the following features

- * Unilateral pain
- * Throbbing pain
- * Aggravation by movement

Plus at least one of the following features

- * Nausea/vomiting
- * Photophobia & Phonophobia

Treatment

Non pharmacologic measures:

- * Identification and avoidance of specific headache triggers
- * Healthy diet, regular exercise, regular sleep patterns, avoidance of excess caffeine and alcohol

- * Avoidance of excessive stress and reducing stress response through measures such as yoga and meditation.

Acute Attack Therapies for Migraine

- * Paracetamol, NSAIDs, Metoclopramide- effective if taken early in an attack of mild to moderate migraine
- * Tab. Sumatriptan 50 mg or 100 mg Stat
- * Tab. Ergotamine 1-2 mg + caffeine 100 mg Stat
- * Sumatriptan 20 mg nasal spray
- * Dihydroergotamine nasal spray 2 mg
- * Parenteral - Sumatriptan 6 mg SC, Dihydroergotamine 1 mg IM

Prophylaxis of Migraine

A preventive medication should be considered in patients with four or more attacks a month. Drugs must be taken daily, and there is usually a lag of between 2 to 12 weeks before an effect is seen. Once effective stabilization is achieved, the drug is continued for about 6 months and then slowly tapered to assess the continued need.

Prophylaxis of Migraine			
Group of Drug	Name of Drug	Dose	Side Effects
β blockers	Propranolol	40-120mg BD	Tiredness Postural symptoms
Antidepressants	Amitriptyline	10-75mg HS	Drowsiness
	Nortriptyline	25-75mg HS	
Calcium channel blockers	Flunarizine	5-15mg	Drowsiness Weight gain Depression Parkinsonism Pedal oedema
Anticonvulsants	Topiramate	25-200mg/day	Paraesthesias Cognitive symptoms Weight loss Nephrolithiasis
	Sodium Valproate	400-600mg BD	Drowsiness Weight gain Hair loss Tremor Foetal anomalies Haematologic or liver abnormalities

Tension-Type Headache

- * Chronic head-pain syndrome characterized by bilateral tight, band-like discomfort
- * The pain typically builds slowly, fluctuates in severity, and may persist more or less continuously for many days.
- * The headache may be episodic or chronic (present >15days per month).

- * Diagnose tension type headache in patients whose headaches are without accompanying features such as nausea, vomiting, photophobia, phonophobia, osmophobia, throbbing, and aggravation with movement

Management

- * Pain relief with Paracetamol or other NSAIDs
- * Relaxation techniques & Counseling
- * Preventive treatment: Amitriptyline 10–75 mg at night

Indications for Referral

In general, patients who

- * *do not have a clear diagnosis,*
- * *have a primary headache disorder other than migraine or tension-type headache*
- * *are unresponsive to two or more standard therapies for the considered headache type*

Should be considered for referral to a specialist

ANAEMIA

Definition

Anaemia is a condition in which the number of red blood cells (and consequently their oxygen-carrying capacity) is insufficient to meet the body's physiologic needs.

Haemoglobin values to diagnose Anaemia

Group	Haemoglobin Value (g/dL)			
	No Anaemia	Mild	Moderate	Severe
Children 6 months to 59 months	≥ 11.0	10 - 10.9	7 - 9.9	< 7
Children 5 years to 11 years	≥ 11.5	11 - 11.4	8 - 10.9	< 8
Children 12 to 14 years	≥ 12.0	11 - 11.9	8 - 10.9	< 8
Non pregnant women (>15 years)	≥ 12.0	11 - 11.9	8 - 10.9	< 8
Pregnant women	≥ 11.0	10 - 10.9	7 - 9.9	< 7
Men > 15 years	≥ 13.0	11 - 12.9	8 - 10.9	< 8

- Haemoglobin values less than 4g/dL : Very severe Anaemia

Differential Diagnosis

- Nutritional anaemia: deficiency of Iron, Vitamin B₁₂, Folic acid, Vitamin C, Copper
- Blood loss associated with haemorrhage in trauma, childbirth etc
- Haemolysis occurring with Malaria
- Hereditary defects like Thalassemia, G₆PD deficiency, sickle cell trait
- Parasitic infestations like Hookworm, Tapeworm, Trichuriasis, Amoebiasis etc
- Anaemia associated with chronic diseases like HIV infection, Tuberculosis or Cancer
- Lead poisoning

Causes of Iron deficiency Anaemia

- Deficiency of iron in diet
- Non-exclusive breastfeeding and early introduction of complimentary feeds in children
- Blood loss associated with menstruation, child birth, peptic ulcer disease, polyps in GI/T, colorectal carcinoma, haemorrhoids
- Decreased absorption of Iron from diet
- Increased requirement of Iron as in pregnancy & lactation

High risk groups for developing Iron deficiency anaemia

- Women of child bearing age
- Pregnant women
- Lactating mothers
- Infants, Children and Adolescents

Symptoms & Signs

- Pale skin, lips, tongue & inner surface of eyelids
- Fatigue & weakness
- Unusual food cravings – Pica
- Decreased appetite in children
- Impaired cognitive performance; reduction of physical capacity
- Sore tongue
- Irritability
- Frontal headache
- Shortness of breath
- Orthostatic hypotension
- Brittle and concave nails

Lab Diagnosis

- Haemoglobin
- Peripheral smear
- Stool examination to rule out parasitic infestations

Treatment

- Oral Iron & Folic acid tablets for mild cases of Anaemia

Age group	Dose of Iron Folic acid
Children 1 to 5 years of age	20 mg elemental Iron & 100µg Folic acid per day
Children 6 to 11 years of age	40 mg elemental Iron & 200µg Folic acid per day
Adolescents & Adults	100 mg elemental Iron & 500µg Folic acid per day
Pregnant women	100 mg elemental Iron & 500µg Folic acid per day

- Haemoglobin values should return to normal within 2 months of starting oral Iron therapy but Iron supplementation should continue for 6 to 12 months to replenish the body iron stores
- Parenteral Iron is needed for persons who cannot tolerate Oral Iron
- Severely anaemic patients will require blood transfusion

Indications for Referral

- Patients not responding to Oral Iron supplementation
- All cases of moderate to severe anaemia
- Associated co-morbid conditions like Cardiac diseases, Renal disease, chronic infections etc
- Anaemia associated with pregnancy (if Hb < 9g %)
- Other causes of anaemia like Hemolytic anaemia, Thalassemia etc

Prevention

- Nutritional supplementation
- Fortification of food with Iron
- Promotion of exclusive breastfeeding for the first 6 months of life
- Iron & Folic acid supplementation

Dose of Iron Folic Acid for Prophylaxis

Age group	Dose of IFA tablets
Children 0 – 5 years	20 mg elemental Iron & 100µg Folic acid for 100 days in a year
6 – 10 years	30 mg elemental Iron & 250µg Folic acid for 100 days in a year
Adolescents (10 - 19 years)	100 mg elemental Iron & 500µg Folic acid weekly (WIFS)
Pregnant & Lactating women	100 mg of elemental Iron & 500µg Folic acid daily for 100 days during pregnancy followed by same dose for 100 days in the postpartum period

- **Regular deworming** : Albendazole 200mg for children less than 2 years and 400mg for adults & children above 2 years; single dose to be taken at bedtime once every 6 months
- Health education & Environmental sanitation

JAUNDICE

Jaundice may be detected in the sclera, skin and underneath the tongue. The presence of scleral icterus indicates a serum bilirubin level of at least 3 mg/dL. Another sensitive indicator of increased serum bilirubin is darkening of urine, which is due to the renal excretion of conjugated bilirubin.

Differential diagnosis for yellowing of the skin

1. Jaundice
2. Carotenoderma (affects- palms, soles, forehead, and nasolabial folds; spares sclera)
3. Drug induced e.g. : Quinacrine
4. Excessive exposure to Phenols

Normal serum bilirubin is < 1.2 mg/dl. Of this, the direct fraction (conjugated bilirubin) is up to 30% (<0.3mg/dl)

Clinical evaluation of a patient with jaundice

History

- Duration of jaundice
- Accompanying signs & symptoms- Fever, arthralgia, myalgia, rash, anorexia, weight loss, abdominal pain, vomiting, pruritus, and changes in the urine and stool
- Complete drug history including herbal medicines
- Transfusions, injectable drug abuse, tattooing
- Sexual history
- Recent travel
- History of food intake from outside
- Occupational exposure to hepatotoxins
- Alcohol consumption
- Family history
- Previous medical and surgical history- splenectomy, Transfusions, Gall stones

Examination

- Evaluation of nutritional status: Temporal and proximal muscle wasting suggests long-standing disease such as pancreatic cancer or cirrhosis.
- Stigmata of chronic liver disease: Spider naevi, Palmar erythema, gynaecomastia, caput medusae, Dupuytren's contractures, parotid gland enlargement, and testicular atrophy
- Lymph nodes: An enlarged left supraclavicular node (Virchow's node) or a peri-umbilical nodule (Sister Mary Joseph's nodule) suggests an abdominal malignancy
- Jugular venous distention and other signs of right heart failure suggest hepatic congestion.
- Abdominal examination: size and consistency of the liver, whether the spleen is palpable, whether ascites is present, palpation of gall bladder, other masses

- Severe right upper quadrant tenderness on deep inspiration (Murphy's sign) suggestive of Cholecystitis.
- Ascites in the presence of jaundice suggestive of cirrhosis or malignancy with peritoneal spread.
- Oedema seen in hypoalbuminemia
- Eyes- KF ring in Wilson's Disease

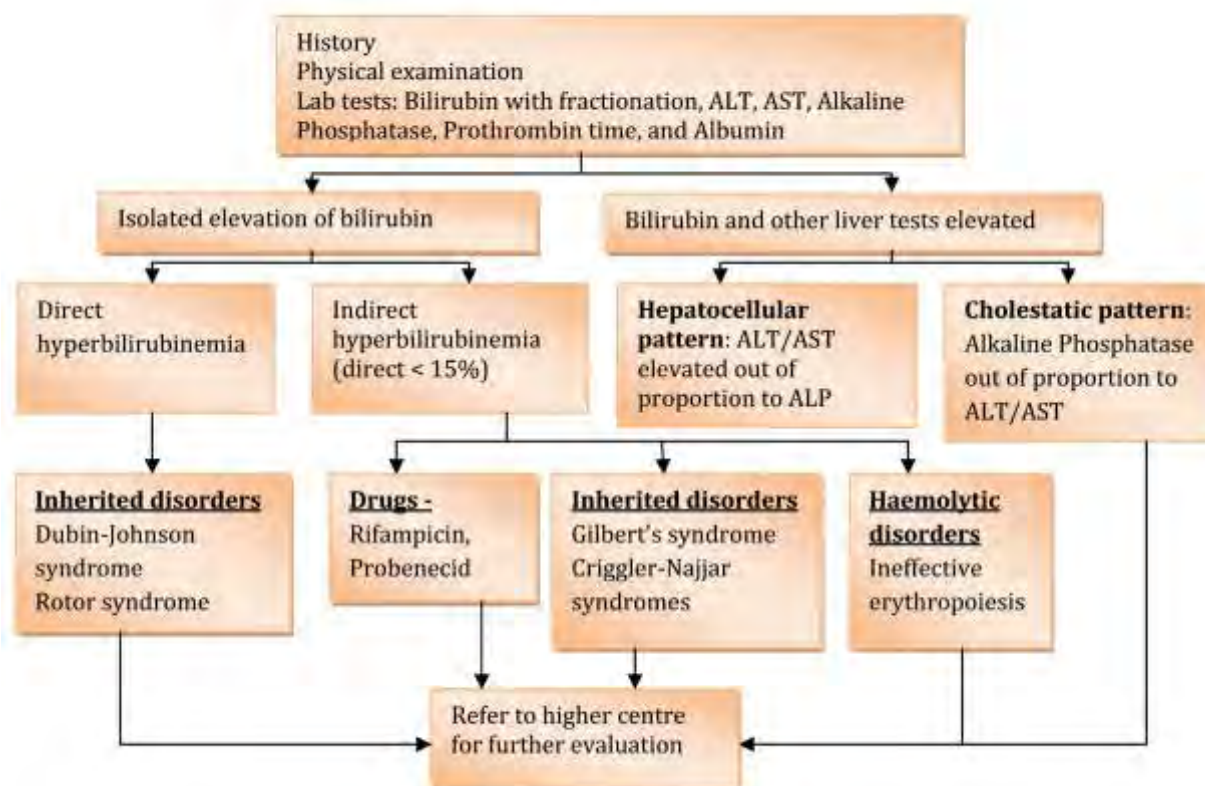
Laboratory Tests

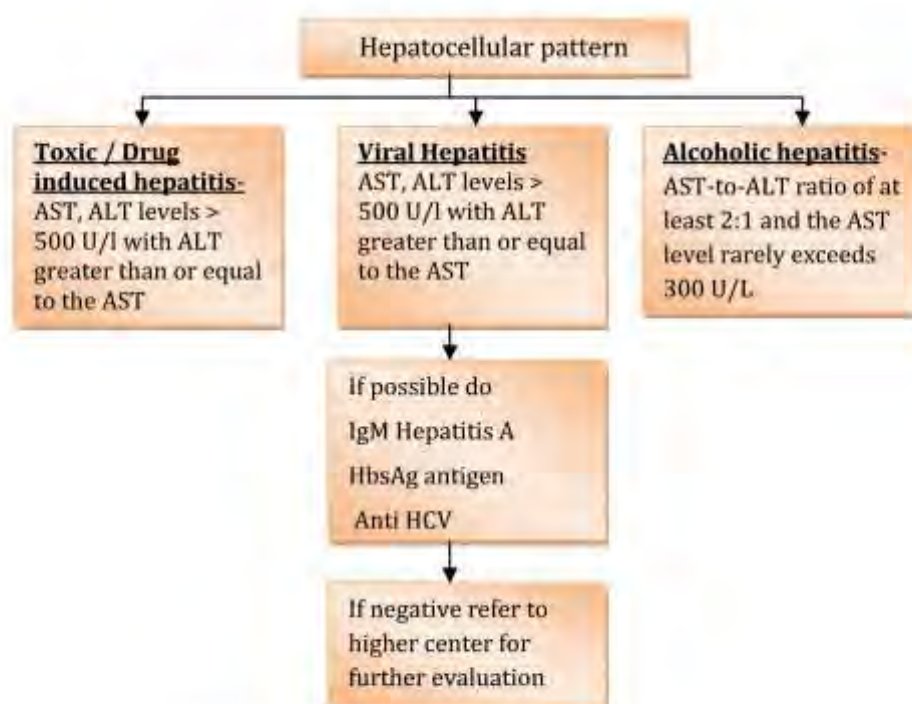
- Blood routine examination
- Urine Routine Examination, Urobilinogen, bile salts, bile pigments
- LFT
- Viral markers, if indicated

Red Flag Signs

1. Deepening jaundice
2. Altered sensorium
3. Coagulopathy
4. Flapping tremor
5. Signs of multi organ dysfunction
6. Hemodynamic instability
7. Shrinking liver span

Diagnosis of Jaundice





Management of Acute hepatitis in PHC

- Acute hepatitis A infection with no danger signs may be managed in the PHC
 - * Patient should be advised to take bed rest
 - * Avoid hepatotoxic drugs (especially Paracetamol) and alcohol
 - * Frequent small low fat meals to be taken
 - * Clean sanitary measures should be advised
 - * IV fluids if indicated
 - * Patient should be kept under follow up (if possible daily review)
 - * Monitor LFT, liver span

Indications for Referral

1. Shrinking liver span
 2. Signs of hepatic failure (refer Red flag signs above)
 3. Poor oral feeding
 4. Hypoglycemic episodes
- Patients with Hepatitis B and Hepatitis C should be referred to a specialist for expert management
 - In case of drug induced hepatitis, stop the offending drug and seek the opinion of a specialist

Management of Alcoholic hepatitis in PHC

Initial management of alcoholic hepatitis patients should always be done in a tertiary care centre. Follow up treatment can be done at PHC

- * Advise complete abstinence from alcohol
- * Ensure good nutrition- increase protein intake
- * Avoid hepatotoxic drugs as far as possible

Communicable Diseases

PREVENTION OF COMMUNICABLE DISEASES

Vector Borne Diseases

Environmental management

- Improved water supply, mosquito proofing of overhead tanks, cisterns or underground reservoirs
- Removal of natural breeding sites like containers, coconut husks, empty tanks, tyres, drip pan of refrigerators, latex cups in rubber plantations etc
- Dry day observation every week
- Proofing of houses with mosquito screens on doors/windows
- Elimination of rodent shelters and food sources
- Clearing of bushes and shrubs
- Ensuring proper liquid and solid waste management

Personal protection

- Protective clothing
- Repellents for vectors
- Avoid sitting or lying on bare ground or grass or drying clothes over shrubs

Biological control

- Larvivorous fishes like Guppy, Gambusia etc
- Endotoxin producing bacteria like *Bacillus thuringiensis*

Chemical control

- Larvicides like Temephos(Abate)
- Adulticides like Pyrethrum spray, Malathion fogging or Ultra low volume spray
- Use of rodenticides like Zinc phosphide
- Spraying of bushes and ground soil with Lindane or Chlordane to kill chigger mites

Chemoprophylaxis

- **Leptospirosis and Scrub typhus:** Doxycycline 200mg once weekly for 6 weeks
- **Malaria :** Doxycycline (100mg daily for adults; 1.5mg/kg day for children) for stay less than 6 weeks(started 2 days before and continued up to 4 weeks after returning from the endemic area)
: Mefloquine -250 mg weekly for adults; should be administered two weeks before, during and till four weeks after returning from endemic area.

Airborne Diseases

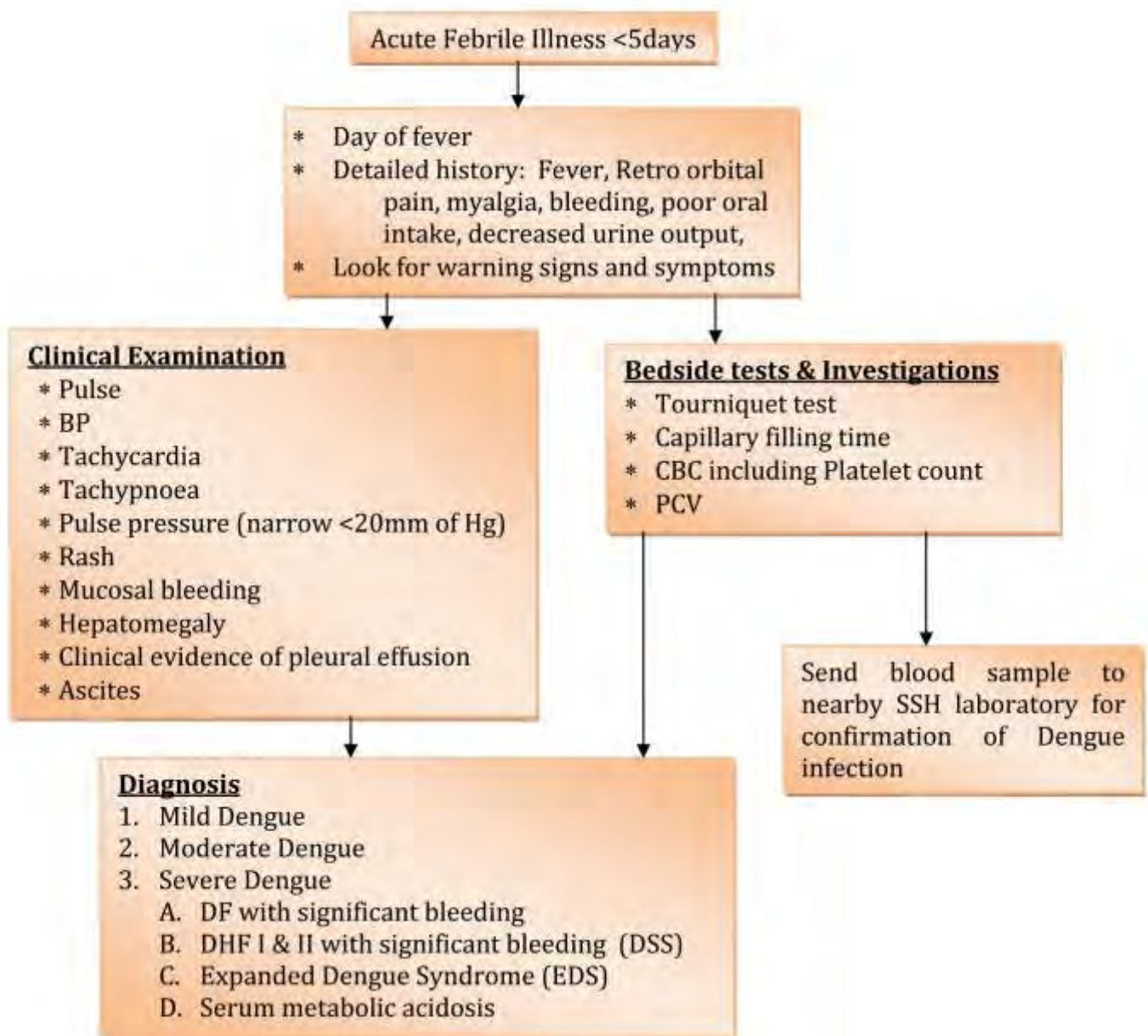
- Promote natural ventilation
- Avoid crowding especially at hospitals
- Ensure adequate ventilation especially at health care facilities
- Appropriate hand hygiene
- Respiratory hygiene
- Cough/sneeze etiquette: cover your nose and mouth when you cough/sneeze
- Avoid close contact/ Isolation of patients with respiratory symptoms

- Minimize hospitalization of TB patients
- Screening patients with respiratory symptoms
- Fast tracking of patients with respiratory symptoms who report to the OPD
- Personal protective equipment like masks
- Proper disposal of Sputum
- Vaccination against Haemophilus Influenza, Pneumococcus etc

Water and Food Borne Diseases

- Drink only boiled water
- Frequent chlorination of Wells and other water sources
- Store water and food materials in clean containers
- Wash vegetables and fruits thoroughly before cooking/consuming
- Avoid raw and uncooked food unless it can be peeled or shelled
- Wash hands thoroughly before preparing food, before and after eating
- Wash hands thoroughly before and after using the washroom
- Periodic trimming of fingernails
- Avoid consuming food materials prepared at unhygienic places
- Proper treatment and disposal of sewage/garbage
- Avoid open defaecation
- Increase awareness about need for personal hygiene and environmental sanitation
- Screening of persons involved in food handling
- Surveillance for early identification and treatment of patients
- Early reporting and control of outbreaks of food/water borne diseases

DENGUE FEVER



Clinical Case Definition

An **acute febrile illness** of 2-7 days duration with two or more of the following manifestations:

- Headache
- Retro-orbital pain
- Myalgia
- Arthralgia
- Rash
- Haemorrhagic manifestations
- Leucopenia

Confirmed Dengue Fever

- A case compatible with the clinical description of Dengue fever with at least one of the following
 - * Isolation of the Dengue virus (Virus culture +ve) from serum, plasma, leucocytes
 - * Demonstration of IgM antibody titre by ELISA positive in single serum sample
 - * Demonstration of Dengue virus antigen in serum sample by NS1-ELISA
 - * IgG sero-conversion in paired sera after 2 weeks with four fold increase of IgG titre
 - * Detection of virus by polymerase chain reaction (PCR)

Red Flag Signs

- | | |
|--|--|
| <ul style="list-style-type: none"> • High grade fever • Abdominal pain • Persistent vomiting • Bleeding manifestations • Decreased Urine output | <ul style="list-style-type: none"> • Respiratory distress • Convulsions / Encephalopathy • Fluid overload • Plasma leakage • Shock/ Impending shock |
|--|--|

Investigations

- Blood routine examination
- Platelet count & PCV(serial estimation during the critical phase of illness)
- NS1 ELISA test – during first 5 days of fever
- IgM ELISA test – Positive after the 5th day
- LFT, RFT
- ECG
- Chest X-ray; if available

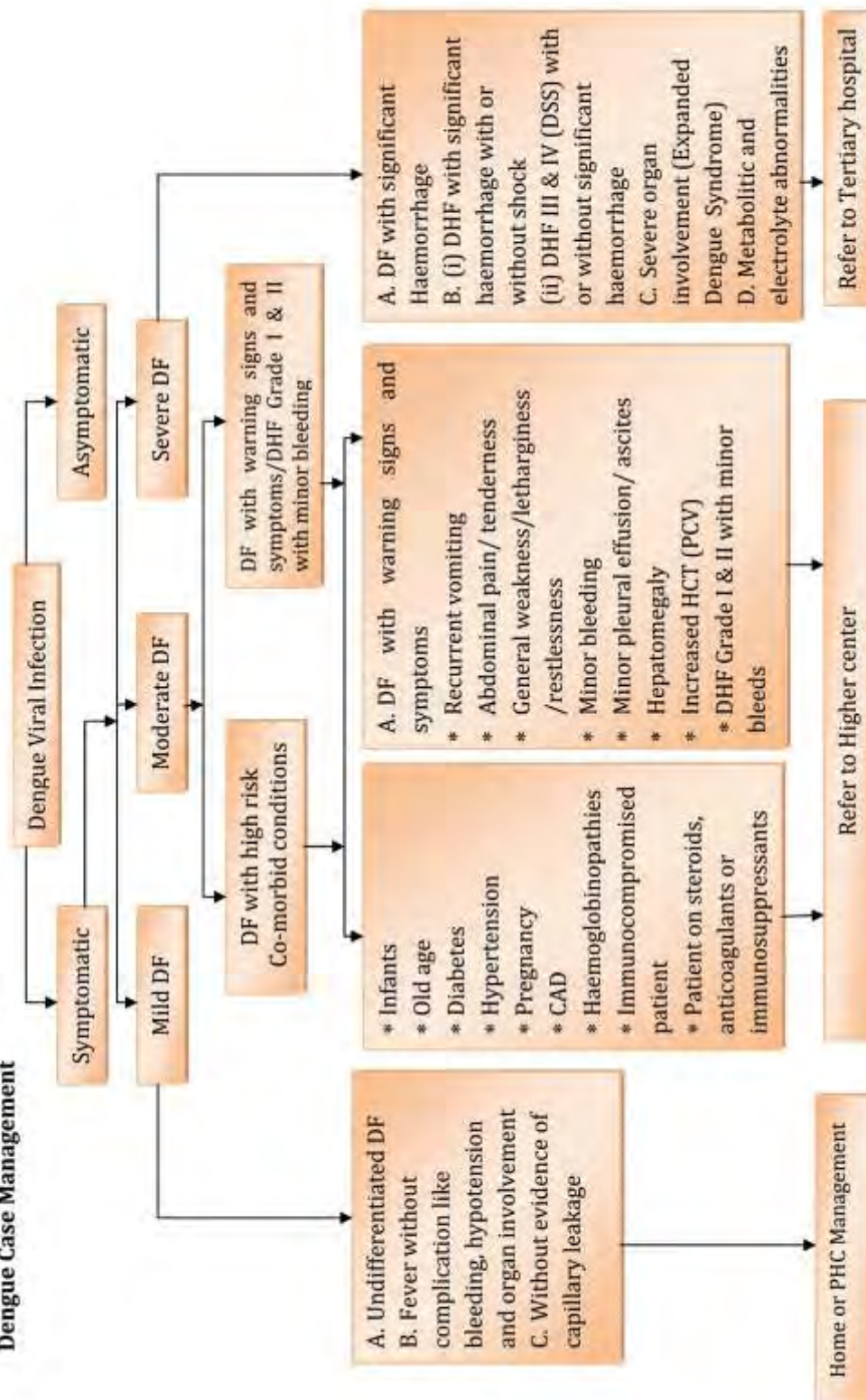
Treatment of Dengue Fever

- Oral fluids
- Rest
- Antipyretics (avoid aspirin and non-steroidal anti-inflammatory drugs)
- Monitor blood pressure
- Level of consciousness
- Serial haematocrit and platelet at least daily from day 3 until temperature normal for 48 to 72 hours
- In case of a 20% increase or decrease in PCV or platelet count < 50,000 or Haemorrhagic manifestations refer after starting IV Normal Saline at 6 ml/kg/hr

Patient Follow up

- Patients treated at home/ PHC should be advised regarding danger signs
- Patients should be asked to review at frequent intervals for repeat clinical evaluation.

Dengue Case Management



LEPTOSPIROSIS

- Caused by the spirochete belonging to the genus *Leptospira*
- Infection acquired through contact of abraded skin and/or mucous membrane with environment contaminated with the urine of rodents, carriers or diseased animals. Direct transmission of Leptospirosis is rare
- MNREGA workers, persons working in contact with stagnant water, agricultural and poultry workers, plantation workers etc are at high risk for the disease

Clinical Case definition

Acute febrile illness with headache, myalgia and prostration associated with a history of exposure to infected animals or an environment contaminated with animal urine with one or more of the following

- * Calf muscle tenderness
- * Conjunctival congestion
- * Oliguria or Anuria and/or proteinuria
- * Jaundice
- * Haemorrhagic manifestations(Intestines, Lung)
- * Signs of meningeal irritation
- * GI symptoms(Nausea/vomiting/Abdominal pain/Diarrhoea)

Symptoms

- * Fever, body ache & headache
- * May have dry cough, sore throat, diarrhoea and dysuria
- * In later stages Jaundice, Oliguria, bleeding tendency, respiratory distress, Cardiac failure, convulsions and coma

Clinical Findings

- * Fever with muscle tenderness especially calf and thigh
- * Low backache
- * Congestion of eyes; later subconjunctival haemorrhage
- * Jaundice and evidence of hepatic, pulmonary or renal involvement

Complications

Usually by the end of first week

- * Thrombocytopenia and Bleeding tendency
- * Hepatic failure, Renal failure
- * Acute respiratory distress
- * Hypotension
- * Myocarditis, pancreatitis
- * Convulsions and coma

Investigations

- * Blood routine examination : neutrophilic leucocytosis during first 3 days
- * Platelet count ; Thrombocytopenia after 3 days
- * LFT : Increased Serum Bilirubin, mild elevation of SGOT/SGPT
- * RFT : Increased Blood Urea & S. Creatinine
- * IgM ELISA – positive after the 5th day
- * ECG to rule out Myocarditis
- * Chest X-ray if available to rule out pneumonitis

Management

- * Patient may be treated as outpatient if vital signs are stable and patient is available for regular follow up
- * NSAIDs should be avoided as far as possible
- * General measures for control of fever; Paracetamol SOS
- * Adequate fluid intake

Antibiotic treatment

Age group	Drug of choice
Adults	Cap. Doxycycline 100mg BD x 7 days Cap. Amoxycillin 500mg TID x 7 days
Children > 8 years	Tab. Doxycycline 5mg/kg/ day in 2 divided doses x 7 days
Children < 8 years	Amoxycillin 50mg/kg/day in 3 divided doses x 7 days Azithromycin 10mg/kg/day OD x 3 days

- * Toxic patients with red flag signs, late presentation and patients with organ dysfunction need admission and parenteral antibiotics. Such patients should be referred to higher centre for expert management

Red flag signs

- * No response to antibiotics in 8 hours
- * Respiratory rate > 30/minute
- * Urine output < 20ml/hour
- * Systolic Blood pressure < 90mm Hg
- * Tachycardia out of proportion to fever
- * Flapping tremor
- * Altered sensorium
- * Lab abnormalities like Thrombocytopenia, elevated liver enzymes etc

Prevention

- * **Chemoprophylaxis:** Cap. Doxycycline 200mg once a week for 6 weeks to those who are engaged in high risk jobs like MNREGA workers, those working in contact with stagnant water, canal cleaning etc
- * Personal protection measures like gloves, boots, waterproof dressings for injuries etc before engaging in high risk jobs
- * Animal housing to be kept away from human dwellings

MALARIA

Malaria is a parasitic disease caused by protozoa of the genus *Plasmodium* and transmitted by female Anophiline mosquitoes. Five species of plasmodium have been identified – *P.vivax*, *P.falciparum*, *P. ovale*, *P.malaria* and *P.knowlesi*. Among these *P.vivax*, *P.falciparum* and mixed infection due to both *vivax* and *falciparum* are common in India.

When to suspect malaria?

In an area where the incidence of malaria is low, malaria is suspected in a patient with fever and history of travel to endemic area. In a malaria endemic area, it should be suspected in any patient with history of fever or temperature $>37.5^{\circ}\text{C}$ with no other obvious cause.

Clinical features

- * Fever with Chills & Sweats
- * Headache
- * Nausea, vomiting
- * Body ache
- * General malaise
- * Hepatosplenomegaly
- * Anaemia

Cerebral Malaria

Severe form of malaria associated with fever, coma, delirium, convulsions, haemolysis, oliguria, anuria, pulmonary oedema and haemoglobinuria

Clinical Case Definition

A case of fever which may be accompanied with any of the following:

- Headache, backache, chills, rigors, sweating, myalgia, nausea and vomiting
- Splenomegaly and anaemia
- Generalized convulsions, coma, shock, spontaneous bleeding, pulmonary oedema, renal failure and death

Diagnosis

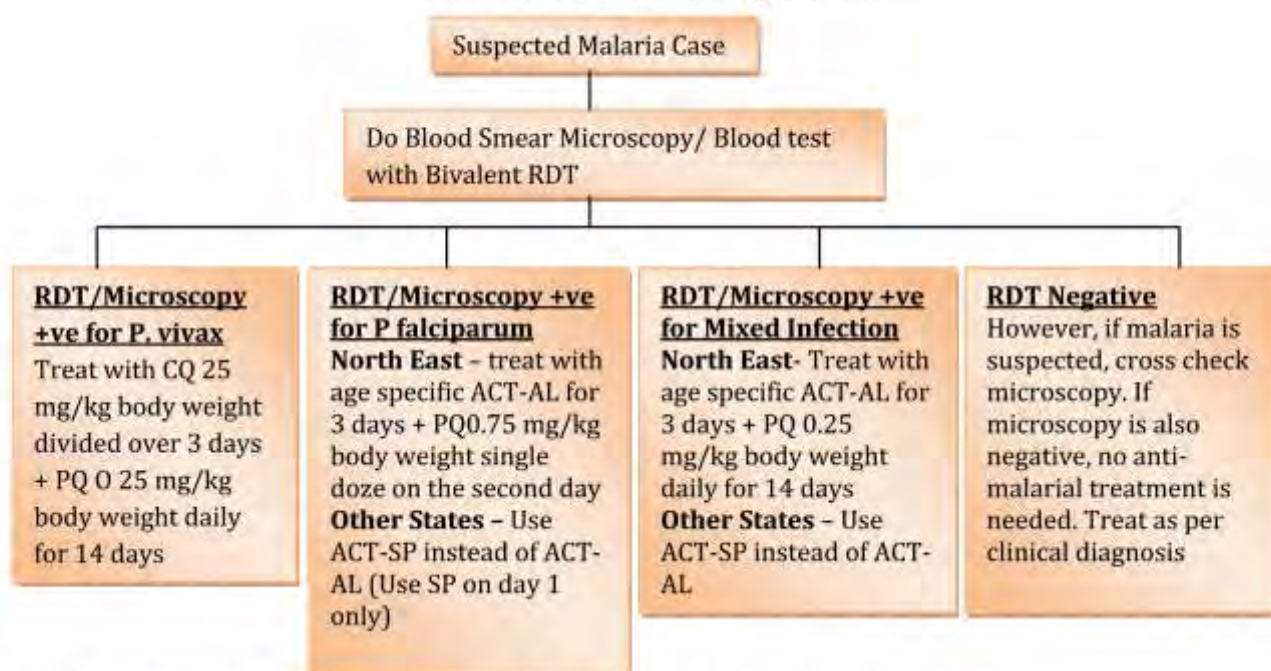
Microscopy – thick smear (detection of parasite) and thin smear (species identification)

- Gold standard
- Quantify the parasite load.

Bivalent RDT

- Detection of circulating parasite antigens.
- Detection of both *Plasmodium vivax* and *Plasmodium falciparum*

Malaria Treatment Algorithm



Note: PQ: Primaquine CQ: Chloroquine ACT: Artemisinin combination therapy

Malaria- Treatment (National drug Policy -2013)

- Presumptive treatment of malaria with a single dose of Chloroquine has been stopped.

Treatment of Vivax Malaria

- Chloroquine:
25 mg/kg body weight divided over three days i.e.
 - 10 mg/kg on day 1,
 - 10 mg/kg on day 2 and
 - 5 mg/kg on day 3.
- Primaquine*: 0.25 mg/kg body weight daily for 14 days

*Primaquine is contraindicated in infants, pregnant women and individuals with G6PD deficiency.

Age Specific Dosage Chart for Malaria Plasmodium Vivax Malaria (Common for all States)

Age	Day 1		Day 2		Day 3		Day 4-14
	CQ	PQ	CQ	PQ	CQ	PQ	PQ
	150 mg base*	2.5 mg	150 mg base*	2.5 mg	150 mg base*	2.5 mg	2.5 mg
Less than 1 yr	½	0	½	0	¼	0	0
1-4 yrs	1	1	1	1	½	1	1
5-8 yrs	2	2	2	2	1	2	2
9-14 yrs	3	4	3	4	1 ½	4	4
15 yrs & more	4	6	4	6	2	6	6
Pregnancy	4	0	4	0	2	0	0

*250 mg Chloroquine phosphate tab = 150 mg Chloroquine base

Treatment of Falciparum Malaria

A. In Other States (other than North- Eastern States) including Kerala

Artemisinin based Combination Therapy (ACT-SP)

Artesunate 4 mg/kg body weight daily for 3 days **plus**
Sulfadoxine (25 mg/kg body weight) Pyrimethamine (1.25
mg/kg body weight) on first day **plus**
Single dose of Primaquine 0.75 mg/Kg body weight on 2nd
day

B. In North-Eastern States (NE States) (also for Migrant laborers from NE states)

ACT-AL

Co-formulated tablet of
Artemether(20 mg) **plus** Lumefantrine (120 mg)
And Single dose of Primaquine 0.75 mg/Kg body weight
on 2nd day

PQ* : 0.75mg per kg body weight on day 2

Plasmodium falciparum Malaria (from State other than NE)

Age	Day 1		Day 2		Day 3
	AS	SP	AS	PQ* (7.5 mg) (Extra to ACT-SP kit)	AS
Less than 1 year (Pink blister)	1 (25 MG)	1 (250 + 12.5 mg)	1 (25 mg)	0	1 (25 mg)
1-4 yrs (Yellow Blister)	1 (50mg)	1 (500+25mg)	1 (50mg)	1	1 (50mg)
5-8 yrs (Green Blister)	1 (100mg)	1 (750+37.5mg)	1 (100mg)	2	1 (100mg)
9-14 yrs (Red Blister)	1 (150mg)	2 (500+25mg)	1 (150mg)	4	1 (150mg)
15 yrs and more (White Blister)	1 (200mg)	2(750+3705mg) or 3 (500+25mg)	1 (200mg)	6	1 (200mg)
PQ*:0.75mg per kg body weight on day 2					

Plasmodium falciparum Malaria (From North Eastern States)

Age	Day 1	Day 2	Day 3
	ACT - AL (Artemether + Lumefantrine) (20mg +120mg)	ACT - AL (Artemether + Lumefantrine) (20mg +120mg)	PQ* (7.5mg) (Extra to ACT-AL Kit)
5m-2Yrs (5-14kg) (Yellow Blister)	1 Tablet twice daily (1-0-1)	1 Tablet twice daily (1-0-1)	5m-1yr:0 >1yr-<2yr:1
3-8 Yrs (15-24kg)	2 Tablets twice daily (2-0-2)	2 Tablets twice daily (2-0-2)	2
9-14 Yrs (25-35kg)	3 Tablet twice daily (3-0-3)	3 Tablet twice daily (3-0-3)	4
15 yrs and more (More than 35 kg)	4 Tablet twice daily (4-0-4)	4 Tablet twice daily (4-0-4)	6

PQ*: 0.75mg per kg body weight on day 2

ACT-AL: Not recommended during the 1st trimester of pregnancy and for children weighing <5kg**Treatment of mixed infections (PV & PF)**

- In North-Eastern States – Treat with: Age-specific ACT-AL for 3 days + Primaquine 0.25 mg per kg body weight daily for 14 days.
- In Other States (other than North-Eastern States) including Kerala – ACT-SP 3 days + Primaquine 0.25 mg per kg body wt. daily for 14 days.

Mixed (vivax & falciparum) Malaria from States other than NE)

Age	Day 1	Day 2	Day 3	Day 4 to 15
	AS	AS	AS	PQ* (2.5mg) (Extra to ACT-SP Kit)
Less than 1 year (Pink Blister)	1 (25mg)	1 (25mg)	1 (25mg)	0
1-4 yrs (Yellow Blister)	1 (50 mg)	1 (50mg)	1 (50mg)	1
5-8 yrs (Green Blister)	1 (100mg)	1 (100mg)	1 (100mg)	2
9-14yrs (Red Blister)	1 (150mg)	1 (150mg)	1 (150mg)	4
15yrs and more (White Blister)	1 (200 mg)	1 (200mg)	1(200mg)	6

PQ*: 0.25mg per kg body weight daily for 14 days

Mixed (vivax & falciparum) Malaria from North Eastern States						
Age	Day 1	Day 2	Day 3	Day 4-15		
	ACT-AL (Artemether +Lumefantrine) (20mg +120mg)	ACT-AL (Artemether +Lumefantrine) (20mg +120mg)	PQ* (2.5mg) (Extra to ACT-AL Kit)	ACT-AL (Artemether +Lumefantrine) (20mg +120mg)	PQ* (2.5mg) (Extra to ACT- AL Kit)	PQ* (2.5mg) (Extra to ACT-AL Kit)
5m-2Yrs (5-14kg) (Yellow Blister)	1 Tablet twice daily (1-0-1)	1 Tablet twice daily (1-0-1)	5m-<1yr: 0 >1yr<2yr:1	1 tablet twice daily (1-0-1)	5m- <1yr: 0 >1yr<2 yr:1	5m-<1yr: 0 >1yr<2yr:1
3-8Yrs (15-24kg)	2 Tablet twice daily (2-0-2)	2 Tablet twice daily (2-0-2)	>2yr<5yr:1 >5yr<9yr:2	2 Tablet twice daily (2-0-2)	>2yr<5 yr:1 >5yr<9 yr:2	>2yr<5yr:1 >5yr<9yr:2
9-14 Yrs	3 Tablet twice daily (3-0-3)	3 Tablet twice daily (3-0-3)	4	3 Tablet twice daily (3-0-3)	4	4
15 Yrs to 35 and more (More than 35 kg)	4 Tablet twice daily (4-0-4)	4 Tablet twice daily (4-0-4)	6	4 Tablet twice daily (4-0-4)	6	6
PQ*: 0.25mg per kg weight daily for 14 days						
ACT+AL: Not recommended during the 1 st trimester of pregnancy and for children weighing <5kg						

Note:

- Primaquine should not be used in Pregnancy, Infancy and G6PD deficiency
- Primaquine and Sulphadoxine-Pyrimethamine should not be given on the same day. Hence avoid Primaquine on the first day of ACT regimen
- ACT not given during the 1st trimester of pregnancy but given during 2nd and 3rd trimesters
- Use Quinine during the 1st trimester

Indications for Referral

- Altered sensorium, coma
- Convulsions
- Platelet count < 50,000/mm³
- Bleeding manifestations
- Getting worse in spite of treatment
- Myocarditis
- Renal failure
- Hypotension
- ARDS
- Pregnancy

NB: Follow up blood smear to be taken on 3rd, 7th, 14th and 28th days for ensuring parasitic clearance.

Treatment of *P. ovale* and *P. malariae*

- *P. ovale* should be treated as per guidelines for *P. Vivax* and *P. Malariae* should be treated as per guidelines for *P. Falciparum*

Chemoprophylaxis

Short term chemoprophylaxis (up to 6 weeks)	<ul style="list-style-type: none"> • Doxycycline : <ul style="list-style-type: none"> – 100 mg once daily for adults – 1.5 mg/kg once daily for children (contraindicated in children below 8 years). – The drug should be started 2 days before travel and continued for 4 weeks after leaving the endemic area
Chemoprophylaxis for longer stay (more than 6 weeks)	<ul style="list-style-type: none"> • Mefloquine: <ul style="list-style-type: none"> – 250 mg weekly for adults and should be administered two weeks before, during and four weeks after stay in endemic area • It is contraindicated in individuals with history of convulsions, neuropsychiatric problems and cardiac conditions.

Prevention & control: Three pronged strategy

Disease management	<ol style="list-style-type: none"> 1. Strengthening of Surveillance. 2. Early Case Detection and Complete Treatment 3. Epidemic Preparedness & Social mobilization; 4. Rapid Response Team.
Integrated-Vector Management (IVM)	<ol style="list-style-type: none"> 1. Strengthening Vector surveillance & Vector control activities- 2. Regular & continuous Source reduction activities -weekly dry day observation, guppy release, use of Bti, larvicides etc 3. Minor environmental /engineering methods- Netting of shallow wells and over head tanks. 4. IRS, ISS, Fogging, spraying to contain out breaks. 5. Advise on personal protective measures 6. Use of Insecticide treated bed nets. (LLINs) 7. Awareness cum action campaigns
Supportive Interventions	<ol style="list-style-type: none"> 1. Capacity building 2. <u>IEC/BCC</u> (print & electronic media) Health awareness for SR and clean premises, weekly Dry Day ,Safe water storage practices, Personal protective measures etc <u>IEC/BCC</u> – for immigrants 3. Public Private Partnership & Inter-sectoral convergence. 4. Web based management information system 5. Monitoring & Supervision

Follow Up

Follow up of each positive case on treatment for one month by BSE on 7th, 14th, 21st and 28th days to ensure complete cure (parasitic clearance) by concerned MOs/HS/HI/JHI/ASHA.

Mass survey: Entire population in the outbreak area (around 0.5 km) irrespective of age, sex or fever status is screened by taking blood smear and children must be included specifically in the survey. The survey to be conducted by pooling laboratory technicians from adjoining PHC/ Districts/Zonal offices /State HQs and peripheral staff from the neighbouring PHC areas to collect blood smears so as to cover the entire population as quickly as possible. The operation should be done within 7 to 10 days. Blood smears collected should be examined within 24 hours and complete treatment to be ensured for all positives.

Case based surveillance- Epidemiological and entomological investigation of each case within 48 hrs of notification & after epidemiological classification (Indigenous/imported/introduced), initiation of control activities (Contact survey, Mass survey, IVM) within 5 days & complete the same within 10 days by PHC MO & team/DSO/DMLO/Biologist & DVCU/Regional entomology unit.

Notification- Malaria became a notifiable disease in the whole state. Hence immediate reporting of all confirmed cases and deaths from public and private sectors to nearest local health authority/DMO/SSO through SMS/Mail/Phone.

H1N1

- Caused by Influenza A(H1N1) virus
- The transmission is airborne from person to person through large droplets generated during coughing and sneezing, and indirect contact by touching a contaminated object or surface and close contact with the affected person

Symptoms

- The hallmark of influenza is the sudden, rapid onset of symptoms. Influenza symptoms may include
 - * Fever, Chills & body aches
 - * Sore throat
 - * Non-productive cough
 - * Running Nose
 - * Headache
 - * Gastrointestinal symptoms and muscle inflammation occur more often in young children, and infants.

