Standard Treatment GUIDELINES

5th Edition

Health Intervention and Technology Assessment Division
Department of Health Services
Ministry of Health

2024

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Department of Health Services, Ministry of Health

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5th Edition: 2024

ISBN 978-99980-45-08-8

Health Intervention and Technology Assessment Division
Department of Health Services
Ministry of Health
Kawangjangsa, Thimphu, Bhutan

For any enquiries contact:
email: hitad@health.gov.bt

Cover photo: https://shorturl.at/824JU

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Foreword

I am honoured to present the fifth edition of the Standard Treatment Guidelines (STG) 2024, a cornerstone in advancing the quality of healthcare for all. Since its inception in 1989, the STG have continually evolved, reflecting the ever-changing landscape of medicine. This edition marks a significant milestone, following an eight-year gap since the 2014 edition.

The intervening years have witnessed remarkable progress in medical research and treatment options. The STG 2024 meticulously integrated these advancements, ensuring Primary Healthcare Professionals (PHCP) have access to the most up-to-date recommendations for managing a wide range of health conditions.

A core objective of this edition remains the promotion of rational medicine use. By providing evidence-based treatment pathways, we aim to empower PHCP to make informed prescribing decisions. This not only optimises patient outcomes but also fosters cost-effectiveness within the healthcare system.

Furthermore, the STG 2024 addresses the crucial issue of prescription and treatment variation among prescribers. By standardising approaches to common health problems, we aim to reduce unwarranted discrepancies in patient care. This consistency fosters improved communication and collaboration between PHCP and specialists, ultimately benefiting patient health.

PHCP are the bedrock of our healthcare system, serving as the first point of contact for a vast majority of patients. Equipping them with these comprehensive guidelines is paramount. The STG 2024 offers a user-friendly format, featuring clear algorithms, flowcharts, and essential medicine information. This facilitates efficient decision-making and ensures the provision of high-quality care within the primary healthcare setting.

I express our deepest gratitude to the esteemed panel of experts who contributed their invaluable knowledge and expertise to this edition. Their dedication ensures the STG remains a trusted resource for PHCP nationwide.

I urge all PHCP to utilise these guidelines as a cornerstone of their practice. By working together and embracing evidence-based practices, we can ensure that every patient receives the highest quality care possible.

PEMBA WANGCHUK
Secretary
Ministry of Health

Preface

Introduction

Primary healthcare centres (PHC) are the cornerstone of healthcare delivery, providing essential services for a wide range of common and chronic diseases. This edition of the Standard Treatment Guidelines (STG) focuses on the management of these core disease conditions encountered by primary healthcare professionals (PHCP) at PHC.

This STG aims to provide PHCP with evidence-based recommendations for the effective diagnosis, treatment, and management of common diseases within the PHC setting. By promoting standardised and optimal care practices, this guideline strives to improve patient outcomes and quality of care.

This STG is designed for PHCP, including doctors, nurses, and other healthcare professionals working in primary healthcare centres.

Scope and limitations

This edition covers the essential disease conditions that can be effectively managed by PHCP within their area of competence. It does not encompass the entire spectrum of complex diseases requiring specialised interventions.

Development process

The development of the 5th edition of the STG underwent a comprehensive revision process to ensure its relevance and accuracy. The key steps in this process were as follows:

Initial feedback collection: An online survey was conducted to gather detailed feedback from PHCP on the previous edition of the STG, published in 2014. This step was crucial in identifying the strengths and weaknesses of the existing guidelines from the perspective of front-line healthcare practitioners.

Survey analysis and appraisal: The results of the survey were meticulously analysed and presented to the National Medicines Committee. This appraisal process aimed to pinpoint specific areas that required improvement and to prioritise these areas based on the feedback received.

Formation of a technical working group: In response to the identified needs, a Technical Working Group was established. This group was composed of experts with specialised knowledge in various disease topics. Their primary responsibility was to develop and update the guideline content, ensuring that it reflected the latest medical standards and practices.

Expert review for accuracy: Once the initial drafts were prepared, clinical experts rigorously reviewed the content. These experts evaluated the guidelines for accuracy, completeness, and applicability to clinical practice. Their reviews ensured that the recommendations were evidence-based and aligned with current medical knowledge.

Final proofreading: To achieve the highest quality and reliability, the drafted guidelines underwent a final round of proofreading. Clinical experts were again involved in this stage to verify that all corrections and suggestions were appropriately incorporated and to ensure that the guidelines were clear, concise, and user-friendly.

Designing the guideline: Once the content was finalised, the guidelines were designed into a book format. This step involved professional layout and design to make the guidelines user-friendly and easily navigable for healthcare providers.

By following these steps, the revision process of the 5th edition of the STG was thorough and collaborative, involving input from various stakeholders to produce a robust and comprehensive set of guidelines.

How to use this guideline

This STG is intended as a reference tool for PHCP. It is structured to provide clear and concise information on each disease condition, including:

- Definition
- Causes
- Symptoms
- Signs
- Investigations
- Management
- Health education

When using this guideline, PHCP should consider individual patient needs, medical history, and response to treatment.

Disclaimer

This STG serves as a guide and does not supersede necessary professional clinical judgement. PHCP are encouraged to use their expertise and integrate the recommendations within this guideline with individual patient assessment and management plans. When necessary, consultation with specialists and adherence to relevant national treatment protocols are paramount.

Acknowledgements

The completion of the Standard Treatment Guidelines 2024, 5th edition, represents a significant milestone in our ongoing commitment to improving healthcare standards and practices. This comprehensive guide would not have been possible without the dedicated efforts, expertise, and collaboration of numerous individuals and organisations. We are profoundly grateful to everyone who contributed to this endeavour.

We extend our heartfelt gratitude to the distinguished officials and experts from the Faculty of Nursing and Public Health (FNPH), Khesar Gyalpo University of Medical Sciences of Bhutan (KGUMSB) and the Jigme Dorji Wangchuck National Referral Hospital (JDWNRH). Their in-depth knowledge, dedication, and efforts in developing the disease content have been instrumental in ensuring the accuracy and relevance of this guideline.

1. Dr. Ripa Chakma, Associate Professor, FNPH, KGUMSB
2. Ms. Manikala Moktan, Assistant Professor, FNPH, KGUMSB
3. Mr. Kinley Gyaltshen, Assistant Professor, FNPH, KGUMSB
4. Mr. Gem Tshering, Deputy Dean, Student Affairs, FNPH, KGUMSB
5. Dr. Tara Devi Laabar (PhD), Sr. Lecturer, FNPH, KGUMSB
6. Ms. Sangay Wangmo, Sr. Lecturer, FNPH, KGUMSB
7. Ms. Sangay Choden Namgyel, Sr. Lecturer, FNPH, KGUMSB
8. Mr. Phensum Tobgay, Sr. Lecturer, FNPH, KGUMSB
9. Mr. Nguldup Gyeltshen, Sr. Lecturer, FNPH, KGUMSB
10. Ms. Pema Choden, Lecturer, FNPH, KGUMSB
11. Mr. Bhawani Shankar Dungana, Associate Lecturer, FNPH, KGUMSB
12. Dr. Sonam Choeki, Dentist, JDWNRH, DCS, NMS

Content proofreader and reviewer

We are deeply thankful to the dedicated proofreaders and reviewers who thoroughly reviewed the content for accuracy, coherence, and clinical relevance. Their expertise and attention to detail have significantly enhanced the quality of this guideline.

1. Dr. Ambika Rani Pradhan, Dermatologist, JDWNRH
2. Dr. Thinely Yangzom, Head of CHD, JDWNRH
3. Dr. Kuenley Pedon, Paediatrician, JDWNRH
4. Dr. Gem Dorjee, Orthopedist, JDWNRH
5. Dr. Mendu Dukpa, Ophthalmologist, JDWNRH
6. Dr. Sangay Tshering, Gynecologist, JDWNRH
7. Dr. Puja Subedi, Psychiatrist, JDWNRH
8. Dr. Sweta Giri, Emergency Physician, JDWNRH
9. Dr. Pushpalal Katel, Otorhinolaryngologist, CRRH
10. Dr. Thinley Dorji, Medical Specialist, CRRH
11. Dr. Sonam Choeki, Dentist, JDWNRH
12. Dr. Pasang Tobgyel Thigh, Sr. Medical Officer, Damphu Hospital
13. Dr. Yowaan Thapa, Sr. Medical Officer, Paro Hospital
14. Ms. Ambika Luitel, Clinical Nurse, JDWNRH

Final review

We extend our special appreciation to the clinical health experts who conducted the final review. Their comprehensive assessment and invaluable feedback have been crucial in refining the guideline to meet the highest standards of clinical excellence.

1. Dr. D. B. Subba, Medical Specialist, JDWNRH
2. Dr. Sonam Gyeltshen, Emergency Physician, JDWNRH
3. Dr. Sonam Phuntsho, Sr. Medical Officer, Damphu Hospital

Program coordinators

The coordination and management of this project were efficiently handled by the program coordinators, whose organisational skills and dedication ensured the smooth progression and timely completion of this guideline.

1. Mr. Tshering Duba, Deputy Chief Pharmacist, HITAD, DHS, MoH
2. Mr. Sangay Norbu, Pharmacist, HITAD, DHS, MoH
3. Mr. Ugyen Tashi, Chief Program Officer, HITAD, DHS, MoH

Design and Layout

We would like to acknowledge Mr. Chana Singye, Graphic Designer, Health Promotion and Risk Communication Division under the Department of Public Health for his exceptional work in designing the book. His creativity and attention to detail have greatly enhanced the visual appeal and usability of this guideline.

Funding support

We are grateful to the World Health Organization (WHO) for their generous funding support. Their financial assistance has been pivotal in the development and publication of this guideline. The support from WHO has enabled us to ensure that this resource meets the highest standards and is accessible to all healthcare professionals.

Abbreviations

AKI	Acute Kidney Injury
AMS	Acute Mountain Sickness
AUB	Abnormal Uterine Bleeding
BID	Two times a day
BPAD	Bipolar Affective Disorders
BPH	Benign Prostatic Hyperplasia
CBC	Complete Blood Count
CCF	Congestive cardiac failure
CKD	Chronic Kidney Diseases
COPD	Chronic Obstructive Pulmonary Disease
CPR	Cardiopulmonary Resuscitation
DKA	Diabetic Ketoacidosis
ECG	Electrocardiography
ENT	Ear, Nose and Throat
FVC	Forced Vital Capacity
GCS	Glasgow Coma Scale
GDMO	General Duty Medical Officer
HACE	High altitude cerebral edema
HAPE	High altitude pulmonary edema
INR	International Normalised Ratio
JDWNRH	Jigme Dorji Wangchuck National Referral Hospital

KGUMSB	Khesar Gyalpo University of Medical Sciences of Bhutan
LFT	Liver Function Test
MDI	Metered Dose Inhaler
MRI	Magnetic Resonance Imaging
NSAID	Non-steroidal anti-inflammatory Drugs
PEF	Peak respiratory flow
PHCP	Primary Health Care Professionals
PIVD	Prolapsed Intervertebral Disc
PO	Oral Administration
PPH	Postpartum Haemorrhage
PSGN	Post-streptococcal glomerulonephritis
QID	Four times a day
RDT	Rapid Diagnostic Test
RFT	Renal Function Test
STG	Standard Treatment Guideline
STI	Sexually Transmitted Disease
TBSA	Total Burn Surface Area
TIA	Transient Ischemic Attack
TID	Three times a day
TMD	Temporomandibular Disorders
UTI	Urinary Tract Infection
UTI	Urinary Tract Infection

CHAPTER 1
EMERGENCY CONDITIONS

Dr. Sweta Giri, Emergency Physician, JDWNRH
Mr. Phensum Tobgay, Sr. Lecturer, FNPH
Mr. Gem Tshering, Deputy Dean of Student Affairs, FNPH

Medical emergencies and life-threatening injuries can occur unexpectedly and at any location. Therefore, it is crucial for primary healthcare providers to be capable of delivering emergent care before referring patients to higher-level healthcare facilities. The initial hour following an emergency, particularly in cases of trauma, is often referred to as the "Golden hour," during which rapid assessment and initiation of life-saving interventions are critical. To facilitate efficient management, a systematic approach known as "Patient Assessment" is employed, typically utilising the ABCDE assessment method. This method enables the detection of life-threatening conditions and prompt intervention to ensure patient stabilisation.

1.1 Patient assessment via the ABCDE approach

The ABCDE approach offers a systematic method for assessing acutely ill patients, addressing life-threatening issues promptly. On identifying a life-threatening issue, it must be tackled immediately. It should be completed within 5 minutes initially and must be repeated when a patient's condition changes.

A: Airway assessment

Can the patient talk normally?

If **yes**, the airway is patent

If **no**, check why the airway is not patent:

- Are there abnormal sounds such as stridor, grunting, or snoring? This indicates a partially obstructed airway
- Look for fluid / vomitus in the airway - If present, suction it out
- Look for a foreign body in the mouth - If present, remove it manually
- If the patient is choking, apply age-appropriate chest thrusts/ abdominal thrusts/back slaps to help expel the foreign body

If the patient is **unconscious and not breathing normally,** open the airway via:

- Head tilt and chin lift manoeuvre, if no trauma
- Jaw thrust manoeuvre, if trauma present
- Use airway adjuncts like nasopharyngeal airway and oropharyngeal airway
- If the airway is open, move on to Breathing

B: Breathing assessment

Look, listen and feel if breathing is normal

- If unconscious with abnormal breathing, start bag-valve-mask ventilation

If conscious but breathing is not normal, assess the following:

- Is the breathing too fast, slow or very shallow?
- If very shallow, start bag-valve-mask ventilation to provide rescue breaths
- Look for signs of increased work of breathing such as accessory muscle use, chest retractions and nasal flaring
- Auscultate the chest for abnormal lung sounds like wheezing or crackles. If wheezing, nebulize with Salbutamol 5mg

- Listen to see if breath sounds are equal on both sides. If reduced on one side, suspect pleural effusion or tension pneumothorax. Perform decompression if available or prepare for emergent transfer

If breathing is adequate, move on to Circulation

C: Circulation assessment

Look and feel for signs of poor perfusion (cold and clammy extremities, delayed capillary refill greater than 3 seconds, low blood pressure, tachycardia, weak or absent pulses)

- If absent pulses, start CPR (Refer Cardiac Life Support)
- If signs of poor perfusion are present:
  - ◊ Administer IV fluids (two large bore iv cannula)
  - ◊ Look for sources of external bleeding. If present, apply direct pressure or tourniquets, as appropriate, to control bleeding
  - ◊ If internal bleeding is suspected (e.g. into the chest, abdomen, pericardium), prepare for transfer to higher health care centres where blood transfusion is available

If circulation is adequate, move on to disability

D: Disability

Assess the level of consciousness using the AVPU scale (Alert, Voice, Pain, Unresponsive) or GCS scale

- If unconscious with no signs of trauma, place in the recovery position

Check blood glucose level

- If glucose is low (<3.5 mmol/L or <60 mg/dl) or glucose test is not available and patient has altered mental status, give IV Dextrose 25%

Check pupils - whether pupils are equal in size and reactive to light

- If pupils are small and breathing is slow, consider opioid overdose
- If pupils are unequal in size, consider brain injury and increased intracranial pressure, raise the head of the bed to 30 degrees. Plan for

rapid transfer to a facility with neurosurgical care

Look for abnormal repetitive movements or shaking involving one or both sides of the body (seizure/convulsion)

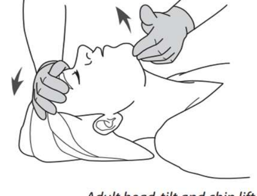
- If present, administer IV Diazepam 10 mg

Check movement and sensation in all four limbs. If absent/reduced movement in one side, suspect stroke and plan for rapid transfer to a higher health care centre

E: Exposure assessment

Examine the entire body for rashes, cuts, bites, bleeding sources or swelling.

- Remove constricting clothing or jewellery from swollen extremities
- Urticaria can indicate allergic reactions
- eFAST (In hospital setting where USG is available)



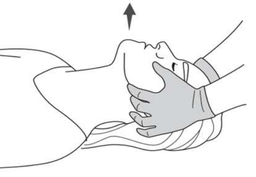
Adult head-tilt and chin lift

Skills required for the primary assessment

1. Airway manoeuvres

a) Head tilt and chin lift

- Used in patients who don't have a patent airway, with no history of trauma
- Place one hand on the patient's forehead and place two fingers of the other hand on the chin. Tilt the head back with one hand while lifting the chin gently with two fingers of the other hand



Jaw thrust in adults

b) Jaw thrust

- Used in patients who don't have a patent airway in the setting of trauma
- Ask an assistant to immobilise the cervical spine first
- Place fingers behind the angle of mandible on both sides of the jaw

and push up so that the lower jaw moves. The head and neck should NOT move

2. **Airway adjuncts**

a) Oropharyngeal airway

- Used in patients who are unconscious (with an absent gag reflex)
- Choose the appropriately sized OPA by measuring from the tip of the earlobe to the corner of the mouth
- Insert the OPA with its tip turned towards the palate. Once you encounter resistance, turn the OPA 180 degrees and push it further until the flange (wide, flat end) rests on the lips

b) Nasopharyngeal airway

- Used in patients who are semi-conscious with an intact gag reflex
- Choose the appropriately sized NPA by measuring from the base of the nostrils to the earlobes. The diameter of the NPA has to be smaller than the person's nostrils
- Lubricate the NPA well and insert it into the nostril, directing it along the floor of the nose posteriorly towards the throat until the wide, flat portion (flange) of the tube rests against the nostril

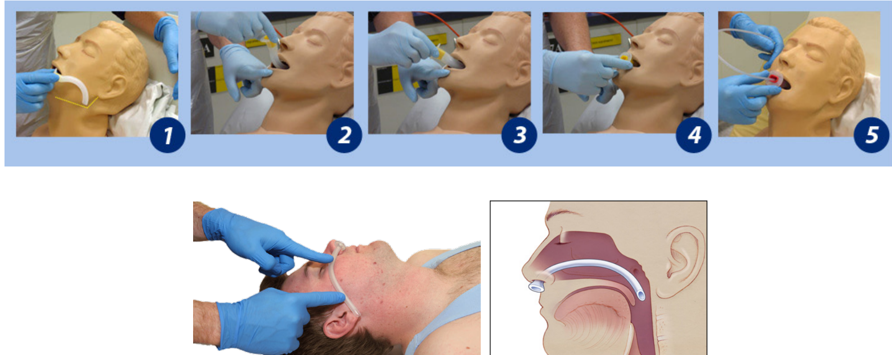


Fig. 1.1 Oropharyngeal airway and Nasopharyngeal airway

3. **Recovery position**

- This is the position where an unconscious or semi-conscious patient is to be placed if there is no trauma.
- Bend the top leg forward. The left arm should be straight with the patient's head resting on the arm to elevate the head and position the mouth downward.

Recovery position

- This position will allow for vomit and other secretions to drain from the mouth with less risk of airway obstruction.

1.2 Choking

CAUSES

- Choking occurs when there is an obstruction in the airway, preventing flow of air into the lungs. This obstruction can be partial or complete and may result from a piece of food, a foreign object or vomitus.

SIGNS & SYMPTOMS

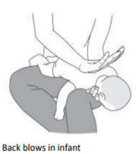
- Difficulty breathing while eating or drinking, inability to speak, coughing
- Universal sign of choking: Hands clutching the throat

MANAGEMENT

- If a choking person can cough forcefully, let them cough. Coughing might naturally remove the stuck object
- If the person cannot cough, use age-appropriate chest thrusts, abdominal thrusts or back blows
- If the person becomes unconscious while choking, follow the BLS algorithm

Chest thrust in adult

Abdominal thrust in late pregnancy

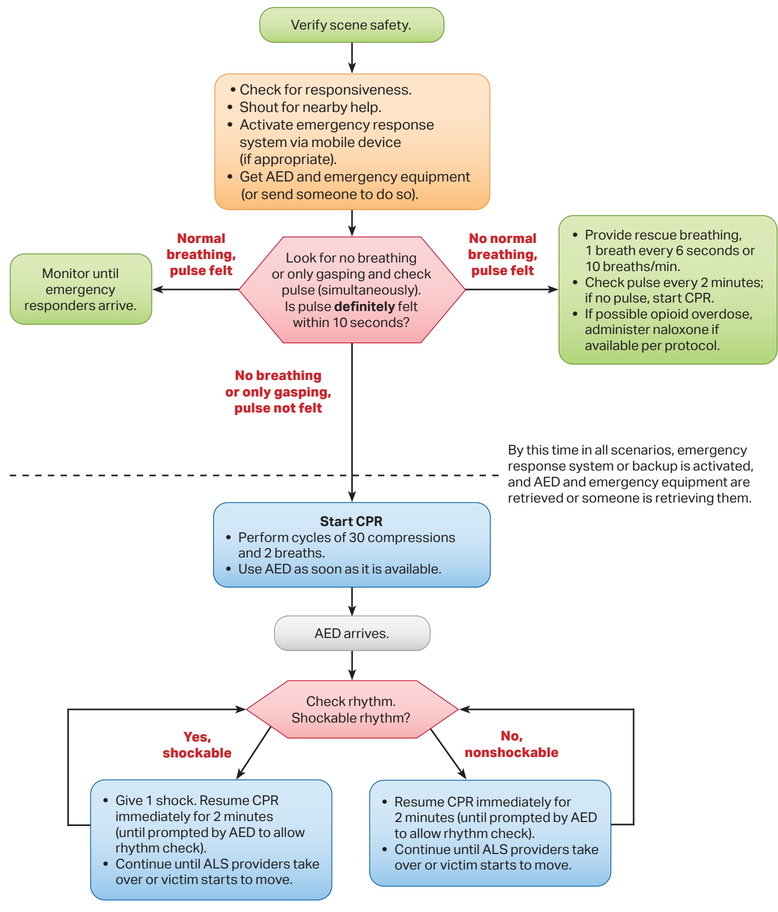

Back blows in infant

Chest thrust in infant

1.3 Cardiac arrest algorithm

If a patient has no palpable central pulses (carotid or femoral), the patient is in cardiac arrest. Initiate Cardiopulmonary Resuscitation (CPR) immediately. Follow the Basic Life Support Algorithm if it is an out of hospital cardiac arrest or your centre doesn’t have required drugs. Follow the Advanced Cardiac Life Support Algorithm if it is in in-hospital cardiac arrest with available drugs.

Flowchart: Adult basic life support algorithm for healthcare providers



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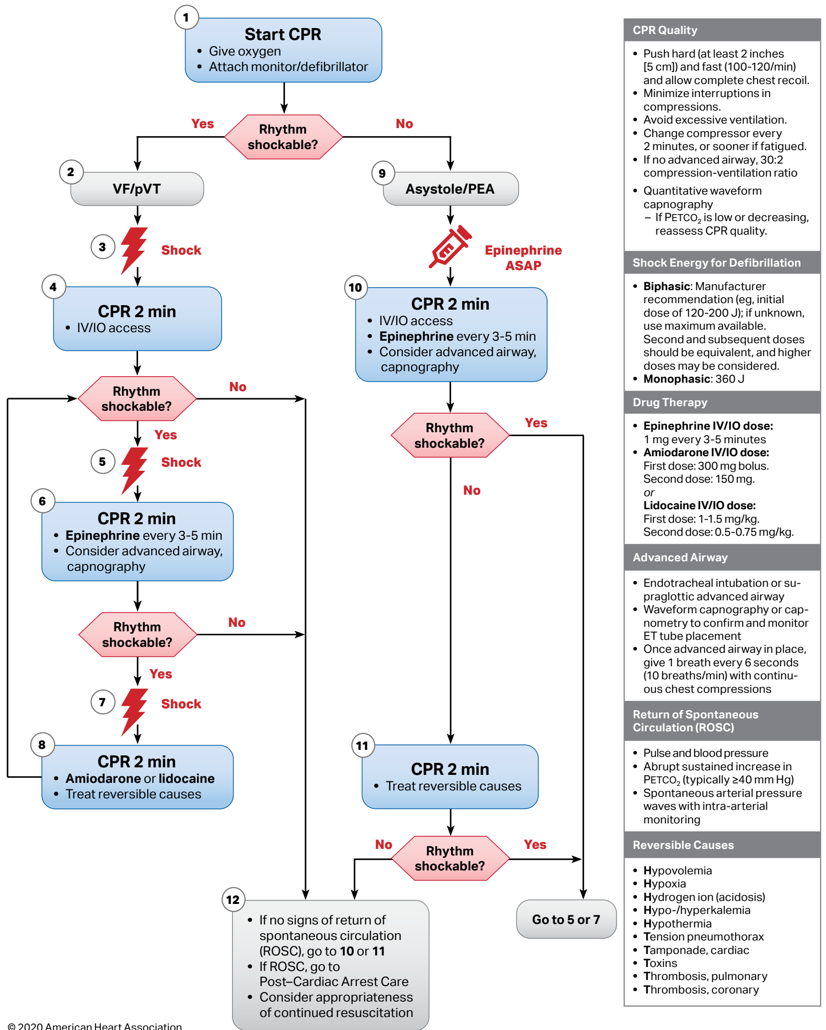
Flowchart: Adult cardiac arrest algorithm



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1.4 Poisoning and overdose

DEFINITION

A poison (toxin) is any substance that, if taken into or absorbed into the body in sufficient quantity, can harm the body (or that causes injury, illness or death). The exposure can be by ingestion, inhalation, injection, or through skin.

The clues to suspecting poisoning is via history - from the patient or the family. Ascertain what toxin was ingested, how much was ingested and what was the time of exposure. Ask the family members about all possible medications in the house, including over-the-counter medications, alcohol and herbal/traditional medicines. Other clues are the presence of empty pill bottles or containers of toxins in the patient's surroundings. Furthermore, unusual odours can also serve as a clue.

Since history is subjective, relying on signs and symptoms are objective. Toxidromes are a set of signs and symptoms associated with the ingestion or exposure to specific classes of toxins or drugs. Observing signs and symptoms consistent with a specific toxidrome allows for suspecting the drug class that the patient may have ingested. Armed with this knowledge, healthcare providers can promptly initiate treatment protocols even in the absence of knowing the specific toxin involved.

The approach to poisoned and overdosed patients must be systematic, with the initial approach focused on stabilisation of life-threatening conditions.

ABCDEFG is a simple mnemonic for the general approach to poisoning and overdose

- **A**irway assessment and management
- **B**reathing assessment and management
- **C**irculation assessment and management
- **D**isability assessment + **D**econtamination

- **E**xposure + **E**nhanced elimination
- **F**ocused therapy (antidotes)

Decontamination

Decontamination refers to the process of removing or reducing the presence of toxic substances from the patient's body, environment, or both. The goal of decontamination is to prevent further absorption, distribution, or adverse effects of the toxic substance. Decontamination methods vary depending on factors such as the type of toxic substance, route of exposure, and patient's condition.

Common methods of decontamination include:

Skin Decontamination: This involves removing toxic substances from the skin surface. Methods include rinsing the affected skin with copious amounts of water or using soap and water to wash off the contaminant.

Ocular Decontamination: If the eyes are exposed to toxic substances, they should be flushed with water or normal saline for 20 minutes.

Gastrointestinal Decontamination: This involves removing toxic substances from the gastrointestinal tract to prevent further absorption. Methods include:

- **Activated charcoal:** 1gm/kg. Given if a patient has ingested toxins that are adsorbed by charcoal within the past 1 hour
- **Gastric lavage:** May be considered when the toxin is not absorbed by charcoal. It is performed by inserting a nasogastric tube and instilling and aspirating normal saline/tap water via the tube.

Enhanced elimination

Enhanced elimination is a method used to increase the rate of toxic removal from the body so as to reduce the severity and duration of clinical intoxication.

Enhanced elimination methods are not routinely used because it requires close monitoring. Different techniques to enhance elimination are:

- Multi dose activated charcoal
- Urinary alkalinization
- Hemodialysis

1.4.1 Sympathomimetic toxidrome

CAUSES

- Amphetamines
- Cocaine
- Methamphetamine

SIGNS & SYMPTOMS

- Agitation
- Altered mental status
- Seizures
- Hypertension
- Tachycardia
- Dilated pupils
- Diaphoresis
- Warm
- Flushed skin

MANAGEMENT

- ABCDE assessment and management as needed
- Supportive care only
- IV Diazepam 10 mg for severe agitation and or seizures
- No specific antidote

1.4.2 Anticholinergic toxidrome

CAUSES

- Atropine
- Chlorpheniramine
- Diphenhydramine
- Promethazine
- Tricyclic antidepressants like Amitriptyline

SIGNS & SYMPTOMS

- Agitation
- Confusion
- Altered mental status
- Seizures
- Hypertension
- Tachycardia
- Hyperthermia
- Dilated pupils
- Dry but warm skin

MANAGEMENT

- ABCDE assessment and management as needed
- Supportive care
- IV Diazepam 10 mg for seizures
- Refer section on TCA overdose for its management

1.4.3 Cholinergic toxidrome

CAUSES

- Organophosphate pesticides,

- Carbamates,
- Some mushrooms

SIGNS & SYMPTOMS

- Increased secretions (lacrimation, sweating, diarrhoea, vomiting, excessive salivation, urinary incontinence)
- Pinpoint pupils
- Bradycardia
- Bronchoconstriction causing wheezing

MANAGEMENT

- ABCDE assessment & management as needed
- Decontamination: Remove clothes soaked with the toxin
- Atropine:
  a. Adults: 2-5 mg IV; repeat every 5 minutes until respiratory secretions clear

  b. Paediatrics : 0.05 mg/kg IV; repeat every 5 minutes until respiratory secretions clear

- Pralidoxime:
  c. Adults: 1-2 gm IV over 15-30 minutes, followed by an infusion at 0.5 - 1 gm/hr

  d. Paediatrics : 20-50 mg/kg/dose IV bolus followed by an infusion at 10-20 mg/kg/hr

1.4.4 Opioid toxidrome

CAUSES

- Morphine
- Fentanyl
- Codeine

- Tramadol
- Heroin
- Methadone

SIGNS & SYMPTOMS

- Altered mental status
- Reduced rate of breathing
- Coma
- Hypotension
- Bradycardia
- Hypothermia
- Low respiratory rate
- Meiosis

MANAGEMENT

- ABCDE assessment and management as needed
- Naloxone 0.4-2 mg IV/IM/SC; can repeat every 3 minutes but not to exceed 10 mg. Target to normal respiratory rate.
- IV fluids (Normal saline, Ringer's lactate) for hypotension

1.4.5 Sedative - hypnotic toxidrome

CAUSES

- Benzodiazepines (Diazepam, Midazolam)

SIGNS & SYMPTOMS

- Altered mental status
- Drowsiness
- Confusion
- Shallow breathing

- Hypotension
- Bradycardia
- Hypothermia
- Low respiratory rate
- Normal pupil size

MANAGEMENT

- ABCDE assessment and management as needed
- IV fluids (Normal saline, Ringer's lactate) for hypotension
- Antidote: IV Flumazenil 0.2 mg IV (only if iatrogenic administration of benzodiazepines)

Table 1.1. Toxidromes at a glance

Toxidrome	Mental status	Pupil	Vital signs	Others
Sympathomimetics (Amphetamines, Cocaine)	Agitated, hyper alert	Dilated	↑HR, ↑BP, ↑RR, ↑Temperature	Diaphoresis with wet and warm skin
Anticholinergics (Atropine, Chlorpheniramine, Diphenhydramine, Promethazine)	Agitated	Dilated	↑HR, ↑BP, ↑Temperature	Dry skin & mucous membranes
Opioids [Morphine, Codeine, Fentanyl, Methadone, Heroin]	CNS depression	Pinpoint pupils	↓HR, ↓RR, ↓BP ↓Temperature	Hyporeflexia Needle marks
Cholinergic (organophosphates, carbamates, mushrooms)	Confused	Pinpoint pupils	↓HR	Wet and moist with increased secretions. (SLUDGE)
Sedative – hypnotic [benzodiazepines, barbiturates]	Confusion, coma	Normal	↓HR, ↓BP, ↓RR	Dry

Table 1.2. Substance causing specific order

Substance	Odour
Ethanol, isopropyl alcohol, chloroform, salicylates	Acetone
Cyanide	Bitter almonds
Organophosphates, phosphorus	Garlic
Hydrogen sulphide	Rotten eggs

1.4.6 Paracetamol poisoning

Toxic dose: 150 mg/kg

SIGNS & SYMPTOMS

- Is dependent on the time at which the patient presents after ingestion

Table 1.3. Stages of Paracetamol Poisoning

Stage	Time after ingestion	Characteristics
Stage 1	0 to 24 hours	Nausea, vomiting, anorexia
Stage 2	24 to 48 hours	Asymptomatic but AST, ALT begin to rise
Stage 3	72 to 96 hours	Liver toxicity: jaundice, coagulopathy, encephalopathy
Stage 4	4 to 14 days	Recovery or death

MANAGEMENT

- Activated charcoal may be used if the patient present within 1 hour of ingesting a toxic dose
- Start the antidote, N-acetylcysteine (NAC), as soon as possible if the ingestion meets the toxic dose
- N-acetylcysteine dose:
  - » 150 mg/kg in 200 ml of 5% dextrose over 1 hour, followed by
  - » 50 mg/kg in 500 ml of 5% dextrose over 4 hours, followed by
  - » 100 mg/kg in 500 ml of 5% dextrose over 16 hours

- If the patient has ingested a toxic dose and NAC is not available at your centre, refer to a higher health centre
- If the patient has any features of hepatotoxicity (stage 3), refer to a higher health care centre

1.4.7 Aspirin (salicylate) poisoning

Toxic dose: >150 mg/kg

SIGNS & SYMPTOMS

- Tinnitus
- Hearing loss
- Dizziness
- Nausea/Vomiting
- Ataxia
- Anxiety
- Seizures
- Tachypnea
- Diaphoresis
- Hypotension

MANAGEMENT

- ABCDE assessment and management
- Activated charcoal may be used if patient presents within 1 hour of ingestion
- Urinary alkalinization: IV sodium bicarbonate 1-2 mEq/kg bolus, followed by an infusion at twice the maintenance rate
- Target sodium bicarbonate infusion to a serum pH of >7.5
- If there are no facilities to monitor pH and in case of unavailability of sodium bicarbonate, refer to a higher centre

- Hemodialysis

1.4.8 Tricyclic antidepressant (TCA)

Toxic dose: >10 mg/kg

CAUSES

- Amitriptyline
- Imipramine

SIGNS & SYMPTOMS

- Altered mental status,
- Seizures
- Tachycardia
- Hypotension

MANAGEMENT

- ABCDE assessment and management
- Do an ECG, if available. Tachycardia, prolonged QRS and terminal R-wave at aVR are suggestive of cardiotoxicity
- Administer sodium bicarbonate 1-2 mEq/kg bolus, followed by an infusion of 0.5-1 mEq/kg/hr
- Plan for referral to centres with facilities to monitor serum sodium levels and blood gas analysis
- IV Diazepam 10 mg for seizures

1.4.9 Carbon monoxide poisoning

CAUSE

Incomplete combustion of charcoal resulting in tissue hypoxia

SIGNS & SYMPTOMS

- Headache
- Nausea and vomiting
- Confusion
- Agitation
- Focal neurological deficits,
- Visual disturbances
- Coma

MANAGEMENT

- ABCDE assessment and management
- Provide 100% oxygen therapy

TOXIC ALCOHOLS

Methanol and ethylene glycol are toxic alcohols. While they possess minor toxic effects by themselves, the compounds that they metabolise are toxic.

1.4.10 Methanol toxicity

Methanol is converted to formic acid, a toxic compound.

Sources: Automotive windshield cleaning solution, carburetor cleaner, antifreeze, photocopying fluid, and solvents.

SIGNS & SYMPTOMS

- Visual disturbances,
- Altered mental status
- Ataxia
- Abdominal pain
- Shortness of breath

- Seizures
- Tachypnea
- Hypotension
- Tachycardia

1.4.11 Ethylene glycol

It is metabolised to glycolic acid and oxalic acid, the toxic compounds.

Sources: Hydraulic brake fluid, automotive coolant (antifreeze)

SIGNS & SYMPTOMS

- Altered mental status
- Shortness of breath
- Reduced urine output
- Spasms
- Hypertension
- Tachycardia

MANAGEMENT

- For toxic alcohols:
- ABCDE assessment and management
- Correct acidosis - IV fluids, IV Sodium Bicarbonate
- Block its metabolism and prevent formation of toxic by-products by administering:
  e. Fomepizole: 15 mg/kg IV over 30 minutes, followed by 10 mg/kg IV every 12 hours for 4 doses
  f. Ethanol: PO route
- Hemodialysis

1.4.12 Acids and alkaline ingestion

CAUSES

- Acids: Automobile batteries, printing solutions, disinfectants, rust remover, metal cleaners
- Alkalis: Drain openers, industrial cleaners, detergents, bleach

SIGNS & SYMPTOMS

- Oral pain, drooling of saliva, painful swallowing, abdominal pain if orally ingested
- Shortness of breath, chest pain, if inhaled or aspirated into the respiratory tract
- Eye pain, reduced vision, if splashed onto the eyes

MANAGEMENT

- ABCDE assessment and management
- No role of activated charcoal, gastric lavage or induced emesis
- Do not neutralise acids with alkali, or alkali with acids
- If the eyes are involved, irrigate with copious amounts of normal saline. Refer to an ophthalmologist
- If significant amounts of acid/alkali has been orally ingested and the patient has significant drooling, dysphagia and odynophagia, refer onto a higher health care centre
- If an acid/alkali has been inhaled or aspirated and the patient has signs of respiratory distress, refer onto a higher health centre with facilities for intubation and ventilation

1.4.13 Mushroom poisoning

History: Ingestion of mushrooms (most likely, wild) following which symptoms developed.

SIGNS & SYMPTOMS

- Depends on the time elapsed from time of ingestion and on the amount ingested
- In general, if toxicity begins within 2 hours of ingestion of a mushroom, the clinical course will be benign. If symptoms begin >6 hours after ingestion the clinical course will be more serious
- Early symptoms: nausea, vomiting, diarrhoea, dizziness, euphoria
- Late symptoms: jaundice, coagulopathy, altered mental status
- Dehydrated, anxious, excessive secretions

MANAGEMENT

- Activated charcoal if the patient presents within 1 hour of ingestion
- IV Metoclopramide 10 mg
- IV fluids
- If labs available, send CBC, LFT, RFT, serum electrolytes, RBS
- For muscarinic symptoms: IV atropine 0.5-1 mg IV for adults and 0.02 mg/kg IV for children; repeat as necessary to control bronchorrhea, bradycardia, or hypotension
- For mushrooms containing amatoxin: N-Acetylcysteine, Silybum marianum
- For severe symptoms, refer onto a higher health care facility

1.4.14 Aconite poisoning

CAUSES

Aconite (present in Tshendu, Monkswood, Wolfsbane)

SIGNS & SYMPTOMS

- Tingling sensation around the mouth, tongue
- Salivation

- Nausea, vomiting
- Diarrhoea
- Tachycardia
- Hypotension

MANAGEMENT

- ABCDE assessment and management
- Do an ECG to check for arrhythmias, refer to higher centre if present
- Arrhythmias to be treated as per AHA algorithms on arrhythmias
- Activated charcoal/gastric lavage if the patient presents within 1 hour of ingestion
- IV fluids

1.4.15 Cannabis

SIGNS & SYMPTOMS

- Euphoria
- Paranoia
- Anxiety
- Lightheadedness
- Disorientation
- Dry mouth
- Increased appetite
- Confusion
- Conjunctival congestion
- Hypertension

MANAGEMENT

- Supportive care

1.4.16 Rodenticides

Rodenticides contain anticoagulants, zinc phosphide, and aluminium.

SIGNS & SYMPTOMS

- Bleeding
- Nausea and Vomiting
- Chest tightness, shortness of breath
- Tachycardia

MANAGEMENT

- Supportive care
- Send PT/INR, if available
- If raised INR and bleeding, transfuse FFP
- If the patient has signs of overt bleeding and your centre doesn't have PT/INR or FFP facilities, refer onwards to a higher health centre

1.4.17 Snake bites

History: Snake bite followed by the onset of symptoms. Ask the patient if they have a picture of the snake to help identify the snake.

SIGNS & SYMPTOMS

- Is dependent on the type of snake and its venom:
- Vasculotoxic snakes (Vipers): bleeding from the bite site and other sites, pain and swelling at the bite site
- Neurotoxic snakes (Cobra, Krait): muscle weakness, drooping of eyelids (ptosis), difficulty breathing

MANAGEMENT

- ABCDE assessment and management

- Immobilise the affected extremity and remove any tourniquets, if present
- Consider antibiotics for treating infection of the bitten area
- Assess for indications of treatment with antivenom
- Indications for antivenom treatment include:
    - » Positive 20 minutes Whole Blood Clotting Test (Put 2 ml of venous blood in a clean, dry, glass test tube. Leave the test tube undisturbed for 20 minutes. Tip the test tube to check if the blood has clotted or not. Blood that fails to clot after 20 minutes indicates a positive WBCT i.e. coagulopathy)
    - » Signs of neurological envenomation: ptosis, respiratory paralysis
    - » Signs of cardiovascular involvement: hypotension, syncope, arrhythmias
    - » Signs of muscle injury: hematuria
    - » Local swelling involving more than half of the bitten limb within 48 hours of the bite (in the absence of tourniquet)
    - » Rapid extension of swelling within a few hours
    - » Development of an enlarged tender lymph node draining the bitten limb
    - » Anti-venom treatment
    - » Dose: 10 vials of polyvalent antivenom
    - » Each vial is diluted in 10 ml of distilled water and is then mixed with 200 ml of normal saline and is administered intravenously over one hour
    - » Patients receiving antivenom therapy are at risk of developing anaphylactic reactions. Thus, they need to be closely monitored

1.4.18 Anaphylaxis

DEFINITION

Anaphylaxis is diagnosed when either of the following two criteria are met.

CAUSES

- May occur secondary to insect stings or bites
- Intake of allergens or following administration of medications that the person is allergic to

Criteria 1

1 Acute onset of an illness (minutes to several hours) with involvement of the skin, mucosal tissue, or both (e.g. generalized hives, pruritus or flushing, swollen lips-tongue-uvula)

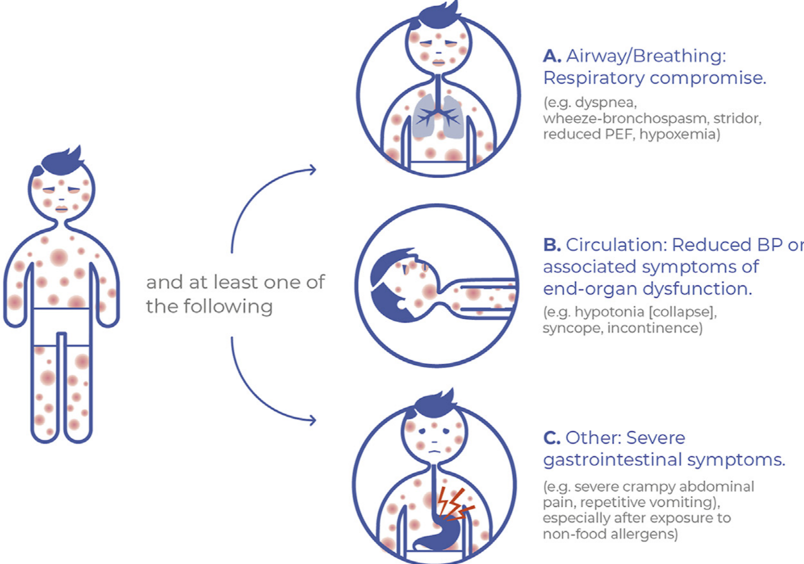


Fig. 1.2 Criteria for the diagnosis of anaphylaxis

Criteria 2

Acoute onset of **hypotension*** or **branchospasm** or **laryngeal involvement*** after exposure to a known or high probable allergen for that patient (minutes to several hours), **even in teh absence of typical skin involvement.**

MANAGEMENT

- Remove exposure to the trigger

- ABC assessment and management
- Epinephrine: 0.5 ml of the 1:1000 solution IM, at the anterolateral thigh
  - Can be repeated every 5 minutes if symptoms do not settle
- Adjunctive therapy:
  - Salbutamol 5 mg nebulization for bronchoconstriction
  - Promethazine 10 mg IV/IM slowly for relief of cutaneous signs
  - IV Hydrocortisone 100 mg to prevent biphasic reactions

1.5 Trauma

DEFINITION

Trauma is a leading cause of death and disability in Bhutan. Motor vehicle crashes caused the maximum deaths in the last couple of years followed by fall injuries either in the farm work setting or at the construction sites leading to significant morbidity and mortality.

General principles of trauma care

Approach to trauma patients consist of three phases - Primary Survey, SAMPLE history and Secondary Survey.

1. **Primary Survey (ABCDE)**

   Involves rapid examination within 5 minutes with an aim of identifying life threatening injuries and addressing it

   Airway + Cervical spine control

   Airway Assessment

   - Can the patient talk? If yes, the airway is patent, If no, use jaw thrust and airway adjuncts to maintain a patent airway
   - Look, listen and feel to assess for features of airway obstruction

Table 1.4. Features suggestive of airway obstruction

Look	Listen	Feel
Unconscious state	Stridor	Tenderness
Cyanosis	Gurgling	Crepitus
Foreign bodies in the mouth	Snoring	

Clear the mouth of secretions, vomitus and foreign bodies to maintain a patent airway

Cervical spine immobilisation

Various techniques of cervical spine immobilisation include:

- Manual immobilisation with hands
- C-spine collar application if available. If not available, sand bags, wooden blocks and tapes can be used
- Instruct the patient to limit c-spine movement if conscious

Fig. 1.3 Techniques for the cervical spine immobilisation

Breathing

Look, listen and feel to identify injuries

Table 1.5. Features suggestive of injuries

Look	Listen	Feel
Respiratory rate (count)	Decreased breath sounds on site of injury (pneumothorax)	Tracheal shift
Cyanosis	Abnormal sounds in the chest	Tenderness over broken ribs
Accessory muscle use		Subcutaneous emphysema
Penetrating injuries		Chest wall expansion on both sides
Flail chest, sucking chest wound		
Chest movement		
Distended neck veins		

MANAGEMENT

- Administer oxygen
- Assist ventilation with bag valve mask
- Immediate decompression of pneumothorax
- Apply three-sided dressing for sucking chest wounds

Circulation

Rapid assessment to identify if the patient is in shock. ‘Shock’ is defined as inadequate organ perfusion and tissue oxygenation. Shock is a clinical diagnosis and its diagnosis is based on assessment of the clinical findings of:

- Tachycardia
- Decreased capillary refill time
- Hypotension
- Tachypnoea
- Decreased urine output

- Changes in mental state

General observations such as pallor, hypothermia and cool extremities also help to make the diagnosis.

Shock in trauma patients are classified as hemorrhagic or non-hemorrhagic:
- Hemorrhagic shock is due to acute loss of blood.
- Non hemorrhagic shock includes cardiogenic shock, neurogenic shock and septic shock.

MANAGEMENT

- 2 large bore IV cannula (14-16 G)
- Send blood for grouping & cross match, complete blood count as per available facilities
- IV fluids: Isotonic crystalloids (Normal saline, ringers lactate)
- Blood transfusion if persistent tachycardia and hypotension despite IV fluid boluses
- Tranexamic acid 1 gm IV if patient presents within 3 hours of trauma
- Look for external sites of haemorrhage and control the bleeding via direct pressure, pressure bandaging or application of tourniquets
- Adequate pain management

Disability

- Assess level of consciousness using AVPU
- Assess GCS for patients with head injury
- Assess pupil size. If unequal pupils, consider traumatic brain injury
- Check RBS

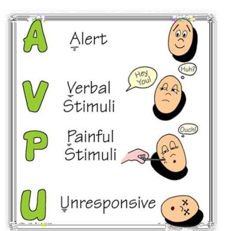


Table 1.6. Features suggestive of shock

Look	Responses	Score
Best Eye Opening	Spontaneous	4
	To Speech	3
	To Pain	2
	None	1
Best Verbal Response	Orientated	5
	Confused conversation	4
	Inappropriate words	3
	Incomprehensible sounds	2
	None	1
Best Motor response	Obey commands	6
	Localize pain	5
	Normal flexion (withdrawal to pain)	4
	Abnormal Flexion (decorticate)	3
	Extension of limbs to pain (deceberate)	2
	None	1

MANAGEMENT

- If GCS <8, plan for rapid transfer to a facility capable of advanced airway management
- If unequal pupils, prepare for transfer to a facility capable of neuroimaging
- If hypoglycemic, administer 25% dextrose

Exposure

- Undress the patient looking for hidden injuries
- Logroll to examine the patient
- Remove constricting clothing & jewellery

- Remove wet clothing and dry if required
- Cover the patient to prevent hypothermia

2. SAMPLE history

- **S**igns and Symptoms
- **A**llergies
- **M**edications
- **P**ast medical history
- **L**ast oral intake
- **E**vents surrounding the injury

3. Trauma secondary survey

It is a detailed head-to-toe examination designed to identify any additional injuries requiring intervention. Diagnostic tests can be performed, if available.

Table 1.7. Trauma secondary survey

Area	Possible injuries	Assessment	Possible further investigations
Nervous system			
Skull	Skull fracture Scalp injury	Inspect and palpate the skull	CT head
Brain	Traumatic brain injury	GCS Pupils	CT head
Vertebral column	Vertebral fracture Nerve injury	Inspect for deformity and palpate for spinal tenderness	Spine X-rays, CT / MRI Spine
Spinal cord	Spinal cord injury Peripheral nerve injury	Motor and sensory exam	Spine X-rays, MRI spine
Face and neck			
Maxillofacial	Skin/ soft tissue injury Teeth / mouth injury Facial bone fracture	Inspect for deformities, palpate for malocclusions and crepitus	Facial bone X-rays, CT facial bone

Area	Possible injuries	Assessment	Possible further investigations
Neck	Laryngeal injury Vascular injury Esophageal injury Surgical emphysema	Inspect, palpate & auscultate for bruits	Endoscopy / laryngoscopy Angiography
Major cavities			
Thorax	• Thoracic wall injury • Pneumothorax / hemothorax • Pulmonary contusion • Thoracic aortic damage • Surgical emphysema	• Inspect for bruising, deformity, paradoxical chest wall movement • Chest wall tenderness • Auscultation for reduced breath sounds and muffled heart sounds	• Chest X ray • CT chest • Bronchoscopy • Ultrasound chest
Abdomen	• Abdominal wall injury • Retroperitoneal injury • Organ injury	• Inspection • Palpation for tenderness • Auscultation	Ultrasound, CT abdomen
Pelvis	Pelvic fractures Genitourinary injuries	Palpate the bony pelvis to determine pelvic stability Inspect the perineum	Pelvic X-ray CT KUB
Limbs			

Area	Possible injuries	Assessment	Possible further investigations
Limbs	• Soft tissue injuries • Fractures • Joint injuries • Neurovascular damage	• Inspect for swelling, bruises, malalignment • Palpate for tenderness, crepitus, tense muscle compartments • Feel for peripheral pulses • Peripheral nerve assessment	X-rays Doppler ultrasound

1.5.1 Head injury

DEFINITION

These are injuries in which the scalp, skull, meninges, brain, or the blood vessels within the brain may be affected separately or together.

CAUSES

- Motor vehicle collisions
- Falls
- Blows
- Stab wound

SIGNS & SYMPTOMS

- Headache
- Altered mental status
- Vomiting
- Seizure
- Visual disturbances

- Bleeding from the scalp
- Nose bleeding
- ENT bleeding
- Loss of consciousness
- Unequal pupils
- Scalp lacerations
- Hematomas
- Periorbital hematomas
- Mastoid bruising

INVESTIGATIONS

- RBS, CBC
- Serum electrolytes
- RFT
- CT brain if indicated

MANAGEMENT

- ABCDE assessment and management
- Assess and record GCS and pupil size
- Raise the head of bed to 30 degrees
- Avoid hypoxia, give oxygen if SpO2 < 90%
- Avoid hypotension; maintain systolic BP >100
- IV fluids: 0.9% Normal saline
- Pain management
- Control bleeding by suturing
- Mild head injury (GCS 13 - 15) may be managed by observation
- Moderate head injury (GCS 9 - 12) and severe head injury (<8) have to referred to a higher centre for neuroimaging and further management

1.5.2 Chest injury

DEFINITION

Any trauma sustained to the chest area, which includes the thoracic cavity and its contents, including the ribs, sternum, lungs, heart, blood vessels, and the surrounding soft tissues.

CAUSES

- Motor vehicle collisions
- Falls
- Blows
- Blunt or penetrating trauma

SIGNS & SYMPTOMS

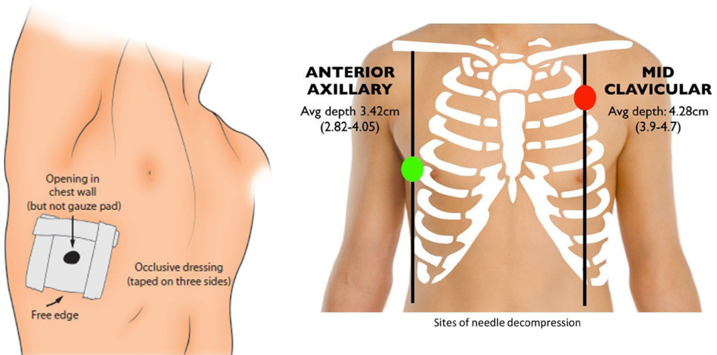
- Difficulty in breathing
- Chest pain
- Bleeding from wounds on the chest
- Distended neck veins
- Unequal chest wall movements
- Unequal breath sounds
- Sucking chest wounds
- Flail chest segments
- Crepitus
- Hypotension

INVESTIGATIONS

- Chest X-ray
- CBC
- Grouping and cross match
- CT chest, if needed

MANAGEMENT

- ABCDE assessment and management
- Pain management
- Provide oxygen
- Apply a three-sided occlusive dressing for sucking chest wounds
- Immediately needle decompress a tension pneumothorax
- Transfer all patients with chest injuries to a higher health care centre with facilities for advanced airway and ventilation



Sites of needle decompression

1.5.3 Abdominal injury

DEFINITION

Trauma resulting in injury to the structures within the abdominal cavity, including solid and visceral organs and the blood vessels. It is either blunt or penetrating, depending on the mechanism.

CAUSES

- Motor vehicle collisions
- Falls
- Stabs
- Impalement
- Crush injuries

SIGNS & SYMPTOMS

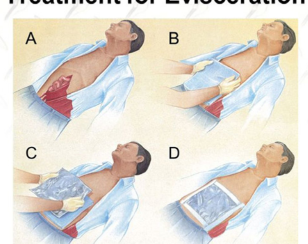
- Abdominal pain
- Abdominal distension and discomfort
- Vomiting
- Rectal bleeding
- Tender and guarded abdomen
- Bruises
- Evisceration of intestines
- Tachycardia
- Hypotension

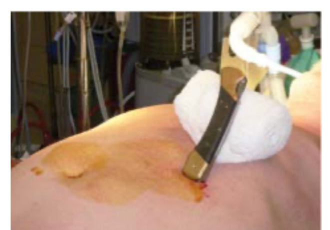
INVESTIGATIONS

- CBC
- Blood grouping and cross match
- eFAST scan
- CT abdomen if indicated

MANAGEMENT

- ABCDE assessment and management
- Keep the patient nil orally
- Pain management
- IV fluids for hypotension
- In case of eviscerated bowel:
  - » Cover the exposed bowel loops with sterile gauze soaked in normal saline
  - » Do not attempt to push the bowel loops into the abdomen
- In case of impaled objects:
  - » Do not attempt to pull out the object



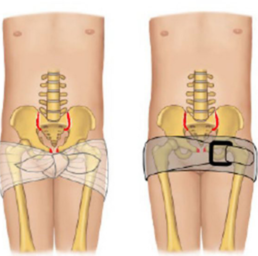


» Stabilise the object in place

» Provide tetanus toxoid

- Suspect pelvic fractures in all cases of abdominal injuries:
  » Confirm with an X-ray when available

  » Stabilise the pelvis with a pelvic binder placed at the level of the greater trochanters



Location of pelvic binder

REFERRAL

- All patients with blunt abdominal trauma who are hemodynamically unstable or have free fluid on eFAST must be transferred to higher centres with operative facilities
- All patients with penetrating abdominal trauma have to be transferred to higher centres with operative facilities

1.6 Trauma in paediatrics

Initial assessment and resuscitation is guided by the same approach as in adults. However, due to the difference in physiology and anatomy in children compared to adults, the following need to be noted:

- Children have proportionately larger heads and smaller airways compared to adults, which makes head injuries and airway management challenging in paediatrics
- Paediatric patients have less blood volume and reserve, making them more susceptible to hypovolemic shock from blood loss.
- Young children may not be able to communicate their symptoms effectively, making it challenging for healthcare professionals to assess them accurately.
- Paediatric trauma care requires expertise tailored to the unique needs of children so involve a (paediatric) surgeon right from the onset.

1.7 Trauma in pregnancy

Initial assessment and resuscitation is guided by the same approach as in adults. However, few points to note are:

- As the size of the uterus increases, it becomes more vulnerable to damage by both blunt and penetrating abdominal injury.
- Trauma might result in preterm labour
- Blunt trauma to the abdomen might result in placental abruption
- Since the gravid uterus compresses the inferior vena cava when the pregnant lady is supine, resuscitation must be done with manual displacement of the uterus to the left or by tilting the bed slightly to the left.

1.8 High altitude illnesses

These are illnesses experienced by patients who are travelling to high elevations of 8000 feet/ 2400 metres or above. It ranges from mild and discomforting to severe and life threatening.

1.8.1 Acute mountain sickness

SIGNS & SYMPTOMS

- Headache plus one or more of the following symptoms:
  - » Lack of appetite
  - » Nausea and vomiting
  - » Insomnia
  - » Dizziness
  - » Fatigue

MANAGEMENT

- Avoid further ascent
- Avoid exertion
- Acetazolamide 250 mg BID PO

- Dexamethasone 4 mg QID PO (for severe symptoms)
- Descent

1.8.2 High altitude pulmonary edema (HAPE)

SIGNS & SYMPTOMS

- Dyspnea at rest
- Productive cough
- Chest tightness
- Tachypnea
- Tachycardia
- Fever
- Hypoxia

MANAGEMENT

- Descend immediately
- Supplemental oxygen
- Nifedipine 20 mg TID PO

1.8.3 High altitude cerebral edema (HACE)

SIGNS & SYMPTOMS

- Features of Acute Mountain Sickness (AMS) plus
- Neurologic symptoms (altered mental status, ataxia, seizures)

MANAGEMENT

- Immediate descent
- Dexamethasone 8 mg PO/IV/IM stat followed by 4 mg PO/IM/IV QID
- Supplemental oxygen
- Portable hyperbaric inflatable chambers, if immediate descent is not possible

1.9 Burns

DEFINITION

Burns are among the most common, yet potentially devastating injuries. Burns result in tissue damage. Depending on the extent of tissue damage, they are classified into four degrees.

Table 1.8. Classification of burns

	Depth	Appearance	Example
1st degree (superficial)	Epidermis	Red, dry, no blisters, painful	
2nd degree (superficial partial thickness)	Epidermis + part of the dermis	Red, moist, blisters seen More painful	
3rd degree (deep partial thickness)	Epidermis + whole of the dermis	White or black and charred	
4th degree (full thickness)	Epidermis + dermis + underlying tissues like muscle and bone	Waxy white, charred, dry	

CAUSES

- Dry heat: fire
- Wet heat (scalds): hot liquids, steam, soups
- Electrical
- Chemical: acids and alkalis

SIGNS & SYMPTOMS

- Pain
- Blisters
- Swelling
- Burnt nasal hair
- Soot in the throat
- Swollen lips (in inhalational burns)

INVESTIGATIONS

- None for first degree burns
- Usually none required for second degree burns
- For third and fourth degree burns and extensive second degree burns: Complete blood count, renal function tests, serum electrolytes

MANAGEMENT

1. Pain management

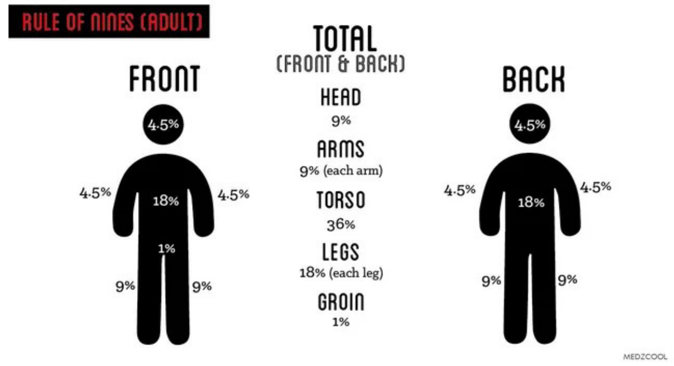
Table 1.9. Medication options for pain management

Medications	Route	Dose	Frequency
Paracetamol	PO	Adults: 1 gm Paediatrics: 15 mg/kg	8 hourly 8 hourly
Ibuprofen	PO	Adults: 400 mg Pediatrics (>6 months): 5 mg/kg	8 hourly
Diclofenac sodium	IM	Adults: 75 mg Pediatrics (>12 years): 25 mg	8 hourly
Morphine	IV	Adults: 0.1 mg/kg Paediatrics: 0.1 mg/kg	4 - 6 hourly 6 hourly
Pethidine	IM	Adults: 50 mg	8 hourly

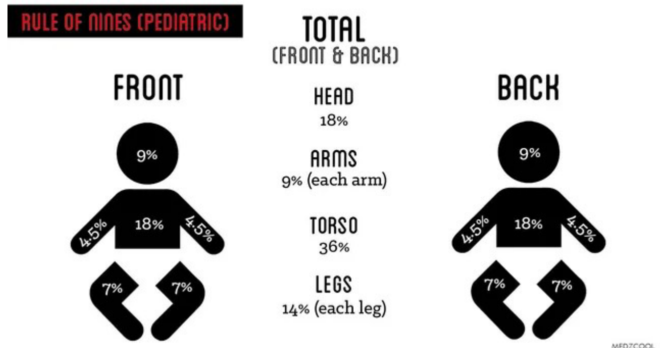
2. Fluid therapy

First and second-degree burns do not usually require IV fluids. Fluid therapy for third- and fourth-degree burns are based on calculation of the total burn surface area (TBSA). Wallace's Rule of Nines is the most common guide to measuring TBSA.

Rule of Nines for children



Rule of Nines for adults



* In patients with scattered burns, a method to estimate the TBSA is the palm method. The size of the patient's palm is approximately 1% TBSA.

Depending on the TBSA, IV fluid amount is calculated based on the **Parkland Formula: 4 ml x body weight (kg) x TBSA (%) = total IV fluids in 24 hours**

Half of this calculated IV fluid is given in the first 8 hours, and remaining half over the next 16 hours.

Fluid of choice: Ringer's Lactate

3. Prevent infection

Table 1.10. Antibiotic options for preventing infections

(One agent to be chosen as per availability)

Name	Dose	Route	Frequency
Cloxacillin	Adults: 500mg Paediatrics: 50-100 mg/kg (1-18 years old)	IV/PO IV/PO	6 hourly 6 hourly
Metronidazole	Adults: 400 mg Paediatrics: 7.5 mg Adults: 500 mg Paediatrics: 7.5 mg	IV IV PO PO	8 hourly 8 hourly 8 hourly 8 hourly

4. Tetanus prophylaxis

5. Dressing with Silver Sulphadiazine

6. Non - pharmacological treatment modalities:

a. Place the burnt part under running water for pain relief

b. Leave intact blisters alone

c. Remove clothing and jewellery from affected part

d. Elevate the affected part

e. Psychological support

f. Nutritional support

Referral Criteria

- Refer all cases of burns with the following characteristics to a higher center:
  - Children with >10% TBSA and adults with > 15% TBSA
  - Any full thickness burns
  - Burns involving face, hands, feet, genitalia, perineum, or major joints
  - Circumferential burns
  - Inhalation injury
  - Burns with concomitant trauma or significant pre-burn illnesses like diabetes mellitus or chronic renal failure
  - Infected burns

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CHAPTER 2
CARDIOVASCULAR SYSTEM

Dr. Yowaan Thapa, Sr. Medical Officer, Paro Hospital
Dr. Ripa Chakma, Asso. Prof., FNPH, KGUMSB

Cardiovascular diseases

- Hypertension
- Hyperlipidemia
- Angina
- Myocardial infarction
- Coronary artery diseases
- Chronic heart failure
- Mitral stenosis
- Aortic stenosis
- Pulmonary hypertension
- Deep vein thrombosis
- Atrial fibrillation
- Rheumatic fever.

History taking for cardiovascular diseases

SYMPTOMS

- Chest pain
- Breathlessness

- Palpitation
- Fatigue
- Dizziness
- Syncope
- Peripheral oedema

General examination

- Pallor
- Oedema
- Cyanosis
- Clubbing
- Raised JVP
- Tachycardia
- Bradycardia
- Murmurs
- Pulmonary oedema
- Splenomegaly

Examination of the cardiovascular system

- **Inspection:** Shape and size of the precordium. Check for surgical scar, apex beat, apex beat displacement, visible pulsations and chest deformity.
- **Palpation:** Apex beat: Ask the client to breathe in and out normally. Palpate the apex beat (usually the 5th or 6th intercostal space midclavicular line).
- Using the palmar surface of the hand at the base of the fingers, locate the cardiac landmark and palpate the thrills.
- **Percussion:** Normally cardiac dullness is present on the left side of the chest. In dextrocardia, the dullness will be felt on the right side.
- **Auscultation:** On auscultation, listen to the heart sounds in the four areas and note if the finding is normal or abnormal.

» **Mitral area:** Left fifth intercostal space in the midclavicular line
» **Tricuspid area:** Left fourth intercostal space in the lower left sternal edge
» **Pulmonary area:** The upper second left intercostal space in the left sternal edge
» **Aortic area:** The upper second right intercostal space in the right sternal edge

2.1 Ischemic heart disease or coronary artery diseases

DEFINITION

It is a condition that occurs when the coronary arteries are narrowed or blocked preventing the heart from receiving enough blood, oxygen and nutrients.

CAUSES

- Atherosclerosis, which develops plaques in the coronary arteries
- Risk factors: smoking, hypertension, hyperlipidemia, diabetes mellitus and obesity are the common risk factors

SYMPTOMS

- Central or diffuse chest pain. Patients usually call it "discomfort".
- Tight, squeezing or choking in character
- May radiate to jaw, neck or arm
- Precipitated by exertion and/or emotion
- Relieved by rest
- Associated with nausea, vomiting and sweating

SIGNS

- Tachycardia
- Sweating

- Levine's sign: Patient holding their clenched fist over the chest
- Hypotension

INVESTIGATIONS

- Complete Blood count
- Blood LFT, RFT and Lipid profile
- Blood glucose
- Electrocardiogram
- Send for cardiac markers if possible

MANAGEMENT

- Absolute bed rest
- Oxygen
- IV fluids
- Tab. Aspirin 300 mg STAT
- High dose Statins 40-80 mg STAT
- Analgesia, Morphine Sulphate 5-10 mg IV (if required)
- Metoclopramide 10 mg IV (if required)
- Refer

HEALTH EDUCATION

- Advise on health screening to identify any risk factors
- Promote lifestyle modifications
- Regular follow up of patients at high risk

2.2 Congestive cardiac failure

DEFINITION

Heart failure is a clinical syndrome comprising of reduced cardiac output, tissue hypoperfusion, and congestion.

SYMPTOMS

- Fatigue
- Shortness of breath
- Breathlessness on lying down
- Leg swelling

SIGNS

- Dyspnoea
- Pedal oedema
- Tachycardia
- Raised jugular venous pressure
- Crepitation (at the base of lungs) on auscultation
- Hepatomegaly
- Ascites

INVESTIGATIONS

- Complete blood count
- Chest X-ray
- Lipid profile, RFT, LFT
- Electrocardiogram
- Echocardiography
- Blood glucose

MANAGEMENT

- High flow, high concentration oxygen (if patient is dyspneic and not maintaining saturation)
- Sit up the patient (place the patient in a propped-up position)
- Diuretics e.g. Furosemide inj. 40 mg IV STAT then 40 mg/day
- Beta blockers e.g. Metoprolol/Bisoprolol

- Refer the patient

2.3 Hypertension

DEFINITION

Persistent rise of blood pressure above 140/90 mmHg is called hypertension.

Table 2.1. Blood Pressure classification

Category	Systolic (mmHg)	Diastolic (mmHg)	
Normal	< 130	and/ or	and < 85
Prehypertension	130 - 139	and/ or	85 - 89
Stage 1 mild	140 - 159	and/ or	90 - 99
Stage 2 Moderate	> 160	and/ or	> 100
Stage 3 Severe	or > 180	or	or > 120

Source: International Society for Hypertension, 2020

CAUSES

- Unknown (essential/primary)
- Renal disease
- Endocrine disease
- Obesity
- Vascular diseases (Takayasu, coarctation of aorta)
- Drugs (Steroids, NSAIDs, sympathomimetic drugs)

SYMPTOMS

- The diagnosis is usually made at a routine examination or incidentally.
- Usually asymptomatic until it causes organ damage
- Headache or visual disturbances
- Symptoms of end-organ damage

SIGNS

- High blood pressure
- Signs of end organ damage such as displaced apex beat, hypertensive retinopathy, signs of heart failure

INVESTIGATIONS

- Complete blood count
- Blood sugar
- Lipid profile
- Renal Function Tests
- Liver Function Tests
- Urine Microscopy
- Electrocardiogram
- Fundoscopy

MANAGEMENT

- Confirm hypertension by checking the BP in both arms and few BP records
- Start with ARBs (Losartan)/ACEIs (Enalapril)
- If not under control, add a CCB (e.g; Nifedipine)
- Add a diuretic (Hydrochlorothiazide) if further control is necessary
- Refer if any evidence of target organ damage

For details treatment see Service with Care and Compassion Initiative (SCCI) Protocol (Flow chart)

HEALTH EDUCATION

- Advise patients to take medicine, come for check-ups regularly
- Weight reduction if obese
- Avoid excess salt consumption

- Avoid heavy alcohol consumption
- Stop smoking
- Regular exercises

2.4 Acute rheumatic fever

DEFINITION

Acute Rheumatic fever is a delayed sequelae of pharyngitis and skin infections due to group A streptococcus. The diagnosis is made clinically based on Jones Criteria which is made up of major and minor manifestations.

- Incubation period: 2-4 weeks

Manifestations of Rheumatic fever (Jones criteria):

A. Major manifestations:

- Polyarthritis
- Carditis
- Erythema marginatum
- Subcutaneous nodules
- Sydenham's chorea

B. Minor manifestations:

- Fever
- Arthralgia
- Raised ESR or CRP
- First degree AV block

Plus

C. Supporting evidence of preceding streptococcal infection: Recent scarlet fever raised Antistreptolysin-O antibody (ASO titers) or other streptococcal antibody titers or positive throat culture.

Rheumatic fever is diagnosed when two or more major criteria or one major and two minor criteria plus evidence of preceding streptococcal infections are present.

INVESTIGATIONS

- Complete blood count, ESR/CRP
- Throat swab culture
- Anti-streptolysin-O antibody (ASO titers)
- Chest X-ray
- Electrocardiogram
- Echocardiogram

MANAGEMENT

- Bed rest
- Tab Aspirin (60 mg/kg/day) in divided doses
- Anti-streptococcal therapy: Injection Benzathine Penicillin (24 Lakhs) IM in buttock STAT or tablet Phenoxymethylpenicillin-V 250 mg 6 hourly for 10 days
- Refer the patient

- Patients are susceptible to further attacks of rheumatic fever, so long term prophylaxis with penicillin should be given as Benzathine penicillin G IM monthly or Phenoxymethylpenicillin V 250 mg 12 hourly.
- For patient weighing <30 kg, use Benzathine penicillin G 6 lakhs
- For patient weighing >30 kg and over, use Benzathine penicillin G 12 lakhs

Duration of secondary prophylaxis

History of rheumatic fever but no cardiac involvement and no heart valve diseases: **until age of 18 years of age at least five years after the last attack:**

- Rheumatic fever with documented cardiac involvement: **At least until 25 years of age or 10 years after last attack (whichever is longer)**
- Chronic carditis: **at least until the age of 40 years, may be better than "life time"**
- With artificial values: **Lifetime**

Follow up checkup yearly:

- ECG and Echocardiography
- Blood for ASO titers and CBC, ESR

CHAPTER 3

RESPIRATORY SYSTEM

Dr. Ripa Chakma, Asso. Prof. FNPH;
Dr. Yowaan Thapa, Medical Officer, Paro Hospital

History taking for respiratory system diseases

SYMPTOMS

- Cough
- Chest pain
- Breathlessness
- Hemoptysis
- Hoarseness of voice
- Wheezing
    - » The above symptoms may be associated with fever
    - » Pleuritic chest pain: sharp stabbing type of pain which is exacerbated by deep breathing,coughing and sneezing.
    - » Cough:Dry or productive?
    - » Sputum: Colour, amount,odour,presence of blood.

Physical examination

Inspection

- Shape of the chest. Normal chest is bilaterally symmetrical

- Look for chest deformities: Kyphosis (forward curvature of the spine), Scoliosis (lateral curvature of the spine), Lordosis (backward curvature of the spine) and barrel-shaped chest (when transverse diameter is equal or more than anteroposterior diameter, due to emphysema)
- Look for any surgical scars
- See the symmetry of the chest wall movement
- Look for intercostal recession
- Check the respiration rate (Normal rate:14-18 breaths/min) and breathing pattern (regular/irregular)

Palpation

- Chest Expansion: Normal: 5 cm
- Look for any tenderness on the chest wall
- Locate the apex beat
- Check for vocal fremitus
- Percussion
- Check the sound and feel of resonance over the healthy lungs
- Compare the percussion note by percussing on both sides of the chest: dull/resonant/ hyperresonant?
- Percuss on the front,back and the sides of the chest

Auscultation

- Check if air entry is normal and equal on both sides
- Listen for crackles, rhonchi, bronchial breath sounds and pleural rub

Crackles: Non-musical sounds mainly heard during inspiration caused by re-opening of occluded small airways or air bubbling through secretions. e.g. pneumonia

Rhonchi: A continuous low pitched sound produced by air passing through narrowed main airways: e.g. acute and chronic bronchitis, Bronchial asthma, Chronic obstructive pulmonary Disease (COPD)

Pleural rub: A creaking or rubbing sound heard in a localised area . It represents inflammation of the pleura(pleurisy)

3.1 Pneumonia

DEFINITION

Inflammation/infection of the lungs.

CAUSES

- Streptococcus pneumoniae
- H. influenzae
- M. pneumoniae
- Staphylococcus aureus
- Viral Pneumonia: Influenzae viruses, SARS-CoV-2, RSV

SYMPTOMS

- Fever
- Productive cough
- Chest pain
- Breathlessness

SIGNS

- Tachypnoea (fast breathing)
- Tachycardia
- Cyanosis
- **Chest examination:**
  - » Inspection: Reduce chest movement on affected side, chest indrawing

- » Palpation: Increased vocal fremitus
- » Percussion: Dull or impaired on affected side
- » Auscultation: high pitched bronchial breath sound and crackles

MANAGEMENT

- Oral Amoxicillin 500 mg TID OR Co-trimoxazole 960 mg BD for 7 days
- IV Ampicillin 1 gm QID and IV Gentamicin 80 mg OD for patients with respiratory distress
- Oxygen, if needed
- Paracetamol
- Consider Salbutamol nebulisation if wheezing
- Refer if there are any complications.

3.2 Lung abscess

DEFINITION

A lung abscess is a localised collection of pus in the lung parenchyma.

CAUSES

- Due to Pneumonia
- Aspiration
- Staphylococcal septicaemia
- Secondary to bronchiectasis

SYMPTOMS

- High grade fever with rigours and chills
- Cough with expectoration of copious amount of foul smelling sputum
- Purulent sputum
- Sputum is often blood stained
- Chest pain

- Breathlessness

SIGNS

- Tachypnoea
- Tachycardia
- Clubbing may be present on the nails
- **Chest examination:**
  - » Inspection: Restricted chest movement on the affected side
  - » Palpation: Impaired lung resonance
  - » Percussion: Dull sound present
  - » On auscultation: breath sound may be bronchial

INVESTIGATIONS

- Chest X-ray P/A
- Blood for CBC and Sputum for gram staining and C/S (Culture and Sensitivity)

MANAGEMENT

- Oral Amoxicillin 500 mg TID or Co-trimoxazole 960 mg BD for 7 days
- IV Ampicillin 1 gm QID and IV Gentamicin 80 mg OD for patients with respiratory distress
- Oxygen, if needed
- Paracetamol
- Consider Salbutamol nebulisation if wheezing
- Refer to Medical/Surgical if no improvement (May need Postural drainage or lobotomy)

HEALTH EDUCATION

Maintain oral hygiene and proper oral care

Follow up x-ray (if sequelae after illness) to rule out the cavity healing

3.3 Pleural effusion

DEFINITION

Accumulation of serous fluid in the pleural space. It may be unilateral or bilateral.

CAUSES

- Lungs: Pulmonary Tuberculosis, Bronchogenic carcinoma, Parapneumonic effusion
- Heart: Congestive Cardiac Failure (C.C.F)
- Kidney: Nephrotic syndrome
- Liver: Cirrhosis of liver

SYMPTOMS

- Breathlessness
- Chest pain
- Fever
- Dry cough

SIGNS

Chest Examination:

- Inspection: Reduced chest movement on affected side
- Percussion: Stony Dull or impaired on affected side
- Palpation: Decreased vocal fremitus
- Auscultation: Reduced/absent breath sounds on the affected side, decreased vocal resonance.

INVESTIGATIONS

- Chest X-ray

- USG Chest
- Pleural Fluid analysis

MANAGEMENT

- Tab. Paracetamol 500 mg or Tab. Ibuprofen 400 mg
- Refer for further evaluation and management

3.4 Pneumothorax

DEFINITION

Pneumothorax means collection of air in the pleural space.

- Spontaneous pneumothorax (more common)
- Traumatic pneumothorax
- Tension pneumothorax (it can develop from either spontaneous or traumatic pneumothorax)

SYMPTOMS

- Breathlessness
- Pleuritic chest pain
- Pain and feeling of tightness on the affected side of the chest. It may be aggravated by deep inspiration

SIGNS

- Chest examination
    - » Inspection: Patients may be dyspneic. Cyanosis may be present. Asymmetrical chest movement with diminished chest movement on the affected side (and Bulging on the side of the affected side)
    - » Palpation: Decreased chest movement on the affected side. Displacement of Apex beat (Midsternal and Apex beat shifting to the opposite side) and diminished vocal fremitus
    - » On percussion: Hyperresonance on the affected side

- » Auscultation: Diminished or absent breath sounds on the affected side
- » Tension pneumothorax produces the most severe respiratory symptoms and cardiac arrest

INVESTIGATIONS

- Chest X-ray

MANAGEMENT

- Supportive care
- Oxygen
- Analgesic for pain relief
- Refer for chest tube insertion

3.5 Acute bronchitis

DEFINITION

Inflammation of bronchi and bronchioles.

CAUSES

- The most common cause is viral *(Rhinovirus, Adenovirus, Influenza A and B, and Parainfluenza virus)*

SYMPTOMS

- Cough
- Fever
- Chest pain
- Wheeze
- Yellowish sputum

SIGNS

- Auscultation: Crepitations scattered all over the lung fields

INVESTIGATIONS

- Blood for CBC
- Chest X-ray

MANAGEMENT

- Avoidance of allergic or precipitating factors
- Antipyretics, antihistamines
- Antibiotics for moderate and severe cases
- Adequate hydration
- Steam inhalations

HEALTH EDUCATION

- Advice: Stop smoking completely
- Avoid dust and smoke

3.6 Chronic bronchitis

DEFINITION

Cough with sputum for at least 3 months in each year for 3 years or cough with sputum on most days of at least three consecutive months for more than two successive years. This is a disease which usually affects middle aged people who have a history of "cough with spit" for years. It is worse in cold or wet weather. The sputum is usually white (and not infected). If a patient with chronic bronchitis develops fever with worsening cough and breathlessness, and significant increase in sputum production, it indicates an acute exacerbation.

CAUSES

- The exact cause is unknown
- Predisposing factors are smoking, dust, fumes, air pollution

SYMPTOMS

- Productive cough for >3 months for 2 consecutive years
- Wheeze
- Breathlessness in exertion
- Fever (during infective exacerbation)
- Hemoptysis
- Frequent respiratory infections

SIGNS

- Tachypnoea
- Cyanosis
- Pedal oedema
- **Chest examination:**
  - » Inspection: Decreased chest expansion
  - » Palpation: Vocal Fremitus is decreased
  - » Percussion: Hyper-resonant on percussion
  - » Auscultation. Breath sounds are diminished, Abnormal breath sounds such as crackles or rhonchi are present

MANAGEMENT

- Salbutamol nebulisation stat and as required
- Salbutamol MDI and steroid (Fluticasone + Salmeterol) MDI as inhalation puffs
- If there is suspicion of infection Amoxicillin OR Co-trimoxazole for 7-10 days

- Tab. Deriphyllin 300 mg OD

HEALTH EDUCATION

- Cessation of smoking
- Avoidance of allergens and dust

3.7 Bronchiectasis

DEFINITION

Bronchiectasis is a condition in which there is abnormal and permanent distortion of one or more conducting airways usually due to preceding infectious processes.

CAUSES

- Previous lung disease especially TB
- Bronchopneumonia
- Chronic bronchitis
- Measles
- It is more common in the malnourished

SYMPTOMS

- Chronic cough with copious amount of mucopurulent sputum
- Blood stained sputum or haemoptysis
- Breathlessness
- Fever
- Chest pain in the affected side

SIGNS

- Pallor
- Cyanosis

- Clubbing is more prominent in patients with moderate to severe disease
- Wasting
- Weight loss
- **Chest examination:**
  - » Inspection chest: Reduced chest movement over the affected area
  - » Palpation: Increased vocal fremitus
  - » Percussion: Dullness over affected area
  - » Auscultation: Coarse crepitation, rhonchi, scattered wheezing and inspiratory squeaks
  - » Signs of complications: Cor Pulmonale

INVESTIGATIONS

- Blood for CBC and ESR
- Sputum for AFB, Gram staining, culture and sensitivity
- Sputum for gram staining & C/S
- Chest X-ray

MANAGEMENT

- Tab. Deriphyllin 300 mg OD (sustained release)
- If there is evidence of infection: Amoxicillin 500 mg TDS for 7-10 days OR Co-trimoxazole for 7-10 days,
- Salbutamol MDI 2 puffs 8 hourly and SOS
- Supportive treatment: Smoking cessation, avoid second-hand smoke, adequate nutrition, immunisation

- REFER all new cases for diagnosis
- Postural drainage twice a day for 10 minutes
- Coughing produces sputum and empties the dilated bronchi
- Following this the patient should breathe slowly and deeply for 10 minutes

3.8 Bronchial asthma

DEFINITION

Asthma is an airway disease characterised by chronic inflammation, hyperresponsiveness with exposure to a wide variety of stimuli, and variable airflow obstruction. As a consequence, patients have paroxysms of cough, dyspnea, chest tightness, and wheezing. A paroxysmal attack of breathlessness, chest tightness and wheezing resulting from paroxysmal narrowing of bronchial airways is called bronchial asthma.

Asthma trigger: Patients with asthma may be hypersensitive to some of the following triggers:

- Indoor allergens (e.g. house dust mites in bedding and carpets, cockroach waste or particles of skin and dried saliva shed by pets, pet dander)
- Outdoor allergens (e.g. pollens, air pollution)
- Tobacco smoke
- Physical exercise
- Cold air
- Extreme emotional arousal such as anger or fear
- Fumes, gases and chemical irritants in the workplace
- Drugs such as aspirin, other non-steroid anti-inflammatory drugs, and beta-blockers (including eye drops)
- Personal or family history of atopy (eczema, rhinitis, nasal polyps)

SYMPTOMS

- Chest tightness
- Breathlessness on exertion or at rest (depending on severity and control)
- Wheezing
- Cough: productive of mucoid sputum with recurrent episodes of frank respiratory tract infection
- There may history of allergies or respiratory tract infection

SIGNS

- Tachycardia and sweating
- Central Cyanosis and bradycardia in very severe asthma
- Chest examination:
  - » Inspection: Chest wall movement diminished both side (Barrel shape chest)
  - » Palpation: Restricted movement both side
  - » Vocal fremitus: Decreased both sides of the chest
  - » Percussion: Hyper-resonant both sides of the chest
  - » Auscultation: Expiratory rhonchi present. In very severe asthma: silent chest

Table 3.1. Signs of different stages of Bronchial Asthma

Mild or moderate	Severe	Life-threatening
• Talks in phrases	• Talks in words	• Drowsy
• Prefers sitting to lying	• Sits hunched forwards	• Confused
• Not agitated	• Agitated	• Silent chest
• Respiratory rate increased	• Respiratory rate >30/min	(Any one of the above)
• Accessory muscles not used	• Accessory muscles in use	
• Pulse rate 100–120 bpm	• Pulse rate >120 bpm	
• O2 saturation (on air) 90–95%	• O2 saturation (on air) <90%	
• PEF >50% predicted or best	• PEF ≤50% predicted or best	

INVESTIGATIONS

- Chest X-ray P/A view (not routinely recommended. Only if patient fails to improve after acute treatment)
- Oxygen Saturation monitoring during exacerbations

MANAGEMENT

(For details treatment see Service with Care and Compassion Initiative (SCCI) Protocol (Flow chart)

At Primary healthcare

- Oxygen
- Nebulisation with Salbutamol
- Inj. Hydrocortisone 200 mg IV stat OR Dexamethasone 4 mg IV STAT
- Refer if there is no improvement

At Secondary healthcare centre (severe attack)

- Propped up position
- Oxygen
- Nebulisation with Salbutamol stat and then 4 H - 6 H
- Inj. Hydrocortisone 1 ampoule 100 mg IV stat then followed by TDS (SOS) in acute case
- During acute life threatening exacerbation Inj. Deriphyllin 1-2 ampoule in 5% Dextrose drip infused at the rate of 5-8 drop/min over 24 hours
- Tab. Deriphyllin 300 mg STAT and 300 mg OD
- Tab. Prednisolone 30-60 mg OD for 7 days
- Antibiotics if needed
- Encourage more fluid intake
- Chest physiotherapy and postural drainage
- Breathing exercise
- Give assurance and support

HEALTH EDUCATION

- Compliance to medication and appropriate follow up
- Educate about control of Asthma symptoms and step up therapies if needed
- Help to identify the risk factors and triggers of asthma and to avoid it if possible
- Yearly influenza vaccination

3.9 Emphysema

DEFINITION

Emphysema is pathologically defined as an abnormal permanent enlargement of air spaces distal to the terminal bronchioles, accompanied by the destruction of alveolar walls and without obvious fibrosis.

CAUSES

- **Risk Factors:**
  - » Idiopathic
  - » Smoking (current or former smokers)
  - » People with a history of chronic bronchitis, chronic asthma and tuberculosis

SYMPTOMS

- Exertional breathlessness
- Chronic cough with history of exposure to risk factors
- Fever is present when there is a superimposed infection
- Gross wasting and symptoms of associated chronic bronchitis present

SIGNS

- Patient adopts propped up position, fixing the shoulder girdles to assist the accessory muscles of respiration

- Rapid shallow breathing (it takes longer to exhale than it does to inhale)
- Cyanosis
- Raised jugular venous pressure
- Atrophy of limb muscles
- Peripheral edema in advanced disease
- **Chest examination**
  - » Inspection: Barrel shaped chest and symmetrically diminished chest movement.
  - » Palpation: Vocal fremitus: Decreased symmetrically
  - » Percussion: Obliterated Liver dullness, hyper-resonance
  - » Auscultation: Diffuse or focal rhonchi. Expiratory rhonchi present. Diminished vesicular breath sounds with prolonged expiration

INVESTIGATIONS

- Chest-X ray P/A view
- Blood for CBC
- Sputum for gram staining

MANAGEMENT

- Bronchodilators: Salbutamol MDI 2 puffs BD
- Tiotropium Bromide MDI 2 puffs BD
- If evidence of infection: Tab. Amoxicillin 500 mg TDS for 5 days OR Tab. Co-trimoxazole 960 mg BD for 5 days
- Tab. Cetirizine 10 mg BD x 3 days
- Oxygen if the patient is hypoxic and not maintaining saturation
- Chest Physiotherapy for expectoration of cough, secretion
- Concurrent treatment of associated complications e.g. Respiratory failure, Right ventricular failure

HEALTH EDUCATION

- Smoking cessation is the single most effective therapy for most COPD patients
- Counsel about disease condition and chronicity
- Regular, mild intensity exercise
- Influenza and pneumococcal vaccination
- Tell to avoid dust and smoke filled areas
- To improve health, adequate nutritional support and practice breathing exercises

3.10 Bronchogenic carcinoma

DEFINITION

Lung cancer or bronchogenic carcinoma refers to tumours originating in the lung parenchyma or within the bronchi.

CAUSES

- Risk Factors:
- Tobacco smoking
- Asbestosis
- Silicosis
- Berrylliosis
- Genetic factors

SYMPTOMS

- General symptoms: Fever, anorexia, nausea, weight loss, tiredness
- Local symptoms: Cough, Hemoptysis, Breathlessness, stridor (upper airway obstruction due to compression by tumour)
- Symptoms due to metastasis
- Chest pain (pleuritic type)

- Lymphadenopathy (cervical lymph node enlarged)
- Jaundice: Liver metastasis
- Stridor: Metastasis to upper airway
- Dysphagia: Esophageal metastasis

SIGNS

- Pallor
- Clubbing
- Weight loss
- Lymphadenopathy
- Lung signs: depends on the characteristics of tumour
- Unilateral hilar enlargement: Central tumour –hilar glandular enlargement. Peripheral tumour in apical segment of a lower lobe can look like an enlargement hilar shadow on the straight x-ray

INVESTIGATIONS

- Chest X-Ray PA-view
- Blood for CBC
- Refer to higher level for further investigations and confirmation of diagnosis:
  - » Lymph node biopsy, pleural fluid analysis, USG for suspected metastasis
  - » Computerised axial tomography scan (CT scan)
  - » Magnetic resonance imaging (MRI)

MANAGEMENT

- Supportive treatment
- Nutritional supplement
- Blood transfusion if required

- Analgesic
- Therapeutic management: Surgery, Chemotherapy and Radiotherapy

3.11 Chronic obstructive pulmonary airway disease (COPD)

DEFINITION

COPD is a chronic, slowly progressive disorder characterised by airflow obstruction which does not change markedly over several months. The impairment of lung function is largely fixed but may be partially reversible by bronchodilator therapy.

Includes:

- Emphysema
- Chronic bronchitis
- **Risk factors for COPD**
  - Smoking, and air pollution (both indoor and ambient)
  - Occupations, particularly dusty environments, mining, agriculture
  - Others (e.g. age, gender, social status, etc.)
- COPD can be classified into four stages based on the results of pulmonary function testing (spirometry) to measure airflow limitation:
  - Stage I - Mild
  - Stage II - Moderate
  - Stage III - Severe
  - Stage IV - Very Severe

SYMPTOMS

- Smoker's cough- mild
- Breathlessness on exertion-moderate
- Cough + sputum-moderate
- Breathlessness on any exertion-severe

- Peripheral oedema-severe
- Symptoms are similar to right heart failure: palpation, tiredness

SIGNS

- Cyanosis
- Engorged neck vein
- Edema
- **Chest examination:**
  - » **Inspection:** Barrel chest (increased AP diameter) - common in COPD
  - » Chest in drawing - present (intercostal, subcostal and supraclavicular indrawing present). Increased respiratory rate
  - » **Palpation:** Movement of the chest wall decreased
  - » Vocal fremitus-decreased
  - » **Percussion:** hyper-resonance present
  - » **Auscultation:** Diminished breath sound, crepitations may be present

INVESTIGATIONS

- Complete Blood Count
- Renal function test
- Liver function test
- Chest X-ray P/A
- ECG

MANAGEMENT

- Propped up position
- Oxygen
- Bronchodilators: Salbutamol Nebulization as needed
- Antibiotics if evidence of infection.

- Refer the patient as soon as possible
- Continue treatment of associated comorbidities such as heart failure or hypertension

For details treatment see Service with Care and Compassion Initiative (SCCI) Protocol (Flow chart)

Differences between Asthma And COPD

Table 3.2. Difference between Asthma and COPD

	Asthma	COPD
Age of onset	More often in childhood or early adulthood; variable	Usually later in life (4th or 5th decade)
Course	Episodic symptoms, with relatively asymptomatic periods in between	Persistent and progressive symptoms with little day-to-day variation
Smoking and other exposures	Uncommon	Common
Nasal symptoms, atopy	Common	Rare
Family history	Often	Uncommon
Triggers	Often identified	None
Wheeze	Prominen and almost universal	May or may not present
Complications		Chronic respiratory failure or cor pulmonale in advanced disease

Lung function testing

A detailed breathing assessment, known as lung function testing, can be conducted by doctors and health workers to assess the airway function. Spirometry can detect whether the disease is restrictive or obstructive and is also used to assess the severity of the disease. Another simple test often performed in these patients is recording peak expiratory flow (PEF).

Spirometry

- Spirometry is noninvasive and usually performed by a trained health worker or technician.
- Designed to identify and quantify defects and abnormalities in the function of respiratory system.

Indications

- Presence of lung disease or abnormality in lung function
- Progression of the disease
- Evaluate the response to treatment

How to perform and interpret spirometry

- Sit up straight (with a clip over the nose ideally)
- Get a good seal around mouthpiece of the spirometer
- Inhale maximally then
- Blow out as hard and as fast as possible and Inhale with maximum effort
- Repeat & record the manoeuvre
- Record the best of three trial

What does the result mean?

- Airway obstruction is considered to be present if the FEV1/FVC ratio is below 0.7
- FEV1 and FVC readings above 80% of their predicted values are generally considered normal

Peak Expiratory Flow (PEF)

Measures the maximal rate that a person can exhale during a short maximal expiratory effort after a full inspiration. Most peak flow metres are small, cheap, easy to use portable devices. The Mini-Wright's PEF metre is the device most commonly used for this measurement.

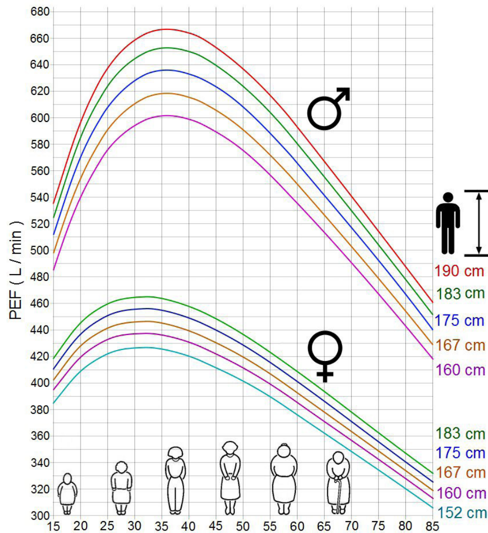


Fig. 3.1 Normal values for peak expiratory flow

How to measure PEF?

PEF can be recorded by asking the patient to blow out into the PEF meter through a short, sharp exhalation. Direct reading from the slider scale. PEF readings are expressed as a percentage of predicted normal, and values below 80% of predicted are generally considered abnormal.

How to interpret the PEF results?

HOW TO INTERPRET THE PEAK FLOW RATE (SEE TABLE 3.10 BELOW)

A "normal" peak flow rate is based on a person's age, height and sex and can be read off a chart (see Table 3.10 below). In general, a normal peak flow rate can vary as much as 20 percent.

80 - 100% of "normal" PFR	(green)	Asthma is under reasonably good control.
50 - 80% of "normal" PFR	(yellow)	Signals caution and requires adjustment of the dose of asthma medications.
Less than 50% of "normal" PFR	(red)	Signals severe airway narrowing. Rescue medication has to be taken and medical advice sought.

TABLE 3.10
Peak expiratory flow rates (Liters/minute)

WOMEN

AGE	HEIGHT (INCHES)				
	55	60	65	70	75
20	390	423	460	496	529
25	385	418	454	490	523
30	380	413	448	483	516
35	375	408	442	476	509
40	370	402	436	470	502
45	365	397	430	464	495
50	360	391	424	457	488
55	355	385	418	451	482
60	350	380	412	445	475
65	345	375	406	439	468
70	340	369	400	432	461

MEN

AGE	HEIGHT (INCHES)				
	60	65	70	75	80
20	554	602	649	693	740
25	543	590	636	679	725
30	532	577	622	664	710
35	521	565	609	651	695
40	509	552	596	636	680
45	498	540	583	622	665
50	486	527	569	607	649
55	475	515	556	593	639
60	463	502	542	578	618
65	452	690	529	564	603
70	440	677	515	550	587

Devices to deliver inhaled medication

Fig. 3.2 Pressurised metered dose inhaler (pMDI)

CHAPTER 4
GASTROINTESTINAL SYSTEM

Dr. Ripa Chakma, Asso. Prof. FNPH
Dr. Passang Tobgyel Thigh, GDMO Damphu hospital

History taking for gastrointestinal tract diseases

SYMPTOMS

Dysphagia, dyspepsia, indigestion, heartburn, flatulence, abdominal pain, abdominal distension, anorexia, nausea, vomiting, diarrhoea, jaundice, weight loss, constipation, hematemesis, melena, rectal bleeding.

- **Dyspepsia:** also known as indigestion which causes discomfort or pain in the upper abdomen. Symptoms include burning sensation in the upper abdomen, nausea, vomiting, belching, feeling of abdominal fullness, heartburn and regurgitation
- **Dysphagia:** Difficulty in swallowing
- **Diarrhoea:** An episode of diarrhoea is defined as the passage of three or more loose or watery stools within 24 hours
- **Hematemesis:** Vomiting of blood
- **Melena:** Passage of altered blood in the form of dark tarry and foul smelling stools

Physical Examination

General examination

- Blood pressure
- Pulse
- Pallor
- Icterus
- Lymphadenopathy
- Clubbing
- Oedema

Abdomen examination

a. Inspection

- Shape of the abdomen: normal or distended
- Umbilicus: normally retracted and inverted. Abnormal: everted. e.g. umbilical hernia, ascites
- Visible veins: Look for prominent and dilated veins on the abdomen
- Caput medusa (distended and engorged periumbilical veins)
- Look for surgical scars
- Look for hernias

b. Palpation

- Superficial palpation: Start from the right iliac region palpating lightly and clockwise to end in the supra-pubic region. Palpate all the quadrants of the abdomen for tenderness
- Deep palpation: Liver, spleen (normally not palpable) and any other lumps

c. Percussion

- Organs or lumps felt: A resonant note is heard throughout the abdomen

except over the organs, where the note is dull. The upper border of liver dullness lies in the 5th or 6th intercostal space. **Flank dullness, horse shoe dullness and shifting dullness for ascites**

- Check for fluid thrill

d. Auscultation

- Listen to the bowel sounds for at least one minute lateral to the umbilicus. Normally bowel sound present: 2-3 sounds/minutes. Bowel sounds can be normal, absent or exaggerated. Bowel sound absent e.g. peritonitis, paralytic ileus.

Note: Also when relevant examine the groin, genitalia and rectum as they are part of abdominal examination.

4.1 Disease of the stomach and duodenum

4.1.1 Gastroesophageal reflux disease

DEFINITION

A condition that develops when the reflux of stomach contents causes troublesome symptoms and/or complications.

CAUSES

- Obesity
- Pregnancy
- Smoking
- Alcohol
- Drugs
- Hiatus hernia

SIGNS & SYMPTOMS

- Heartburn
- Regurgitation

- Cough

Symptoms occur soon after eating or bending/lying down soon after eating

MANAGEMENT

- Tab. Antacid 2 tablets, one to three hours after meals 3 to 4 times a day
- If not improved, Tab. Ranitidine 150 mg twice a day for 1 month

OR

- Cap. Omeprazole 20 mg BD for one month
- Metoclopramide 10 mg BD for 5 days
- Refer if not improved

HEALTH EDUCATION

- Weight reduction
- Stop smoking and alcohol
- Avoid consuming fatty foods, coffee, chocolate, citrus fruits and pickles
- Consumption of smaller and more frequent meals

4.1.2 Gastritis

DEFINITION

Inflammation of the stomach is called gastritis. It is a histological diagnosis, but it can be recognized by endoscopy.

SYMPTOMS

- Epigastric pain
- Nausea or vomiting
- Loss of appetite
- It may also cause hematemesis or melena

SIGNS

- Epigastric tenderness may be present

INVESTIGATIONS

- Upper GI endoscopy
- Stool for H. Pylori antigen

MANAGEMENT

- Tab. Antacid 2 tablets 3 times a day after meal for short duration
- Tab. Ranitidine 150 mg 12 hourly for 1 month OR
- Cap. Omeprazole 20 mg 12 hourly for one month
- Metoclopramide 10 mg BD for one week

4.1.3 Peptic ulcer disease

DEFINITION

The term peptic ulcer refers to ulceration in any part of the gastrointestinal tract which is exposed to acid-pepsin digestion of mucosa.