Clinical Findings

- Fever: rapid onset, peaking at 38.4°C (up to 41 °C, especially in children), typically lasting 3 days (up to 4-8 days)
- Flushed face
- Hot & moist skin
- Watery, reddened eyes
- Nasal discharge
- Otitis
- Hyperemic mucous membranes
- Cervical lymph node enlargement especially in children

All individuals seeking consultations for flu like symptoms should be screened at health care facilities and they are categorized as under:

CATEGORY- A

Patients with

- Mild fever plus cough / sore throat with or without
- Body ache
- Headache
- Diarrhoea and vomiting
 - * They do not require Oseltamivir and should be treated for the symptoms mentioned above.
 - * The patients should be monitored for their progress and reassessed at 24 to 48 hours by the doctor.
 - * No testing for Influenza is required.
 - * Patients should confine themselves at home and avoid mixing up with public and high risk members in the family.

CATEGORY-B

- (i) In addition to all the signs and symptoms mentioned under Category-A, if the patient has high grade fever and severe sore throat, may require home isolation and **Oseltamivir**
- (ii) In addition to all the signs and symptoms mentioned under Category-A, individuals having one or more of the following high risk conditions shall be treated with **Oseltamivir**:
 - * Children with mild illness but with predisposing risk factors
 - * Pregnant women
 - * Persons aged 65 years or older
 - * Patients with lung diseases, heart disease, liver disease, kidney disease, blood disorders, diabetes, neurological disorders, cancer and HIV/AIDS
 - * Patients on long term cortisone therapy
- Testing for Influenza is not required for Category-B (i) and (ii)
- All patients of Category-B (i) and (ii) should confine themselves at home and avoid mixing with public and high risk members in the family
- Broad Spectrum antibiotics as per the Guidelines for Community acquired pneumonia (CAP) may be prescribed.

CATEGORY-C

In addition to the above signs and symptoms of Category-A and B, if the patient has one or more of the following:

- * Breathlessness
- * chest pain
- * drowsiness
- * Hypotension
- * Haemoptysis
- * Cyanosis
- * Children with influenza like illness who had a severe disease as manifested by the red flag signs (Somnolence, high and persistent fever, inability to feed well, convulsions, shortness of breath, difficulty in breathing, etc) and worsening of underlying chronic conditions
- All these patients mentioned above in Category-C require **testing, immediate hospitalization** and treatment.

Oseltamivir is the recommended drug for treatment and should be started immediately without waiting for test results. Dose for treatment is as follows:

Dosage of Oseltamivir for Infants	
0-3 months	12 mg BD x 5 days
3-5 months	20 mg BD x 5 days
6-11 months	25 mg BD x 5 days
By Weight	
Weight	Dose
<15 Kg	30 mg BD x 5 days
15-23	45 mg BD x 5 days
24-40	60 mg BD x 5 days
>40	75 mg BD x 5 days

Red Flag Signs

The care giver at home should be aware of the early warning signs.

The early warning signs in adults are:

- High grade fever not responding to antipyretics.
- Difficulty in breathing or shortness of breath
- Pain or pressure in the chest or abdomen
- Sudden dizziness, Confusion
- Severe or persistent vomiting.

The early warning signs in children are:

- Fast breathing or trouble breathing
- Bluish skin color
- Not drinking enough fluids
- Not waking up or interacting
- Being so irritable that the child does not want to be held
- High fever with rash

Vaccine Recommendations

- Ministry of Health and Family Welfare recommends the trivalent inactivated influenza vaccine.
- Health Care workers working in Hospital / Institutional settings (Doctors, Nurses, Paramedics) with likelihood of exposure to Influenza virus should be vaccinated.

SCRUB TYPHUS

- Caused by Rickettsial species *Orientia tsutsugamushi*
- Transmitted by the bite of Chigger mite

Clinical Case definition

Acute undifferentiated febrile illness of 5 days or more with or without Eschar should be suspected as a case of Rickettsial infection. If Eschar is present, fever of less than 5 days duration should be considered as scrub typhus

Symptoms

- * High grade fever with chills & rigor
- * Severe myalgia & body ache
- * Intense headache
- * Sore throat and dry cough
- * Chest pain & breathlessness



Clinical Findings

- * Conjunctival congestion
- * Maculopapular rash
- * Regional lymphadenopathy
- * Splenomegaly
- * Eschar: Starts as an enlarging papule at the site of chigger bite, often in concealed and moist areas of the body like axilla, inguinal region and under the breasts in women. Later develops to classical Eschar which is usually larger than 1cm in diameter. It has a central necrotic black scab surrounded by raised ring and surrounding erythema. It is not itchy or painful

Complications

- * Pneumonitis
- * Myocarditis
- * Encephalitis
- * Shock
- * Acute renal failure
- * Disseminated intravascular coagulation

Investigations

- * Blood routine: Leucopenia, relative lymphocytosis, Thrombocytopenia
- * LFT- Mild elevation of serum bilirubin with moderate elevation of SGOT/SGPT
- * IgM ELISA
- * ECG : to rule out Myocarditis
- * Chest X-ray : to rule out pneumonitis

Management

- * General measures for control of fever; Paracetamol 6th hourly or SOS
- * Avoid NSAIDs
- * Tepid sponging
- * Adequate fluid intake

Antibiotic treatment

Group	Drug of Choice
Adults & Children >8 years	Cap. Doxycycline 100mg BD x 5-7 days
Children < 8 years	Tab. Azithromycin 500mg OD x 5-7 days
Pregnant women	Azithromycin 10mg/kg/day OD x 5-7 days
Resistant cases	Tab. Azithromycin 500mg OD x 5-7 days
	Cap. Rifampicin 450mg BD x 5-7 days

Red Flag signs

- * No response with treatment
- * Tachycardia out of proportion to fever
- * Altered sensorium
- * Oliguria/Anuria
- * Hypotension
- * Lab abnormalities like thrombocytopenia, elevated liver enzymes etc

Prevention

- * Protective clothing and use of insect repellants
- * Chemoprophylaxis: Cap. Doxycycline 100mg once weekly for 6 weeks after exposure
- * Clearing of bushes or shrubs
- * Avoid drying clothes over shrubs

TUBERCULOSIS

Case Definitions

- * **Presumptive Pulmonary Tuberculosis**

Refers to a person with any of the symptoms and signs suggestive of TB including cough > 2 weeks, fever > 2 weeks, significant weight loss, haemoptysis or any abnormality in chest radiograph (In addition, contacts of microbiologically confirmed TB patients, PLHIV, diabetics, malnourished, cancer patients, patients on immuno-suppressants or steroids should be regularly screened for signs and symptoms of TB).

- * **Presumptive Extra pulmonary Tuberculosis**

Refers to the presence of organ specific symptoms and signs like swelling of lymph node, pain and swelling in the joints, neck stiffness, disorientation etc and/or constitutional symptoms like significant weight loss, persistent fever for ≥ 2 weeks, night sweats.

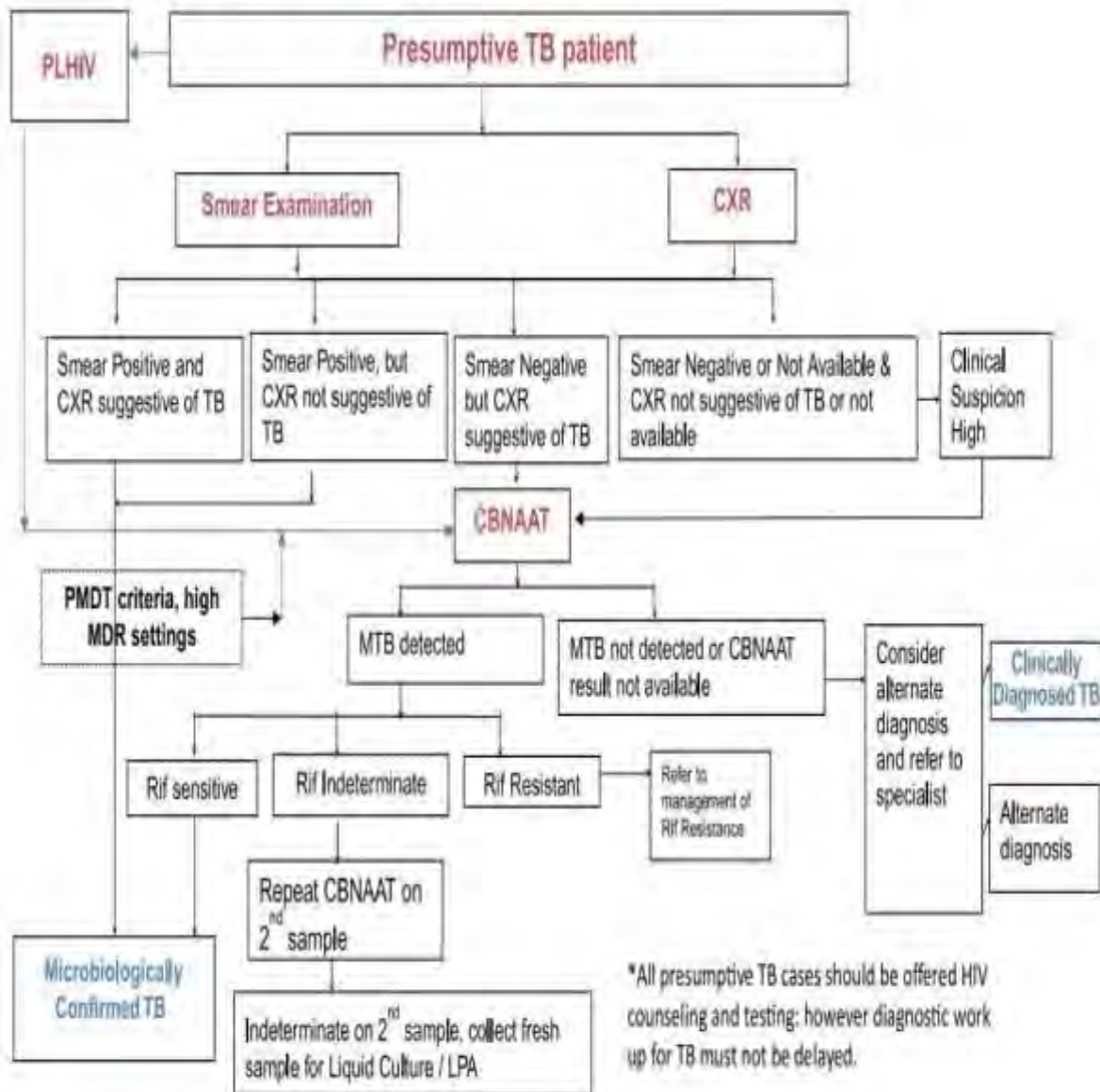
- * **Presumptive Paediatric Tuberculosis**

Refers to children with persistent fever and/or cough for more than 2 weeks, loss of weight/no weight gain and/or history of contact with infectious TB cases (within last 2 years)

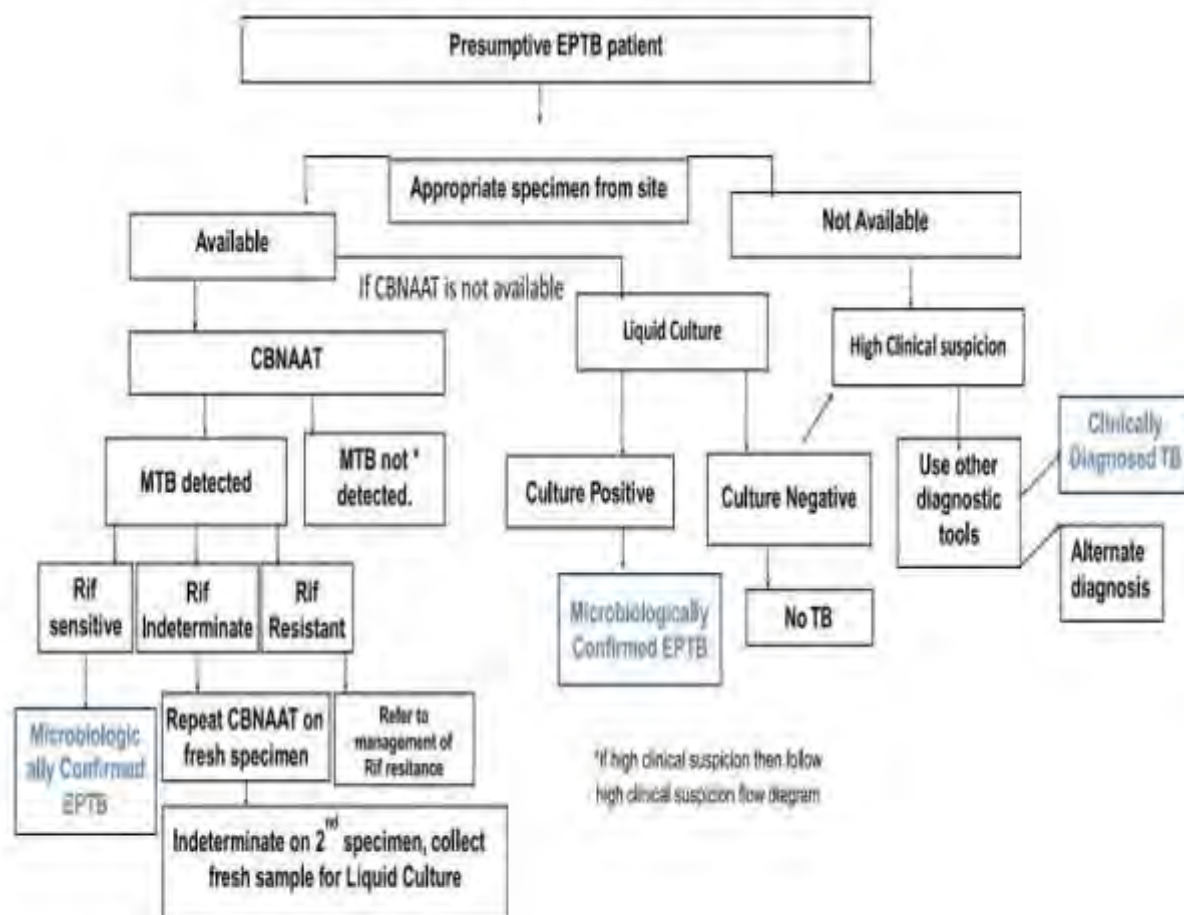
- * **Presumptive Drug Resistant Tuberculosis**

Refers to those patients who have failed treatment with first line drugs, Paediatric TB non responders, TB patients who are contacts of DR-TB (or Rifampicin resistance), TB patients who are found positive on any follow up sputum smear examination during treatment with first line drugs, previously treated TB cases and patients with HIV co-infection

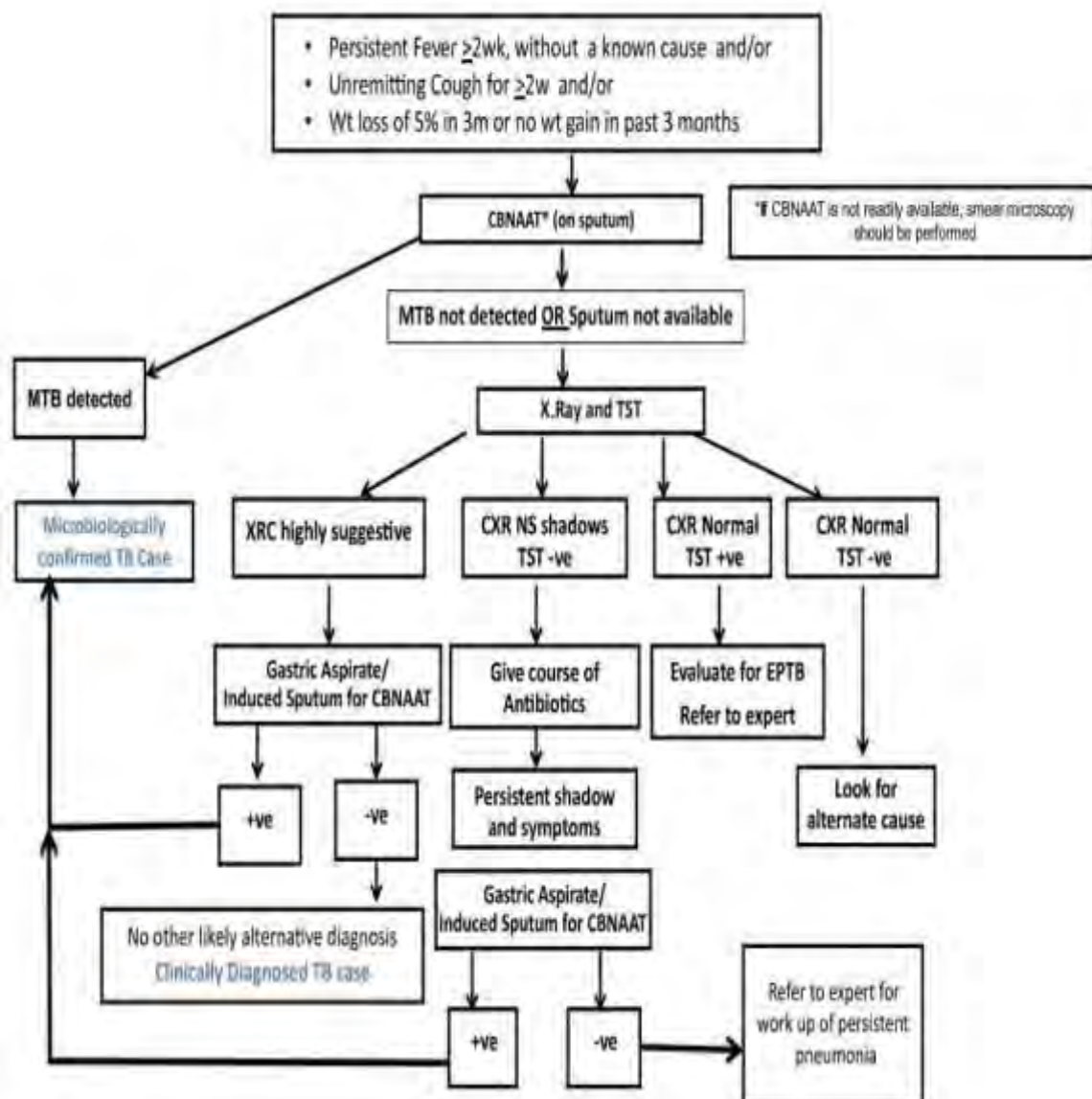
Diagnostic algorithm for pulmonary TB



Diagnostic Algorithm for Extra Pulmonary TB



Diagnostic algorithm for Pediatric Pulmonary TB



Treatment

Daily regimen is recommended now. Fixed drug combinations of first line anti-tuberculous drugs in appropriate weight bands are given

Type of TB case	Treatment regimen in IP	Treatment regimen CP
New	(2) HRZE	(4) HRZE
Previously treated	(2) HRZES + (1) HRZE	(5) HRE

Drug dosage

Drug Dosage in Adult patients

Weight category	Number of tablets		Inj. Streptomycin
	Intensive phase	Continuation phase	
	HRZE	HRE	
	75/150/400/275	75/150/275	
25-39 kg	2	2	0.5
40-54 kg	3	3	0.75
55-69 kg	4	4	1
≥ 70 kg	5	5	1

* Maximum dose of streptomycin in persons above 50yrs of age should be 0.75g

Drug Dosage in Pediatric patients

Weight category	Number of tablets (dispersible FDC)			Inj. Streptomycin
	Intensive phase		Continuation phase	
	HRZ	E	HRE	
	50/75/150	100	50/75/100	
4-7 kg	1	1	1	Mg
8-11 kg	2	2	2	100
12-15 kg	3	3	3	150
16-24 kg	4	4	4	200
25-29 kg	3 + 1 A	3	3 + 1 A	300
30-39 kg	2 + 2 A	2	2 + 2 A	400
				500

* A = adult FDC (HRZE = 75/150/400/275; HRE = 75/150/275)

* H- ISONIAZID, R- RIFAMPICIN, Z-PYRAZINAMIDE, S-STREPTOMYCIN

COMMUNITY ACQUIRED PNEUMONIA

Community Acquired Pneumonia

Diagnostic Criteria

Fever – 1 to 3 days duration
Cough with purulence
± Breathlessness
± Chest pain
± Blood tinged sputum

Clinical Features

Febrile, Ill looking, Rashes ±
Tachycardia, Tachypnoea
Crackles on auscultation ±
tubular bronchial breathing
± e/o effusion
*Chest X ray if available might
show e/o consolidation with
air bronchogram ± pleural
effusion.*

Differential Diagnosis

Viral Infection
Acute exacerbations of chronic
lung diseases- ILD, COPD,
Bronchiolitis Obliterans with
Organised Pneumonia (BOOP)

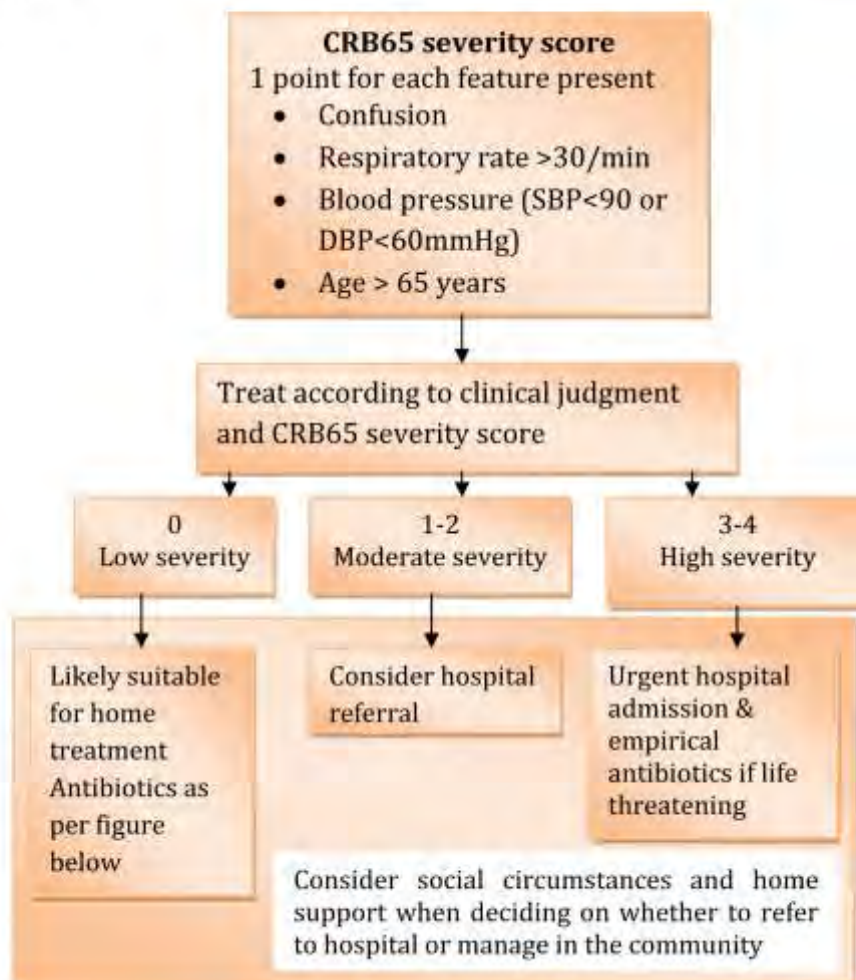
Investigations

Blood routine
Sputum AFB
Chest X ray, if available

Assessing severity by CRB 65

If CRB 65 scores ≥ 1
OR
SpO₂ < 92% refer to higher

Treatment



If no serious co-morbidity and severity criteria low then treat with:

- Rest
- Hydration
- Antibiotics:
Cap. Amoxicillin 500 mg TID for 5-7 days
(Macrolides if penicillin sensitive- Tab. Azithromycin 500 OD for 5-7 days)
If associated co-morbidities: Amoxicillin + Clavulanic Acid **PLUS** Macrolides

**Reassess after 48 hours**

If improving continue same management



Clinically no improvement ± worsening blood counts or radiological worsening

Note: Look for haematuria, jaundice, petechiae which are suggestive of haemorrhagic fevers

Complications may arise like pleural effusion, Lung abscess, ARDS

Refer to higher centre

Box 2.8.1: Vaccines recommended for patients with:

- Age > 65 years
- c/c respiratory, cardiovascular or liver disease
- Diabetes
- Patients on immuno-suppressants

Vaccines recommended:

- Pneumococcal vaccination-
Patients ≥ 65 years (single dose 0.5 ml IM)
Patients aged < 65 years with significant co-morbidities (2 doses-boosters after 5 years)
- Influenza vaccine- Yearly (0.5 ml)

MANAGEMENT OF RTI/STI

Management of RTI/STI

SYMPTOM	DESCRIPTION	DIAGNOSIS	TREATMENT	ADVICE	Follow up
Urethral Discharge	Urethral discharge (pus or mucopurulent) Dysuria, Malaise, Fever etc Increased frequency of micturition	Gonorrhoea Chlamydia Trichomoniasis	Tab. Cefixime 400mg stat PLUS Tab. Azithromycin 1g stat (or) Cap. Doxycycline 100mg BD x 7 days	Treat all recent partners	7days
Cervical Discharge	Cervical discharge Dysuria, Low backache Genital complaints by sexual partners	Gonorrhoea Chlamydia Trichomoniasis Herpes simplex	Tab. Azithromycin 1g stat PLUS Tab. Cefixime 400mg stat	Treat partners when symptomatic	7days
Painful Scrotal Swelling	Swelling & pain in the scrotal region Dysuria, Malaise, fever etc History of urethral discharge	Gonorrhoea Chlamydia	Tab. Azithromycin 1g stat PLUS Tab. Cefixime 400mg stat	Treat all recent partners	7days
Vaginal Discharge	Vaginal discharge Dysuria, Low Backache Increased frequency of micturition Genital complaints by sexual partners	Trichomoniasis Candidiasis Bacterial vaginosis	Tab. Secnidazole 2g stat (or) Tab. Metronidazole 400mg BD x 7 days PLUS Cap. Fluconazole 150mg stat	Treat partners when symptomatic	7days
Genital ulcer – Non Herpetic	Genital ulcer Burning sensation in the genital area Enlarged lymph nodes	Syphilis Chancroid Granuloma inguinale LGV	Inj. Benzathine penicillin 2.4MU PLUS Tab. Azithromycin 1g single dose (or) Tab. Erythromycin 500mg QID x 7 days If allergic to penicillin Cap. Doxycycline 100mg BD x 15 days (or) Tab. Azithromycin 2g stat single dose	Treat all sexual partners for the past 3 months	7days

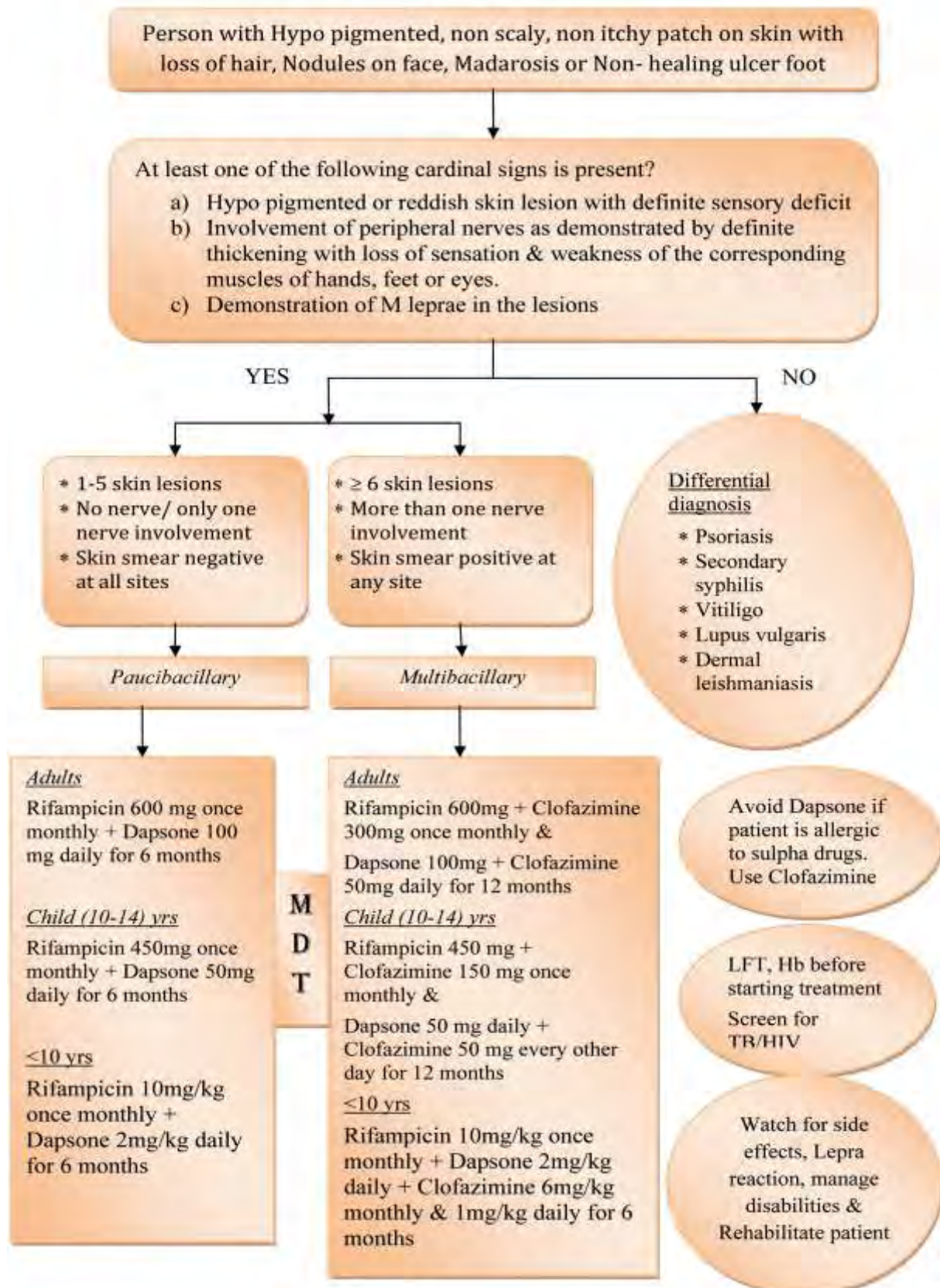
Genital Ulcer – Herpetic	Genital ulcer or vesicles, single or multiple, painful and recurrent Burning sensation in the genital area	Genital Herpes	Tab. Acyclovir 400mg TDS x 7 days	No partner treatment	7days
Lower Abdominal Pain	Lower abdominal pain Vaginal discharge Menstrual irregularities Dysmenorrhoea, dyspareunia, tenesmus Low backache, Fever, Dysuria Cervical motion tenderness	Gonorrhoea Chlamydia Mycoplasma Gardnerella Anaerobic bacteria	Tab. Cefixime 400mg stat PLUS Tab. Metronidazole 400mg BD x 14 days PLUS Tab. Doxycycline 100mg BD x 14 days	Treat male partners as for urethral discharge	3days 7days 14days
Inguinal Bubo	Painful swelling in inguinal region h/o genital ulcer/discharge Fever, Malaise etc	LGV Chancroid	Tab. Doxycycline 100mg BD x 21 days PLUS Tab. Azithromycin 1g stat (or) Tab. Ciprofloxacin 500mg BD x 3 days	Treat all sexual partners for past 3 weeks	7days 14days 21days

During Follow up

- Investigate those who did not respond to treatment
- Refer all patients to ICTC for HIV screening
- Consider immunization against Hepatitis –B
- Educate client and partners regarding STI/RTI, safe sex practices and importance of taking complete treatment
- Treat partner/s
- Advise sexual abstinence or condom use during course of treatment
- Provide condoms, educate about correct and consistent use

MANAGEMENT OF HANSEN'S DISEASE

Management of Hansen's Disease



EXAMINATION

Skin

- Number of lesions indicate severity of the disease
- Hypopigmented or erythematous lesions. Never de-pigmented ; erythematous lesions are seen in reaction states
- Loss of sensation (Elicit with the tip of a ball point pen applying light pressure; don't stroke; Don't use pin, cotton wool or feather. Proceed from normal skin to patch)
- Tenderness on tapping seen in reaction states
- Thick, shiny and erythematous skin (infiltration) & Nodules in skin are found in severe forms of leprosy

Nerve examination

- Look for definite thickening with loss of sensation with/without weakness of corresponding muscles of hands, feet or eyes
- Ulnar, Lateral popliteal and posterior tibial nerves most commonly affected
- Facial, Trigeminal, Median and Radial nerves may also be affected

Grading of Disabilities

Grading	Hands & Feet	Eyes
Grade 0	No anaesthesia over palm/sole No visible deformity or damage	No eye problems No evidence of visual loss
Grade 1	Anaesthesia present over palm/sole No visible deformity or damage	Eye problems present but vision better than 6/60, can count fingers at 6m
Grade 2	Visible deformity or damage present	Severe visual impairment ($> 6/60$), inability to count fingers at 6m Lag opthalmos, iridocyclitis & corneal opacity present

Before starting Treatment

- * If patient is jaundiced, wait for jaundice to subside
- * If patient is anaemic, start treatment for anaemia simultaneously
- * Screen for tuberculosis; if patient is to be on Rifampicin, give Rifampicin at the dose required for treatment of tuberculosis
- * If patient is allergic to Sulpha use Clofazimine instead of Dapsone

LEPRA REACTIONS

Persons with following features are more likely to develop reactions

- * Multiple lesions
- * Lesions close to peripheral nerves
- * Lesions on the face
- * Persons with nerve thickening

Reaction precipitating factors

- * Infections and infestations
- * Vaccination
- * Hormonal changes : puberty, pregnancy and childbirth
- * Psychological stress

Lepra Reactions

Type I (Reversal reaction)	Type II (Erythema Nodosum Leprosum)
Occurs in any patient with unstable Cell mediated immunity	Occurs in patients with MB leprosy having a heavy load of bacilli
Cell mediated delayed hypersensitivity	Antigen antibody (Immune complex) reaction
Existing skin lesions become inflamed. New lesions may appear. Subsiding lesions show scales on surface	Red, painful & tender subcutaneous nodules (ENL) appear commonly on face arms and legs
Acute neuritis/ Silent neuropathy	Nerves may get affected but not as common as type I
Swelling of hands/feet	Swelling of hands and feet – Non pitting
Ocular tissue not affected but patient may develop corneal anaesthesia & lag ophthalmos due to involvement of trigeminal and facial Nerves	Ocular tissue is affected leading to Iritis or Iridocyclitis and impairment of vision
Drug of choice is Prednisolone 40mg daily for 2 weeks	Other organs like joints, testes, kidney affected
Reduce dose fortnightly and gradually stop	Mild cases : manage with analgesics only Severe cases/Neuritis : Prednisolone

Refer if:

- * Failure to respond after 2 weeks of steroid treatment
- * Eye involvement
- * Other systemic involvement
- * Recurrent lepra reactions

Non communicable diseases

PREVENTION OF NON-COMMUNICABLE DISEASES

Screening

- Screen all individuals above 18 years for hypertension and above 30 years for diabetes
- Assess habits – Diet, Exercise and addictions
- Check Height, weight and calculate BMI & Waist-hip ratio

Hypertension & Diabetes

- Check blood pressure and RBS
- If normal, follow up every year
- If abnormal values are found patient should be examined by the primary care physician and managed accordingly

Cancer

- Ask for symptoms suggestive of malignancy
- Look for any premalignant conditions
- All persons should be screened once in five years. If any lesions are found on routine screening such persons should be referred for detailed evaluation (Refer chapter on Cancer)

COPD

- Ask for history of exposure to cigarette smoke, domestic biomass fuel smoke, occupational dust/smoke exposure
- Ask for symptoms like dyspnoea, chronic cough, sputum production etc

Risk Factors

Diseases	Modifiable	Non modifiable
Hypertension	<ul style="list-style-type: none"> • Obesity/ Lack of physical activity • Stress • Excess sodium in diet • Smoking/ Alcoholism • Abnormal lipid profile 	<ul style="list-style-type: none"> • Males > 45 years • Females > 65 years • Positive family history
Diabetes Mellitus	<ul style="list-style-type: none"> • Obesity/Lack of physical activity • Hypertension • Low HDL and High Triglyceride 	<ul style="list-style-type: none"> • Family history of diabetes • Gestational diabetes/ giving birth to child >4 kgs • Age >45 years
CAD/Stroke	<ul style="list-style-type: none"> • Smoking • Diabetes/Hypertension • High LDL levels • Homocystinemia • Obesity/Lack of physical activity • Hypercoagulable states • Stress 	<ul style="list-style-type: none"> • Males >55 years • Females >65 years • Positive family history

COPD	<ul style="list-style-type: none"> • Smoking • Exposure to tobacco smoke/biomass fuel smoke • Occupational exposure 	<ul style="list-style-type: none"> • Age • Previous h/o Tuberculosis or Asthma
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Diet management

	What to eat	What not to eat
Hypertension	<ul style="list-style-type: none"> • Fiber rich food • Leafy vegetables and Whole grain foods • More fruits and low fat dairy products 	<ul style="list-style-type: none"> • Extra salt (restrict to <6g/day) • Salty foods like pickles, pappad, dried fish • Fatty and fried foods • Red meat • Sugary drinks
Diabetes Mellitus	<ul style="list-style-type: none"> • Eat smaller meals spaced throughout the day(4-5 small meals) • Fiber rich foods, leafy vegetables • Cereals, Mixed coarse grains, whole pulses, salads and Soya Beans • Whole fruits are recommended in moderation (1-2 servings) 	<ul style="list-style-type: none"> • Avoid Fasting and skipping meals • Animal fat • Roots and Tubers used sparingly • Sugar, glucose, Jams, Jaggery, Honey, Sweets, Beverages • Very sweet fruits & Fruit juices • Fatty and fried foods, use oil sparingly • Avoid Binge eating

Exercise

- Brisk walking for 20 -30 minutes; 5-6 days a week with 5 minutes warm up and 5 minutes cool down
- Cycling, swimming, jogging or sports
- Yoga
- Any physical activity that the person enjoys
- Maintain correct body weight and normal Body Mass Index

Addictions

- Avoid smoking, alcoholism, pan chewing and other substance abuse

DIABETES MELLITUS

Symptoms

- * Frequent urination, Disproportionate thirst, Intense hunger, Unusual weight loss
- * Fatigue, Irritability
- * Blurred vision
- * Cuts and bruises don't heal properly or quickly
- * Recurrent skin infections
- * Itchy skin
- * Frequent gum disease/infection, red and swollen gums
- * Sexual dysfunction
- * Numbness or tingling, especially in the hands and feet
- * Vulvo-vaginitis, Balanoposthitis
- * Can also be Asymptomatic

Criteria for Diagnosis of Diabetes Mellitus

Symptoms of DM plus Random Blood glucose(RBS) concentration ≥ 200 mg/dl
 OR
 Fasting Blood Glucose(FBS) ≥ 126 mg/dl
 OR
 Two hour Post Prandial blood Glucose (PPBS) ≥ 200 mg/dL

	Normal	Pre Diabetic	Diabetic	Description
RBS	79-140	140-199	≥ 200	Sample will be taken at a random time regardless of food taken
FBS	≤ 100	100-125	≥ 126	Sample will be taken after an overnight fasting
2 hr PPBS	≤ 140	140-199	≥ 200	For a 2-hour postprandial test, a meal is eaten exactly 2 hours before the blood sample is taken
HbA1c	≤ 5.7	5.7-6.4	≥ 6.5	This is measured primarily to identify the three-month average plasma glucose concentration

Monitoring and Follow Up In Diabetes

- * Clinical Examination need to be done during every visit- minimum once in 3 months
- * Optimizing weight, blood pressure, lipid profile
- * FBS & 2hr PPBS
- * HbA1c every 3-6 months
- * Screening for long term complications like retinopathy, nephropathy, PVD
- * Encourage foot care

What to do during Annual checkup?

- * Lipid profile
- * Ophthalmology checkup/ Fundus examination
- * Blood Urea, S. Creatinine
- * Urine- Protein/Albumin, Micro-albumin
- * ECG
- * Thyroid Function tests
- * Ultrasound Abdomen

Management

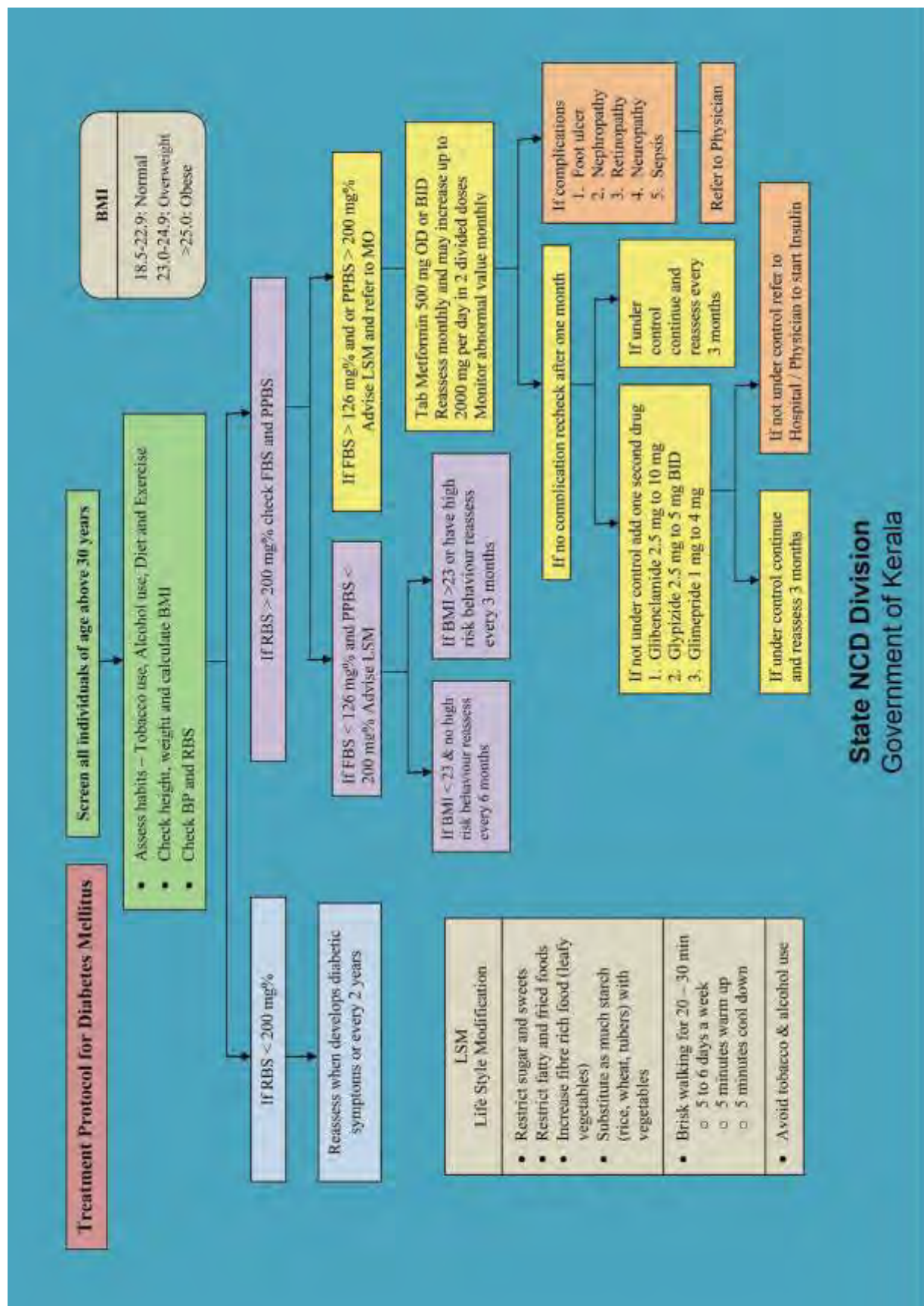
1. Diabetes Patient Education
2. Diet: Restrict sugar and sweets, restrict fatty and fried foods, increase fibre rich foods and leafy vegetables, substitute as much starch(rice, wheat, tubers) with vegetables
3. Exercise: Brisk walking for 20-30 minutes, 5 to 6 days a week with 5 minutes each for warm up and cool down
4. Avoid tobacco and alcohol use
5. Medicine (Oral Drugs, Insulin)
6. Prevention of complications

Complications

- * Neuropathy
- * Retinopathy
- * Diabetic foot
- * Nephropathy
- * Infections
- * Cardiovascular disease
- * Impotence, sexual dysfunction

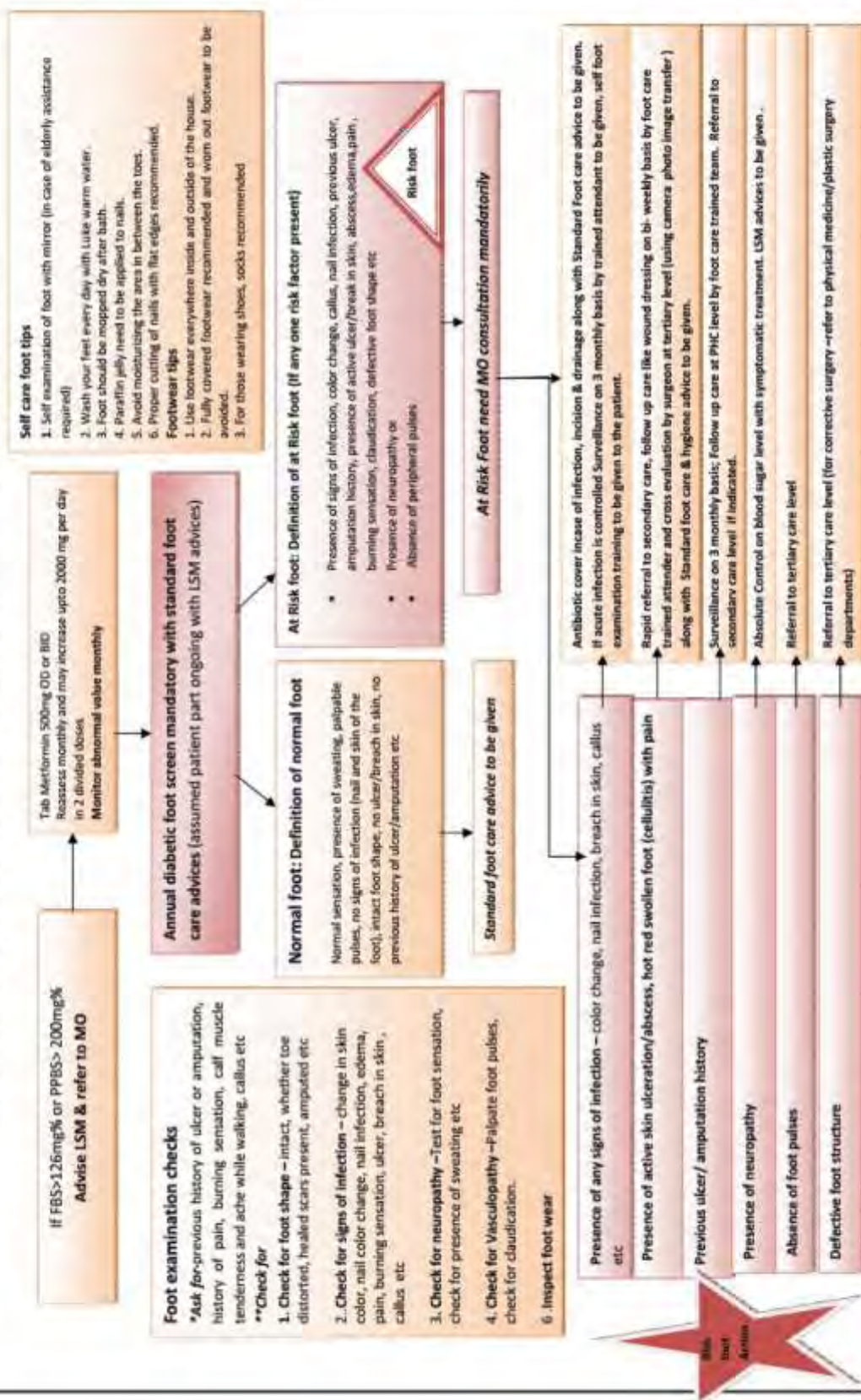
Indications for Referral

- Recurrent Hypoglycemic episodes
- Failure to achieve glycemic targets even with maximum doses of OHA
- Signs of nephropathy – historically: fluid retention, frothy urine
 - * Investigations: worsening creatinine, microalbuminuria, anaemia
 - * Refractory hypertension
 - * Associated retinopathy on fundoscopy
- Deterioration in Vision
- Micro / Macro vascular complications like Cardiovascular disease, Cerebrovascular disease, chronic kidney disease, peripheral vascular disease, peripheral neuropathy
- Diabetic foot – Blebs, ulcer, gangrene not responding to one course of oral antibiotics and dressing.



DIABETIC FOOT CARE PATHWAY –UHC PRIMARY CARE PROJECT KERALA

Prepared by Research wing SHSRC, Kerala under technical guidance of Dr. R.C Sreekumar (MCH, Alappuzha), expert panel and UEL



HYPERTENSION

Hypertension is defined as persistently elevated blood pressure; Systolic blood pressure above 140mm Hg and Diastolic blood pressure above 90mm Hg when recorded on 2 separate occasions.

Stages of Hypertension

Stage	Systolic BP	Diastolic BP
Normal	<120	<80
Prehypertension	120 -139	80 - 89
Stage I	140 - 159	90 - 99
Stage II	≥ 160	≥ 100

Symptoms

- May be asymptomatic
- Headache
- Light headedness, Giddiness & Vertigo
- Vomiting
- Palpitation
- Breathlessness

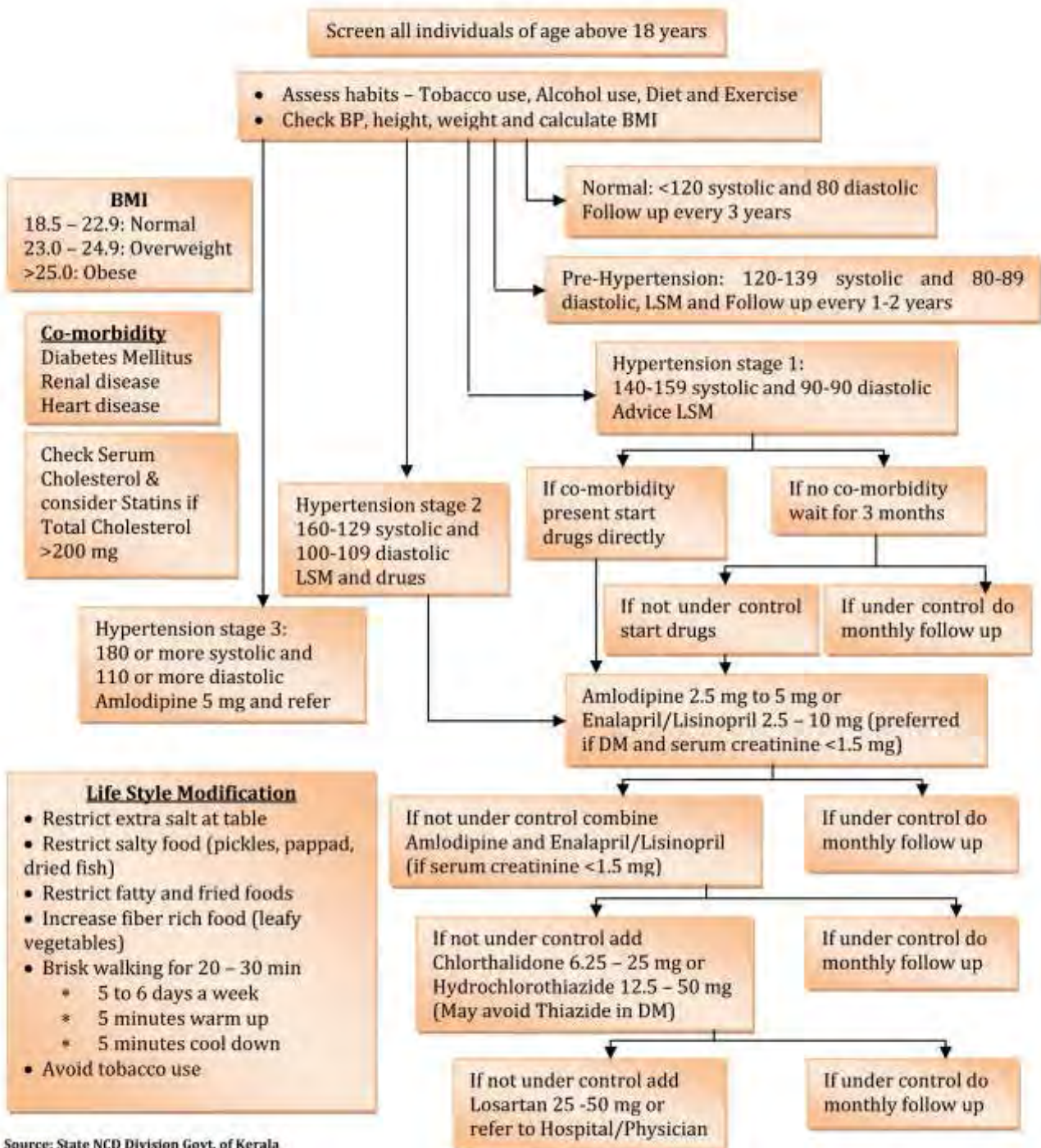
Causes

- Primary or Essential
- Secondary hypertension
 - * Renal : Polycystic kidney, Chronic glomerulonephritis
 - * Vascular : Coarctation of aorta, Renal artery Stenosis
 - * Endocrine : Hyperaldosteronism, Hyperparathyroidism

Investigations

- FBS, PPBS
- Fasting lipid profile
- Blood routine examination
- Urine routine examination
- Renal function test
- Serum Electrolytes
- Electrocardiogram

Algorithm for Management of Hypertension



Source: State NCD Division Govt. of Kerala

Management

Start with the lowest dose of a drug and titrate the dose according to the response

Drug Class	Agents of Choice	Comments
Calcium Channel blockers	Amlodipine 5-10mg Nifedipine ER 30-90mg	Cause oedema Dihydropyridines may be safely combined with β -blocker Non-Dihydropyridines reduce heart rate and proteinuria
ACEI/ARB	ACEI: Enalapril 2.5 -20mg Ramipril 2.5-10mg ARB: Losartan 25-100mg Telmisartan 20-80mg	<u>Side effects</u> Cough (ACEI only) Angioedema (more with ACEI) Hyperkalemia Losartan lowers uric acid levels
Beta-Blockers	Atenolol 25 – 100mg OD/BD Metoprolol 25-100mg OD/BD Propranolol 10-120mg OD/BD	Not first line agents – reserve for post-MI/CHF Cause fatigue and decreased heart rate Adversely affect glucose; mask hypoglycemic awareness
Centrally-acting Agents	Clonidine 0.1-0.2mg twice daily Methyldopa 250-500mg twice daily	Clonidine available in weekly patch formulation for resistant hypertension
Diuretics	Hydrochlorothiazide - 12.5-50mg Frusemide 20-80mg BD	Monitor for hypokalemia Most Side effects are metabolic in nature Most effective when combined with ACEI Loop diuretics may be needed when GFR <40mL/min

Indications for Referral

- Blood pressure above 180/120 mm Hg
- Persistent headache and vomiting
- Focal neurological deficits
- Altered sensorium
- Orthopnoea
- Decreased urine output
- Associated co-morbid conditions like heart disease, renal disease etc

CORONARY ARTERY DISEASE

Case Definition

Coronary artery disease (CAD) is characterized by atherosclerosis in the epicardial coronary arteries. Atherosclerotic plaques, the hallmark of atherosclerosis, progressively narrow the coronary artery lumen and impair the antegrade myocardial blood flow. The reduction in coronary artery flow may be symptomatic or asymptomatic, occur with exertion or at rest, and culminate in a myocardial infarction, depending on the severity of obstruction and the rapidity of development.

Risk Factors

Non Modifiable	Modifiable	
	Major	Minor
Male gender Advanced age Males > 55 Females > 65 years of age Positive family history	Smoking Diabetes mellitus Hypertension High LDL levels	Homocystinemia Obesity Lack of physical activity Hypercoagulable states Stress Dietary deficiency of polyunsaturated fatty acids

Symptoms

- The most common symptom of CAD is angina pectoris. Angina is often referred to as chest pain. It is also described as chest discomfort, heaviness, tightness, pressure, aching, burning, numbness, fullness or squeezing. It can be mistaken for indigestion or heartburn. Angina is usually felt in the chest but may also be felt in the left shoulder/ bilateral shoulder joints, arms, neck, back or even the jaw
- Difficulty breathing or shortness of breath
- Sweating or "cold sweat"
- Fullness, indigestion or choking feeling
- Nausea or vomiting
- Light headedness, dizziness, extreme weakness or anxiety
- Rapid or irregular heartbeats

Clinical Findings

- Sweating, Pallor, Tachycardia and systemic hypertension due to sympathetic activation
- Bradycardia and Vomiting due to high vagal tone
- Signs of impaired myocardial function : Hypotension, Oliguria, Cold Peripheries, Narrow Pulse Pressure, Feeble First Heart Sound, Third Heart Sound, Elevated JVP, Basal Fine Pulmonary crepitations
- Signs of extensive tissue damage e.g.: Fever

Red Flag Signs

- Ventricular Fibrillation, Ventricular ectopics, Ventricular Tachycardia
- Atrial Fibrillation, Supraventricular Tachycardia
- Pericarditis
- AV blocks
- Signs of Left Heart Failure : Pulmonary oedema, Fine Basal creps, dyspnoea, tachycardia, uncontrolled Hypertension
- Signs of Right Heart Failure : Elevated JVP, tender Hepatomegaly, dependent oedema over the legs and sacrum
- Cardiovascular Shock: Tachycardia, difficulty in breathing, Narrow pulse pressure, Oliguria, Cold clammy extremities and elevated JVP
- Ongoing Unstable Angina

Differential Diagnosis

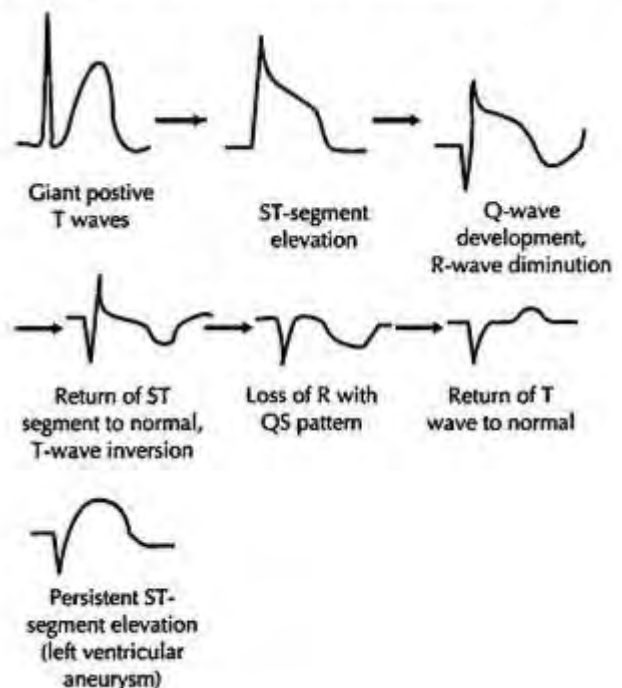
- Myalgia , Costochondritis
- GERD
- Pleuritis
- Pericarditis
- Pancreatitis
- Cholecystitis
- Neurological, Psychological
- Mitral Valve Prolapse
- Pulmonary embolism
- Herpes Zoster

Investigations

Electrocardiogram

- The earliest changes are tall, positive hyper acute T waves in the ischemic vascular territory
- This is followed by elevation of the ST Segments
- Over hours to days T wave inversion frequently develops
- Finally, diminished amplitude R wave amplitude or Q waves occur

ECG Changes in Acute Myocardial Infarction



Criteria

- **ST elevation:** New ST elevation at the J-point in two contiguous leads with the cut-off points: ≥ 0.2 mV in men or ≥ 0.15 mV in women in leads V₂-V₃ and/or ≥ 0.1 mV in other leads +/- reciprocal changes
- **ST depression and T-wave changes:** New horizontal or down sloping ST depression >0.05 mV in two contiguous leads; and/or T inversion ≥ 0.1 mV in two contiguous leads with prominent R-wave or R/S ratio ≥ 1

Localization of Coronary Vessel Involved From Electrocardiogram

Location of MI	Leads Affected	Artery Involved	ECG Changes
Anterior Wall	V ₂ - V ₄	Diagonal branch of LAD	Poor R wave progression ST elevation T wave Inversion
Septal Wall	V ₁ & V ₂	Septal Branch of LAD	R wave disappears ST segment Elevation T wave Inversion
Lateral Wall	I, aVL, V ₅ & V ₆	Circumflex branch of LCA	ST segment Elevation T wave Inversion
Inferior Wall	II, III & aVF	Post. descending branch of RCA	ST segment Elevation
Posterior Wall	V ₁ - V ₄	Circumflex branch of LCA Post. Descending branch of RCA	Tall R waves ST segment Depression Upright T waves

Management

- Give Loading Dose
 - * Aspirin 325mg + Clopidogrel 300mg + Atorvastatin 80mg for Plaque stabilization
 - * If patient is already on Statins give only 40mg Atorvastatin
 - * Loading dose is not given if the patient is above 75 years of age or has a previous history of serious haemorrhagic complications
- Give Oxygen at 2-8 litres/minute
- Give Sublingual Nitrates if Diastolic BP is above 60mm Hg
- If there is Hypotension (Systolic BP <100 mm Hg or Diastolic BP <60 mm Hg) start 500ml Normal saline as IV infusion at a rate of 100-150ml/hour
- Propped up Position; If hypotension is present then Foot end Elevation
- After initiating these measures all patients should be referred to a tertiary care Institution at the earliest.

STROKE

Stroke is defined as abrupt onset of focal neurological deficit of vascular origin. Ischaemic stroke (occlusive stroke) accounts for 85% of total stroke cases and haemorrhagic stroke comes to 15%. The medications used for ischaemic stroke are contraindicated in hemorrhagic stroke and may increase the mortality and morbidity. Hence it is important to diagnose with certainty the type of stroke. Haemorrhagic stroke can be intracerebral bleed or subarachnoid haemorrhage.

Symptoms

Ischaemic Stroke

History of sudden onset of persistent focal neurological symptoms like Facial deviation, Arm weakness/hemiparesis or difficulty in Speaking (FAST). The last letter in the mnemonic FAST indicates that 'time is brain' indicating the urgency of the situation

Transient Ischaemic Attack

Same symptoms as Ischaemic stroke for a short period with complete recovery

Haemorrhagic Stroke

Presence of associated sudden onset altered consciousness, headache and or vomiting. Presence of hemiplegia/hemiparesis at onset will help to differentiate intracerebral haemorrhage from subarachnoid haemorrhage

It is important to note the time of onset of symptoms, to know if the patient with Ischaemic Stroke has arrived within the '*golden hour*' (window period - within 4.5 hours) for thrombolysis. The time of stroke onset is defined as the time the patient's symptoms began or the time the patient was last seen as normal. Patients who awaken with stroke have the onset defined as when they went to bed.

Risk Factors

- Hypertension
- Diabetes Mellitus
- Smoking
- Dyslipidemia
- Excess Alcohol use

History of recent trauma, current medications like antiplatelets, anticoagulants, antihypertensives, and drug compliance should also be noted.

Differential Diagnosis

- | | |
|----------------------------|------------------------------|
| • Hypoglycaemia | • Bell's Palsy |
| • Metabolic Encephalopathy | • Demyelination |
| • Post Ictal Paresis | • Aura of Migraine |
| • Subdural Haematoma | • Pressure Palsies |
| • Intracranial Tumour | • Cerebral Venous Thrombosis |
| • Brain Abscess | • Wernicke's Encephalopathy |

Examination and Investigations

- * Blood pressure
- * RBS
- * Pulse oximetry

Treatment

- * Airway, Breathing and Circulation should be stabilised if compromised
- * Hypoglycaemia should be corrected
- * If dehydration is suspected IV Normal Saline may be used. Fluids like 5% Dextrose should be avoided.

Referral criteria

All acute stroke patients should be referred to a tertiary care immediately.

Follow Up

- * Monthly follow up of patients can be done at the PHC to monitor BP, Blood sugar, and provide medications in consultation with secondary and tertiary levels.
- * Aspirin 150 mg daily life long should be given for Ischaemic Stroke. Double anti-platelets are in general not preferred due to the higher adverse reactions
- * Statins like Atorvastatin 10-80mg at bedtime may be continued depending on the amount of atherosclerosis suspected in the pathogenesis of stroke.
- * Monitoring of oral anti coagulants can be done only at a higher medical facility.
- * Physiotherapy should be organized at the PHC level. Bedridden patients should be linked to palliative care services to provide Physiotherapy, care of bed sore, Nasogastric Tube, and Indwelling Urinary Catheter.

CANCERS

Warning Signs of Cancer



- * The five most frequent cancers (ranking defined by total number of cases) in India in Men and Women are Breast, Cervical, Oral cavity, Lung and Colorectal carcinomas
- * Cancer is the second most common cause of death in India (after cardiovascular disease)
- * Breast cancer is the most common cancer in women in India and accounts for about a quarter of all cancers in women in Indian cities

Most Common Cancers in India

Rank	Men	Women
1	Lip, Oral cavity	Breast
2	Lung	Cervix
3	Stomach	Colorectum
4	Colorectum	Ovary
5	Pharynx	Lip, Oral cavity

Cancer Screening

Type of Cancer	Age group	Method of Screening	Frequency of Screening	If positive
Oral	30-65 years	Oral Visual examination	Once in 5 years	Refer to Surgeon, Dentist or ENT surgeon for confirmation & biopsy
Cervical	30-65 years	Visual inspection with Acetic acid	Once in 5 years	Refer to Gynaecologist
Breast	30-65 years	Clinical Breast examination	Once in 5 years	Refer to Surgeon

1. ORAL CANCER**Risk factors**

- * Tobacco & Alcohol consumption
- * Sharp teeth or ill fitting dentures
- * HPV infection
- * Immunocompromised states
- * UV rays

Common signs & symptoms of Oral Cancers

Any of the following signs/symptoms lasting for more than 2 weeks requires evaluation/screening

- * A persistent sore in the mouth, face or neck which does not heal
- * Difficulty in opening the mouth
- * Development of white, red or mixed patches on tongue, gums or inner linings of mouth
- * A lump or hard mass in the neck
- * Chronic pain in mouth or tongue, jaw pain
- * Difficulty in chewing or swallowing
- * Swelling, thickening, lumps or bumps on lips, gums or oral cavity
- * Unexplained bleeding in mouth
- * Hoarseness or change in voice
- * Loose teeth and ill-fitting dentures
- * Unexplained weight loss

Examination

Visual inspection & palpation of the entire oral cavity & neck should be carried out under adequate light. Look for swellings, lumps, red/white patches or abnormal areas of skin/mucosa. Patients with suspicious lesions should be sent for detailed evaluation & biopsy/imaging.

Preventive measures

- * Avoid smoking & Alcoholism
- * Avoid pan chewing/ use of tobacco in betel quid
- * Eat plenty of fresh fruits & vegetables
- * Oral self examination for early detection of lesions

Common Premalignant Lesions in the Oral Cavity

Lesion	Signs/Symptoms	Differential Diagnosis	Treatment	Referral criteria
Leukoplakia	White/red patches that cannot be scraped off	Traumatic keratosis Fungal infections Lichen planus	Tobacco & Alcohol cessation Correction of Anaemia Oral self examination	Presence of granular areas, Induration, ulceration, proliferation or Infiltration
Erythroplakia	Red velvety patch that cannot be scraped off	Erosions caused by chemicals or drugs Pan chewer's encrustation	Tobacco & Alcohol cessation Oral Self examination	All cases to be referred for biopsy
Sub mucous fibrosis	Intolerance to spicy foods Trismus Pale atrophic mucosa Depapillation of tongue Fibrotic bands at circumoral or posterior part of buccal mucosa	Amyloidosis Generalised fibromatosis Oral lesions of scleroderma Oral lichen planus Anemia	Correction of anaemia Oral self examination Tobacco cessation Oral physiotherapy	Presence of growth, granular areas, thick white patches & Induration
Lichen Planus	Burning sensation ± Erosion ± White/red patches with white striations (Wickham's striae)	Lichenoid reactions Leukoplakia Candidiasis Pemphigus Squamous cell carcinoma	Treatment of cause like drugs/dental fillings Oral self examination	Presence of growth, granular areas or induration
Traumatic Ulcer	Non healing ulcer of more than 2 weeks duration with/without hyperkeratosis	Aphthous stomatitis Squamous cell carcinoma Herpangina Herpes simplex HFMD	Removal of irritating focus like sharp tooth, root stump or ill fitting dentures Antibiotics	Lesion persisting after 2 weeks

2. BREAST CANCER

Risk factors

Non-modifiable	Modifiable
Women > Men	Obesity
Age : mostly between 45 – 50 years	Alcohol consumption
Family h/o breast cancer	Hormone intake
Gene mutations : BRCA1 & BRCA2	Radiation exposure
Early menarche	
Late menopause	

- Nulliparous women have a higher risk for developing breast cancer than multiparous women
- Lack of or short duration of lactation is also a risk factor for development of breast cancer

Signs & Symptoms

- * Lump/Mass in the breast/axillae
- * Unexplained change in shape/size of breast
- * Unexplained swelling of the breast especially on one side only
- * Recent unevenness of the breasts
- * Dimpling anywhere on the breast
- * Sunken or inverted nipple
- * Redness or scaling of the skin of the breast, nipple or areola
- * Uneven areas or pores on the skin that resemble an orange peel
- * Clear or bloody discharge other than breast milk
- * Swelling of lymph nodes

Examination

Clinical breast examination should be done to detect any of the lesions suggestive of breast cancer. If any suspicious lesions are found, refer the patient to a surgeon for detailed evaluation & biopsy/Imaging.

Women should be educated to do proper Breast self examination

Prevention

- * Maintain correct body weight
- * Exercise regularly
- * Avoid smoking & alcoholism
- * Avoid unnecessary radiation exposure
- * Genetic testing in persons with family history of breast cancer

3. CERVICAL CANCER

Risk factors

- * Persistent infection of the cervix with HPV
- * Multiparity
- * Multiple sexual partners
- * Spouse with multiple sexual partners
- * Having sexual intercourse at young age
- * Smoking
- * HIV/AIDS, Immunosuppressive drugs

Signs & Symptoms

- * Abnormal vaginal bleeding : bleeding & spotting between periods, menorrhagia, post menopausal bleeding
- * Unusual or excessive vaginal discharge with foul smell
- * Post coital vaginal bleeding
- * Lower abdominal pain or pelvic pain
- * Dyspareunia

Differential diagnosis

- * HPV lesions
- * Cervicitis
- * Carcinoma Endometrium

Clinical Diagnosis

- * Per-vaginal & Per-speculum examination and Pap smear should be done.
- * If there is any evidence of infection during speculum examination, a course of antibiotics & antifungal may be given before taking Pap smear. Tab. Ciprofloxacin 500mg + Tab. Tinidazole 600mg BD for 5 days & Clotrimazole vaginal tablets x 6 days (if whitish curdy discharge is present) should be given before taking Pap smear
- * If any lesion is found on examination or the Pap smear result is positive patient should be sent for detailed evaluation & biopsy/Imaging.

Prevention

- * Adopt safe sex practices (avoid multiple sex partners)
- * Use of condoms to reduce the risk of HPV infection
- * Prompt treatment of reproductive tract infections
- * Pap smear screening for early diagnosis of premalignant lesions

CHRONIC OBSTRUCTIVE PULMONARY DISEASE

Chronic Obstructive Pulmonary Disease (COPD), a common preventable and treatable disease, is characterised by persistent respiratory symptoms and airflow limitation that is due to airway and/or alveolar abnormalities usually caused by significant exposure to noxious particles or gases.

Features of COPD	
Age of onset	After 40 years age
Pattern of symptoms	<ul style="list-style-type: none"> Persistent despite treatment Good and bad days but always daily symptoms and exertional dyspnoea Chronic cough & sputum preceded onset of dyspnoea, unrelated to triggers
Lung function between symptoms	Abnormal
Past or family history	<ul style="list-style-type: none"> Previous doctor diagnosis of COPD, chronic bronchitis or emphysema Heavy exposure to risk factors: tobacco smoke, passive smoking, biomass fuels
Time course	<ul style="list-style-type: none"> Symptoms slowly worsening over time (progressive course over years) Rapid-acting bronchodilator treatment provides only limited relief
Chest X-ray	Features of emphysema like - Hyperinflation, hyperlucency of lungs, rapid tapering of vascular markings, wide intercostal spaces, flattened diaphragm, increased retrosternal airspace and tubular heart in emphysema
Comorbidities	Diabetes, Hypertension, Dyslipidemias, CAD, GERD, Malnutrition, Osteoporosis, depression
Clinical Examination	<p>Emphysematous or Barrel shaped chest</p> <p>Evidence of Polycythemia, Pedal oedema, cor pulmonale</p> <p>Tachypnoea, Cyanosis and Bilateral rhonchi, basal crackles during exacerbations</p> <p>Note: If crackles present- look for e/o infection</p> <p>If localized absence or diminished breathsounds and Hyperresonant on percussion look for e/o pneumothorax or bullae</p> <p>If localized absence or diminished breathsounds and dull note on percussion - pleural effusion or pneumonia</p> <p>Confirm by Chest X-ray if available and refer to higher centre if pneumothorax is present</p>

Differential Diagnosis

- Asthma
- Congestive heart failure- e/o JVP, basal crackles, hepatomegaly, oedema
- Bronchiectasis – h/o recurrent infection and copious secretions + h/o haemoptysis, clubbing, coarse crackles
- Tuberculosis – All chronic respiratory symptomatics should be evaluated for TB
- Interstitial lung disease- Breathlessness on exertion, cough, history of exposure to definite precipitating factors, e/o clubbing and end inspiratory fine crackles(velcro).

Investigations:

- **Sputum for AFB**- Initial visit (h/o cough > 2 weeks). (As per current RNTCP algorithm) May be repeated on follow up in case of clinical suspicion especially during severe exacerbations and high risk patients like diabetics, patients on immunosuppressants.
- **Chest X-ray(if available)** – To exclude alternate diagnosis, relevant clinical findings / complications
- **Pulse oximetry** – To assess all patients with clinical signs suggestive of respiratory failure and right heart failure (need for oxygen therapy, referral in exacerbation)
- Blood –Hb, TC, DC, ESR, Platelet Count, Peripheral smea
- Blood Sugar, LFT and RFT
- **ECG** - to rule out CAD, RVH
- **Spirometry with post bronchodilator reversibility**

} During exacerbation/IP care

For definite diagnosis and staging of COPD – **Every patient should have a Spirometry.** Patient may be referred to higher centre for evaluation and staging if Spirometry is not available

After diagnosis and staging, start appropriate inhaled and/or oral bronchodilators.

MANAGEMENT OF COPD EXACERBATION

An exacerbation of COPD is defined as an acute worsening of respiratory symptoms that result in additional therapy.

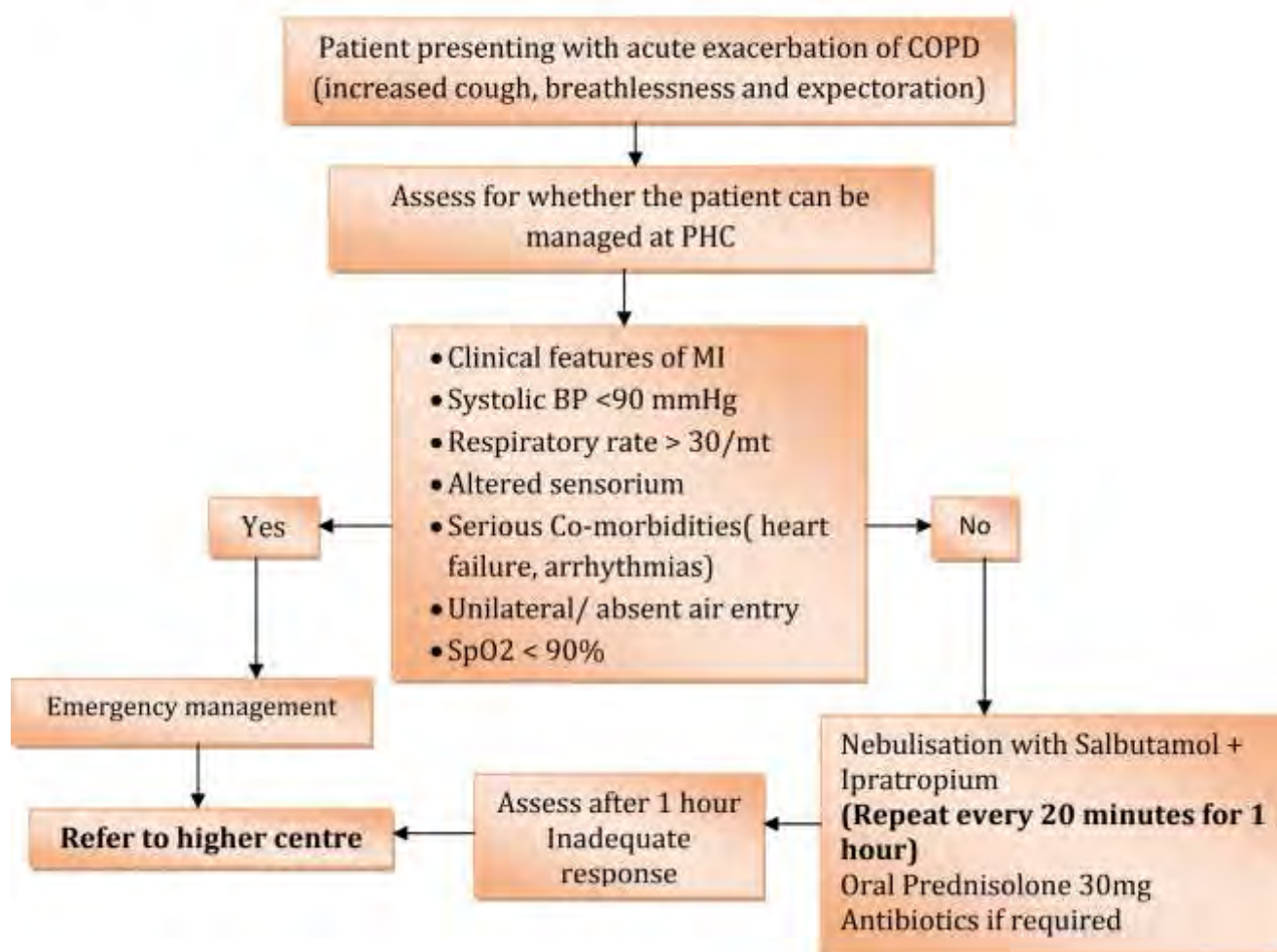
Assess if exacerbation is life threatening or not

Treatment of exacerbation

- Inhaled bronchodilators - Nebulised SABA plus SAMA
- Oral/ systemic Gluco-corticosteroids (Prednisolone 40mg OD or equivalent)for 5 days
- Oxygen : should be titrated to a target saturation above 90%
- Antibiotics should be given to patients with all the three cardinal symptoms:
 - * Increased dyspnoea,
 - * Increased sputum volume,
 - * Increased sputum purulence
 - * **OR**
 - * With sputum purulence and any one of the other two symptoms.

Amoxicillin 500 mg TID or Doxycycline 100 mg BD for 5-7 days (Macrolides if penicillin sensitive- Azithromycin 500mg OD for 3 days.) **Avoid Quinolones**

Management of COPD Exacerbation



Management of Stable COPD

The patients who are already diagnosed and severity graded by Spirometry and clinical assessment may be managed as per Kerala COPD Prevention and Control Programme guidelines (SWAAS) as given below

mMRC dyspnoea scale

Grade	Description of Breathlessness
Grade 0	Breathlessness only with strenuous exercise
Grade 1	Shortness of breath when hurrying on level ground or walking up a slight hill
Grade 2	Breathlessness when walking with people of the same age or having to stop for breath when walking at own pace on level ground
Grade 3	Stopping for breath after walking about 100 yards or after a few minutes on level ground
Grade 4	Too breathless to leave the house or breathlessness when dressing

Classification of airflow limitation severity - GOLD COPD stage

GOLD Stage	Severity of airflow limitation	Post bronchodilator FEV1 (percentage of predicted)
GOLD 1	Mild	More than or equal to 80% of predicted
GOLD 2	Moderate	Between 50% and 80% of predicted
GOLD 3	Severe	Between 30% and 50% of predicted
GOLD 4	Very severe	Less than 30% of predicted

Treatment of Stable COPD

mMRC grade	GOLD COPD stage	Treatment
0 - 1	1 or 2	As required bronchodilators (either inhaled Salbutamol or oral Salbutamol / Theophylline)
0 - 1	3 or 4	Inhaled Tiotropium
≥ 2	1 or 2	Inhaled Tiotropium
≥ 2	3 or 4	Inhaled Tiotropium and inhaled Budesonide - Formeterol

Preventive Care in COPD

The key to decreasing the burden of COPD is identification and reduction of risk factor exposure like Tobacco Smoke, Occupational Exposure, Indoor and Outdoor Air Pollution. Reduction of exposure to smoke from biomass fuel will help in reduction of prevalence of COPD. Efficient ventilation, non-polluting cooking stoves like solar stoves, electric cookers etc may be recommended.

- **Smoking Cessation Advice:** Smoking cessation has the greatest capacity to influence the natural history of COPD. With effective cessation strategies, long term quit success rates of up to 25% can be achieved.
- **Vaccinations**
 - * **Pneumococcal vaccination:** Prevents the incidence of community acquired pneumonia in patients with COPD aged <65 years with poor lung function values (FEV1 <40%) and in those with co-morbidities.
 - * All COPD patients ≥ 65 years (single dose 0.5ml IM)
 - * Patients <65 years with severe COPD and significant co-morbidities and exacerbations -2 doses (second dose after 5 years)

- * **Influenza vaccine**: Reduces serious illness and death in COPD patients. All patients are given vaccine 0.5ml IM yearly.
- **Nutritional Support**: Improves respiratory muscle strength and overall health related quality of life
- **Pulmonary rehabilitation**: patients should be advised regarding daily physical activity as it can help in strengthening of respiratory muscles, get more oxygen, and breathe with less effort and can improve psychological status. A structured pulmonary rehabilitation programme may be continued as per pulmonologist advice.
- Verification and reinforcement of proper inhaler techniques helps in better compliance and prevention of exacerbations

ASTHMA

Asthma is a common and potentially serious chronic disease that can be controlled but not cured. Asthma causes symptoms such as wheezing, shortness of breath, chest tightness and cough that vary over time in their occurrence, frequency and intensity. Symptoms may be triggered or worsened by factors such as viral infections, allergens, tobacco smoke, exercise and stress.

Features of Asthma	
Age of onset	Before 20 years age
Pattern of symptoms	<ul style="list-style-type: none"> • Variation over minutes, hours or days • Worse during the night or early morning • Triggered by exercise, emotions including laughter, dust or exposure to allergens
Lung function between symptoms	Normal
Past or family history	<ul style="list-style-type: none"> • Previous diagnosis of asthma • Family history of asthma, and other allergic conditions (allergic rhinitis or eczema)
Time course	<ul style="list-style-type: none"> • No worsening of symptoms over time. Variation in symptoms either seasonally or from year to year • May improve spontaneously or have an immediate response to bronchodilators or to ICS over weeks
Chest X ray	Usually normal
Comorbidities	Atopy, Rhino-sinusitis, GERD, Obesity
Clinical Examination	<ul style="list-style-type: none"> • Normal appearance of chest • Tachypnoea, Cyanosis and Bilateral rhonchi during exacerbations • Tachypnoea, Cyanosis and Silent chest during impending respiratory arrest
Differential Diagnosis	<ul style="list-style-type: none"> • COPD • Congestive heart failure- e/o JVP, basal crackles, hepatomegaly, oedema • Bronchiectasis – h/o recurrent infection and copious secretions + h/o haemoptysis, clubbing, coarse crackles • Tuberculosis – All chronic respiratory symptomatics should be evaluated for TB • Interstitial lung disease- Breathlessness on exertion, cough, history of exposure to definite precipitating factors, e/o clubbing and end inspiratory fine crackles(velcro)

Investigations:

- **Sputum for AFB:** Initial visit (h/o cough > 2 weeks), during severe exacerbations and with other suggestive symptoms especially in older patients, high risk patients like diabetics, patients on immunosuppressants. (As per current RNTCP algorithm)
- **Chest X Ray if available:** To exclude alternate diagnosis, s/o allergic bronchopulmonary aspergillosis, atypical findings / complications
- **Pulse oximetry:** To assess all patients with clinical signs suggestive of respiratory failure (need for oxygen therapy, referral in exacerbation)
- **Blood –Hb, TC, DC, ESR, Platelet Count, P. Smear, Absolute Eosinophil count**
- **Spirometry with post bronchodilator reversibility:** Every patient should have a Spirometry and a Pulmonology consultation as soon as possible.

During exacerbation/IP care

Treatment of Asthma

Avoid exposure to trigger factors like inhaled aeroallergens, indoor allergens like dust and mites, avoid furry pets, foods causing allergy, aspirin and NSAIDS, Beta blockers which can precipitate bronchospasm. Rule out other causes which can aggravate asthma as well as cause poor control of symptoms like sinusitis and GERD.

Controller of medications

Those taken daily to prevent symptoms, improve lung function and prevent attacks. E.g. inhaled corticosteroids, LABA

Reliever medications

Those taken occasionally to relieve acute symptoms. E.g. SABA, anti-cholinergics

COMMONLY USED INHALED AND ORAL MEDICINES AND DOSES

Metered Dose Inhalers

Name of Drug	Dose
Salbutamol (SABA)	100 – 200 mcg up to QID
Ipratropium (SAMA)	20mcg up to QID
Tiotropium (LAMA)	18mcg OD
Formoterol (LABA)	6mcg BD
Salmeterol (LABA)	25mcg BD
Formoterol(LABA) + Budesonide (ICS)	100/200/400 mcg BD

Nebulisation solution

Salbutamol - 2.5 mg to 5 mg in adult

Ipratropium -500 µg in adults

Oral

Tab. Salbutamol 2-4 mg BD/TDS

Tab. Terbutaline 2.5- 5 mg TDS

Tab. Methyl Xanthines (Theophylline) 100- 400 mg/day

Inhaled medications are preferred over oral medications

Steroids (Prednisolone 30 – 40 mg/day)

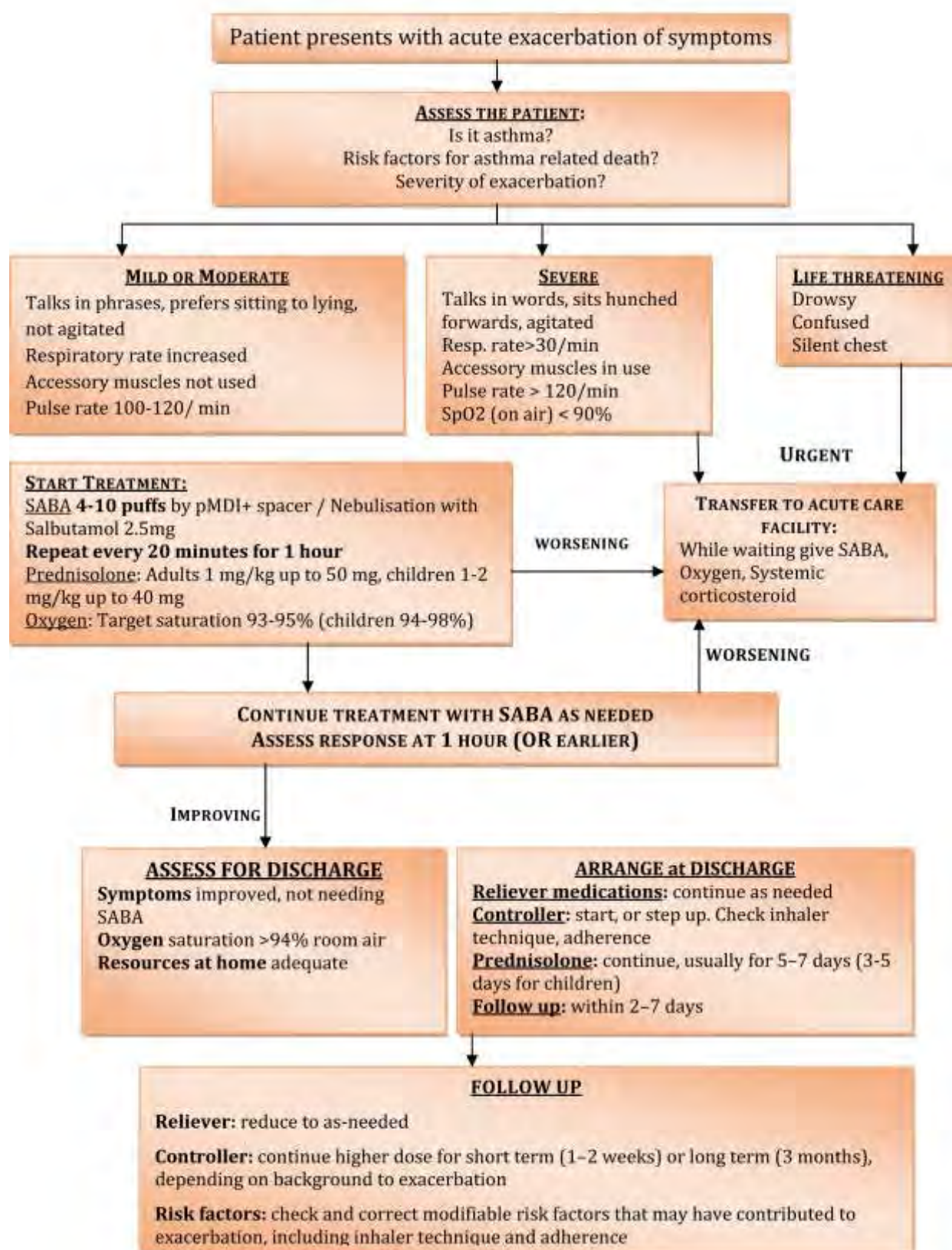
Intravenous methyl Xanthines are not routinely recommended for fear of side effects

Oral steroids are equally effective as IV steroids

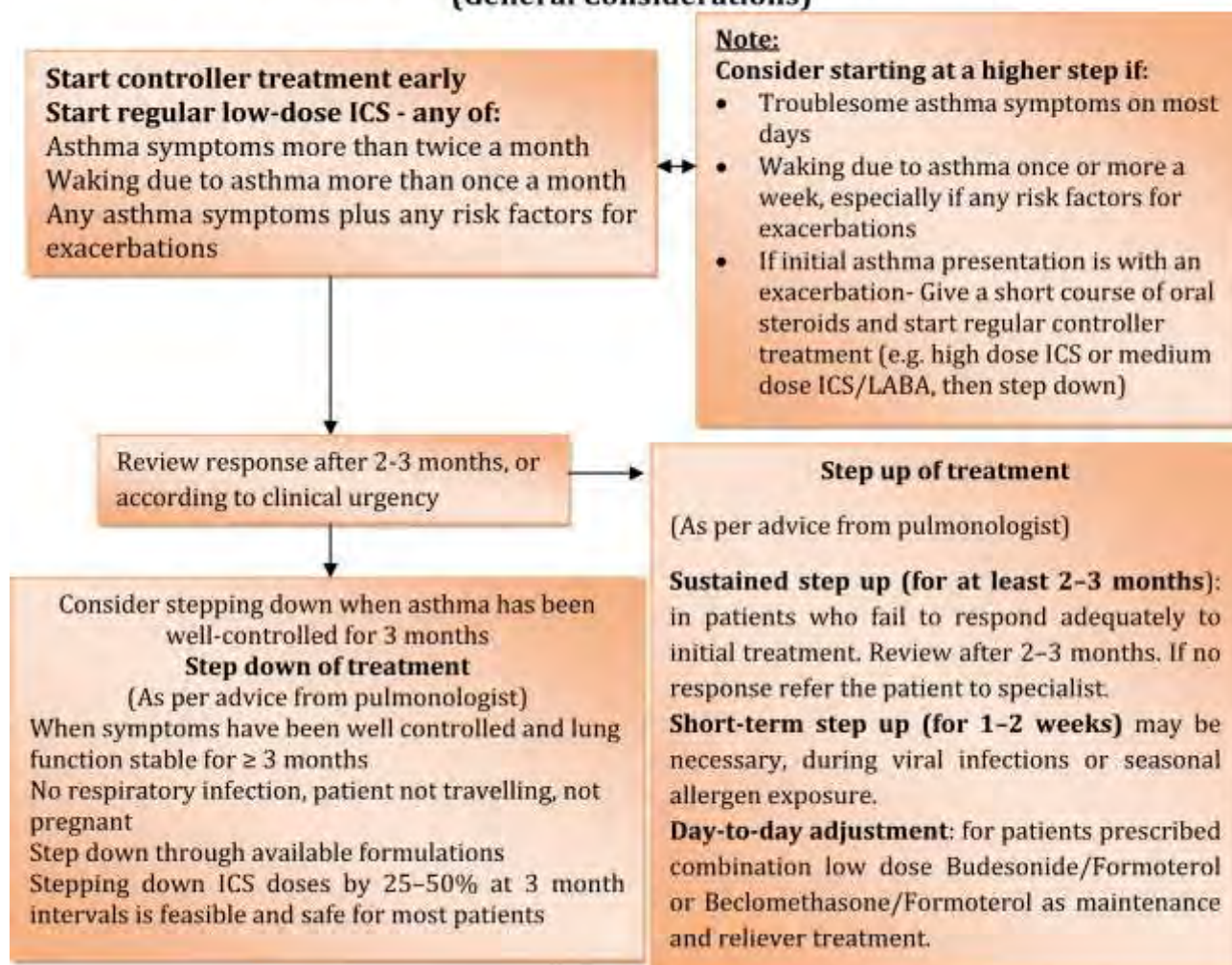
Inhaled Corticosteroid Dosage

Inhaled Corticosteroid	Low dose(mcg)	Medium dose(mcg)	High dose(mcg)
Beclomethasone	100-200	200-400	>400
Budesonide	200-400	400-800	>800
Fluticasone	100-250	250-500	>500
Ciclesonide	80-160	160-320	>320

Management of Asthma Exacerbation



Management of Asthma after Diagnosis /Control of Exacerbation (General Considerations)



Stopping ICS is not recommended in adults with asthma because of risk of exacerbations

Indications for referral:

- Difficulty confirming the diagnosis of asthma
- Suspected occupational asthma
- Persistent uncontrolled asthma or frequent exacerbations
- Risk factors for asthma-related death
 - * Near-fatal exacerbation in past
 - * Anaphylaxis or confirmed food allergy with asthma
- Significant side-effects of drugs (or risk of side-effects) - steroids, drugs for treatment of co-morbidities.
- Symptoms suggesting complications or sub-types of asthma like nasal polyposis and reactions to NSAIDs (may be aspirin exacerbated respiratory disease), chronic sputum production, fleeting shadows on Chest X-ray (may be allergic bronchopulmonary aspergillosis)

PSYCHIATRY

I. DEPRESSION

Diagnosis and Management of Depression

Depression

Depressive Episode

Mild- at least 2 of **A** & at least 2 of **B**

Moderate- at least 2 of **A** & at least 3 of **B**

Severe- all 3 of **A** & at least 4 of **B**

A

1. Depressed **Mood**
2. Loss of **Interest** or pleasure
3. Reduced energy and decreased **activity**

B

4. Reduced **Concentration**
5. Reduced **self-esteem**
6. Ideas of **Guilt**
7. Pessimistic **Thoughts**
8. **Suicidal** ideas
9. Disturbed **Sleep**
10. Diminished **appetite**

Monitor

- Thyroid function Test
- Serum sodium
- RBS

1. Mild depression - psychosocial intervention & follow up

2. Moderate and severe – start drug treatment

- Escitalopram 10-20 mg. Start with 10 mg. slowly increase to 20mg if needed.