CAUSES

- The main cause is due to H. pylori infection. This gram-negative bacteria colonises the epithelial mucous layer of the gastric antrum and body.
- Steroids
- NSAIDS
- Alcohol
- Smoking

SYMPTOMS

- Abdominal pain is described as burning, gnawing, or may be described as hunger pain

- In Duodenal ulcer, pain occurs 90 min to 3 hours after meal and is frequently relieved by antacids or foods. Heartburn and night pain - less common in duodenal ulcer
- Gastric ulcer pain may be precipitated by food. Heartburn and night pain- more common in gastric ulcer
- Patients may present for the first time with complications such as bleeding, perforation, and obstruction

SIGNS

- Epigastric tenderness

INVESTIGATIONS

- Blood for CBC
- Stool occult blood
- Stool antigen test: H. pylori
- Upper GI Endoscopy
- ECG

MANAGEMENT

- Diet: reduce oily and fatty foods with regular habits
- Tab. Antacid or liquid antacid ½ hours TDS after meal
- Tab. Ranitidine 150 mg BD after meal for 4-6 weeks OR
- Cap. Omeprazole 20 mg BD for 4 to 6 weeks
- Medical treatment for H.*pylori* is triple therapy with:
- Tab. Amoxicillin 1000 mg BD for 14 days
- Tab. Omeprazole 20 mg BD for 14 days
- Tab. Clarithromycin 500 mg BD for 14 days

FOLLOW UP

H.*pylori* follow up testing in 3 months

All patients with symptoms of PUD who do not respond to treatment should be referred for an Upper Gastrointestinal Endoscopy

Serious complications: stomach and duodenal perforation

- Peptic ulcer disease is the most common cause of stomach and duodenal perforation
- If suspecting perforation in history and examination, erect chest X-ray to access air under diaphragm should be done.
- Initial management before referral is similar to bowel obstruction (kindly refer to the topic for details)
- Refer early for surgical care

4.1.4 Carcinoma of the stomach

DEFINITION

Carcinoma of the stomach is one of the most common malignant tumours of the GI tract.

CAUSES

- Risk factor: 40-60 years
- Male predominant
- Heredity: Blood group "A" suffers more
- Diet: Foods containing hydrocarbons (smoked foods)
- Risk Factors:
    - Smoking
    - Alcohol
    - *Helicobacter pylori* infection
    - Pernicious anaemia

SYMPTOMS

- Abdominal pain/discomfort and burning sensation. Pain increases by taking food and not relieved by food or antacid
- Early satiety
- Persistent vomiting
- Haematemesis
- Melaena
- Weight loss and weakness due to general effects of cancer

SIGNS

- Emaciated patient
- Pallor
- Lymphadenopathy
- Epigastric tenderness, epigastric mass
- Ascites - due to metastasis in the peritoneum

INVESTIGATIONS

- CBC LFT RFT
- Stool Occult Blood
- Stool for H pylori antigen
- Upper GI Endoscopy
- USG of the abdomen
- CT Abdomen

MANAGEMENT

- Symptomatic treatment
- Refer

4.1.5 Gastrointestinal bleeding

DEFINITION

Acute upper GIT bleeding. Manifests as hematemesis or melaena.

CAUSES

- Peptic ulcer
- Esophageal varices
- Carcinoma of the stomach
- Oesophagitis
- Mallory-weiss syndrome

INVESTIGATIONS

- CBC, Urgent blood grouping and cross matching
- USG abdomen
- Endoscopy of the upper GIT tract: to determine the site of bleeding and lesion causing it

MANAGEMENT

- Provide oxygen
- Put a large bore (14 or 16 gauge) cannula. Two large bore IV lines if bleeding is severe
- In the case of hypovolemia resuscitation using IV fluids (Normal Saline or Ringer's lactate solution) to maintain systolic blood pressure higher than 100 mmHg and pulse lower than 100 beats/min until blood transfusion is available
- Target haemoglobin level should be at least ≥7 g/dl.
- Monitor the patient with hematocrit
- IV Ranitidine 50 mg IV 12 hourly OR IV Omeprazole 80 mg stat (preferred to IV Ranitidine) if available

- Inj. Ceftriaxone 1 gm once a day in variceal bleeding and cirrhosis
- Octreotide infusion if variceal bleeding is suspected: 50-100 mcg bolus followed by 25 to 50 mcg/hr (if available)
- Fresh frozen plasma and Platelet transfusion are also given to maintain and platelet count > 50000/mm3
- Measure pulse and B.P frequently
- Endotracheal intubation-if patient has altered consciousness (due to shock or hepatic encephalopathy)
- Refer

4.1.6 Acute abdominal pain

DEFINITION

An acute abdominal condition is defined as a recent or sudden onset of unexpected abdominal pain (usually within 24-72 hours of presentation). The cause can be medical or surgical. Acute abdominal conditions include intestinal obstruction, peritonitis, acute appendicitis, acute cholecystitis, acute severe gastritis, acute pancreatitis, mesenteric vessel thrombosis, intestinal perforation, gallstone disease, etc.

SYMPTOMS

- Abdominal pain, which may be colicky
- Abdominal distention
- Vomiting
- Constipation

SIGNS

- Distended abdomen
- Tender abdomen
- Absent/exaggerated bowel sounds

INVESTIGATIONS

- Abdominal X-rays: plain erect and supine abdominal X-rays for air fluid levels
- USG Abdomen
- CBC LFT RFT Electrolytes Amylase/Lipase
- Blood glucose

MANAGEMENT

- Nil per mouth
- Insert nasogastric tube, keep free flow
- IV fluids(normal saline or RL)
- IV Ampicillin 1 gm IV 6 hourly
- Analgesia with available drug
- Refer

4.1.7 Acute appendicitis

DEFINITION

It is an inflammation of the appendix. It results from bacterial invasion of usually distal to an obstruction of the lumen which can be caused by faecoliths, cysts or worms.

SYMPTOMS

- Abdominal pain in the right iliac fossa which may be preceded by peri umbilical pain.
- Fever

SIGNS

- Tenderness in the right iliac fossa
- Maximum tenderness at the McBurney's point

- Positive Rovsing's sign: Sharp pressure on the left iliac fossa and pain on the right iliac fossa indicated acute appendicitis
- Rebound tenderness over McBurney's point. (McBurney's point: On the right side of the abdomen which is one-third of the distance from the anterior superior iliac spine and two-third to the umbilicus.)-indicates that there is peritonitis due to burst appendix or perforation

INVESTIGATIONS

- USG lower abdomen with full bladder and appendix
- Blood for CBC and blood grouping
- Urine R/E

MANAGEMENT

- Nil per mouth
- IV fluids (NS/RL)
- Start IV Ampicillin 1 gm 6 H and IV Metronidazole 500 mg 8 H
- Refer

4.1.8 Peritonitis

DEFINITION

Peritonitis is an acute life-threatening condition caused by bacterial or chemical contamination of the peritoneal cavity.

SYMPTOMS

- Severe generalised abdominal pain, which is worse on movement or coughing
- Fever
- Abdominal distension
- Shoulder pain (referred from diaphragm)

SIGNS

- Tenderness
- Guarding
- Rigidity
- Absent bowel sounds.

MANAGEMENT

- Nil per mouth
- IVF (NS/RL)
- IV ampicillin 1 gm 6 H and IV metronidazole 500 mg 8 H
- Analgesics
- Refer

4.1.9 Acute cholecystitis

DEFINITION

It is an inflammation of the gallbladder wall. Acalculous cholecystitis can also occur

SYMPTOMS

- Usually presents with epigastric or right upper quadrant (RUQ) pain, which may radiate to the back below right scapula or shoulder
- Nausea, vomiting and fever
- Previous history of similar pain

SIGNS

- Tenderness over RUQ
- Positive Murphy's sign: elicited in patients with acute cholecystitis by asking the patient to take deep breath while palpating the patient's right subcostal area. If the patient experiences pain when the inflamed gallbladder touches the examiner's hand, the test is considered positive

INVESTIGATIONS

- USG HBS
- CBC LFT
- TREATMENT
- Nil per mouth
- IV fluids (NS/RL)
- IV Ampicillin 1 gm 6 H
- Analgesic
- Refer

4.1.10 Acute pancreatitis

DEFINITION

It is an acute inflammatory process of the pancreas.

CAUSES

- Alcohol
- Gallstone
- Trauma
- Steroids
- Hyperlipidemia
- Hypercalcemia
- Infections
- ERCP
- Drugs

SYMPTOMS

- Severe abdominal pain, usually in the upper abdomen, with pain radiating to back
- Associated with nausea and vomiting

- Pain typically gets better when bending forwards

SIGNS

- Tenderness in epigastric region with guarding

INVESTIGATIONS

- CBC, LFT RFT S Lipids Serum amylase,Lipase serum calcium serum electrolytes
- Blood glucose
- USG HBS

MANAGEMENT

- Nil per mouth
- IV fluids (NS/RL)
- Analgesia
- Refer

4.2 Ano-rectal disorders

4.2.1 Hemorrhoid

SYMPTOMS

- Fresh PR bleeding
- Painless in simple cases
- Painful if prolapsed or thrombosed
- Aggravated by pregnancy in females
- Bleeding is aggravated by constipation

INVESTIGATIONS

- Proctoscopy
- **Examination:** Digital rectal examination

MANAGEMENT

- High-fibre diet, increased fluid intake
- Local application of anti hemorrhoidal ointment
- Laxative
- Refer

4.2.2 Anal fissure

DEFINITION

It is a split or tear in the mucosal lining of the anal canal.

SYMPTOMS

- Painful defecation
- Streaks of blood with stool
- Hard stools worsen symptoms
- Chronic cases will have skin tags around the anal opening

MANAGEMENT

- High-fibre diet
- Application of local anaesthetic like lignocaine
- Laxatives like senna
- Sitz bath (preferably with $KMnO_4$)

4.3 Anaemia

DEFINITION

Anaemia is defined as a state in which the blood haemoglobin level is below the normal range for the patient's age and sex.

CAUSES

- Nutritional deficiency

- Iron deficiency (commonest cause)
- B12 deficiency
- Folate deficiency
- Increased destruction or loss
- Hemolysis
- Blood loss
- Reduced RBC production
- Marrow failure
- Infiltrative disease
- Dysfunction of marrow

SYMPTOMS

- Breathlessness on exertion
- Lethargy
- Lightheadedness
- Palpitation

SIGNS

- Pallor
- Angular stomatitis
- Koilonychia (in iron deficiency anaemia)

INVESTIGATIONS

- CBC
- Blood picture
- LDH
- Serum bilirubin
- Coombs test
- Reticulocyte count

MANAGEMENT

- Iron supplements
- Blood transfusions

NOTE: Finding the cause and managing accordingly is important.

HEALTH EDUCATION

- Dietary modification:
  - » Increase of green leafy vegetables and meat
  - » Avoid tea and milk with iron rich diets

FOLLOW UP AND REFERRAL

- Monthly CBC during treatment and few months after recovery
- Refer for
  - » Serum Iron, B12 and folate level studies where necessary
  - » For transfusion where not available (haemoglobin target of minimum 7 g/dl in uncomplicated patients)

4.4 Cirrhosis

DEFINITION

Cirrhosis is a diffuse process characterised by fibrosis and destruction of normal liver architecture with nodule formation.

CAUSES

- Alcohol
- Hepatitis-B, C and D
- Medication
- Primary biliary cirrhosis
- Secondary biliary cirrhosis: stones, stricture

SYMPTOMS

- Swelling of abdomen and feet
- Haematemesis and malena (due to portal hypertension)
- Anorexia, nausea, vomiting and upper abdominal discomfort
- Weakness, fatigue, muscle cramps and weight loss

SIGNS

- Icterus
- Ascites
- Signs of CLD: parotid enlargement, palmar erythema, testicular hypertrophy, gynaecomastia, spider naevi, dupuytren's contracture
- Splenomegaly with or without hepatomegaly
- Pitting oedema and hyperpigmentation

INVESTIGATIONS

- CBC, LFT, PT INR
- Viral markers HBsAg and HCV
- Ultrasound (gold standard for diagnosis)
- UGIE

MANAGEMENT

- Withdrawal or treatment of etiological factors e.g. alcohol consumption, drugs
- High energy protein rich diet in absence of encephalopathy or ascites
- Fat restriction (if cholestasis)
- Vitamin k and other supplements
- Treatment of complications where possible:
  - » Ascitis; Paracentesis
  - » Laxative: Syrup Lactulose (30 ml) TDS

» Tab. B-Complex and Vitamin-C, B, D
» Tab. Spironolactone (70-100 mg) daily
» Tab. Furosemide 40 mg daily
» Omeprazole 20 mg BD
» Propranolol 20 mg BD

HEALTH EDUCATION

- Stop alcohol
- Physical activity
- Eat a well balanced diet with low salt
- 4.5 Acute viral hepatitis

DEFINITION

It is commonly caused by hepatitis virus A, B, C, D and E. Less commonly it is caused by cytomegalovirus, Epstein-Barr and Herpes simplex virus.

SIGNS & SYMPTOMS

- Lethargy, chills, headache, and malaise
- Anorexia, nausea, vomiting and diarrhoea
- RUQ abdominal pain.
- Fever
- Myalgia and arthralgia
- Yellowish sclera
- Tender enlarged liver

INVESTIGATIONS

- Complete Blood count
- Liver Function Tests
- Viral markers: HBsAg (Hepatitis-B surface antigen) and Hepatitis-C

antigen

- USG HBS

MANAGEMENT

- Most patients do not need hospital admission
- Bed rest
- Nutritional support
- Avoid Paracetamol and other hepatotoxic drugs
- Ibuprofen if needed

HEALTH EDUCATION.

- Avoid alcohol and hepatotoxic drugs
- Vaccination of hepatitis-B in high risk groups
- Practise safe sex behaviour

4.6 Lymphadenopathy

DEFINITION

Lymphadenopathy refers to enlargement of the lymph nodes. It can be generalised or regional.

CAUSES

- Infection (Bacterial, viral, fungal, mycobacterial)
- Malignancy (Leukaemia, Lymphomas, Metastasis)
- Connective tissue disorders (SLE, Felty's Syndrome)
- Granulomatous disorders (Sarcoidosis)

INVESTIGATIONS

- CBC, CRP, ESR, LFT, RF
- Blood picture

- Chest X-ray PA
- USG abdomen
- Mantoux test
- Viral markers
- FNAC/Biopsy

MANAGEMENT

- Provide antibiotics if evidence of infection/inflammation
- Refer

4.7 Hepatic encephalopathy

DEFINITION

It represents a reversible impairment of neuropsychiatric function associated with advanced liver disease

SIGNS & SYMPTOMS

- Signs of liver failure
- Altered sleep rhythm
- Confusion-mild, moderate, severe
- Asterixis (Flapping tremor)
- Slurred speech
- Mood changes
- Behavioural changes
- Impaired memory and concentration
- Coma

INVESTIGATIONS

- CBC, PT INR, RFT and LFT
- Blood sugar

- Urine RE
- Chest X ray
- USG abdomen

MANAGEMENT

- Main goal is correction of underlying cause that precipitate HE
- IV Fluids (RL/NS)
- Lactulose enema
- Lactulose 30 ml 8 H. Adjust dose and target 2-3 soft stools in 24 hours
- Avoid sedatives and diuretics
- IV Metronidazole 500 mg 8 H
- Refer

CHAPTER 5
ENDOCRINE DISORDER

Ms. Manikala Moktan, Asst. Professor FNPH
Dr. Thinley Yangzom,Head of CHD, JDWNRH

Physical examination of the neck

Inspection

Ensure patient is seated comfortably with neck exposed
Observe the neck for any visible mass, swelling, asymmetry, abnormal skin changes and pulsations

Palpation of the thyroid gland

- Stand behind the patient and ask the patient to slightly tilt the neck forward and to the side opposite to the lobe you are examining
- Use the pads of your fingers to palpate the thyroid gland. Locate the cricoid cartilage (upper part of trachea). Thyroid gland lies just below the cricoid cartilage
- Gently palpate each lobe of the thyroid gland and note size, texture, presence of any nodules and tenderness
- Ask patient to swallow to identify the thyroid gland movement and any other mass

Palpation of Lymph nodes

- Cervical lymph nodes should be palpated for any enlargement,

consistency, tenderness and mobility

Palpation of trachea

- Ensure trachea is in the midline and not deviated
- Auscultation
- For any bruits over the blood vessels of the neck

5.1 Hyperthyroidism

DEFINITION

Thyrotoxicosis refers to excess circulating hormone originating from any cause (including thyroid hormone overdose).

CAUSES

- Autoimmune disorder (Graves' disease)
- Thyroiditis
- Toxic multinodular goitre
- Excessive intake of thyroid hormones

SIGNS & SYMPTOMS

- Fatigue
- Heat intolerance and sweating
- Palpitations
- Weight loss despite increased appetite
- Diarrhoea
- Oligomenorrhea
- Tachycardia
- Tremor

INVESTIGATIONS

- Complete Blood Count
- Thyroid Function Test (elevated T3,T4 with suppressed TSH)

MANAGEMENT

- Carbimazole 15-60 mg daily in two or three divided doses
- Propranolol 40 mg OD
- Monitor TFT

HEALTH EDUCATION

- Advocacy on regular screening and monitoring
- Balanced diet
- Avoid excess iodine
- Take food rich in Calcium and Vitamin-D (dairy products, leafy greens, fish)
- Regular exercise
- Stress management

5.2 Hypothyroidism

DEFINITION

Hypothyroidism is a common endocrine disorder where the thyroid gland does not produce enough thyroid hormones. These hormones thyroxine (T4) and triiodothyronine (T3) regulate metabolism and are crucial for the functioning of all body systems.

CAUSES

- Autoimmune disorder (Hashimoto's disease)
- Thyroiditis
- Congenital hypothyroidism

- Surgical removal of part or all of the thyroid
- Radiation treatment of the thyroid
- Iodine deficiency
- Medications that suppress the production of thyroid hormones

SIGNS & SYMPTOMS

- Fatigue
- Dry skin
- Cold intolerance
- Constipation
- Weight gain
- Menorrhagia
- Irregular menstruation
- Bradycardia
- Depression

INVESTIGATIONS

- Complete Blood Count
- Thyroid Function Test (high level of TSH and low level of Thyroxine indicate hypothyroidism)
- Lipid profile

MANAGEMENT

- Thyroxine replacement therapy

FOLLOW UP

- Monitor TFT regularly and adjust dose of Thyroxine

HEALTH EDUCATION

- Raise awareness on hypothyroidism
- Advocate on regular screening and monitoring
- Eat balanced diet
- Limit intake of certain vegetables like cauliflower, broccoli, cabbage and soy products

5.3 Diabetes mellitus

DEFINITION

Diabetes mellitus, commonly known as diabetes, is a clinical condition characterised by increased blood sugar level. The three types are Type-1 DM, Type-2 DM and Gestational diabetes.

CAUSES

- Absolute or relative deficiency of insulin in the body or when the body does not respond to the effects of insulin

SYMPTOMS

- Polyphagia, polydipsia and polyuria
- Weight loss
- Blurring of vision
- Fatigue

SIGNS

- Skin infections
- Signs of acute metabolic deterioration (severe dehydration, fast breathing or shortness of breath, abdominal pain, altered mental status)
- Clinical signs of chronic complications (acute coronary disease, stroke, kidney disease, vision loss, neuropathy, diabetic foot)

INVESTIGATIONS

- Complete Blood Count
- Urine Routine examination
- Blood Sugar, Fasting and Postprandial
- Haemoglobin A1c
- Lipid Profile
- Renal Function Tests
- Electrocardiogram
- Ophthalmoscopy for diabetic eye changes
- Diagnostic criteria for diabetes: cut-off values are presented below
- Fasting blood glucose >126 mg/dl
- Random plasma glucose > 200 mg/dl
- Plasma glucose two hours postprandial >200 mg/dl
- HaemoglobinA1c <7.0% (Note: HbA1c is the most accurate measurement of long-term glycemic control and represents the average blood glucose over the previous two to three months. HbA1c <7% is generally considered to be adequate glycemic control)

MANAGEMENT

- Dietary/lifestyle modification
- Metformin 500 mg every 12 hr is the first line of treatment
- Insulin therapy in type I or in Type-II if not controlled by oral drugs

(For details treatment see Service with Care and Compassion Initiative (SCCI) Protocol (Flow chart)

FOLLOW UP

- Monthly FBS,PP using glucometer
- Monitor blood pressure

- Examine feet for ulcers
- Optimise dose of anti-diabetic medicines

5.4 Diabetic ketoacidosis (DKA)

DEFINITION

It is a complication of uncontrolled Diabetes Mellitus and is a medical emergency. It is a serious condition that can lead to diabetic coma or even death. History may reveal that the patient has missed the insulin or diabetic drugs therapy. It may be precipitated by infections too.

SIGNS & SYMPTOMS

- Shortness of breath
- Fever
- Vomiting
- Abdominal pain
- Decreased urine output
- Altered sensorium

INVESTIGATIONS

- Complete Blood Count
- Urine for ketone bodies
- Urine Routine examination
- Blood Sugar, Fasting and Postprandial
- Renal Function Tests
- Serum electrolytes

MANAGEMENT

- Hydration is the mainstay management (20 ml/kg bolus and maintenance)
- Refer to higher centre

For details treatment see Service with Care and Compassion Initiative (SCCI) Protocol (Flow chart)

5.5 Hypoglycemia

DEFINITION

Hypoglycemia (blood sugar <70 mg/dl) is a frequent iatrogenic complication in diabetic patients, occurring particularly in patients receiving sulfonylurea or insulin. It can cause loss of consciousness and coma and is potentially life-threatening.

SYMPTOMS

- Headache
- Dizziness
- Hunger
- Irritability, anxiety
- Paresthesia
- Palpitations
- Sweating
- Trembling
- Difficulty in speaking

SIGNS

- Confusion
- Ataxia
- Stupor
- Pallor
- Seizures
- Coma

MANAGEMENT

- Mild- Oral sweet drinks, honey, jam, sugar or sweets
- Severe- Intravenous 25% Dextrose infusion till blood glucose level stabilises

For details treatment see Service with Care and Compassion Initiative (SCCI) Protocol (Flow chart)

CHAPTER 6
RENAL SYSTEM

Dr. Ripa Chakma, Asso. Prof. FNPH;
Dr. Thinley Dorji, Medical Specialist, CRRH

HISTORY TAKING FOR RENAL DISEASES

- Pain: dull pain in the loin/renal colic/flank pain
- Dysuria: Pain while passing urine
- Haematuria: blood in the urine (dark coloured urine/pure blood with/after or before urination)
- Oliguria: decreased urine output
- Anuria: absence of any urine output
- Polyuria: persistent increase in urinary output >3 litres/24 hours
- Nocturia: Increased frequency of micturition at night
- Incontinence: Inability to retain urine in the bladder
- Frequency: Increased in the number of micturition as compared to patient's usual pattern
- Urgency: strong desire to micturate immediately, patient cannot hold urine
- Retention: failure to evacuate urine from the bladder
- Oedema: swelling face

PHYSICAL EXAMINATION

- **Inspection:** Look for supra-pubic region distension, mass and scar

- **Palpation:** ballottement of both kidneys in the lumbar region check for tenderness and palpation of bladder for full bladder/ palpation of supra pubic to ilicit tenderness/renal angle tenderness.
- **Percussion:** Supra-pubic region urinary bladder; Dullness present usually during normal full bladder and urine retention

6.1 Urinary tract infection (UTI)

DEFINITION

Urinary tract infections (UTIs) include cystitis (infection of the bladder/lower urinary tract) and pyelonephritis (infection of the kidney/upper urinary tract). UTI results from the colonisation of bacteria,often from skin or rectum, enter the urethra, and infect the urinary tract. It is common in women and increases with age and sexual activity,but not uncommon in men.

CAUSES

- *Escherichia coli* (most common)
- *Klebsiella, Pseudomonas, Staphylococcus*

SYMPTOMS

- Patients with cystitis usually have fever, dysuria, frequency, urgency, and suprapubic pain or discomfort and sometimes gross haematuria
- Symptoms of acute pyelonephritis include fever with chills and rigour, nausea and vomiting, flank pain with or without the symptoms of cystitis

SIGNS

- General appearance: ill looking
- Fever
- Pallor
- Tachycardia
- Hypotension

- Suprapubic and flank tenderness may be present (renal angle tenderness)

INVESTIGATIONS

- Urine analysis for White Blood Cells >10 cells, pus cells, Red Blood Cells
- Urine culture and sensitivity to identify the uropathogen (if available)
- Ultrasound of KUB in recurrent UTI
- Complete blood count and blood culture if pyelonephritis is suspected

MANAGEMENT

- Antibiotic treatment is recommended if compatible clinical presentation AND a positive test. If tests are not available, treatment can be provided based on clinical presentation. Clinical improvement should be evident within 48-72 hours
- For cystitis in adults:
  - » Amoxicillin 500 mg Q 8 hourly x 3 days
  - » Co-trimoxazole (SMX+TMP 800 mg +160 mg) PO Q 12 hourly x 3 days
- For UTI in children, the above medicines are given in weight-based dosing
- Fluid intake of at least 2 L/day
- Regular complete emptying of urinary bladder
- For pyelonephritis: Inj. Ampicillin and Gentamicin (if RFT NORMAL) for 5-10 days based on clinical response (REFER TO HIGHER CENTRE)

FOLLOW UP

- Patients with persistent or recurrence of symptoms require evaluation with urine culture and antibiotic susceptibility testing and ultrasound of KUB

HEALTH EDUCATION

- Drink plenty of fluid intake
- Frequent emptying of bladder
- Maintain personal hygiene

6.2 Acute glomerulonephritis

DEFINITION

Glomerulonephritis is a group of kidney diseases in which an immunologic mechanism triggers inflammation and proliferation of glomerular tissue that can result in the damage of basement membrane, mesangium, or capillary endothelium. Examples include post-Streptococcal glomerulonephritis (PSGN) while others include nephrotic and nephritic syndrome.

CAUSES

- PSGN occurs 2-6 weeks after throat or skin infection with Streptococcus
- Some are inherited conditions

SYMPTOMS

- History of sore throat or skin infection
- Very bubbly or foamy urine
- Cola coloured urine
- Decreased urine output
- Headache, malaise, anorexia
- Facial swelling
- Fatigue
- Leg oedema
- Generalised itching
- Shortness of breath

SIGNS

- Hypertension
- Pallor
- Ascites pleural effusion
- Rashes
- Renal angle tenderness
- Arthritis
- Impetigo
- Oedema (first noticed in periorbital and facial areas and progress to involve ankle and body)

INVESTIGATIONS

- Urine examination for protein/albumin
- Renal Function Tests
- Ultrasound KUB

MANAGEMENT

- Fluid restriction (500 mL + previous day output)
- Sodium restriction
- Daily weight charting
- Diuretics: Hydrochlorothiazide 25 mg OD
- Anti-hypertensive: Hydralazine 25-50 mg OD
- Refer to higher centres for follow up

HEALTH EDUCATION

- Monitor BP, urine output
- Follow up every month

6.3 Nephrotic syndrome

DEFINITION

It is a clinical syndrome that is a combination of the nephrotic range of proteinuria with a low serum albumin level and oedema. Nephrotic range protein is loss of 3 grams or more of protein into the urine.

CAUSES

- Primary causes are due to primary glomerulonephritis such as minimal change disease, membranous nephropathy etc.
- Secondary causes are diseases such as diabetes mellitus, amyloidosis and lupus erythematous

SYMPTOMS

- Periorbital and facial oedema that progresses to generalised oedema
- Foamy urine
- Fatigue
- Loss of appetite
- Abdominal distension and discomfort due to ascites
- Nausea and vomiting may be present

SIGNS

- Blood pressure may be raised or normal or low
- Ankle oedema, periorbital or facial oedema
- Pleural effusion may be present
- Ascites, abdominal girth

INVESTIGATIONS

- Urinalysis for proteinuria, albuminuria
- 24 hours urinary total protein

- 24 hours urine protein: creatinine ratio
- Renal function tests
- Fasting lipid profile

MANAGEMENT

- Diet: Low sodium diet
- Loop diuretics to control edema
- BP control with Losartan (also helps reduce albuminuria)
- Daily weight and urine output charting
- Specific measures: Steroid therapy for minimal change nephropathy (specialist decision)
- Refer to higher centre

HEALTH EDUCATION

Reducing saturated fat and cholesterol in diet can help manage hyperlipidemia
Limiting the amount of sodium in diet
Follow up every month with urine analysis for protein/albumin
Children on steroid therapy are at high risk of infections (bacterial, viral)
Monitor height and weight in children

6.4 Urinary tract calculi/urolithiasis/urinary stone

DEFINITION

Urolithiasis refers to the presence of stones, or calculi in the urinary tract. Stones in the urinary tract lead to obstruction and permanent kidney damage (obstructive uropathy) if left untreated or urine collection proximal to the stone may be infected.

CAUSES

- Chronic infection
- Poor fluid intake

- Genetic disorder
- Chronic obstruction with stasis of urine, foreign bodies within the urinary tract
- Hypercalcemia is caused by renal tubular acidosis, excessive intake of vitamin-D, milk and hyperparathyroidism

SYMPTOMS

- **Pain:** typical ureteric colic is extremely painful. The pain in the loin is sharp and biting and radiates with greater severity to the testicle in male and the labia in the female
- **Strangury:** there is a great urge to pass urine every few minutes, but only a drop or two is voided
- **Hematuria:** the urine may tint with blood or there may be frank haemorrhage (staghorn calculus)
- **Asymptomatic stones:** In some cases, patients may be diagnosed with renal stones on ultrasound images even in those without symptoms

INVESTIGATIONS

- Urine routine examination and urine culture
- USG KUB
- X-ray of the urinary tract
- Renal function test

MANAGEMENT

- Treatment of the acute attack with adequate analgesia (Paracetamol, Ibuprofen)
- Treat urinary tract infection with IV antibiotics
- 90% of calculi less than 4 mm in diameter pass spontaneously
- For those with calculi between >5 mm and ≤10 mm, medical therapy with tamsulosin may be given (consult Surgeon)

- Calculi more than 5 mm have lower chances of spontaneous passage. Calculi ≥10 mm are unlikely to pass spontaneously. These should be referred to Surgeon
- The patient should be advised to drink at least 3 litres of fluid a day to help prevent further stone formation
- If renal function is impaired, repeat after a few days with adequate hydration. If renal function remains impaired, refer to physician'

6.5 Urethral stricture

DEFINITION

Fibrosis narrowing of urethra by contracture.

CAUSES

- Congenital
- Acquired causes include traumatic injury, inflammation, postoperative complication and instrumental (catheterization)

SYMPTOMS

- Poor urinary stream, improves on straining
- Dribbling
- Acute retention
- Recurrent urinary tract infections
- Urinary spraying, dysuria

INVESTIGATIONS

- Voiding cystourethrogram
- Ultrasound KUB, prostate with post void residual volume
- Screen for sexually transmitted infections

MANAGEMENT

- Asymptomatic treatment can be followed up clinically
- Complications include urinary retention, bladder stones, recurrent UTI, hydronephrosis
- Refer to Surgeon for evaluation and management

6.6 Acute kidney injury (AKI)

DEFINITION

Acute Kidney Injury is an abrupt and usually reversible loss of renal function usually accompanied by a reduction in urine volume. AKI is characterised by an abrupt increase of serum creatinine by $\geq$0.3 mg/dl within 48 hours or increase in serum creatinine with a decrease in urine output.

SYMPTOMS (depends on causes)

- Oliguria or anuria
- Anorexia, nausea and vomiting
- Confusion, hiccups, fits

SIGNS (depends on causes)

- Hypotension
- Increased respiratory rate
- Coma

INVESTIGATIONS

- Renal Function Tests including Electrolytes
- Complete Blood Count
- Urine Routine Examination
- Ultrasound of KUB
- X- ray chest
- ECG

MANAGEMENTS

- Treatment of the underlying cause such as restoration of the lost fluids and relieving obstruction
- Restoration of fluid and electrolyte balance
- Dialysis for hyperkalemia and pulmonary oedema
- Avoid nephrotoxic drugs such as Gentamicin, NSAIDS, etc

6.7 Chronic kidney disease (CKD)

DEFINITION

Chronic Kidney Disease is an irreversible deterioration of renal function which develops over several years. The definition of CKD is based on estimated glomerular filtration rate <60 mL/min/1.73 m2 for at least three months.

SYMPTOMS

- Anorexia
- Fatigue
- Lethargy
- Headache
- Pruritus
- Nausea and vomiting
- Tingling and numbness of hands and feet
- Reduced frequency of urine

SIGNS

- Anaemia
- Hypertension
- Hyperpigmented skin at later stage

INVESTIGATIONS

- Renal Function Tests
- Complete Blood Count
- Urine Routine examination
- Urine Protein: Creatinine ratio
- Ultrasound KUB
- HBsAg, anti-HCV, anti-HIV serology
- FBG, PPBG and lipid profile

MANAGEMENT

- Antihypertensives to achieve target BP
- Optimal blood sugar control if diabetic
- Calcium and vitamin D supplementation
- Iron and folic acid
- Symptomatic management for nausea, vomiting, poor sleep
- Refer to specialist centre to evaluate for the need for renal replacement therapy (dialysis)

6.8 Benign prostatic hyperplasia (BPH)

DEFINITION

Prostate is an organ that surrounds the male urethra. Benign prostatic hyperplasia (BPH) is the enlargement of the prostate resulting in obstruction of the urethra at its origin from the bladder neck. The prevalence of BPH increases in men over the age of 40 years with symptoms progressing over a period of years.

SYMPTOMS

- Urinary frequency, urgency, nocturia, incontinence
- Hesitancy, poor urinary stream, intermittent urinary stream, straining

during micturition
- Sensation of incomplete emptying
- Haematuria
- Some may be asymptomatic

SIGNS

- Digital rectal examination to assess prostate size (normal prostate is the size of a walnut) and tenderness, asymmetry, nodules
- Dullness on supra-pubic region if there is urine retention)

INVESTIGATIONS

- Ultrasonography KUB, prostate volume and post-void residual volume
- Urine Routine Examination

MANAGEMENT

- Avoid fluids prior to bedtime or before going out
- If acute urinary retention, catheterize the patient and refer
- If post-void residual volume is >250 ml on ultrasound, refer to surgeon
- Continue medicines (Tamsulosin, Finasteride given as night dose) if prescribed by a surgeon
- Monitor for side effects such as dizziness

CHAPTER 7
NEUROLOGICAL SYSTEM

Dr. Ripa Chakma, Asso. Prof. FNPH;
Dr. Thinley Dorji, Medical Specialist, CRRH

Major Symptoms of Nervous system

- Headache
- Convulsions
- Fainting
- Sleep mood
- loss of consciousness, speech, memory, sensation
- Weakness of arm or leg
- Altered mental status

INSPECTION

- Appearance, behaviour, mood, orientation, speech, memory
- State of consciousness: Conscious/semi-conscious /unconscious (follow the Glasgow Coma Scale if consciousness is altered)
- Squint, facial symmetry

Cranial nerves (12 Pairs) examination:

- Olfactory (sensory): Smell
- Optic (sensory): Visual acuity and visual field, colour vision
- Oculomotor (motor): Ocular movement, pupil: size, shape and reaction

to light

- Trochlear (motor): Ocular movement
- Trigeminal (mixed) Motor: Master and temporal muscle prominence on clenching. Sensory: sensation of face
- Abducent (motor): ocular movement
- Facial (mixed) Motor: close the eyes, wrinkle the forehead by looking, whistle, show the teeth Sensory: sense of taste of the anterior two-thirds to tongue
- Vestibulocochlear Auditory (sensory): Hearing
- Glossopharyngeal (mixed) sensory: posterior third of the tongue and motor: palatal reflex, Throat sensation
- Vagus (mixed) motor: ability to swallow, speaking clearly and sensory: to respiratory passage
- Accessory (motor): strength of Sternocleidomastoid and Trapezius muscles
- Hypoglossal (motor) muscle of tongue: deviation, strength of tongue

Motor function test

Bulk of muscle:

Inspection (compare both sides upper and lower limbs): Normal/diminished/increased

- Palpation: upper and lower limbs: normal/ muscle wasted, soft , hard

Tone of muscle:

- Hypertonia: normal/spasticity/rigidity
- Hypotonia: Normal/soft

Movement and Strength of muscle: Normal/ abnormal

- Reflex: Superficial reflex: Plantar and abdominal reflexes
- Deep reflex: Knee reflex, Ankle reflex, Biceps reflex, Triceps reflex.

7.1 Coma

DEFINITION

It is a state of unrousable unresponsiveness or a state from which the patient cannot be aroused by stimulation and no purposeful attempt is made to avoid painful stimuli. Persistent loss of consciousness or coma indicates disorder of the arousal mechanisms in the brainstem and diencephalon and indicates bilateral hemisphere or brainstem disease.

CAUSES

- Stroke
- Metabolic disturbance (hypoglycemia), respiratory failure, hepatic failure, renal failure
- Trauma
- Infections such as meningitis, encephalitis, and cerebral abscess
- Epilepsy, brain tumour
- Poisoning, snake envenomation

Coma patient is assisted by Glasgow coma scale: The Maximum normal score is 15

Table 7.1. Glasgow coma scale

	Assessment	Score
Eye opening	Spontaneous	4
	To speech	3
	To pain	2
	None	1
Best motor response	Obeys	6
	Localization	5

	Assessment	Score
	Withdraws	4
	Abnormal Flexion	3
	Extends	2
	None	1
Verbal response	Oriented	5
	Confused	4
	Inappropriate	3
	Incomprehensible	2
	None	1

While score 15: a patient whom level of consciousness is normal (maximum)
While score 3: a patient who is in deep coma (minimum)

7.2 Headache

DEFINITION

Pain in the region of the cranial vault is called a headache. It is one of the common and difficult clinical problems in medicine.

CAUSES

- Tension headache: anxiety, stress and depression
- Vascular headache: migraine, sinusitis
- Inflammatory headache: meningitis
- Others: Hypertension
- Intracranial tumours

SYMPTOMS

- Recurrent attacks of headaches that are usually bilateral

- Feeling of heaviness, pressure or tightness that may extend like a band around the head
- There may be photophobia, but nausea and vomiting are unusual
- Rarely severe enough to prevent regular activities
- Early morning vomiting

INVESTIGATIONS

- Blood pressure assessment
- Vision assessment
- Complete blood count

MANAGEMENT

- Reassurance
- Analgesics such as paracetamol
- Relaxation
- Evaluate for symptoms of depression

7.3 Migraine

DEFINITION

It is characterised by episodic headache, which is typically unilateral and often associated with vomiting and visual disturbance.

SYMPTOMS

- Recurrent attacks of hemi-cranial headache associated with nausea and/ or vomiting
- In classical migraine associated with aura usually visual
- May persists for several hours

MANAGEMENT

- Reassurance
- Identify and avoid trigger factors such as red wine, chocolate, certain cheeses, missing meals, irregular sleep pattern, glare and flashing lights
- NSAIDs for mild attacks (Ibuprofen + Metoclopramide) to be taken at the onset of aura or onset of headache
- For severe attacks Ergotamine + Caffeine, Triptans
- For prophylaxis-Propranolol, Amitriptyline
- Physical treatment: relaxation and massage

7.4 Bacterial meningitis

DEFINITION

Meningitis is the bacterial infection of the central nervous system resulting in inflammation of the meninges around the brain and the spinal cord. Bacterial meningitis is a medical emergency and antibiotics and steroids should be initiated as quickly as possible (after lumbar puncture).

CAUSES

- Neisseria meningitis (also known as meningococcus)
- Streptococcus pneumoniae
- Haemophilus influenzae
- Mycobacterium tuberculosis
- Viral
- Fungal
- Protozoal
- Aseptic

SYMPTOMS

- May present as acute or subacute infection
- Fever

- Headache
- Alteration in mental status, seizures, nausea vomiting and photophobia

SIGNS

- Neck stiffness or neck rigidity
- Kernig's sign, Brudzinski's sign (refer pic)
- Rash in meningococcal meningitis which begins as maculopapular but rapidly becomes petechial

INVESTIGATIONS

- Complete Blood Count
- Blood Culture
- Renal Function Tests, Liver Function Tests, PT/INR
- Random blood glucose
- Serology for dengue, scrub, malaria
- Fundoscopy for papilloedema
- Lumbar puncture and CSF analysis (CSF white blood cells, protein, sugar, GeneXpert, Gram stain and culture for bacteria or Mycobacterium tuberculosis)
- CT scan of brain

MANAGEMENT

- Admit in hospital
- Chart Glasgow Coma Scale
- Check A, B, C
- Antibiotics
  - » Ampicillin 2 gm IV given every 4 hours OR Inj. Benzyl Penicillin 24 million units/day IV every 4 hours
  - » Ceftriaxone 2 gm IV Q 12 H and Gentamicin 7.5 mg/kg/day IV given every 8 hours

- Dexamethasone 10 mg IV given prior or with the first dose of antibiotics (continue for
- If cerebral oedema: IV Mannitol
- Meningitis due to Mycobacterium tuberculosis, start anti-tuberculosis therapy as per national guideline
- Check vital signs: TPR
- Oxygen inhalation (SOS)
- Catheterization
- Intravenous fluids and electrolytes as required.
- Paracetamol to relieve fever
- For convulsion: Inj. Diazepam 10 mg IV OR IM (SOS)

7.5 Bell's palsy

DEFINITION

Bell's palsy is a form of facial paralysis resulting from a dysfunction of the cranial nerve VII (the facial nerve) causing an inability to control facial muscles on the affected side. Lower motor type of neuron lesion of facial nerve.

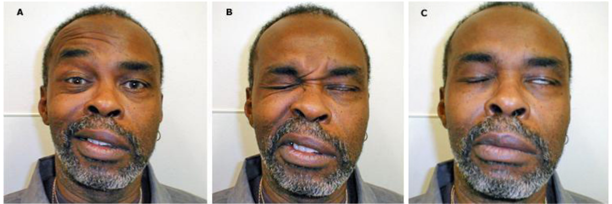


Fig. 7.1 Shows Bell's palsy

CAUSES

- Unknown
- Viral infection
- Vascular damage
- Trauma

- Cold exposure has been implicated

SYMPTOMS

- Paralysis of the upper and lower parts of the affected side of the face
- Unilateral facial paralysis
- The eyes on the affected side cannot be closed
- The mouth is drowned over to the opposite side
- Saliva and fluid escape from the angle of the mouth
- The eye on the attempting to do so the eyeball rolls upwards (Bell's sign)

MANAGEMENT

- Steroid therapy
- If unable to close the eyes completely, provide artificial tears while awake and shut the eyes with a tape during sleep
- Follow up after 1-2 months for clinical examination for recovery

7.6 Stroke

DEFINITION

Stroke is generally defined as any disease process that interrupts blood flow to the brain, causing brain injury and leading to lost of brain function (focal and global deficit of cerebral function) lasting more than 24 hours.

Transient ischemic attack (TIA): clinical signs of focal or global disturbance of the cerebral lasting less than 24 hours.

CAUSES

- Atherosclerosis
- Arteriosclerosis: e.g. Hypertensive
- Embolism, from heart vessels
- Head trauma

- Aneurysms, small arteriolar (hypertensive)
- Type of stroke
- Ischemic stroke: Obstruction of arteries that supply parts of the brain
- Haemorrhage stroke: Rupture of blood vessels due to hypertension, aneurysm or arteriovenous malformations.

SIGNS & SYMPTOMS

- Sudden onset of symptoms with inability to move arms or legs with or without altered consciousness
- **Facial weakness:** Ask the person to smile showing their teeth? Does one side of the face droop or is the person's smile uneven or lopsided?
- **Arm weakness:** Ask the person to raise both arms. Can the person raise both arms? Does one arm drift downward?
- **Speech problems:** Can the person speak clearly and understand what you say? Ask the person to repeat a simple sentence and see whether the person is able to correctly repeat the words?
- Dizziness, lightheadedness and difficulty in walking

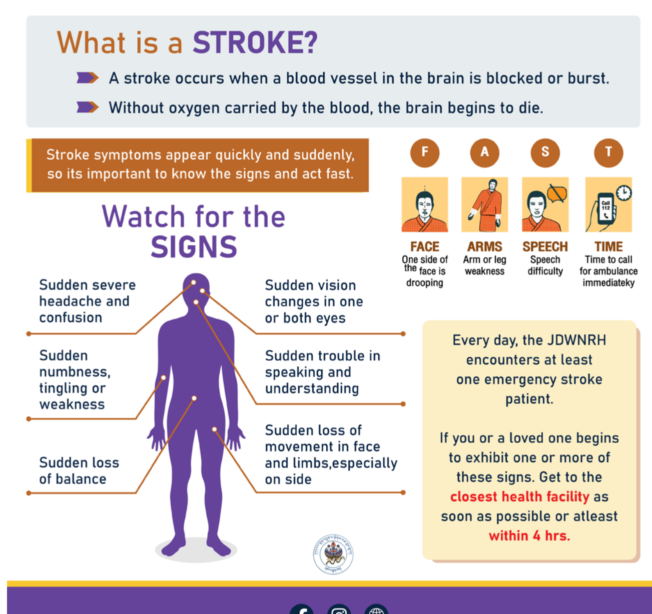


Fig. 7.2 Signs of stroke

INVESTIGATIONS

- CT scan of brain
- Complete Blood count
- Renal Function Tests
- ECG to diagnose atrial fibrillation

MANAGEMENT

- Manage ABCs
- Intravenous access (most commonly normal saline solution are recommended for resuscitation, if needed)
- Oxygen (as required if oxygen saturation is < 92%)
- Assess for hypoglycemia and correct it

- NPO
- Rapid transport to closest appropriate facility capable of treating acute stroke (within window period i.e within 3 - 4.5 hours from time of onset of stroke symptoms, activation of BEAR team for air lift)

For details treatment see Service with Care and Compassion Initiative (SCCI) Protocol (Flow chart)

Avoid excessive blood pressure reduction, dextrose-containing fluids in non-hypoglycaemic patients and excessive intravenous fluids in patients with stroke

7.7 Seizure and epilepsy

DEFINITION

Seizure is a brain disorder caused by an abnormal electrical discharge in the cerebral cortex. This disorder is characterised by a variety of symptoms including uncontrolled movements of the body, disorientation or confusion, alteration in behaviour, or loss of consciousness.

It is called epilepsy if there are more than two unprovoked seizures more than 24 hours apart. There are three classes of seizure types based on whether the initial manifestations of the seizure are focal or generalised:

- Focal onset (intact awareness or impaired awareness). The term awareness refers to the knowledge of self and environment during a seizure. Focal seizures can have motor manifestations (such as tonic, clonic, or myoclonic movements) or non motor manifestations (such as sensory, autonomic, or emotional symptoms) without impairment of awareness.
- Generalised onset (tonic-clonic, atonic, myoclonic or absence seizure). Generalised tonic clonic seizures are the most common type that begins abruptly without warning, has initial tonic contraction of all muscles muscles, a loud moan (ictal cry), clenching of jaws that are interrupted

by periods of relaxation and contractions with unresponsiveness. Bladder or bowel incontinence may occur. After the seizure has ended, patients complain of headache, fatigue and muscle pain.

- Unknown onset

The use of terms simple/complex partial seizure and convulsion are discontinued.

Status epilepticus is defined by seizures lasting more than 30 minutes or recurrent seizures without full recovery of sensorium between two episodes. In practice, any seizure lasting more than 5 minutes should be treated as status epilepticus.

Table 7.2. Features distinguishing seizures and pseudoseizures (fake seizures)

Symptoms	Seizure	Pseudo seizure
Injury/Tongue bite	Yes	No
Duration of seizure	Short (less than 1 minute)	Long (more than 30 min.)
Post seizure	Confused or drowsy	Normal sensorium
Sleep	Can occur in sleep	Usually not occur

CAUSES

- There is no known cause in 60-75 % of cases (genetic predisposition)
- Brain injury to the foetus during pregnancy, birth trauma (lack of oxygen), infection, head trauma, hypoglycaemia, hypocalcaemia, brain tumour, stroke, poisoning, eclampsia
- Neurocysticercosis

INVESTIGATIONS

- Electroencephalography available at KGUMSB
- MRI brain (specialist decision)

- Complete blood count, renal function, liver function, electrolytes (Na, K, Mg, Ca), Gamma glutamyl transferase, random blood glucose

MANAGEMENT

- Epilepsy diagnosis is very important as it involves long term commitment from the treatment provider and the patients once treatment is started. A single seizure is not usually treated but is an indication for investigation especially in individuals above 30 years of age. If the health worker has any doubt about the diagnosis, the patient should be referred for confirmation of diagnosis. Treatment is to be started only if there is a clear-cut diagnosis and there is more than one episode of seizures.
- Once treatment is started, ensure compliance to medications. Even if seizures are not controlled, wait for at least 6 weeks before adding or substituting with another anti-epileptic drug. Avoid poly-therapy as far as possible, start with one anti-epileptic drug, begin with a small dose and gradually increase dose over a period of a few weeks until reaching maximum tolerable dose. If there are side effects, consult with Physicians to regulate the drug dose or medication.
- Once treatment is started, it should be continued for a minimum of three years even if the seizures are completely controlled. At the end of a three year seizure-free period, the medicines should not be stopped abruptly but tapered off gradually over a few months to avoid break through seizures.

There are a lot of myths and misconceptions about epilepsy among our population. So, health workers need to give special health education to patients at the onset of treatment such as:

- They should take medications regularly, not adjust the dose themselves
- There is no need to restrict any particular food items, but alcohol should be strictly prohibited
- Epilepsy is not contagious, nor is it spread through saliva of patient and therefore it is safe to help patients when they get fits

- Epilepsy patients can do their normal work (studies in case of children) but should take certain precautions:
  - » avoid driving or operating machinery
  - » avoid working alone near fire, water or on heights

First aid during seizures:

- Move person away from danger (fire, water, machinery, traffic)
- After convulsions cease, turn patient to recovery position (semi-prone)
- Ensure that airway is clear – no foreign bodies are left in the mouth
- Do not insert anything in the mouth such as spoon or splint as they can break teeth during seizure
- If convulsions continue for more than 5 minutes or recur without person regaining consciousness, ask for medical help
- Person may be drowsy or confused for some 30-60 minutes after the seizure and should not be left alone until fully recovered

MANAGEMENT

- Anti-epileptic drugs are the mainstay of treatment.

Table 7.3. Anti-epileptic drugs

Drug	Adverse effects	Adult dose (refer BNF for children dose)
Tab. Phenobarbitone 30 mg or Inj. 200 mg/ml	Daytime drowsiness, lethargy, intellectual, cognitive depression, allergic skin reactions, addiction	60-180 mg per day in single dose at night or in divided dose if patient cannot tolerate single dose
Phenytoin - Tab. 100 mg or Inj. 50 mg/ml	Swelling of gums, thickening of skin, Steven Johnson Syndrome, ataxia, confusion	100-1000 mg per day in single at night or divided doses if patient cannot tolerate single dose

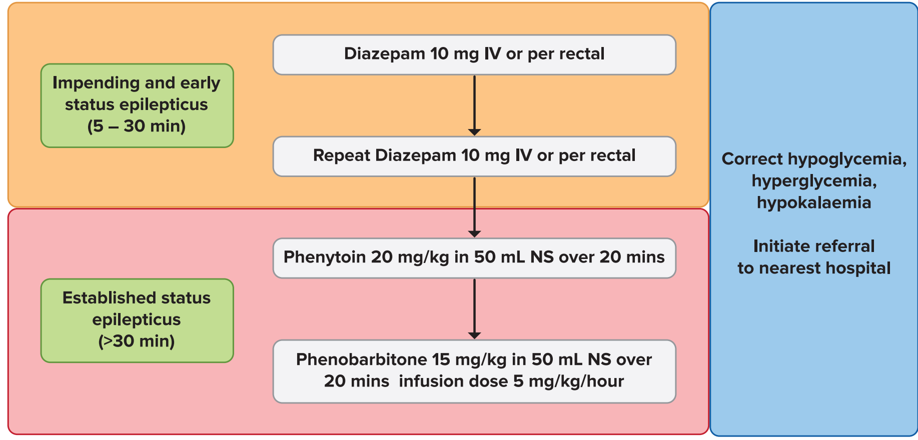


Fig. 7.3 Management of Status Epilepticus at PHC

CHAPTER 8
INFECTIOUS DISEASES

Dr. Ripa Chakma, Asso. Prof. FNPH;
*Dr. Thinley Yangzom,Head of CHD, JD*WNRH

8.1 Bacterial infections

8.1.1 Enteric or typhoid fever

DEFINITION

The bacteria are transmitted through contaminated food and water. In addition, a small number of people, called carriers, recover from typhoid fever but continue to carry the bacteria. It is transmitted from person to person by faecal-oral or urine-oral routes. Prevalent in places where sanitation is poor and water supply is contaminated.