- Tab. Sertraline 50 mg to maximum 150 mg per day

- Use Benzodiazepines (Clonazepam) as adjuvant in case of insomnia.

- Continue treatment for 6 – 9 months

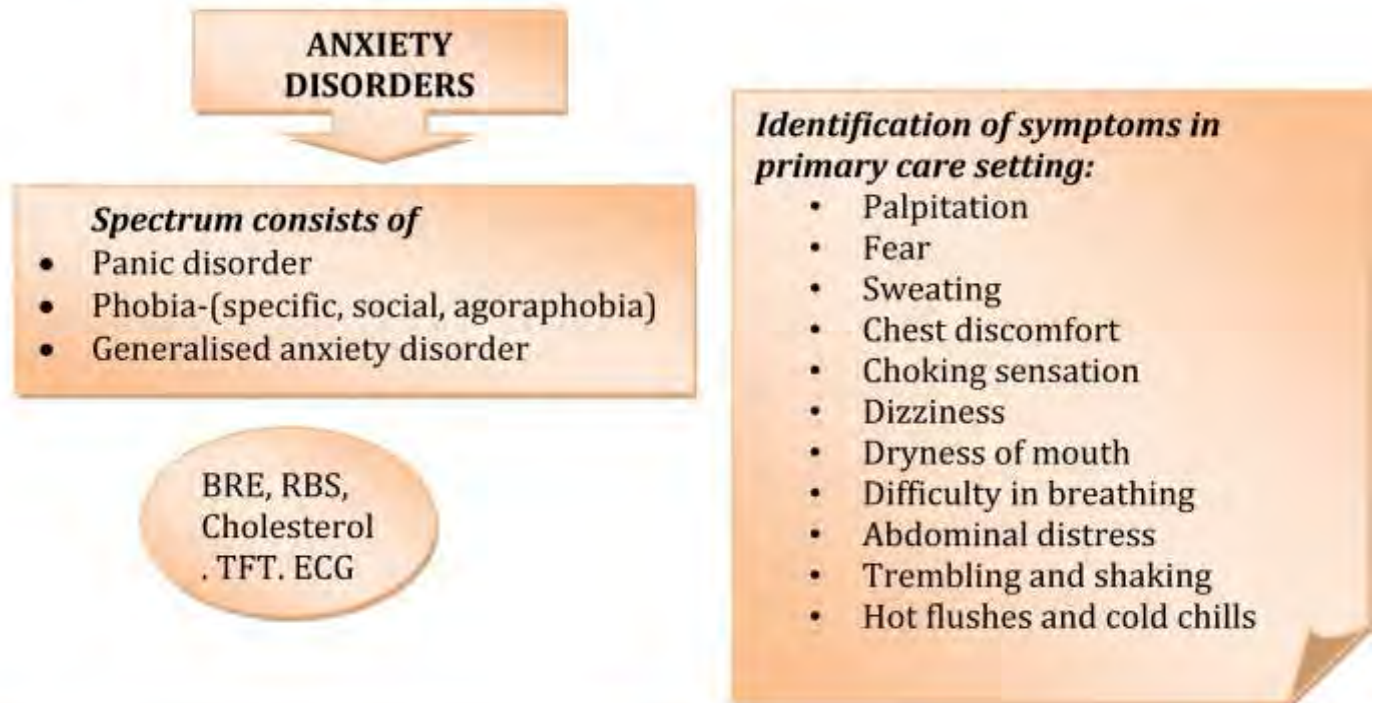
(Combination of medical & Psychological treatments is more effective than a single measure)

Refer to DMHP Psychiatrist in case of

- Doubt in diagnosis
- h/o bipolar disorder, co-morbid, substance use
- No satisfactory improvement with first line of management
- Self harm and Suicidal ideas/acts/attempts
- Psychotic features
- Medical co-morbidities

II. ANXIETY DISORDERS

Diagnosis and Management of Anxiety Disorder



CLUES to the diagnosis

Panic disorder at least 4 of the symptoms mentioned above, occurring as spontaneous discrete episodes, starting abruptly & lasting for a few minutes.

Moderate –at least 4 panic attacks per month

Severe- at least 4 panic attacks per week

Generalized Anxiety Disorder

At least 4 of the symptoms mentioned above must have been present over a period of at least 6 months.

Management of anxiety disorders

Rule out physical causes for the above symptoms (MVP, Hyperthyroidism etc)

Mild cases – Psychosocial intervention with relaxation exercises

Moderate & severe cases- medical management

Escitalopram 10-20mg start slow with 5 mg and increase to maximum 20 mg for one year

Acute Attack- **Clonazepam** 0.5mg SOS for the first 2-3 weeks


(Combination of medical & Psychological treatments is more effective)

Refer to DMHP Psychiatrist in case of doubt in diagnosis, no improvement with initial management, or frequent relapses.

III. SOMATOFORM DISORDER

Diagnosis and Management of Somatoform Disorder

Somatoform disorder



Diagnostic features:

- Multiple, recurrent & frequently changing physical symptoms without a physical explanation (A full physical examination is necessary to determine this).
- Frequent medical visits in spite of negative investigations.
- Some patients may be primarily concerned with obtaining relief from physical symptoms. Others maybe worried about having a physical illness and be unable to believe that no physical condition is present
- Symptoms of depression and anxiety are common

Medication:

- Avoid unnecessary diagnostic testing or prescription of new medication for each new symptom.
- Anti depressant medication e.g., Amitriptyline 50 – 100 mg or SSRIs will help.

Specialist consultation:

- Avoid reference to specialists for physical symptoms. Patients are best managed in primary care setting. Patients may be offered psychiatric referral in the beginning for confirmation of diagnosis

Essential information for patient and family

- Stress often produces physical symptoms.
- Cure may not always be possible. The goal is to live the best life possible even if symptoms continue

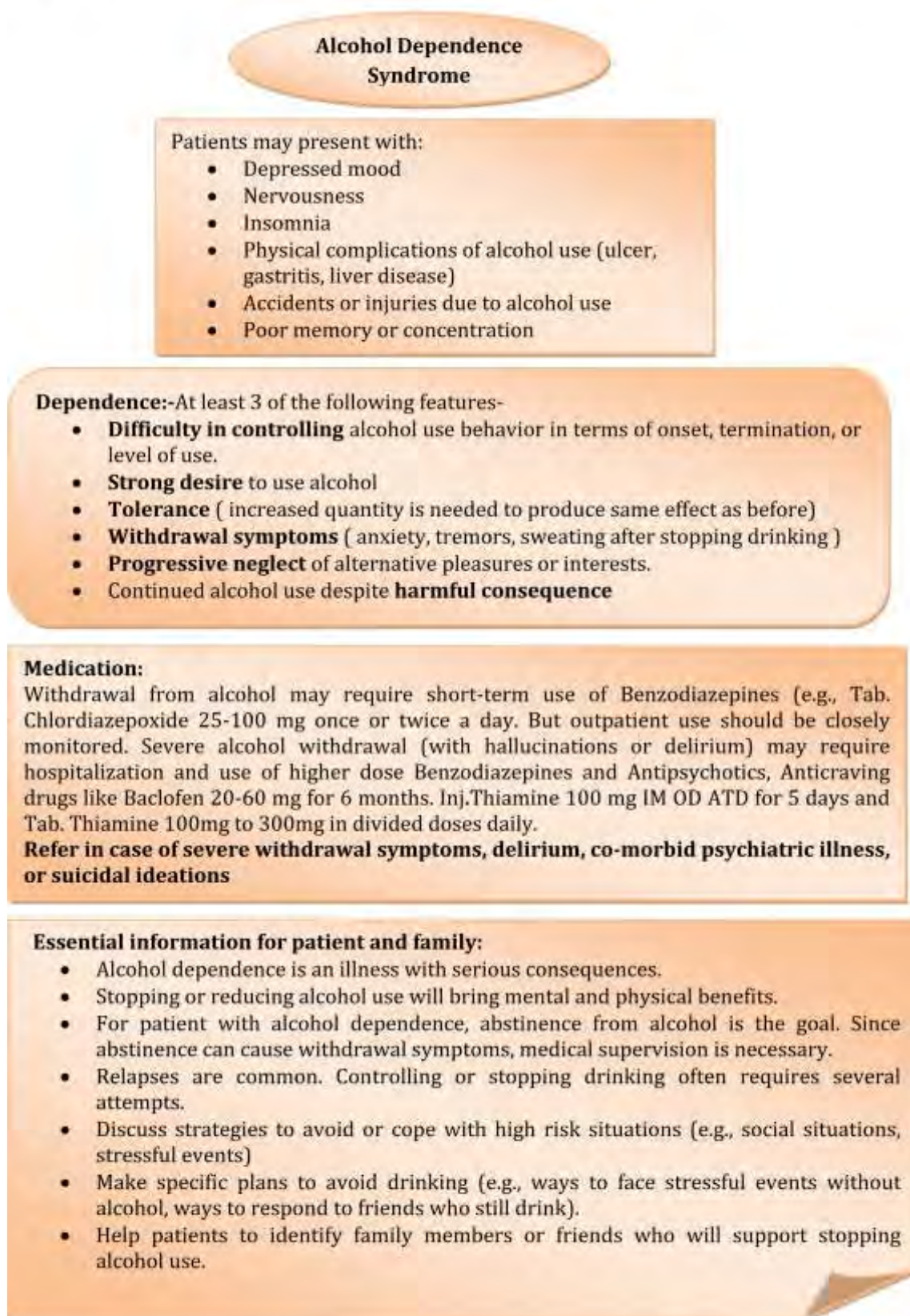
Counseling of patient and family:

- Acknowledge that the patient's physical symptoms are real. They are not lies or inventions.
- Ask about the patient's beliefs (what is causing the symptoms?) and fears (what does he/she fear may happen?)
- Offer appropriate reassurance (e.g., abdominal pain does not indicate cancer or any other serious illness). Advise patients not to focus on medical worries.
- Discuss emotional stresses that were present when the symptoms began.
- Relaxation methods can help reduce symptoms like tension headache, neck or back pain.
- Encourage exercise and enjoyable activities. The patient need not wait until all symptoms are gone before returning to normal routines.

For patients with more chronic complaints, time limited appointments that are regularly scheduled can prevent more frequent visits.

IV. ALCOHOL DEPENDENCE SYNDROME

Figure 3.8.4: Diagnosis and Management of Alcohol Dependence Syndrome



V. PSYCHOSIS

Diagnosis and Management of Psychosis

PSYCHOSIS

Patients may present with:

- Suspiciousness
- Hallucinatory behavior (talking to self, laughing to self, muttering)
- Social withdrawal
- Fearfulness
- Poor personal hygiene
- Wandering behavior
- Impaired sleep and appetite

BIPOLAR MOOD DISORDER

Mania-

- Elevated mood or irritability
- Increased talk
- Loss of inhibitions
- Decreased need for sleep
- Increased self esteem

Patient may also have periods of depression.

Either type of episode may predominate

Episodes may be frequent and may be separated by periods of normal mood.

In severe cases, patients may have hallucinations or delusions during periods of mania or depression

Antipsychotic medications will reduce psychotic symptoms (e.g., Risperidone 2-6 mg, Olanzapine 5-20 mg, Chlorpromazine 100-200 mg daily). The dose should be the lowest possible for the relief of symptoms, though some patients may require higher doses.

If the patient fails to take medications as requested, injectable long acting antipsychotic medications like Fluphenazine decanoate may ensure continuity of treatment and reduce risk of relapse.

Common motor side-effects include:

- Acute dystonias or spasms that can be managed with Inj. Promethazine and Trihexyphenidyl 2 mg
- Akathisia (severe motor restlessness) that can be managed with dosage reduction or beta-blockers.
- Extra pyramidal symptoms (tremor, rigidity can be managed with Trihexyphenidyl 2 mg.

Consider psychiatric consultation (with DMHP) for all new cases of psychotic disorder to clarify diagnosis and ensure most appropriate treatment.

Consultation with appropriate community services may reduce family burden and improve rehabilitation in chronic cases

(For violent patients): INJ HALOPERIDOL 5 mg IM + Inj. Promethazine 25 mg **OR** Inj. Lorazepam 2 to 4 mg IM

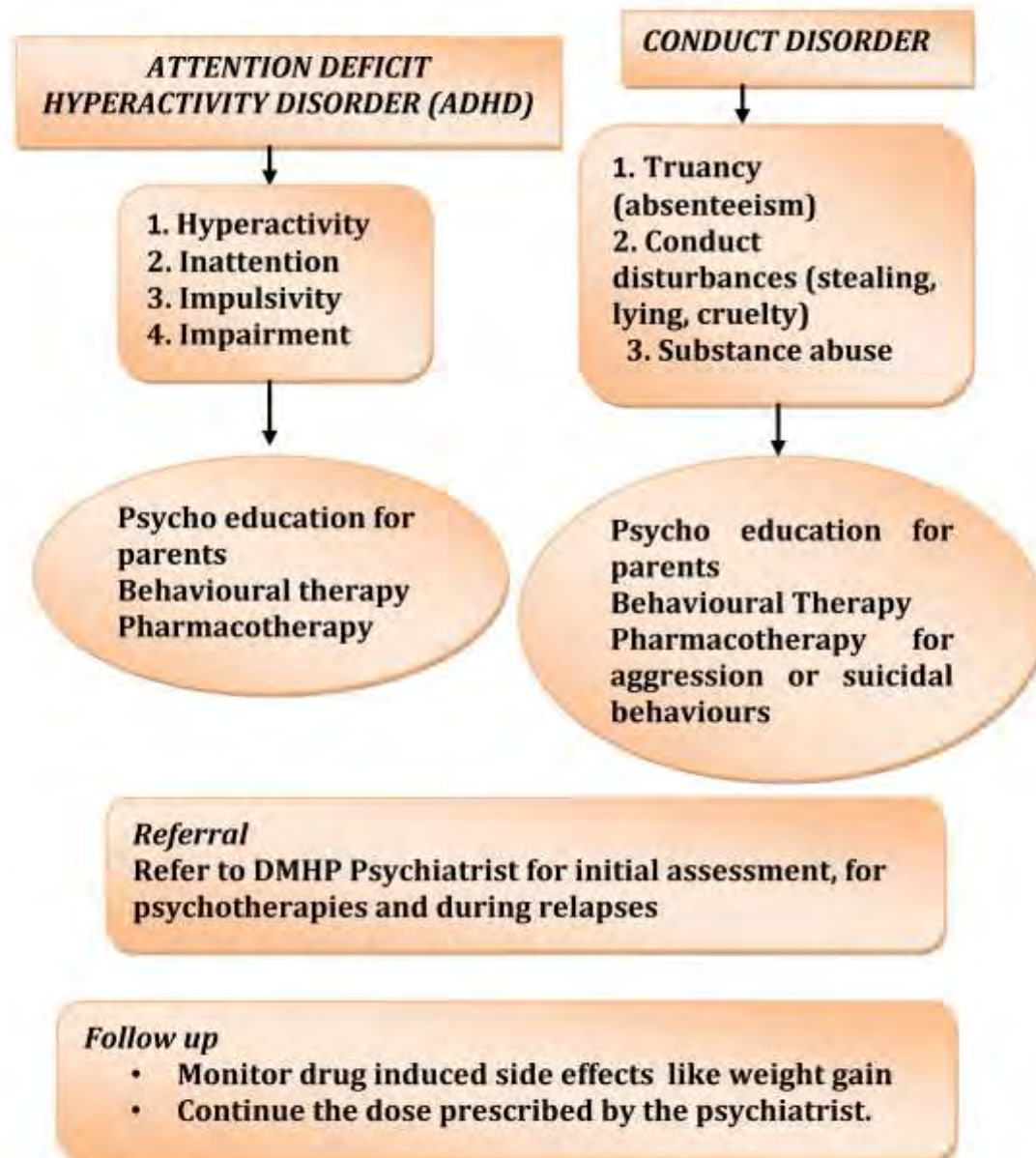
Lithium (300-900mg) helps relieve mania and depression. Serum lithium estimation should be done frequently in higher doses of lithium. Watch for lithium toxicity.

Alternative medicines include Sodium Valproate (200-1500mg), and Carbamazepine (200-1200mg).

If patients displays agitation, excitement or disruptive behaviour, Antipsychotics (Olanzapine 5-20mg or risperidone 2-6mg may be needed).

VI. Emotional And Behavioural Disorders In Children & Adolescents

Emotional and Behavioural Disorders in Children & Adolescents

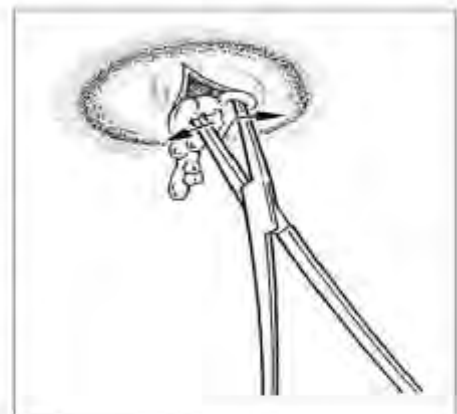


Surgical Conditions

MINOR SURGICAL PROCEDURES

1. ABSCESS

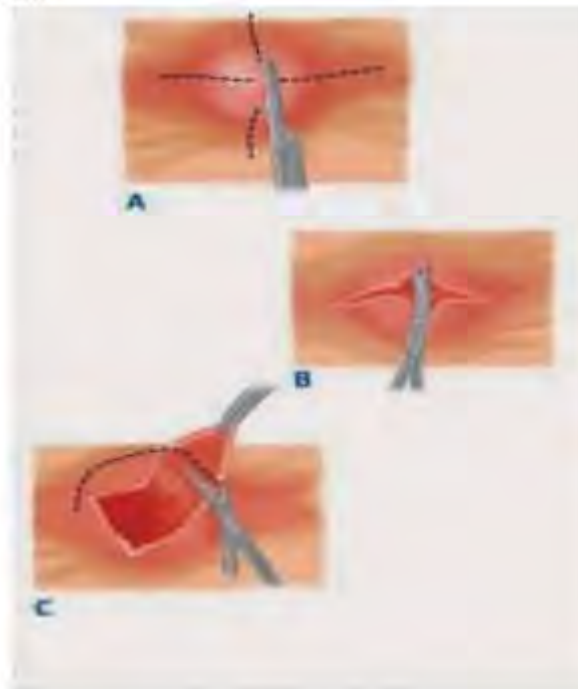
- Identified as pain & swelling by the patient.
- O/E – Tender swelling with redness & local rise of temperature.
- Management – Incision & Drainage followed by antibiotics, analgesics, anti-inflammatory drug, regular cleaning & dressing.
- Incision & Drainage
 - Instruments – No. 11/15 blade ± BP Handle, Artery Forceps/Sinus forceps, roller gauze, Dressing pad, Bandage/Adhesive tape
 - Local Anaesthesia - Infiltrate uninfected tissue surrounding the abscess with a local anaesthetic(2% Lignocaine 3 mg/kg, with Adrenaline 7 mg/kg)
 - Procedure: If in doubt regarding diagnosis, perform preliminary aspiration using Wide Bore Needle (18G or Larger).
 - Make Incision on most prominent portion of the swelling
 - Insert the tip of artery forceps into the incision and open its jaws to open the wound
 - Irrigate the cavity with Hydrogen Peroxide, Saline and Betadine in that order.
 - Insert one end of roller gauze to pack the cavity and keep it open to ensure further drainage. Roller gauze should never be fully inserted & should be changed with each dressing.
 - Keep dressing pad over the gauze followed by bandaging or Adhesive tape as required.
 - Cleaning & Dressing can be done daily if dressing is soaked or else every alternate day.



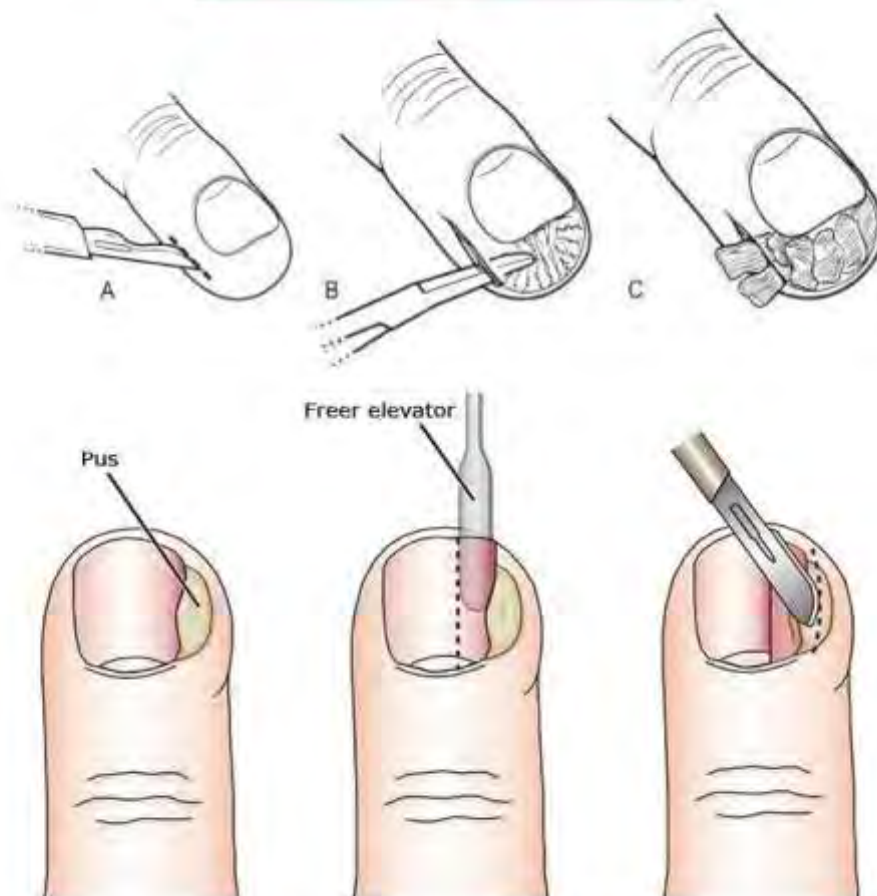
- **Carbuncle** – Specialized abscess seen in diabetics usually seen in the nape of neck and back. Incision should be cruciate. I & D procedure is followed. In addition, necrosed tissue should be debrided daily.



- **Peri-Anal Abscess** – Incision should be cruciate. Proper cleaning with soap water after each defaecation, followed by Sitz bath. Metronidazole & Betadine ointment for local application.



- **Paronychia** – Abscess around the nail bed. Antibiotics may be given in early stages with no localized pus collection. I & D after Ring Block Local anaesthesia using plain 2% Lignocaine.



- **In diabetics, control of glycemic status is of utmost importance.**
- Direct closure of abscess cavity should never be done.
- **Indications for Referral**
 - * Septicaemia
 - * Involvement of deeper structures(Muscles, Tendons, Blood Vessels)
 - * Uncontrolled Diabetes
 - * No response to oral antibiotics
 - * If associated with other organ failures.

2. WOUND MANAGEMENT & DRESSING

- **Clean Incised Wounds** – Primary closure after cleaning with saline & Betadine.



- **Contaminated wounds**– Primary closure should never be done. First clean with Hydrogen Peroxide, Saline & Betadine. Debridement of devitalized tissue in following days. Once the wound is clean (Floor appears bright red) and edges can be approximated, suturing can be done. Or else, leave it for healing by secondary intention. Large clean wounds may be referred for grafting.



- Antibiotics along with Analgesics and Anti-Inflammatory drugs should be given appropriately.
- **Dressing**
 - * **Materials** – Sterilised dressing pad, Gauze, Hydrogen Peroxide, Normal saline, Betadine, bandage, adhesive tape, Sterile gloves.
 - * **Instruments** – Artery forceps, Surgical blade with BP Handle, Scissors, Toothed thumb forceps.
 - * **Topical Applicants** –Fusidic Acid, Neosporin, Mupirocin, Nanosilver gel

- * Always use sterile gloves and sterile instruments to handle sterile dressing materials
- * While cleaning the wound, never go from contaminated area to a clean area.
- * Debridement should be limited until fresh bleeding is seen. During debridement, if profuse bleeding occurs, stop procedure & apply pressure to the area with a sterile pad.

3. ULCERS

- Commonly seen – Traumatic ulcer, Diabetic ulcer and Pressure sores
- Traumatic ulcers are managed according to the wound management protocol.

- Diabetic Ulcer



- * Strict control of Diabetes with wound management.
- * Regular Slough Removal when the dressing is done.
- * Cleaning & Dressing can be done daily if dressing is soaked or else, every alternate day
- * Indications for Referral
 - Uncontrolled Diabetes
 - Septicaemia
 - Extensively infected ulcer

- **Venous Ulcer**

- * Secondary to Varicose veins, Deep vein disease - Stasis Ulcer
- * Most Common Site is around the Medial Malleolus



- * Severely painful ulcer with sloping edges with base showing granulation tissue and patches of slough & exudate

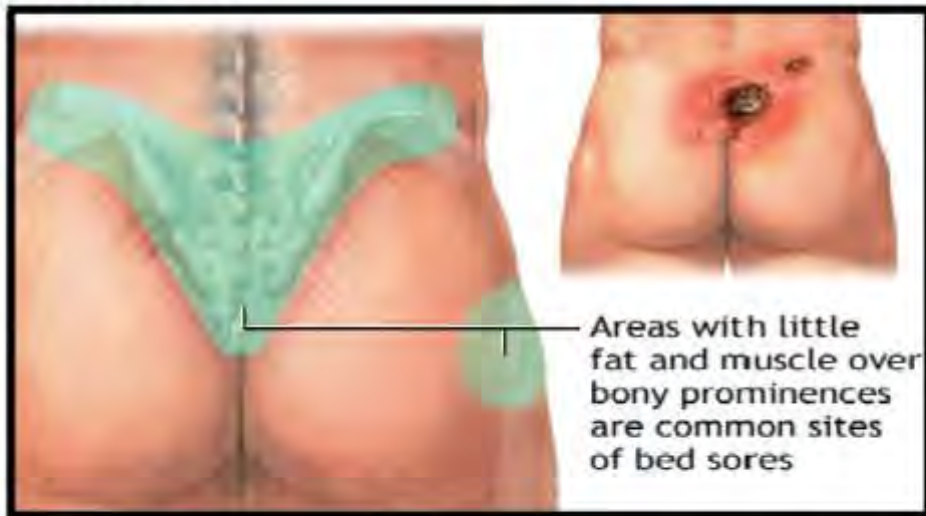
- * **Treatment**

- Wound management, Cleaning & Dressing with compression bandage using Elastocrepe bandage 15cm from mid-foot to Knee joint to be applied from dawn to dusk and removed when lying down to sleep.



- Antibiotics, Analgesics & Anti-Inflammatory drugs
- Cap. Calcium Dobesilate 500 mg BD x 2 weeks, then for 2 more weeks if there is improvement in ulcer
- * **Indications for Referral**
 - Non healing Ulcers with no improvement - For Surgical treatment
 - Generalised oedema & pain
 - Septicaemia

- **Pressure Sore**



- * Commonly seen in Bedridden patients and paraplegics
 - * Sites – Sacral, Trochanteric, Ischial and over the heel
 - * Frequent change of position, Air Bed/Water Bed usage
 - * Daily Dressing with topical cream
 - * Heel ulcers – Offloading or custom made footwear
 - * Correct Anaemia, Hydration and Hypoproteinemia
- **Maggot Infested Ulcers** – Diluted Turpentine solution may be applied over the wound which brings out the maggots, which are removed manually using forceps. This is continued every day until the wound is maggot free. Rest of the wound is managed as usual.



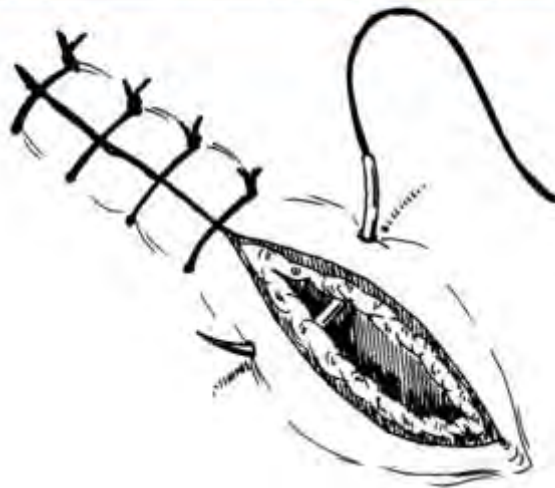
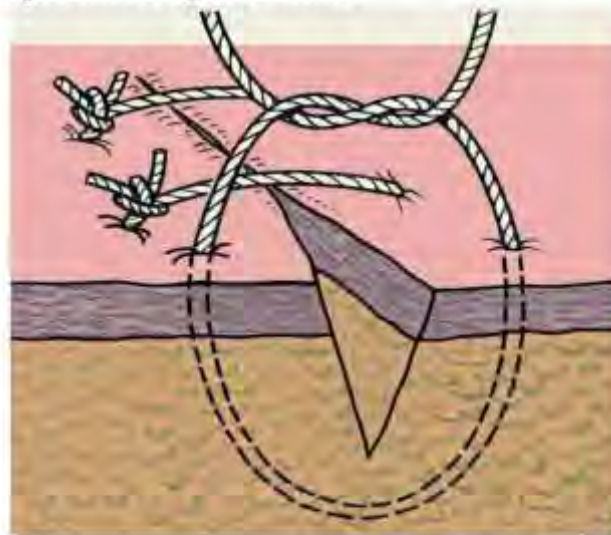
- * **Indications for Referral** – Large Ulcers with exposed bone, tendon, vessels or nerves, Organ Failure, Septicaemia.

4. **SUTURING**

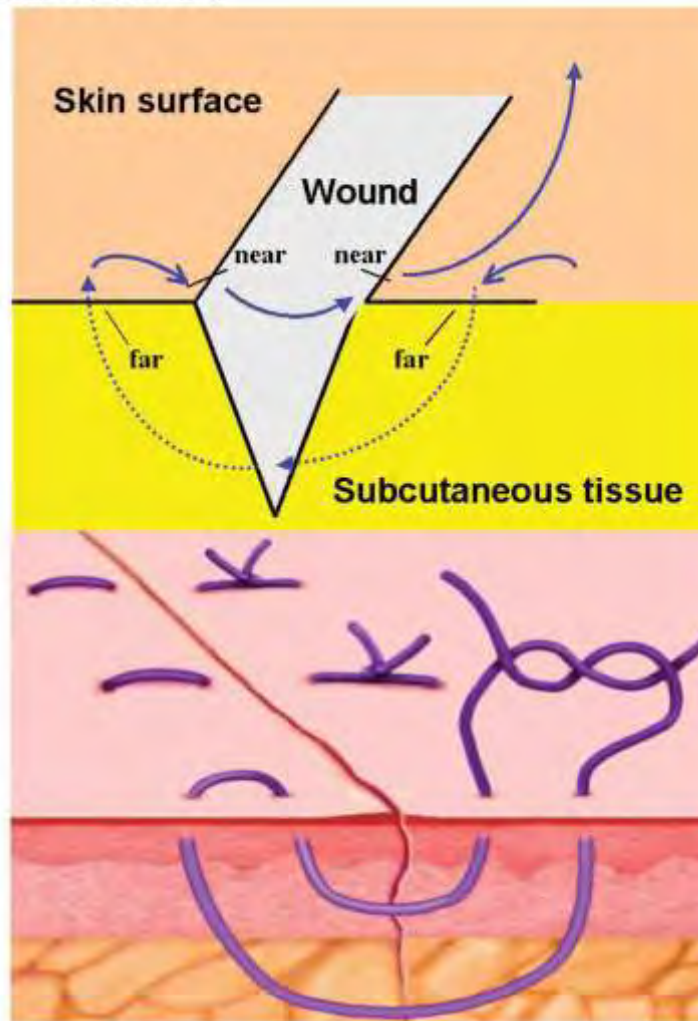
- Materials Used – Nylon (Ethilon), Vicryl (Braided, Polyglycolic Acid), Monocryl (monofilament, poliglecaprone), Polypropylene (Prolene). Silk is not preferred nowadays.
- Instruments – Needle Holder, Scissors, Thumb Forceps
- For Skin suturing - Cutting/Reverse Cutting needles may be used along with Nylon, Prolene or Monocryl (Absorbable)
- Soft tissue Suturing – Round Body Needle with Vicryl

- Techniques

- * **Simple Interrupted suture**

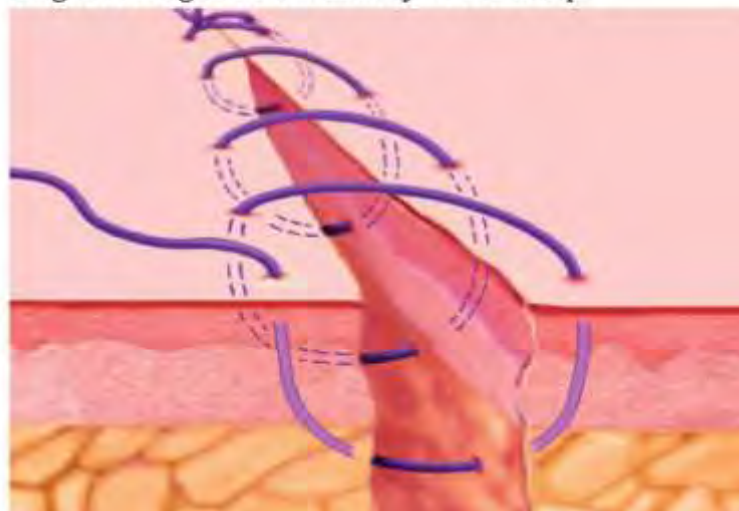


* **Vertical Mattress suture**



* **Continuous Sutures**

- For long bleeding wounds usually in the scalp

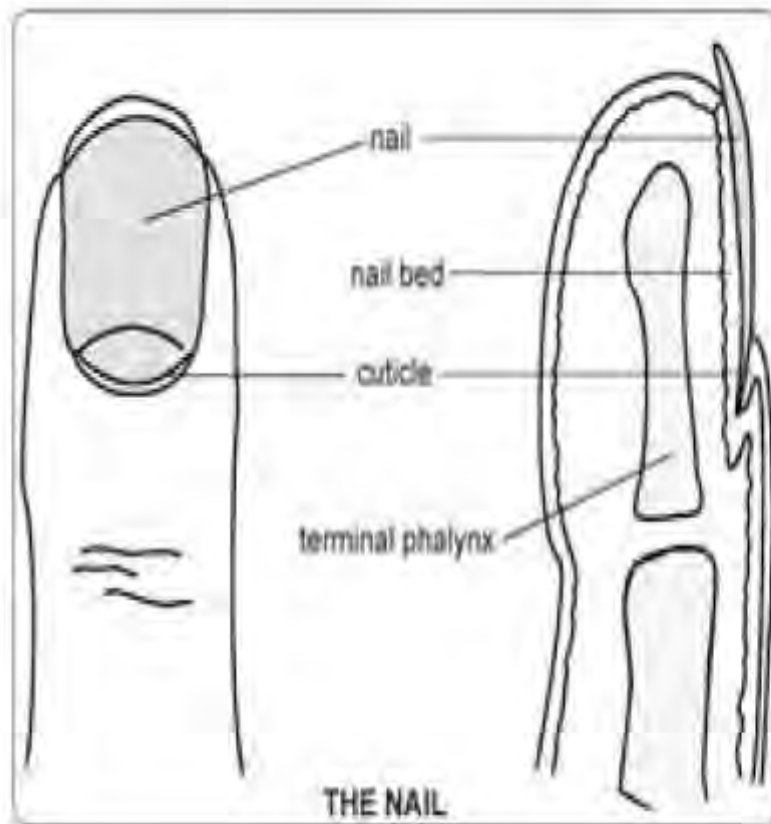


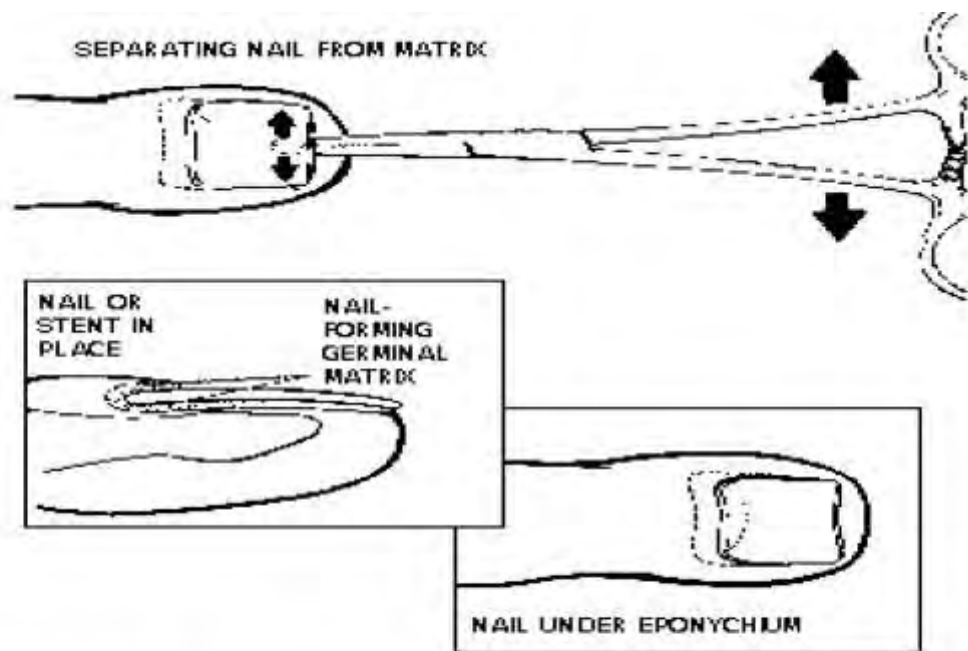
5. **FOREIGN BODY REMOVAL**

- Examples – Wooden splinters, Thorn, Fish Bone, Metal/Glass piece etc.
- Attempt removal only in superficial foreign bodies which can be easily seen or palpated after infiltrating with local anaesthetic.
- Incision should be directly above the palpated foreign body or by extending the entry wound and exploring taking care not to injure vital structures.
- All others cases of foreign body should be referred including foreign bodies penetrating into abdominal/ thoracic cavity.

6. **NAIL REMOVAL**

- Indications – Ingrowing Nail, Onychomycosis, Paronychia, Subungual haematoma
- Instrument – Artery Forceps
- Anaesthesia – Ring Block using Plain Lignocaine
- Procedure – Insert the tip of Artery forceps below the nail plate and separate it from the nail bed. Then the nail can be easily pulled out. Dressing is done to prevent bleeding.





- **Partial Nail Extraction** – Part of the nail to be removed is separated from the nail bed & incised from rest of the nail.



- Antibiotics, analgesics and alternate day dressing is desirable.

7. **CELLULITIS**

- Painful edema
- Generalised – Due to any infective foci in the limb



- Localised – Usually around the infective foci



- Most common site is lower limb
- Oedema and redness can occur with or without Fever
- O/E – Tenderness, redness, oedema, local rise of temperature
- Treatment
 - Oral Antibiotics, Analgesics, Anti-inflammatory drugs
 - Broad Spectrum IV Antibiotics if no relief with oral drugs
 - * Inj. Crystalline Penicillin 20LU IV Q6H ATD
 - * Inj. Cefotaxime 1g IV Q8H ATD
 - * Inj. Metronidazole 500mg IV Q8H
 - Foot End Elevation
- Indications for Referral
 - * Patients not responding to oral antibiotics
 - * Uncontrolled diabetes
 - * Generalised oedema
 - * Signs of septicaemia

8. DRUG THERAPY IN SURGICAL CASES

- Antibiotics :
 - * Amoxycillin-Clavulanate 625 mg BD x 5 days Or
 - * Amoxycillin 500 mg + Cloxacillin 500 mg QID x 5 days Or
 - * Cefixime 200 mg BD x 5 days Or
 - * If allergic to penicillin, give Tab. Ciprofloxacin 500 mg BD x 5 days
- Analgesics :
 - * Tab. Diclofenac 50 mg BD Or
 - * Tab. Aceclofenac 100 mg BD Or
 - * Tab. Ibuprofen 400 mg BD
- Anti-inflammatory drugs :
 - Tab. Serratiopeptidase 10 mg TID Or
 - Tab. Trypsin-Chymotrypsin TID

INJURIES & ACCIDENTS

Broadly Classified into Major and Minor Trauma

Major Trauma

- Road Traffic Accidents
- Polytrauma
- Assault
- Fall from height
- Blast injuries / Burns more than 20%
- Head Injury
- Penetrating Injury of Chest or Abdomen
- Obvious Neurovascular injuries of the extremities

Treatment

- First Aid should be provided and IV lines should be applied. If there is haemorrhage, start Crystalloids. If the patient is in Shock, start aggressive fluid replacement. Two large bore IV lines should be placed at a minimum.
 - * External wounds if present should be cleaned and dressed
 - * Bleeding wounds if present, direct pressure control is preferable and should be sutured if time permits or a pressure tamponade (pressure dressing) should be applied. Fractures should be splinted with whatever material is available locally like cardboard, wooden scale etc. Hard cervical collar to be applied, if cervical spine injury is suspected.
- In case of Open fractures, early debridement at an institution with necessary facilities is of utmost importance. Cover the wound with saline moistened dressing and refer the patient to a tertiary care centre.
- No patient with major trauma should be managed in a PHC. Ask the patient to remain Nil per Oral as he may need an emergency surgery.
- Patients with all kinds of fractures should be referred to a higher centre with appropriate facility
- In polytrauma, the patient's chance of survival diminishes rapidly after 1 hour (Golden hour)
- A sheet or commercial pelvic binder around the pelvis of a patient, who is haemodynamically unstable with pelvic pain is an important life saving measure to prevent further compromise of circulation in pelvic fracture
- If arterial injury is suspected, immediately refer to a vascular surgeon as irreversible ischaemic damage to nerve and muscle tissue occurs after 4 hours of warm ischaemia time.

- Compartment syndrome, diagnosed by pain out of proportion to injury and pain on passive stretch, should be immediately referred for decompression
- In complete traumatic amputation of a finger or entire extremity, proximal stump should be dressed first with RL soaked dressing and pressure is applied (not to apply tourniquet). The amputated part is wrapped in RL moistened sterile sponge and placed in a plastic bag. It should be cooled by placing it in a container with ice. The part must not be frozen, placed in direct contact or encased within ice. Within 2 hours of amputation, the patient has to reach the higher centre.

Tetanus Toxoid immunisation in Injuries

Patient Immunisation Status	Non Tetanus Prone Wounds	Tetanus prone wounds	
	Tt+	Tt+	TIG
Unknown or Incomplete	Yes	Yes	Yes
Complete <5 years	No	No	No
Complete >5-10 years	No	Yes	No
Complete >10 years	Yes	Yes	No

- Adapted from advisory committee on Immunization practices (ACIP)

Minor Trauma

All minor trauma, and simple burns <5% in trunk and extremities may be treated as IP or OP according to the merits of the case.

Approach to patients brought with trauma

- Ask a brief and to the point history; simultaneously check the patient's vitals
- Ask for the mode of injury, site and time of occurrence, and co-morbidities
- Do a primary survey based on the ATLS protocol (ABCDE) to identify patients who have life threatening injuries. If there is more than one patient, triage them to prioritize treatment and reference.

Triage

It is the sorting of patients based on their need for treatment and availability of resources.