CAUSES

- *Salmonella typhi* and *Salmonella paratyphi*
- **Incubation period:** 10-14 days

SYMPTOMS

- High grade fever (step ladder pattern)
- headache and aching in the limbs
- Constipation followed by diarrhoea
- Abdominal pain

- Skin rash (Rose spots)
- Confusion, agitation, delirium.

SIGNS

- Coated tongue
- Febrile
- Relatively low pulse rate despite high fever (Relative bradycardia)
- Rashes over the abdomen, Rose spots may be present
- Hepatosplenomegaly

INVESTIGATIONS

- Complete blood count LFT, RFT
- Widal test
- Stool culture
- Blood culture

MANAGEMENT

- Tab. Ciprofloxacin 500 mg BD 12 hourly for 7 to 14 days
- Tab. Paracetamol 500 mg 1 tab TDS
- Antiemetics
- Adequate hydration

HEALTH EDUCATION

- Maintain good sanitation and hygiene
- Eating foods that are thoroughly cooked
- Use clean water

8.1.2 Bacillary dysentery (Shigellosis)

DEFINITION

It is a bacterial gastroenteritis affecting the colon and transmitted through contaminated food, water and from person to person.

CAUSES

- Shigella species
- **Incubation period:** 1-3 days

SYMPTOMS

- Diarrhoea (bloody or mucoid)
- Colicky abdominal pain
- Tenesmus
- Nausea and vomiting
- Fever

SIGNS

- Dehydration
- Signs of shock

INVESTIGATIONS

- CBC
- Stool for culture and sensitivity

MANAGEMENT

- Assess dehydration and give ORS or IV fluids if required
- Ciprofloxacin 500 mg BD for 7 days.
- PCM 500 mg TDS

HEALTH EDUCATION

- Clean and safe drinking water
- Food sanitation
- Hand hygiene

8.1.3 Scrub typhus

DEFINITION

Scrub typhus is a mite borne infectious disease.

CAUSES

- *Orientia tsutsugamushi* - through infected larval mite bite
- Incubation period: 7 to 12 days (varies from 6-21 days)

SYMPTOMS

- Fever, headache
- Malaise, anorexia
- Rash (maculopapular involving trunk, face and limbs including palms and soles).
- Myalgia

SIGNS

- Painless papule with a black central crust (eschar) at the bit site
- lymphadenopathy

INVESTIGATIONS

- Complete Blood count
- RFT, LFT
- Serological tests

MANAGEMENT

- Tab. Doxycycline 100 mg 12 hourly for 7 days
- Paracetamol 500 mg TDS

HEALTH EDUCATION

- Prevent mite bites while in endemic areas
- Chemoprophylaxis
- Mite control

Refer to National guideline on Scrub typhus

8.1.4 Leptospirosis

DEFINITION

Leptospirosis is a zoonotic disease caused by spirochaete Leptospira.

Mode of transmission:

- Humans are incidental hosts, who get infected after exposure to contaminated environments
- Human exposure that leads to infection includes contact with contaminated soil or water (floodwater, ponds,rivers, streams, sewage), ingestion of food or water contaminated with urine or direct contact(cut or abraded skin) with animal urine
- **Incubation period:** 5- 14 days

SYMPTOMS

- Fever
- Headache
- Nausea, vomiting, abdominal pain
- Jaundice
- Myalgia/Arthralgia
- Rash

SIGNS

- Icterus
- Conjunctival congestion
- Lymphadenopathy
- Hepatosplenomegaly

INVESTIGATIONS

- CBC (Anaemia, Thrombocytopenia, Pancytopenia), LFT
- URE
- Leptospira serology(Igm/IgG)
- Polymerase Chain Reaction

MANAGEMENT

- Assess for hydration and provide IVF or ORS
- Doxycycline 100 mg BD for 7 days
- Paracetamol 500 mg TDS

8.1.5 Diphtheria

DEFINITION

It is an acute infectious disease spread mainly by droplet infection. It may lead to respiratory disease, cutaneous disease or asymptomatic carrier state.

CAUSES

- *Corynebacterium diphtheria*
- **Incubation period:** 2-6 days

SYMPTOMS

- Sore throat
- low grade fever

- Dysphagia
- Dysphasia
- Nasal discharge
- hoarseness of voice

SIGNS

- Pseudomembrane: the diagnostic feature is the "wash leather" formation of elevated grayish-white membranes on the tonsils and surrounding structures
- Stridor
- Tender cervical lymphadenopathy
- Bull-neck-swelling of the neck

INVESTIGATIONS

- Throat swab and swab from affected site for gram staining
- CBC

MANAGEMENT

- Tab. Erythromycin 500 mg QID for 14 days
- Symptomatic treatment

HEALTH EDUCATION

- Childhood immunisation
- Use face mask (Diphtheria bacteria spread from person to person, usually through respiratory droplets, like from coughing or sneezing)
- Hand hygiene

8.1.6 Pertussis or whooping cough

DEFINITION

It is a highly infectious respiratory disease spread mainly by droplets and occurs in all seasons, although more favourable in winter.

CAUSES

- *Bordetella pertussis*
- **Incubation period:** 7-14 days

SYMPTOMS

- Unproductive cough
- Fever
- Throat pain
- Tiredness

SIGNS

Severe bouts of coughing. Initially the cough is short, later gathering in speed and a characteristic sound called "whoop"

INVESTIGATIONS

- Throat swab test for C/S
- CBC

MANAGEMENT

- Symptomatic treatment

HEALTH EDUCATION

- Childhood immunisation
- Use face mask

8.1.7 Tetanus

DEFINITION

Tetanus is a serious bacterial infection acquired by contamination of wounds with tetanus spores. The bacteria produce a toxin that affects the brain and nervous system, leading to stiff muscles and spasms. If not treated promptly, it can lead to serious complications and is fatal. The bacteria is commonly found in the soil, dust and manure and can enter the body through cuts and wounds.

CAUSES

- *Clostridium tetani,* gram positive, anaerobic, spore bearing organism
- **Incubation period:** 6-10 days

SIGNS & SYMPTOMS

- Muscle stiffness starting from the jaw (lockjaw) and progressing to other parts of the body
- Neck stiffness
- Painful muscle spasms
- Difficulty in swallowing
- Fever and sweating
- High blood pressure and tachycardia

INVESTIGATIONS

- Tetanus is diagnosed clinically and so it is important to take a thorough medical history and physical examination

MANAGEMENT

- Wound care
- Tetanus Immune Globulin (TIG) and TT vaccination
- Muscle relaxant Inj. Diazepam
- Supportive care

HEALTH EDUCATION

- Primary immunisation in childhood
- Regular booster shots of tetanus vaccination is recommended every 10 years to maintain immunity

8.1.8 Anthrax

DEFINITION

- Anthrax is a serious infectious disease caused by gram-positive, rod-shaped bacteria. It occurs naturally in soil and commonly affects domestic and wild animals. Contact with infected animal products, inhalation of spores, insect bites and consumption of undercooked animal products are some of the transmission modes. It manifests as cutaneous, pulmonary and gastrointestinal anthrax.

CAUSES

- *Bacillus anthracis*
- **Incubation period:** 1-7 days

SYMPTOMS

- Skin lesions (face, neck, arms and hands)
- Fever, headache, malaise
- Shortness of breath, chest pain
- Abdominal pain, nausea, vomiting, diarrhoea

SIGNS

- Lymphadenopathy and lymphangitis
- Small blisters or bumps that may itch
- Painless skin sore with black centre (Eschar)
- Signs of lung consolidation

- Dyspnoea
- Shock
- Signs of Meningeal irritation

INVESTIGATIONS

- Complete Blood count
- Stool for culture
- Chest X-Ray

MANAGEMENT

- Tab. Penicillin-V 500 mg orally every 6 hr for 5 days OR
- Cap. Amoxicillin 500 mg orally every 8 hr for 5 days

HEALTH EDUCATION

- Awareness of the anthrax infection
- Avoid contact with infected animal carcasses or animal products
- Annually immunise domestic animals

For details refer to the National guideline on anthrax management

8.1.9 Pulmonary tuberculosis

DEFINITION

Tuberculosis is an infectious disease transmitted through droplet infection and droplet nuclei generated by sputum-positive patients.

CAUSES

- *Mycobacterium tuberculosis*
- **Incubation period:** 2-10 weeks

SYMPTOMS

- Fever
- Night sweats
- Loss of appetite
- Weight loss
- Lethargy
- Productive cough
- Hemoptysis
- Chest pain

SIGNS

- Dyspnea
- Signs of consolidation

INVESTIGATIONS

- CBC, ESR, RFT, LFT
- Blood sugar
- HIV, HBsAg, Anti-HCV
- Sputum AFB x 3
- Xpert MTB/RIF test
- Sputum culture & sensitivity
- Chest X-ray

MANAGEMENT

- Weight based 4 FDC for 2 months (intensive phase) and 2 FDC for 4 months (continuation phase)
- Tab. Pyridoxine
- Nutrition support

HEALTH EDUCATION

- Reassurance and patient education are an important part of TB treatment as is in any other diseases. Take time and interest to educate them.
  - » Explain about the disease and the treatment. Dispel myths, fears and taboos about the disease
  - » Advise the patient on the importance of complying with treatment and completing the full course of treatment
  - » Take good care of the Patient Treatment Card and bring it whenever they visit the health centre
  - » Identify a DOTS provider and educate him/her of how and when to give the medicines to the patient at home
  - » When to come to collect drugs
  - » When to do the follow up sputum examinations
  - » Explain the side effects of tuberculosis drugs and what to do if side effects develop
  - » Educate about careful disposal of sputum: cover mouth and nose while coughing or sneezing, avoiding close contacts with family members especially children
  - » To avoid alcohol, smoking and other unhealthy habits
  - » Explain the importance of good nutrition, balanced diet, sanitation and hygiene
  - » Educate the patient about the relation between TB and HIV and encourage the patient for Voluntary Counseling and Testing
  - » All sputum positive patients must complete the follow up sputum examination

For detail refer Integrated National Guidelines for Management of Tuberculosis in Bhutan for adult & National Guidelines for Management of Pediatric Tuberculosis in Bhutan

8.2 Protozoa infections

8.2.1 Amoebiasis (amoebic dysentery)

DEFINITION

Amoebiasis is a parasitic intestinal infection and most infections are asymptomatic.

CAUSES

- *Entamoeba histolytica*
- **Incubation period:** 2-4 weeks

SYMPTOMS

- Abdominal pain
- Bloody diarrhoea with mucus
- Fever

SIGNS

- Abdominal tenderness
- Signs of liver abscess (right upper quadrant pain, fever, tenderness to palpation)

INVESTIGATIONS

- CBC, ESR
- Stool for ova and cysts
- Stool culture
- Ultrasound abdomen
- Chest X-r ay if signs of liver abscess

MANAGEMENT

- Tab. Metronidazole 400 mg 8 hourly for 5 days

- Assess and treat dehydration with ORS or IV fluids as required

HEALTH EDUCATION

- Hand washing with soap and water after using the toilet or handling soiled diapers
- Proper disposal of sewage
- Avoid consumption of raw salad, peel skin of fruits
- Wash vegetables thoroughly

8.2.2 Giardiasis

DEFINITION

Giardiasis is a diarrheal disease affecting children, travellers and immunocompromised individuals and transmission occurs via foodborne, waterborne and faecal-oral routes.

CAUSES

- *Giardia lamblia*
- **Incubation period:** 7-14 days

SYMPTOMS

- Diarrhoea
- Abdominal pain
- Bloating
- Belching
- Flatulence
- Nausea, and vomiting
- Chronic giardiasis may present with loose stools, fatty stool, burping and weight loss with or without previous acute symptomatic episode
- Symptoms of malabsorption

SIGNS

- Dehydration
- Abdominal tenderness

INVESTIGATION

- Stool for ova, cysts and parasites
- Stool culture
- CBC

MANAGEMENT

- Tab. Metronidazole 400 mg 8 hourly for 5 days
- Assess and treat dehydration and malnutrition

HEALTH EDUCATION

- Follow general food safety practices
- Practise safe sex and wash hands after contact with stool
- Wash your hands often with clean running water and soap

8.3 Parasitic diseases

8.3.1 Malaria

DEFINITION

Malaria is caused by the protozoa of genus plasmodium and mainly transmitted by bite of female anopheline mosquitoes. Of the five species that cause malaria in humans, Plasmodium falciparum and Plasmodium vivax are found in Bhutan.

For details refer to Malaria manual of the VDCP

Mode of Transmission

- Transmission occurs through the bite of infected female anopheles mosquitoes and rarely through transfusion of infected blood and from mother to foetus
- **Incubation Period:** 7-30 days

SYMPTOMS

- Clinical features are non-specific and must be suspected in anyone who has travelled to a malaria endemic area
- Fever, chills, headache, nausea, vomiting
- Diarrhoea , body ache

SIGNS

- Pallor
- Jaundice
- Hepatosplenomegaly
- Cerebral malaria manifested by confusion, seizures or coma

INVESTIGATIONS

- CBC
- Microscopic examination for malaria parasites
- Rapid Diagnostic Test (RDT)

MANAGEMENT

- Chloroquine and Primaquine for P. vivax
- ACT and single dose Primaquine for P. falciparum (Refer Malaria Treatment Guideline)

HEALTH EDUCATION

- Always sleep under insecticide treated bed nets in the endemic areas
- Prevent from mosquito bites by using repellents, wearing appropriate clothing
- Check for malaria if you have fever after travel to endemic areas

8.3.2 Kala azar or leishmaniasis

DEFINITION

Leishmaniasis is a vector- borne disease caused by the trypanosomatid parasite of genus Leishmania. It is transmitted through the bite of infected female sand flies.

CAUSES

- *Leishmania donovani*
- Incubation period: 2–6 months

SYMPTOMS

- Fever, malaise, weight loss, abdominal discomfort
- Chronic diarrhoea
- Weight loss
- Darkening of skin (black fever) at later stage

SIGNS

- Pallor
- Splenomegaly
- Hepatomegaly
- Wasting

INVESTIGATIONS

- rK39 rapid test
- Microscopic examination for LD bodies in bone marrow/spleen
- Complete Blood count

MANAGEMENT

- Refer for confirmation of diagnosis
- Liposomal Amphotericin-B OR
- Amphotericin-B Deoxycholate OR
- Miltefosine
- Sodium Stibogluconate/Paramomycin are choices for alternative treatment

Refer to national treatment guideline on Leishmaniasis

HEALTH EDUCATION

- Use of insecticide treated bed nets is recommended
- Good sanitation and housekeeping prevent sandflies from lodging in the house
- Insecticide can be sprayed on outdoor breeding sites
- References: Read the National guideline 2024

8.4 Helminth infestations

8.4.1 Echinococcosis or hydatid disease

DEFINITION

Human echinococcosis is a zoonotic disease that is caused by dog tapeworms. The most common mode of transmission to humans is by the accidental consumption of soil, water, or food that has been contaminated by the faecal matter of an infected dog.

CAUSES

- *Echinococcus granulosus* (dog tapeworms)
- Incubation period: Months to years.

SYMPTOMS

- Abdominal pain,jaundice, nausea, and vomiting when cysts occur in liver
- Chronic cough, chest pain and shortness of breath when lungs are affected
- Weight loss, anorexia and weakness

SIGNS

- Icterus
- Palpable mass in RUQ

INVESTIGATIONS

- Ultrasound HBS
- CT Abdomen
- Serological test to confirm the diagnosis

MANAGEMENT

- Refer
- Tab. Albendazole therapy 400 mg 12-hourly for 3 months
- Surgery

HEALTH EDUCATION

Basic hygiene, such as washing hands with soap after gardening or touching the dog

Proper washing of vegetables that may have been contaminated by dog faeces

8.4.2 Hookworm infection (ancylostomiasis)

DEFINITION

The parasitic worms infect humans by penetrating the skin, often through bare feet walking on contaminated soil, and then migrate through the bloodstream to the lungs. From the lungs, they travel to the pharynx, are swallowed and then reach the intestines where they attach to the intestinal walls. In the intestines, they feed on blood, leading to iron deficiency anaemia and protein malnutrition in severe cases.

CAUSES

- *Ancylostoma duodenale* and *Necator americanus* (hookworms)
- **Incubation period:** 3-4 weeks

SIGNS & SYMPTOMS

- Itching and localised rash (ground itch) where the larvae penetrate the skin
- Intestinal infection can cause abdominal pain, diarrhoea, loss of appetite, weight loss and fatigue
- Cough, chest discomfort, wheezing and fever as the larvae pass through the lungs
- Iron deficiency anaemia
- Malnutrition

INVESTIGATIONS

- Stool for ova parasites and cysts
- Complete Blood Count

MANAGEMENT

- Tab. Albendazole 400 mg single dose
- Iron + Folic acid if anaemic

HEALTH EDUCATION

- Improved sanitation
- Avoid walking barefoot where there may be human faecal contamination of the soil
- Avoid defecating outdoors
- Deworming progra

8.4.3 Roundworm infestation (ascariasis)

DEFINITION

It is caused by Ascaris lumbricoides in humans. It is transmitted through ingestion of eggs in contaminated food or soil. The eggs hatch into larvae in the intestines and then the larvae migrate through the body before returning to the lungs and throat where they are swallowed again, maturing into adult worms in the intestines.

CAUSES

- *Ascaris lumbricoides* (roundworms)
- **Incubation period:** 4 - 8 weeks

SIGNS AND SYMPTOMS

- Abdominal discomfort or pain
- Loss of appetite
- Weight loss
- Visible worms in stool or rarely coming out through the nose or mouth
- Fever, cough, shortness of breath with wheezing as the larvae migrate through the lungs
- Malnutrition and growth retardation in severe cases
- Intestinal obstruction

INVESTIGATION

- Stool for ova parasites and cysts
- CBC - eosinophilia

TREATMENT

- Tab. Albendazole 400 mg single dose

HEALTH EDUCATION

- Avoid contact with soil that may be contaminated with human faeces, including with human faecal matter, "night soil" used to fertilise crops
- Wash hands with soap and water before handling food
- Proper disposal of human waste
- Safe water supply

8.4.4 Tapeworms (taeniasis)

DEFINITION

Taeniasis is the intestinal infection with the tapeworm caused by ingestion of raw or undercooked pork. Cysticercosis is caused by ingestion of tapeworm eggs, and when the larval stage of the tapeworm infects the tissues of muscles, skin, eyes and the central nervous system. When cysts develop in the brain it is called neurocysticercosis.

CAUSES

- *Taenia solium* (pork tapeworm) and *Taenia saginata* (beef tapeworm)
- **Incubation period:** is 8-10 weeks for Taenia solium and 10-14 weeks for Taenia saginata

SIGNS & SYMPTOMS

- In Taeniasis, mild symptoms (abdominal pain, nausea, diarrhoea) with passage of segments in faeces

- In cysticercosis, mostly asymptomatic. Superficial cysts may be felt under the skin
- In Neurocysticercosis, signs and symptoms depend on the location of the cysts in the brain. Symptoms range from chronic headache, blindness and may cause seizure, dementia, and personality changes.

INVESTIGATIONS

- Stool for Ova parasites and cysts

MANAGEMENT

- Niclosamide for enteric infection
- Albendazole for neurocysticercosis
- Refer

HEALTH EDUCATION

- Good personal and food hygiene
- Cook meat thoroughly, avoid eating undercooked meat

8.5 Viral infections

8.5.1 Coronavirus disease (COVID-19)

DEFINITION

It is an infectious disease caused by the SARS-CoV-2 virus. First outbreak reported on Dec 2019 from Wuhan, China which then spread throughout the world causing a pandemic. It is transmitted by droplet infection and can cause mild to severe illness, and even death

.

CAUSES

- SARS-CoV-2
- **Incubation period** - 3-14 days after first contact

SYMPTOMS

- Fever
- Cough
- Tiredness
- Loss of taste or smell
- Sore throat
- Headache
- Diarrhoea
- Chest pain
- SIGNS
- Dyspnoea
- Hypoxia

INVESTIGATIONS

- Complete blood count
- Chest X-ray
- Rapid antigen and antibody tests
- Polymerase Chain Reaction

MANAGEMENT

- Isolation
- Supportive management
- Antiviral drugs

HEALTH EDUCATION

- Importance of vaccination
- Use face mask
- Cough hygiene
- Counselling on isolation and preventing spread of infection

- Hand hygiene
- Drink plenty of water

8.5.2 Influenza or seasonal flu

DEFINITION

Influenza is an acute respiratory illness caused by influenza viruses. Spreads through droplets.

CAUSES

- *Influenza virus* (type A and B)
- **Incubation period:** varies from 1-4 days

SYMPTOMS

- Fever
- Headache
- Sore throat
- Cough
- Nasal congestion
- Muscle or body aches
- Fatigue
- Vomiting and diarrhoea in children

SIGNS

- Dyspnoea
- Hypoxia

MANAGEMENT

- Symptomatic management

HEALTH EDUCATION

- The best way to prevent the flu is by getting a flu vaccination each year
- Cough hygiene
- Avoid close contact with people who are sick
- Hand hygiene
- Hydration

8.5.3 Ebola

DEFINITION

Ebola, previously known as Ebola hemorrhagic fever, is a rare and deadly disease caused by infection with one of the Ebola virus strains. It spreads from person to person through infected body fluids, such as semen, saliva, blood, stool, urine and vomitus.

CAUSES

- *Ebola virus*
- **Incubation period:** 5-7 days (range 2-21 days)

SYMPTOMS

- Fever
- Headache
- Sore throat
- Weakness
- Tiredness
- Vomiting
- Diarrhoea
- Abdominal pain
- Vomiting with blood
- Hemorrhagic rashes whole body

- Gum bleeding

SIGNS

- Dehydration
- Hypotension
- Shock
- Bradycardia
- Tachypnea
- Hypoxia
- Uveitis

INVESTIGATIONS

- CBC LFT RFT
- Rapid antigen test
- RT-PCR

MANAGEMENT

- Isolation
- Blood transfusion if indicated
- Fluid supplement
- Ill patients require intensive supportive care

HEALTH EDUCATION

- Isolation/quarantine of cases
- Universal precautions for infection control
- Education and public awareness.

8.5.4 Japanese encephalitis

DEFINITION

Japanese encephalitis (JE) is a mosquito-borne viral disease affecting the central nervous system. Humans become infected with JE virus following bites of infected mosquitoes. Mosquitoes become infected from JE infected pigs or birds. As humans are dead-end hosts, there is no human-to-human transmission.

CAUSES

- *Japanese encephalitis virus*
- **Incubation period:** 3-15 days

SYMPTOMS

- Fever with rigours
- Headache
- Nausea
- Vomiting
- Abnormal behaviour

SIGNS

- Altered sensorium/coma
- Seizure
- Acute psychosis
- Focal weakness, hemiplegia, hemiparesis

INVESTIGATIONS

- CBC, LFT
- Serology test
- PCR

- CSF studies
- CT/MRI brain

MANAGEMENT

- Symptomatic and supportive management
- Antibiotics for secondary infections
- Early diagnosis and treatment of raised intracranial pressure and seizure
- Refer

HEALTH EDUCATION

- **Personal Protection Measures**
  - » Use long lasting insecticide treated nets (LLIN)
  - » Wear long-sleeve clothes
  - » Apply mosquito repellent on exposed body parts
  - » Use mosquito coils in rooms
- **Source Reduction**
  - » Piggeries should be away from human residence as pigs are JE virus amplifier host
  - » Draining away rainwater collections from the vicinity of human settlements
  - » Fishery ponds should be clean of vegetation at shores
- **Chemical control**
  - » Indoor residual spray including animal-sheds and piggeries
  - » Thermal fogging during outbreaks

8.5.5 Rubella

DEFINITION

It is a vaccine-preventable viral illness that is self-limiting in children but can have devastating effects on the foetus when acquired during pregnancy. The

virus is transmitted directly from person to person by droplets from nose and throat.

CAUSES

- ***Rubella virus***
- **Incubation period:** 2 to 3 weeks

SYMPTOMS

- Malaise and low-grade fever
- Enlargement of the post- auricular and posterior cervical lymph nodes
- Arthralgia
- Rash: The rash is often the first indication of the disease in children. It appears first on the face and then spreads to involve the trunk and limbs. It is a minute, discrete, pinkish, macular rash and not confluent as the rash of measles

SIGNS

- Lymphadenopathy
- Conjunctival congestion may occur
- Small red spots on soft palate (Forchheimer spots)

INVESTIGATIONS

- Serological test: Detection of rubella antibody
- Throat swab for RT-PCR

MANAGEMENT

- No specific treatment
- Arthritis usually responds to analgesic
- Other symptomatic treatment

HEALTH EDUCATION

- Active immunisation
- Isolation for 7 days after onset of rash

8.5.6 Measles

DEFINITION

A highly infectious viral disease where transmission occurs directly from person to person mainly by droplet infection.

CAUSES

- RNA paramyxovirus
- Incubation period: 6-21 days

SYMPTOMS

- Fever, malaise, anorexia
- Rash appears 2 to 4 days after onset of fever, appears on the face and spreads to the neck, trunk and limbs
- Runny nose
- Red eyes
- Cough

SIGNS

- Koplik's spots may be seen on the soft palate
- Conjunctivitis
- Erythematous, maculopapular, blanching rash
- Pharyngitis
- Lymphadenopathy

MANAGEMENT

- Symptomatic management
- Vitamin A is given once to all children suffering from measles

For details refer to IMNCI guideline

HEALTH EDUCATION

- Active immunisation
- Isolation for 4 days from days of rash in otherwise healthy patients

8.5.7 Mumps

DEFINITION

A contagious viral infection caused by mumps virus.. The disease is spread mainly by droplet infection, direct contact, or fomites.

CAUSES

- Mumps virus that belongs to *Paramyxovirus* family
- **Incubation period:** 2 to 3 weeks

SYMPTOMS

- Fever
- Headache
- Fatigue
- Anorexia
- Body ache
- Painful swelling over the angle of the jaw just below the ear
- Difficulty opening mouth (Trismus)

SIGNS

- Parotid gland swelling (can be unilateral or bilateral)
- Orchitis
- Neurological complications like meningitis, encephalitis, deafness

INVESTIGATIONS

- Oral swab for RT-PCR
- Antibody tests

MANAGEMENT

- Maintain oral hygiene and give plenty of fluids and soft food
- Symptomatic treatment
- Antibiotic for secondary infection

HEALTH EDUCATION

- Isolation
- Avoid contact with mumps infected patients for at least 5 days
- Mumps can be prevented with MMR vaccine - protects against three diseases: measles, mumps, and rubella

8.5.8 Dengue

DEFINITION

It is a mosquito-borne viral infection transmitted by aedes mosquitoes that bite during the day.

CAUSES

- Dengue viruses (serotypes 1 to 4)
- **Incubation period:** 4-10 days

SYMPTOMS

- Fever
- Headache
- Ocular pain (retro orbital pain)
- Severe backache and body ache, joints pain (“break bone fever”)
- Skin rash which appears on the limb and involves the trunk.

SIGNS

- Relative bradycardia
- Tourniquet test - usually positive
- Skin erythema
- Bleeding manifestations like petechiae, purpura, mucosal bleeding, gastrointestinal and vaginal bleeding
- Dehydration
- Shock

INVESTIGATIONS

- CBC - leukopenia and thrombocytopenia
- LFT, RFT
- Rapid diagnostic tests
- ELISA/PCR

MANAGEMENT

- Symptomatic treatment-analgesics (Paracetamol) for headache and fever
- Complete bed rest
- Manage shock by volume replacement and blood as required
- Continuous monitoring for shock and bleeding manifestations
- Avoid NSAIDs
- Refer

HEALTH EDUCATION

- Use Long Lasting Insecticide treated nets both during day and night as aedes mosquitoes bite during day
- Use mosquito repellents and appropriate clothing
- Eliminate mosquito breeding sites

For details refer to Dengue Guideline

8.5.9 Rabies

DEFINITION

Rabies is a vaccine preventable neglected viral zoonotic disease that is transmitted to humans through the bite of infected dogs. Rabies in humans can manifest in 2 forms: furious and paralytic.

CAUSES

- Rabies virus that belongs to genus Lyssavirus
- **Incubation period:** highly variable, ranging from 5 days to several years

SYMPTOMS

- Fever, headache, malaise
- Tingling sensation and paraesthesia at bite site
- Insomnia, anxiety, confusion, difficulty in swallowing

SIGNS

- Hypersalivation, agitation
- Hydrophobia
- Delusions and hallucinations accompanied by spitting and biting
- Gradual ascending paralysis
- Stupor, coma

INVESTIGATIONS

- Detection of viral nucleic acid in saliva and nuchal skin biopsy (RT-PCR)
- Detection of anti-rabies antibodies in serum and CSF
- Postmortem testing of brain tissue for rabies virus

MANAGEMENT

- No cure
- Supportive treatment only
- Isolation in a quiet room with dim light and protect from draughts of air
- Sedation with diazepam
- IV fluids and nutrition

HEALTH EDUCATION

- Pre-exposure vaccination for high-risk individuals and post-exposure vaccination for people with probable exposure to rabies
- Surveillance of rabies in dog
- Rabies vaccination in dogs

For details refer to National Rabies Guideline

8.5.10 Poliomyelitis

DEFINITION

Poliomyelitis is a highly contagious illness transmitted by faecal-oral route or by droplet infection.

CAUSES

- *Polioviruses* 1, 2 and 3
- **Incubation period:** 3-21 days

SYMPTOMS

- Paralysis of the limbs
- Dysphagia
- Fever, sore throat, fatigue and headache
- Vomiting and neck rigidity in severe illness
- No sensory symptoms
- Muscle wasting in late presentation

SIGNS

- Flaccid paralysis in one or more limbs with decreased or absent reflexes
- Sensations- Normal
- Meningeal signs
- Dysarthria
- Respiratory failure

INVESTIGATIONS

- Stool samples for RT-PCR
- CSF analysis
- MRI Brain and spine
- Nerve conduction studies

MANAGEMENT

- Isolation
- No specific treatment, only supportive
- Avoid injection as it provokes paralytic polio.
- Physiotherapy

HEALTH EDUCATION

- Immunisation is the best way to prevent polio (Refer National EPI

Manual)

8.5.11 Viral gastroenteritis

DEFINITION

It is a common illness that affects persons of all ages worldwide especially in children.

CAUSES

- *Rotavirus, norovirus, Astrovirus* and *Enteric adenovirus*
- **Incubation period:** 12 – 60 hours

SYMPTOMS

- Watery diarrhoea
- Fever
- Nausea, vomiting and abdominal pain

SIGNS

- Dehydration, hypotension, tachycardia

INVESTIGATION

- Diagnosis is based on clinical signs and symptoms. Laboratory tests are usually not necessary unless in severe cases with complications

MANAGEMENT

- No definitive treatment
- Assess and manage dehydration by ORS or intravenous fluids in severe dehydration
- Nutrition support

HEALTH EDUCATION

- Hand hygiene
- Safe and clean water
- Food hygiene

CHAPTER 9
SEXUALLY TRANSMITTED INFECTIONS (STIs)

Dr. Ambika Pradhan, Dermatologist, JDWNRH

History taking and Physical examination

- Respect the patient and ensure patient privacy
- Take a medical and sexual history, assess the risk of STIs
- Perform a physical examination of genital and anal area
- Syndromic management of STIs.

9.1 Vaginal discharge

DEFINITION

Vaginal discharge is perceived by women to be abnormal and associated with vulvar irritation or itching. Discharge can be both physiological and pathological.

CAUSES

- Commonest cause of abnormal vaginal discharge are *Trichomonas vaginalis* and *Candida albicans*
- *Neisseria gonorrhoeae* and *Chlamydia trachomatis* causes endocervical infection so may not present with discharge

SYMPTOMS

- Patient complains of vaginal discharge that may have foul smelling
- Itch and irritation may be present
- **Gonococcal infection -** 50% of women are asymptomatic. Cervical discharge, vaginal discharge, bleeding and dysuria
- **Chlamydia infection -** most women are asymptomatic. Those who have symptoms may complain of vaginal discharge, dyspareunia, dysuria and abdominal pain

SIGNS

- On external and speculum examination:
- **Trichomonas vaginalis -** vaginal discharge that may be yellowish or greenish and frothy, erythematous vaginal walls
- **Candidiasis -** white thick creamy or curdy discharge
- **Bacterial vaginosis -** white discharge and abnormal odour
- **Gonococcal and chlamydia -** speculum examination may show edematous cervix, erosion and mucopurulent discharge at the os

INVESTIGATIONS

- If testing facility is available

MANAGEMENT

- For people with symptomatic vaginal discharge, treat for N. Gonorrhea, Chlamydia trachomatis and T. vaginalis on the same visit

Table 9.1. Treatment of Vaginal Discharge

Infection	First line treatment	Alternative
Bacterial vaginosis	Metronidazole 400 mg BD for 7 days (Ideally should be avoided in first trimester)	Metronidazole 2 gm single dose
T.vaginalis	Metronidazole 400 mg BD for 7 days OR Metronidazole 2 gm single dose	Tinidazole 2 gm single dose
Candidiasis	Clotrimazole vaginal pessary 200 mg inserted intravaginally at night for 3 nights.	Fluconazole 150 mg single dose. May have to be given longer in complicated or recurrent cases. (Contraindicated in pregnancy)
N. *gonorrhoeae*	Ceftriaxone 250 mg IM single dose *Plus* Azithromycin 1 gm orally single dose (not available - give Doxycycline 100 mg BD for 7 days)	In pregnancy use Azithromycin with Inj. Ceftriaxone.
Chlamydia trachomatis	Doxycycline 100 mg BD for 7 days	Azithromycin 1 gm orally single dose OR Erythromycin 500 mg 6 hourly for 7 days

- **For all STI patients offer:**
  - » HIV and syphilis testing
  - » Other preventive services
  - » Partner treatment

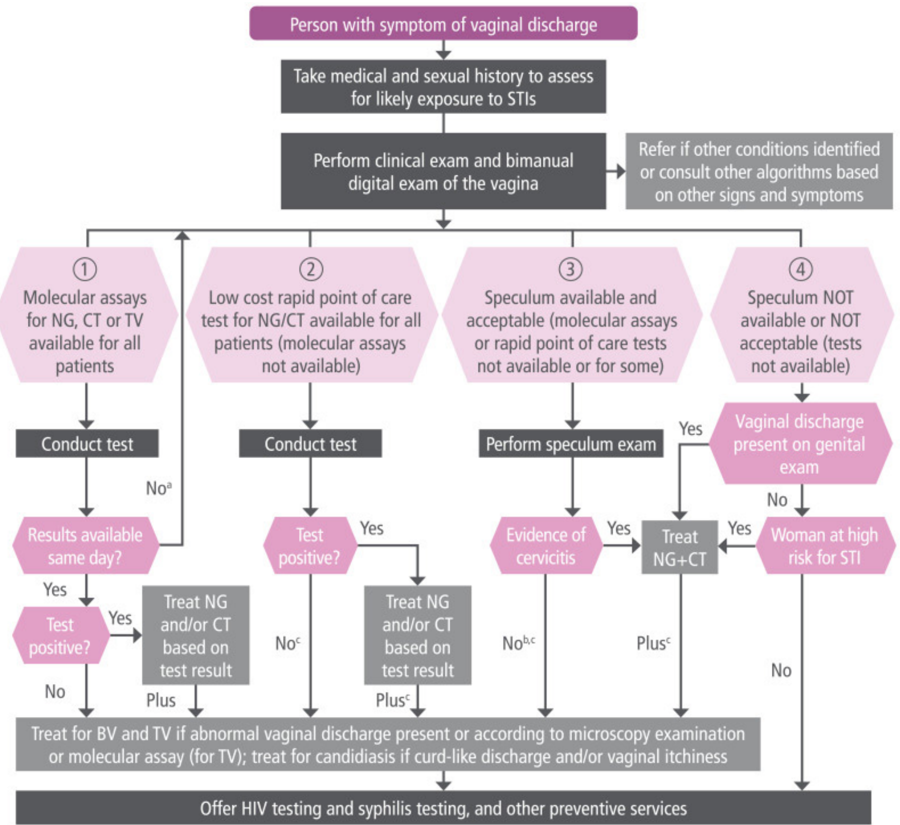
HEALTH EDUCATION

- Promote condom use
- Advice regular testing
- Partner notification and treatment

FOLLOW UP

- If symptoms persist refer to a higher centre

Flowchart: Syndromic management of vaginal discharge. Follow pathway 3 or 4 for PHC. (WHO 2021)



Source: https://shorturl.at/1OQWX

9.2 Urethral discharge

DEFINITION

Men with urethritis (inflammation of the urethra) present with urethral discharge.

CAUSES

- *N. Gonorrhoeae* and *C. trachomatis* are the commonest cause
- Others are *Mycoplasma genitalium* and *T. vaginalis*

SYMPTOMS

- Urethral discharge
- Dysuria (occasionally the only symptom)
- Itching at the tip of urethra
- Sometimes with scrotal swelling and pain, rectal pain, pain on defecation

SIGNS

- Discharge may be seen at the urethral opening, if not milk the urethra to demonstrate the discharge

INVESTIGATIONS

Urethral discharge for gram stain and culture where available

MANAGEMENT

- Syndromic treatment for both N. gonorrhoeae and C. trachomatis on the same day. For medication and dosage see above
- **For recurrent or persistent urethral discharge ask:**
  - » Is it re-infection?
  - » Was the partner treated?
  - » How was the treatment compliance?
  - » If re-infection is excluded, the partner was adequately treated and treatment compliance was good, consider infection with *M. genitalium* or *T. vaginalis*
  - » Ideally should be referred to a higher centre to see drug resistance and molecular testing

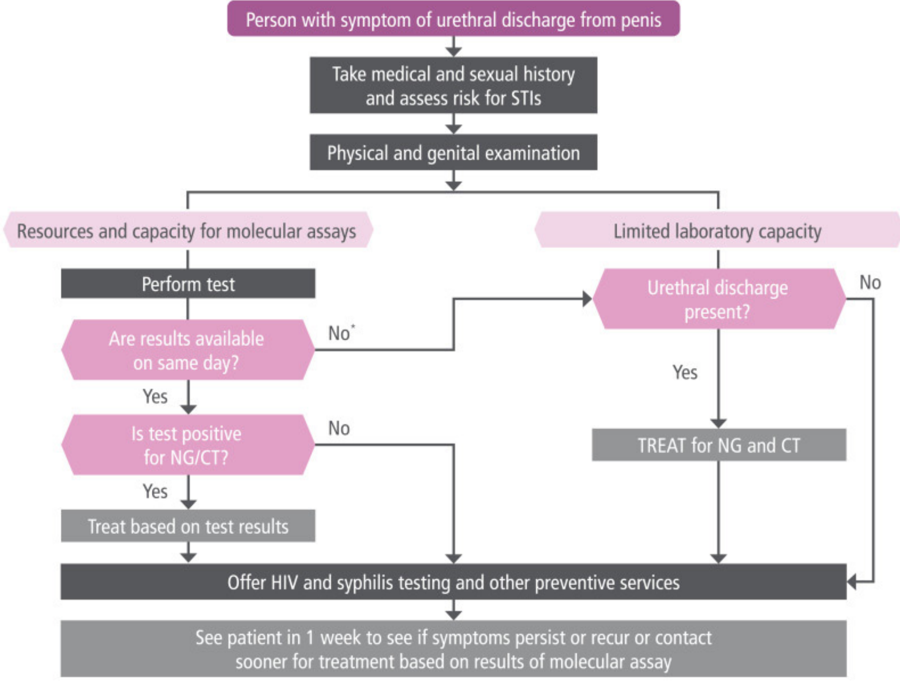
HEALTH EDUCATION

- As above

FOLLOW UP

- If symptom persistent

Flowchart: Syndromic management of urethral discharge (WHO 2021)



Source: https://shorturl.at/v1ZVg

9.3 Genital ulcer syndrome

DEFINITION

Group of sexually transmitted infections that present with anogenital ulcers.

CAUSES

- *Herpes simplex* infection (HSV I and HSV II) is the commonest cause
- Others are *Treponema pallidum* (syphilis), C. t*rachomatis serovar* L1-L3 (Lymphogranuloma venereum, LGV) and less commonly *Haemophilus ducreyi* (Chancroid)

SIGNS & SYMPTOMS

- Symptoms will depend on the causative organism:
- **Herpes simplex infection -** may present as painful grouped vesicles on genital and perianal that will ulcerate. It may be primary or recurrent
- **Primary syphilis -** painless shallow clean ulcer with indurated edge (chancre)at the site of contact early in the disease. Serological test may be negative
- **Chancroid -** painful single or multiple ulcers with slough
- **LGV -** small ulcers, may go unnoticed and present with unilateral enlarged fluctuant inguinal lymph nodes

INVESTIGATIONS

- Tzanck smear if available may help
- Test for syphilis

MANAGEMENT

- Treat for Herpes simplex infection and syphilis on the same day (if testing facility is not available)
- Treatment for Chancroid can be given based on clinical features or where cases are emerging
- If recurrent ano-genital ulcer then treat as herpes infection

Table 9.2. Treatment of Genital Ulcer Syndrome

Infection	First line treatment	Alternative treatment	Pregnancy and lactation
Genital Herpes	*Primary infection:* • *Acyclovir 400 mg TDS for 10 days* *Recurrent infection:* • *Acyclovir 400 mg TDS for 5 days (episodic therapy)* *If frequent recurrence: consider chronic suppressive therapy - refer to higher centre*		Use Acyclovir when the benefit outweighs the risk. Same dosage
Syphilis	*Primary, secondary and early latent (less than 1 year):* *Benzathine penicillin 2.4 million-unit IM single dose. (give test dose, and give in divided doses in each buttock as injection is painful)*	If penicillin sensitive: Doxycycline 100 mg BD for 14 days Or Erythromycin 500 mg 4 times per day for 14 days	Benzathine penicillin 2.4 million-unit IM single dose. (If sensitive to Benzathine penicillin refer to higher centre)
	Late latent (more than 1 year) or where duration is not known: *Benzathine penicillin 2.4 million-unit IM once weekly for 3 consecutive weeks*	Procaine penicillin 1.2 million units daily for 20 days Or Doxycycline 100 mg BD for 30 days	Benzathine penicillin 2.4 million-unit IM once weekly for 3 consecutive weeks
Chancroid	Ceftriaxone 250 mg IM single dose	Azithromycin 1 gm single dose	
Chlamydia trachomatis	Doxycycline 100 mg BD for 7 days	Azithromycin 1 gm orally single dose OR Erythromycin 500 mg 6 hourly for 7 days	

For details refer to WHO or the National guideline on STI

HEALTH EDUCATION

- Same as above

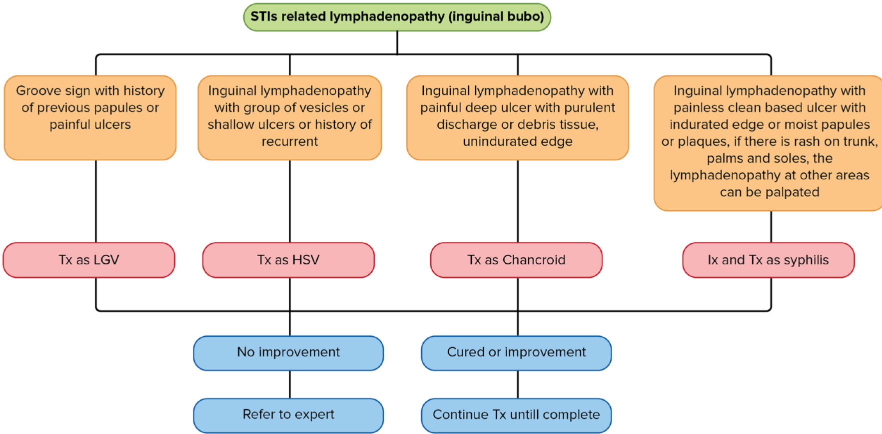
FOLLOW UP

- For treatment response
- Repeat RPR and TPHA after 6 months (in non-HIV patients), if positive and treated for syphilis) to see a fall in RPR titer

Flowchart: Syndromic management of genital ulcer (WHO 2021)

Source: https://shorturl.at/597k2

Flowchart: Management of inguinal buboes.



9.4 STI related lymphadenopathy (inguinal buboes)

CAUSES

- HSV
- LGV
- Chancroid
- Syphilis

MANAGEMENT

- See above

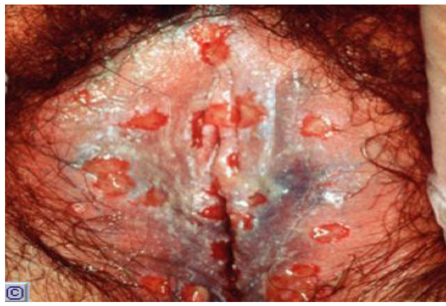


Fig. 9.1.a. Grouped ulcer in HSV

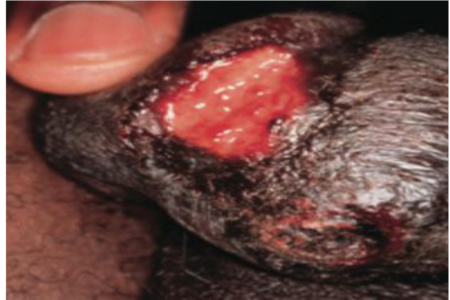


Fig. 9.1.b. Single clean ulcer in syphilis

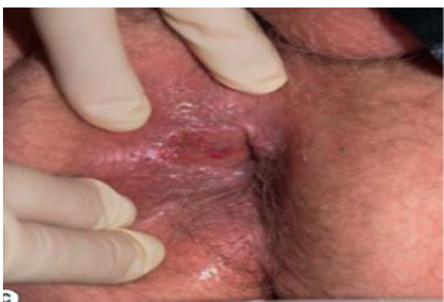


Fig. 9.1.c. Inguinal lymphadenopathy showing groove sign in LGV

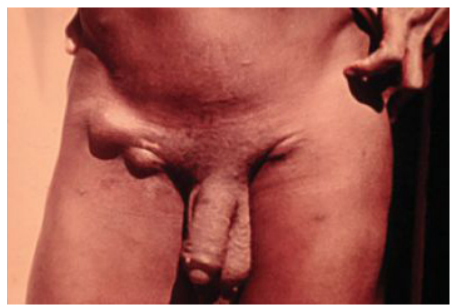


Fig. 9.1.d.. Deep ulcer in Chancroid (Photo: Bolognia)

CHAPTER 10
MENTAL HEALTH

Dr. Puja Subedi, Psychiatrist, JDWNRH
Mr. Kinley Gyaltshen, Asst.Professor, FNPH, KGUMSB
Ms. Tshering Wangmo, Sr. Lecturer, FNPH, KGUMSB
Ms. Sangay C Namgyel, Sr. Lecturer, FNPH, KGUMSB
Ms. Pema Choden, Lecturer, FNPH, KGUMSB

10.1 Mental health and mental illness

DEFINITION

Mental Health

Mental health is a state of mental well-being that enables people to cope with the stresses of life, realise their abilities, learn well and work well, and contribute to their community. It is an integral component of health and well-being that underpins our individual and collective abilities to make decisions, build relationships and shape the world we live in. Mental health is a basic human right. And it is crucial to personal, community and socio-economic development.

Mental health is more than the absence of mental disorders. It exists on a complex continuum, which is experienced differently from one person to the next, with varying degrees of difficulty and distress and potentially very different social and clinical outcomes.

Mental Illness

Mental illness, also called mental health disorders, refers to a wide range of mental health conditions and disorders that affect your mood, thinking and behaviour. Many people have mental health concerns from time to time. Mental health concern becomes a mental illness when ongoing signs and symptoms cause frequent stress and affect your ability to function. Mental illness touches everyone and we all know someone (parent, partner, child, friend, neighbour, or colleague) who is suffering or has suffered from mental illness. There is no one cause for mental illness but rather a variety of factors like genetics, environment and lifestyle that causes mental illness.

Most mental illnesses can be treated. Like all illnesses, mental illnesses respond best to treatments that are timely and effective.

CAUSES

- **Biological**
    - Genetics/hereditary
    - Substance use
    - Physical Health conditions
    - Hormonal changes (pregnancy, menopause)
    - Infections
    - Medications

- **Psychological**
    - Violence/abuse
    - Grief and loss
    - Neglect
    - Temperament
    - Adverse childhood experience

- **Social**
  - » Lack of Social support
  - » Low socio-economic status
  - » Cultural practices
  - » Natural disasters
  - » Abuse/Violence

General guideline for evaluation and treatment of people for mental illness

- Ensure the patient is comfortable
- Provide privacy for the patient to talk
- Obtain history about current symptoms, and perform MSE. (Refer Annexure for MSE Template). Ensure that the communication is clear, respectful, empathetic, and non-judgmental
- Maintain confidentiality. Obtain consent from the patient before sharing information.
- *Note: Confidentiality can only be breached when there is risk of harm to self or others.*
- You can use the MERIT Screening tool (refer Annexure) for mental health screening
- Always obtain a history of medical and/or surgical illness, perform general physical evaluation. Manage or refer for any concurrent medical conditions
- Screen all patients with mental illness for suicidal ideations. *(refer Annexure for suicide screening tool)*
- Provide psychoeducation to patients and families
- Refer to the next highest health centre, as needed
- Provide a follow-up plan. Frequency of follow up should be based on severity of symptoms.
- Connect them to relevant agencies, as needed

- Maintain proper documentation

Psychoeducation: The process of teaching clients with mental illness and their family members about the nature of the illness, including its aetiology, progression, consequences, prognosis, treatment, and alternatives

Goals of Psychoeducation:

- To ensure basic knowledge and competence of patients and their relatives about the illness
- To provide insight into the illness
- To promote relapse prevention
- Engaging in crisis management and suicide prevention

Common points in Psychoeducation

- Mental illness is caused by the interplay of biological, psychological and social factors. It can happen to anybody
- Mental illnesses are not communicable
- Mental illness is an illness like any other and can be treated effectively with timely intervention and continued treatment
- Family and social support improve the chances of recovery
- Maintaining a daily routine is helpful
- Regular follow up at the health centre and compliance to treatment is essential for recovery. Frequency of follow-up will depend on severity of symptoms.
- Follow suicide- or self-harm safety-plan, as applicable

- Confidentiality: A principle of professional ethics requiring providers of mental health care or medical care to limit the disclosure of a patient's identity, their condition or treatment, and any data entrusted to professionals during assessment, diagnosis, and treatment.