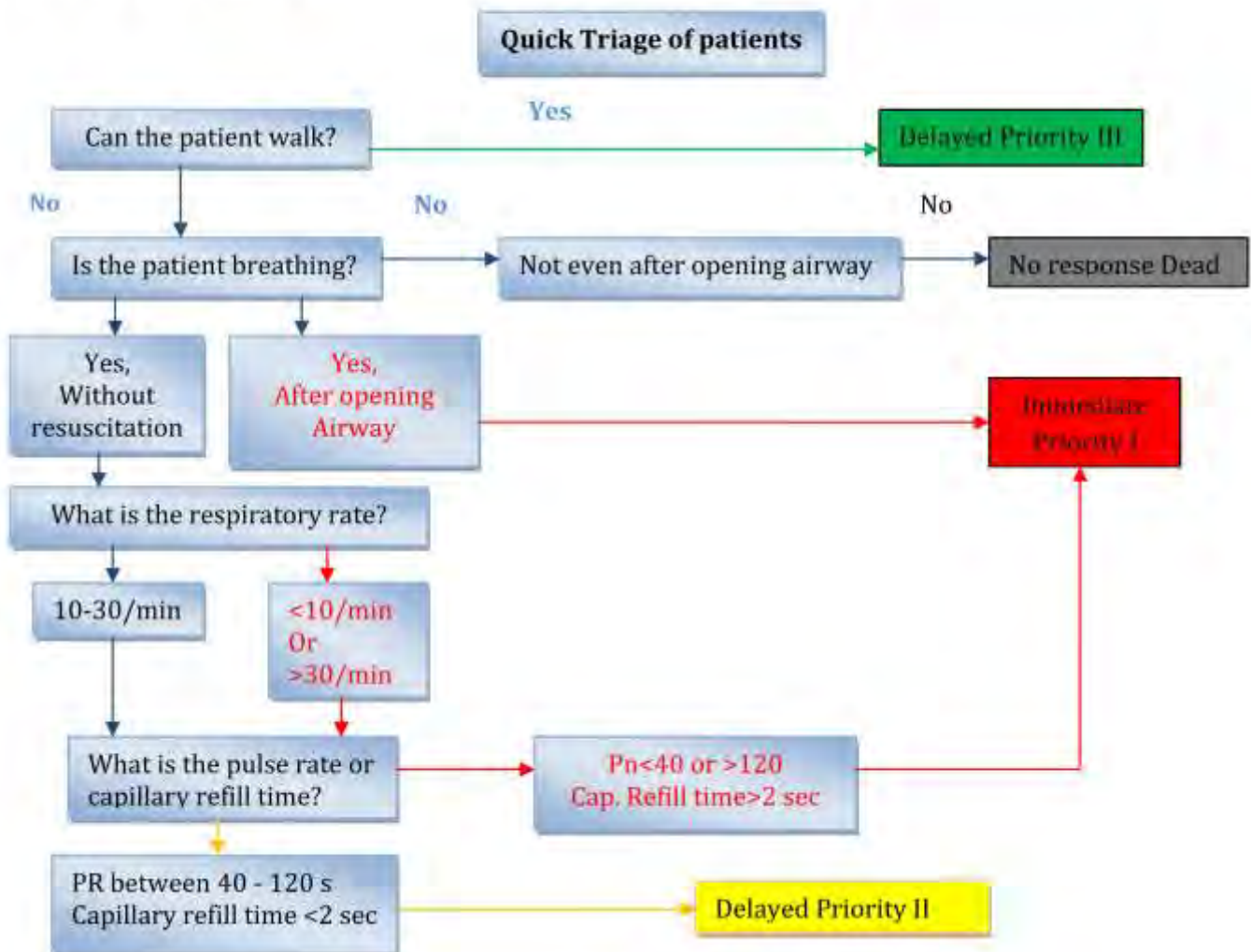
Immediate: requires immediate medical attention and will not survive if not seen soon.

Delayed: requires medical attention within 6 hours. Injuries are potentially life-threatening, but can wait.

Minimal: "Walking wounded" and may not require stabilization or monitoring.

- Quick Assessment of a patient in 10 seconds
- Identify yourself to the patient
- Ask him/her his /her name
- Ask him /her "what happened"
- An appropriate response like " *Doctor, I am fine*" gives you the following information
 - A - Patent Airway
 - B - Sufficient air reserve to permit speech
 - C - Sufficient perfusion to permit cerebation
 - D - Clear Sensorium

Triaging of Patients



PRIMARY SURVEY AND RESUSCITATION			
AIRWAY +CERVICAL SPINE STABILIZATION	BREATHING	CIRCULATION	DISABILITY
<ul style="list-style-type: none"> • Apply hard collar • Can the patient talk freely? <ul style="list-style-type: none"> * If yes, no airway obstruction * If no, look for <ul style="list-style-type: none"> ○ Stridor ○ Agitation ○ Cyanosis ○ Use of accessory muscles of respiration ○ Paradoxical chest wall movements 	<ul style="list-style-type: none"> • Look for cyanosis • Absence of chest wall movements • Palpate for broken ribs or sucking wounds • Percuss for haemo/pneumothorax • Auscultate to assess air entry 	<ul style="list-style-type: none"> • Look for shock <ul style="list-style-type: none"> * Confusion * Cold & clammy extremities * Hypertension * Tachycardia • Look for Neurovascular injuries • Look for bleeding external wounds 	<ul style="list-style-type: none"> • Rapid neurological assessment • AVUP score <p><i>A- Awake</i> <i>V- Responds to verbal stimulus</i> <i>P- Responds to painful stimulus</i> <i>U- Unresponsive</i></p>
Treatment <ul style="list-style-type: none"> * Remove FB, if any * Chin lift * Jaw thrust * Suction * Guedel airway insertion * Needle cricothyrotomy • All patients with head and neck trauma should be suspected to have C-spine injury unless proved otherwise • Avoid unnecessary neck movements and hyper extension 	Treatment <ul style="list-style-type: none"> • O₂ Inhalation • Close sucking wounds on 3 sides • Needle thoracostomy (in suspected tension pneumothorax) A 14G/16G needle in 2nd ICS, mid clavicular line 	Treatment <ul style="list-style-type: none"> • 2 IV lines (14G/16G) • 2L pre-warmed RL/NS • Avoid IVF containing glucose • In bleeding wounds suture if time permits or apply pressure dressing • Splint all fractures 	

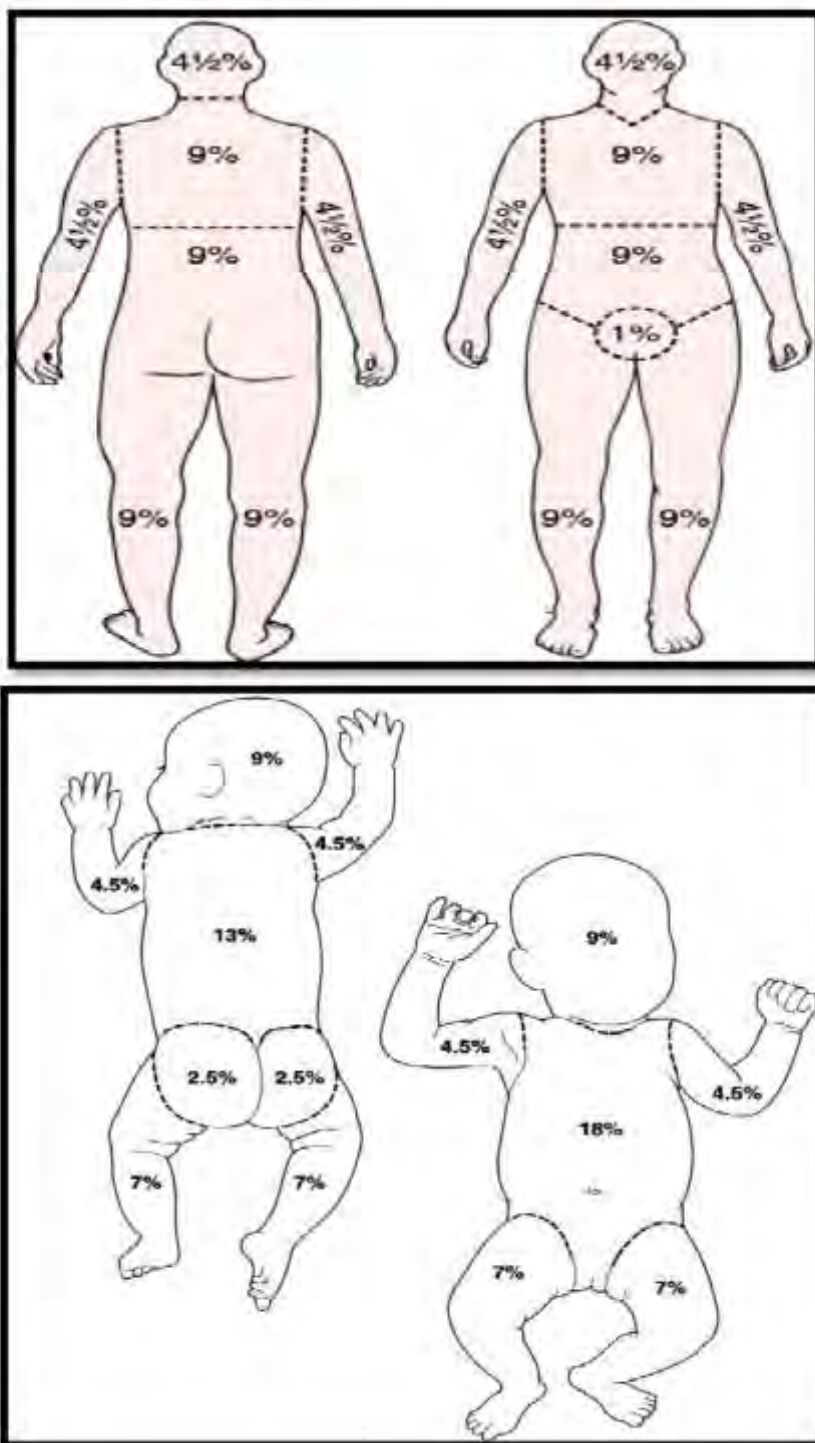
- Patients requiring reference to higher centres should be referred based on their need for treatment and not on a first come first serve basis.

Back Referral

Cases which require Suture or Stapler removal or dressings may be referred back to PHCs.

BURNS

- Vital signs should be recorded first in all cases of burns.
- Percentage & Depth of the burns should be assessed next.
- Wallace Rule of 9 is used to assess the percentage of burns where patient's palm area corresponds to 1%.

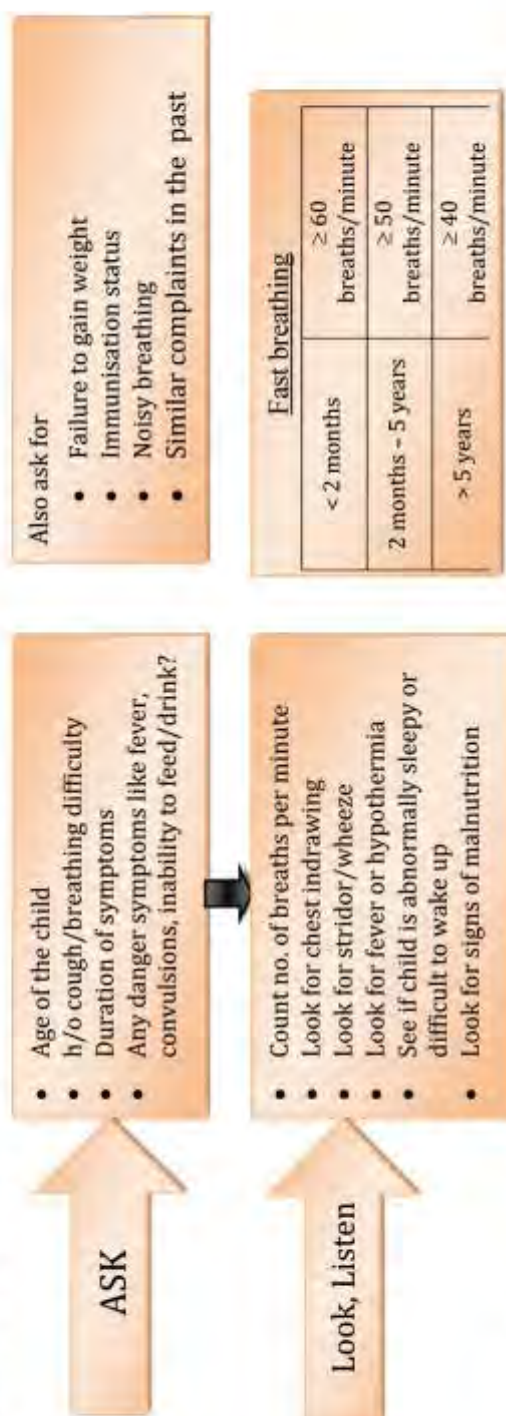


- Depth
 - * Superficial burns – Affected area is erythematous with preserved sensation and severe pain.
 - * Deep burns – Area will be pale and insensate.
- Hydration is the most important step in management of Acute Burns.
- In PHC setup, only superficial burns up to 10% body surface area should be managed
- If any Blebs are present, they should be broken and the loose skin should be completely removed.
- Topical Application using Silver Sulfadiazine. Sisomycin may be used for face.
- High protein diet is essential with plenty of oral fluids.
- **Indications for Referral**
 - * Burns more than 10% body surface area
 - * Inhalational burns
 - * Blast Burns
 - * Elderly or Debilitated patients
 - * Burns in Infants & children

COMMON PAEDIATRIC CONDITIONS

ACUTE RESPIRATORY INFECTIONS

Management of Acute Respiratory Infections in Children



Management of ARI in Young Infant (0-2 Months Old)

Signs	VERY SEVERE PNEUMONIA	SEVERE PNEUMONIA	NO PNEUMONIA, COUGH OR COLD
<ul style="list-style-type: none"> • Stopped feeding well • Convulsions • Abnormally sleepy or difficult to wake • Stridor in a calm child • Wheezing • Fever or hypothermia 	<ul style="list-style-type: none"> • Chest indrawing • Fast breathing 	<ul style="list-style-type: none"> • No chest indrawing • No fast breathing 	
Diagnosis	Refer URGENTLY to hospital	Refer URGENTLY to hospital	Keep the young infant warm
Treatment	<ul style="list-style-type: none"> • Keep the infant warm • Give first dose of antibiotic 	<ul style="list-style-type: none"> • Keep the infant warm • Give first dose of antibiotic 	<ul style="list-style-type: none"> • Breastfeed frequently • Clear nose if it interferes with feeding • Return quickly if child becomes sicker, has feeding difficulty or breathing becomes fast and difficult

Management of ARI in Child Aged 2 Months to 5 Years

Signs	<ul style="list-style-type: none"> • Not able to drink • Convulsions • Abnormally sleepy or difficult to wake • Fever or hypothermia • Stridor in a calm child 	<ul style="list-style-type: none"> • Chest indrawing • Recurrent wheezing • Fast breathing 	<ul style="list-style-type: none"> • No chest indrawing • Fast breathing 	<ul style="list-style-type: none"> • No chest indrawing • No fast breathing
Diagnosis	VERY SEVERE DISEASE	SEVERE PNEUMONIA	PNEUMONIA	NO PNEUMONIA COUGH OR COLD
Treatment	<ul style="list-style-type: none"> • Refer URGENTLY • Give first dose of antibiotic • Treat fever if present 	<ul style="list-style-type: none"> • Refer URGENTLY • Give first dose of antibiotic • Treat fever if present • Treat wheezing if present (if referral not feasible give antibiotic & follow up closely) 	<ul style="list-style-type: none"> • Advise mother to give home care • Give antibiotic • Treat fever if present • Advise mother to return with the child after 2 days for reassessment or earlier if the child is getting worse 	<ul style="list-style-type: none"> • Keep the child warm • Clear nose if it interferes with feeding • Continue breastfeeding • Return quickly if child becomes sicker, has feeding difficulty or breathing becomes fast and difficult

Reassess in 2 days a child who is taking antibiotic for Pneumonia

Signs	<p>WORSE</p> <ul style="list-style-type: none"> • Not able to drink • Has chest indrawing • Any other danger signs present 	<p>SAME</p>	<p>IMPROVING</p> <ul style="list-style-type: none"> • Breathing slower • Eating better • Less fever
Treatment	<p>Refer urgently</p>	<p>Refer urgently</p>	<p>Finish 5 days of antibiotic</p>

During follow up, look for and correct

- Malnutrition
- Micronutrient deficiency
- Immunisation status
- Deworming
- Iron supplementation – if needed

Drug Treatment

- Amoxicillin 25-50 mg/kg/dose TID if the child is not sick
- Inj. Ampicillin 50 mg/kg/dose QID or Cefuroxime 50 mg/kg/dose TID for 7 to 10 days
- For infants: Cefotaxime 50 mg/kg/dose TID
- Supportive measures – Oral fluids, Oxygen, Nebulisation if wheeze is present

Prevention

- Improvement of nutrition and reduction of low birth weights & malnutrition
- Strengthen routine immunisation
- Control of indoor air pollution
- Promotion of exclusive breastfeeding
- Effective case management at all levels

Management of Other Conditions

Condition	Acute Bronchiolitis	Bronchial Asthma	Acute Epiglottitis	Croup
Age	First 2 years of life	Unlikely in children < 6 months	Usually seen in children 2-7 yrs	6 months – 12 years of age
Onset	Mild URTI followed by gradual development of respiratory distress accompanied by paroxysmal wheezy cough, dyspnoea & irritability	h/o previous episodes + family h/o atopy, allergic rhinitis ±	Minor URI which progresses rapidly High fever Unable to phonate Child sits up with extended neck Drooling of Saliva	Mild URI for 1-2 days Brassy cough Agitation, Incessant cry
Signs	Tachypnoeic infant Prolonged difficult expiration or wheeze Hyper inflated chest Intercostal & subcostal recession	Recurrent bouts of cough, shortness of breath & tightness of chest due to airway narrowing	Direct visualization of large cherry red swollen epiglottis on laryngoscopy	Inspiratory stridor with flaring of nostrils, suprasternal, intercostal & subcostal retraction Wheezing
Investigations	Blood routine examination Chest X-ray	Blood routine examination Chest X-ray GRBS	X-ray soft tissue neck lateral view (Thumb Sign)	Blood Routine examination Chest X-ray
Treatment	Humidified Oxygen Frequent small feeds IV fluids if unable to feed Nebulisation with 3% saline TID Nebulisation with beta agonists like adrenaline or Salbutamol Antibiotics only if secondary infection is present	Nebulisation: Salbutamol 0.5ml/1ml + 3ml NS with oxygen x 3 times @ 20 minutes interval Inj. Hydrocortisone 10mg/kg (or) Tab. Prednisolone 1-2mg/kg/day	Give first dose of steroid Humidified oxygen 2-4L/mt by mask or nasal catheter Antibiotics Ceftriaxone 100mg/kg/d in 2 doses Cefotaxime 200mg/kg/d in 4 doses	Humidified oxygen IV fluids if dehydrated or unable to feed Give first dose of steroid Nebulisation with adrenaline(1/1000) 0.5ml/kg-repeat if needed Avoid sedation
Indications for Referral	Apnoea or h/o apnoea Cyanosis SpO ₂ < 92% Respiratory muscle fatigue Preterm, SGA Known case of heart disease Danger signs	Danger signs like drowsiness, agitation, cyanosis, inability to vocalize, silent chest Dehydration Hypotension Pulsus paradoxus	All cases should ideally be treated in a tertiary center due to risk of sudden respiratory distress	Severe croup not responding to treatment

ACUTE DIARRHOEAL DISEASE

Diarrhoea : the passage of three or more loose or liquid stools per day

Dysentery: Presence of blood in stools

Persistent Diarrhoea: loose stools for more than 14 days

Assessment of Severity of Dehydration

Two of the following signs		Use
<ul style="list-style-type: none"> Lethargic or unconscious Sunken Eyes Not able to drink or drinks poorly Skin pinch goes back very slowly (>2s) 	SEVERE DEHYDRATION	PLAN C
Two of the following signs		
<ul style="list-style-type: none"> Restless Irritable Sunken Eyes Drinks eagerly, thirsty Skin pinch goes back slowly (<2s) 	SOME DEHYDRATION	PLAN B
Not enough signs to classify as severe dehydration or some dehydration	NO DEHYDRATION	PLAN A

- The Drug of choice for management of dehydration is ORS
- Look for other associated conditions like Malnutrition, Pneumonia, Otitis media, sepsis or other associated systemic illness
- Suspect Cholera in all cases of severe dehydration; Send stool samples for 'Hanging drop' to district lab and vibrio culture to Medical College

Treatment

PLAN A: Prevention of dehydration/ Prevention of ongoing losses to prevent dehydration

ORS for Prevention of dehydration		
Show the mother how much ORS to give after each stool and give her enough packets for two days		
Age	Amount of ORS after each loose stool	Amount of ORS to provide for use at home
Less than 24 months	50-100 ml	500 ml/day
2 years to 10 years	100-200 ml	1000 ml/day
10 years or more	As much as wanted	2000 ml/day
ORS is appropriate for both prevention and treatment of dehydration		

- Show the mother how to mix ORS and how to give ORS
- Give a teaspoonful every minute for a child under 2 yrs; frequent sips from a cup for an older child
- If child vomits, wait for 10 minutes and then give the solution more slowly
- Continue feeding the child with diarrhoea

PLAN B: Patient with physical signs of dehydration

- 75 ml/kg of ORS in the first 4 hours should be started immediately
- Only use patient's age if weight is not known
- More ORS should be offered if the child wants it
- Breast feeding should be encouraged and continued whenever the child wants
- If the child vomits, wait for 10 minutes and then continue, but more slowly

Guidelines for treating patients with some dehydration when body weight is not known

Approximate amount of ORS solution to be given in the first 4 hours

Age	Up to 4 months	4 months to 12 months	12 months to 2 years	2 years to 5 years	5 years to 14 years	More than 14 years
Approx wt in Kg	<6	6-10	10-12	12-19	20-30	>30
ORS in ml	200-400	400-700	700-900	900-1400	1500-2200	2200-4000
Glass	1-2	2-3	3-4	4-6	6-11	12-20

Table 5.2.4: Guidelines for maintenance fluid therapy

How much ORS to give for replacement of ongoing stool losses to maintain hydration	
Age	After each liquid stool, offer
Less than or equal to 6 months	Quarter glass (50ml)
7 months to less than 2 years	Quarter to half glass (50-100ml)
2 years to 10 years	Half to one glass (100-200ml)
Older children and adults	As much as desired

PLAN C: Children with severe dehydration should be given rapid intravenous rehydration

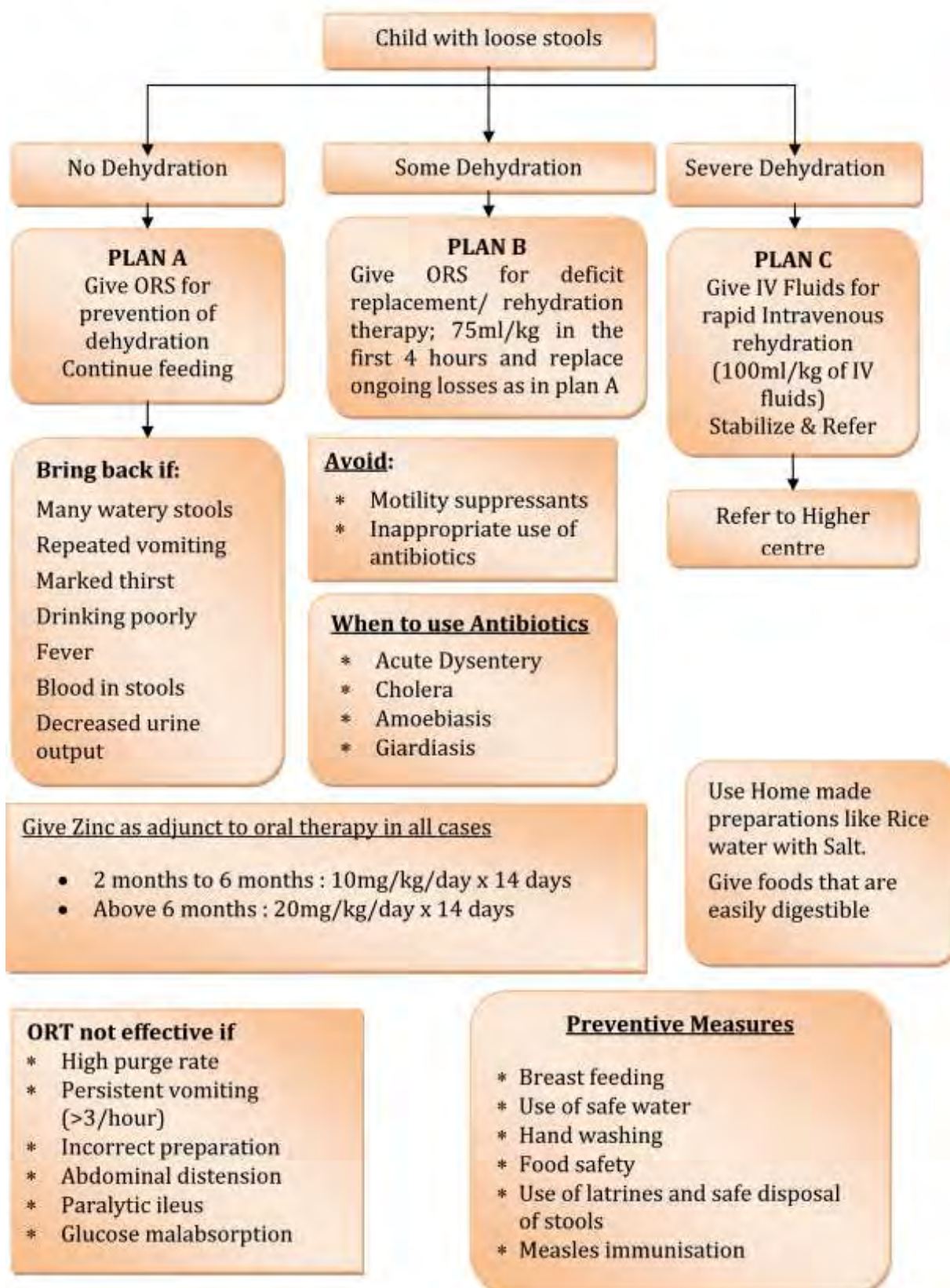
- * Best IV fluid solution is Ringer's lactate solution. If Ringer's lactate is not available, Normal saline solution can be used. Dextrose on its own is not effective.
- * 100ml/kg of the chosen solution should be given as follows

Age	First give 30 ml/kg in	Then give 70ml/kg in
<12 months	1 hour*	5 hours
Older children	½ hour*	2 ½ hours

* Repeat again if radial pulse is still very weak or not detectable

- * All children should be started on ORS solution (5ml/kg/h) when they can drink without difficulty during the time they are getting IV fluids
- * If unable to give IV fluids, rehydration with ORS using nasogastric tube at 20ml/kg/h should be started immediately. Reassess the child every 1-2 hours. If there is repeated vomiting or abdominal distension, fluids should be given more slowly. If there is no improvement after 3 hours, IV fluids should be started as early as possible.

Management of ADD in Children



DEVELOPMENTAL DELAY

Management of Developmental Delay					
Symptom	Diagnostic Criteria	Differential diagnosis	Investigation	Referral criteria	Follow up
Delayed milestones of development	Not achieving/ delay in any or all of the below as per age 1. Social smile by 2 months 2. Sucks on hands by 4 months 3. Reaches out for an object by 6 months 4. Looks for a spoon or a toy that has dropped by 6 months 5. Responds to her name by 9 months 6. Responds to 'No!' by 12 months 7. Searches for hidden objects by 12 months 8. Imitate house hold tasks by 18 months 9. Pretend play by 2 years 10. Parallel play by 2 years 11. Crossed play by 3 years	1. Developmental delay 2. Autism 3. Vision impairment 4. Hearing impairment 5. Neurological ailments	Screening by JPHN using RBSK screening card and tool kit	1. Immediate referral to DEIC 2. Do not wait for spontaneous improvement. 3. Any loss of already attained milestones needs referral	As per advice from DEIC/THQH/DH/GH/WC
Visual delay/ deficit	Not achieving/ delay in any or all of the below as per age No Eye contact, not following light or bright object by 2-4 months Not smiling at mother by 2-4 months Bumping at objects during crawling by 9 months Putting small things into a cup by 15 months	1. Developmental delay 2. ROP 3. Congenital cataract 4. Retinoblastoma 5. Ocular trauma	Screening by JPHN using RBSK screening card and tool kit	Do not wait for spontaneous improvement. Immediate referral to DEIC	As per advice from DEIC/THQH/DH/GH/WC

Hearing deficit	<p>Not achieving/ delay in any or all of the below as per age</p> <p>Not becoming alert to sounds by 2 months</p> <p>Does not respond to mother's speech by 4 months</p> <p>Does not turn head or eyes to a whisper sound by 6 months</p> <p>Does not respond to name by 9 months</p>	<p>1. Developmental delay</p> <p>2. Congenital deafness</p> <p>3. Autism</p>	Screening by JPHN using RBSK screening card and tool kit	Do not wait for spontaneous improvement. Immediate referral to DEIC	As per advice from DEIC/THQH/DH/GH/WC
	<p>Not achieving/ delay in any or all of the below as per age</p> <p>Not <i>Cooing</i> or vocalizing by 2 months</p> <p>Babbles "<i>baba</i>", "<i>dada</i>", "<i>mama</i>" by 9 months</p> <p>Does not say one meaningful word by 12 months</p> <p>Not saying two words together like "<i>mama-milk</i>", "<i>car-go</i>" by 24 months</p> <p>Not speaking sentences by 36 months</p>	<p>1. Developmental delay</p> <p>2. Hearing impairment</p>	Screening by JPHN using RBSK screening card and tool kit	Do not wait for spontaneous improvement. Immediate referral to DEIC	As per advice from DEIC/THQH/DH/GH/WC
Motor delay	<p>Not achieving/ delay in any or all of the below as per age</p> <p>Gross Motor</p> <p>Neck holding -4months</p> <p>Roll over - 6 months</p> <p>Sit alone by 9 months</p> <p>Crawl by 12 months</p> <p>Stand-alone by 15 months</p> <p>walks well means he can walk</p>	<p>1. Developmental delay</p> <p>2. Hypothyroidism</p> <p>3. CNS infections</p>	Screening by JPHN using RBSK screening card and tool kit	Do not wait for spontaneous improvement. Immediate referral to DEIC	As per advice from DEIC/THQH/DH/GH/WC

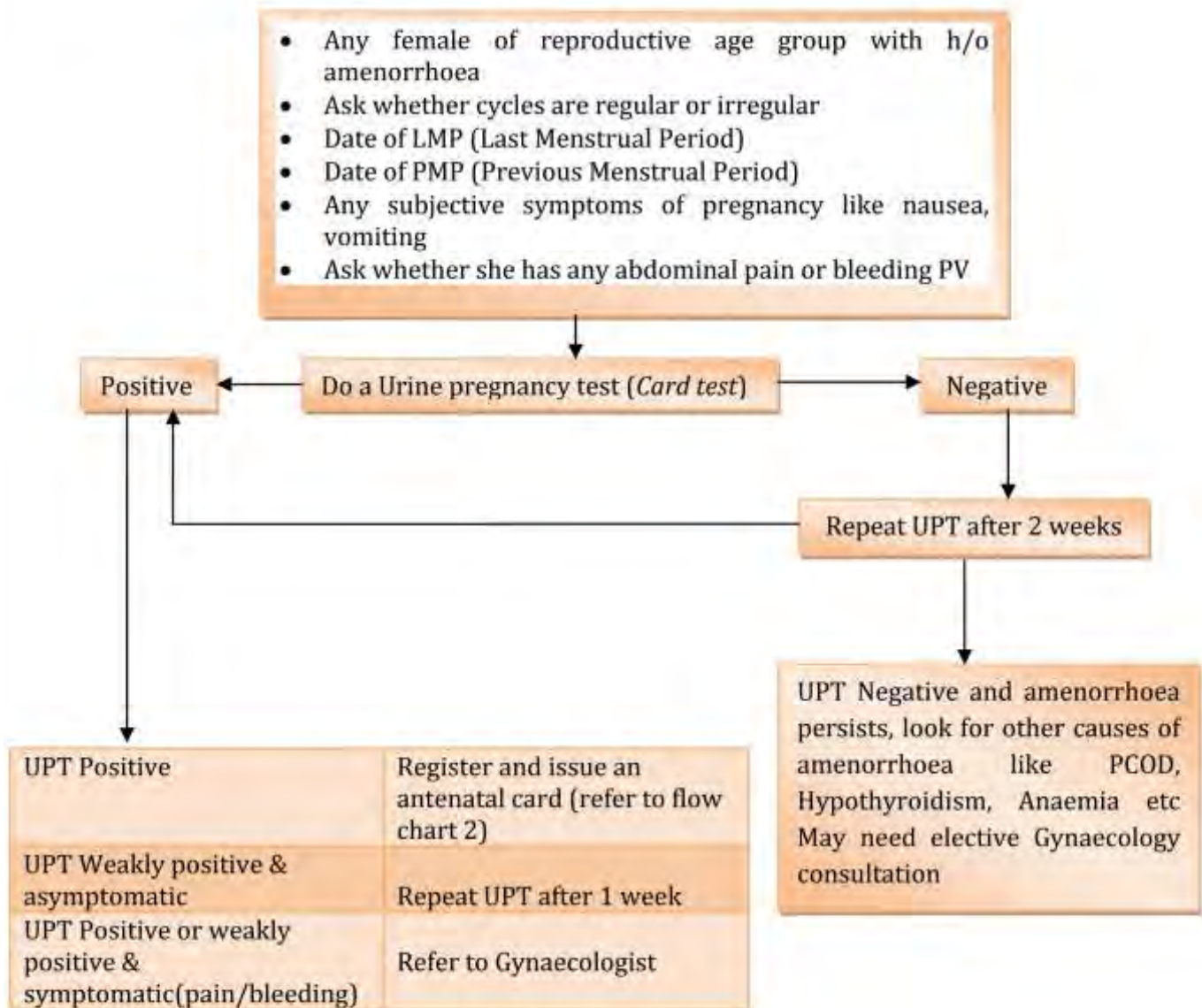
while pulling a toy by 18 months				
Walking upstairs one step at a time with holding by 2 years				
Walking upstairs alternating feet without holding by 3 years				
Fine Motor				
Hold rattle by 6 months				
Transfer object from hand to hand by 9 month.				
Pincer grasp by 12 months.				
Putting objects or toys in a container by 15 month.				
Scribble by 18 months				
Feeds self with hand or by spoon by 24 months				
	HR	Training	Investigation/ consumables	Equipment
				Enabling environment
A JPHN for screening of the babies during immunization/OP	MOs, JPHN, JHI Basic RBSK training, training in screening of children at different age groups and in Follow up physiotherapy and age specific stimulation		RBSK Screening tool Kit (Head circumference measuring tape, Mid-arm measuring tape, Infantometer, torch, Red ring, brass bell, cubes)	Play area cum screening area which is child and infant friendly for screening & follow up activities
Development screening card shall be incorporated along with immunization card. Instead of a card a booklet incorporating both will be ideal				

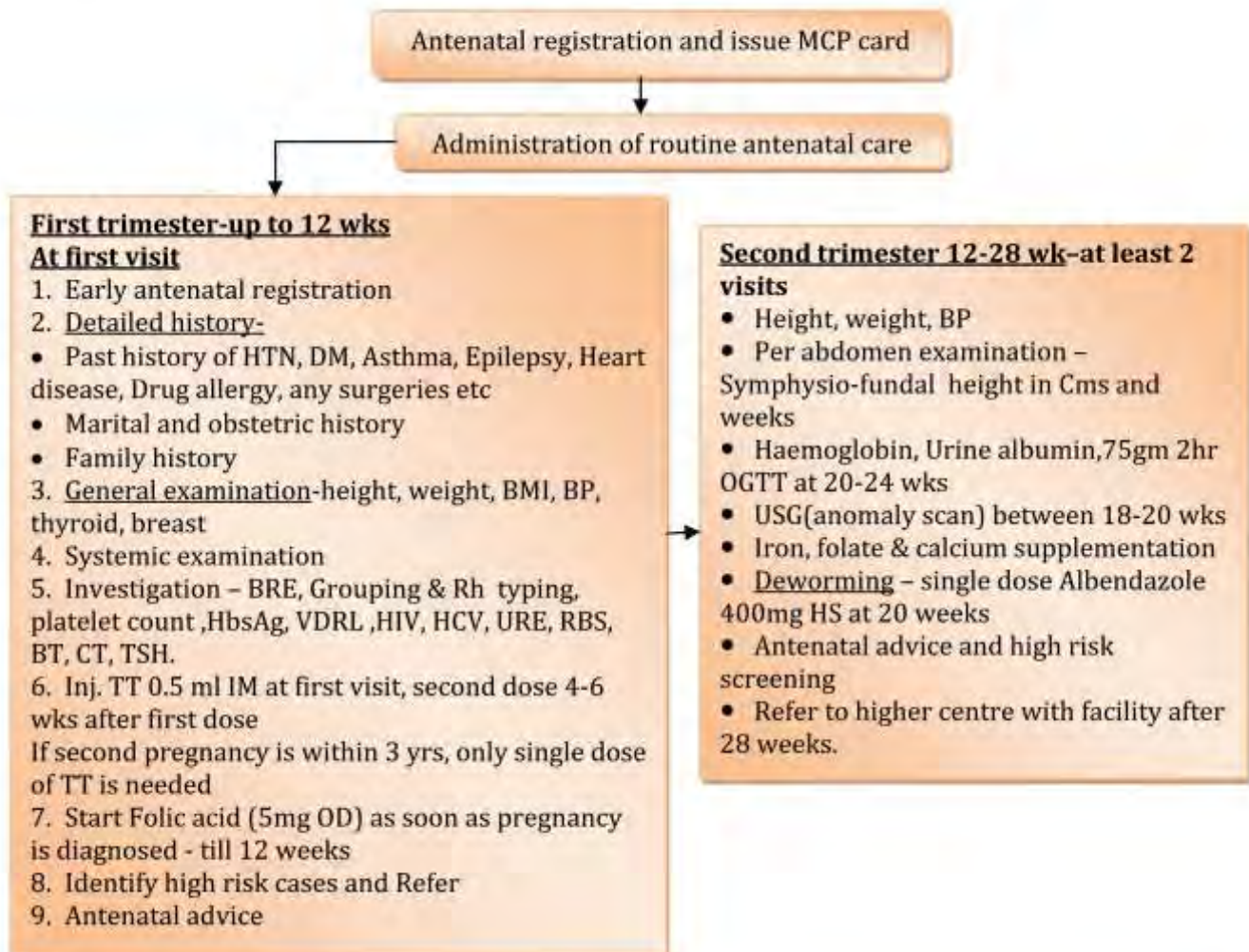
*As per RBSK criteria, facilitators guide /job aid of GOI

OBSTETRICS
GYNAECOLOGY

ANTENATAL CARE

Identifying an Antenatal Case in PHC



Normal Antenatal Case**Antenatal visits**

- once in a month up to 28 weeks
- After 28 weeks - refer for registration to a higher centre where delivery services are available.
- After registration, if she desires and if her medical and obstetric conditions permit, she may continue fortnightly follow up to 32 weeks & weekly follow up at PHC till 36 wks

Antenatal education (once a month antenatal classes)

1. Diet
2. Exercise - Walking and upper body exercise
3. Warning signs
 - a. Puffiness of face/ generalised bloatedness
 - b. Epigastric pain/ Vomiting
 - c. Decreased urine output
 - d. Blurring of vision/severe headache/ flashes of light before eyes
 - e. Fever / urinary symptoms/ generalised pruritus
 - f. Leaking PV/ abnormal vaginal discharge
 - g. Bleeding PV
 - h. Abdominal pain
 - i. Decreased foetal movement
 - j. Easy fatiguability/ exertional dyspnoea
4. Maternity benefits (JSSK/JSY etc)
5. Hygiene
6. Sleep
7. Advice on family planning-PP IUCD, IUCD, Condoms, sterilisation etc.

Advice on Diet

HAVE

- small frequent meals and snacks
- Adequate fluid intake (12-15 glasses/day)
- adequate fiber
- Green leafy vegetables
- High protein diet

AVOID

- Smoking, & alcoholism
- Excessive caffeine in tea, coffee, cola or use of illicit drugs
- Self medication
- Dieting
- Fasting

Recommended weight gain	
BMI	Weight gain (Kg)
<18.5	12.7-18.2
19-24.9	11.4-15.9
25-29.9	6.8-11.4
>30	6.8

Advice on Exercise

Regular mild to moderate exercise at least 3 times per week is safer than intermittent burst of activity. Jerky, bouncing vigorous movements should be avoided.

Contraindications to exercise:

- Cardio vascular diseases
- Acute infections
- History of recurrent abortions/pre-term labour
- Multiple pregnancy
- Cervical incompetence
- Pre-eclampsia/chronic hypertension
- Pulmonary diseases
- Uncontrolled Type-I DM

Fluid must be taken before, during and after exercise to prevent dehydration
Avoid supine position after first trimester; lie in the left lateral position.
Avoid prolonged standing without moving
Better to avoid sexual intercourse in the first and third trimesters especially in high risk cases.

Identification of High Risk Cases at PHC

- History, symptoms, observation and examination
- Risk categorisation should be done at every visit

Early referral to secondary centre

- Age ≥ 35 years and < 18 years
- Weight less than 40 kgs and height less than 140 cm
- BMI > 25 and < 18
- Scarred uterus (Previous caesarean, myomectomy)
- Bleeding PV, Leaking PV or abdominal pain in any trimester
- Detection of PIH (BP $\geq 140/90$ mm Hg), proteinuria or GDM (75gm OGTT-Fasting > 95 mg%, 2hourly ≥ 140 mg %)
- Disparity between uterine size and period of amenorrhoea (> 2 weeks)
- Previous h/o IUD, Abruption, Pre-term labor, Eclampsia or PPH
- Anaemia, Hb < 9 gm%
- Pregnancy complicated by medical disorders (Seizure disorders, Thyroid disorder, Infections)
- Recurrent pregnancy loss
- Previous h/o anomalous baby

Direct referral to tertiary centre

- Heart disease of moderate or severe degree complicating pregnancy
- Women on anti-coagulant therapy
- Previous caesarean section with anterior placenta praevia
- Morbid obesity
- Imminent Eclampsia, Eclampsia or HELLP syndrome
- Severe degree of APH or PPH

Management of Common Complications in ANC

Complications	Management
Lower abdominal pain (Ectopic/ UTI not responding to treatment/non-obstetric causes of abdominal pain)	Refer to higher centre
Bleeding PV	<ul style="list-style-type: none"> • Check vital signs • Insert a Wide-bore IV cannula(16/18 G) with Normal Saline on flow • Labeled blood sample-2(plain & EDTA) • Refer to higher centre with facilities
Hyperemesis up to moderate severity	Check urine acetone <ul style="list-style-type: none"> • <u>Urine acetone negative</u>- correct dehydration- Oral/IVF (RL+5%D) & Doxylamine 10 -20 mg BD or Ondansetron 4 mg BD. If not responding, refer to secondary centre • <u>Urine Acetone Positive</u> – Start IVF + antiemetics (Ondansetron, Metoclopramide or Promethazine) and Refer
Convulsions (suggestive of Eclampsia)	<ul style="list-style-type: none"> • Ensure patent airway • IV line • Start loading dose of Magnesium sulphate • Refer in ALS ambulance
Symptoms of imminent Eclampsia and high BP	<ul style="list-style-type: none"> • IV Labetalol 20 mg IV slow in 3-5 min or Oral Nifedipine 10 mg • Prophylactic dose of Inj. Magnesium sulphate 4 gm deep IM on buttocks (50% Magnesium sulphate 4 ampoules) • Refer in ALS Ambulance
Decreased Fetal movements	<ul style="list-style-type: none"> • Refer immediately to higher centre
ILI/H1N1 during pregnancy	<ul style="list-style-type: none"> • Start Oseltamivir 75mg BD x 5 days • Refer if there are any red flag signs like dyspnoea, chest pain, drowsiness, hypotension, haemoptysis or cyanosis
Haemorrhoids	<ul style="list-style-type: none"> • Fiber rich diet, fluids, avoid constipation, avoid straining during defaecation • Tab. Cefixime 200 mg 2 tabs stat • Local application of Calcium dobesilate, Hydrocortisone & Lignocaine cream

POSTNATAL CARE

Components

- Post natal checkups
- Investigation and management of common post natal problems
- Health education
- Care of the baby and Immunisation
- Contraception

Post Natal Checkups

Post Natal Visit: At 6 weeks

- General examination
- Blood pressure
- Breast examination
- Per abdominal examination

Common Post Natal Problems

- UTI
- Wound infection
- Acute mastitis
- Constipation and Bleeding PR
- Cracked nipple
- Puerperal sepsis and Secondary PPH-Refer to nearest gynaecologist
- Post partum psychosis-refer to psychiatrist

Rare but Serious Problems

Deep Vein Thrombosis (DVT)-Refer to tertiary centre
Cortical venous thrombosis (CVT)-Refer to tertiary centre

Report to Health Centre if,

- Sleep alterations
- Loss of appetite
- Change in attitude to the baby
- Headache
- Altered sensorium
- Discolouration/ Temperature change in lower limbs
- Pedal oedema
- Fever, Dysuria, Abdominal pain or Loin pain
- Foul smelling discharge PV or bleeding PV
- Pain, redness or swelling of the breast
- Constipation or Faecal incontinence

Management

Continue Iron & Calcium for at least 6 months.

- UTI: Do urine RE. Give antibiotics & analgesics
- Wound infection: Do BRE, Platelet count, URE. Give antibiotics, analgesics. If not responding refer
- Acute mastitis: Antibiotics; if not responding refer
- Cracked nipple: local emollient cream (lanolin)
- Constipation and bleeding PR: Diet restriction, laxatives, local creams
- PIH & GDM: Review once in 2 weeks till 6 weeks
- Hypothyroidism: Review after 6 weeks. Continue treatment as per guidelines

Health Education and Counseling

- Post natal exercises
- Diet during lactation
- Need for exclusive breast feeding for 6 months(proper positioning, burping)
- Child rearing
- Counseling- for women & family in case of pregnancy loss
- Spacing – 3 years
- Immunisation of the newborn

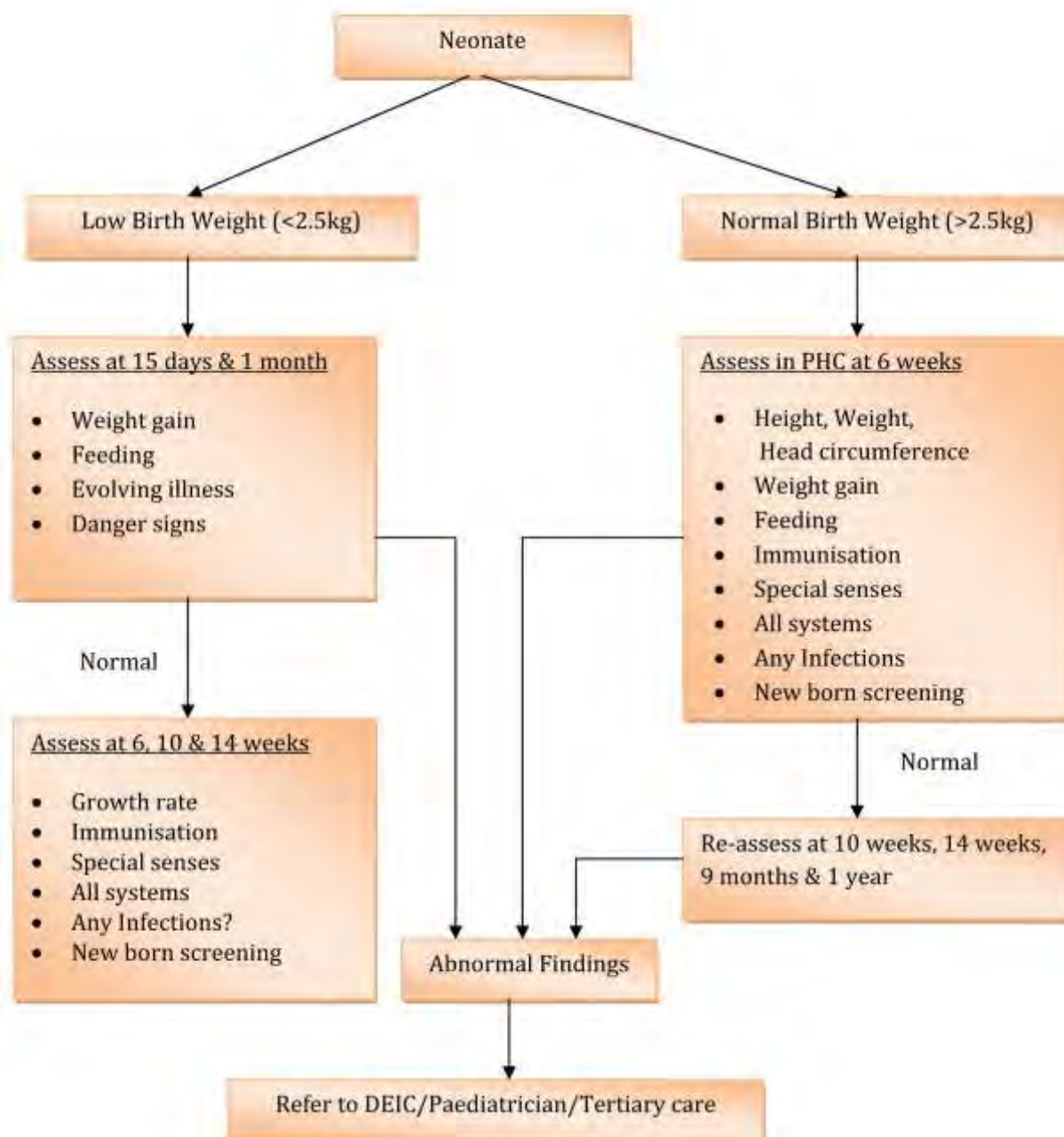
Contraception

Copper T,
Condom
Sterilisation advice

Refer if**Systemic Infection**

**DVT, CVT, Puerperal sepsis,
suspected psychosis or Depression**

NEW BORN CARE

**DANGER SIGNS IN NEONATES**

- Lethargy or Poor feeding
- Fast breathing, chest indrawing
- Apnoea or Cyanosis
- Seizures
- Jaundice (before 24 hours and persistence of jaundice beyond two weeks of age).

- Hypothermia
- Hypoglycemia
- Incessant crying
- Persistent vomiting
- Diarrhoea

Common Neonatal problems

- **Regurgitation of feeds**
Non projectile vomiting of food and other stomach contents without force is usually normal. Advice proper feeding techniques and burping after each feeding
- **Passing stools after feeding**
Passage of stools after each feed is usually normal in neonates (gastrocolic reflex) and does not require any medicines
- **Incessant crying**
Infants usually cry when they are hungry or having any discomfort like a wet napkin, blocked nose etc and crying before passing urine is normal. Excessive crying or inconsolable high pitched crying means the child is sick and requires immediate medical attention
- **Umbilical sepsis**
In mild cases with pus not extending to periumbilical skin apply any topical antibiotic. In cases with infection extending to the periumbilical skins refer to higher centre.
- **Vaginal bleeding after 4 days of birth is normal**

Immunization Schedule

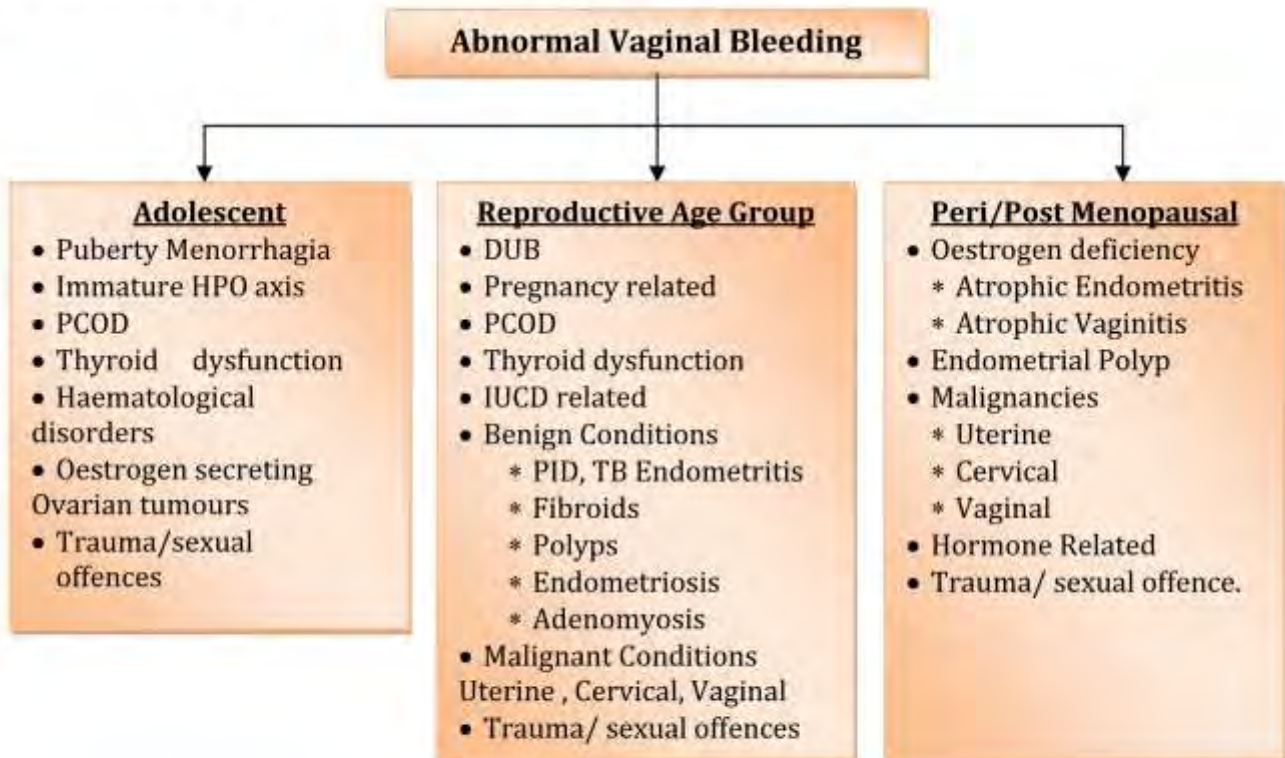
Age	Vaccines
At Birth	BCG, OPV 0 dose, Hepatitis B
6 weeks	Pentavalent Vaccine 1 st dose , OPV 1 st dose, IPV 1 st dose
10 weeks	Pentavalent Vaccine 2 nd dose , OPV 2 nd dose
14 weeks	Pentavalent Vaccine 3 rd dose , OPV 3 rd dose, IPV 2 nd dose
9 months	Measles vaccine
15 months	MMR or Measles vaccine 2 nd booster
18 months	DPT 1 st booster, OPV, JE vaccine(optional)
5 years	DPT 2 nd booster
10 years	TT
16 years	TT

Vitamin A – 9 months to 5 years at 6 monthly intervals; Total 9 doses

COMMON GYNAECOLOGICAL PROBLEMS

ABNORMAL VAGINAL BLEEDING

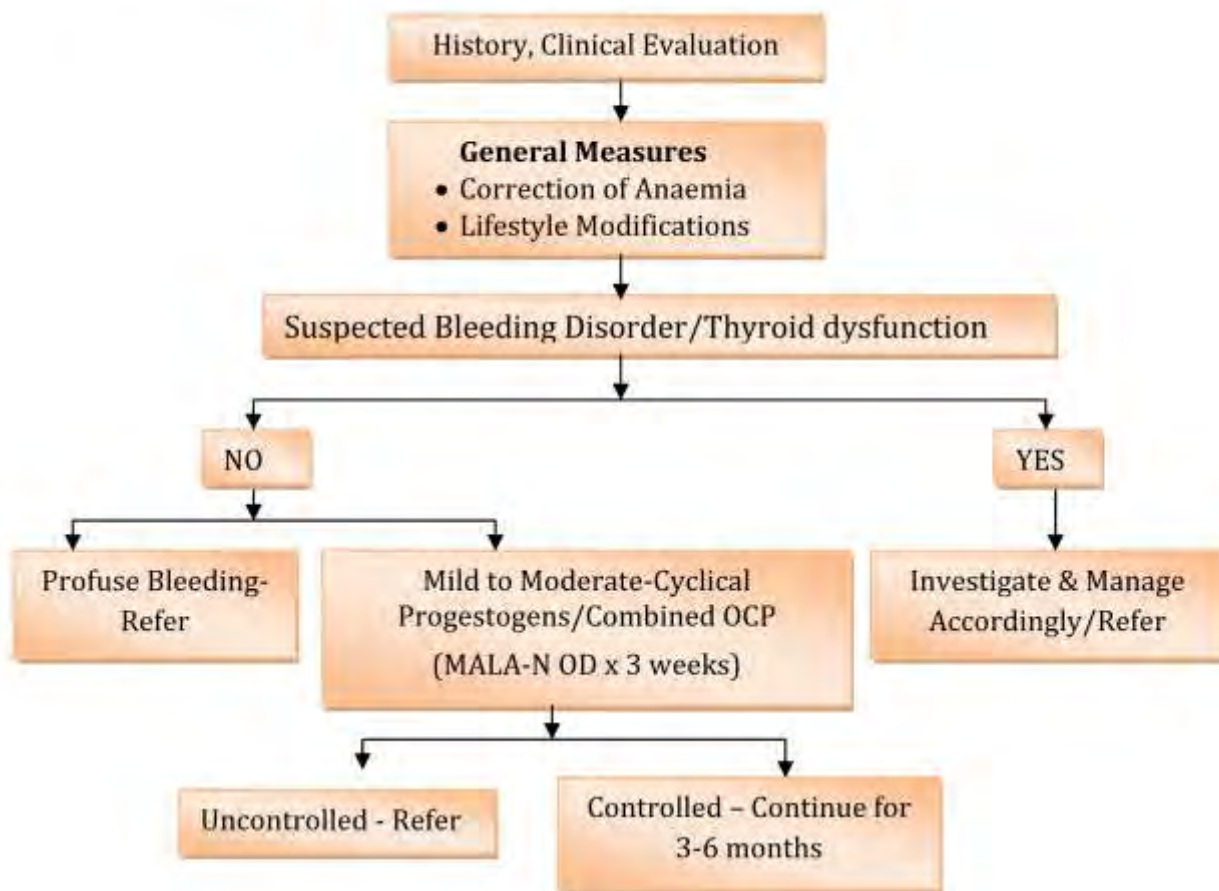
Differential Diagnosis



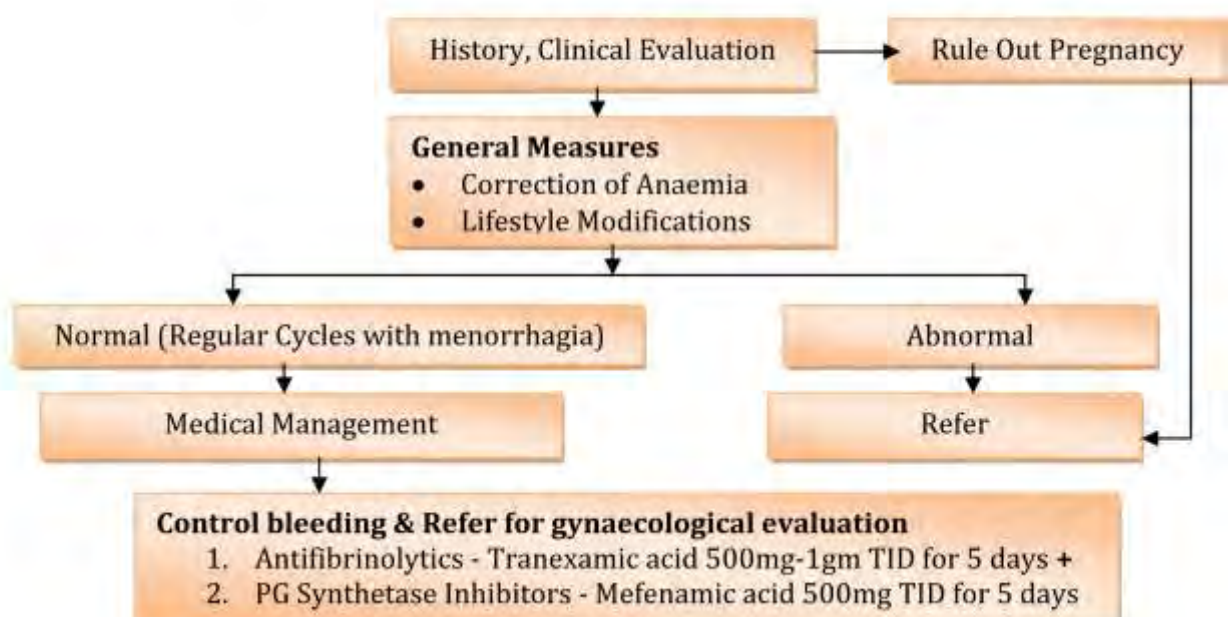
Clinical Evaluation

HISTORY	EXAMINATION	INVESTIGATIONS
<ul style="list-style-type: none"> • LMP, PMP • Previous h/o any similar conditions • H/o any medical disorders • Previous h/o surgery 	<ul style="list-style-type: none"> • General <ul style="list-style-type: none"> * Pallor, thyroid enlargement • Abdomen <ul style="list-style-type: none"> * Mass, tenderness • Local <ul style="list-style-type: none"> * Bleeding * Injuries 	<ul style="list-style-type: none"> • Blood RE • BT, CT • Platelet count • TSH

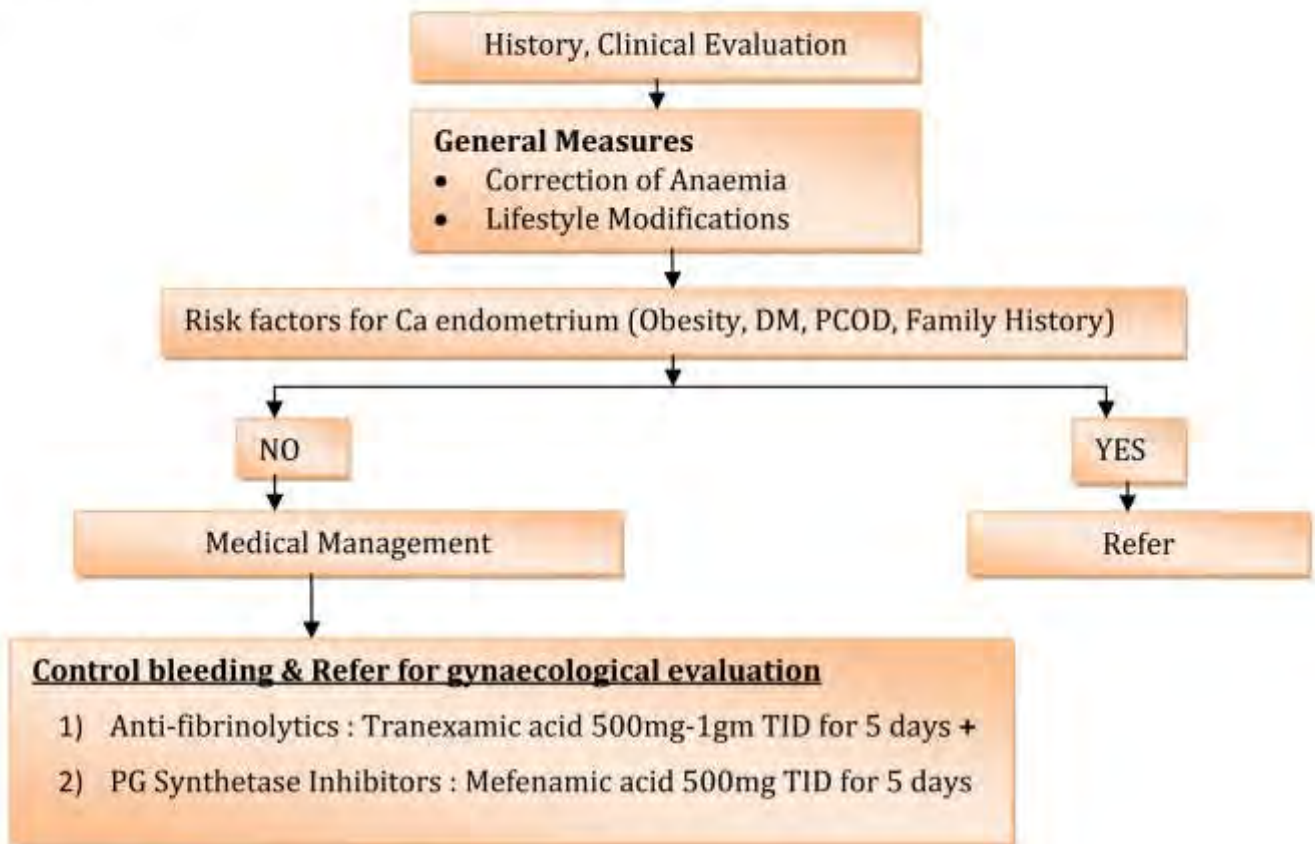
Management in Adolescent Age Group



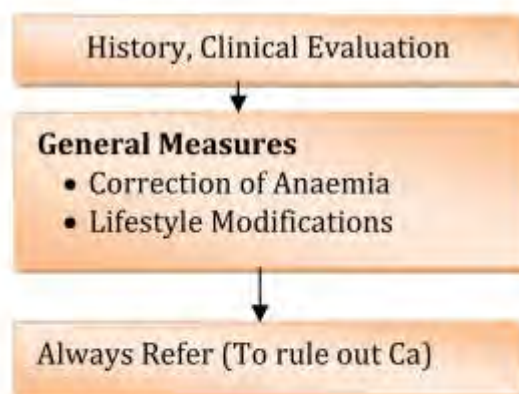
Management in Reproductive Age Group

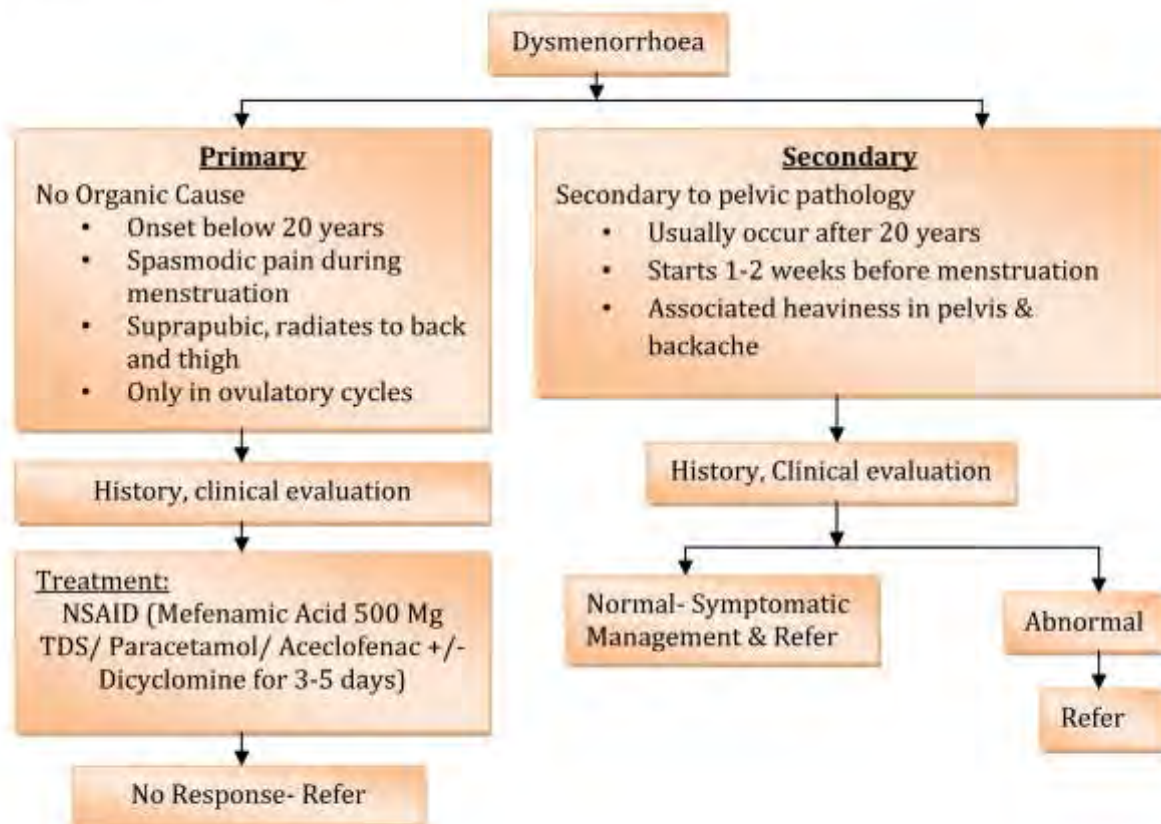


Management in Perimenopausal Age Group

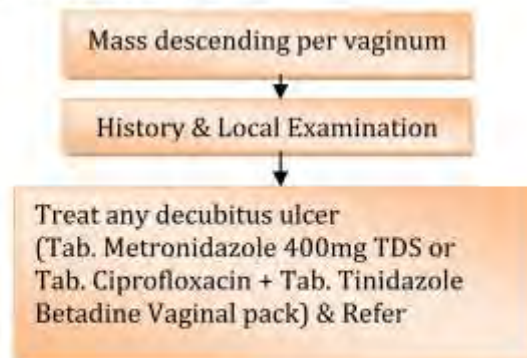


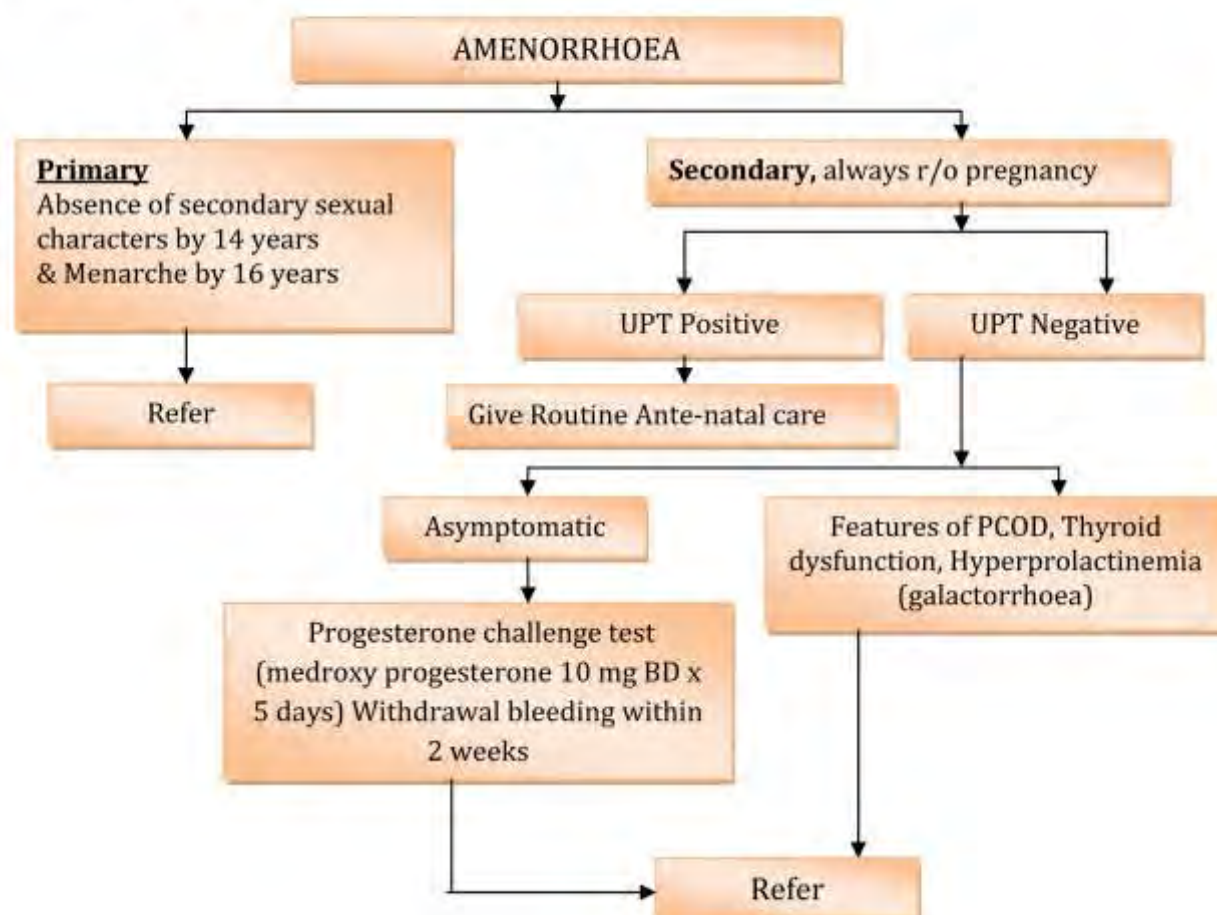
Management in Post Menopausal Age Group



DYSMENORRHOEA**Management of Dysmenorrhoea****Mass Descending Per Vaginum****Causes**

- Pelvic organ prolapse
- Congenital elongation of cervix
- Polyps
- Chronic inversion of uterus
- Vaginal cysts

Management of Mass Descending Per Vaginum

AMENORRHOEA**Management of Amenorrhoea****UPT Positive in women less than 18 years of age**

Inform Child welfare committee as per POCSO Act & Refer to a Gynaecologist

URINARY TRACT INFECTION**Management of Urinary Tract Infection**

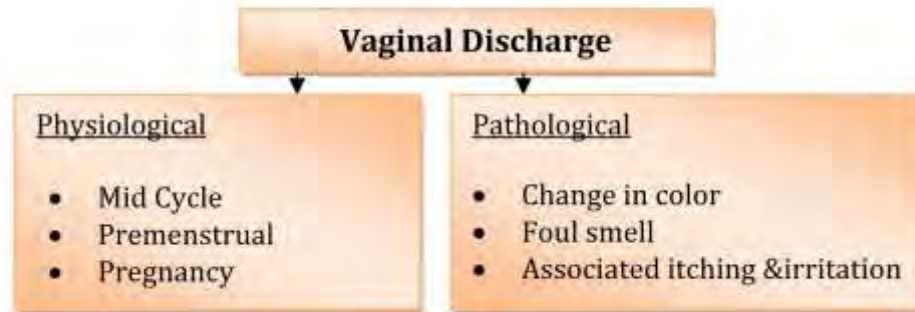
Symptoms	Common Organisms	Investigations	Management
<ul style="list-style-type: none"> • Frequency • Urgency • Dysuria • Haematuria • Pelvic pain • Fever • Backache 	<ul style="list-style-type: none"> • E-coli • Klebsiella sp. • Pseudomonas • Proteus sp. • Streptococcus faecalis • Enterococci • Staphylococcus saprophyticus 	<ul style="list-style-type: none"> • <u>Urine routine</u> <p>> 10 pus cells / HPF In Pregnancy \geq 5-6 pus cells/HPF)</p>	<p><u>Uncomplicated Cases</u></p> <p>T. Norfloxacin 400mg BD x 7 days Or T. Ciprofloxacin 500mg BD x 7 days Or T. Nitrofurantoin 100mg QID x 5 days Or C. Ampicillin 500mg Q6H or Cephalosporins</p> <p><u>Pregnancy & Lactation</u></p> <p>C. Ampicillin 500mg Q6H x 7 days Tab. Cefixime 200mg BD x 7 days</p>

Indications for Referral

- Un Complicated cases not responding to oral therapy; For Culture & Sensitivity
- Complicated cases
- UTI with Pregnancy
- Persistent & recurrent cases

STRESS URINARY INCONTINENCE**Management of Stress Urinary Incontinence**

Risk factors	Investigation	Management
<ul style="list-style-type: none"> • Age • Multiparity • Vaginal delivery • Obesity • Menopause • Chronic increase in intra-abdominal pressure • Smoking • Previous surgery 	<ul style="list-style-type: none"> • Urine RE • Urine C&S if available 	<ul style="list-style-type: none"> • Lifestyle modifications • Treatment of UTI if present • Nonsurgical management • Pelvic floor exercises • Refer for Gynaecological or Urological evaluation

VAGINAL DISCHARGE**Vaginal Discharge in Children**

Causes	Management
<ul style="list-style-type: none"> • Nonspecific Vulvo-vaginitis <ul style="list-style-type: none"> * Poor Hygiene * Allergies * Foreign body • Specific Vulvo-vaginitis <ul style="list-style-type: none"> * Streptococcus * Other bacteria * Pinworm * Candida, Trichomonas 	<p>Local examination Look for pinworm infestation <u>Bloodstained/Foul smelling Discharge</u>: Suspect Foreign body & refer URE</p> <p><u>Management</u></p> <ul style="list-style-type: none"> • Good Hygiene • Treatment of Allergies • Bacterial infections –Antibiotics (C. Ampicillin or Cephalosporin for 5-7days) • Pinworm infestation –Albendazole 400 mg HS • Candidal infection –Clotrimazole local application for 2 months. If No response; Refer • Trichomoniasis : Metronidazole • Suspected sexual assault – refer to Gynaecologist

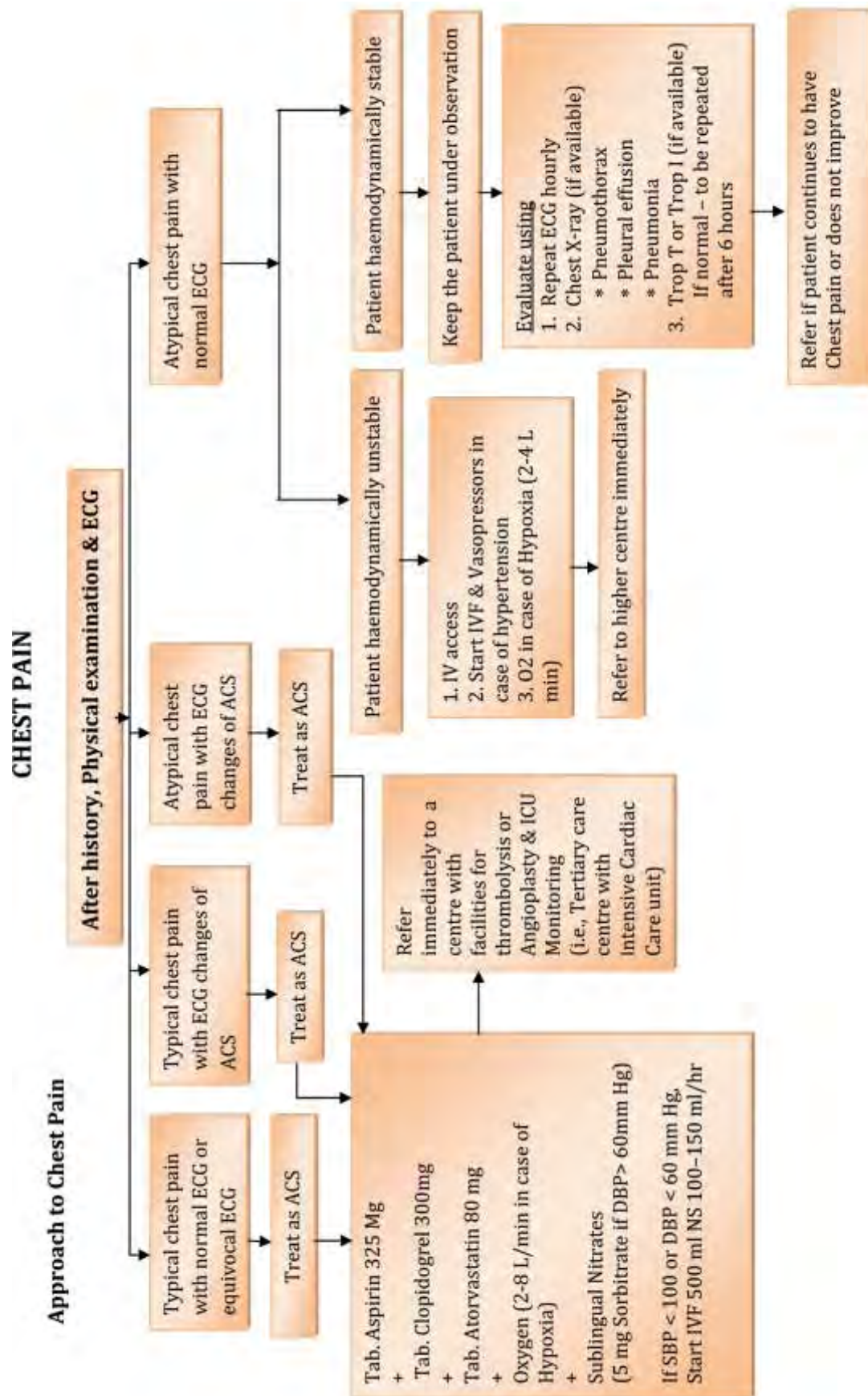
Vaginal Discharge in Reproductive Age Group

Causes	Management
<ul style="list-style-type: none"> • VAGINITIS <ul style="list-style-type: none"> * Bacterial Vaginosis * Trichomonas Vaginitis * Candidal Vaginitis * Mixed infection • CERVICITIS <ul style="list-style-type: none"> * Gonococcal infection * Chlamydia trachomatis infection • ACUTE PELVIC INFECTION <ul style="list-style-type: none"> * Gonococcal infection * Chlamydia -trachomatis infection * Other aerobic/anaerobic pathogens • CHRONIC PELVIC INFECTION <ul style="list-style-type: none"> * Chronic PID * Tuberculosis 	<ul style="list-style-type: none"> • History • Local examination • Syndromic management of vaginal discharge (Tab. Secnidazole 2g stat(or) Tab. Metronidazole 400mg BD x 7 days PLUS Cap. Fluconazole 150mg stat) • REFER if there is no relief

Vaginal Discharge in Post Menopausal Women

Causes	Management
<ul style="list-style-type: none"> • Senile Vaginitis -Purulent discharge, Spotting, Bleeding • Malignancies -Vulval, Vaginal, Cervical, Endometrial • Pyometra 	<ul style="list-style-type: none"> • History • Local examination • REFER all cases for Gynaecology consultation

EMERGENCY CARE



APPROACH TO AN UNCONSCIOUS PATIENT

General Measures

- Clear the airway, insert oropharyngeal airway if required
- Give oxygen at 6 litres/minute
- Assess level of consciousness using Glasgow coma scale
- Check Pulse rate, Blood pressure, Respiratory rate, SpO₂ and RBS(if available)
- Establish IV access using a wide bore cannula
- Give Ringer lactate if the patient is bleeding; else give Normal saline
- If there is hypotension (BP <90/60), give IV fluids rapidly till BP is stabilised. Stop if patient becomes dyspnoeic
- If RBS is <70mg/dL, give 100ml 25% Dextrose IV
- ECG should be taken

Indications for Referral

- SpO₂ < 90% in room air
- Hypotension
- Suspected Head injury
- Suspected poisoning
- Signs of sepsis/Meningeal irritation
- Seizures
- Altered sensorium; Reduced GCS
- ECG changes
- Focal neurological deficits
- Suspected metabolic encephalopathies
- Any patient who cannot be revived after initial measures

Glasgow Coma Scale

- **Eye Opening**
 - * Spontaneous – 4
 - * To speech – 3
 - * To pain – 2
 - * None – 1
- **Best Motor response**
 - * Obeying commands – 6
 - * Localizes purposefully to pain- 5
 - * Withdraws to pain – 4
 - * Flexing – 3
 - * Extending – 2
 - * None – 1
- **Best verbal response**
 - * Oriented – 5
 - * Confused – 4
 - * Inappropriate words – 3
 - * Incomprehensible – 2
 - * None – 1

Add scores to give a single score

ACUTE HEART FAILURE

Symptoms

- Breathlessness
- Orthopnoea
- Chest discomfort
- Palpitation

Signs

- Look for signs of Congestion/Cardiac Involvement:
 - * Tachycardia, Tachypnoea
 - * Elevated JVP, Peripheral oedema, Ascites, Hepatomegaly
 - * Displaced Apical pulse due to Cardiomegaly
 - * Gallop rhythm
 - * Cardiac murmur
 - * Chest- Bilateral basal crackles
- Look for signs of Low Cardiac Output:
 - * Hypotension
 - * Altered level of consciousness, confusion
 - * Cold & clammy peripheries and low volume Carotid pulse
 - * Tachycardia or Bradycardia
 - * Decreased urine output
 - * Peripheral cyanosis

Investigations

- ECG
- Cardiac markers—CPK, CPK-MB, Troponin T and I (if available)

Treatment

- Monitor SpO₂ and administer Oxygen in high concentration to maximize tissue oxygenation as hypoxia can depress myocardial function
- Head end elevation (avoid if patient is hypotensive)
- Relieve anxiety—provide reassurance and anxiolytics
- Diuretics - parenteral Frusemide- 40-80 mg IV stat
- Prevent and treat pain—2-4 mg Morphine if available
- Vasodilators - Isosorbide Nitrate sublingual (not to be given if patient is hypotensive)
- Fluid restriction
- Refer to a higher centre with facilities immediately after initiating the above measures

DYSPNOEA

Causes of Dyspnoea

- * Acute- within minutes to hours
- * Sub acute- within days/weeks
- * Chronic- Lasting more than one month. Approximately two thirds of cases of chronic dyspnoea are caused by a pulmonary or cardiac disorder.

Types of Dyspnoea

Acute Dyspnoea	Sub acute Dyspnoea
* Acute severe Asthma	* Pneumonia [e.g. TB]
* Pneumonia	* Congestive heart failure
* Pneumothorax	* Pericardial disease
* Thromboembolic disease	* Anaemia
* Cardiac failure-Pulmonary oedema	
* Non cardiogenic pulmonary oedema	
* Myocardial Infarction	
* Anaphylaxis	
* Psychogenic	

Differential Diagnosis of Chronic Dyspnoea

Cardiac	Pulmonary	Non-cardiac or Non-pulmonary
* Congestive heart failure	* COPD	* Thromboembolic disease
* Coronary artery disease	* Asthma	* Pulmonary hypertension
* Cardiac arrhythmias	* Interstitial lung disease	* Morbid obesity
* Pericardial disease	* Pleural effusion	* Severe Anaemia
* Valvular heart disease	* Malignancy (Primary or Metastasis)	* GERD
	* Bronchiectasis	* Metabolic conditions (acidosis, uraemia)
		* Liver cirrhosis
		* Thyroid diseases
		* Neuromuscular disorders (myasthenia gravis, amyotrophic lateral sclerosis)
		* Chest wall deformities (kyphoscoliosis)
		* Upper airway obstruction (Laryngeal disease, Tracheal Stenosis)
		* Psychogenic causes (GAD, PTSD, panic disorders)

New onset dyspnoea	Exacerbation of pre-existing dyspnoea	Combination	Multiple diseases
Myocardial Infarction	Asthma	Recurrent	Infection or Arrhythmia
Pneumonia	COPD	disease	exacerbating heart
Pulmonary embolism	Congestive heart failure	Myocardial	failure
Anaphylaxis	ILD	Infarction	Anaemia exacerbating
Arrhythmia	Cardiac arrhythmia	Pulmonary	cardiac failure
Trauma	Pleural/pericardial	embolism	COPD complicated by
Pneumothorax	effusion	Arrhythmia	pneumonia
	Neuromuscular disorder		
	Anaemia		

Consider every time:

- Myocardial Infarction
- Pulmonary embolism
- Infection/Sepsis
- Pericardial tamponade
- Arrhythmia
- Pneumothorax

Physical Examination findings and their interpretation

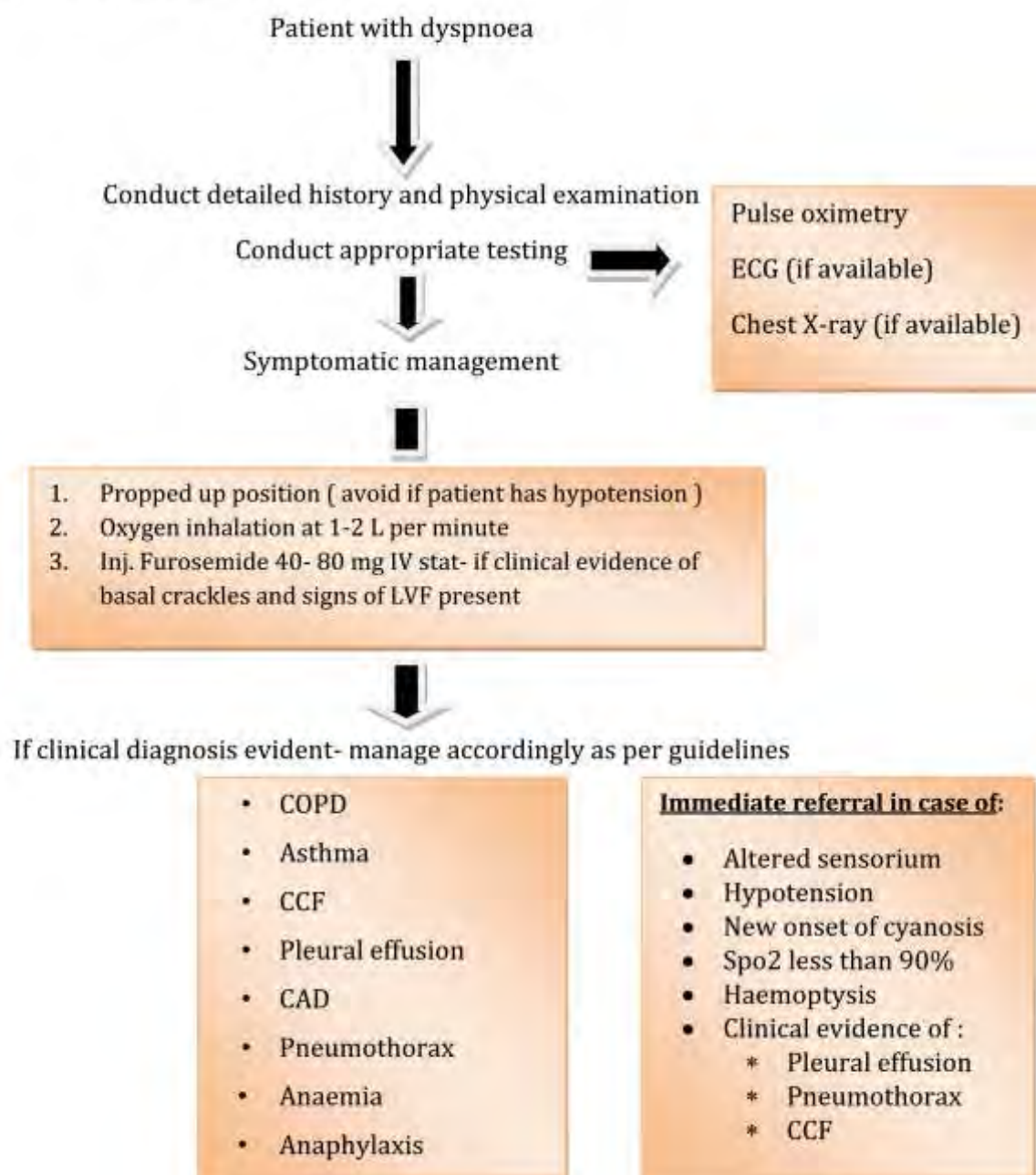
Fever	Pneumonia, Pulmonary Embolism
Tachycardia	Pneumonia, Tachyarrhythmia, Heart failure, Pulmonary embolism
Increase in weight/ Pedal oedema	may signal worsening Congestive Heart failure
Pursed-lip breathing and a prolonged expiratory phase	COPD
Retraction of the intercostal muscles on inspiration	Emphysema
Percuss for dullness and hyper resonance	Pleural Effusion / Pneumothorax
Wheeze on auscultation	Asthma, COPD, Heart failure, Cardiac ischaemia, Anaphylaxis
Crackles	Bronchitis, Pneumonitis, and CHF

- Normal findings on lung examination do not rule out pulmonary pathology but do lessen its probability and the likelihood that it is severe

Investigations

- **ECG** : Assess Acute Coronary Syndrome, changes secondary to pulmonary disease
- **Pulse Oximetry**: Hypoxia to assess severity and response to treatment
- **Chest X-ray** (if available): COPD, Pneumothorax, Effusion, Cardiomegaly, CCF, Pneumonia.