- Risk of Harm: Behaviours that threaten to harm self or others, psychosis, or becoming extremely withdrawn or depressed. These are severe mental health issues that often constitute urgent or emergent situations.

- The PEMA Secretariat: To avail helpline services, anyone can call 1010/112. All mental health related calls will be forwarded to the PEMA Helpline. The PEMA Helpline provides information, online counselling as well as referral and linkages. Call 1098 to report or avail services for women and child protection issues

Advocacy, Referral and Linkages to SUD treatment and rehabilitation

1. Dorji Tshering @17727469
2. Sonam Jamtsho @77978777
3. Office @02332862

National Drug Treatment and Rehabilitation Center, The PEMA Secretariat

1. Pema Galek @17922653
2. Tsagay @71690129
3. Kinley Tshering @17326342
4. Leki Norbu @77852550

The PEMA Helpline

1100 & 112

10.2 Psychiatric disorders

10.2.1 Substance use disorders

DEFINITION

Substance use disorder is a chronic, relapsing disorder characterised by compulsive drug seeking, continued use despite harmful consequences, and long-lasting changes in the brain. It affects a person's brain, behaviour and emotions causing an inability to control the use of the substance. It is

characterised by repeated use that can result in tolerance, withdrawal and compulsive behaviours. It is considered both a complex brain disorder and a mental illness.

Psychoactive substance/drug: Any substance, which, when taken into the body, alters its function physically and/or psychologically.

Intoxication: Clinically significant problematic behavioural or psychological changes that developed during, or shortly after, exposure to psychoactive substances.

Tolerance: defined by either of the following:

- A need for markedly increased amounts of the substance to achieve intoxication or desired effect
- Markedly diminished effect with continued use of the same amount of the substance

Withdrawal: A cluster of physical and/or psychological symptoms a person experiences when they suddenly stop or cut back the use of a substance after prolonged duration of use

Common drugs (psychoactive substances) abused in Bhutan

1. **Alcohol:** (Refer section on Alcohol Use Disorder below)
2. **Opioids:** Tramadol (available as SP+), Heroine (available as brown sugar), dextro-propoxyphene (available as SP/Spasmo-Proxyvon capsule, Relipin), Codeine (available as oral tablets, cough syrup Corex, Phensedyl), Morphine (available orally or as injections), Pethidine
3. **Cannabinoids** such as in marijuana, hashish, weed, black
4. **Stimulants:** Amphetamine and methamphetamine (available as party drugs such as Ecstasy, Ice or Yabba), Ephedrine (available in cough and cold-flu tablets such as Sinarest, Tippy in Thailand), Methylphenidate (available as Ritalin or Concerta for ADHD)

5. **Sedatives and hypnotics** like Nitrazepam (available as N10 or Nitrosun) Diazepam
6. **Inhalant** drugs such as dendrite, correcting fluid, paint thinners, petrol
7. **Nicotine** in cigarettes, tobacco chewing and snuff
8. **Arecholine** in areca-nut and beetle
9. **Caffeine** and **theophylline** in Coffee and tea

SIGNS & SYMPTOMS

- Substance intoxication or withdrawal will depend on the type of substances used:

Refer Annexure for Screening tools: MERIT Screening Tool and/or CAGE-AID

Table 10.1. Signs of Substance Abuse and Withdrawal

Substance	Signs of Intoxication	Signs of Withdrawal
Opioids	• Initial euphoria followed by apathy, dysphoria • Psychomotor agitation or retardation • Impaired judgement • Pupillary constriction • Drowsiness or coma • Slurred speech • Impairment in attention or memory *Note: there may be pupillary dilation due to anoxia from severe overdose*	• Dysphoric mood • Nausea or vomiting • Muscle aches • Lacrimation or rhinorrhea • Pupillary dilation, piloerection, or sweating • Diarrhoea • Yawning • Fever • Insomnia

Substance	Signs of Intoxication	Signs of Withdrawal
Cannabis	• Impaired motor coordination • Euphoria • Anxiety • Perceptual disturbance (e.g., sensation of slowed time, impaired judgement) • Social withdrawal • Conjunctival injection • Increased appetite • Dry mouth • Tachycardia	• Irritability, anger, or aggression • Nervousness or anxiety • Sleep difficulty (e.g., insomnia, disturbing dreams) • Decreased appetite or weight loss • Restlessness • Depressed mood • At least one of the following physical symptoms causing significant discomfort: • Abdominal pain, • Shakiness/tremors • Sweating, fever, chills, or headache
Sedatives	• Slurred speech • Incoordination • Unsteady gait • Nystagmus • Impairment in cognition (e.g., attention, memory) • Stupor or coma	• Autonomic hyperactivity (e.g sweating or pulse rate greater than 100 bpm) • Hand tremor • Insomnia • Nausea or vomiting • Transient visual, tactile, or auditory hallucinations or illusions • Psychomotor agitation • Anxiety • Seizures

Substance	Signs of Intoxication	Signs of Withdrawal
Inhalants	Two or more of the following: • Dizziness • Nystagmus • Incoordination • Slurred speech • Unsteady gait • Lethargy • Depressed reflexes • Psychomotor retardation • Tremor • Generalised muscle weakness • Blurred vision or diplopia • Stupor or coma • Euphoria	• Non-specific
Tobacco	• Non-specific	• Irritability, frustration, or anger • Anxiety • Difficulty concentrating • Increased appetite • Restlessness • Depressed mood • Insomnia

Substance	Signs of Intoxication	Signs of Withdrawal
Stimulants	Two or more of the following: • Tachycardia or bradycardi • Pupillary dilation • Elevated or lowered blood pressure • Perspiration or chills • Nausea or vomiting • Evidence of weight loss • Psychomotor agitation or retardation • Muscular weakness • Respiratory depression • Chest pain • Cardiac arrhythmias • Confusion • Seizures • Dyskinesias, dystonias • Coma	• Dysphoric mood • Fatigue • Vivid, unpleasant dreams • Insomnia or hypersomnia • Increased appetite • Psychomotor retardation or agitation.

MANAGEMENT

1. Supportive Management

- If patient is acutely intoxicated:
  - ◊ Monitor vital signs
  - ◊ Perform general examination
  - ◊ If patient is stable, wait for effects of the substance to end
  - ◊ If vital signs are not stable, refer section on Poisoning and Overdose for management
- Most patients can be managed on an OPD basis, however some patients may need admission and monitoring

2. **Pharmacological treatment**
    - Symptomatic Treatment (as applicable)
        - ◊ Tab. Amitriptyline 25-100 mg HS PO for 1-2 weeks for sleep disturbance, mood disturbance including irritable and/or depressed mood
        - ◊ Tab. Ibuprofen 400 mg PRN PO (up to TDS) for 3-5 days for aches and pains
        - ◊ Tab. Dicyclomine 10 mg PRN PO (up to TDS) for 3-5 days for abdominal pain or cramps
        - ◊ Tab. Metoclopramide 10 mg PRN PO (up to TDS) for 3-5 days for recurrent vomiting
        - ◊ Oral Rehydration Solution po as tolerated for repeated loose stools
        - ◊ Refer Management of Seizures (if applicable)
3. **Psycho-social treatment**
    - Assess motivation for treatment
    - Family and community support are important components of supportive therapy
    - Provide Brief Intervention (refer below)
    - Asses for personality characteristics of the patient
    - Current and past social, interpersonal and occupational functioning

FOLLOW UP

- Review after one-two week(s) as needed
- Regular follow-up for one-two years, for relapse prevention (refer below for psychological exercises for Relapse Prevention)

REFER

- Co-occurring other mental or physical illness
- For continued Care (to SUD program/Rehabilitation)

10.2.2 Alcohol use disorder

DEFINITION

Alcohol related disorders are the leading cause of morbidity and mortality in Bhutan. Patients with alcohol problems may present for treatment for other physical complaints, or may only come for treatment when they have developed symptoms related to cirrhosis of liver or other complications. There are very limited interventions at later stages, therefore *we want to identify patients with alcohol problems as early as possible before they develop liver cirrhosis*. Therefore, we recommend all patients should be screened for alcohol use disorders.

Use AUDIT or CAGE-AID (refer Annexure) for screening to identify harmful pattern of use or dependence

Harmful pattern of Alcohol use: Refers to when an individual uses alcohol even when he/she experiences health and other social and financial problems related to alcohol.

Alcohol Dependence: Three main criteria to be fulfilled:

1. Need or urge to take alcohol on a continuous basis (also called craving)
2. Development of tolerance
3. Experience withdrawal

The most difficult part of quitting alcohol is due to severe withdrawal symptoms. Any person with Alcohol Dependence needs to undergo detoxification.

Alcohol withdrawal

Table 10.2. Alcohol withdrawal

Manifestation	Timeline	
	Signs and Symptoms	Onset since last drink (in hours)
Acute Withdrawal Symptoms	• Autonomic hyperactivity (e.g. sweating or pulse rate greater than 100 bpm) • Anxiety • Tremors • Nausea or vomiting • Insomnia	• 6-24
Withdrawal Seizures	Single or multiple episodes of Generalised Tonic Clonic Seizures	• 12-24
Perceptual disturbances	• Hallucinations (auditory, visual), usually transient. • In some patients symptoms may persist for longer duration	• 12-48
Delirium Tremens	• Fluctuating sensorium, disorientation in time, place and person • Hallucinations, usually visual, content may include frightening images, small figures • Agitation and restlessness • Vitals instability (raised BP, Tachycardia, Tachypnoea)	• 48-72

MANAGEMENT

1. The mainstay of treatment is *detoxification*. **Detoxification** essentially is allowing the alcohol to get metabolised or excreted from the body while medications like diazepam are given to calm the patient.
   a. *The treatment is usually provided in a health centre.* However, in case of unavailability of bed or other resource constraints, patients with good family support may be offered treatment on an Out-patient

basis, with proper psychoeducation.

b. Family members need to be with the patient at all times to ensure safety and security of the patient as there is a high risk of patients falling, injuring or wandering away from the ward.

c. Detoxification regime is as follows:

- ◊ Tab. Diazepam 15 mg TDS x 2 days
- ◊ Then 10 mg TDS x 2 days
- ◊ Then 5 mg TDS x 2 days
- ◊ Then 5 mg HS x 2 days

d. If the patient is in DT, is agitated, or having severe symptoms, add following in between routine doses:

- ◊ Inj. Diazepam 5-10 mg IV slowly over 3-5 mins, (may be repeated after every 30 mins, not exceeding 40 mg/day)
- ◊ Tab. Diazepam 5-10 mg PO as needed (not to exceed 3-4 doses)
- ◊ *Note: Ensure that the patient is not too sedated*

e. If persistent sleep disturbance:

- ◊ Tab Amitriptyline 25-100 mg HS PO for one to two weeks **(as add-on treatment)**

2. Supportive Care: Alcohol patients may also require treatment for other common conditions:

a. Monitor vitals 6-8 hourly including:

- ◊ BP (blood pressure)
- ◊ PR (pulse rate)
- ◊ Oxygen saturation (SPO2)
- ◊ GCS (Glasgow Coma Scale)
- ◊ Orientation (time, place, person)

Note: If vitals unstable, refer section ABCDE for management

b. Malnutrition, dehydration and thiamine deficiency:

◊ Inj. Thiamine 100 mg IV stat (if available), followed by 75 mg twice or thrice PO per day for up to three months

◊ IV fluids (as needed)

◊ Antiemetics as needed

c. Trauma:

◊ Perform physical examination from Head to Toe

d. Infections

◊ Routine screening (e.g., respiratory tract infection, infected wound, urinary tract infection)

e. Upper GI Bleed: Haematemesis and/or malena

◊ Refer section on UGIB for management

3. Psycho-social treatment

a. Psychoeducation

b. Brief Intervention (refer below)

c. Family and community support are important components of supportive therapy

4. Relapse Prevention

a. Writing their drinking/substance use history

b. Weighing advantages and disadvantages of drinking/continuing substance use

c. Identifying urges and trigger factors to drinking/substance use and specific skills to deal with them during their detoxification period

d. Develop healthy alternative pastimes and recreations: engaging exercise, developing new hobbies

e. Attend self-help sober groups such as Alcoholic Anonymous/

Narcotics Anonymous

Drinking to be avoided absolutely in the following Situations

- Pregnancy
- History of Alcohol dependence
- Anxiety, Depression and Psychosis
- Heart Diseases, Hypertension, Diabetes Mellitus.
- Driving and biking
- Operating machinery
- Exercising (swimming, jogging, etc.)

FOLLOW UP

- If patient is provided detoxification on OPD basis, review every 3-4 days or as needed, until completion of treatment
- Follow-up regularly for relapse prevention for one-two years

REFER

- Co-occurring other mental or physical illness
- Complicated withdrawal (withdrawal seizures, Delirium Tremens, persistent perceptual disturbance)

Note: Refer above for contact information of The PEMA to liaison with Rehabilitation Center or other intervention.

- For continued care (AA, SUD Program, Rehabilitation)

Table 10.3. Brief Intervention

Brief Intervention	
• **The 5As:** an approach to help patients/clients who are ready to change their behaviour	• **The 5Rs:** an approach to help increase motivation in patients/clients who are not yet ready to change their behaviour
• **Ask:** Identify and document substance and/or alcohol use status for patients at every visit. • **Assess:** In a clear, strong, and personalised manner, urge every to quit their substance of use • **Advise:** is the patient willing to make a quit attempt at this time • **Assist:** For the patient willing to make a quit attempt, use counselling and pharmacotherapy to help him or her quit • **Arrange:** Schedule followup contact, preferably within the first week after the quit date.	• **Relevance:** Encourage the patient to indicate why quitting is personally relevant • **Risks:** Ask the patient to identify potential negative consequences of substance use • **Rewards:** Ask the patient to identify potential benefits of stopping substance use • **Roadblocks:** Ask the patient to identify barriers or impediments to quitting • **Repetition:** The motivational intervention should be repeated every time an unmotivated patient has an interaction with the health worker. Substance users who have failed in previous quit attempts should be told that most people make repeated attempts before they are successful

10.2.3 Anxiety disorders

DEFINITION

Anxiety is the anticipation of future threats. Types of common anxiety disorders.

1. **Social Anxiety Disorder:** Persistent, intense fear or anxiety about specific social situations because you believe you may be judged negatively, embarrassed or humiliated. Anxiety-producing social situations are avoided or endured with intense fear or anxiety.
2. **Panic Disorder:** Panic attack is defined as an abrupt surge of intense fear or intense discomfort that reaches a peak within minutes characterised by a cluster of symptoms (refer common symptoms below). Panic disorder is

defined as recurrent panic attacks with anticipatory fear of another panic attack.

3. **Generalised Anxiety Disorder:** Involves persistent and excessive worry that interferes with daily activities occurring almost everyday for the last six months or more.

SYMPTOMS

- Sense of uneasiness
- Restlessness
- Dry mouth
- Palpitations
- Choking sensation, or difficulty in breathing
- Cold, sweaty, numb, or tingling hands or feet
- Nausea
- Feeling tired or exhausted
- Dizziness
- Unable to stop worrying or excessive worrying
- Inability to concentrate
- Disturbance in sleep

MANAGEMENT

- Pharmaceutical treatment
  - » Tab. Amitriptyline 12.5-100 mg HS PO; gradually increase the dose by 25 mg/week for two weeks. Indications: Sleep disturbance, persistent symptoms for >1 month, significant impairment of functionality

    OR

  - » Tab. Fluoxetine 20 mg OD (in the morning, after food) PO for two-four weeks
  - » Tab. Diazepam 5 mg PRN PO for 2-3 days **(as add-on treatment)**

» Indication: Severe/intense anxiousness and/or restlessness

Duration of treatment should be equal to or longer than the Duration of illness or six months whichever is longer.

- Psycho-social treatment
  - » Psychological First Aid
  - » Psycho-education
  - » Relaxation Techniques

FOLLOW UP

- Review after two-four weeks
- Increase dose of medications if minimal improvement, and review after 2-4 weeks
- Follow-up monthly for at least 6 months

REFER

- Severe symptoms with no improvement at review; OR
- No significant improvement after second review, following dose increment

10.2.4 Mood disorders

DEFINITION

A mood disorder is diagnosed when sadness or elation is more intense than usual, is accompanied by certain other symptoms, and impairs the ability to function physically, socially, and at work. Mood Disorders can be classified as:

1. **Depressive Disorders:** also known as depression is a common mental disorder. It involves a depressed mood or loss of pleasure or interest in activities for two weeks or more. Depression is different from regular mood changes and feelings about everyday life. It can affect all aspects of life, including relationships with family, friends and community.
2. **Bipolar Affective Disorders (BPAD):** formerly called manic-depressive

illness or manic depression is a mental illness that causes unusual shifts in a person's mood, energy, activity levels, and concentration. These shifts can make it difficult to carry out day-to-day tasks. It includes episode(s) of elevated mood (called mania) or episode(s) of depressed mood (called depression) with a history of manic episode(s) in the past. BPAD is a chronic mental illness, and requires long-term treatment. If patients defaulted treatment without advice from psychiatrist, and/or presented with relapse of symptoms: review and reinitiate on previous medications, and gradually build up to previous effective dose. In order to ensure and improve compliance to treatment and medication, it is important to understand why the patient defaulted their treatment and to address their concerns.

SYMPTOMS of Depression

- Feeling sad, empty, or irritable most of the time
- Loss of interest in pleasurable activities
- Feeling tired or low on energy, multiple aches and pains
- Changes in appetite or weight (loss of appetite or overeating)
- Sleep disturbance (insomnia or hypersomnia)
- Poor concentration
- Social isolation
- Loss of motivation, low self-esteem,
- Feelings of excessive guilt
- Feelings of hopelessness about the future
- Thoughts about dying or suicide

Refer Annexure for Screening tool for depression: PHQ-9

MANAGEMENT

- Pharmaceutical treatment
  - » Tab. Amitriptyline 12.5-100 mg HS PO, gradually increases dose by 25 mg/week for two weeks. Indications: significant sleep disturbance

    OR

  - » Tab. Fluoxetine 20-40 mg OD (in the morning, after food) PO for two-four weeks, increases by 20 mg after two weeks. Indications: students, atypical symptoms (hypersomnia and/or over-eating)

  Duration of treatment should be equal to or longer than the Duration of illness or six months whichever is longer

  Note: Depressive Episode in patients with a diagnosis of Bipolar Affective Disorder should be treated in combination with antipsychotics (Refer management of mania for antipsychotic doses).
- Psycho-social treatment
  - » Psychological First Aid
  - » Psycho-education
  - » Relaxation Techniques

FOLLOW UP

- Review after two-four weeks
- Increase dose of medication as needed, and review after 2-4 weeks
- Follow-up monthly for at least 6 months

REFER

- Severe symptoms with catatonia, psychosis and/or suicidal ideations (refer psychotic disorders and psychiatric emergencies for management).
- Associated with pregnancy or child-birth
- Symptoms present in children and teenagers (18 years or below)
- Co-occurring Substance Use Disorder (Refer Substance Use Disorder for management)

- No improvement after dose increment

SYMPTOMS of Mania

- Mania
- Inflated self-esteem or grandiosity
- Decreased need for sleep
- Increased talkativeness
- Flight of ideas
- Shorter attention span
- Increase in goal-directed activity
- Engaging in activities that hold the potential for painful consequences, e.g. excessive spending, increased and/or unsafe sexual activity

MANAGEMENT

- Pharmaceutical treatment
  - » Tab. Risperidone 2-12 mg per day PO, divided into three doses for two-four weeks:
    - ◊ Initiate at 2-6 mg PO per day divided into three doses 8 hourly
    - ◊ Increase by 2 mg every three days to a maximum dose of 12 mg per day (divided into three doses) based on response
    - ◊ Maintain at lowest effective dose

AND/OR

  - » Tab. Chlorpromazine 100-300 mg HS PO for two-four weeks (if patient has significant sleep disturbance)
  - » If acute agitation or aggression, refusal to take medications:
    - ◊ Inj. Haloperidol 5-10 mg IM PRN

OR

    - ◊ Inj.Chlorpromazine 100 mg IM PRN
  - » Tab. Diazepam 5-10 mg PRN PO for 2-3 days (as add-on treatment).

Indication: disturbed sleep, restlessness

Note: Antidepressants like Amitriptyline and Fluoxetine can trigger and/or worsen manic episodes. **AVOID PRESCRIBING AMITRIPTYLINE TO PATIENTS WITH MANIC EPISODE OR DIAGNOSIS OF BIPOLAR AFFECTIVE DISORDER, when they present with sleep disturbance.**

- Duration of treatment
  - » 1st episode: Minimum for one year
  - » 2-3 episodes: Minimum for 5 years
  - » >3 episodes: Life Long
- Psycho-social treatment
  - » Psychological First Aid
  - » Psycho-education

FOLLOW UP

- If the patient presents with mild symptoms, with good family support, initiate treatment review after 2 weeks or as needed
- Follow-up regularly for at least one year of symptom free period

REFER

- » First episode
- » Severe symptoms with risk of harm to self and others

10.2.5 Psychosomatic disorders

DEFINITION

Psychosomatic disorder is diagnosed when a person has a significant focus on physical symptoms, such as pain, weakness or shortness of breath, to a level that results in major distress and/or problems functioning. The individual has excessive thoughts, feelings and behaviours relating to the physical symptoms. The physical symptoms may or may not be associated with a diagnosed medical

condition, but the person is experiencing symptoms and believes they are sick. Physical symptoms are real. Emotional stress can cause physical symptoms and physical symptoms can lead to more emotional stress. Emotional stress can make physical symptoms worse.

A person is not diagnosed with somatic symptom disorder solely because a medical cause can't be identified for a physical symptom. The emphasis is on the extent to which the thoughts, feelings and behaviours related to the illness are excessive or out of proportion. Psychosomatic disorders can trigger or give rise to different symptoms and illnesses, both physical and mental.

It is important to validate patients' symptoms, and explain the nature of illness. Patients should be informed that recovery may be slow, and compliance to treatment and regular follow-up are essential for recovery.

SYMPTOMS

- Headaches
- Chest pains
- Difficulty in breathing
- Difficulty in swallowing
- Nausea and vomiting, and/or loose stools
- Aches and Pains (Abdominal, Lower back, generalised)
- Skin rashes
- Frequent urination
- Burning sensation the whole body etc.

MANAGEMENT

- Pharmacological treatment
    - » Tab. Amitriptyline 12.5-100 mg HS PO, gradually increase dose by 25 mg/week for four weeks

OR

- » Tab. Fluoxetine 20 mg OD (in the morning, after food) PO increase by 20 mg after 2 weeks (to max of 40 mg) for four weeks

AND

- » Symptomatic management
- Psycho-social treatment
  - » Psychological First Aid
  - » Psychoeducation
  - » Relaxation techniques
  - » Reassurance after history and detailed physical examination

FOLLOW UP

- Review after four weeks
- Increase dose of medication as needed, and review after four weeks
- Follow-up regularly

REFER

- No improvement after second review
- Co-occurring other mental and/or physical illness

10.2.6 Trauma and stress related disorders

DEFINITION

Trauma and stress related disorders are serious psychological reactions that develop in some individuals following:

1. Exposure or experiencing of a traumatic event or life-threatening experience, including, but no limited to, significant physical or sexual assault, natural disaster, an accidents, severe illness; **AND/OR**
2. Stressful events including, but not limited to, divorce/separation, loss of employment, financial loss, upcoming exams, or failing exams, loss of a family member, etc.

SYMPTOMS

- Anxiousness
- Mood disturbances (low mood, irritability)
- Sleep disturbances,
- Headaches,
- Easy startling, hypervigilance
- Difficulty in social life/interaction
- Difficulty carrying out daily activities
- Impaired attention and concentration

MANAGEMENT

- Pharmacological treatment
  - » Tab Diazepam 5 mg PO PRN for few days, if patient in acute distress

AND/OR

  - » Tab Amitriptyline 12.5-50 mg HS PO, for two-four weeks, if symptoms have been persistent for a week or more and causing significant distress and/or if there is sleep disturbance
- Psychological treatment
  - » Psychological First Aid
  - » Psychoeducation
  - » Relaxation techniques
  - » Secure social support
  - » Connect to relevant agencies

FOLLOW UP

- Review after two weeks
- Increase dose of medication as needed, and review after one-two weeks
- Follow-up regularly until symptom free

REFER

- Severe symptoms with significant impairment in functioning, and/or suicidal ideations and/or psychotic symptoms
- Co-occurring other mental illness

10.2.7 Psychotic disorders

DEFINITION

Psychosis is an illness of the brain in which thoughts are disordered and reality distortions occur, like hallucinations and delusions. It's a symptom that can appear in several physical and mental diseases.

Types:

- Acute psychosis/Brief psychotic episode:
  - » An episode of psychosis that lasts for less than a month
  - » It may be primary or secondary
  - » Secondary causes may include:
    - ◊ Substance intoxication or withdrawal
    - ◊ Medications (such as Steroid, ATT, etc)
    - ◊ Other disorders such as Parkinson's, SLE, etc
    - ◊ Child-birth
    - ◊ CNS infections
- Schizophrenia: Chronic illness whereby psychotic symptoms have been persistent for a month or more with impairment in functionality for over six months, and age of onset of symptoms is usually around teen to late 20's.

SYMPTOMS (core)

- **Delusions:** Firmly held, false belief, despite evidence to the contrary that is not understandable in the context of a person's social, cultural, and educational background.

- **Hallucinations:** is the presence of perception in the absence of an external stimuli. It can occur in any of the sensory modality: Auditory(hearing), visual(seeing), tactile(touch), olfactory(smell), gustatory (taste).

SYMPTOMS (associated)

- **Disorganised thinking and/or behaviour:** Disturbance in how thoughts are organised and expressed, expressing themselves in unusual ways when they speak or write. Disorganised behaviour refers to actions that seem extremely bizarre or without purpose, leading to difficulties in performing activities of daily living.
- **Negative Symptoms:** Negative symptoms of psychosis refer to the absence or reduction of normal behaviours and emotions, significantly impacting a person's activities of daily living, for e.g., reduced or absent facial expression, monotonous speech, lack of interests and/or motivation,
- Psychomotor agitation or retardation
- Aggression and/or violence

MANAGEMENT

- Pharmacological treatment
  - » Tab. Risperidone 2-12 mg per day PO, divided into three doses for two-four weeks:
    - ◊ Initiate at 2-6 mg PO per day divided into three doses 8 hourly
    - ◊ Increase by 2 mg every three days to a maximum dose of 12 mg per day (divided into three doses) based on response
    - ◊ Maintain at lowest effective dose

AND/OR

  - » Tab. Chlorpromazine 100-300 mg HS PO for two-four weeks (if patient has significant sleep disturbance)
  - » Inj. Haloperidol 10 mg IM PRN. IfIndication: acute agitation or aggression, refusal to take medications:

  - » Inj. Haloperidol 5-10 mg IM PRN

OR

  - » Inj. Chlorpromazine 100 mg IM PRN
  - » Tab. Diazepam 5-10 mg PRN PO for 2-3 days (as add-on treatment). Indication: disturbed sleep, restlessness
  - » Duration of treatment:
    - ◊ *1st episode: Minimum for one year*
    - ◊ *2-3 episodes: Minimum for 5 years*
    - ◊ *>3 episodes or diagnosis of Schizophrenia: Life Long*
- Psychosocial Treatment
- Psychological First Aid
- Psychoeducation
- Secure family and social support
- Ensure regular follow-up

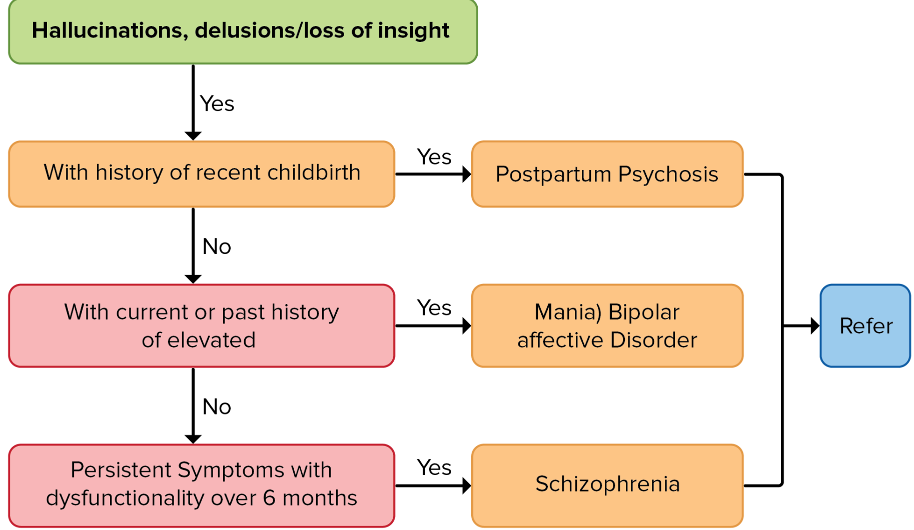
FOLLOW UP

- If patient has mild symptoms with good family support, initiate treatment and review after one week or as needed
- Increase dose of medication and review after one week
- Follow-up regularly for at least one year of symptom free period

REFER

- First episode
- Risk of harm to self or others
- Co-occurring other mental or physical illness
- No improvement after dose increment

Flowchart: Diagnosis of Psychosis



10.3 Psychiatric emergency

DEFINITION

Refers to the sudden and significant psychological distress to the individual/ others resulting in high risk of sudden disability or death, thus requiring immediate medical attention and/or referral.

- Psychiatric emergencies include:
- Suicidal ideations and/or attempts
- Catatonia
- Agitation and/or aggression
- Perinatal Psychosis
- Dystonic reaction due to psychotropic drugs
- Delirium
- Alcohol withdrawal syndrome *(refer section on Alcohol Use Disorder)*

1. **Suicidality:** Defined as the risk of suicide, usually indicated by suicidal

ideation or intent, especially as evident in the presence of a well-elaborated suicidal plan. It can also be defined to include suicidal thoughts, plans, gestures, or attempts. Ensure the patient has social support, and activate 112, and refer to the nearest health centre with a Medical officer or Clinical Counsellor. Refer Annexure for Suicide Screening tool.

2. **Catatonia:** It is a neuropsychiatric syndrome characterised by abnormal movements, behaviours, and withdrawal. It is most often seen in mood disorders but can also be seen in psychotic, medical, neurologic, and other disorders. Patients with Catatonia are at high risk of developing medical complications such as dehydration, infections, Acute Kidney Injury, and sustaining physical injury, and thus require immediate referral and intensive treatment.

SYMPTOMS of catatonia include, but not limited to :

- Stupor/extreme withdrawal, whereby the patient is not responsive to external stimuli
- Poor oral intake/refusal of food and water
- Psychomotor agitation or retardation
- Abnormal posturing for prolonged durations
- Rigidity of muscles
- Mutism
- Negativism or doing opposite of the other person does
- Excessive compliance to actions of others

3. **Aggressive/violent patient:** Violent patient- patient who uses physical / verbal intimidation. Aggressive behaviour in patients with psychiatric disorders has many possible causes. Violent patients pose a threat to himself/herself and others.

MANAGEMENT

- Keep an arm's length distance when dealing with violent/aggressive patients

- Attempt verbal de-escalation and distraction (refer below)
- Move other patients/relatives to safety
- Attempt physical restraining with support of security staff/ people
- Seek extra help for physical restraining of the patient, if the patient does not respond to chemical restraint (oral sedatives or injection) and is a potential threat to his/her and other patients' safety
- If physical restraint falls, administer medications to the violent patients or high risk with the help of security personnel
- Inform Medical officer, if at any point a patient threatens staff or other clients with a weapon, secure the area and call police
- Inform Hospital Administration/In-charge in case of self harm or harm to the staff/other patients/attendants through telephone
- Staff should document the incident in the incident reporting form
- **Refer to higher centre with a Medical Officer for further management**
- Medication (sedatives)
  - » Inj. Haloperidol 10 mg IM STAT, may be repeated after one hour, maximum of 3 doses/day
  - » Inj. Promethazine 25-50 mg IM STAT (as adjunct to Inj. Haloperidol or by itself if Inj. Haloperidol is not available)

OR

  - » Inj. Chlorpromazine 50-100 mg IM STAT, may be repeated every 6 hours (monitor for orthostatic hypotension)
  - » Inj. Diazepam 5-10 mg IV STAT slowly over 3-5mins, monitor vital signs before and after injection, may be repeated after 30 mins as needed
  - » Tab. Diazepam 10 mg PO STAT and 6 hourly (as needed)
  - » Tab. Risperidone 2 mg PO STAT and 8 hourly (if patient is psychotic)

Note: DO NOT GIVE INJ. HALOPERIDOL IF PATIENT HAS ALCOHOL DEPENDENCE, MANAGE WITH DIAZEPAM (injection or oral)

De-escalation techniques

- Use an empathic non-confrontational approach, but set boundaries
- Listen to the patient, but avoid giving opinions on issues and grievances beyond your control
- Offer food, drink and a place to sit
- Avoid excessive stimulation
- Avoid aggressive postures and prolonged eye contact
- Recruit family, friends, seniors staff to help
- Address medical issues, especially pain and discomfort
- Try to ascertain what the patient actually wants and the level of urgency

4. **Peripartum Depression and Psychosis**

   Any woman who presents with symptoms of Depression or Psychosis during Antenatal period or Post-natal period up to one year after child birth is considered a psychiatric emergency and needs to be referred immediately for further management.

5. **Acute Dystonic reaction (secondary to antipsychotic medication)**

   An acute dystonic reaction is characterised by involuntary contractions of muscles of the extremities, face, neck, abdomen, pelvis, or larynx in either sustained or intermittent patterns that lead to abnormal movements or postures. Reactions usually occur shortly after the initiation or an increased dose of antipsychotics (e.g. Haloperidol, Risperidone), and anti-emetics (Metoclopramide, Prochlorperazine). Acute dystonic reactions are often transient but can cause significant distress to the patient. Although rare, laryngeal dystonia can cause life-threatening airway obstruction.

MANAGEMENT

- **Assessment:** Evaluation of the patient with acute dystonic reaction should

be performed with the same basic steps as any other acute presentation including assessment of airway, breathing, and circulation. Subtle signs such as dysphonia or complaints of throat discomfort following administration of a potential offending agent should raise suspicion of laryngeal dystonia. *(Refer section on ABCDE for airway management)*

- Medication
  - » Symptoms usually improve or resolve dramatically within 10 to 30 minutes of administration of parenteral anticholinergics
    - ◊ Inj. Promethazine 25 mg IM STAT

OR

    - ◊ Inj. Diazepam 10 mg IV STAT, slowly over 3-5 mins, monitor vital signs after administration
    - ◊ Tab. Trihexyphenidyl 2 mg PO STAT and three times daily for 1 week

6. **Delirium:** Delirium is an acute, usually reversible brain disorder characterised by decreased awareness of the environment, a reduced ability to focus and maintain attention, and altered perception. Symptoms often develop rapidly and may change from hour to hour. Intensity of symptoms varies through the day and is usually worse at night.

CAUSES

- Drug Intoxication: Anxiolytic and anticonvulsant drugs, digitalis, opiates, Levodopa
- Withdrawal of alcohol and drugs like Anxiolytic, sedative drugs
- Metabolic failures: Kidney failure, liver failure, respiratory and cardiac failure
- Electrolyte imbalance – such as in dehydration
- Systemic infections - Septicaemia, Pneumonia
- Intracranial causes - Encephalitis, meningitis, Space occupying lesions, raised intracranial pressure

- Head injury
- Others like Hypoglycaemia, nutritional and vitamin deficiency, epilepsy

SYMPTOMS

- Confusion
- Clouded thinking or decreased awareness
- Disorientation
- Poor memory (especially recent events)
- Emotional disturbance (irritability, crying spells)
- Tendency to wander
- Withdrawal from others
- Suspiciousness
- Agitation
- Hallucination (visual, auditory, tactile)
- Illusions
- disturbed sleep or reversal of sleep cycle

MANAGEMENT

- Assessment (refer section on ABCDE, Emergency Conditions for further information)
  - » Performed detailed physical examination and assess vital signs
  - » Screen for head injuries, dyselectrolytemia, hypoglycaemia, infections, organ-failure, intoxication or withdrawal from psychoactive substances
- Supportive care
  - » Secure safety
    - ◊ Take measures to prevent the patient from harming himself or others, remove unsafe objects
    - ◊ Physically restrain if needed. Obtain consent from family

member(s) for applying physical restraint, and document
    - ◊ Keep a relative nearby to observe the patient
  - » Keep patients in a well-lit room and not in a dark room
- Ensure hydration and nutrition (according to need of patient)
  - » Open an IV line and administer IV fluid
  - » NG tube feeding if patient cannot swallow orally
- Personal hygiene and sanitation
  - » Maintain personal hygiene
  - » Change position every two hours to prevent bed sores if patient is bed-ridden
  - » Condom/indwelling catheter for urinary drainage to avoid bed soiling
- Medication
  - » Sedation:
    - ◊ Only if the patient is very agitated and violent
    - ◊ Haloperidol 5-15 mg IM/day as required in divided doses
    - ◊ In case of delirium tremens due to alcohol withdrawal, refer section on Alcohol Use Disorder
    - ◊ Symptomatic Treatment of fever, pain
  - » Treatment of underlying cause

Annexure:

- *Mental Status Examination*
- *MERIT Screening Tool*
- *CAGE-AID*
- *AUDIT*
- *Depression Screening tool (PHQ-9)*
- *Suicide Screening Tool (ASQ-3)*

CHAPTER 11
GYNAECOLOGY AND OBSTETRICS/ REPRODUCTIVE SYSTEM

Mr. Nidrup Gyeltshen, Lecturer, FNPH;
Dr. Sangay Tshering, Gynecologist, JDWNRH

11.1 Anaemia in pregnancy

DEFINITION

According to WHO, anaemia in pregnancy is defined as when haemoglobin (Hb) concentration reduces to <11 g/dl. It is divided into three levels of severity such as mild anaemia (9-11 g/dl), moderate anaemia (Hb: 7-8.9 g/dl), and severe anaemia (Hb: less than 7 g/dl).

CAUSES

- Nutritional deficiencies (Iron and folate deficiency)
- Blood loss (menorrhagia, GI bleeding)

SIGNS & SYMPTOMS

- Fatigue
- Pica
- Shortness of breath
- Poor concentration
- Pallor of conjunctiva, mucus membrane and nail bed

- Dyspnea

INVESTIGATIONS

- Blood for Hb level
- Complete blood count, Peripheral blood smear, Iron studies

MANAGEMENT

- Tab. FeFA supplement and Vitamin-C 1 Tablet OD starting at 12 weeks gestation
- Antihelminthic therapy (Albendazole 100 mg STAT) at 20 weeks of gestation
- If anaemic, check compliance to FeFA supplement
- Recheck Hb level in two weeks time
- If Hb level is not improved or Hb is less than 7 g/dl, refer to higher centre

HEALTH EDUCATION

- Avoid taking iron tablet with milk products, tea and calcium lactate
- Advice mother to take an extra meal beside normal family meals
- Advice mother to take green leafy vegetables
- Educate mothers on side effects of iron supplement (metallic taste in the mouth, nausea/vomiting, constipation, black coloured stool)

11.2 Abortion

DEFINITION

The loss of intrauterine pregnancy before 20 weeks of gestation (WHO) and 26 weeks of gestation (NICU data, Bhutan).

Types of abortion

- Threatened,
- Inevitable,
- Incomplete,
- Complete,
- Septic,
- Missed abortion.

CAUSES

- Advanced maternal age/chromosomal abnormalities
- TORCH/Infections
- Teratogenic medicine
- Chronic diseases such as diabetes and HTN
- Trauma (blunt abdominal trauma)

SIGNS & SYMPTOMS

- Lower abdominal pain
- Vaginal bleeding
- Fever (Septic abortion)
- Cervical Os closed or open
- Bulky soft uterus
- USG shows retained POC/absent foetal cardiac activity.

Table 11.1. Types of Abortion

Types of abortion	Sign and symptoms	Treatment
Threatened abortion	• Vaginal bleeding • Cervical Os closed • Abdominal pain	Complete bed rest Folic acid supplementation
Incomplete abortion	• Bulky soft uterus • OS open heavy/prolonged bleeding after expulsion of POC	• Resuscitate if in shock Refer to higher centre for Evacuation
Complete abortion	• History of expulsion of POC • Mild bleeding • USG shows an empty uterus	• Observe and follow up
Septic abortion	• Bleeding • Fever and pain abdomen • May have features of incomplete abortion	• Admit and resuscitate if in shock • IV antibiotics (Ampicillin and Metronidazole) • Refer to the higher centre for evacuation.
Missed abortion	• History of amenorrhea and bleeding • Bulky uterus with closed os Mild bleeding/spotting. • Ultrasound shows a anembryonic pregnancy or an embryo/foetus with no cardiac activity	• Admission and refer for evacuation
Inevitable abortion	• Abdominal pain • Vaginal bleeding • Cervical dilation	• Resuscitate if in shock and refer for evacuation • USG to scan RPOC • Oral antibiotic

INVESTIGATIONS

- Urine pregnancy testD
- Hb level
- ABO-Rh Grouping
- Physical examination: CBC, ABO-Rh grouping and crossmatchingUSG, Urine pregnancy test

MANAGEMENT

- Post abortion care
- Watch for complications (Bleeding and infection)
- Contraceptive counselling
- Preconception counselling

11.3 Ectopic pregnancy and ruptured ectopic pregnancy

DEFINITION

It is the implantation of the fertilised ovum outside the normal uterine cavity.

CAUSES

- Pelvic inflammatory disease
- Tubal corrective surgery
- Tubal sterilisation
- Previous ectopic pregnancy
- Documented tubal pathology
- Infertility

SIGNS & SYMPTOMS

- Period of amenorrhea
- Lower abdominal Pain
- Vaginal bleeding

- Dizziness, fainting
- Shoulder tip pain
- Urinary symptoms
- Abdominal/Adnexal Tenderness
- Cervical motion tenderness
- Bulky uterus
- Hypotension
- Tachycardia
- Syncopal attack

INVESTIGATIONS

- Blood for Hb level
- ABO-Rh grouping
- Urine pregnancy test
- CBC, ABO-Rh Grouping and cross matching
- USG

MANAGEMENT

- Resuscitate if in shock (IVF 20 ml/kg bolus followed by whole blood)
- Pain relief
- Refer to higher centre for surgery

11.4 Molar pregnancy

DEFINITION

It is defined as a pathological conceptus characterised by marked enlargement of placental villi. Two types of molar pregnancy are complete and partial molar pregnancy.

CAUSES

- Chromosomal abnormalities
- Increased maternal and paternal age
- Prior molar pregnancy

SIGNS & SYMPTOMS

- Period of amenorrhea
- Hyperemesis gravidarum
- Vaginal bleeding
- Height of fundus is larger than period of gestation
- Uterus is doughy Abnormal USG findings (vesicular appearance of the uterus/G-sac or foetal pole without foetal cardiac activity/large placenta/ large bilateral ovarian cyst)

INVESTIGATIONS

- Hb level urine pregnancy test, ABO-Rh grouping
- Serum Beta hCG level, CBC, ABO-Rh grouping and cross matching, USG, Chest X-ray, LFT, RFT

MANAGEMENT

- Resuscitate if in shock
- Refer to higher centre for suction evacuation
- Regular follow up with serum beta HCG for cure and persistent GTD
- Education on contraception during the follow up period

FOLLOW UP

- All women with a diagnosis of molar pregnancies are followed up with serum beta HCG weekly till 3 consecutive normal, then monthly HCG for 3 months (complete mole) and 1 month (partial mole) months

- In some women with GTD, this disease will persist or spread beyond uterus and chemotherapy is needed
- Avoid pregnancy till follow up is complete
- Pregnancy following GTD: In the next pregnancy, an early USG should be done to confirm normal pregnancy and a Beta-HCG should be done at 6 weeks postpartum/post-abortion

11.5 Hypertensive disorders in pregnancy

DEFINITION

1. **Gestational hypertension**

   Gestational hypertension is defined as elevated blood pressure (SBP ≥140 mmHg or DBP ≥90 mmHg) after 20 weeks of gestation in a previously normotensive woman without proteinuria.

2. **Chronic hypertension**

   It is defined as systolic blood pressure ≥140 mmHg/or diastolic blood pressure ≥90mmHg diagnosed before 20 weeks of pregnancy.

3. **Chronic hypertension with superimposed pr- eclampsia**

   Chronic hypertension in pregnancy with additional features of pre-eclampsia.

4. **Pre-eclampsia**

   It is defined as elevated blood pressure (SBP ≥140 mmHg or DBP ≥90 mmHg) after 20 weeks of gestation in a previously normotensive woman with proteinuria or SBP ≥160 mmHg or DBP ≥110 mmHg irrespective of proteinuria.

5. **Eclampsia**

   It is defined as onset of generalised tonic clonic seizure in the presence of high blood pressure irrespective of proteinuria.

CAUSES

Table 11.2. Causes of Hypertensive Disorders in Pregnancy

Types of abortion	Risk Factors
High	History of preeclampsia, especially when accompanied by and adverse outcome
	Multifetal gestation
	Chronic hypertension
	Type 1 or 2 diabetes
	Renal disease
	Autoimmune disease (SLE, antiphospholipid syndrome)
Moderate	Nulliparity
	Obesity (BMI > 30)
	Family history of preeclampsia (mother or sister)
	Sociodemographic characteristics (African American race, low socioeconomic status)
	Age 35 years or older
	Personal history factors (eg. low birthweight, small for gestational age, previous adverse pregnancy outcome, more than 10-years pregnancy interval)

SIGNS & SYMPTOMS of preeclampsia

- Headache
- Visual disturbance
- Epigastric pain
- Nausea and vomiting
- Vaginal bleeding with abdominal pain
- High blood pressure

INVESTIGATIONS

- Primary: Urine for protein
- Secondary: CBC, RFT, LFT, Urine for protein, USG

MANAGEMENT

- **Gestational /Chronic hypertension**
  - » Check urine for protein
  - » Start Tab. Methyldopa 250 mg BD OR Hydralazine 25 mg BD OR Nifedipine 20 mg BD (based on the availability)
  - » BP follow up in three days
  - » Educate on symptoms of PE
  - » Perform obstetric examination to assess the foetal growth and wellbeing
  - » Refer if BP is not controlled or symptoms of PE develops

- **Management of Preeclampsia**
  - » Admit the mother
  - » Administer IV Hydralazine 40 mg in 500 ml NS at 10 drops/min
  - » Monitor BP every 30 minutes and increase the drop rate by 10 drops/min till BP is 140/90 mmHg
  - » If IV Labetalol is available, start IV Labetalol 20 mg and recheck BP after 30 minutes. Double the dose every 30 minutes to maximum of 220 mg or until the BP is 140/90 mmHg
  - » Administer loading dose of Magnesium Sulphate
  - » Administer antenatal steroid IM Dexamethasone 6 mg every 12 hours for four dose if the baby is preterm
  - » Document foetal heart rate
  - » Refer to higher centre for further management

- **Management of Eclampsia**
  - » Check Airway, Breathing and Circulation
  - » Place mother in lateral position to prevent supine hypotension syndrome
  - » Start Magnesium Sulphate as per the protocol given below
  - » Assess foetal wellbeing (foetal heart rate)
  - » Administer antenatal steroid IM Dexamethasone 6 mg every 12 hours for four dose if the baby is preterm
  - » Refer to higher centre for further management

FOLLOW UP

Antenatal and Postnatal follow up

- Monitor PE symptoms, blood pressure and PE profile
- Provide counselling on contraception and preconception
- Low dose Aspirin prophylaxis (150 mg daily) from 12-16 weeks till 36 weeks if one major risk factor or two or more moderate risk factors
- Routine blood pressure checkup every 6 months to 1 year

NOTE

- Magnesium Sulphate (MgSO4) 2 ml (50%) ampoules = 1 g
- TO PREPARE THE LOADING DOSE (20%): Take 8 ml of 50% MgSO4 (4g)
- Add distilled water 12 ml in a 20 or 50 ml syringe

Magnesium Sulphate Protocol

Loading dose Mgso4

1. Give MgSO4 20% solution, 4 g IV over 5 minutes
   - Take one 20 mL sterile syringe

- Draw 8 mL (4 g) of MgSO4 50% into syringe
- Add 12 mL of sterile water for injection to make a 20% solution
- Follow immediately with 10 g of MgSO4 50% solution, 5 g in upper, outer quadrant of each buttock
- Take 20 mL sterile syringes.
- Draw 10 mL(5 g) of MgSO4 50% into each syringe
- Add 1 mL of 2% lignocaine in each syringe
- Give deep IM injection in each buttock

2. If convulsion occur after 15 min, give 2 g MgSO4 (20% solution) IV over 5 minutes
   - Take one 10 mL sterile syringe
   - Draw 4 mL (2 g) of MgSO4 50% into syringe
   - Add 6 mL of sterile water for injection to make 20% solution
   - Give IV slowly over 5 minutes

Maintenance dose MgSo4

- Give MgSO4 50%, 5 g IM every four hours
- Check for signs of toxicity of MgSO4
  - ◊ Loss of deep tendon reflex
  - ◊ Respiratory depression- RR less than 12/min
  - ◊ Urine output in the last 4 hours is less than 100 mL

11.6 Prolonged labour

DEFINITION

It is defined as labour pain lasting 12 hours or more after 4 cm cervical dilation without spontaneous vaginal delivery.