Initial Assessment and Management



HYPERTENSIVE CRISIS

- Hypertensive crisis is defined as a severe elevation in blood pressure with the potential to cause Target organ damage (Heart, Kidneys, Vasculature, Eyes or Brain)
- **Hypertensive Urgency** : There is no evidence of acute or ongoing target organ damage
- **Hypertensive Emergency** : There is evidence of acute & ongoing target organ damage

Causes

- * Discontinuing or missing Anti-hypertensive doses
- * Stroke
- * Myocardial Infarction
- * Heart failure
- * Renal failure
- * Eclampsia
- * Pheochromocytoma
- * Substance abuse

Signs & Symptoms

- * Severe hypertension; usually above 180/120 mm Hg
- * Headache, giddiness
- * Chest pain/ chest discomfort
- * Breathlessness
- * Vomiting
- * Anxiety, agitation and restlessness
- * Altered mental status
- * Paraesthesias
- * Visual disturbances
- * Haematuria

Examination

- * Measure Pulse Rate, SpO₂
- * Measure Blood pressure in both arms
- * Palpate all peripheral pulses
- * JVP
- * Auscultate for any murmurs or basal creps
- * Assess level of consciousness

Investigations

- * Electrocardiogram
- * Chest X-ray if available
- * Renal Function tests
- * Serum electrolytes if available
- * Urine microscopy: RBCs or RBC casts can be seen

Management

- * If there is any definite evidence of end organ damage, immediately refer the patient to a tertiary care centre
- * Initiate oral therapy for hypertension; Start Tab. Amlodipine 2.5– 5mg stat **or** Tab. Clonidine 0.1-0.2 mg stat. Blood pressure should not be lowered abruptly
- * Monitor Blood pressure hourly

Indications for Referral

- * If there is no fall in Blood pressure after 1-2 hours of starting antihypertensives
- * Very high blood pressure above 220/120 mm Hg
- * ECG changes suggestive of myocardial Ischaemia
- * Altered Sensorium
- * Seizures
- * Persistent headache/vomiting/giddiness

APPROACH TO A PATIENT WITH SEIZURES

- Seizures are brief episodes of involuntary movement that may involve a part of the body (partial) or the entire body (generalized), and are sometimes accompanied by loss of consciousness and control of bowel or bladder function.
- Aim of treatment should be to stop the seizures and determine the cause, if possible

Ask for

- * Previous history of seizures(if patient is on antiepileptics, ask if he/she had missed any doses)
- * History of Hypertension, Diabetes or any neurological illness
- * History of trauma
- * Drug history eg : Insulin, anti-epileptics, antidepressants etc
- * History of recent illness like fever
- * History of alcohol or other substance abuse; any recent withdrawal

General measures

- * Place the patient in recovery position
- * Protect the patient from trauma
- * Maintain airway and respiration
- * Give Oxygen
- A patient who presents with ongoing seizures should be managed as status epilepticus
 - * Check pulse, Blood pressure and SpO₂
 - * RBS to rule out hypoglycemia; correct hypoglycemia if any
 - * Obtain IV access
 - * **Give anti-epileptic medications**

Anti-Epileptic Medication

Drug	Dose
Diazepam	Adults : 5-10 mg slow IV; repeated if necessary Children : 0.3 mg/kg IV or 0.5mg/kg rectally
Lorazepam	4 mg IV stat; repeated if necessary
Phenytoin	20 mg/kg IV infusion in NS @ 50mg/minute

- * Give Inj. Thiamine 100mg IV with 100ml 25% Dextrose
- In case of febrile seizures, give Paracetamol & tepid sponging to control fever once seizures have subsided
- After initial evaluation & management the patient should be referred to a higher centre for detailed evaluation

ANAPHYLAXIS

- Life threatening, systemic allergic reaction caused by release of histamine and vasoactive mediators from mast cells
- Manifested by respiratory distress due to laryngeal oedema and bronchospasm followed by vascular collapse and shock
- Cutaneous manifestations – pruritus and urticaria with or without angioedema

Signs & Symptoms

- * Feeling of impending doom, loss of consciousness
- * Angioedema of the lips & mucous membranes
- * Laryngeal obstruction/stridor
- * Conjunctival congestion
- * Flushing/sweating
- * Wheeze/bronchoconstriction
- * Hypotension
- * Urticaria
- * Itching of palms, soles & genitalia
- * Tachycardia

Diagnosis is by history & clinical examination

Management

- Prevent further contact with the allergen eg: removal of bee sting
- Ensure airway patency
- Administer Intramuscular Adrenaline. Adult dose is **0.3 to 1ml of a 1:1000** solution. Repeat at 5-10 minute intervals if initial response is inadequate
- Administer Antihistamines e.g. : Chlorpheniramine 10mg IM or Slow IV injection
- Administer Corticosteroids eg: Hydrocortisone 200mg IV
- IV fluids to restore or maintain blood pressure
- Nebulisation with Salbutamol or other β_2 agonists to decrease bronchoconstriction
- Oxygen if needed

ANIMAL BITES

Classification of Animal bites

Category	Type of Contact	Type of Exposure	Management
I	<ul style="list-style-type: none"> • Touching or feeding of animals • Licks on Intact skin 	None	None if reliable case history is available
II	<ul style="list-style-type: none"> • Nibbling of uncovered skin • Minor scratches or abrasions without bleeding 	Minor	Wound management & Anti Rabies vaccine
III	<ul style="list-style-type: none"> • Single or multiple transdermal bites/scratches with oozing of blood • Licks on broken skin • Contamination of mucous membrane with saliva • Bite by wild animals 	Severe	Wound Management + Rabies Immunoglobulin/Anti Rabies Serum + Anti Rabies vaccine

- All bites by wild animals should be treated as Class III exposure
- Bite by rats, mice, squirrel, hare & rabbits seldom require PEP; however following exposure to bandicoots & mongoose PEP is recommended
- Following history of consumption of raw milk from a rabid animal, the person may be given Rabies PEP
- Exposure to bats does not warrant PEP
- Risk of Rabies transmission from human to human is very minimal. However, people who have been exposed closely to the secretions of a patient with Rabies maybe offered PEP as a precautionary measure
- Pregnancy, lactation, Infancy, Old age or Concurrent illnesses are not contraindications for Rabies post exposure prophylaxis in the event of an exposure. PEP against Rabies takes preference over any other consideration since it is a life saving treatment. Hence complete PEP should be given depending on the category of exposure
- Severely immunocompromised patients like HIV/AIDs with CD4 count <200, patients with chronic renal failure or those on immunosuppressive drugs & anticancer treatment with category II exposure should receive category III PEP. Vaccine should be given by IM route only. If facilities are available, anti Rabies antibody estimation should be done 10 days after the completion of the course of vaccination.
- PEP should be given to all patients even if they report late for treatment
- Animal bite victims on Chloroquine therapy should be given ARV by Intramuscular route

Wound Management

- Wash the wound thoroughly with soap and flush the wound with running water for at least 10 minutes
- Avoid direct touching of wounds with bare hands

- Wound toilet should be done if there is an unhealed wound even if the victim reports late for treatment
- After thorough washing and drying the wound, apply Povidone Iodine, Alcohol, Chlorhexidine or Cetrimide solution over the wound
- In all Class III exposures Rabies immunoglobulin should be infiltrated in the depth and around the wound to inactivate the locally present virus
- Suturing of wound should be avoided as far as possible; if needed apply minimum loose sutures as possible after adequate local treatment & infiltration of Rabies immunoglobulin
- Occlusive dressing should be avoided as far as possible
- Injection Tetanus toxoid should be given if required
- Antibiotics should be given depending on the severity of the wound

Anti Rabies Vaccines

Intramuscular & Intradermal Regimens

DAY	INTRAMUSCULAR (Essen Regimen)	INTRADERMAL (Updated TRC Regimen)
0	1ml IM on deltoid region	0.1ml ID each on both deltoids
3	1ml IM on deltoid region	0.1ml ID each on both deltoids
7	1ml IM on deltoid region	0.1ml ID each on both deltoids
14	1ml IM on deltoid region	No injection
28	1ml IM on deltoid region	0.1ml ID each on both deltoids

- If re-exposed, persons who have previously received & documented full pre or post exposure prophylaxis either by IM or ID route with a potent cell culture vaccine or Purified Duck embryo vaccine should now be given only two booster doses, Intramuscularly (0.5ml/1ml) or Intradermally (0.1ml at 1 site) on days 0 and 3. Proper wound toilet should be done. Treatment with Rabies Immunoglobulin is not necessary
- Persons who have previously received full post-exposure treatment with Nervous tissue vaccine or vaccine of unproven potency or cannot document previous pre or post exposure treatment should be treated as a fresh unvaccinated case and given treatment as per merits of the case

Rabies Immunoglobulin

Types of Rabies Immunoglobulin

Type	Dose calculation	Concentration	Maximum dose
Human Rabies immunoglobulin (HRIG)	20 IU/kg body wt	300 IU/ml	1500 IU
Equine Rabies immunoglobulin (ERIG)	40 IU/kg body wt	150 IU/ml	3000 IU

- Sensitivity testing should be done prior to administering Equine Rabies immunoglobulin (*Inject 0.1ml of ERIG diluted 1:10 in Normal saline intradermally into the flexor surface of the forearm to raise a bleb 3-4 mm diameter. Inject equal amount of normal saline as negative control on the flexor surface of the other forearm. Increase in diameter to >10mm of induration surrounded by flare is taken as positive skin test when read after 15 minutes provided the saline test was negative. An increase or abrupt fall in BP, syncope, tachypnoea, palpitations and other systemic manifestations should be taken as positive test*)
- Even if the skin test is negative the physician should take all precautions for treating early anaphylactic reactions with adrenaline. Dose of adrenaline is 0.5ml of a 0.1% solution (1 in 1000, 1mg/ml) for adults & 0.01mg/kg body weight for children injected subcutaneously or IM
- HRIG should be preferred in patients sensitive to ERIG, but if HRIG is not available ERIG can still be given after taking due precautions and after obtaining an informed high risk consent
- HRIG does not require prior sensitivity testing
- As much of the calculated dose of RIG as is anatomically feasible should be infiltrated into and around the wounds. Remaining if any should be administered by deep intramuscular injection in the gluteal region
- If the calculated dose is not sufficient to infiltrate all wounds, it is advisable to dilute the immunoglobulin in sterile normal saline to a volume sufficient to infiltrate all wounds
- In situations where immunoglobulin was not administered with the first dose of vaccine it can be given up to the seventh day. Beyond seventh day in a vaccinated person RIG is not indicated as antibody response to anti Rabies vaccine is presumed to have occurred
- If immunoglobulin is not available, greater emphasis should be given to proper wound toileting followed by Essen schedule(IM) of Cell culture Vaccine with double dose on day 0 at 2 different sites intramuscularly (on both deltoids) followed by single dose each on days 3, 7, 14 and 28

Pre-exposure Prophylaxis

- High risk groups like laboratory staff handling the virus & infected material, clinicians and persons attending to human rabies cases, veterinarians, animal handlers and catchers, wildlife wardens, quarantine officers and travelers from rabies free areas to rabies endemic areas should be offered Pre-exposure prophylaxis
- **Schedule** : Pre-exposure vaccination is administered as one full dose of vaccine intramuscularly or 0.1ml intradermally on days 0,7 and either day 21 or 28
- Lab staff and others at high continuing risk of exposure should have their neutralizing antibody titres checked every 6 months during the initial 2 years period after the primary vaccination. If it is less than 0.5IU/ml a booster dose of vaccine should be given. Subsequently, sero-monitoring is recommended every 2 years.

SNAKE BITE

**All cases of Snake bite**

- Reassure the patient
- Immobilize like Fracture; No tourniquets, cutting or sucking
- Tourniquets already applied shouldn't be removed
- Inj. Tetanus toxoid
- IV access
- Refer to next higher center
- Tell bystanders to inform the doctor of signs like bleeding or drooping eyelids that develop on the way to hospital

Give ASV Only if:

- **Progressive weakness or Respiratory Depression**
- **Bleeding Tendency**
- **Progressive painful swelling**

If Neurotoxic also give

- Atropine 0.6 mg followed by Neostigmine 1.5 mg IV stat
- (Inj. Atropine 0.05mg/kg followed by Inj. Neostigmine 0.04mg/kg IV stat in children)
- Give first dose & Refer

Patient with Snake bite**Vasculotoxic / Haemotoxic**

- Swelling more than half the girth of the bitten limb
- Blisters at bitten site
- Bleeding manifestations

Neuroparalytic / Neurotoxic

- Ptosis, Paralysis (2Ps)
- Diplopia, Dysphonia, Dysarthria, Dyspnoea, Dysphagia (5Ds)
- Single breath count less than 30/minute or Breath Holding time less than 45 seconds. Repeat the count every 10 minutes

ASV

- Give 1st dose of ASV: 10 vials stat as infusion in Normal saline slowly over 30 minutes

If Anaphylaxis occurs, give

- 0.5mg Adrenaline IM (Adults)
- 0.01mg/kg (children) on Deltoid Muscle or Thigh
- Inj. Chlorpheniramine 10mg (adults) or 0.2mg/kg (children)
- In patients with previous history of hypersensitivity give Inj. Hydrocortisone 200mg + Inj. Chlorpheniramine 22.75mg prior to starting ASV

Refer all cases of Snake bite since they need observation for at least 24 hours

DOS & DON'TS

- Immobilize the affected limb as in fracture but do not block the blood supply or apply pressure
- Remove any ornaments, tight clothing or shoes that can act as tourniquet when swelling occurs
- Keep the patient in recovery position, prone, on the left side
- Nil orally till the patient reaches the nearest health facility
- Do not waste time attempting traditional methods.
- Do not wash the wound or interfere with bite wound like cutting, suction etc as it may introduce infection, increase the absorption of venom & increase local bleeding.
- Do not apply cold compresses
- If there are definite signs & symptoms of envenomation give the full dose of ASV. ASV should not be delayed while waiting for lab results
- There are no absolute contraindications for the use of ASV
- ASV dose is the same in children, pregnant women & adults as snakes inject the same amount of venom
- ASV should only be given as a slow IV infusion. It should not be given IM or injected locally
- Don't give ASV test dose
- Patients with signs & symptoms of envenomation should always be referred to a tertiary care hospital. Give the first dose of ASV, if available, and refer. In case of Neurotoxic envenomation give the first dose of Atropine + Neostigmine also & refer

Prevention of Snake bite

- Avoid snakes as far as possible. Never handle, threaten or attack a snake. If you see a snake, move back and let it go
- Do not put your hands, fingers or feet into holes, nests or other places you cannot see or any hidden places where snakes may live
- Most snake bites occur during the rainy season after flood since snakes are forced out of their hiding places. Take adequate precautions while walking on roads & fields
- Do not pick up a dead snake. Even dead snakes can deliver venom through their fangs
- Wear boots or shoes and pants to protect your feet and legs
- While walking during the night use a flash light or lamp. Do not walk in areas where you cannot see the ground
- When walking walk with heavy steps as snakes can detect the vibration and will move away
- Avoid sleeping on the floor
- Watch the ground while walking in fields or woods. Use a stick to move the grass/branches ahead
- Clear bushes and grass around houses. Close rat holes
- Do not keep live stock especially chicken inside the house
- Keep plants away from doors and windows as snakes can climb through them
- Regularly inspect surroundings for snakes

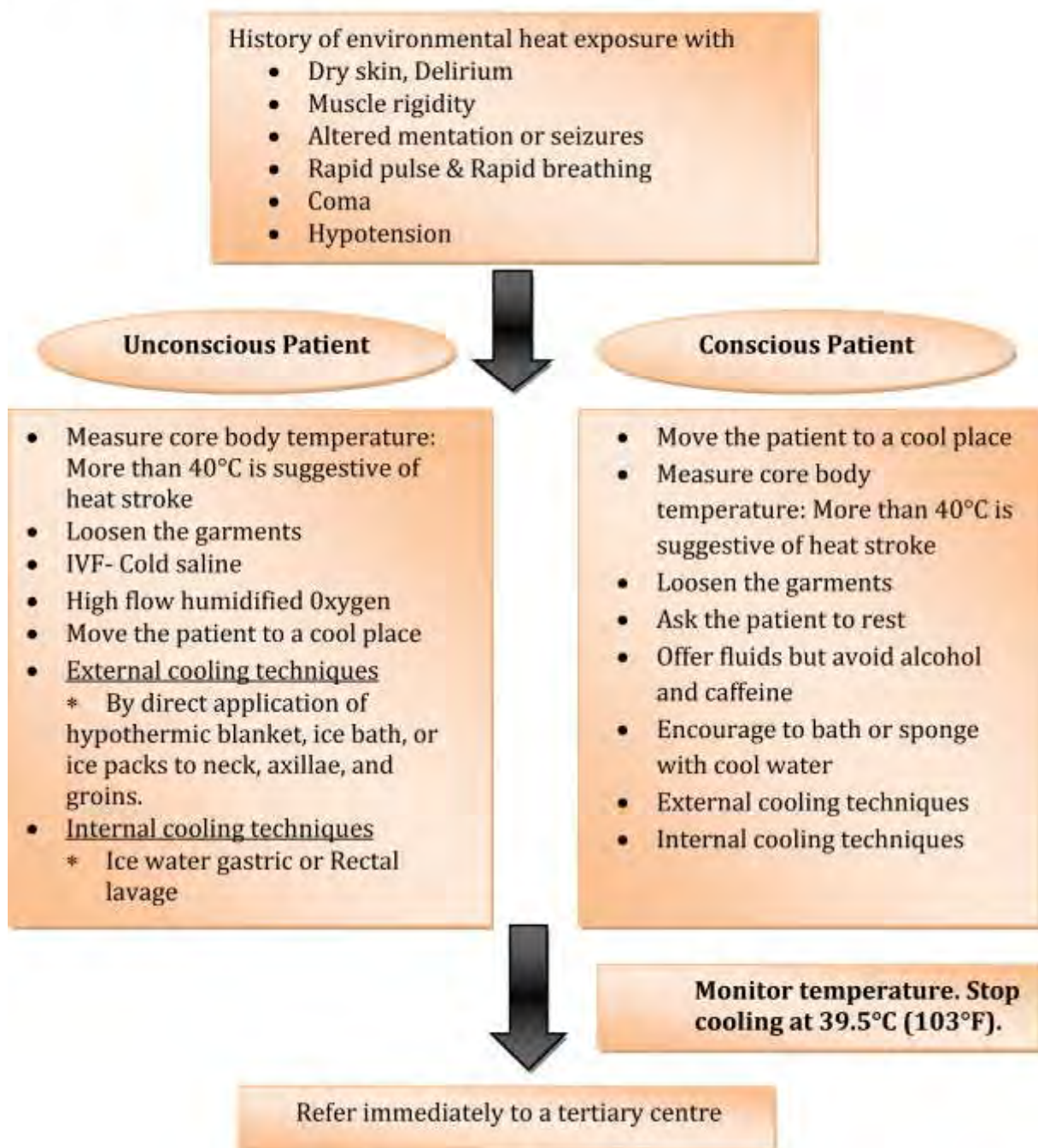
HEAT STROKE

Prevention

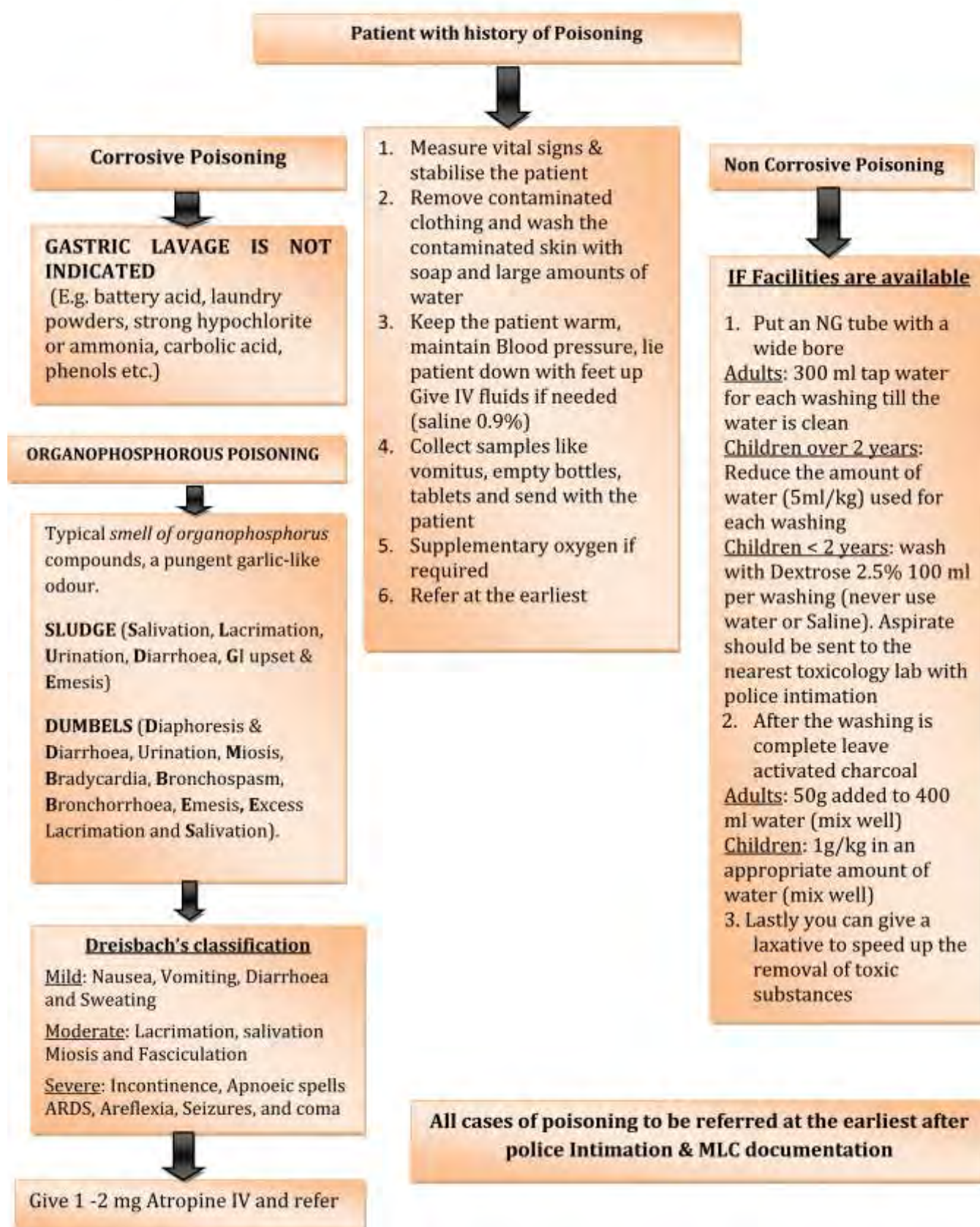
- Avoid working in the open under direct sunlight between 11am and 3pm during the summer season
- Wear loose and light coloured clothes. Cover the head and back of neck while working
- Avoid prolonged direct exposure to heat like in stoves/ovens
- Drink lots of water to avoid dehydration; Home available fluids like lemonade, fruit juices, lassi, kanji water etc are preferred
- Avoid fluids with caffeine and excess sugar; avoid alcohol
- Avoid consuming heavy and oily foods while working outdoors
- Children, Elderly persons, athletes, manual laborers are at more risk for developing heat stroke than others
- If a person develops symptoms of heat exhaustion or heat stroke he should stop working and immediately be moved to a cool shady place
- Public should be made aware of the signs and symptoms of heat stroke and immediate first aid measures that can be given before the person receives medical aid

Heat related Illnesses

Condition	Signs/Symptoms	Management
Heat Cramps	<ul style="list-style-type: none"> • Painful muscle cramps • Palpable muscular spasm 	<ul style="list-style-type: none"> • Passive stretching • Massage affected areas • Apply Ice • Oral fluids
Heat Syncope	<ul style="list-style-type: none"> • Loss of consciousness 	<ul style="list-style-type: none"> • Rest supine with feet up • Oral/IV fluids as needed
Heat Exhaustion	<ul style="list-style-type: none"> • Fatigue • Nausea, vomiting • Mild confusion • Tachycardia • Hypotension, Orthostasis • Elevated core temperature 	<ul style="list-style-type: none"> • Stop activity & Rest • Move to cool place • Monitor vital signs • Cool the body surface • Oral fluids

Management of Heat Stroke

POISONING



ENT DISORDERS

ENT DISORDERS

Common Ear Symptoms

- *Ear discharge*
- *Ear ache*
- *Ear block*
- *Itching*
- *Hearing loss*
- *Ringing sensation*
- *Trauma*
- *Foreign body*
- *Giddiness/Vertigo*
- *Swelling around the ear*
- *Deformity of the pinna*

Ear Discharge

Types of Ear Discharge

Type of Discharge	Causes
Serous	External Otitis Otomycosis
Mucoid	Otitis media
Mucopurulent	Otitis media – Acute & Chronic
Purulent	External Otitis – furuncle CSOM – Atticoantral disease Parotid abscess TM joint abscess draining to External auditory canal
Blood stained	ASOM CSOM- Atticoantral disease Carcinoma ear Malignant Otitis externa (usually in diabetics)
Frank blood	Trauma Glomus tumor Vascular malformations in the ear
Foul smelling	CSOM- Atticoantral disease Long standing CSOM TTD with super added saprophytic infection Syphilitic Otitis media FB with secondary infection
Watery	CSF otorrhoea Temporal bone fracture

COMMON EAR INFECTIONS

- Perichondritis
- External Otitis
- Acute Otitis Media
- Chronic Otitis Media

PERICHONDritis

- * Inflammation of perichondrium and cartilage of pinna
- * Red hot painful pinna → Abscess between perichondrium & cartilage → Necrosis of cartilage
- * Treatment : Systemic antibiotics IV
If pus has formed Incision & Drainage has to be done

EXTERNAL OTITIS

- * Inflammation of the external ear

Symptoms & Signs

- * Ear ache
- * Blockage of ear
- * Trismus
- * Discharge +/- If present, Serous/Purulent
- * Tragal tenderness seen
- * Movement of pinna is painful
- * Furuncle



Treatment

- * Furuncle: Incision & Drainage. Antibiotic ointment (Fusidic acid +/- steroid cream based on the severity of oedema)
- * Diffuse External Otitis: Medicated Ear packing with combination ointment (Antibiotic + antifungal+ steroid)
- * For adults: Tab. Ciprofloxacin & Tab. Ibuprofen
- * For children: Syp. Amoxicillin + Clavulanic acid & Syp. Ibuprofen

Referral Criteria

- * Persisting symptoms
- * Malignant Otitis externa in diabetics to be ruled out

OTOMYCOSIS

Symptoms & Signs

- * Itching in the ear canal
- * Blockage of ear
- * Pain
- * Serous discharge with musty odour
- * Brownish or blackish discharge
- * Tinnitus +/-
- * On examination; Fungal debris may be seen
- * Tragal tenderness may be present
- * Cotton wool appearance in *Candida albicans*
- Black headed filaments in *Aspergillus Niger*
- Pale blue /green in *Aspergillus fumigatus*.



Treatment

- * Thorough ear toilet to remove all fungal debris
- * Clotrimazole ear drops 3-5 drops thrice daily for 10 days
- * Clotrimazole ointment in patients with h/o CSOM

Criteria for Referral: Persisting symptoms

ACUTE OTITIS MEDIA

- * Acute inflammation of the middle ear cleft by pyogenic organisms.

Signs and symptoms

- * Usually following URI
- * Ear ache
- * Fever
- * Ear block
- * If TM perforated : Bleeding/Mucopurulent discharge



Treatment

- * Ampicillin/Amoxicillin 500 mg TID x 7 days
- * If allergic to penicillin , Azithromycin 500mg OD x 5 days
- * Children: Amoxicillin 40-50mg/kg TID x 7 days
- * Topical decongestant nasal drops (Xylometazoline 2-3 drops TID)
- * Oral Antihistaminic + Decongestant
- * Analgesic & antipyretic - Paracetamol/Mefenamic acid
- * Ear toilet
- * Review after 1 week

Criteria for Referral: Persisting symptoms

CHRONIC SUPPURATIVE OTITIS MEDIA – TUBOTYMPANIC DISEASE

- * Long standing infection of middle ear cleft
- * Mucopurulent/Mucoid discharge
- * Hearing loss
- * Exacerbated by URI/entry of water

Treatment

- * Aural toilet; keep the ear dry
- * Ciprofloxacin ear drops 2-3 drops TID
- * Systemic Antibiotics
- * Treatment of URI: Nasal decongestant drops + Oral Decongestant & Antihistamine



Referral Criteria

- * To rule out primary causes of infection – Nose, Nasopharynx, Para nasal sinuses or Throat
- * For hearing evaluation
- * For surgical management
- * For tympanoplasty

CHRONIC SUPPURATIVE OTITIS MEDIA –ATTICOANTRAL DISEASE

- * Involves posterosuperior part of middle ear cleft & attic region
- * Associated with cholesteatoma
- * Unsafe ear due to bone eroding property
- * Risk of complications

Pathology

1. Cholesteatoma
2. Osteitis & Granulation
3. Ossicular necrosis
4. Cholesterol granuloma

Symptoms & Signs

- * Scanty, foul smelling discharge
- * Hearing loss
- * Bleeding/blood stained discharge
- * Attic or posterosuperior retraction marginal perforation/ Retraction pocket
- * Pearly white flakes of cholesteatoma

Features Indicating Complications in CSOM

Symptom	Complication
Pain	Extradural, perisinus or Brain abscess
Vertigo	Erosion of lateral semicircular canal Labyrinthitis Meningitis
Persistent Headache	Intracranial complications
Facial weakness	Erosion of facial canal
Fever, Nausea, vomiting	Intracranial infection
Irritability, Neck rigidity	Meningitis
Diplopia	Petrositis
Ataxia	Labyrinthitis Cerebellar abscess
Abscess around the ear	Mastoiditis

Treatment

- * Demands urgent attention
- * Emergency Medical / Surgical Treatment = IMMEDIATE REFERRAL

EAR BLOCK (Without AOM/COM/Otitis Externa)

Look for:

- * Wax: Soda bicarb ear drops 5-6 drops TID or Paradichlorobenzene ear drops
- * Foreign body
- * Normal ext. auditory canal & TM : Suggest pure tone audiogram & tympanogram
- * Middle ear pathology : Eustachian tube dysfunction, Serous Otitis Media, Otosclerosis
- * Sensorineural deafness

Referral Criteria

- * For pure tone audiogram and tympanogram
- * Persisting symptoms

GIDDINESS/VERTIGO

- * Rule out any systemic pathology : Anaemia, Hypertension, Diabetes mellitus, CAD, Cervical spondylosis, visual or neurological disorders
- * Positional variation seen in BPPV : Labyrinthine sedatives (Betahistine, Cinnarizine, Prochlorperazine)
- * If vomiting present give Inj. Prochlorperazine IM
- * Rule out:
 - Head injury
 - Impacted wax
 - Viral Labyrinthitis due to Mumps, Measles
 - Acoustic Trauma

- Labyrinthitis as a complication of CSOM or ASOM
- Motion sickness
- Meniere's disease - vertigo, tinnitus, deafness
- Acoustic neuroma - vertigo, tinnitus, deafness
- Functional

Management

- * A detailed history and Clinical examination is a must
- * Haematological Investigations
- * ECG
- * Tuning Fork Tests, Pure Tone Audiogram
- * X-ray Mastoid, Cervical Spine
- * Neurological evaluation
- * Reassurance needed
- * Treatment of the cause

Indications for Referral: Persistent symptoms

TRAUMA TO EAR

- * Tympanic membrane may be ruptured by:
 - Trauma due to hair pin, match stick, unskilled attempts to remove foreign body
 - Sudden change in air pressure- slap, sudden blast
 - Pressure by a fluid column- diving, water sports
 - Accidental trauma- Fracture Temporal bone
- * Associated with Facial paralysis or Subluxation of Stapes & Sensorineural hearing loss
- * TM injury - No ear drops, Keep the ear dry, Systemic antibiotics, analgesics
- * If medico legal case, Pure Tone Audiogram should be done



Indications for Referral: Vertigo, hearing loss, facial paresis/palsy

Foreign Bodies of Ear

- * **Animate** e.g. : Insects, Flies, Maggots
- * **Inanimate** Hygroscopic e.g.: Vegetable: beans, seeds.
Non-hygroscopic e.g.: beads, stones, pebbles, rubber, metallic FB

Symptoms

- * History of FB entering the ear
- * Pain & Deafness
- * Tinnitus

Management

- * If living FB: Instill Sodium bicarbonate ear drops or Spirit or 4% xylocaine (r/o history of CSOM) and then remove with good visualization.
- * Small Non hygroscopic FB can be removed by syringing
- * Vegetable/ Hygroscopic FB: Syringing should not be done (risk of swelling & impaction)

- * If FB in the deep part of External canal wall- don't try to manipulate; risk of injury to canal & tympanic membrane

Indications for Referral

- * Animate FB with severe pain
- * Uncooperative patient
- * Large Hygroscopic FB
- * FB in deep external auditory canal wall

COMMON NASAL PROBLEMS

- *Nasal discharge*
- *Nasal blocks*
- *Head ache*
- *Sneezing*
- *Epistaxis*
- *Hyposmia or Anosmia*
- *Foul smelling breath*
- *Trauma*
- *Foreign body*

ALLERGIC RHINITIS

Symptoms

- * Recurrent Sneezing
- * Nasal discharge – watery & copious
- * Nasal obstruction
- * Hyposmia/ Anosmia
- * Itching in the nose
- * Signs of allergy in eye, ear, pharynx or larynx

Diagnosis: detailed history, physical examination

Investigations: Total count, Differential count, Absolute Eosinophil count

Complications:

- * Recurrent sinusitis
- * Nasal polyp
- * Serous Otitis media
- * Prolonged mouth breathing
- * Orthodontic problems

Treatment

- * Avoid allergens
- * Antihistamines e.g.: Cetirizine 10 mg 0-0-1
- * Nasal spray : Fluticasone/mometasone nasal spray once daily
- * Review after 2 weeks

Indications for Referral: Persistent symptoms

Nasal Block without Discharge

Refer all cases for nasal endoscopy to r/o DNS/Polyps/Mass

NASAL VESTIBULITIS

- * Diffuse dermatitis of nasal vestibule caused by *Staphylococcus aureus*

Signs and symptoms

- * Pain
- * Local tenderness
- * Crust or furuncle in vestibule

Treatment

- * Local ointment (Fusidic acid/Mupirocin) ± steroid
- * Antibiotics (Cloxacillin 500 mg QID/Tab. Tab. Azithromycin 500 mg OD)

Complication: Cavernous Sinus Thrombosis

Indications for Referral: Persisting cellulitis

**NASAL POLYPS****Bilateral Ethmoid polyps**

- * Usually seen in adults
- * Polyp arising from Ethmoid sinuses
- * **Common Causes:** Nasal allergy, Chronic rhinosinusitis, Asthma, Aspirin intolerance, Allergic fungal sinusitis
- * **Symptoms:** Nasal obstruction usually bilateral, Hyposmia/Anosmia, headache, sneezing, watery nasal discharge, multiple polypi
- * **Diagnosis:** TC, DC, X-ray PNS Water's view & Caldwell view
- * **Treatment:** Antihistamines, Steroid nasal spray
- * **Referral criteria:** persistent symptoms (for CT PNS and FESS)
- * **Surgical management:** FESS, Intranasal ethmoidectomy

Antrochoanal polyp

- * Arising from the mucosa of Maxillary antrum
- * Usually seen in children and young adults
- * Unilateral, single polyp
- * **Symptoms:** Unilateral nasal obstruction, Nasal discharge, Postnasal drip, Voice change (Polyp grows into the nasopharynx), Headache
- * **Signs:** Antrochoanal polyp grows posteriorly as seen on posterior rhinoscopy
Large polyp hangs behind the soft palate
- * **Investigations:** X-ray PNS Water's view (hazy maxillary antrum seen)
- * **Treatment:** send all cases for expert management (needs surgery- FESS)

ADENOIDITIS

- * Inflammation of the nasopharyngeal tonsils or adenoids located at the junction of roof and posterior wall of nasopharynx
- * Adenoids are present at birth, enlarge up to six years of age and then tends to atrophy by puberty and disappears by the age of 20
- * **Clinical Features**
 - **Nasal Symptoms:** Nasal obstruction, Nasal discharge, Sinusitis, Epistaxis and voice change
 - **Aural Symptoms:** Obstruction of Eustachian tube leading to retracted TM, recurrent attacks of Acute Otitis media, CSOM, Serous Otitis media
 - **General symptoms:** Adenoid facies, pulmonary hypertension
- * Diagnosis is by examination of the postnasal space by nasopharyngoscopy
- * **Treatment**
 - In minor cases, breathing exercises, decongestant nasal drops and antihistamines can be given
 - Adenoidectomy should be done in severe cases with snoring, mouth breathing, sleep apnoea or speech abnormalities, recurrent rhinosinusitis or CSOM with adenoid hyperplasia

SINUSITIS

- * Inflammation of sinus mucosa
- * **Clinical features:** headache, nasal obstruction, nasal discharge, postnasal drip, halitosis, bleeding/blood stained discharge

Sinus affected	Site of Headache
Frontal Sinus	Forehead (office headache)
Maxillary	Malar region, upper teeth
Ethmoid	Pain around the eyes
Sphenoid	Occiput, vertex

- * In acute sinus infection sinus tenderness is seen
- * **Treatment:**
 - Antibiotics (Amoxicillin + Clavulanic acid) dose 625 mg TID x 5 days
 - Nasal drops (Xylometazoline) 3 drops TID x 5 days & steam inhalation
 - Antihistamine – decongestant
 - Tab. Paracetamol 500 mg TID
- * Review after 5 days
- * **Indications for Referral:** Persistent headache, Fever, Oedema of eyelids, Vomiting and Visual deterioration
- * All cases of chronic sinusitis (postnasal drip, foul smelling breath (halitosis), and headache) are to be referred for nasal endoscopy

Differences between Sinus headache & vascular headache

Vascular headache	Sinusitis
Temporal region, pulsatile	Depends on the sinus affected, Headache increases on stooping
Usually unilateral	Depends on sinus
Visual aura present	Not seen
Nausea, vomiting present	Not seen
Phonophobia, photophobia +	Not seen
More in females – premenstrual, OC pills	
Precipitating factors – hypoglycemia, exposure to sunlight, long travel, food fads, emotional/physical stress, lack of sleep	URI, Deviated nasal septum
Family history +	Nil

Hyposmia/Anosmia without URI: Refer all cases for Nasal endoscopy

FOUL SMELL**Differential Diagnosis**

- * In Children: Foreign body nose/ Adenoiditis/Acute rhinitis
- * Acute & Chronic Sinusitis
- * Dental caries /GERD
- * Acute & Chronic Tonsillitis
- * Tumours

FOREIGN BODY NOSE/THROAT:

Attempt removal of Foreign body only if

- * Child is cooperative
- * Foreign body is properly visualized
- * Proper instrument is available

Foreign Body in Lower Air Passages

- * Symptoms: choking, gagging and wheezing in the initial period
- * If history of choking is present refer the patient immediately to the nearest tertiary center for bronchoscopy

Heimlich's maneuverEPISTAXIS

- * Ask h/o URI, Hypertension, CAD, bleeding disorders, Nasal surgeries, drug history

Emergency Management

- * Check pulse & BP- If BP is high, use antihypertensive agents. If BP is low give IV fluids
- * Ask the patient to sit & lean forward slightly; Pinch the nostrils while breathing through the mouth
- * Apply ice packs
- * Throat examination & post nasal examination to rule out posterior bleeding

Referral Criteria

- * Post nasal bleeding
- * Persisting bleeding

COMMON SYMPTOMS OF ORAL CAVITY & THROAT

ACUTE PHARYNGITIS

- * Usually Viral, milder form
- * In severe form, bacterial infection can occur.
- * Symptoms & Signs
 - Sore throat
 - Dysphagia
 - Malaise
 - Fever
 - Congested throat
 - Hypertrophic lymphoid follicles in the posterior pharyngeal wall
 - In severe cases, cervical lymph nodes are enlarged & tender.
- * Treatment
 - Paracetamol 500 mg TID
 - Warm saline gargle
 - Voice rest
 - If severe: C. Amoxicillin 500mg TID x 5 days



ACUTE TONSILLITIS

Symptoms & Signs

- * Throat pain
- * Fever, malaise, headache & ear ache
- * Congested tonsils; multiple follicles may occur
- * Enlarged & tender Jugulodigastric lymph nodes

Treatment

- * Warm saline gargle
- * Soft bland warm diet
- * Avoid cold, oily & spicy foods
- * T. Paracetamol 500 mg TID
- * C. Amoxicillin 500 mg TID x 5- 7 days
- * Multivitamins orally

Referral criteria

- * Severe odynophagia
- * Trismus
- * Membranous pharyngitis
- * Peritonsillitis



CHRONIC PHARYNGITIS

Signs & symptoms

- * Foreign body sensation throat (more than 6 weeks duration)
- * Discomfort/pain in the throat
- * No true Dysphagia
- * Irritant cough
- * Pharyngeal wall appears congested; engorgement of capillaries
- * Increased mucous secretion may cover pharyngeal mucosa
- * Granular pharyngitis shows reddish lymphoid nodules

Differential diagnosis

- * GERD
- * Chronic sinusitis

Treatment

- * Warm saline gargle
- * Avoid hawking & clearing the throat
- * Treat GERD: Tab. Pantoprazole 40 mg OD x 4-6 weeks
- * Treat sinus infection if present
- * Voice therapy & reassurance



APHTHOUS ULCER

Signs & Symptoms

- * Painful oral ulcer
- * Seen in movable mucosa
- * Single or multiple

Treatment

- * Oral Triamcinolone paste
- * Multi-vitamins

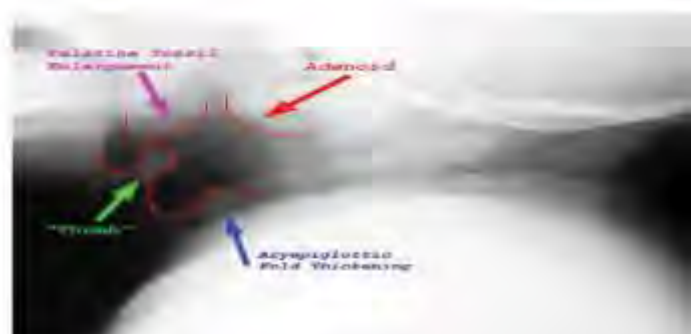
Referral criteria

Persisting symptoms more than 14 days



ACUTE EPIGLOTTITIS

- * Acute inflammatory condition of the supraglottic region
- * Usually seen in children 2-7 years, can affect adults also
- * H.influenza B is the commonest organism



- * Clinical features:
 - Abrupt onset of symptoms with rapid progression
 - High fever, Sore throat, Dysphagia, Dyspnoea or Stridor (inspiratory)
 - Rapid deterioration, septicaemia
 - On examination with tongue depressor red swollen epiglottis is seen
- * Investigations: X-ray soft tissue neck lateral view: Swollen epiglottis (Thumb Sign)
- * Treatment:
 - Inj. Hydrocortisone 100 mg IV stat
 - Needs hospitalization (for Parenteral antibiotics)
 - Give first dose of steroid, start IV fluids and refer to the nearest tertiary center

HYSTERICAL APHONIA

Signs & Symptoms

- * Acute onset
- * Emotionally labile females in the age group 15-30 years
- * Communicates with whisper
- * Sound of cough is good

Treatment: Reassurance, Psychotherapy

HOARSENESS OF VOICE

Signs & Symptoms

- * Hoarse voice
- * Usually associated with URI
- * Voice abuse

Treatment

- * Voice rest
- * Steroids
- * Treatment of URI

Referral criteria

- * Stridor
- * Symptoms persisting for more than 2 weeks
- * Age above 40 years

ODYNOPHAGIA (Painful Swallowing)

- * Can present as drooling in children
- * Differential diagnosis : a/c pharyngitis, a/c tonsillitis, Peritonsillitis, ulcers of mouth, FB throat, acute retropharyngeal abscess & acute parapharyngeal abscess
- * FB throat, a/c retropharyngeal or parapharyngeal abscess can be diagnosed by X-ray soft tissue neck lateral view ☐ referral indicated

DYSPHAGIA (Difficulty in Swallowing)

- * Sudden onset in cases of Foreign body or impaction of food
- * Progressive dysphagia is seen in malignancy
- * Dysphagia more to liquids : paralytic lesions
- * Dysphagia more to solids : Malignancy, Stricture
- * Intolerance to acidic food/fruit juices : Ulcerative lesion
- * Regurgitation of food : Hiatus hernia
- * All cases of progressive dysphagias should be referred for investigations (barium swallow, endoscopy)

INSTRUMENTS

- Head light (Battery operated)
- Nasal speculum
- Ear speculum
- Crocodile forceps
- Wax hook
- Jobson-Horne probe
- Tongue depressor
- Ear/Nasal dressing forceps
- 3-0 catgut
- Thumb forceps
- Needle holder
- Scissors
- Otoscope
- Tuning fork 512 Hz

Crocodile Forceps**Otoscope****Wax hook**

THYROID DISEASES

THYROID DISORDERS

	HYPOTHYROIDISM	HYPERTHYROIDISM
Definition	Insufficient production of thyroxine by thyroid gland	Over activity of the thyroid gland causing excessive amounts of free thyroid hormone in the body
Etiology	Hashimoto's thyroiditis Congenital Agenesis Iodine Deficiency Anti-thyroid drugs Post surgery and post irradiation Postpartum thyroiditis Dyshormonogenesis	Graves disease : 60-80% Thyroiditis Toxic Multi Nodular Goitre Drug Induced TSH secreting adenomas Hydatiform mole Struma ovary
Subtypes	Congenital : Cretinism Myxoedema	
Symptoms	Fatigue Weight gain Anorexia Constipation Cold intolerance Dry Skin Impaired fertility Menorrhagia Reduced sweating	Weight loss Increased appetite Irritability and restlessness Palpitation Heat intolerance Tremor Diarrhea Oligomenorrhoea Loss of libido Increased sweating
Signs	Coarse and brittle Hair; Hair loss Pallor Xanthelasma Hoarseness of voice Bradycardia Non-pitting oedema Carpal tunnel syndrome Delayed relaxation of deep tendon reflexes	Tremor Tachycardia Hair thinning, Alopecia Goiter Palmar Erythema Pretibial Myxoedema Lid Lag, Stare Exophthalmos
Investigations	Thyroid function tests, thyroid antibody Lipid profile FBS, PPBS Haemoglobin	
Normal TFT Values	TSH : 0.4 – 4.5 mIU/L T3 : 9 - 25µg/dL T4 : 4.6 -12µg/dL Free T3 : 80-20ng/dL in adults Free T4 : 0.7-1.9ng/dL <u>TSH During pregnancy</u> First trimester : 0.1 – 2.5 mIU/L 2 nd Trimester : 0.2 – 3.0 mIU/L 3 rd Trimester : 0.3 -3.0 mIU/L	

Interpretation of Lab values

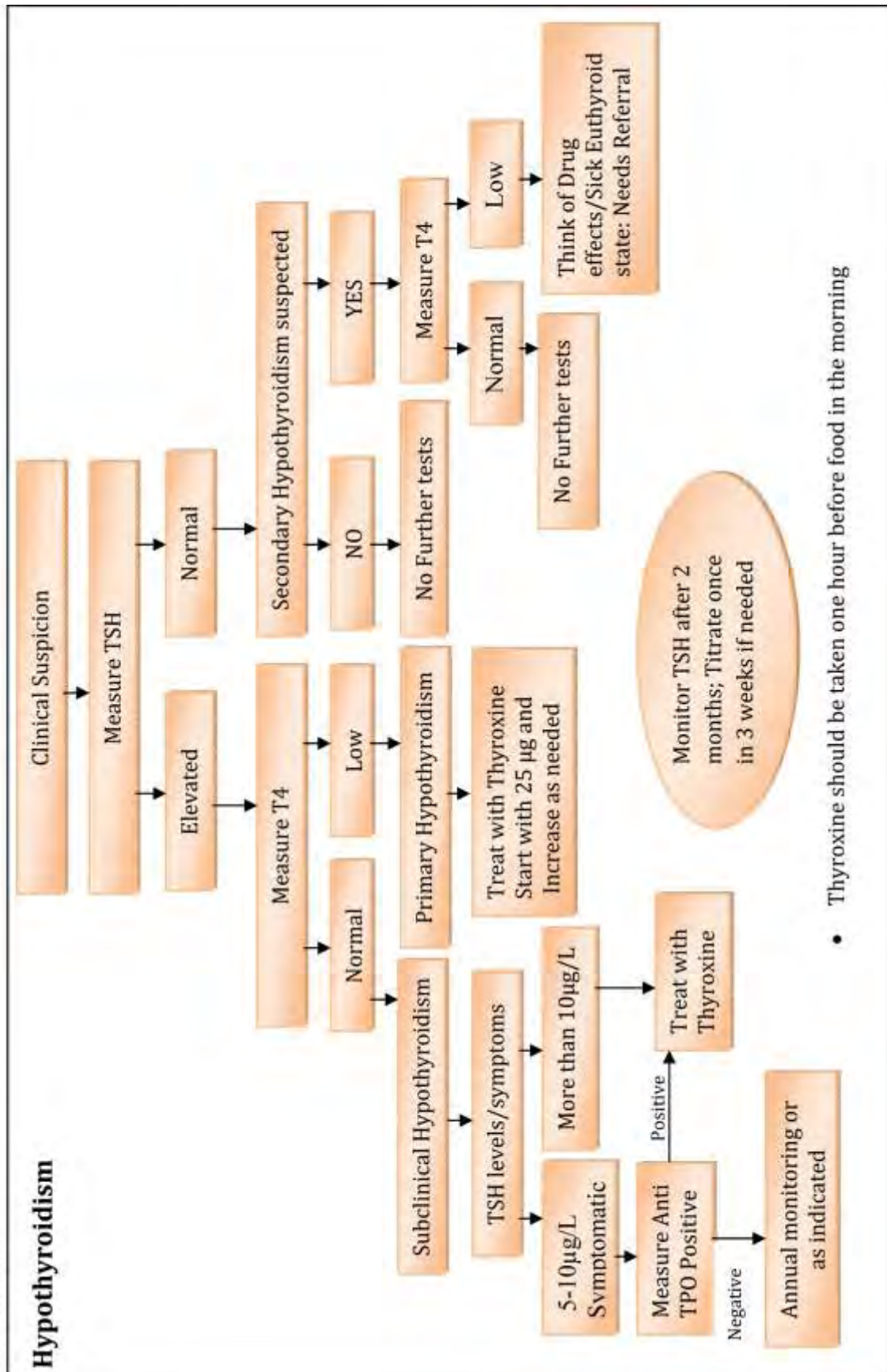
	TSH	T3	T4
Euthyroid State	Normal	Normal	Normal
Primary Hypothyroidism	High	Low	Low or Normal
Hyperthyroidism	Low	High	High
Hypothyroidism secondary to pituitary disease	Low	Low	Low or Normal

	TSH	Free T3	Free T4
Euthyroid State	Normal	Normal	Normal
Hyperthyroidism	Low	High	High

- As a single test, TSH is the most reliable test

Treatment

Hypothyroidism



Indications for Referral

Special situations like CAD, Elderly patients, Pregnant hypothyroid, paediatric patients referred to a higher centre for initiation of treatment

If in doubt or the primary physician needs clarification about initiation of treatment refer the patient to a higher centre.

Hyperthyroidism

	TSH	Free T3	Free T4
Euthyroid State	Normal	Normal	Normal
Hyperthyroidism	Low	High	High

- Initiation of treatment for hyperthyroidism should be done from secondary or tertiary level and follow up maybe done from primary level

Drugs

Drugs	Dose	Side Effects	Contraindications
Propranolol	40-80 mg every 6-8 hours	Bradycardia Decreased libido	Bronchial asthma Diabetes mellitus
Carbimazole (most commonly used)	20 – 40mg daily every 8 hours or single dose	Rash Nausea Vomiting Arthralgia Agranulocytosis	Pregnancy
Propyl thiouracil	100 -200 mg 8 th hourly	Rash Nausea Vomiting Arthralgia Agranulocytosis	

- Monitoring by free T4 estimation every 2 months

Indications for Referral

- Pregnancy and lactation
- Any co-existent problems like Ischaemic heart disease or congestive cardiac failure
- Those with graves ophthalmopathy
- Large Multinodular goiter for surgery
- Those unresponsive to medical treatment

COMMON OPHTHALMIC CONDITIONS

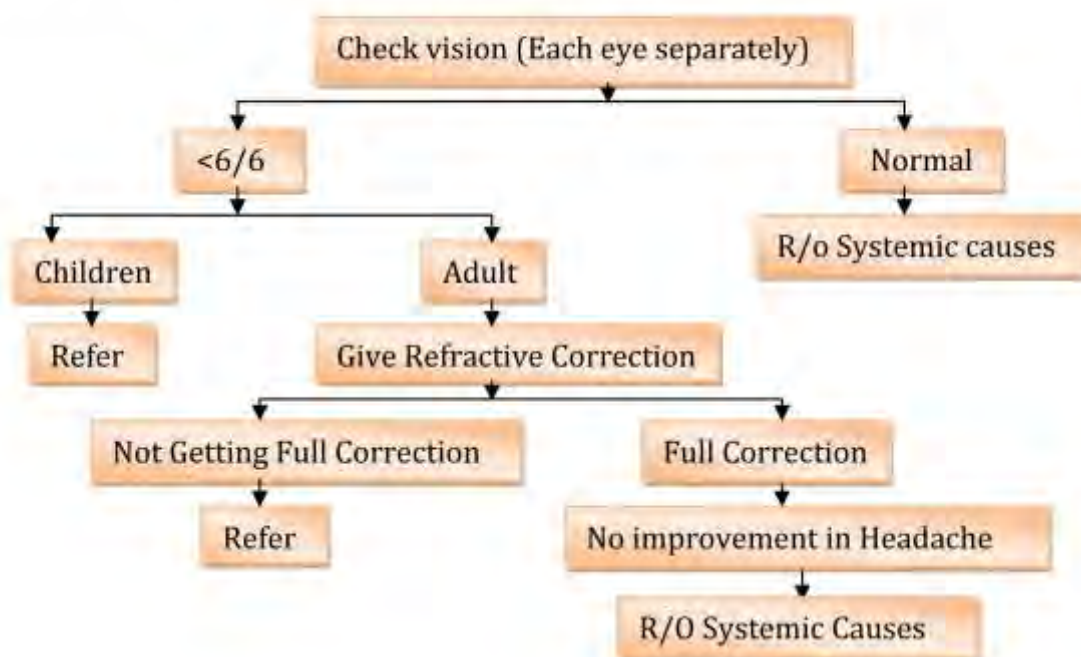
OPHTHALMOLOGY

Vision should be checked (Each eye separately) for each and every person coming with ophthalmological problems.

Common complaints encountered in daily practice at PHC level

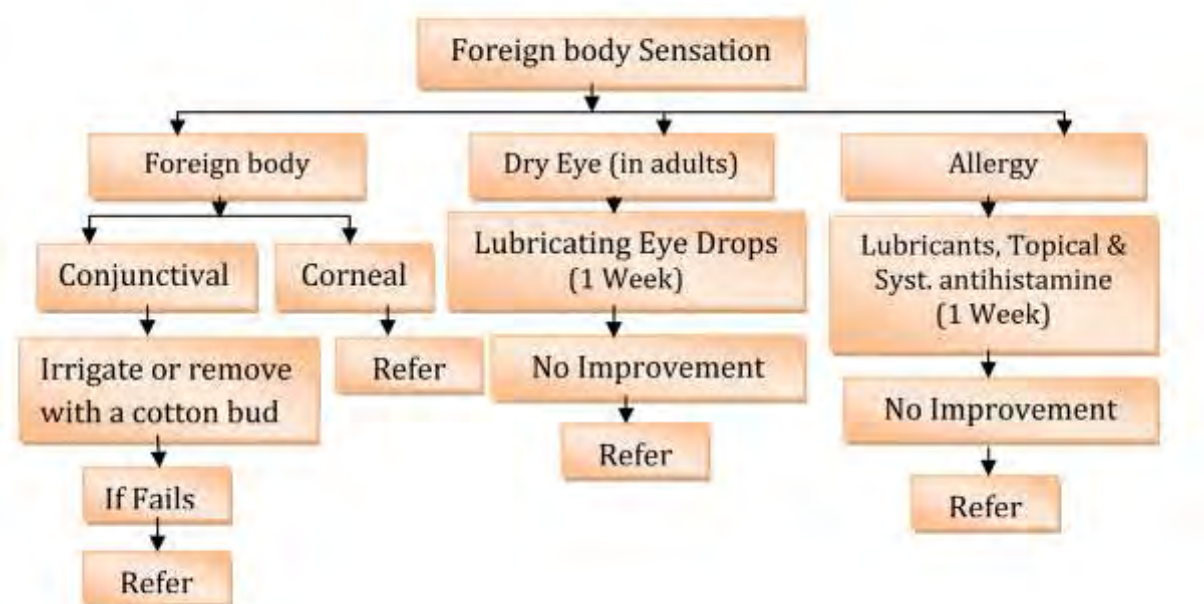
1. Headache & Eye strain
2. Foreign body sensation
3. Redness
4. Defective vision
5. Pain
6. Injury
7. Lid swelling & pain in the lids
8. Oedema eye (Periorbital oedema)

Eye Strain & Headache

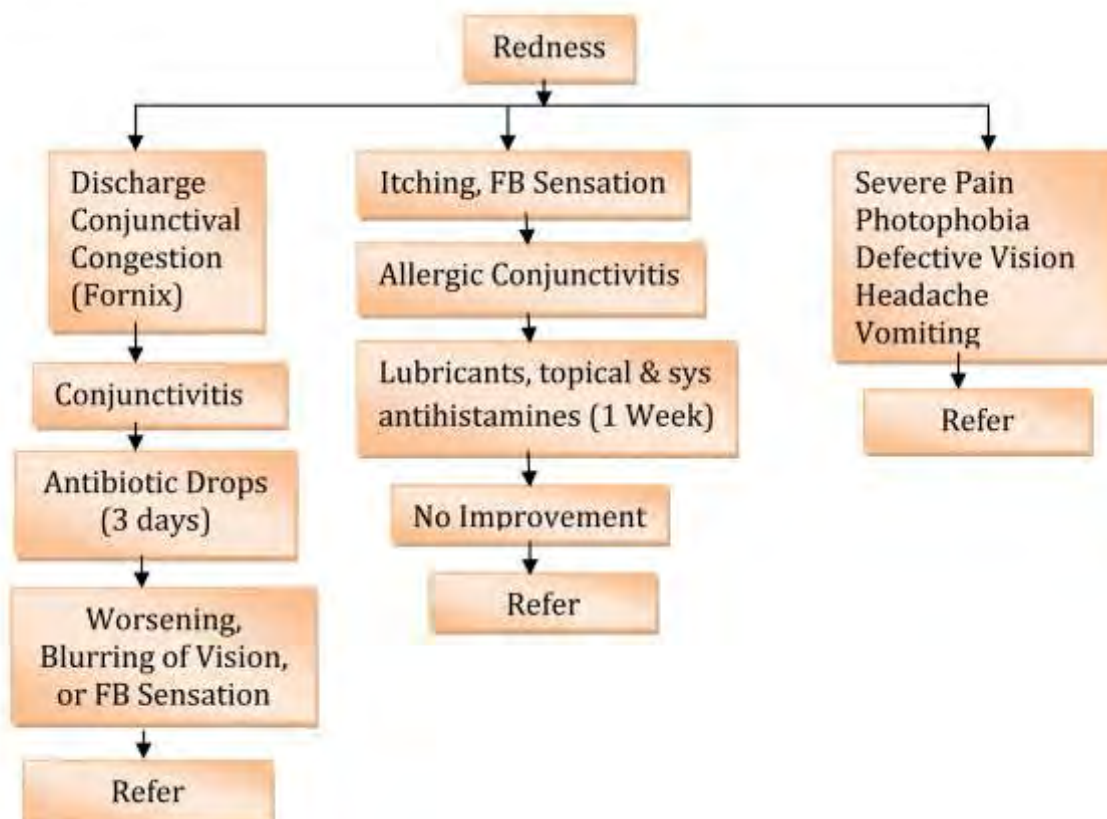


NOTE: Check RBS before spectacle correction in adults

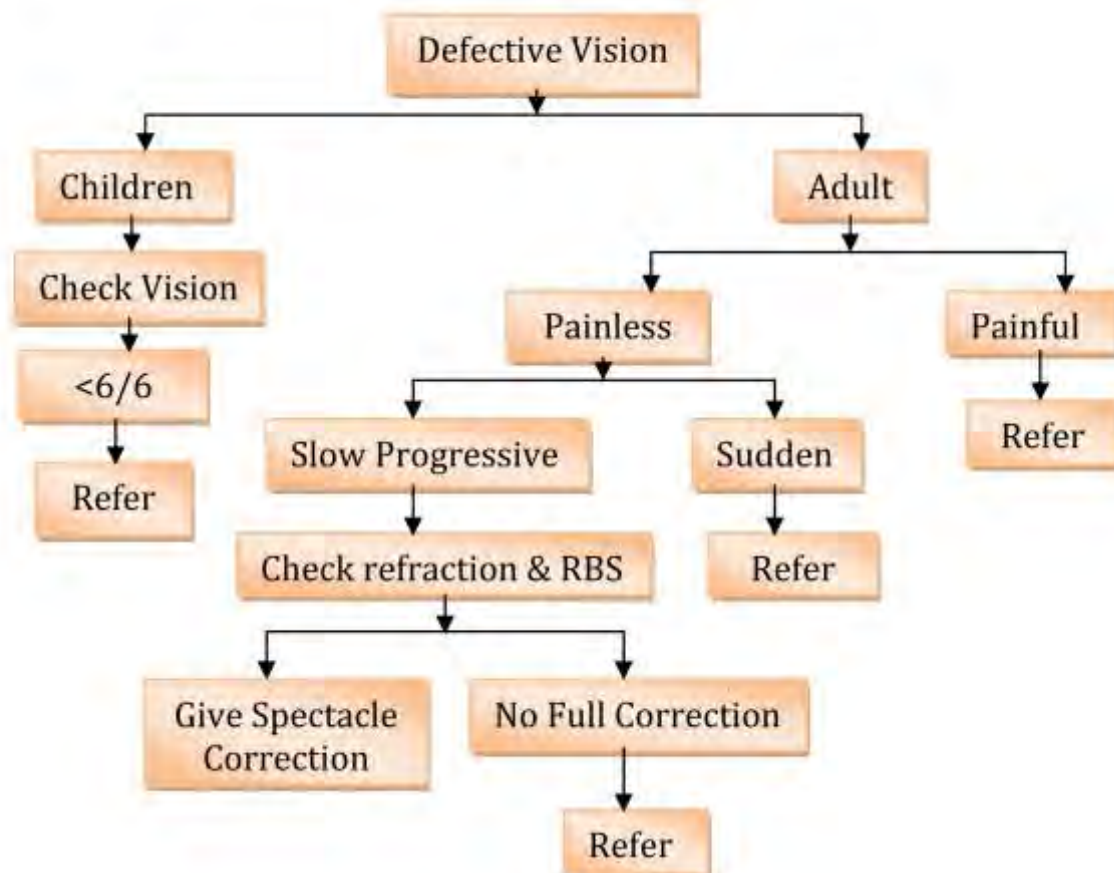
Foreign Body Sensation



Redness Eyes



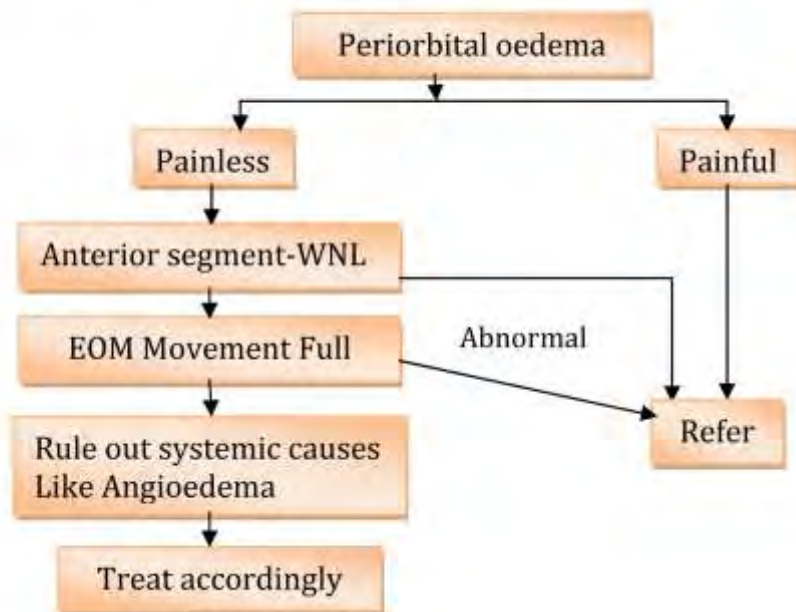
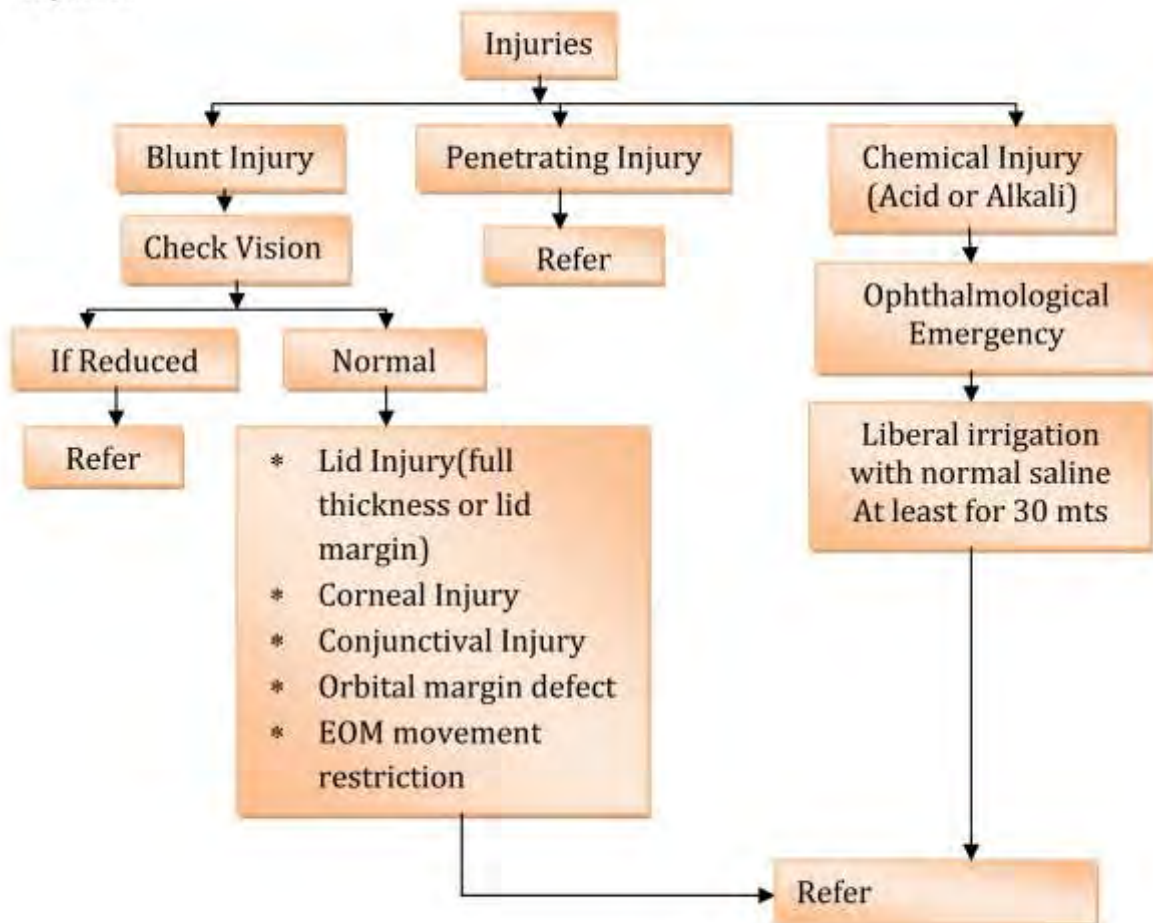
Defective Vision



Painful Lid Swelling

Hordeolum internum or externum

- Hot compress
- Systemic analgesic and anti-inflammatory
- Systemic antibiotic if multiple abscess or diabetic patients
- Topical antibiotic drops and ointment
- Check RBS in adults

Oedema Eyes**Injuries**

- Diabetic retinopathy and glaucoma screening can be done at PHC level with the help of mobile ophthalmic unit
- In case of pain in the eye always rule out ENT and Dental problems

INDICATIONS FOR REFERRAL

- Any patient with sudden onset of defective vision, painless or painful
- Neonates with unilateral watering or discharge from the eye
- Patients with c/o flashes of light, Diplopia, Proptosis, Scotoma, Field defect, Squint
- Any child with squint
- All cases of cataract
- Those who are not getting full correction with spectacles

Topical Medications - Eye drops

	Name of Drug	Dosage
Lubricants	Carboxymethyl Cellulose	1 drop TID x 1 week
	Hydroxypropyl methyl cellulose (Hypromellose)	1 drop TID x 1 week
Antihistamines	Ketotifen	1 drop TID x 1 week
	Tetrahydrozoline	1 drop TID x 1 week
	Ofloxacin, Ciprofloxacin	1 drop Q6H x 1 week
Antibiotics	Tobramycin	1 drop Q6H x 1 week

COMMON DERMATOLOGICAL CONDITIONS

COMMON DERMATOLOGICAL CONDITIONS

DERMATOLOGICAL TERMS

- **Macule:** A change in colour of the skin. A Macule greater than 1cm may be referred to as a patch
- **Papule:** A solid raised lesion less than 1cm with distinct borders
- **Plaque:** A solid raised lesion more than 1cm
- **Vesicle:** Fluid filled lesions less than 1cm
- **Bulla:** Circumscribed fluid filled lesion more than 1cm
- **Pustule:** Circumscribed elevated lesions containing pus
- **Crust:** Dried up plasma or exudate

FUNGAL INFECTIONS

Condition	Description	Signs/Symptoms	Management
Taenia infection T. corporis T. circinata T. capitis T. cruris	Dermatophyte infection of non hair bearing area with the exclusion of palms, soles and groin	Typical lesions are circular or polycyclic with borders which are erythematous, vesicular or scaling. There is central clearing with peripheral extension	a) <u>Topical agents</u> Clotrimazole cream for local application BD x 2-4 weeks , or Terbinafine cream for LA BD X 2 weeks. b) <u>Oral antifungals</u> for wide spread / inflammatory lesion. T. Fluconazole 150 mg /week x 4-6 weeks <i>If no response within 2 weeks refer to a Dermatologist</i>
Tinea mannum Tinea pedis	Dermatophyte infection of palms and soles		<u>Mild interdigital</u> - Topical antifungals
Tinea capitis	Dermatophyte infection of scalp		Terbinafine 250mg/day for 2 to 4 weeks or Fluconazole 150mg /week for 8-12 weeks
Tinea versicolor Pityriasis versicolor	Malassezia furfur	<u>Furfuraceous scales</u> - It has clear cut borders which are usually polycyclic. It can be hypopigmented or hyperpigmented	a) <u>Topical agents</u> Clotrimazole cream for local application BD x 2-4 weeks , Terbinafine cream for LA BD X 2 weeks. 2.5% selenium sulphide shampoo or 2% ketoconazole applied over the affected area , washed off after 10 minutes x 2 weeks Then once or twice / month to prevent recurrence T. Fluconazole- 400mg single dose

Onychomycosis	Invasion of nail plate by Dermatophyte species	Destruction of nails	Topical: Amorolfine nail lacquer Oral: Terbinafine 250mg/day x 6 weeks for finger nails And 12-16 weeks for toe nails Fluconazole 150-300mg weekly for 6- 12 months
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CANDIDIASIS			
Condition	Description	Signs/Symptoms	Management
Oral Candidiasis	Common in newborns & infants In adults associated with HIV, broad spectrum antibiotics, steroid therapy	Friable pseudo membrane, resemble milk curds, consists of desquamated epithelial cells, fungal elements, inflammatory cells, & food debris Candidal cheilitis/perleche Erythema, fissuring, maceration.	Uncomplicated cases : Clotrimazole mouth paint BD for 4 weeks
Candidal Intertrigo	Inflammation occurs in areas where 2 skin surfaces are in close apposition	Common between fingers, axillae, groin and buttocks	Clotrimazole cream for local application BD x 2-4 weeks
Candidal Paronychia	Chronic inflammation of nail folds	Posterior nail folds become red, painful & swollen with occasional discharge of pus.	Keep the affected fingers clean & dry Clotrimazole lotion (1%) for local application BD x 2-4 weeks
Genital Candidiasis	Candidal infection of genital regions		Clotrimazole cream BD for 4 weeks. Single day oral therapy with Fluconazole 150 mg

BACTERIAL INFECTIONS			
Condition	Causative Organism	Signs/Symptoms	Management
Impetigo	Staph aureus Strep pyogenes	Vesicles which rupture to form erosions with yellow brown crusting. Fever & constitutional symptoms in children	Topical antibiotics like Fusidic acid , Mupirocin BD for 1 week Cap. Cloxacillin 500mg QID for 5-7 days or Tab. Erythromycin 500mg QID for 5-7 days Proper hygiene
Cellulitis	Strep pyogenes	Erythema ,swelling and redness of affected area	Ampicillin + Cloxacillin QID for 5-7 days
Furuncle	Staph aureus	Inflammatory nodule in hair follicle	Cloxacillin 500mg QID for 5-7 days
Carbuncle		Multiple furuncles	Moist compresses Ampicillin + Cloxacillin QID for 5-7 days Fusidic acid , Mupirocin for 1 week

VIRAL INFECTIONS			
Condition	Causative Organism	Signs/Symptoms	Management
Molluscum contagiosum	Pox virus	Shiny, pearly white papules with central pitting	Phenol cautery
Hand, Foot & Mouth Disease	Coxsackie virus	Fever, vesicles on buccal mucosa, palms and soles	Supportive management
Warts(verrucae)	Human papilloma viruses	Benign skin lesions that are due to epidermal hypertrophy	Salicylic acid 6% daily once, ablative methods
Herpes simplex (Herpes labialis)	HSV-1	Characteristic lesion are clusters of vesicles Cold sores/fever blisters: peri-oral	Topical Acyclovir 5% T. Acyclovir 400 mg TID daily for 5 days
Varicella (chicken pox)	Varicella zoster virus	Vesicles usually are umbilicated. It appears in crops and appears in various stages There will be papules, vesicles and pustules in a single patient. It heals by forming a scab and falling off to leave behind hypo pigmented scars	T. Acyclovir 800 mg 5 times daily x 5days
Herpes zoster (shingles)		Dermatomal distribution; anywhere on body	T. Acyclovir 800 mg 5 times daily x 7-10 days Analgesics
Pitted Keratolysis	Corynebacterium	Fine punched out lesions coalescing to form a cribriform pattern, mainly over the soles. Sweating and occlusive footwear can aggravate it.	Topical Fusidic acid /Clindamycin/ Azole group antifungals Improved local hygiene.

PARASITIC INFECTIONS			
Condition	Causative Organism	Signs/Symptoms	Management
Scabies	Sarcoptes scabiei (itch mite)	Itching worse at night, papules mainly in interdigital area, flexures, axilla, buttocks and genitalia. In children younger than two years of age, the lesions tend to occur on the head, neck, palm and soles.	<u>GBH 1% lotion</u> -single overnight, head to foot application after scrub bath <u>25%BB Emulsion</u> -overnight application for three consecutive days <u>Permethrin 5% cream</u> -single overnight application like GBH -Treat family members -Promote hygiene

OTHER SKIN CONDITIONS			
Condition	Description	Signs/Symptoms	Management
Urticaria (Hives)	Allergy to Food such as Shellfish, chocolate, peanut, butter, meat and citrus fruits. Natural Food Additives like Yeast, citric acid, eggs or synthetic additives like Azo dyes and penicillin Drugs like Penicillin, Aspirin, NSAIDS and Sulphonamides	Erythematous evanescent plaques	<u>Antihistamines</u> 1. T. CPM 1-0-1 or 2. T. Cetirizine 10mg HS 3. Steroids: if not controlled with Antihistamines alone Refer if patient have breathlessness or angioedema.
Nummular eczema		Coin shaped lesions are characteristic	Saline compresses Systemic antibiotics if needed Topical steroid- Antibiotic combinations twice daily (eg : Betamethasone -Fusidic acid for adults, Hydrocortisone-Fusidic acid -for children) If oozing doesn't subside- Refer
Atopic Dermatitis		Papules, vesicles, scaly lesions Extreme itching can lead to secondary infection Typical areas effected <u>Children</u> - Extensor surfaces shins/back of elbows <u>Adults</u> - Flexural surfaces, Cubital and popliteal fossae, neck Hypo/hyperpigmentation in chronic cases Exacerbations due to allergies & stress	<u>Antibiotics for infection</u> Mild soap, no dyes, natural material for clothing -Mild Corticosteroids like Hydrocortisone/ Clobetasone cream or lotion BD for itchy lesions -Sedative Antihistamines - <u>Adults</u> : Emollients Moderately potent steroids- Mometasone/Betamethasone Antihistamines
Pityriasis alba		Ill defined usually hypopigmented patch with mild scaling	Emollients like Vaseline
Seborrhoeic dermatitis		Endogenous eczema present over seborrheic areas like scalp, face, chest, axilla and groin. Mild form on the scalp is called dandruff Severe dermatitis can be associated by oozing	Topical Selenium sulphide, ketoconazole , Cyclopiroxolamine twice weekly for two weeks and then once weekly Topical steroid Antifungal combinations and systemic antifungals in severe cases.
Acne		It is a chronic inflammatory disease of pilosebaceous follicles characterised by comedones, papules, pustules, nodules and often scars.	Clindamycin gel or Benzoyl peroxide 2.5% BD for 2 weeks

COMMON DENTAL CONDITIONS

COMMON DENTAL CONDITIONS

Dental Caries

Dental caries is an infectious microbiologic disease of the calcified tissues of teeth, characterized by demineralization of the inorganic portion and destruction of the organic substance of the tooth. It is a common chronic disease that leads to pain and disability across all age groups.

Symptoms

- * Toothache
- * Increased sensitivity to hot or cold foods/drinks

Differential Diagnosis

- * Hypersensitivity
- * Dental Abrasions/Erosions
- * Periapical abscess

Clinical evaluation

- * Visual inspection of oral cavity
- * Look for black spots on teeth
- * Pain on percussion of the affected tooth
- * Increased sensitivity to hot & cold
- * Swelling in the affected area

Treatment

In case of acute pain & swelling

- * Antibiotics: Cap. Amoxicillin 500mg TID or Cap. Ampicillin 500mg QID x 5 days
- * Analgesics: Tab. Paracetamol 500mg TID or Tab. Ibuprofen 400mg TID x 5 days
- * Saline gargle 8-12 times daily

Referral criteria

- * Increased sensitivity to hot & cold foods for more than 2 weeks
- * Pain, swelling for more than a week
- * Trismus
- * Intra oral or Extra oral sinus
- * Cavity requiring dental treatment

PERIODONTITIS

- Periodontitis is the inflammation or the loss of supporting tooth structures namely the periodontal ligaments and alveolar bone resulting in gingival bleeding, foul odour, periodontal pockets and lastly the mobility of the tooth

Symptoms

- * Swollen & tender gums
- * Receding gums
- * Pus between teeth & gums
- * Halitosis, Bad taste in mouth

- * Loose teeth
- * Space between teeth & gums
- * Change in occlusion

Differential diagnosis

- * Acute gingival conditions
- * Periapical abscess
- * Periodontal abscess

Evaluation

Look for

- * Bleeding from gums
- * Swelling/pus in gums
- * Alteration in the colour of gums
- * Difficulty in chewing
- * Loosening of teeth
- * Spacing between teeth
- * Dull pain radiating to the jaws
- * Pain on percussion of the affected tooth

Treatment

- * Chlorhexidine mouthwash 5ml BD for 15 days
- * In case of acute swelling give Tab. Ciprofloxacin 500mg & Tab. Tinidazole 500mg BD for 5 days
- * Education regarding Oral Hygiene measures
- * Advise the patient to use Interdental aids like dental floss & brushes

Referral criteria

- * Persistent gingival inflammation for a week or more
- * Suppuration from gums & halitosis
- * Spontaneous bleeding from gums
- * Increase in mobility or spacing of teeth
- * Progressive loss of clinical attachment of teeth

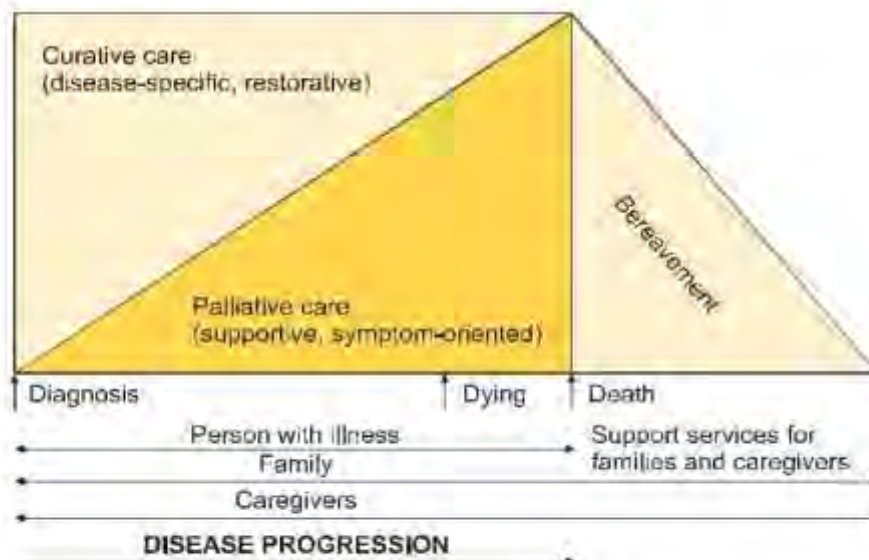
Prevention of Dental Diseases

- Good Oral Hygiene
 - * Daily Twice Brushing with a fluoride toothpaste
 - * Daily Flossing
- Eat nutritious and balanced meals and limit snacking.
 - * Restrict Consumption Of Sugary Foods and Drinks
- Cessation of Smoking & Tobacco chewing
- Health education
- Screening of school children for dental diseases

PALLIATIVE CARE

PALLIATIVE CARE

- * Palliative care is a continuum of care that goes hand-in-hand with disease-specific treatment
 - * It is aimed at the quality of life of the patient and the family
 - * It treats pain and other physical symptoms and also social, emotional and spiritual factors
 - * Offers a support system to help the family cope during the patient's illness and in bereavement



Common Conditions Requiring Palliative Care

- * Cancer
- * HIV/AIDS
- * Dementia
- * Progressive neurological disorders like Parkinson's disease, Multiple sclerosis and Motor Neuron Disease
- * Stroke, Paraplegia, Quadriplegia
- * Progressive systemic diseases like COPD, ILD
- * Heart, Liver and Renal diseases
- * Geriatric problems
- * Any other illness that causes a significant reduction in the quality of life

1. Communication with the Patient and Family

- Acknowledge and understand the concerns of the patient and family and respond in an appropriate manner
- Base it on the patient's values, beliefs and priorities, yet base it also on clinical evidence and rationale

Core Principles

- **Respect:** Treat the patient and family with respect
- **Empathy:** Try to understand another person's feelings by placing yourselves in their shoes
- **Trust:** Truth is essential for maintaining trust; but it must be given at the right time with compassion
E.g.: Concealing the diagnosis destroys trust; Insensitive breaking of bad news can destroy the person

Principles of effective communication

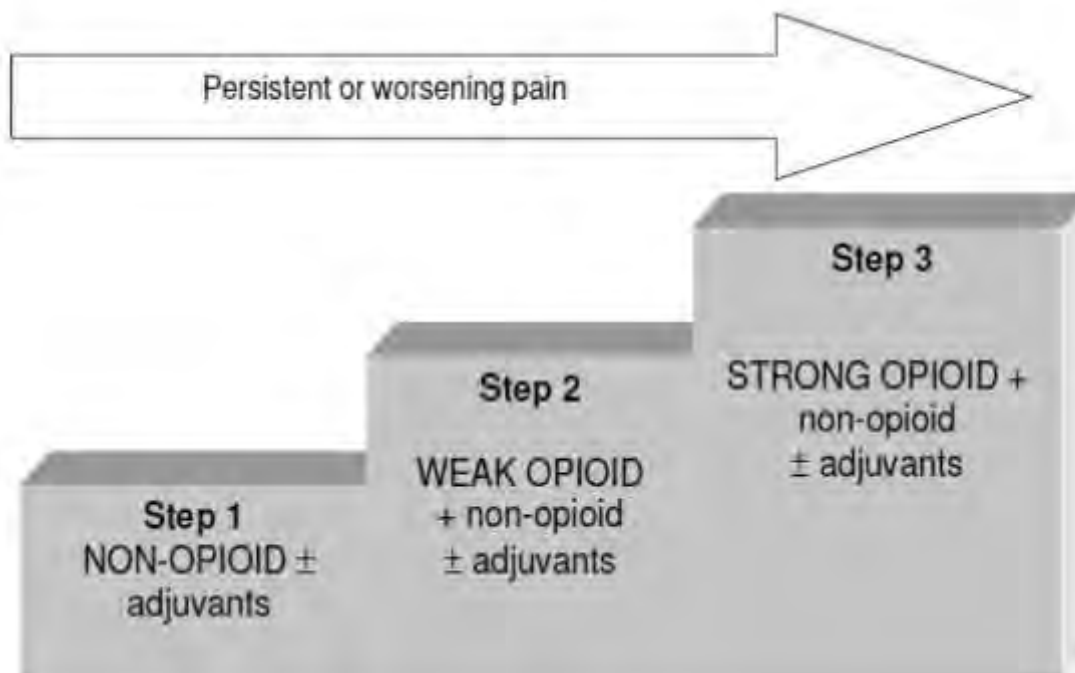
Steps in Effective communication	Don'ts
<ul style="list-style-type: none"> • Build a relationship • Open the discussion • Gather information • Understand the patient's perspective • Share information • Reach agreement on problems and plans • Close discussion sensitively 	<ul style="list-style-type: none"> • Do not philosophise or moralise • Avoid comparisons • Avoid meaningless words eg : don't be afraid • Avoid jargon • Avoid false or premature reassurance • Avoid patronising • Do not force your beliefs or convictions on the patient

Illustrative Scenarios	
For Effective Communication	Examples
Set the scene	"Sit down" (ensure privacy)
Convey empathy	Say what you see, "You look worried" Convey with your expression that you care
Gather information	"What do you know about the disease?" "Would you like to know the diagnosis?"
Understand the patient's perspective	"Could you tell me your thoughts and how you are feeling?" Be prepared for emotions and behaviours like sobbing, anger, silence or despair
Share information	Give a warning shot "I am afraid I have some bad news for you" Give information in small chunks. "You have a growth in your stomach"
Check reaction (If he/she is ready to hear more, convey bad news focusing on the most positive point)	"The biopsy report shows you have cancer, but with treatment we can keep you comfortable".
Again check reaction (Ready for more discussion?)	"Radiation can take away your bone pain. You have any concerns about it?"
Assure your support (But never make promises that you cannot keep)	"We shall be here for you on all week days, if you have any pain or any discomfort. On other days we can give you a phone number that you can reach"

Reach agreement	<i>"Shall I see you again when the radiation treatment is over or earlier if you have any pain?"</i>
Close discussion sensitively	<i>"I am sure you will have questions. Come back on Tuesday if you need. We are here for you".</i>

2. Pain Management

- Pain relief is essential for improving the quality of life
- **Pain assessment**
 - * All pains cannot be treated the same way. Assessment includes the nature, severity and possible type of pain. Severity can be assessed only by the patient – usually on a 0-10 scale in which 0 means no pain and 10 means the worst imaginable pain
- **Pain management**
 - * Set realistic goals, stage by stage eg: pain free overnight, at rest, on movement
 - * In continuous pain, prescribe analgesics "by the clock" depending on the duration of action of medicine
 - * Prescribe SOS analgesic for breakthrough and/or incident pain
 - * Pain is managed according to severity as per the WHO pain ladder



Drugs

Non Opioids	Step 2 Weak Opioids	Step 3 Strong Opioids	Adjuvants
Tab. Paracetamol 12-15mg/kg Q6H	Tramadol Up to 400mg/day	Morphine 5-10 mg 4 th hourly	Amitriptyline 12.5-25mg HS Increase 12.5 to 25mg every 3-5 days to maximum 100mg/day
Tab. Ibuprofen 400mg TDS		Fentanyl Transdermal 25µg/hour patch equivalent to 10mg oral morphine	Carbamazepine Start with 50-100mg TDS, increase by 200mg weekly to a maximum of 1000mg/day
Tab. Naproxen 500mg BD			Gabapentin Start with 100mg TDS increase 300mg TDS every week to a maximum of 1200mg TDS
			Dicyclomine 20mg TDS

- Steps for Calculating the dose of Oral Morphine**

- * The usual starting dose is 5-10mg every 4 hours
- * The night dose is usually double that of other doses to avoid waking up in the middle of the night
- * Review every 2 days till stable. If pain relief lasts less than 4 hours, increase dose by 50%
- * The rescue dose for breakthrough pain is the same as the 4th hourly dose
- * There is no upper limit for the dose of Morphine. The right dose for the patient is the dose needed to achieve pain relief
- * On Morphine, drowsiness without pain relief indicates that the pain is not Opioid-sensitive

Side Effects of Opioids and It's Management

Side effects	Management
Constipation	Stimulant laxatives (Bisacodyl 10 mg HS)
	Softeners / lubricants [liquid Paraffin]
Nausea and vomiting (Self-limiting within a week)	Haloperidol 1.5 mg HS or Metoclopramide 10 mg TDS
Sleepiness and tiredness (Often Self- limiting)	Reduce dose and review if it persists beyond a week
Dry mouth	Good mouth care
Urinary hesitancy	Alpha blocker (Tamsulosin- 1mg HS)
Itching	5HT3 blockers (Ondansetron)

3. SYMPTOM MANAGEMENT

- Aim of treatment is to improve the quality of life
- Look for correctable factors and correct them

Examples for symptom control in incurable illness

Symptoms	Management
Breathlessness	Oral morphine – 5 -10 mg Q 4-6 hourly Dexamethasone – 4-8 mg PO OD
Constipation	Bisacodyl 10 mg PO (Add: Liquid cremaffin if necessary)
Diarrhoea (when the cause cannot be corrected as in cancer)	Loperamide - up to 16 mg daily PO
Nausea and Vomiting	
• Gastro stasis	Metoclopramide 10 mg Q6H PO/SC
• Opioid induced	Metoclopramide 10 mg Q8H PO/SC Haloperidol 1.5 mg HS PO/SC
• Elevated intracranial tension	Dexamethasone 8-32 mg PO/slow IV
Delirium	Exclude precipitating factors Haloperidol – start with 1.5 mg OD – Slowly increase up to 20 mg OD PO/SC
Opioid-induced urinary hesitancy	Tamsulosin 1 mg PO HS
Bleeding wounds	Ethamsylate 250-500 mg Q6H PO/IV

Oral Hygiene

- **Objectives**
 - * To remove any food particles, especially in patients with altered sensorium
 - * To prevent dental caries
 - * To improve nutritional status by enhancing appetite
 - * To refresh the mouth of a person who is confined to bed, critically ill or dehydrated
 - * To stimulate the blood circulation in gums
 - * To reduce the incidence of ventilator associated pneumonia
- **Common Antiseptic solutions used**
 - * Thymol glycerine
 - * 1% soda bicarbonate
 - * Potassium permanganate
 - * Normal saline
 - * Hydrogen peroxide (avoid for unconscious patients)
 - * Chlorhexidine

- **Common Lubricants used**
 - * Liquid paraffin
 - * Coconut oil
 - * Borax glycerine
 - * Vaseline
- Look for cracked lips, sores at the corners of mouth, dry or coated tongue, oral Candidiasis, oral ulcers, bleeding or any other lesions in oral cavity

Care of Wounds

- Normal saline, Metronidazole solution, Betadine solution etc are commonly used to clean wounds
- Gently sponge the wound with normal saline from the inner to the outer aspect of the wound without causing further trauma to the repair tissues
- Debridement only if required
- While dressing wounds Vaseline gauze can be used to avoid adhesion to the wound

Management

Problem	Management
Pain	<ul style="list-style-type: none"> • Round the clock analgesics using WHO Ladder • Local application of lignocaine jelly before dressing • Analgesics half an hour before dressing
Fungating/Necrotic wound	<ul style="list-style-type: none"> • Regular dressing using Saline solution • Debridement if necrotic tissue is present • Radiation therapy can be considered
Foul smelling wounds	<ul style="list-style-type: none"> • Dressing with Metronidazole solution or powder • Tab. Metronidazole 400mg TID x 7 days followed by 200mg once daily
Bleeding wounds	<ul style="list-style-type: none"> • Use Vaseline gauze for dressing • Soak with saline before removing the dressing • Tranexamic acid tablet can be powdered and used over the wound • Apply adequate pressure • Haemostatic radiation therapy
Maggots	<ul style="list-style-type: none"> • Manual removal using turpentine oil • Repeat removal may be needed for a few days • Adequate covering of wound can prevent maggot infestation

Prevention of Bed Sores

- Change the position of the patient every 2 hours
- Lift patient every 15 minutes if in a wheel chair
- Make the bed without wrinkles
- Do not drag the patient on the sheet
- Do not leave the patient on a wet sheet for a long time
- Gently massage the areas where bed sores can develop like the Ankle, heels, sacrum and Trochanteric regions
- Examine the skin daily for any redness or blisters
- If ulcers are formed, clean the ulcer using saline from the inner to the outer aspect and apply saline soaked gauze. Cover the wound with a dressing pad and apply micropore.

Care of Tracheostomy

- Tracheostomy tube has an outer metal tube which stays permanently in place and an inner metal tube which should be regularly cleaned
- The inner tube should be cleaned daily or more if needed
- The site around the tracheostomy should also be cleaned
- Sodium bicarbonate solution is usually used for cleaning the inner tube
- The area around the tracheostomy should be cleaned using Normal saline
- After cleaning, the inner tube is inserted back the tracheostomy site is covered using a saline soaked gauze

Care of Colostomy**Objectives**

- To prevent leakage of colostomy
- To prevent excoriation of skin around the stoma
- To observe the stoma and surrounding skin
- Examine the stoma and surrounding skin for any excoriation of skin, prolapse, retraction, inversion or obstruction
- Ask for any symptoms like constipation, diarrhoea, infection, necrosis or bleeding
- Colostomy collection bag should be emptied frequently and site cleaned with soap and water during bath
- Care taker should be advised regarding emptying and changing colostomy bags

Bladder Care

- The perineal area should be cleaned every day with soap and water
- Drink adequate water to maintain good flow of urine and to flush the catheter
- Clean the urinary catheter with cotton balls soaked in Betadine solution

- Change the urinary catheter every 2 weeks (Silicon catheter once in 3 months)
- Urinary catheter should be striped to the lower abdomen in men and to the thigh in women
- If the catheter is blocked it should be changed immediately
- If there is any change in the colour of urine or any systemic symptoms like fever with chills or abdominal pain inform the home care team

4. END OF LIFE CARE

- Futile and inappropriate artificial life support measures usually cause physical, psychological and social suffering to patients and families
- Patient and family should be
 - * Adequately informed on status and goals of care
 - * Adequate awareness of signs/symptoms and time course
 - * Awareness of the unpredictability of time course
 - * Awareness regarding what to do for unexpected events

Treatment plan

- * Take & provide into consideration the patient's expressed wishes
- * Provide information and discuss with family, decide and document regarding the place of care – home, hospital or ICU
- * Extent of life support measures desired – IV hydration, Artificial ventilation, Renal dialysis etc
- * Can any of the medicines like Statins, Antihypertensives be stopped?
- * If swallowing is difficult consider rectal/subcutaneous route for administration of medicines
- * If on morphine and level of consciousness is dropping, do not stop morphine; Consider reducing the dose by one third
- * For rattling in the throat, give Glycopyrrrolate 0.2mg 6th hourly
- * Nursing care focussed on comfort ("*how is he?*" rather than "*what is the Blood pressure?*")
- * Assume patient can hear and understand and keep communicating with him/her
- * Ensure that the family (including children) understands the situation
- * Facilitate religious rites

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