CAUSES

- 3 Ps:

   » Power: Abnormalities of expulsive forces- inadequate or uncoordinated uterine contractions and poor maternal effort
   » Passenger:Abnormal foetal presentation, lie, or position or large baby
   » Passage: Contracted maternal bony pelvis or soft tissue tumours in the maternal pelvis

SIGNS & SYMPTOMS

- Maternal exhaustion
- Severe pain
- Tachycardia
- Dehydration and Ketosis
- Slow cervical dilatation and effacement
- Slow descent or no descent of head
- Meconium stained liquor
- Tender uterus
- Perineal swelling

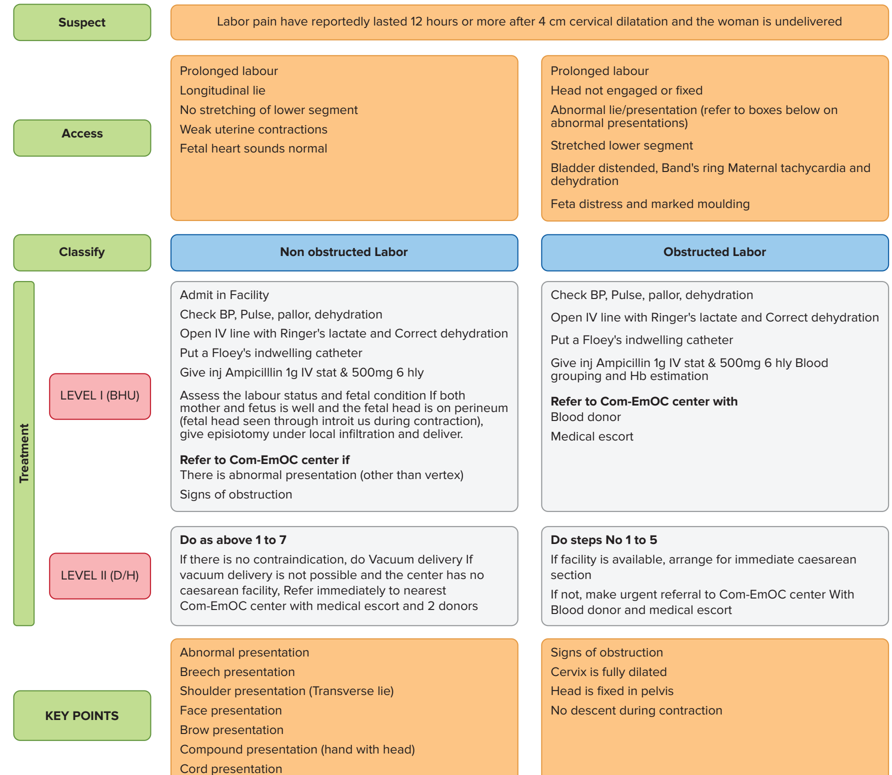
INVESTIGATIONS

- Partograph

MANAGEMENT

- Reassess the 3 Ps of l
- Monitor vital signs and foetal heart rate
- Pain relief: Pethidine
- Provide hydration
- Refer to higher centre for further management

Flowchart: Management of Prolonged Labour



11.7 Puerperal sepsis

DEFINITION

Puerperal sepsis is defined as infection of the genital tract occurring at any time between the onset of rupture of membranes or labour and the 42nd day postpartum in which two or more of the following clinical features are present

CAUSES

- Caesarean section/instrumental deliveries
- Prolonged labour
- Prolonged rupture of membrane

- Multiple vaginal examination
- Maternal diabetes mellitus, anaemia and obesity
- Meconium stained liquor

SIGNS & SYMPTOMS

- Pelvic pain
- Fever (>38.5°C)
- Foul smelling vaginal discharge
- Delay in uterine involution
- Tachypnea
- Tachycardia
- Tender uterus

INVESTIGATIONS

- Hb level
- CBC
- CRP
- Urine R/E culture and sensitivity
- Blood for culture and sensitivity for antibiotic test
- LFT
- RFT
- USG

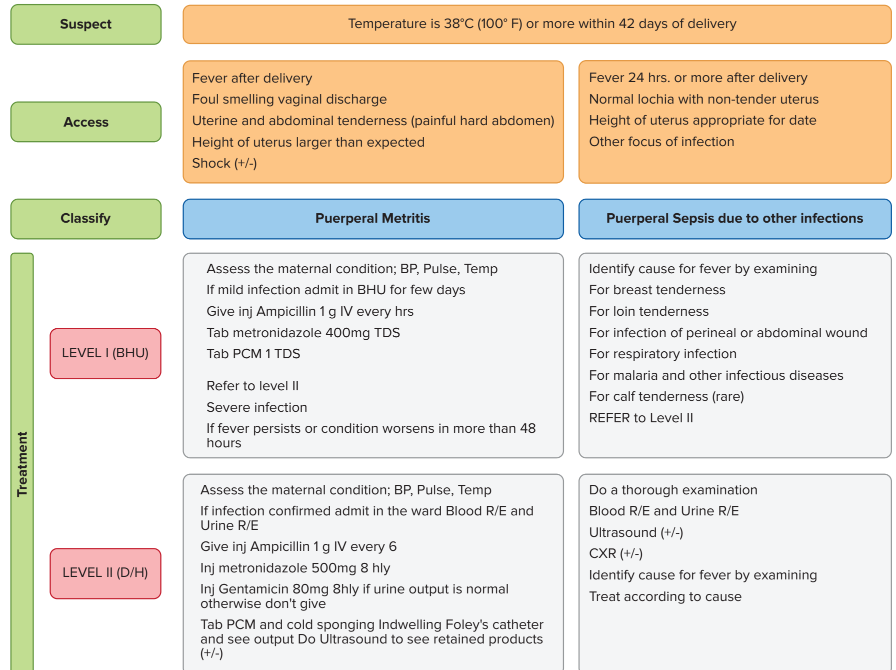
MANAGEMENT

- Administer IV fluids
- IV Antibiotics - Ampicillin, Gentamicin, Metronidazole
- Analgesics for fever and pain
- Refer to higher centre for evacuation of retained placental fragments/ membranes/clots, pelvic abscess and for blood transfusion or if symptoms

do not subside after 48 hours of antibiotics

- Drainage of pus in case of Pelvic abscess

FlowChart: Management of Puerperal Sepsis



11.8 Gestational diabetes

DEFINITION

It is defined as carbohydrate intolerance of variable severity with onset or first recognition during pregnancy.

CAUSES

- Previous pregnancy with diabetes and or macrosomia
- Overweight or obesity
- Polycystic ovarian syndrome

- Family history of diabetes
- Age >35 years
- Race
- Glucose intolerance
- Previous adverse pregnancy outcome such as congenital anomaly, IUFD

INVESTIGATIONS

- 75 gm OGTT
- Diagnosis based on 75 gm OGTT
- If one or more risk factor is present, screen during the first booking visit and at 24-28 weeks
- If no risk factors present, screen at 24-28 weeks
- GDM Diagnosis is confirmed with one or both abnormal results:
  - » Fasting plasma glucose ≥100-125 mg/dl (5.6-6.9 mmol/l)
  - » 2- hour plasma glucose ≥140-199 mg/dl (7.8-11.0 mmol/l

MANAGEMENT

- Start medical nutritional therapy (MNT) and postprandial physical exercise
- Repeat fasting and 2 hours PPBS in two weeks.
- Refer to higher centres:
  - » If fasting and 2 hour PPBS is above the target range
  - » Foetal growth monitoring
  - » For planned delivery by 37 weeks if sugar control is poor
  - » For planned delivery at 38-39 weeks if sugar control is good
- Target for monitoring GDM:
  - » Fasting capillary (venous plasma) blood glucose level is <105 mg/dl
  - » 1-h postprandial <155 mg/dl
- 2-H postprandial <126 mg/dl

POSTPARTUM FOLLOW UP

- OGTT for mother at 6 weeks and 6 months
- Every year for FBS/PPBS

11.9 Ovarian tumour or cyst

DEFINITION

Ovarian tumours are abnormal growths on the ovaries, the female reproductive organs. Size is usually over 5 cm with varying sonographic features depending on the type of cyst. It may be benign or malignant. Functional cysts are asymptomatic in nature and usually do not grow beyond 3 cm.

CAUSES

- Age - risk increases for women over age 50 years
- Family history of ovarian, breast or bowel cancer

SYMPTOMS

- Most are asymptomatic and detected accidentally
- Heaviness in lower abdomen
- Gradually increasing mass in lower abdomen
- Dull aching pain in lower abdomen
- In neglected cases, tumour may be big to fill whole abdomen and causes cardio-respiratory problem and GIT symptoms
- Menstrual abnormality
- Pelvic pain – this can range from a dull, heavy sensation to a sudden, severe and sharp pain on the side of the cyst
- Bloating and a swollen tummy
- Pain during sex
- Frequent urination
- Low back and thigh pain

SIGNS

- Bulging of lower abdomen which moves freely with respiration
- Mass may be place centrally or in one side
- Freely mobile from side to side but restricted from above downwards

INVESTIGATIONS

- USG lower abdomen with uterus and adenex

MANAGEMENT

- Conservative or surgery depending on the nature of the cyst and symptoms

11.10 Abnormal uterine bleeding (AUB)

DEFINITION

Defined as abnormalities in regularity, amount, duration of menstrual bleeding.

CAUSES

- PALM-COEIN (polyp, adenomyosis, leiomyoma, malignancy and hyperplasia, coagulopathy, ovulatory dysfunction, endometrial, iatrogenic, and not yet classified.

SIGNS & SYMPTOMS

- Irregular menstrual cycles
- Heavy menstrual bleeding
- Menstrual pain
- prolonged bleeding/ scanty bleeding
- Bleeding after menopause
- Fatigue and anaemia

MANAGEMENT

- Lifestyle modifications; Maintaining a healthy weight and doing relaxation techniques or counselling
- Medications; NSAIDs like Ibuprofen can relieve menstrual pain and reduce the amount and duration of bleeding
- Oral Contraceptive Pills to regularise the cycle, reduce amount and duration of bleeding
- Refer to the higher centre for surgical management

11.11 Postpartum haemorrhage (PPH)

DEFINITION

Postpartum haemorrhage is defined as excessive bleeding after childbirth enough to cause hemodynamic instability in the mother. Primary PPH occurs within the first 24 hours after delivery. Secondary PPH occurs anywhere between 24 hours and six weeks postpartum.

CAUSES

- 4Ts: Tone of the uterus, Trauma of the reproductive tract, Thrombin disorders and retained tissues)
- Risk factors
    - Failure to progress during the second stage of labour
    - Placenta accreta spectrum
    - Lacerations
    - Forceps or vacuum-assisted vaginal birth
    - Large for gestational age newborn
    - Hypertensive disorders
    - Induction of labour
    - Prolonged first or second stage of labour

SYMPTOMS

- Excessive bleeding

SIGNS

Haemorrhage leading to tachycardia, tachypnea, sweating, altered sensorium or air hunger

MANAGEMENT

- Active management of third stage of labour (AMTSL)
- ABC protocol
- For Uterine atony
- Uterine massage
- 2 wide bore cannula (Green/Gray), send blood for ABO/Rh grouping and baseline Hb level
- IV fluid (Crystalloid) rapid infusion
- Insert urinary catheter
- IV Oxytocin 20 IU in 500 ml Normal Saline
- IV Tranexamic acid 1 gm over 10 minutes
- IM Methylergometrine 0.2 mg (check contraindication)
- Per rectal Misoprostol 800 mcg (if available)
- Bimanual uterine compression, condom tamponade
- For failed medical management of uterine atony, genital tract lacerations or retained placenta, refer to higher centre

11.12 Common birth trauma

DEFINITION

Clavicle fracture - swelling and tenderness over clavicle, no treatment required. Humerus or femur fracture-deformity of limb, treated with elastic bandage. Arm weakness (Erbs palsy), treated with physiotherapy. Scalp swelling

(cephalohematoma) - may resolve on its own.

Approach to Trauma Care

Most of the principles of adult trauma also apply to children, but there are important differences. Most important of all is rapid assessment, resuscitation and stabilisation before referring to the higher Centre.

Principles of primary trauma care management

1. Examine, diagnose and treat life-threatening complications of trauma as soon as the patient arrives in the health facility.
2. Use the simplest treatment possible to stabilise the patient's condition
3. Perform a complete, thorough examination of the patient to ensure that no other injuries are missed
4. Constantly monitor the patient for response to treatment; if the patient's condition deteriorates, reassess the patient
5. Patient should be stabilised before starting the definitive treatment
6. Refer to the surgical centres if definitive treatment is not available locally

Six Phases of Primary Trauma Care (PTC) Management

The successful management of severe trauma is dependent on the following six steps:

1. Triage
2. Primary survey
3. Secondary survey
4. Stabilisation
5. Transfer
6. Definitive care

Trauma deaths: Trauma deaths occur in three time periods

Immediate deaths

Patients who do not reach the hospital alive die from overwhelming injuries, including

- Rupture of the heart or pulmonary artery
- Overwhelming haemorrhage
- Massive destruction of brain or other neural tissue

Such deaths can be reduced only by preventive strategies in the community.

Early deaths

- Patients who arrive alive at the hospital need immediate resuscitation to survive
- Many deaths in the early time period are preventable with appropriate early diagnosis and treatment of severe life-threatening injuries such as:
- Pneumothorax flail chest
- Abdominal haemorrhage
- Pelvic and long bone injuries

Late deaths

Late deaths occur as a result of:

- Infection
- Multiple organ failure

Appropriate initial care can prevent late complications and death

CHAPTER 12
PEDIATRIC

Dr. Kuenley Pedon, Paediatrician, JDWNRH

COMMON CHILDHOOD DISORDERS IN 0-5 YEARS OLD: TO REFER IMNCI GUIDEBOOK

12.1 Central nervous system

12.1.1 Febrile convulsion

DEFINITION

Febrile Convulsion is defined as a seizure happening in febrile children (temperature of 38ºC or 100.4ºF) typically from 6 months to 60 months of age in absence of central nervous system conditions (infection, inflammation, head injury, epilepsy) or prior afebrile seizures

CAUSES

- Acute viral illness
- Tonsillitis
- Otitis Media
- Urinary Tract Infection
- Pneumonia
- Septicemia

SIGNS & SYMPTOMS

- Convulsion occurs in a febrile child
- Convulsion should not last for more than 15 minutes
- Convulsion should be generalised not focal
- No residual weakness of limbs (paresis)

MANAGEMENT

- Maintain airway, breathing and circulation (ABC)
- Monitor vital signs and maintain SPO2 > 92 %
- Reduce temperature by tepid sponging and Tab. Paracetamol 60 mg/kg/day 4-6 hourly or 15 mg/kg/dose 4-6 hourly when temperature is more than 100.4ºF
- Control convulsion with Inj. Diazepam 0.3mg/kg/dose IV very slowly or 0.5 mg/kg/dose per rectum SOS

FOLLOW UP

- Consider giving prophylactic anticonvulsants with Tab. Diazepam 0.3 mg/kg/dose twice daily for 3 days in the following conditions:
  - » Febrile seizure occurring before age of 1 year
  - » High level of parental anxiety
- Refer the patient to the district hospital for further evaluation after prophylactic medication

12.1.2 Meningitis

DEFINITION

Meningitis refers to the inflammation of the meninges, the protective membranes surrounding the brain and spinal cord. Inflammation of both the brain and meninges is called meningoencephalitis.

CAUSES

- Pyogenic meningitis is caused by an acute bacterial infection - *Pneumococcal, Meningococcal, Streptococcal & Escherichia Coli, Haemophilus Influenzae)*
- Aseptic meningitis is caused by viral infection
- Tuberculous Meningitis is caused by Mycobacterium tuberculosis

SYMPTOMS

- Fever
- Irritability
- Vomiting
- Convulsion,
- Drowsiness
- Restlessness/inconsolable crying
- Coma

SIGNS

- Neck rigidity may positive
- Kernig's sign may positive

INVESTIGATIONS

- Lumbar Puncture for Cerebrospinal fluid analysis
- Blood for complete blood count

MANAGEMENT

- Maintain airway, breathing and circulation
- Insert an intravenous cannula and start maintenance fluid. If unable to get IV access give all injections by IM route and feeding can be given orally if conscious or through NG tube if unconscious to prevent hypoglycemia

- Control convulsion with Inj. Diazepam 0.3 mg/kg/dose slowly IV or 0.5 mg/kg/per dose per-rectal (PR or PO with NG tube)
- Antibiotic
    - » Inj. Ampicillin 50 mg/kg IM/IV stat and every 6 hours and Inj. Gentamicin 7.5 mg/kg/dose IV/IM STAT and OD (ensure that there is good urine output)
- If child is in coma, assess glasgow coma and manage like any other unconscious child such as inserting NG tube (preventing aspiration), a urinary catheter, care of the eyes and changing position frequently
- Stabilise the child and then refer the child to the higher centre for further investigation and management. May consult with a medical officer to seek advice wherever possible.

Important message

- Ask the history of similar illness in the family or community. Meningitis can occur as epidemics. If there are more than one similar case, notify the DPHO/CMO for investigation.

FOLLOW UP

- Follow up the child for any neurological problem such as deafness, epilepsy or any other deficits

12.1.3 Headache

DEFINITION

Chronic and recurrent headache is a common complaint in children.

CAUSES

The most common forms of primary headache are migraine and tension type headaches

SIGNS & SYMPTOMS

Migraine

- Characterised by episodic attacks (moderate to severe)
  - » Focal in location on the head
  - » With a throbbing quality
  - » May be associated with nausea and vomiting
  - » Light sensitivity, and sound sensitivity
  - » Associated with an aura (visual, sensory)
- Tension-type headaches
  - » Mild to moderate in severity
  - » Diffuse in location
  - » Non-throbbing in nature
  - » Not affected by activity
  - » Less frequently associated with nausea, light and sound sensitivity

INVESTIGATIONS:

- MRI Brain is indicated when the neurologic examination is abnormal, the headaches awaken the child from sleep or are present on first awakening, when the headache is mostly in the occipital area; and when the child has migrainous headache with no family history of migraine

MANAGEMENT:

- For acute treatment to relieve the pain:
  - » Tab. Ibuprofen 7.5 to 10 mg/kg/dose TDS for 3- 5 days OR
  - » Tab. Paracetamol 15 mg/kg/dose TDS for 3-5 days
  - » Ensure good hydration
- Prophylactic therapy should be considered if migraine occurs frequently or is disabling.
  - » Tab. Propranolol 10-20 mg TDS

FOLLOW UP

- Follow up every 1-3 months for symptoms relief and compliance to medications

HEALTH EDUCATION:

- The potential triggers for frequent migraines are skipping meals, dehydration, decreased or altered sleep therefore advice on adequate fluid intake without caffeine, regular exercise, not skipping meals and having healthy food and adequate (8-9 hr) sleep on a regular basis should be given

12.1.4 Acute brain injury

DEFINITION

Acute Brain injury is usually caused by trauma in children and is one of the leading causes of death and disability in children.

CAUSES

- Accidental head injury due to fall injury, pedestrian injury, road traffic accidents and sports related accidents
- Abusive head trauma is also a common cause of acute brain injury in infants

SIGNS & SYMPTOMS

- Headache (acute and severe)
- Vomiting
- Irritability/reduced activity
- Poor feeding/reduced appetite
- Altered sensorium/ loss of consciousness

INVESTIGATIONS

- X ray skull
- CT Brain

MANAGEMENT

- Maintain airway, breathing and circulation
- Administer oxygen
- Raise the head end of the bed by 15-30 degrees
- Insert IV Cannula and administer maintenance IV therapy (Normal saline)
- Administer available antibiotics (STAT doses)
- Refer immediately to the higher centre with a medical escort.

FOLLOW UP

- For post trauma headaches
- School performance

HEALTH EDUCATION

- Safety gears and injury prevention (use of helmets while using scooters, window guards and stairs safety gates at home, an adult companion for children less than 8 years while crossing roads)
- For infants (<1 year old): no undue shaking of the infant when trying to calm them down, rolls of blankets around the young infants when they are sleeping (preferably a crib), avoid use of walkers
- For toddlers (1-3 years old): window guards and stairs safety gates at home, always under an adult supervision

12.1.5 Meningomyelocele (spina bifida)

DEFINITION

It is the most common and serious open neural tube defect. In this condition, a small sac containing part of the spinal cord and nerves protrudes through a bony defect at the base of the skull or vertebrae, the most common site being the lumbar region.

May be associated with neurological problems like hydrocephalus (big head), bowel and bladder incontinence and motor deficits (paralysis) in the lower extremities. Meningitis can occur if the spinal defect is left open.

MANAGEMENT

- Cover the defect with warm sterile dressings
- Refer to the nearest higher centre
- Health education for folic acid in the next pregnancy (3 months before conception)

12.2 Respiratory system

12.2.1 Pneumonia

DEFINITION

Inflammation of lungs is known as pneumonia.

CAUSES

- Bacterial: *Pneumococcus, Streptococcus, Haemophilus Influenzae, Mycoplasma pneumoniae*
- Viral: Adenovirus, *Influenza virus, Parainfluenza virus,* RSV Chicken pox, Measles
- Aspiration of fluids, food, vomitus, chemical
- Fungal: *Cryptococcosis*

SYMPTOMS

- Fever
- Cough
- Rapid breathing
- Breathing difficulty

SIGNS

- Fast breathing
- Crackles on auscultation
- Respiratory distress (chest indrawing, suprasternal retraction, nasal flaring)

INVESTIGATIONS

- Chest X-ray
- Blood for CBC, ESR

MANAGEMENT

- Give oxygen if necessary
- Tab. Amoxicillin 15 mg/kg/dose or 20-40 mg/kg/day every 8 hourly
- Tab. Paracetamol 15 mg/kg/ dose 6-8 hourly PO
- Refer to the higher centre if there is respiratory distress

HEALTH EDUCATION

- FU SOS if respiratory distress develops
- Soothe the throat with warm saline gargling
- Relieve cough with a safe home remedy (warm water, ginger tea, warm clothes)

12.2.2 Bronchial asthma

DEFINITION

Asthma is a chronic inflammatory condition of the lung airways characterised by exacerbations and remissions resulting from paroxysmal narrowing of bronchial airways. The child will present with acute or subacute shortness of breath, cough, wheezing, or chest tightness.

CAUSES

- Although the cause of childhood asthma has not been determined
- Environmental exposures to respiratory viruses, allergens, tobacco smoke, air pollutants is a major cause of bronchial asthma in children

SYMPTOMS

- Fever
- Cough
- Shortness of breath
- Tachycardia
- Fast breathing; noisy breathing
- Difficulty in breathing/chest tightness
- Irritability, drowsiness, confusion
- Infants or young children may have history of recurrent bronchitis, bronchiolitis, or pneumonia

SIGNS

- Tachypnea
- Dyspnea/respiratory distress (use of accessory muscles, chest retraction)
- Wheezing on chest auscultation: A musical, high-pitched, whistling sound produced by airflow turbulence is one of the most common signs. During a most severe episode, wheezing may be absent because of the severe limitation of airflow associated with airway narrowing and

respiratory muscle fatigue. Asthma can occur without wheezing when obstruction involves predominantly the small airways. Thus, wheezing is not necessary for the diagnosis of asthma
- Rhonchi on chest auscultation: coarse, loud, low-pitched sounds caused by constriction of larger airways

INVESTIGATIONS

- Chest X-ray P/A view
- CBC

MANAGEMENT

- Maintain airway, breathing and circulation
- Position: The child in respiratory distress is better to breath in a sitting position
- **Mild to moderate attack**
  - » Provide supplemental oxygen
  - » Salbutamol nebulization 2.5 mg/dose (5 mg/ml solution) STAT and BD for 5-7 days

OR

  - » Salbutamol inhalation by MDI spacer 2 puffs stat and BD for 5-7 days
- **Moderate to Severe attack (should be managed at higher centre)**
  - » Salbutamol nebulization 2.5 mg/dose (5 mg/ml solution) stat and can be repeated every 15-20 minutes 3 doses and review the child with chest auscultation

OR

  - » Salbutamol inhalation by MDI spacer 2 puffs stat and repeat every 15-20 minutes 3 times
  - » First dose of Steroids:
    - ◊ Inj. Dexamethasone 0.6 mg/kg/dose IM STAT OR

- ◊ Tab. Prednisolone 1-2 mg/kg/ day OD STAT
- Refer to higher centre with a medical escort

12.2.3 Tuberculosis in children

(Refer TB Guideline)

12.3 Cardiovascular system

12.3.1 Congestive heart failure

DEFINITION

Congestive Heart Failure results from the heart's inability to pump and deliver an adequate amount of oxygenated blood (adequate cardiac output) to meet the metabolic requirement of the body.

CAUSES

- Congenital heart diseases
- Rheumatic heart disease
- Acute myocarditis
- Severe anaemia
- Hypertension (acute glomerulonephritis)

SYMPTOMS

- Poor feeding
- Poor weight gain
- Difficulty in breathing on exertion
- Sweating on exertion
- Irritability, Lethargy

SIGNS

In **Left heart** failure (congestion in lungs)

- Tachypnea (fast breathing)
- Orthopnea (difficulty in breathing on lying down)
- Exertional dyspnea (poor feeding)
- Cough with frothy sputum
- Wheezing and crepitations

In **Right heart** failure (systemic congestion)

- Jugular venous engorgement
- Enlarged tender liver
- Dependent edema

INVESTIGATIONS

- Blood for CBC, ESR, CRP
- Chest X-ray P/A view
- ECG
- Echocardiogram

MANAGEMENT

- Maintain airway, breathing and circulation
- Keep in propped up position
- Bed rest
- Oxygen supplementation
- Ensure normal feeding. If unable feed, start NG feeding
- Tab. Hydrochlorothiazide 25 mg: 1-2 mg/kg per dose stat and OD/BD
- Refer the patient to higher centre for expert management

FOLLOW UP:

- Follow up every 3 months for compliance to medications once discharged from the higher centre

HEALTH EDUCATION

- Avoid excess intake of fluids
- Take regular medication on time
- FU at the higher centre regularly as advised.

12.4 Gastrointestinal system

12.4.1 Diarrhoea

DEFINITION

Diarrhoea is defined as excessive loss of fluid and electrolyte in the stool. There is excessive loose stool and the frequency is usually more than 3 to 4 times in a day. It is called acute diarrhoea when the episode lasts for <14 days and persistent diarrhoea when the episode lasts longer than 14 days.

CAUSES

- Bacterial: *Escherichia Coli, Shigella, Salmonella, Campylobacter jejuni, Vibrio cholerae*
- Viral: *Rotavirus, Adenovirus, Norovirus, Hepatitis A*
- Protozoal: *Entamoeba histolytica, Giardia lamblia*
- Dietary: Indigestion, food intolerance

SYMPTOMS

- Stools are loose, liquid in consistency and may contain mucus, pus or blood. It may be greenish or yellow in colour
- Vomiting
- Abdominal pain/cramps
- There may be fever ranging from low to high grade
- Irritability, restlessness and lethargy

SIGNS

- Pallor and weakness
- Irritability
- Dehydration, anaemia may present
- Deep and rapid breathing

INVESTIGATIONS

- Stool for routine examination and stool for culture and sensitivity test

MANAGEMENT

In majority of the cases, the causative organisms are viruses. Therefore, symptomatic treatment is the mainstay of treatment

- Ensure adequate oral intake to have good urine output
- Oral Rehydration Solution (ORS)
- Zinc Sulphate 20 mg OD for 14 days
- Tab. Paracetamol 15 mg/kg per dose 6-8 hourly for fever and abdominal cramps
- IV Maintenance fluid therapy if moderate to severe dehydration (Resuscitation with 20 ml/kg Normal Saline if severe dehydration)
- Refer to higher centre if no improvement with in 5-7 days or diarrhoea persists beyond 14 days

HEALTH EDUCATION

- Advise on general hygiene and handwashing
- Sign and symptoms of dehydration
- Monitor for urine output
- Once loose motions are controlled, high calories and high protein diet should be given to make up the weight loss
- Nutritional status should be monitored

12.4.2 Constipation

DEFINITION

Constipation is defined as a delay or difficulty in defecation present for 2 weeks or longer and significant enough to cause distress to the child. Functional constipation or faecal withholding is common in children. It typically starts after the neonatal period. It is defined as difficult or infrequent bowel movements and/or deviation from normal frequency, painful defecation, passage of hard stools and sensation of incomplete evacuation.

CAUSES

- Dietary changes - breast milk to formula or cow's milk, inadequate fluid intake, inadequate intake of fibres
- Trauma to perianal region

SIGNS & SYMPTOMS

- Withholding of defecation
- Passage of small and hard stools
- Infrequent and large bowel movement
- Passage of blood in the stool
- Straining and painful defecation
- Suprapubic mass may be palpated on abdominal examination

INVESTIGATIONS

- No investigation is required for functional constipation

HEALTH EDUCATION

- Adequate intake of fluids
- Ensure high fibre diet
- Toilet training should be regular and a pleasant experience
- Avoid unpleasant toilet experience

MANAGEMENT

- Glycerine suppository per rectal stat and HS for 2-3 nights
- Syrup Lactulose 1- 3 ml/kg/day OD or BD for 3-5 days
- Refer for further evaluation if the above medications and health education doesn't help

12.4.3 Intestinal obstruction

DEFINITION

Classic symptoms of intestinal obstruction in the neonate are vomiting, abdominal distention, abdominal pain and no bowel movement.

SYMPTOMS

- Bile stained (green) vomiting can be a sign of a life-threatening condition
- Abdominal distension and abdominal pain
- No bowel movement

SIGNS

- Bowel sound absent
- Peristaltic wave across abdomen can sometimes be present just before the child vomit
- Abdominal distension
- Sometimes an abdominal mass could be palpated

MANAGEMENT:

- Maintain airway, breathing and circulation
- Keep nil per orally
- Insert a nasogastric tube
- Start IV maintenance fluid therapy
- Refer to higher centre

12.4.4 Intussusception

DEFINITION

Intussusception occurs when a portion of the intestine is telescoped into an adjacent segment. It is the most common cause of intestinal obstruction between 5 months and 3 years of age and the most common abdominal emergency in children younger than 2 years.

CAUSES

- Idiopathic in approximately 90% of cases
- Secondary as a complication of HSP, gastroenteritis, otitis media, and upper respiratory tract infections
- The risk of intussusception was increased in infants 1 year of age or younger after receiving rotavirus vaccine within 2 weeks of immunisation

SYMPTOMS

- Severe colicky pain abdomen which is sudden in onset and recurs at frequent intervals. The infant is comfortable and normal between the episodes
- Vomiting occurs in most cases and is usually more frequent in the early phase
- Passage of loose stool stained with blood and mucus (currant jelly stool)
- Irritability and progressive lethargy

SIGNS

- Irritability and lethargy
- Abdominal distension and tenderness
- Tender sausage shaped mass, sometimes ill-defined is palpated most often in the right upper abdomen
- Bloody mucus on rectal examination

INVESTIGATIONS

- Plain X Ray abdomen
- USG Abdomen

MANAGEMENT

- Maintain airway, breathing and circulation
- Monitor vital signs
- Nil per orally
- Insert IV cannula and start IVF maintenance therapy
- Start Empirical antibiotics to cover GI sepsis:
  - » Inj. Ampicillin 25 mg/kg/dose IV STAT and 6 hourly
  - » Inj. Gentamicin 5 mg/kg/dose IV STAT and OD
- Refer to higher centre urgently with a medical escort

12.4.5 Hypertrophic pyloric stenosis

DEFINITION

Commonly seen in neonates 2-5 weeks of age, males more than in females and it is caused by thickening of muscle that controls stomach emptying (pylorus). The most common complications are electrolyte imbalance and poor weight gain.

SYMPTOMS

- Non-bilious (not green) projectile vomiting after feeding
- Weight loss, poor weight gain and failure to thrive
- Irritability and hungry most of the times (feeds vigorously after vomiting)
- Constipation due to too little intake of breast milk

SIGNS

- Dehydration may be present

- Small mass may be palpable in the upper abdomen at the midline or slightly to the right of midline

MANAGEMENT

- Resuscitate with normal saline 20 ml/kg bolus if there is severe dehydration.
- Start IV Maintenance fluid therapy
- Insert nasogastric tube
- Refer to the nearest higher centre

12.4.6 Esophageal atresia

DEFINITION

Failure of development of some parts of oesophagus and is commonly associated with fistula with trachea.

SYMPTOMS

- Presents with drooling or regurgitation of the first and subsequent feeds
- Choking or coughing on feeding is frequent
- If delayed management, the neonate is at risk of developing pneumonia

MANAGEMENT

- Keep the infant neonate warm
- Insert nasogastric tube
- Keep nil per orally
- Start IV fluids as per body weight
- Refer to the nearest higher centre

12.4.7 Abdominal wall problem

SIGNS & SYMPTOMS

- Occur at or around the umbilicus
- Two types occur Omphalocele and Gastroschisis
- In omphalocele, there is always a transparent sac covering the over extruding bowel and the umbilical cord is inserted in the caudal area of the sac
- In gastroschisis, the bowel is exposed and is lateral to the umbilicus which is in its normal position (usually to the right)

Fig. 12.1.a. Abdominal wall problem

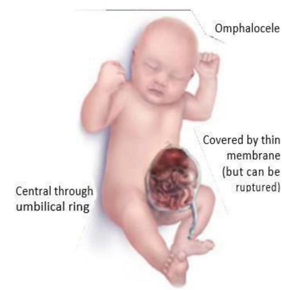


Fig. 12.1.b. Abdominal wall problem

MANAGEMENT

- Apply warm sterile dressing and then cover with plastic bag to prevent fluid loss

- Exposed bowel can lead to rapid fluid loss and hypothermia so start IV fluids
- Refer to the nearest higher centre

12.4.8 Anorectal anomalies

DEFINITION

Imperforate anus is a congenital anorectal malformation where a normal anal opening is absent at birth. Diagnosis is usually made at birth by examining the anus and inserting a thermometer in the anus.

SIGNS & SYMPTOMS

- There may be no opening at all or tiny opening, discharging of meconium may be seen at the base of penis or just inside vagina (ano-vaginal fistula)
- Delay in diagnosis may cause severe abdominal distension, leading to bowel perforation

MANAGEMENT

- Place a nasogastric tube
- Start IV fluids
- Refer to the nearest higher centre

12.4.9 Cleft lip and cleft palate

DEFINITION

These are birth defects that occur when a baby's lip and palate do not form properly during pregnancy.

SIGNS & SYMPTOMS

- Cleft lip and palate may occur together or separately
- Child may have difficulty sucking leading to malnutrition

MANAGEMENT

- Infant should be fed expressed breast milk via cup and spoon if direct breastfeeding is difficult
- Urgent referral is not necessary as the operation (surgical repair) for cleft lip is best done at 6 months and cleft palate at 1 year of age
- Refer to the nearest district hospital

12.4.10 Viral hepatitis

DEFINITION

Acute viral hepatitis is an acute viral infection with abrupt onset of symptoms and lasts for a duration of 7-14 days. In children, the infection does not cause any disease or usually is mild.

CAUSES

- Hepatitis-A, Hepatitis B, Hepatitis C, Hepatitis D, Hepatitis E
- *Herpes simplex virus, Cytomegalovirus, Epstein-Barr virus, Varicella-zoster virus, HIV, Rubella, Adenoviruses, Enteroviruses, Parvovirus B19, and Arboviruses*

SYMPTOMS

- Fever
- Anorexia
- Nausea and vomiting
- Jaundice
- weakness

SIGNS

- Icterus
- Lethargy
- Generalised weakness

INVESTIGATIONS

- Blood to detect antibodies to HAV (Anti HAV)
- Blood to detect antigens and antibodies to HBV (HbsAg)
- Blood to detect antibodies to HCV
- Raised level of serum ALT, AST, bilirubin, alkaline phosphatase, and γ-glutamyl transpeptidase

MANAGEMENT

- Symptomatic treatment
- Ensure adequate hydration

HEALTH EDUCATION

- Patients infected with HAV are contagious for 2 weeks before and 7 days after the onset of jaundice and should be excluded from school, childcare, or work during this period
- Hand-washing is necessary, particularly after changing diapers and before preparing or serving food
- Vaccination against Hepatitis B

12.5 Renal system

12.5.1 Acute glomerulonephritis

DEFINITION

It is one of the most common causes of gross hematuria in children.

CAUSES

- Group-A-β-hemolytic streptococcal infections are common in children and acute poststreptococcal glomerulonephritis (PIGN) is characterised by the sudden onset of gross hematuria, edema, hypertension, and renal failure which typically develops 1-2 weeks after a streptococcal pharyngitis or 3-6 weeks after a streptococcal pyoderma (skin infection)

- Poststreptococcal GN is most common in children ages 5-12 years.

SYMPTOMS

- Puffiness of face
- Cola-coloured urine
- Oliguria/ reduced urine output
- Non-specific symptoms like malaise, lethargy, abdominal or flank pain, fever

SIGNS

- Hypertension
- Edema

INVESTIGATIONS

- Urine routine examination: protein/albumin 2+ or less; numerous RBCs
- Blood: raised ESR, ASO titer positive, may have raised blood urea and serum creatinine level
- Throat swab culture: may be positive for B-hemolytic streptococci

MANAGEMENT

- Inj. Hydralazine 0.15 mg/kg/dose IV STAT if blood pressure can be measured and is high
- Tab. Penicillin-V 250 mg PO BD for 14 days
- Refer to higher centre for further laboratory investigation and management

FOLLOW UP

- Symptoms usually resolve after 2-3 weeks; blood pressure becomes normal after 1-3 months and microscopic hematuria will persist for several months.
- FU at the higher centre every 1- 2 month for 3- 6 months; and every 3-6

months for 3 years

12.5.2 Nephrotic syndrome

DEFINITION

Characterised by edema, proteinuria, hypoalbuminemia and hyperlipidemia.

CAUSES

- Primary (90%): Minimal Change Disease is the most common one with a good prognosis
- Secondary (10%): Vasculitis and Post infectious Glomerulonephritis, Henoch-Schonlein purpura, SLE

SYMPTOMS

- Puffiness of face and swelling of the lower limbs
- Progressive weight gain
- Reduced urine output
- Breathlessness (due to severe ascites)
- Vomiting, diarrhoea may occur due to poor absorption because of the edema of the gastrointestinal mucosa

SIGNS

- Generalised edema (including scrotal swelling and ascites)
- Blood pressure is usually normal according to age and height (Could be increased in atypical nephrotic syndrome)

INVESTIGATIONS

- Urine routine examination: albumin +++
- Urine protein creatinine index
- Renal Function Test and serum electrolytes

- Total protein and serum albumin (low)
- Lipid profile (Serum cholesterol and lipid will be high)
- USG Abdomen
- Chest X-ray

MANAGEMENT

- Refer to higher centre for further evaluation and treatment

FOLLOW UP

- Growth monitoring: One of the side effects of prolonged steroid use is linear growth retardation and obesity (increased appetite)
- Monitor blood pressure if diagnosed as atypical Nephrotic syndrome at the higher centre
- For compliance to medications (specially prednisolone) as per the discharge summary from the higher centre
- Ensure that the child goes to follow up at the higher centre as advised

12.5.3 Urinary tract infection (UTI)

DEFINITION

UTI is an important cause of fever in children. Symptomatic UTI in the first year of life is 7.8% in girls and 1.8 % in boys. Boys usually present in the first 3 months of life and are more likely to have congenital anomalies and one should look for labial adhesion in girls.

CAUSES

- *Escherichia coli (E. coli),* 75% to 90% a type of bacteria commonly in children
- *Klebsiella Pneumoniae*
- *Pseudomonas aeruginosa*
- *Enterococcus*

- » *Staphylococcus*
- » *Group A streptococci*

SYMPTOMS

- Symptoms are often clear in older children:
    - » Fever
    - » Lower abdominal pain and backache
    - » Increased urinary frequency
    - » Dysuria
    - » Cloudy urine and/or foul-smelling urine
    - » Urinary urgency and bladder accidents (enuresis)
    - » Blood in the urine
    - » Nausea/vomiting
- Symptoms may not be very clear in infants and younger children:
    - » Febrile without any focus
    - » Fussiness and irritability
    - » Poor feeding
    - » Vomiting

INVESTIGATIONS

- Urine routine examination
- Urine for Culture and sensitivity
- Renal function test and serum electrolytes
- USG KUB (Kidney and Urinary Bladder): to look for cystitis and CAKUT (Congenital Anomalies of Kidney and Urinary Tract)

MANAGEMENT

- Encourage frequent breastfeeding and adequate intake of fluid
- If vomiting is severe, Tab. Metoclopramide 0.1 mg/kg/dose stat and TDS

for 2-3 days and observation for a few hours
- Tab./Syrup (250 mg/5 ml) Paracetamol 15 mg/kg/dose TDS for 3 days
- Empirical antibiotics can be administered:
  - » Tab./Syrup (250 mg/5 ml) Amoxycillin 15 mg/kg/dose TDS for 5 days **OR**
  - » Tab. 480 mg/Syrup 240 mg/5 ml Co-trimoxazole 8 mg TMP/kg/day BD for 5 days
- Follow up after 48 hours for symptoms relief
- Refer for further evaluation if there is history of recurrent UTI (2 or more episodes in last 6 months and 3 or more episodes at any given time)

HEALTH EDUCATION

- Ensure good intake of oral fluids which will help to flush out bacteria from the urinary tract and also prevents constipation. Retained faecal matter create blockages in the urinary tract which allow bacteria to grow
- Explain the importance of completion of antibiotics
- Change baby's diapers often to prevent bacteria from growing
- Wipe the genitalia area of the baby from front to back
- Advise older female children on perineal hygiene and to wipe from front to back. This helps to prevent bacteria in stool from getting into the vagina and urinary tract
- Encourage the child to go to the bathroom as soon as they feel the urge
- Encourage the child to wear cotton undergarments which improves airflow and prevents bacteria from growing

12.6 Henoch-Schonlein purpura (HSP)

DEFINITION

Henoch-Schönlein purpura (HSP) is the most common vasculitis of childhood. Approximately 90% of HSP cases occur in children, usually between the ages of 3 and 10 yr. Many cases of HSP follow an upper respiratory infection. The

prognosis for childhood HSP is excellent, and recurrences occur within 4-6 months of the initial diagnosis in around 5-60% of children with HSP.

SIGNS & SYMPTOMS

- Rash: symmetrical palpable purpura starting as pink macules or wheals and developing into petechiae, raised purpura, or larger ecchymoses. They usually occur on lower extremities or on buttocks
- Arthritis and arthralgias of the lower limbs are common and self-limited
- Abdominal pain, vomiting, diarrhoea and melena
- Blood in the urine

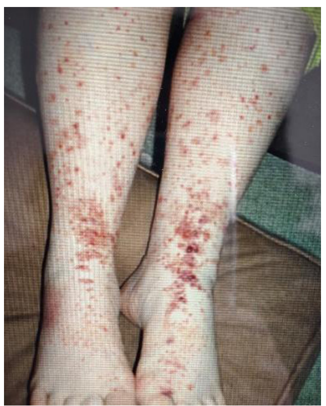


Fig. 12.2 Symptoms of Henoch- Schonlein purpura

INVESTIGATIONS

- HSP is a clinical diagnosis. Usually, laboratory investigations are not necessary

MANAGEMENT

- Symptomatic treatment for mild HSP which is self-limited (adequate hydration, nutrition, and pain relief)
- Prednisolone 1mg/kg/day for 1-2 weeks, followed by taper for abdominal

pain and joint pains

FOLLOW UP

- Monitor blood pressure for development of nephritis
- Renal disease is the major long-term complication, occurring in 1-2% of children with HSP
- Renal disease can develop up to 6 months after diagnosis if the initial urine routine examination was not normal

CHAPTER 13
MUSCULOSKELETAL SYSTEM DISORDERS

Mr. Gem Tshering, Asso. Prof. FNPH
Dr. Gem Dorjiee JDW proofreader

13.1 Sprains and strains (closed soft tissue injuries)

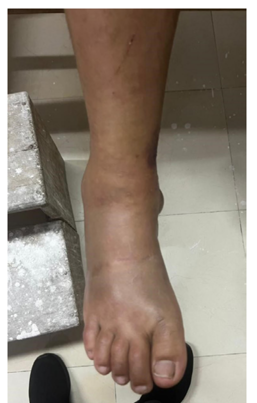
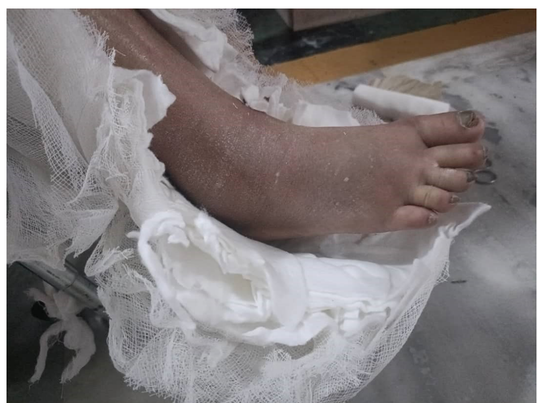



Fig. 13.1 & 13.2 Shows images of right ankle

DEFINITION

A sprain occurs when ligaments, muscles and tendons are put under sudden force or stretched and are partially torn. Usually there is a history of injury, e.g. Twisting injury to the ankle, knee, back etc.

CAUSES

- Any form of trauma e.g. falls, accidents, sports injury

SIGNS & SYMPTOMS

- Swelling
- Increased warmth
- Discoloration
- Pain on passive or active movement.
- ROM(restriction of movement)
- Deformity

P.S: Advisable to avoid manipulation if unsure of bony injuries.

INVESTIGATIONS

- X-rays of the affected area to rule out associated fractures and dislocation (If available)

MANAGEMENT

- Initial treatment for strains and sprains includes R.I.C.E. (Rest, Ice, Compression, and Elevation)

- Medications to help control pain and swelling
- Restricting activities
- May need a splint or cast
- Crutches or a wheelchair may be needed

If pain persists or incase of instability patient may require referral to a higher centre for diagnosis and management

13.2 Fractures and dislocations

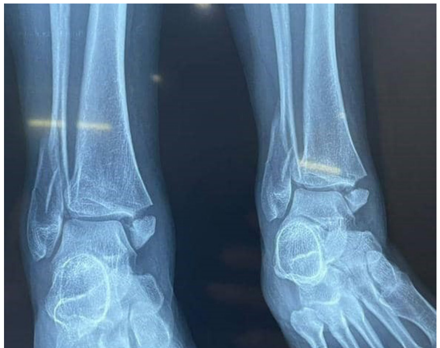


Fig. 13.3 Fracture of ankle

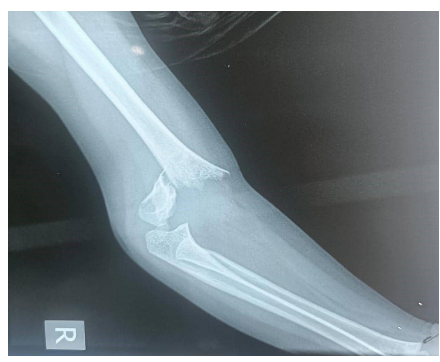


Fig. 13.4 Supracondylar fracture

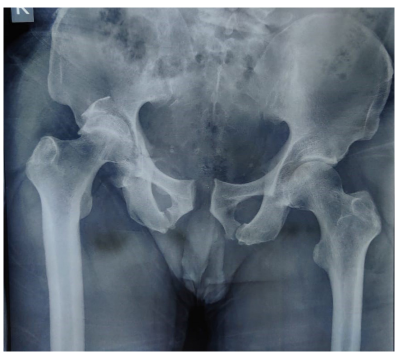


Fig. 13.5 Fracture dislocation of the hip

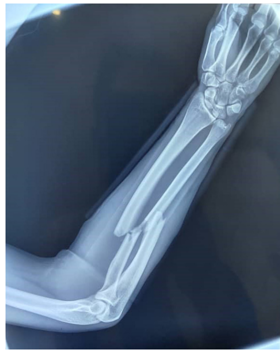


Fig. 13.6 Fracture of both bones forearm

DEFINITION

Fractures are defined as breaks or cracks in the bones. Dislocation occurs when a bone moves out of place from its usual connecting joint.

CAUSES

- The cause is usually trauma resulting from a fall, RTA, contact sports

SIGNS & SYMPTOMS

- Look for open wound at the site of impact (to differentiate open/ close

fracture)

- Pain
- Swelling
- Loss of movement of the limb
- Deformity
- Neurovascular status (pulse and sensation of affected limbs)
- Point tenderness over the bone in case of fractures
- Crepitus- in case of fractures

If unsure of fracture or dislocation, never manipulate before confirming by x-rays unless there is impaired circulation to the limb from severe deformity

INVESTIGATIONS

- Plain X-ray – If available
- CT scan – If available
- MRI – If available

MANAGEMENT

Open Fractures

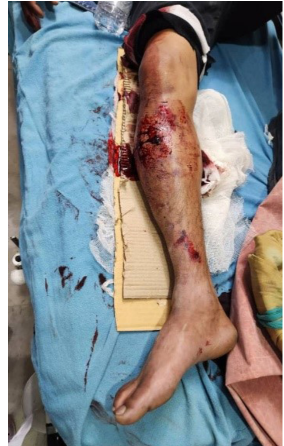


Fig. 13.7 Shows open fracture of the tibia

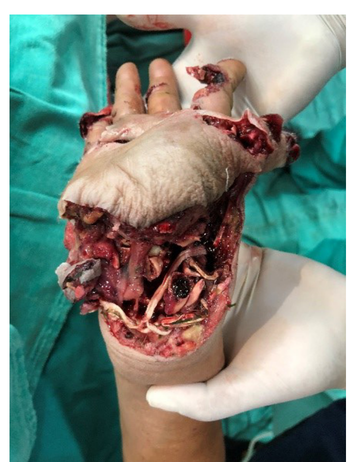


Fig. 13.8 Near amputation of the wrist

- Intravenous fluids (20 ml/kg bolus of crystalloids fluid for patient with sign of impending shock and shock)
- Inj. TT 0.5 ml IM STAT (For adult and child above 5 years old)
- Pain relief (analgesic as per the pain severity)
- Irrigation of the wound
- Control bleeding
- Antibiotics
- Reduce fracture and dislocations
- Apply appropriate splints
- Refer for definitive treatment

Complications:

- Injury to the internal organs
- Severe bleeding and shock especially in pelvic fractures, open fractures or long bone fractures (eg. femur)
- Neuro-vascular injuries (injury to the artery or nerve at the site of fracture)
- Osteomyelitis in case of open fractures.

Closed Fracture

- Pain relief
- Reduce fracture and dislocations
- Apply appropriate splints
- Refer for definitive treatment

13.3 Open soft tissue injuries

Fig. 13.9 Soft tissue injury of the hand

Fig. 13.10 Soft tissue injury of the foot

DEFINITION

A soft tissue injury is described as any injury that causes damage to the skin, muscle, ligament, tendon or the neurovascular structures.

CAUSES

- Injuries result from sharp objects, workplace accidents, RTA, sports

SIGNS & SYMPTOMS

- Open wounds: Laceration, abrasion, incised
- Bleeding
- Loss of range of movement
- Loss of sensation

INVESTIGATIONS

- X-ray – If available

MANAGEMENT

- Pain relief
- Inj. TT 0.5 ml IM STAT

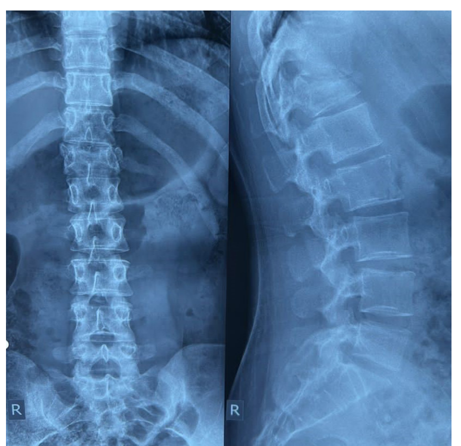
- Irrigation of the wound
- Control bleeding
- Antibiotics
- Apply appropriate splints
- Refer for definitive treatment

P.S: Do not suture the wound

Table 13.1 Summary

Disease	Causes	Clinical Features	Investigations	Management	Comments
Sprains and strains - Closed soft tissue injuries	Fall,RTA, sports injury	Swelling, tenderness, reduced ROM, discoloration	X- Ray of affected part	RICE, pain relief, immobilisation	Refer incase of persistent pain and instability
Open soft tissue injuries	Cut injuries, RTA, workplace injuries	Open wound, bleeding, loss of ROM, loss of sensation.	X- Ray of affected part	Irrigation, pain relief, bleeding control, antibiotics, splinting	Refer incase of tendon and NV injuries
Fractures - Open	RTA, sports injuries, workplace injuries	Open wound, bleeding, pain, deformity, fractures fragments may be visible, loss of ROM, loss of sensation	X- Ray of affected part	Irrigation, pain relief, bleeding control, antibiotics, splinting	Refer for proper management
Fractures - Closed	RTA, sports injuries, workplace injuries	Swelling, pain, deformity, discoloration, loss of ROM, loss of sensation.	X- Ray of affected part	Pain relief, reduction of fracture, splint application	Refer for definitive treatment
Dislocation	RTA, sports injuries, workplace injuries	Swelling, pain, deformity, loss of ROM, loss of sensation	X- Ray of affected part	Pain relief, reduction of fracture, splint application	Refer for definitive treatment

13.4 Spine fractures and spinal cord injuries



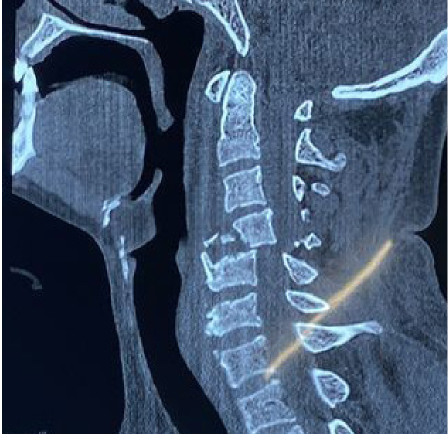


Fig. 13.11 & 13.12 X rays and MRI showing fracture of the spine and canal compromise

DEFINITION

A spinal cord injury (SCI) is damage to the tight bundle of cells and nerves that sends and receives signals from the brain to and from the rest of the body. The spinal cord extends from the lower part of the brain down through the lower back.

A patient with spine injuries may still have an uninjured spinal cord (intact neurological function) and proper emergency care may prevent the need for extensive medical care and permanent disability. Therefore, it is imperative that utmost care is taken while handling a spine injured patient to prevent any further harm.

CAUSES

- Accidents from falls and road traffic crashes are the most common cause of damage to the spinal cord

SIGNS & SYMPTOMS

- In a conscious patient, pain over the neck and back
- Numbness, tingling and weakness in the limbs
- Loss of bladder or bowel control
- Paralysis or anaesthesia
- Pain over the spine with movement
- Tenderness over the spine
- Absent or weak reflexes (deep tendon jerks)

ACUTE PHASE CONDITIONS

Patients may present during the acute with features of various types of shock namely spinal, neurogenic or hypovolemic shock.

Table 13.2. Spinal vs Neurogenic vs Hypovolemic Shock

	Spinal Shock	Neurogenic Shock	Hypovolemic Shock
Blood Pressure	Hypotension	Hypotension	Hypotension
Pulse	Bradycardia	Bradycardia	Tachycardia
Reflexes/ Bulbocavernoss reflex	Absent	Variable/ Independent	Variable/ Independent
Motor	Flaccid paralysis	Variable/ Independent	Variable/ Independent
Dislocation	RTA, sports injuries, workplace injuries	Swelling, pain, deformity, loss of ROM, loss of sensation	X- Ray of affected part

Table 13.3. Asia ImpairmENT Scale

		MOTOR	SENSORY
A	COMPLETE	No motor function	Complete deficit
B	INCOMPLETE	No motor function	Incomplete deficit
C	INCOMPLETE	Motor function partially preserved: more than half of key muscles below the neurological level have a muscle power grade of less than 3.	Incomplete deficit
D	INCOMPLETE	Motor function partially preserved: at least half of key muscles below the neurological level have a muscle power grade of less than 3.	Incomplete deficit
E	NORMAL	Normal motor	Normal sensation

INVESTIGATIONS

- In case of a suspected spinal cord injury, it is essential to stabilise the spine before sending for investigations (APPLICATION OF C-COLLAR AND SPINE BOARD)
- X-ray to rule out fractures of the spine

MANAGEMENT

- Patient mobilisation: LOG ROLL
  - » Positioning: Ensure that the person is lying flat on their back
  - » Preparation: If there are no suspected neck or spine injuries, two people can perform the log roll
  - » First Person: Stand on the side of the person's injured side. Place one hand under the person's shoulder and the other hand under their hip
  - » Second Person: Stand on the opposite side. Place one hand under the person's thigh and the other hand under their knee
  - » Coordination: Both people should coordinate their movements to roll the person onto their side as a single unit, keeping the spine aligned

» Rolling: On a count of three, gently roll the person onto their side, ensuring the head, neck, and spine move together

» Positioning: Once rolled onto their side, place a soft support (e.g., a rolled-up towel) behind their back to maintain the position

» Assessment: Assess the person's condition and provide necessary medical care

It's crucial to perform a log roll carefully and avoid twisting or bending the spine to prevent further injury

Fig. 13.13 Log Roll

- Immobilisation of Spine:
  » Scene Safety: Before approaching the patient, ensure that the scene is safe for both you and the patient

  » Assessment: Assess the patient's level of consciousness, airway, breathing, and circulation (ABCs) to ensure they are stable before proceeding with spinal immobilisation

  » Immobilisation Equipment: Gather the necessary equipment, including a spinal board, head immobiliser, straps, and padding

  » Positioning: Position the spinal board next to the patient, ensuring it is at the same level as the patient's body to minimise movement during transfer

- » Manual Stabilisation: Have one or more assistants manually stabilise the patient's head and neck in a neutral position while you prepare the board
- » Transfer: Carefully transfer the patient onto the spinal board, maintaining manual stabilisation of the head and neck throughout the process
- » Padding: Place padding under the patient's head, torso, and limbs as needed to maintain neutral alignment and prevent pressure sores
- » Securing Straps: Secure the patient to the board using straps, starting with the chest and pelvis straps and then securing the legs and arms
- » Head Immobilization: Attach a head immobiliser to the board to further stabilise the head and neck. Ensure the immobiliser is snug but not too tight to avoid compromising circulation
- » Reassessment: Reassess the patient's ABCs and neurovascular status after immobilisation to ensure there are no new complications
- » Transport: Transport the patient to the appropriate medical facility while maintaining spinal precautions throughout the journey

It's essential to follow proper protocols and receive training in spinal immobilisation techniques to ensure the safety and well-being of patients with suspected spinal injuries

- Pain relief
- Care of the bowel and bladder
- Prevention of bed sores
- Refer for further treatment especially those patients with neurological problems

13.5 Osteomyelitis

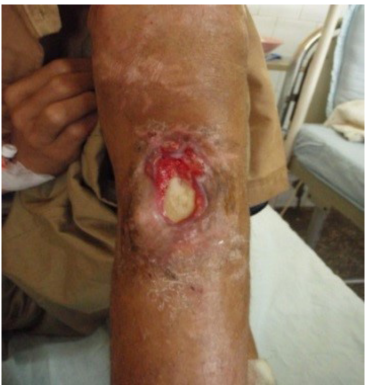
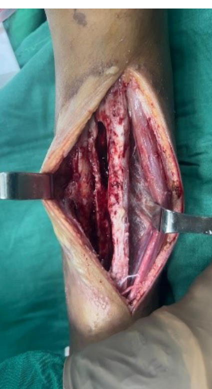



Fig. 13.14 Osteomyelitis

DEFINITION

Osteomyelitis is an infection of the bone that can include the periosteum, medullary cavity, and cortical bone.

CAUSES

- Open fractures
- Blood bone infection (hematogenous) from a site of infection elsewhere in the body

SIGNS & SYMPTOMS

- Pain
- Fever
- Reduced ROM
- Swelling and erythema
- Pus discharge from a sinus over the bone in case of chronic osteomyelitis.

INVESTIGATIONS

- CBC
- X Ray of the affected part

MANAGEMENT

- Start antibiotics with Inj. Benzyl Penicillin 6 lakh units IM Q 6 hrs or preferably Inj. Ceftriaxone 1 gm IV Q 12 hrs if available (adult dose)
- Treat fever and give other supportive therapy
- Refer urgently for I & D as any delay would lead to chronic osteomyelitis

13.6 Septic Arthritis

DEFINITION

Septic arthritis is an infection in the joint fluid and tissues. Most commonly affecting the knee, hip and shoulder.

CAUSES

- The cause of septic arthritis is usually infective in nature.

SIGNS & SYMPTOMS

- Severe pain, swelling and redness in a single joint
- Fever
- Reduced movement in the joint

INVESTIGATIONS

- CBC
- X Ray to rule out fracture

MANAGEMENT

- Pain relief and treat fever

- Immobilise the joint with a splint
- Start antibiotics with Inj. Ampicillin 500 mg IV Q 6 hrs
- Refer urgently

13.7 Pyomyositis

DEFINITION

Pyomyositis is a bacterial infection of the muscle that usually results in an abscess.

CAUSES

- Pyomyositis is most often caused by a bacterium called Staphylococcus aureus

SIGNS & SYMPTOMS

- Fever
- Pain in the involved limb
- Swelling associated with deep tenderness
- The skin over the swelling may be intact but tense and warm
- Inability to move the limb normally

INVESTIGATION

- CBC
- X Ray to rule out fracture

MANAGEMENT

- Start IV antibiotics with Inj. PP or Ceftriaxone
- Treat fever and pain
- Refer urgently

13.8 Gout

DEFINITION

Gout is a painful form of inflammatory arthritis affecting joints, usually the big toe joint.

CAUSES

- Increased level of uric acid in blood

SIGNS & SYMPTOMS

- Onset is sudden (severe at night)
- First affect the meta-tarsophalangeal joint of great toes. Other joints, the ankle, the knee and small joints of feet and hands, the wrist and elbow can also be involved
- The affected joint is hot, red and swollen with shiny overlying skin and dilation of veins, it is a painful and tender
- Fever and occasionally anorexia, nausea in very acute attack

INVESTIGATION

- CBC, ESR
- Serum uric acid

MANAGEMENT

- Rest
- Pain relief
- Diet modification- restrict alcohol, dairy products, red meat
- Drink plenty of water
- Maintain a healthy weight
- Avoid medications that trigger gout (e.g. Hydrochlorothiazide)
- Allopurinol to reduce uric acid levels

13.9 Rheumatoid arthritis (RA)

DEFINITION

This is a chronic inflammatory joint disease which causes a symmetrical destructive and deforming polyarthritis affecting the small and large peripheral joints with systemic disturbances, more common in females.

CAUSES

- RA is the result of an immune response in which the body's immune system attacks its own healthy cells

SIGNS & SYMPTOMS

- Joint pain, tenderness, swelling or stiffness that lasts for six weeks or longer
- Morning stiffness that lasts for 30 minutes or longer
- More than one joint is affected
- Small joints (wrists, certain joints in the hands and feet) are typically affected first
- The same joints on both sides of the body are affected
- Fatigue, low grade fever
- Deformity

INVESTIGATIONS

- X-ray of hands

MANAGEMENT

- Rest
- Ibuprofen 400 mg TDS
- Physiotherapy
- Healthy Eating and movement

- Balancing activity with rest
- Hot and cold treatments
- Refer for expert management

13.10 Osteoarthritis

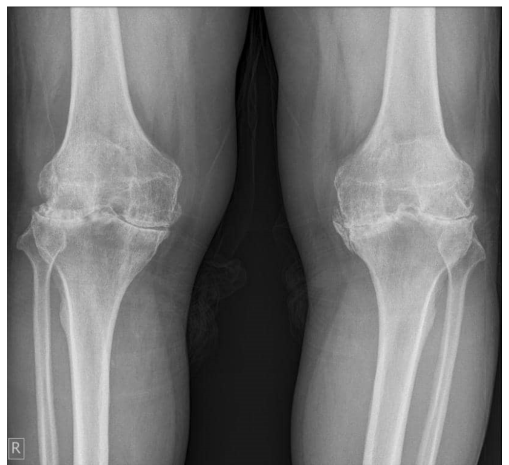


Fig. 13.15 Osteoarthritis of B/L Knees

DEFINITION

Osteoarthritis is a degenerative disease of the joints that causes progressive loss of articular cartilage.

CAUSES

- Articular Trauma
- Repetitive knee bending (Occupational)
- Obesity
- Increased age
- Gender: Females >Males

SIGNS & SYMPTOMS

- Pain
- Stiffness of joints
- Decrease range of motion
- Crepitus when the joint is moved

INVESTIGATION

- X-ray

MANAGEMENT

- Pain relief
- Refer for expert management
- Weight reduction in obese patients
- Quadriceps strengthening exercise

13.11 Low back pain

DEFINITION

Back pain is the most common patient complaint encountered in general practice. Majority of these patients suffer from non-specific back pain and they neither have clear-cut abnormalities on clinical or radiographic evaluation. These patients are referred to as having "mechanical low back pain" and their treatment is empiric. All these patients should be treated with a course of NSAIDs and physiotherapy and no referrals should be made.

The rest of the patients who complain of acute low back pain with a history of injury may be suffering from either "acute back sprain/strain" or prolapsed intervertebral disc *(PIVD). RULE OUT OTHER CAUSE OF LOWER BACK PAIN (e.g. UTI, PYELONEPHRITIS, POTS DISEASE)*

CAUSES

- Repeated minor back injuries
- Bad posture or following an uncoordinated action to pick up something from the ground

SIGNS & SYMPTOMS

- Sudden onset of acute low back pain
- Unable to bend or move around
- Muscle spasm over the back
- Muscle tenderness at the sides of the vertebrae
- Severely restricted movement of the back

MANAGEMENT

- Bed rest
- Pain relief
- Local ice application
- Physiotherapy
- Prevention: Always lift heavy objects with the knees bent and back straight, hold the objects close to the back

13.12 Prolapsed intervertebral disc (PIVD)

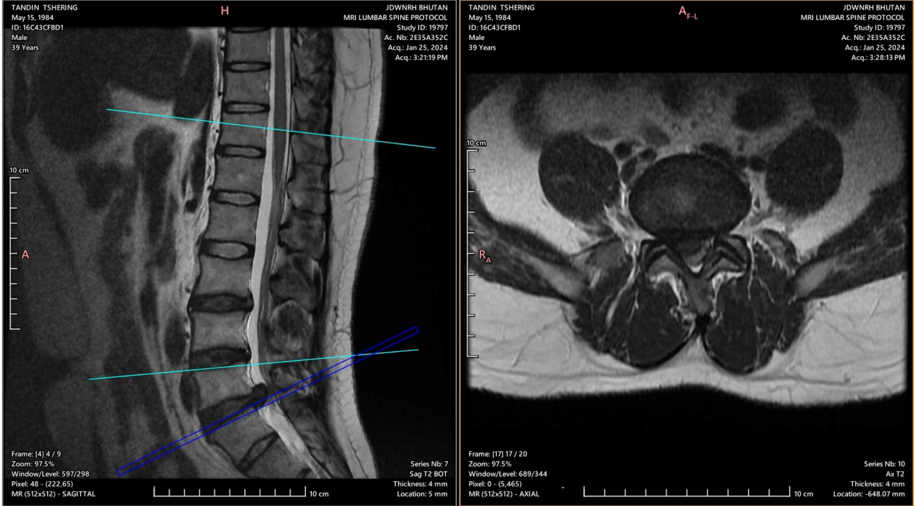


Fig. 13.16 Showing Prolapsed Intervertebral Disc (PIVD)

DEFINITION

Prolapsed intervertebral disc is a common cause of low back pain and unilateral leg pain, known as radiculopathy.

CAUSES

- Trauma that causes the vertebrae to fracture
- A job that requires lots of lifting
- A job that requires a lot of sitting
- Weight-bearing sports or exercise
- Obesity
- Smoking
- Weakness in the spine due to normal ageing

SIGNS & SYMPTOMS

- Acute severe pain in the lower back or buttock or down the leg
- May have local tenderness
- Straight leg raise test (SLRT) produces pain in the leg or sciatica
- Weakness of the toe extensors or flexors
- Retention or incontinence of urine if the nerves to the bladder are affected

MANAGEMENT

- Bed rest
- Pain relief
- Physiotherapy
- Refer for investigation and further management (specially when bowel and bladder are involved)

13.13 Rickets

DEFINITION

Rickets is a metabolic bone disease caused by a defect in mineralization of the osteoid matrix caused by inadequate calcium and phosphate that occurs prior to closure of the physis.

CAUSES

- Rickets usually occur because of a lack of vitamin D or calcium, although it can also be caused by a genetic defect or another health condition

SIGNS & SYMPTOMS

- In infants, tetany, irritability, weakness, failure to thrive
- In toddlers, presenting with pain and swelling around the joints
- Tibial bowing
- Enlargement at the site of growth plates such as wrists, costochondral

junctions (ribs) called as “rachitic rosary”
- Waddling gait

MANAGEMENT

- Refer for further investigation and management

Sources of vitamin D are

- Sunlight: your skin produces Vitamin D when it's exposed to the sun, and we get most of our Vitamin D this way
- Food: Vitamin D is also found in some foods, such as oily fish, eggs and fortified breakfast cereals
- Dietary supplements

13.14 Osteomalacia

DEFINITION

Osteomalacia means “soft bones” and is a metabolic bone disease where there is defective mineralization resulting in weak bones.

CAUSES

Osteomalacia develops most commonly due to a Vitamin D deficiency

SIGNS & SYMPTOMS

- Anorexia, weight loss
- Widespread bone pains
- Muscle weakness
- Bony tenderness
- Progressive bony deformity of the spine and limbs

MANAGEMENT

- Refer for further investigation and management

13.15 Osteoporosis

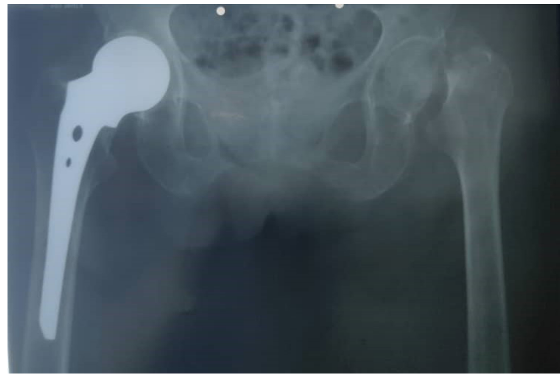


Fig. 13.17 Osteoporosis

DEFINITION

Means “porous bone” and is characterised by decrease in total amount of bone in the skeleton either from decreased bone formation or increased resorption of bone. There is normal calcification of bone; only the amount of bone is less. Osteoporosis is a common finding in post-menopausal women and elderly people.

CAUSES

- **Sex:** Woman >Men. Women have lower peak bone mass and smaller bones than men. However, men are still at risk, especially after the age of 70
- **Age:** As you age, bone loss happens more quickly, and new bone growth is slower. Over time, your bones can weaken and your risk for osteoporosis increases
- **Changes to hormones.** Postmenopausal women are at higher risk of developing osteoporosis
- **Diet.** Beginning in childhood and into old age, a diet low in calcium and vitamin D can increase your risk for osteoporosis and fractures. Excessive

dieting or poor protein intake may increase your risk for bone loss and osteoporosis

- **Lifestyle.** A healthy lifestyle can be important for keeping bones strong

SIGNS & SYMPTOMS

- Generalised bone pain especially in the back
- General weakness and ill feeling
- Progressive deformity of the spine with loss of both standing and sitting height
- Abnormal degree of dorsal kyphosis
- Elderly patients may present with fractures in the wrists from trivial falls

Table 13.4. Type I vs Type II Osteoporosis

	Type I (Postmenopausal)	Type II (Senile)
Age group	50-70 yrs old	More than 70 yrs old
Bone affected	Almost exclusively trabecular	Trabecular >Cortical
Bones fractured	Distal radius and vertebral	Hip and pelvis
Effect on calcium	Net negative levels of calcium	Poor calcium absorption
Effect on Vitamin-D	Reduced total circulating levels of calcium but not free levels of calcium	

MANAGEMENT

- Pain medication
- Refer for further management

13.16 Musculoskeletal tumour or neoplasm

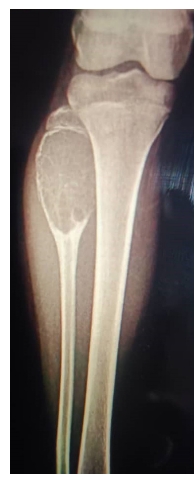


Fig. 13.18 Shows tumour of the proximal fibula

DEFINITION

Tumour or "neoplasm" which means new abnormal growth as in any other systems are broadly divided into benign and malignant lesions.

CAUSES

- Radiotherapy
- Other disease of the bone - Paget's disease
- Genetic conditions

SIGNS & SYMPTOMS

- Bone pain aggravated at night
- Swelling and redness
- Reduced ROM
- Fractures
- Loss of weight and appetite

INVESTIGATIONS

- X Ray

MANAGEMENT

- Pain relief
- Apply appropriate splint in case of fractures

Table 13.5. Difference between benign and malignant bone tumours

Condition	Symptoms	Signs	Management	Comments
Benign lesion	Slowly growing lump Not painful unless pressure symptoms	Firm swelling Non tender Localised	Watchful expectancy Reassurance	Refer if unsure or growing in size
Malignant lesion	Progressively growing lump Progressive pain	Diffuse swelling Firm and tender Skin over the swelling may be warm and veins dilated	Pain medication	Prompt referral

CHAPTER 14
EAR, NOSE & THROAT

Dr. Puspalal Katel, Otorhinolaryngologist, CRRH
Ms. Manikala Moktan Asst. Professor FNPH

Important points to note while taking ENT History and Examination

Nose:

- Look at nostril, nasal septum, bleeding, blockage, and outside nose
- Many patients complain of nasal obstruction. Try to determine whether this is unilateral or bilateral
- Intermittent nasal obstruction associated with sneezing, nasal itch may be due to allergy
- Unilateral epistaxis or blood-stained nasal discharge, nasal obstruction/ foreign body, facial pain or swelling, diplopia, history of snoring must be recognized as the common presenting features of nasal tumours
- Features that may indicate sinusitis are pressure or pain in the cheeks, in the forehead or across the bridge of the nose with mild grade fever
- One should enquire about defects in the sense of smell, such as loss of smell (anosmia) and unpleasant odours (cacosmia) which requires further assessment
- Septal hematoma following nasal trauma requires urgent referral as it causes avascular necrosis of septum which results in saddle nose deformity

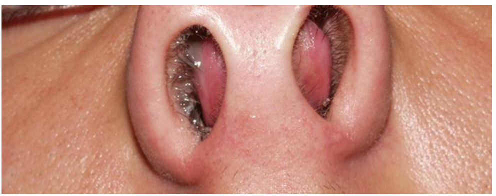


Fig. 14.1 Septal Hematoma Following nasal trauma

Ear:

- Examine ear with a light
- Look at outside of the ears & ear canals, discharge
- Hearing loss is the most common presenting complaint in diseases of the ear. A unilateral Hearing loss should raise the level of suspicion for further evaluation
- Pain in the ear (otalgia) and/or discharge from the ear (otorrhea) are also common symptoms, as is itch in the ears. The nature of any discharge from the ears should be determined. For example, is it simple wax, purulent, blood-stained or watery? Each of these may suggest a differing pathology. Foul-smelling otorrhea may be characteristic of cholesteatoma, maggots in ear, impacted foreign body and rarely malignancy
- Patients often complain of noises in the ears (tinnitus). It is important to recognize unilateral (one side) pulsatile tinnitus, which may occur with serious vascular tumours or malformations. Similarly, tinnitus along with vertigo and hearing loss may be due to Meniere's disease
- Dizziness with or without vomiting is another frequently encountered complaint usually associated with change in position may be due to Benign paroxysmal positional vertigo (BPPV)
- Trauma to ear pinna causing auricular hematoma requires urgent referral as it cases avascular necrosis of helical cartilage resulting in pinna deformity (cauliflower ear)

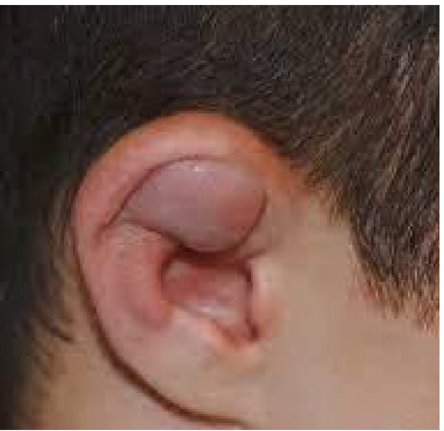


Fig. 14.2 Auricular hematoma following blunt trauma to ear;

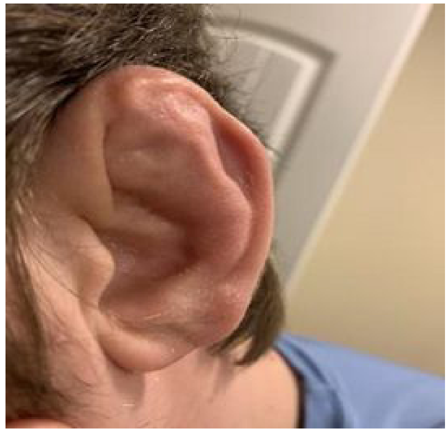


Fig. 14.3 Cauliflower ear deformity following untreated auricular hematoma

Throat:

- While taking history from a patient who complains of a hoarse voice, it is important to determine the duration and circumstances that preceded this symptom. Hoarseness of voice is common following an upper respiratory tract infection or after excessive voice use which usually resolves on its own. However, persistent hoarseness of voice with or without difficulty in swallowing beyond 2 weeks may be due to cancer of larynx
- Other common symptoms are feeling of a lump in the throat, mucus in the throat and discomfort may be the presenting features of oral or oropharyngeal cancers
- Acid reflux may also contribute to or cause throat problems, and, therefore, other features suggestive of this must also be sought
- It is important to ascertain a good general medical history, since a wide variety of systemic conditions such as anaemia and human immunodeficiency virus (HIV) infection can present with oral manifestations
- Patients with lumps in the neck must be referred to a GDMO/ENT specialist, since only the ENT specialist has the adequate equipment

and expertise to examine the likely primary sites from which secondary neoplastic neck node deposits may originate

- Symptoms of weight loss, night sweats and malaise may suggest a systemic disease such as tuberculosis, lymphoma or acquired immunodeficiency syndrome (AIDS)
- Facial asymmetry, facial fullness or facial swelling should also be noted and referred for further evaluation

References

Training Manual on Ear, Nose and Throat (ENT) Care for Staff Nurse at Ayushman Bharat – Health and Wellness Centres

14.1 Acute otitis externa

DEFINITION

This is an inflammation or infection in the outer part of the ear canal. It causes pain and has crusts around the external ear.

CAUSES

- Pseudomonas aeruginosa or
- Staphylococcus aureus
- Seborrheic dermatitis
- Self-ear picking/ear cleaning

SIGNS & SYMPTOMS

- Pain and tenderness on pulling the pinna and pressing the tragus

MANAGEMENT

- Clean the ear carefully under good light (suction, dry mopping, removal of obstructing cerumen or foreign body)
- Apply Chloramphenicol 1% ointment after cleaning

- Advice follow up in 1 to 2 days if no improvement and repeat cleaning if required
- If it is severe, give Cap. Amoxicillin 500 mg TDS X 7 - 10 days or Co-trimoxazole for 7 - 10 days to patients who are allergic to Penicillin
- Avoid entry of water into ear and avoid trying to clean or pick ear with hard objects

HEALTH EDUCATION

- Do not pick ears
- Wash hands

14.2 Impacted cerumen (Wax)

DEFINITION

It is cerumen secreted by ear glands. If excess can cause deafness without pain, pain can be present if the wax is hard and impacted or if it swells when water enters.

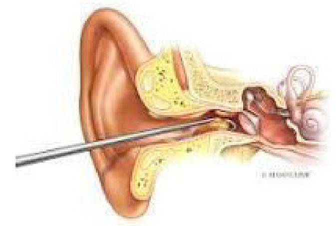


Fig. 14.4 Impacted cerumen (Wax)

CAUSES

- Excess wax and not removed naturally

MANAGEMENT

- If the wax is hard it should be softened by pouring a few drops of warmed (not hot) cooking oil into the ear. Hydrogen peroxide (50% dilution) can

also be used
- After 5 – 7 days of using wax softening drops, carefully syringe the ear with warm water (at skin temperature). Direct the water along the roof of the canal

DANGER
Do not syringe if there is a history of a previous ear discharge

14.3 Acute otitis media

DEFINITION

This is an infection in the middle ear.

CAUSES

- Viral (30-70%): RSV; Rhinovirus; Coronavirus; Influenza: Parainfluenza
- Bacterial (55%): *Streptococcus pneumoniae* (44%); *Haemophilus influenzae* (41%); *Moraxella catarrhalis* (14%); Gram negative enteric bacteria; *S. aureus*
- Combined (15%)
- It is a complication of an upper respiratory infection and is very common in young children. If a child has had it once, he will probably have it many times, but the attacks will become fewer as he gets older

SIGNS & SYMPTOMS

- Pain in the ear which makes a young child cry
- Fever
- Pus running from the ear
- Foul-smelling discharge can indicate a cholesteatoma which has a higher chance of complication
- Young children may also have

  - » Vomiting
  - » Diarrhoea
  - » Convulsions

MANAGEMENT

- Clean the ear carefully three times a day with a twist of cotton wool or blotting paper
- Nothing should be put into the ear as long as the eardrum is perforated and the pus is running out
- Advice the mother not to allow water to enter the ear when she is washing the child
- Amoxicillin: adult 500 mg TDS; child 15 mg/kg TDS for 7 - 10 days (first choice) OR Co-trimoxazole: adult 160 mg/800 mg 6 hourly, child 8 mg TMP/kg/day 12 hourly for 7 – 10 days
- 0.9% Normal Saline nasal drops into the nose twice daily
- Paracetamol for 3 days

Complications

- Deafness
- Mastoiditis with fever, pain and swelling over the mastoid bone just behind the ear
- Meningitis with fever, headache and neck stiffness
- Intracranial abscess with headache, fever, squint and increasing weakness of part of body
- REFER all of these complications

14.4 Foreign body in the ear

DEFINITION

A foreign object in the ear can be anything in the ear canal that normally would not be there.

CAUSES

- Any foreign object that can fit into the ear canal

SIGNS & SYMPTOMS

- Pain or itching in the ear

MANAGEMENT

- Never put water or oil into the ear to flush out a foreign body. If it is a seed it will swell up and be impossible to remove
- If the patient is a child, wrap him up in a cloth so the child can't move
- Gently remove the foreign body with a hook
- Do not use forceps because they will push the foreign body in further
- If you cannot remove the foreign body easily and need sedatives REFER child to hospital
- Patient may need a general anaesthesia

NOTE

Make a hook from a paper clip, run the end to make it smooth, gently push it behind the foreign body, and twist it so that you can pull the foreign body out.

14.5 Epistaxis (bleeding from nose)

DEFINITION

Epistaxis, or bleeding from the nose, is a common complaint, especially during winters. Moisturising the nostrils with moisturising cream or soft paraffin (Vaseline) will help stop some mild epistaxis in many cases. In the majority of cases, nosebleeds can be self-limiting, but it may be of significant concern if it is recurrent, massive or occurring in children.

The nose has a rich vascular supply. The Kiesselbach plexus, or Little's area, is an area in the anterior cartilaginous septum where a number of blood vessel connections (known as anastomosis) exist. This is the most common site for epistaxis. Nosebleeds occur more frequently in the drier, colder months, and in less humid environments. This is because dry air facilitates excoriation and cracking of the nasal mucosa, vessel trauma and subsequent epistaxis.

CAUSES

- Local causes: Trauma (fingernail trauma), mucosal irritation, nasal septal abnormality, inflammatory diseases, tumours
- Systemic causes: Certain blood disorders, hypertension (more common in adults), liver disease, kidney disease, some blood thinning drugs like Aspirin, Clopidogrel, Warfarin, etc.
- Idiopathic or reason unknown

SIGNS & SYMPTOMS

Ask for the following:

- Duration of current episode
- Previous history of similar episodes
- History of trauma
- History of bleeding tendencies elsewhere
- History of chronic liver disease
- History of any drug intake
- History of chronic alcohol intake

INVESTIGATIONS

- Site of bleeding
- Blood pressure
- Nasal septum deviation

MANAGEMENT

Relax the patient, make him sit upright with head slightly bent forward and measure his BP

- Ask the patient not to blow through his nose
- Assess whether the bleed is anterior or posterior
- In case of anterior bleeds, pinch the soft parts of nose tightly for 10 mins
- If bleeding doesn't stop, pack the nose with Vaseline laden gauge
    - » Place a dry cotton ball at the external nares to prevent leakage and dripping
    - » Leave the cotton balls in place for 10 minutes
- If the bleeding still doesn't stop and **Refer**
- Always give antibiotics in case of pack in nose and the pack should be removed after maximum 2 to 3 days

FOLLOW UP

- If the patient has high blood pressure, then this also needs to be followed up and treated for the high blood pressure. Also, cases that are referred to higher facilities must be followed up after treatment and note the special instructions/advice by the specialists.

14.6 Foreign body in the nose

DEFINITION

An object is present in the nose when it's not naturally supposed to be there.

CAUSES

- Any foreign object that can fit into the nostrils

SIGNS & SYMPTOMS

- Chronic nasal discharge
- Blood stained nasal discharge

- Foul smelling breath
- Discomfort in the nose

MANAGEMENT

- If the patient is a child, wrap him up in the cloth so that he cannot move. Gently remove the foreign body with a hook, a blunt hook should be introduced beyond the foreign body to pull it out
- Do not use forceps because it will push the foreign body further
- If you cannot remove the foreign body easily, **REFER** the child
- May need a general anaesthetic
- Button batteries (e.g. watch battery) should be considered an emergency and requires immediate removal

HEALTH EDUCATION

Not to allow children to play with small objects that can be easily inserted into the nose

14.7 Acute viral pharyngitis

DEFINITION

A viral pharyngitis (sore throat) is pain, scratchiness or irritation of the throat that often worsens when you swallow.

CAUSES

- Viral infections

SIGNS & SYMPTOMS

- Slight fever only
- Often associated with a common cold or influenza
- Causes a red throat but there are no spots on the tonsils or oropharynx, very often throat looks normal in viral sore throat

MANAGEMENT

- Viral sore throat do not require treatment with antibiotic
- Salt water gargle 2 to 3 times a day. Add one teaspoon of salt to a glass of warm water
- Symptomatic relief with Paracetamol or Ibuprofen
- Drink Plenty of fluids

FOLLOW UP

- Follow up in 2 to 3 days if there is no improvement
- Suspect bacterial causes if no improvement or severely ill

14.8 Acute bacterial pharyngitis

DEFINITION

Bacterial pharyngitis is severe throat pain, associated with fever, difficulty in swallowing.

CAUSES

- Bacterial infections: Streptococcus

SIGNS & SYMPTOMS

- Patient looks ill and may look dehydrated
- High Fever
- Enlarged cervical lymph nodes
- Pus on the tonsils and pharynx

MANAGEMENT

- Salt water gargle 2 to 3 times a day
- Drink plenty of fluids
- Paracetamol or Ibuprofen three times a day

- Amoxicillin: adult 500 mg TDS and child: 15 mg/kg TDS for 7 to 10 days

FOLLOW UP

- Follow up in 2 to 3 days if there is no improvement
- Suspect peritonsillar abscess or deep neck Infection which requires surgical interventions: REFER
- Recurrent tonsillitis (7 or more episodes in 1 year or 5 episodes per year for 2 years or 3 episodes per year for 3 years) requires referral to a higher centre for tonsillectomy.

CHAPTER 15
EYE DISORDER

Ms. Manikala Moktan Asst. Prof. FNPH;
Dr. Mendu Drukpa, Ophthalmologist, JDWNRH

Introduction

An eye is a sensory organ that allows us to perceive visual information. Being exposed to an external environment, it is vulnerable to injuries besides many systemic diseases affecting the eyes.

The eye is located in a protective bony socket called the orbit. Six extraocular muscles are attached to the eye. These muscles are responsible for eye movements. The sclera is a strong layer of fibrous tissue that covers nearly posterior 2/3rd of the eyeball.

The cornea forms anterior 1/3rd of the eye which is transparent and serves the refractive functions.

Behind the anterior chamber is the eye's iris (the coloured part of the eye) and the aperture in the middle forms the pupil which is responsible for regulating the amount of light entering the eye.

The crystalline lens helps to focus the light. The Vitreous is a gel-like structure which fills up the posterior segment of the eye and helps in maintaining the integrity of the eye. The retina receives the visual information and transmits it

to the visual cortex via optic nerve.

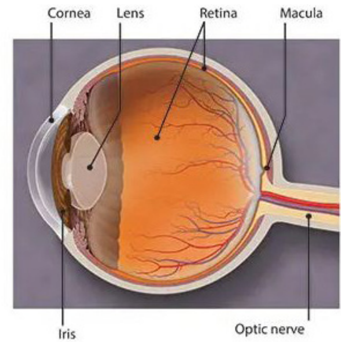


Fig. 15.1 Anatomy and Structural Diagram of Eye

Third Nerve Palsy

Examination

- 3rd oculomotor nerve: ocular movement
- Pupil: size, shape and reaction to light (downward and lateral displacement of the eye)
- Check: note Squint present/Diplopia (if client sees double)/Ptosis (drooping of the eyelid) Functions: check ocular muscles movement (except lateral rectus and superior oblique muscles)

Extraocular movements examination

- With both eyes open, test for ocular movements with client’s head in neutral position
- Ask the client to fix the gaze on the examiner's finger and to report, if double vision occurs while following movement of the finger held 60 cm away
- Move the finger up and down, then to the right and up and down, then to the left and up and down

Examination of pupil

- Size, shape and reaction to light
- Pupillary light reflex: If a light is directed at one eye, both pupils will normally constrict
- The reaction of the pupil on the side stimulated is called the direct light reflex and the constriction of the other pupil is called the consensual light reflex
- The pupil size, shape and symmetry may change in third nerve palsy (may be dilated)
- Ask the client to fix the eyes on a distant point straight - ahead
- Bring torch light from the side to shine on the pupil. Look for constriction of the pupil (direct light reflex) and constriction of the opposite pupil (consensual light reflex)
- Check the direct and consensual reflex in both eyes
- **Refer**

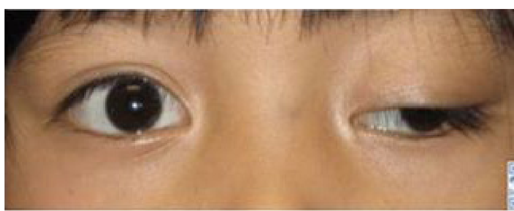
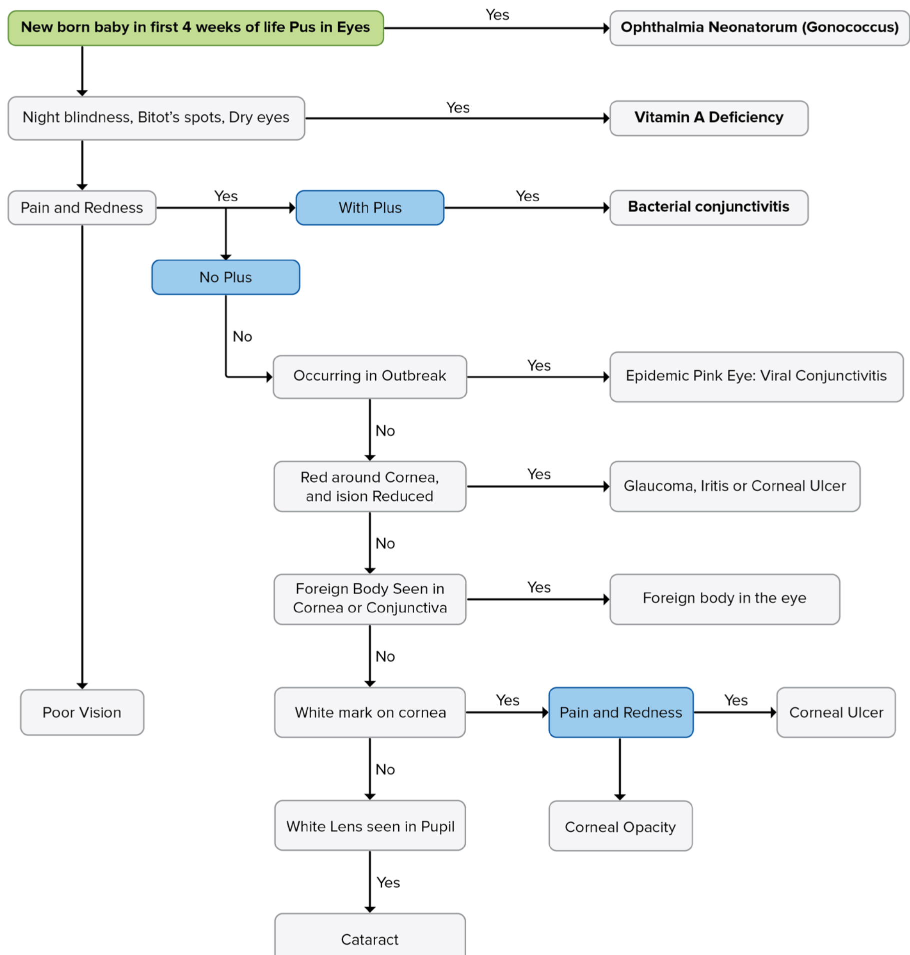
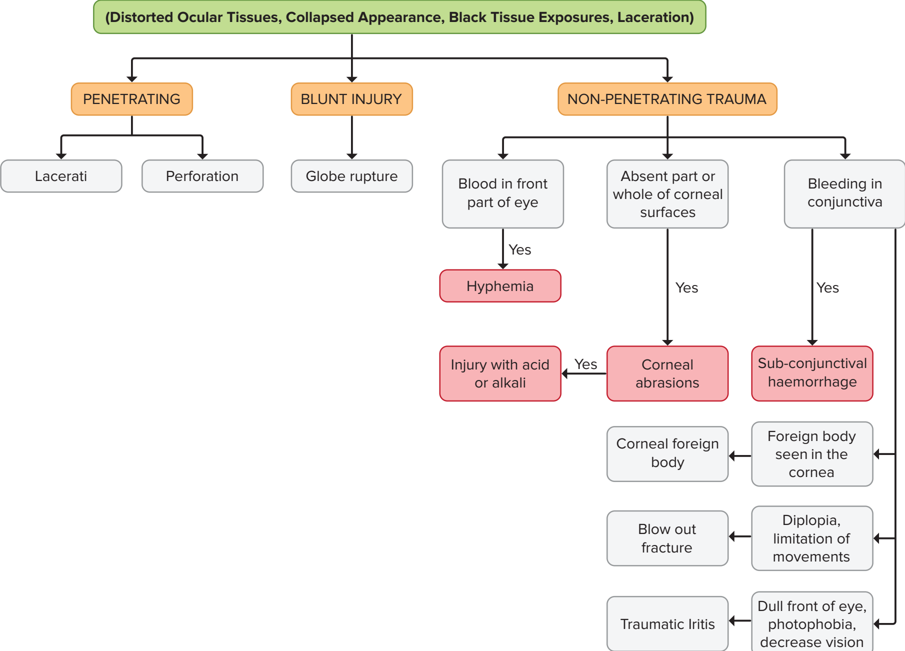


Fig. 15.2 Third Nerve Palsy

Flowchart: Examination of eye of newborn



Flowchart: Ocular trauma



15.1 Ophthalmia neonatorum

DEFINITION

Ophthalmia neonatorum is a type of conjunctivitis seen in the neonatal period.

CAUSES

- *N. Gonorrhoea*
- *Chlamydia*
- Virus
- Gonococcus is a common and very serious infection, where the baby gets the infection from the mother during delivery

SIGNS & SYMPTOMS

- Pus from both eyes in a baby under one-month-old
- Swelling of the eyelids, redness of the eye
- Conjunctiva may be painful
- Discomfort
- Photophobia
- Stickiness of eyelids
- Blindness if proper treatment is not given due to corneal ulcerations and perforation

INVESTIGATIONS

- Eye examination

MANAGEMENT

- *Neisseria gonorrhoeae:* Topical Erythromycin ointment but Tetracycline eye ointment or Chloramphenicol eye ointment. Systemic treatment - third-generation Cephalosporin such as (Ceftriaxone - 25-50 mg/kg IM STAT not to exceed 125 mg)
- Infants with gonococcal ophthalmia should have their eyes irrigated with saline frequently until the discharge is eliminated. A single dose of Cefotaxime (100 mg/kg IV or IM) is an alternative treatment along with eye ointment, give Ciprofloxacin eye drops one to two hourly for five days to seven days
- Prophylaxis: Erythromycin 0.5% or Tetracycline 1% eye ointment. If not available, Chloramphenicol eye ointment can be applied
- Refer if no improvement within 48 hours

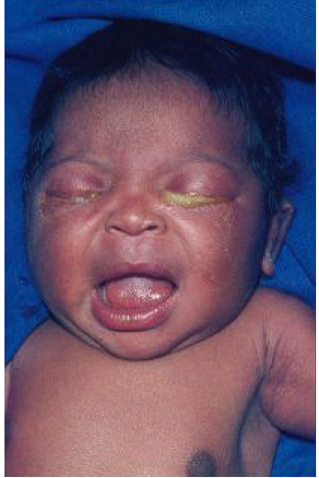


Fig. 15.3 Ophthalmia Neonatorum

NOTE

Give injection Ceftriaxone to both the parents

PREVENTION

- Look for and treat sexually transmitted diseases in pregnant women
- Clean the eyes of the baby as soon as the head is born and before the eyes are opened
- Give Tetracycline/Chloramphenicol eye ointment as a single dose if you suspect STD in the parent

HEALTH EDUCATION

- Wash hands thoroughly and avoid sharing towels, pillows etc

15.2 Bacterial conjunctivitis

DEFINITION

Conjunctivitis is the swelling or inflammation of the conjunctiva, the thin,

transparent layer of tissue that lines the inner surface of the eyelid and covers the white part of the eye.

CAUSES

- *Staphylococcus aureus*
- *Streptococcus pneumoniae*
- *Haemophilus influenzae*
- *Moraxella catarrhalis, or* less commonly
- *Chlamydia trachomatis*
- *Neisseria gonorrhoeae*

Fig. 15.4 Bacterial Conjunctivitis

SIGNS & SYMPTOMS

- Pus discharge
- Irritation in the eye
- Mild ocular discomfort

MANAGEMENT

- Wash the eyes with water before applying eye ointment or drops
- Chloramphenicol eye drops 0.5% or Ciprofloxacin eye drops 0.3% 2-3 hourly for 7 days
- Chloramphenicol ointment HS for 7 days

HEALTH EDUCATION

- Do not use the same cloth to wipe the eyes of more than one person
- Hand hygiene
- Isolation
- Use a smokeless Chula to reduce irritation from smoke

15.3 Viral conjunctivitis

DEFINITION

Conjunctivitis is the swelling or inflammation of the conjunctiva, the thin, transparent layer of tissue that lines the inner surface of the eyelid and covers the white part of the eye.

CAUSES

- *Adenoviruses*
- *Rubella virus*
- *Rubeola (measles) virus*
- *Herpesviruses, including Herpes simplex virus*
- *Picornaviruses, such as coxsackievirus* A24 and *enterovirus* 70 (which has caused outbreaks in other countries)

- This occurs in epidemics, especially in schools and colleges

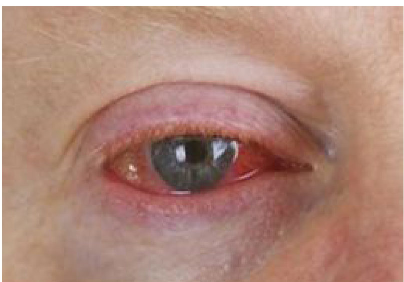


Fig. 15.5 Viral Conjunctivitis

SIGNS & SYMPTOMS

- Red eyes, but without pus
- Watery discharge

MANAGEMENT

Check conjunctiva for any membrane formation and cornea for opacities
Chloramphenicol ointment/drops given to prevent secondary infection
If membrane/corneal opacities – refer to ophthalmic staff

HEALTH EDUCATION

- Do not use the same cloth to wipe the eyes of more than one person
- Use a smokeless Chula to reduce irritation
- Wash hands
- Isolation

15.4 Corneal ulcer

DEFINITION

A corneal ulcer is a breach in epithelium or an open sore in the outer layer of the cornea.

CAUSES

- Infection with a virus, bacteria or fungus
- Corneal injury at work place especially working in field
- Eyelids that do not close, such as with Bell palsy
- Foreign bodies in the eye
- Severely dry eyes
- Contact lens wearer
- Various inflammatory disorders such as Thyroid eye diseases

SIGNS & SYMPTOMS

- Usually red painful eyes. Redness is circumcorneal (just around the cornea)
- White spot/patch on cornea
- Decreased vision, difficulty seeing in bright light (photophobia)

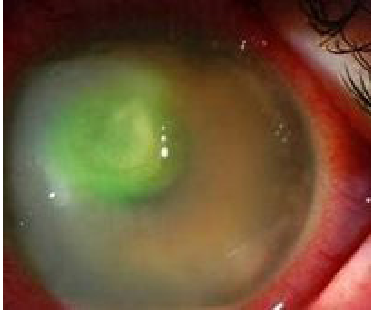


Fig. 15.6 Corneal Ulcer

MANAGEMENT

- If a foreign body is visible, remove it, as described (flush with normal saline or cotton swab)
- If a foreign body is not visible, suspect an ulcer. Start antibiotics ointment Chloramphenicol eye drops 0.5% or Ciprofloxacin eye drops 0.3% (4 to 6 times a day) or drops every 1-2 hourly and Chloramphenicol ointment at bed time and refer
- An ulcer which is not treated properly may later cause perforation and permanent blindness apart from causing scar

HEALTH EDUCATION

- Do not use the same cloth to wipe the eyes of more than one person
- Advocate safety measures at workplace, use of protective goggles
- Use a smokeless Chula to reduce irritation
- Wash hands

15.5 Corneal opacity

DEFINITION

Corneal opacity is scarring of the cornea.

CAUSES

- Following healing from a corneal ulcer or injury

SIGNS & SYMPTOMS

- A white mark on the front of the eye
- Poor vision or complete blindness if the scar is over the pupil
- Refer to ophthalmic staff for assessment of the possibility of corneal transplant and visual restoration

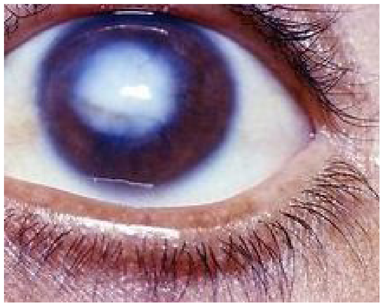


Fig. 15.7 Corneal Opacity

INVESTIGATIONS

A sight tests or vision assessment

MANAGEMENT

- A small corneal opacity not interfering with vision can be left untreated
- Refer if Corneal opacity produces blurred vision or loss of vision
- Corneal transplant) and optical iridectomy and coloured contact lenses or tattooing of scar for cosmetic purposes are the options provided

HEALTH EDUCATION

- Advocate safety at work place
- Use of protective eye goggles
- Timely Vitamin-A supplementation

15.6 Iritis and glaucoma

DEFINITION

Iritis is inflammation of the iris (the coloured part of the eye). Another name for iritis is anterior Uveitis.

SIGNS & SYMPTOMS

- Pain
- Pain seeing in bright light (Photophobia)
- Redness around the cornea
- Reduced vision

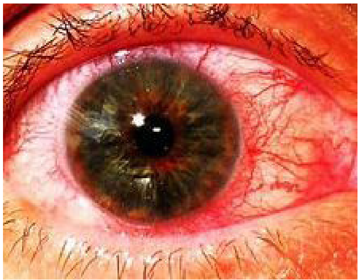


Fig. 15.8 Iritis

MANAGEMENT

- Refer urgently
- All painful red eye or visual loss should be referred immediately

15.7 Glaucoma

DEFINITION

Glaucoma is a group of eye diseases that can cause vision loss and blindness by damaging the optic nerve.

CAUSES

- The fluid drains out through the drainage angle and this process keeps pressure in the eye (called intraocular pressure or IOP) stable. However, if the drainage angle is not working properly, fluid builds up. The pressure inside the eye rises, damaging the optic nerve

SIGNS & SYMPTOMS

- Vision is suddenly blurry
- Severe eye pain and redness
- Headache
- Nausea & vomiting
- See rainbow-coloured rings or halos around lights

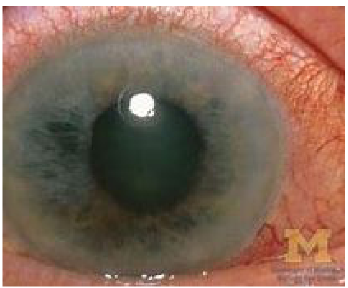


Fig. 15.9 Glaucoma

INVESTIGATIONS

- Physical examination
- Digital examination globe-stony hard

MANAGEMENT

- Medication Analgesics
- Refer

15.8 Cataract

DEFINITION

A cataract is a clouding or opacity that develops in the crystalline lens of the eye. Proteins in your lens break down and cause blurring of vision.

CAUSES

- It is the most common cause of avoidable blindness in the community
- Occurs in all age groups but is almost universal in old age
- Medical conditions such as Diabetes
- Systemic medication-corticosteroid use
- Trauma induced
- People need not remain needlessly blind where a simple surgery can restore the vision back

SIGNS & SYMPTOMS

- Slow and gradual progressive, painless loss of vision
- The lens becomes white and can be seen as a white patch inside the pupil

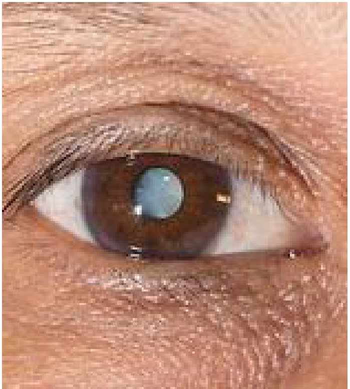


Fig. 15.10 Cataract

MANAGEMENT

- Refer if visually challenging

15.9 Ocular trauma

15.9.1 Corneal laceration

DEFINITION

A corneal laceration is a partial- or full-thickness injury to the cornea that can occur from trauma to the eye.

CAUSES

- Any activity in which objects can fly into the eye at high speed that can cause a corneal laceration
- The most common causes of a corneal laceration are such activities as:
  - » Cutting wood
  - » Grinding metal
  - » Trimming grass
  - » Carving stone
- Accidental injury by arrow, dart

SIGNS & SYMPTOMS

- Pain, reduced vision, photophobia
- If partial thickness (no perforating injury)
- Anterior chamber formed
- Partial thickness wound
- If full thickness laceration
- Shallow anterior chamber
- Pupil irregular
- Full thickness corneal wound with iris prolapse

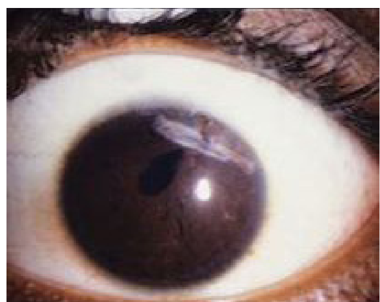


Fig. 15.11 Corneal Laceration

INVESTIGATIONS

- Physical examination
- Vision assessment

MANAGEMENT

- Tetanus toxoid
- Ciprofloxacin 0.3% 4-6 times
- Analgesics
- When a moderate to deep corneal laceration is accompanied by wound gape, it may need repair – So Refer
- Apply eye shield if available

- Avoid any straining activities and local massage or rubbing.
- Don't apply eye ointment
- Lacerations are defined as either a penetrating injury, intraocular foreign body, or a perforating injury

FOLLOW-UP

Re-evaluate daily until the epithelial heals

15.9.2 Ruptured globe

DEFINITION

A ruptured globe is classified as secondary to blunt trauma when the layer of the globe is disrupted. Globe ruptures can either occur due to an object penetrating the ocular tissue or by blunt trauma. Blunt trauma causes acute rise in intraocular pressure and can cause rupture in the location where the eye is weakest (insertion of muscles into the sclera).

CAUSES

- Injury by sharp objects (arrow or dart) and injury by blunt trauma such as blow or hit by a blunt object

SYMPTOMS

- History of trauma, fall, or sharp objects entering globe
- Pain and redness
- Decreased vision

SIGNS

- Full-thickness sclera or corneal laceration
- Severe subconjunctival haemorrhage
- A deep or shallow AC (Anterior chamber) compared to the fellow eye
- Peaked or irregular pupil

- Iris defects
- Lens material in the AC (Anterior Chamber)
- Iris prolapse through the corneal wound
- limitation of extraocular motility (greatest in direction or rupture)
- Intraocular contents may be outside of the globe.

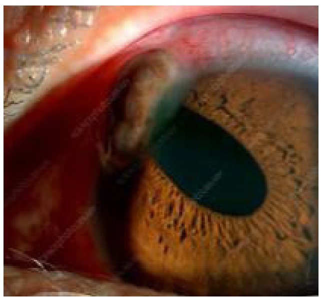


Fig. 15.12 Globe Rupture

INVESTIGATIONS

- If the diagnosis of a ruptured globe is made, further examination should be deferred until the time of surgical repair in the operating room. This is to avoid placing any pressure on the globe and risking extrusion of intraocular contents
- Diagnosis can be made by penlight

MANAGEMENT

- Tetanus toxoid and antiemetic (e.g. Metoclopramide 10 mg IM Q 8 H as needed for nausea and vomiting to prevent Valsalva manoeuvre
- Where available, X-ray of the orbits should be done
- Systemic antibiotics should be administered within 6 hours of injury. For adults give Ampicillin 500 mg 6 hourly IV Ciprofloxacin eye drop 2 to 3 hourly
- Analgesics IM/IV

- Determine the time of the patient's most recent meal. The timing of surgical repair is often influenced by this information
- Arrange for surgical repair and refer as soon as possible to the nearest ophthalmologist
- Apply eye bandage

HEALTH EDUCATION

- Protect the eye with a shield at all times
- Admit patient on bed rest with no food or drink (NPO)
- Instruct patients to avoid bending over or Valsalva manoeuvres. Place the patient on bed rest with bathroom privileges

15.9.3 Corneal and conjunctival foreign bodies

DEFINITION

A conjunctival foreign body should be suspected if a patient presents with a sensation of something in the eye. Patients with a conjunctival foreign body often state that their eye feels as if an irritating object - like grit, "junk," sand, or glass.

CAUSES

- Foreign body

SYMPTOMS

- Foreign body sensation, tearing, history of trauma

SIGNS

- Conjunctival or corneal foreign body with or without rust ring

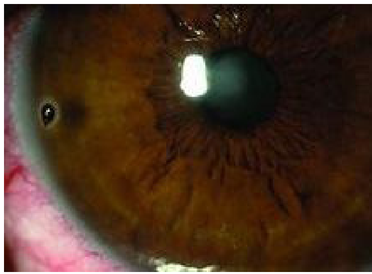


Fig. 15.13 Corneal Foreign Body

INVESTIGATIONS

- Physical examination
  - » History: Determine the mechanism of injury [e.g., metal striking metal, may suggest an intraocular foreign body (IOFB)]. Attempt to determine the size, weight, velocity, force, and shape of the object
  - » Document visual acuity before any procedure is performed
  - » Torch light examination to locate and assess the depth of the foreign body and other complications
  - » If there is no evidence of perforation, evert the eyelids and inspect the fornices for additional foreign bodies

MANAGEMENT

- Corneal foreign body
  - » Apply topical anaesthesia (e.g. Lignocaine 4%) before attempting removal of superficial corneal foreign body with a cotton tip. Avoid overdoing it if not coming out properly and refer
  - » Multiple superficial foreign bodies may be more easily removed by irrigation
  - » Treat as for the corneal abrasion.
- Conjunctival foreign body
  - » Remove foreign body under topical anaesthesia

    - Multiple or loose foreign bodies can often be removed with saline irrigation
    - A foreign body can be removed with a cotton-tipped applicator soaked in topical anaesthetic or with fine forceps
- Conjunctival Lacerations exceeding 1.5 cm need surgical repair and so REFER
- Apply available topical antibiotic (e.g. Chloramphenicol ointment BD, or Ciprofloxacin eye drop QID
- If Intraocular Foreign Body (IOFB) suspected, REFER for detailed investigations and management

15.9.4 Traumatic iritis

DEFINITION

When the iris becomes inflamed or damaged due to trauma (blunt force) to the eyes.

CAUSES

- A corneal abrasion
- Blunt eye injury

SYMPTOMS

- Dull, aching pain
- Photophobia and tearing

SIGNS

- Reduced vision
- Dull appearance
- Variable pupil sizes
- Red around the cornea

INVESTIGATIONS

- Visual assessment

MANAGEMENT

- REFER

15.9.5 Hyphema

DEFINITION

Hyphema is usually caused by injuries to the eye from accidents or playing sports. There is a collection of blood in the AC (Anterior chamber).

CAUSES

- Injuries to the eye from accidents or playing sports and after ocular surgery. Hyphema can be caused by other, less common things, including:
  - » Abnormal blood vessels (Neovascularization due to Diabetic retinopathy and Vascular occlusive disorder) on the surface of the iris
  - » Eye infections caused by a herpes virus
  - » Blood clotting problems and patient on systemic anticoagulant medication
  - » Very rarely, cancers of the eye

SYMPTOMS

- Pain
- Blurred vision
- History of blunt trauma
- SIGNS
- Blood or clot or both in the anterior chamber
- A total (100%) hyphema may be black or red (8 ball hyphema)

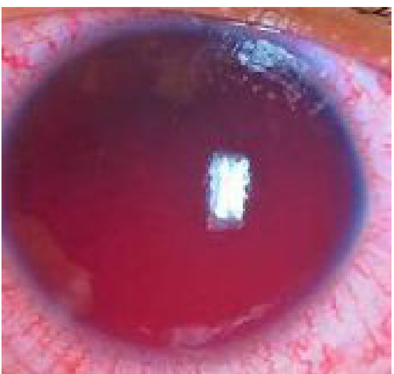


Fig. 15.14 Hyphema

INVESTIGATIONS

Visual acuity test

- Ocular examination, first ruling out a ruptured globe

MANAGEMENT

- Confine either to bed rest with bathroom privilege or to limited activity. Elevate head to allow blood to settle
- Place a shield (metal or clear plastic) over the involved eye at all times
- Cycloplegics if available such homatropine etc
- No Aspirin containing products or NASIDs
- Mild analgesics only (e.g. Paracetamol). Avoid sedatives
- Refer for other detailed assessment and management to equipped centres

15.9.6 Orbital blow-out fracture

DEFINITION

Orbital blowout fractures are secondary to injury by objects impacting the globe. There is increase in the intra-orbital pressure as a result of force by objects whose diameter exceeds the diameter of the orbital rim. (tennis ball) The orbital wall gives away at its weakest sites.

CAUSES

- Blowout fractures can happen with falls
- Sports-related high velocity ball impacts
- Violence from fists and elbows
- Traffic accidents

SYMPTOMS

- There will be pain on attempted eye movements
- Local tenderness
- Eyelid edema
- Double vision, and crepitus after nose blowing
- Acute tearing is usually due to ocular surface irritations (e.g. conjunctival chemosis, corneal abrasion, and iritis)

SIGNS

- Restricted eye movements (especially in upward or lateral gaze or both)
- Subcutaneous or conjunctival emphysema
- Hypoesthesia in the distribution of the infraorbital nerve (i.e. ipsilateral check and upper lip)
- Orbital rim tenderness
- Enophthalmos (may initially be masked by orbital oedema)

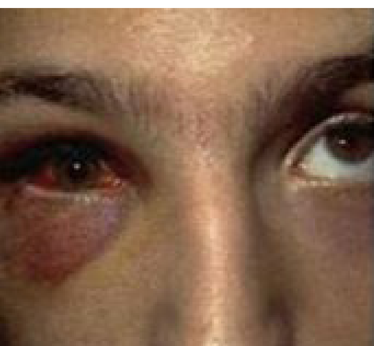


Fig. 15.15 BlowOut Fracture

MANAGEMENT

- Broad spectrum oral antibiotics (e.g. Amoxicillin 250 to 500 mg PO, TDS; or Ciprofloxacin 500 mg PO, BD) for 7 days. Antibiotics are recommended if the patient has a history of sinusitis, diabetes, or is otherwise immunocompromised
- Nasal decongestants (NS drop) for 3 days
- Apply ice packs to the orbit for the first 24 to 48 hours
- Surgical repair may be needed depending on severity
- Refer

HEALTH EDUCATION

- Instruct patient not to blow his/her nose
- Do not put undue pressure

15.10 Eyelid disorder and eyelid laceration

15.10.1 Stye

DEFINITION

A stye is a painful red bump on the edge of your eyelid caused by a bacterial infection in your eyelash follicle or skin.

SIGNS & SYMPTOMS

- Pain
- Swelling
- Pus discharge

CAUSES

- Bacterial infection

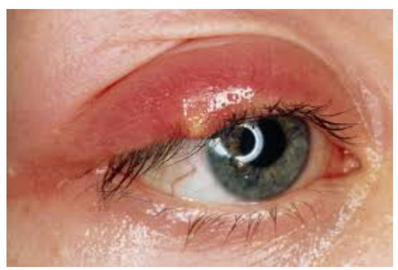


Fig. 15.16 Stye

MANAGEMENT

- Warm compress
- Antibiotic - Amoxicillin 500 mg TDS for 5 days in severe cases
- Chloramphenicol ointment local application once daily for 5 days

HEALTH EDUCATION

- Maintain eyelid hygiene

15.10.2 Chalazion

DEFINITION

A chalazion is a red, swollen bump on your eyelid that forms when an oil gland becomes blocked.

Fig. 15.17 Chalazion

SIGNS & SYMPTOMS

- Painless
- Swelling
- Visual disturbance

MANAGEMENT

- Warm compress and lid massage
- Chloramphenicol ointment local application once daily for 5 days
- If not resolved REFER

15.10.3 Pterygium

DEFINITION

A pterygium is a growth of the conjunctiva or mucous membrane that covers the white part of your eye over the cornea.

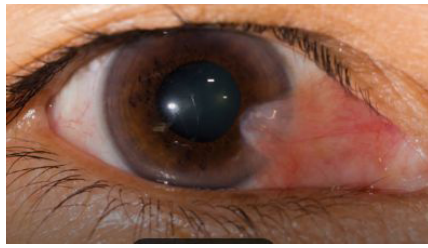


Fig. 15.18 Pterygium

SIGNS & SYMPTOMS

- Redness
- Fleshy growth of conjunctiva
- Foreign body sensation
- Watering

INVESTIGATIONS

- Vision assessment

MANAGEMENT

- Artificial Tear drops QID
- Advice for use of UV protective sunglass
- Minimise exposure to windy and dusty environment

15.10.4 Eyelid laceration

DEFINITION

There is presence of discontinuity in the lids margins. Require accurate apposition and repair in order to prevent severe lids deformity and exposure problems.

CAUSES

- Injury by sharp objects

Fig. 15.19 Eyelid Laceration

MANAGEMENT

- Apply antibiotic ointment
- TT and systemic antibiotics be given gently pad and refer

15.11 Chemical injuries

DEFINITION

These are true ophthalmic emergencies. Injury to the eyes when it comes in contact with chemicals. It can be accidental and sometimes intentional. Common chemical agents are acidic injuries (car battery blast- Sulphuric acids) Chemical used as fertilisers (ammonia, lime used as white wash). Act first and history and examination later.

CAUSES

- Chemicals which burn - Acid or alkali.

SIGNS & SYMPTOMS

- Decrease vision
- Severe pain
- Redness
- Conjunctival chemosis, corneal ulcerations, limbal ischemia (blanching of limbal vessels)
- Foreign body sensation and watering
- Photophobia

Fig. 15.20 Chemical Injury

MANAGEMENT

- Lie the patient down so that he is looking at the ceiling
- Put Lignocaine 4% drops into the eye if available
- Immediately wash the eyes with tap water
- For irrigation use Normal Saline or Ringer's lactate
- Follow 3 Ps (Prompt, Profuse and Prolonged irrigations)
- Fluid should flow from medial to lateral sides. Use at least 2-3 bottles.
- Remove the foreign body with a clean piece of cloth or with stump spud or cotton swab
- Evert lids and remove dust and chemical debris
- Use glass rods to swipe the fornices
- After irrigations: Apply Ciprofloxacin eye drops 2- 3 hourly; Apply Chloramphenicol eye ointment 1% applicap, apply 4-6 times a day; Apply cycloplegic if available; Give systemic pain medications; If artificial tears available, apply frequently

REFER URGENTLY

Severe burns that require intensive treatment

Note: Exposure to toxic chemicals requires overall general assessment and management.

15.12 Corneal abrasion

DEFINITION

This occurs due to loss of corneal epithelium from trauma.

CAUSES

- Injury
- Contact lens wearer
- Foreign body

SIGNS & SYMPTOMS

- Pain
- Decreased vision,
- Watering
- Photophobia

Fig. 15.21 Corneal Abrasion

MANAGEMENT

- Check for any foreign bodies and remove them
- Apply Chloramphenicol eye ointment, pad and bandage for 24 hours
- Remove the bandage the next day and if healed, put on Chloramphenicol eye ointment 3 times a day for few days or Ciprofloxacin eye drop QID for 5 days
- Avoid padding if there is evidence of infection or corneal ulcerations.

15.13 Subconjunctival haemorrhage

DEFINITION

The bleeding in the bulbar conjunctiva.

CAUSES

- Hypertension
- Trauma
- Bleeding disorders
- Severe coughing or straining etc.

Fig. 15.22 Subconjunctival Haemorrhage

Precautions

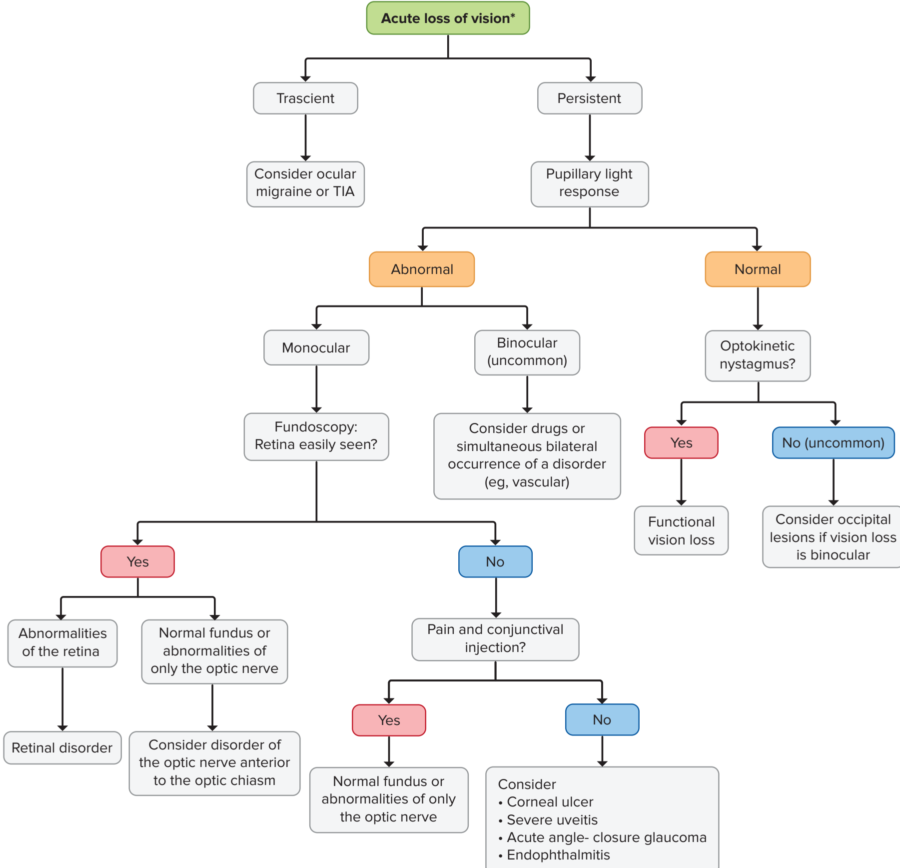
- Rule out all possible causes of bleeding
- Instruct patients to avoid straining activities such as coughing and rubbing
- Avoid taking Tab. Aspirin or Tab. Ibuprofen for pain. Take Paracetamol for control of pain
- Cold compresses for a few minutes several times a day for a couple of days
- Natural resolution takes place in a few weeks time

Caution - Loss of vision is usually considered acute if it develops within a few minutes to a couple of days. It may affect one or both eyes and all or part of a visual field

REFER URGENTLY

Severe burns that require intensive treatment

Flowchart: Acute loss of vision as reference



*In patients with binocular, symmetric (homonymous) visual field defects, consider a lesion of the visual pathways posterior to the optic chiasm.

TIA= transient ischemic attack

CHAPTER 16
DERMATOLOGY DISEASES

Dr. Ambika Rani. Pradhan, Dermatologist, JDWNRH

History and examination in dermatology patients

History: Onset, duration, progressions, itch, pain, burning, recurrence, contact history, occupation, topical therapy used, over the counter medications used, home remedies used.

Examination: Morphology of skin lesions
- Primary lesions: Macules, papules, patches, plaque, nodules, vesicles, pustules, bulla, wheal, hyperpigmentation and hypopigmentation
- Secondary lesions/changes: Scales, excoriation, oozing, erosions, fissures, ulcer, crust, pigmentation, atrophy, lichenification
- Configuration of lesions - annular, grouped, dermatomal, segmental, serpiginous etc.

16.1 Skin infection

16.1.1 Superficial fungal infections

16.1.1.1 Dermatophytosis (syn. ringworm, tinea infection)

DEFINITION

Dermatophytosis is a fungal infection caused by three genera of fungi that have the unique ability to invade and multiply within keratinized tissue (hair, skin and nails).

CAUSES

- Tr*ichophyton*
- *Epidermophyton*
- *Microsporum*

SYMPTOMS

Subtypes classified based on area of involvement. Itch is a prominent feature.

- Flexural areas (Tinea cruris)
- Body (Tinea corporis)
- Face (Tinea faciei)
- Palms (Tinea manuum)
- Soles (Tinea pedis)
- Nails (Tinea unguium)
- In children it can affect the scalp hair (Tinea capitis) and present with patchy hair loss with scaling

SIGNS

- Annular erythematous plaque with central clearing and peripheral scale
- Picture will change if a topical steroid is used (steroid-modified tinea)
- On palms and soles, it will present as scaling and on nails, there will be thickening and yellow discolouration of the nail plate

INVESTIGATION

- Skin scraping and nail clipping for KOH mount to look for fungal hyphae and spores

MANAGEMENT

- Cetirizine 10 mg OD for 7 to 10 days
- 2% Miconazole cream local application BD

Table 16.1. Management of Dermatophytosis

	Griseofulvin
Tinea pedis	750 to 1000 mg per day for 4 weeks (in adults)
Tinea unguium	750 mg per day for 3 months for fingernails and 6 months for toenails (in adults)
Tinea corporis, cruris single lesion and not used any topical therapies	2% Miconazole cream BD until lesion clears
Tinea corporis - extensive, steroid modified, failure of topical therapy	750 to 1000 mg per day for 4 weeks (in adults)
Tinea capitis (children)	20-25 mg/kg body weight for 6 to 8 weeks

Do a baseline liver function test. Griseofulvin is contraindicated in pregnancy.

HEALTH EDUCATION

- Combine oral medication and apply topical antifungal
- Apply medication over and outside the lesion
- Continue medication until total clearance of lesions and for further 1 week
- Daily bathing and changing clothes daily
- Avoid sharing clothes, slippers, comb, towels and shaving blades
- Avoid using over the counter steroid and antifungal combination creams

FOLLOW UP

- Regularly until lesion clearance
- If a patient does not respond to the above treatment, refer to the dermatologist

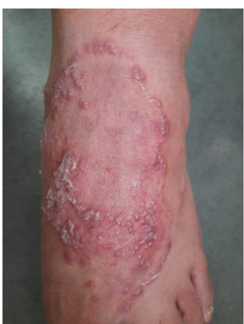


Fig. 16.1.a. Annular plaque with active margin.

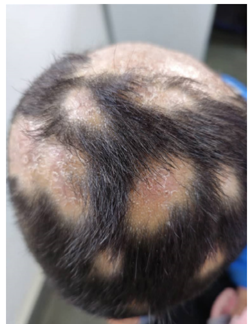


Fig. 16.1.b. Tinea capitis.

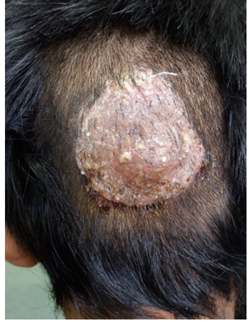


Fig. 16.1.c. Kerion, infection of the hair follicle with animal fungus. (Photos by: Dr. Ambika R. Pradhan)

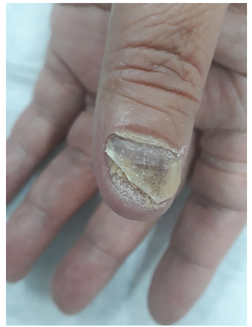


Fig. 16.1.d. Tinea capitis.

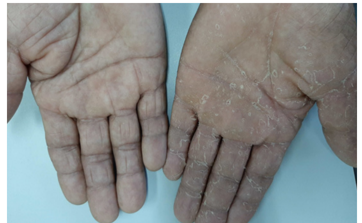


Fig. 16.1.e. Tinea manuum, often asymmetrical.

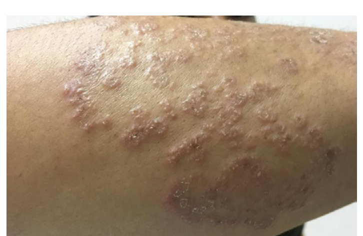


Fig. 16.1.f. Steroid steroid-modified tinea, the active margin is not seen.

16.1.1.2 Pityriasis versicolor

DEFINITION

- Non-infectious superficial yeast infection of the skin.

CAUSES

- Commensal yeasts (*Pityrosporum orbiculare*)

SYMPTOMS

- Non-itchy hypopigmented or pigmented skin patches mainly on the upper trunk
- Worse in summer months (hot and humid)

SIGNS

- The fawn-coloured or depigmented thin plaques, with fine scaling and fine wrinkling
- Scaling can be elicited by gentle rubbing of the skin.

INVESTIGATIONS

- Skin scraping for KOH mount will show both hyphae and spores (dimorphic)

MANAGEMENT

- For localised lesions
  - » 2% Miconazole cream BD for 6 to 8 weeks or until clearance
  - » Selenium Sulphide shampoo or Ketoconazole shampoo (to purchase) as body wash
- For extensive lesions
  - » Oral Fluconazole 150 mg OD for 7 days

HEALTH EDUCATION

Daily bathing
Change clothes daily
Apply Selenium Sulphide shampoo over the lesion overnight and wash it off
Advice patients that it can reoccur

16.1.1.3 Candidiasis

DEFINITION

Superficial opportunistic infection of the skin that mainly affects the flexural areas and seen in people with predisposing factors such as obesity, immobility, diabetes, pregnancy, use of broad-spectrum antibiotics and wet and macerated skin.

CAUSES

- *Candida albicans*

SIGNS & SYMPTOMS

- **Oral candidiasis**
  - » White plaque that can be wiped off revealing an erythematous base
- **Candida intertrigo**
  - » Erythema and maceration of skin folds, may see satellite pustules or papules
  - » Toe webs show white macerated plaques
- **Genital candidiasis**
  - » Sore itchy vulvovaginitis with white curdy discharge
  - » Erythema and itching in glans penis in men
- **Chronic Paronychia**
  - » Loss of cuticles with swollen proximal nail folds and later nail dystrophy
  - » Seen in people who do a lot of wet work

INVESTIGATIONS

- Skin smear/fluid from pustule/vaginal swab for KOH mount

MANAGEMENT

- Predisposing factors should be sought and eliminated (e.g. denture hygiene may be important).
- Nystatin oral paste for mouth
- For other areas 2% Miconazole cream BD
- For vulvovaginal candidiasis - Clotrimazole pessary 200 mg HS for 3 nights
- For complicated candidiasis oral antifungal is required

HEALTH EDUCATION

- False teeth should be removed at night, washed and cleaned in antiseptic or a nystatin solution
- Infected skin folds should be separated and kept dry
- Those with chronic paronychia should keep their hands warm and dry

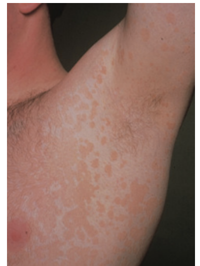


Fig. 16.2.a. Pityriasis versicolor

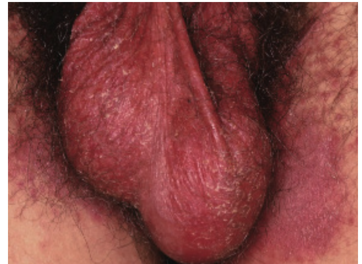


Fig. 16.2.b. Candida intertrigo (Photo: Bolognia)

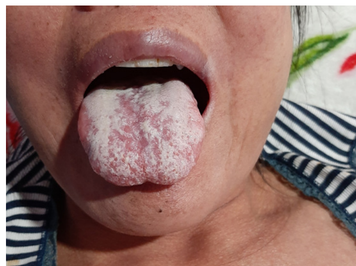


Fig. 16.2.c. Oral candidiasis (thrush) (Photo by: Dr. Ambika R. Pradhan)

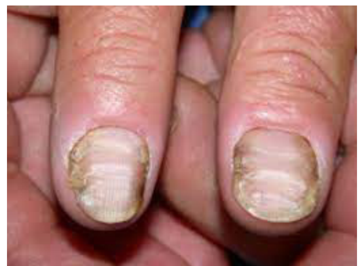


Fig. 16.2.d. Chronic paronychia (Photo by: DermNet)

16.1.2 Bacterial infection

16.1.2.1 Impetigo

DEFINITION

Impetigo is a common childhood skin infection that is contagious and can present in non-bullous and bullous forms.

CAUSES

- *Staphylococcus* aureus causes both bullous and non-bullous impetigo
- Group A *β-hemolytic Streptococcus (Streptococcus pyogenes)* causes non-bullous type.

SIGNS & SYMPTOMS

- A thin-walled flaccid clear bullae that may become pustular before rupturing to leave an extending area of exudation and yellowish varnish-like crusting
- Lesions are often multiple, particularly around the face
- Rarely can a child have extensive disease. Usually no systemic symptoms.

INVESTIGATION

- None, diagnosis clinical
- Gram stain if required.

MANAGEMENT

- Topical antibiotics like Neomycin ointment, Mupirocin ointment or Fusidic acid cream BD
- If extensive disease – oral Cloxacillin or Erythromycin or Cephalexin

HEALTH EDUCATION

- Daily bathing

16.1.2.2 Ecthyma

DEFINITION

Ecthyma is a deep form of non-bullous impetigo characterised by shallow crusted ulcer.

CAUSES

- Streptococcus pyogenes infection of preexisting ulcer or excoriated insect bites

SIGNS & SYMPTOMS

- Crusted ulcers mainly over the lower leg

INVESTIGATIONS

- None, pus swab for gram stain and culture if available

MANAGEMENT

- Oral Cloxacillin or Cephalexin
- Wound care, clean with NS
- Mupirocin ointment or Neomycin ointment or Fusidic acid cream local application BD.

HEALTH EDUCATION

- Daily bathing
- Treat insect bites, avoid scratching
- May heal with scarring if lesions deep

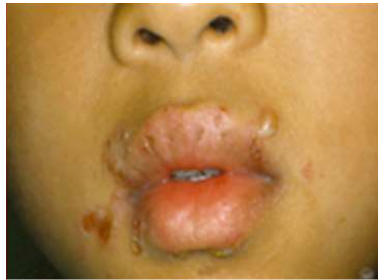


Fig. 16.3.a. Bullous impetigo Photo: American academy of dermatology (AAD)

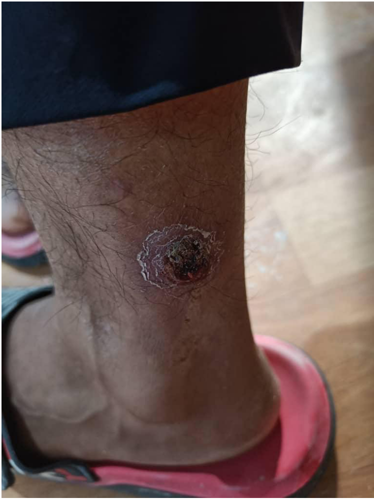


Fig. 16.3.b. Ecthyma (Photo by: Dr.Tshewang Choden)

- 16.1.2.3 Folliculitis, furunculosis and carbuncle

DEFINITION

- Acute bacterial infection of the hair follicles
- **Folliculitis** – superficial infection of the single hair follicle
- **Furunculosis** – infection involves the entire hair follicle and surrounding tissue
- **Carbuncle** – infection involving multiple adjacent hair follicles often with abscess formation

CAUSES

- *Staphylococcus aureus*

SIGNS & SYMPTOMS

- Common sites are face, neck, axilla, back, perineum and buttock
- **Folliculitis** presents as small follicular pustules or crusted papules over an erythematous base

- *Furunculosis* presents as painful firm tender red nodules that enlarge and become fluctuant
- *Carbuncles* are collections of furuncles that extend into subcutaneous tissue and surface has multiple discharging sinuses

INVESTIGATIONS

- None, clinical diagnosis. Gram stain and culture if atypical or recurrent

MANAGEMENT

- For folliculitis and simple furuncles, warm compresses may promote maturation, drainage and resolution
- Larger or deeper fluctuant lesions typically require incision and drainage
- Systemic antibiotic therapy is recommended in the following situations:
  - Furuncles around the nose, in the external auditory canal or in other locations where drainage is difficult (face, hands, genitalia)
  - Severe or extensive disease (e.g. multiple sites)
  - Lesions with surrounding cellulitis/phlebitis or with signs/symptoms of systemic illness
  - Lesions not responding to local care
  - Patients with comorbidities or immunosuppression
  - Antibiotics such as Cloxacillin, Doxycycline or Trimethoprim-Sulfamethoxazole (TMP-SMX) can be given
  - Pain management with simple analgesics
  - Patients with recurrent furunculosis may benefit from eradication of S. aureus from the nares, axilla and perineum. Use Mupirocin ointment bd for 5 days in these areas.

HEALTH EDUCATION

- Daily bathing
- Avoid shaving legs (especially in females)

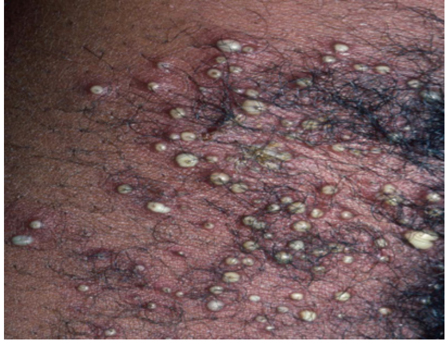


Fig. 16.4.a. Folliculitis (Photos: AAD)

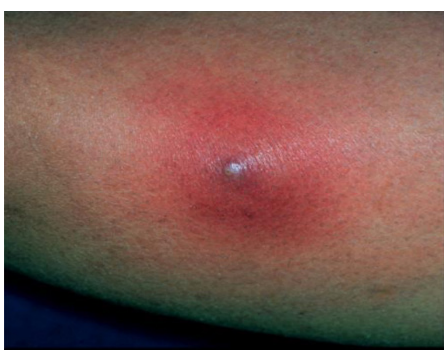


Fig. 16.4.b. Furuncle

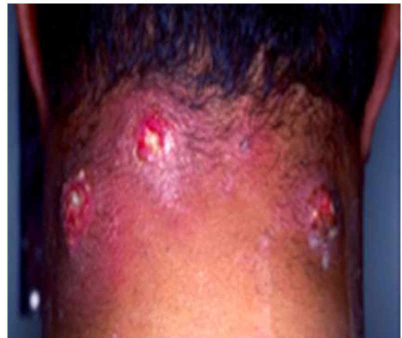


Fig. 16.4.c. carbuncle

16.1.2.4 Cellulitis and erysipelas

DEFINITION

Inflammation of the skin and subcutaneous tissue. Erysipelas is a more superficial inflammation as compared to cellulitis.

CAUSES

- *Streptococci*
- *Staphylococci* and other organisms
- Predisposing factors such as preexisting injury and tinea pedis (intertrigo)

SYMPTOMS

- Fever
- Malaise
- Chills
- Pain and redness of affected areas
- Common sites are legs (cellulitis) and face (erysipelas)

SIGNS

- Diffuse erythematous tender swelling of affected part in cellulitis
- Erysipelas presents with well-defined advancing margin. Blisters may form over the area

INVESTIGATIONS

- CBC, CRP, FBS, PPBS, RFT, LFT
- Blood culture if the patient is ill or shows signs of sepsis

MANAGEMENT

- Rest and elevation of limb
- Systemic antibiotics:
  - » For cellulitis - oral Cloxacillin, Cephalexin. If severe IV Ceftriaxone or Cloxacillin
  - » For erysipelas – Penicillin V, Amoxicillin or Cephalexin. If severe IV Ceftriaxone
  - » Antibiotics for 5 to 6 days and longer if slowly responding

HEALTH EDUCATION

- Rest and keep limbs elevated
- Antipyretic and analgesics
- Wound care if skin breaks down is there

FOLLOW UP

- Review to see clinical improvement.

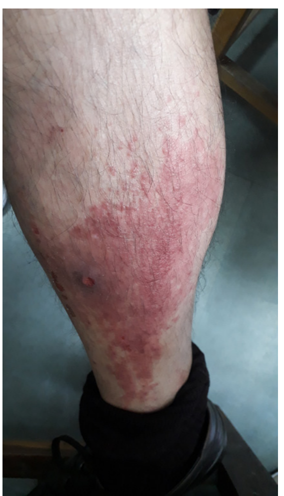


Fig. 16.5.a. Erysipelas

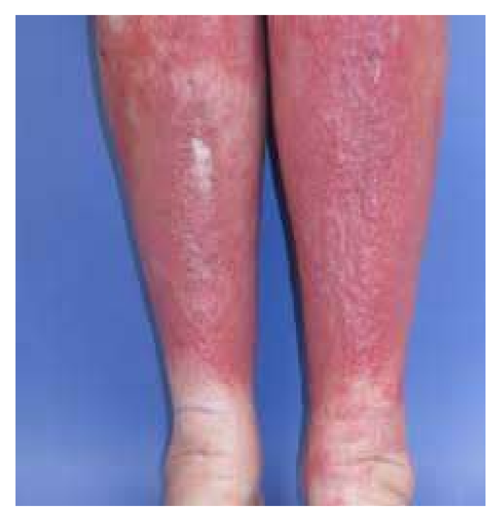


Fig. 16.5.b. Cellulitis (Photos: DermNet)

16.1.2.5 Leprosy

DEFINITION

Chronic infection of the skin and nerves that can cause disabilities of hands, feet and eyes. Clinical features and complications depend on the immunity of the person, a person with high immunity will develop paucibacillary type and those with low immunity will develop multibacillary type.

Paucibacillary - one to five skin lesions with loss of sensation and a negative slit skin smear (SSS).

Multibacillary - more than five lesions with loss of sensation or with nerve involvement and a positive SSS.

Incubation periods range from 5 to 20 years and infection is transmitted from an untreated case via respiratory droplets.

CAUSES

- Mycobacterium leprae

SYMPTOMS

- One or more hypopigmented (pale) or erythematous patches, plaques or shiny nodules
- Reduced sensation to temperature, touch and pain in the skin lesion
- Weakness or hands, feet or eyelids
- Numbness and tingling of limbs
- Presence of deformity of hands, feet or eyes
- Painful tender nerves

SIGNS

- Hypopigmented patch(s) or plaque(s) with reduced sensation - check with cotton wool tail or edge of paper for light touch and pin for pain
- Thickening of nerves - palpate common peroneal and ulnar nerve (commonly thickened)
- Weakness of hands and feet and check power of small muscles of hands, wrist drop and foot drop. Check for small muscle atrophy and ulcers over hands and feet

INVESTIGATIONS

- Refer to higher centres for diagnosis
- SSS from ear lobe, forehead and two active patches and stain for acid-fast bacilli
- CBC, LFT, RFT and G6PD (if available)

MANAGEMENT

- Multi-drug therapy (MDT) blister pack - Rifampicin (once a month) and daily Dapsone and Clofazimine

- Paucibacillary - MDT blister pack for 6 months
- Multibacillary - MDT blister pack for 12 months

For details refer to National leprosy guideline

HEALTH EDUCATION

- Treatment compliance and the importance of treatment completion
- Contact tracing for household and community
- If neuropathy proper care for hands, feet and eyes

FOLLOW UP

- For treatment adherence
- See for leprosy reaction (fever, arthralgia, swelling of existing lesions, new onset lesions, acute nerve pain or nerve palsy), if present continue MDT and refer to higher centre

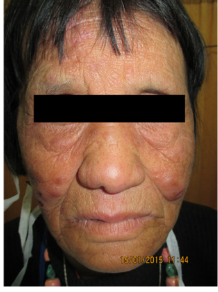


Fig. 16.6.a. Lepromatous leprosy with typical plaques and nodules.

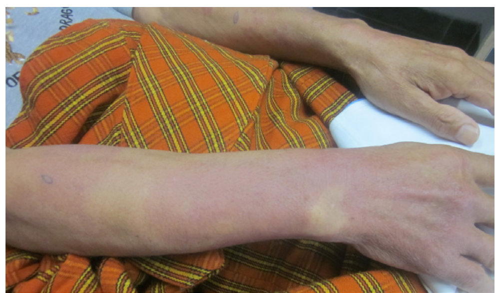


Fig. 16.6.b. Erythematous plaques in a case with leprosy.

(Photos by: Dr. Ambika R. Pradhan)

16.1.2.6 Cutaneous tuberculosis

DEFINITION

Infection of the skin presents in a variety of clinical forms and can be acquired either by endogenous spread or exogenous exposure or via immunological

reaction to the bacilli.

CAUSES

- *Mycobacterium tuberculosis*

SIGNS & SYMPTOMS

- **Tuberculous chancre** after injury
- **Tuberculosis verrucosa cutis** (warty TB) - resembles a wart
- **Lupus Vulgaris** - red brown plaque that heals with scarring
- **Scrofuloderma** - a direct extension of TB of the skin either from lymph nodes or bone. Suppurative nodules that ulcerates and forms sinuses and scars

INVESTIGATIONS

- If suspected skin biopsy is required - refer to higher centre

MANAGEMENT

- Start ATT (as extra pulmonary non complicated)

For details refer to the National guidelines for management of tuberculosis, Bhutan

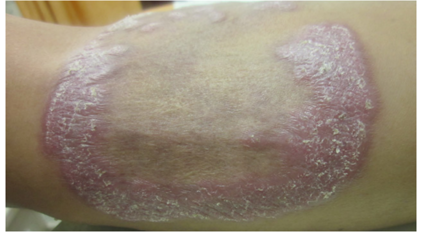


Fig. 16.7.a. Lupus vulgaris

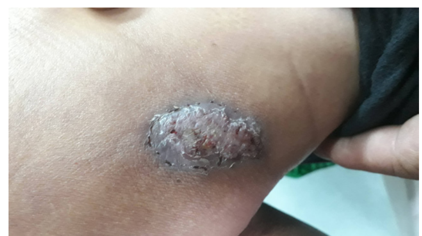


Fig. 16.7.b. Warty TB on the thigh

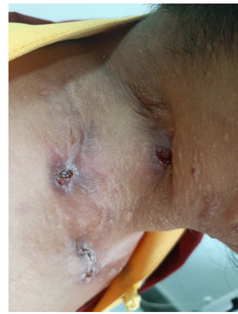


Fig. 16.7.c. Scrofuloderma on the neck.

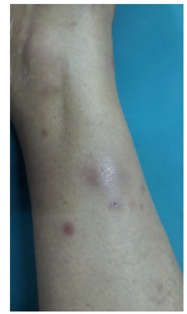


Fig. 16.7.d. Erythema nodosum, the immunological reaction often seen in patients with TB. (Photos by: Dr.Ambika R. Pradhan)

16.1.3 Viral infection

16.1.3.1 Nonspecific viral exanthem

DEFINITION

Exanthem means rash that appears suddenly and affects several parts of the skin simultaneously. Viral exanthems are more common in children and drug exanthems are more common in adults. Clinically it is difficult to differentiate the two.

CAUSES

- *Adenovirus,*
- *Rhinovirus*
- *Parainfluenza virus etc.*

SYMPTOMS

- Fever
- Headache
- Myalgia
- Fatigue
- Respiratory and gastrointestinal symptoms

SIGNS

- Generalised non-descript erythematous macules and papules
- No unique indicative symptom complex or morphology and distribution

INVESTIGATION

- None

MANAGEMENT

- Supportive management, exanthem usually resolves after 1 week

HEALTH EDUCATION

- Reassurance to the parents

16.1.3.2 Varicella

DEFINITION

Varicella infection also known as chickenpox is a generalised, highly infectious primary infection in a non-immune person. The incubation period is about 10 to 23 days.

CAUSES

- *Varicella zoster* virus

SIGNS & SYMPTOMS

- Fever and malaise that is followed by erythematous itchy papules, that form vesicles on an erythematous base (dew drop on rose petal)
- Vesicles may form pustules, umbilicate, crust and clears
- Lesions start on the trunk and spread to other areas
- Oral mucosa may be affected

INVESTIGATIONS

- None, clinical diagnosis

MANAGEMENT

- In children <12 years: supportive treatment, antihistamine to control itch and Calamine lotion 2 to 3 times per day. Antipyretic for fever. Oral therapy if the risk of complicated disease
- In adults: supportive treatment as above and oral Acyclovir 800 mg five times per day for 7 days
- In pregnancy: oral Acyclovir and refer to gynaecologist
- In immunocompromised – IV Acyclovir, refer to higher centre

HEALTH EDUCATION

- Daily bathing to prevent secondary bacterial infection
- Clip nails short to prevent excoriations
- Use Calamine lotion
- School children can rest at home for 7 days (as infectivity lasts about 7 to 10 days)

16.1.3.2 Herpes zoster infection

DEFINITION

Also known as shingles is a reactivation of the latent virus (after previous chicken pox infection) in a partially immune person.

CAUSES

- *Varicella zoster* virus

SYMPTOMS

- Burning pain along a dermatome (one segment of the body and does not cross the midline), this is followed by the appearance of painful papules that form vesicles

SIGNS

- Grouped vesicles scattered along dermatome
- Thoracic dermatome and ophthalmic division of trigeminal nerve (forehead) are commonly affected

INVESTIGATION

- None, clinical diagnosis

MANAGEMENT

- Systemic treatment should be given to all patients
- Start treatment within 5 days of the attack
- Oral Acyclovir 800 mg 5 times per day for 10 to 14 days
- Eye consultation if ophthalmic division of trigeminal nerve is affected
- Treat post herpetic neuralgia

HEALTH EDUCATION

- Take bath daily
- Keep the lesions dry, avoid using topical antibiotics or Acyclovir ointment over the lesions
- Counsel about the pain, sometimes neuralgia can last several months

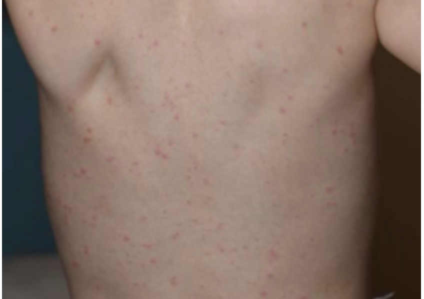


Fig. 16.8.a. Non specific viral exanthem

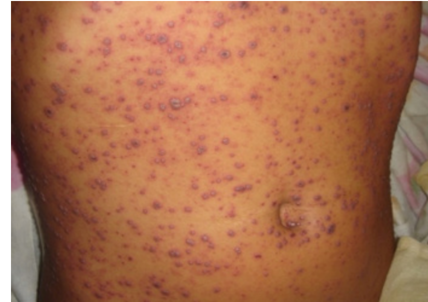


Fig. 16.8. b. Chicken pox, lesions at different stages of evolution. (Photo: AAD)

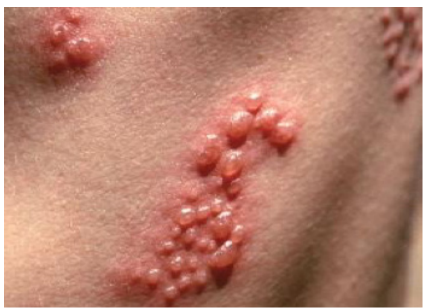


Fig. 16.8.c. Grouped vesicles in herpes zoster

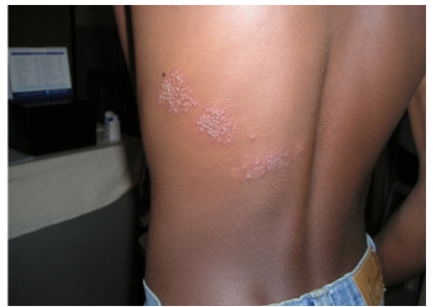


Fig. 16.8. d. Herpes zoster showing dermatomal distribution

16.1.3.3 Herpes simplex infection

DEFINITION

Primary and recurrent vesicular eruption that favours orolabial and genital region that is transmitted directly through contaminated saliva or secretion.

CAUSES

- *Herpes simplex virus* (HSV) I and II

SYMPTOMS

- **Primary disease:** typically in children as acute gingivostomatitis with associated fever, malaise, headache and enlarged cervical lymph nodes. Can also occurs in areas of contact (herpetic whitlow on fingers)
- **Primary type II:** infection is usually sexually transmitted and presents as painful genital or peri anal vesicles that ulcerate
- **Recurrent infection** – usually at the same site, more common in the face, lips and genitals. Can be triggered by respiratory tract infections or other stress

SIGNS

- Grouped vesicles that ulcerates and usually heals without scarring

INVESTIGATIONS

- If doubtful and where a pathologist is available, Tzanck smears from vesicle fluid or ulcer base for Giemsa stain to look for multinucleated giant cells.

MANAGEMENT

- Supportive - analgesics, antipyretic
- Cool compresses
- For primary gingivostomatitis or genital herpes - Acyclovir 400 mg TDS for 10 days
- For recurrent herpes labialis - Acyclovir ointment 4 to 5 times per day and for recurrent genital herpes oral Acyclovir 400 mg TDS for 5 days

HEALTH EDUCATION

- Wash daily and keep the area dry
- Avoid touching the lesions
- Apply medication either with gloved fingers or wash hands immediately
- Continue medication until lesions heals

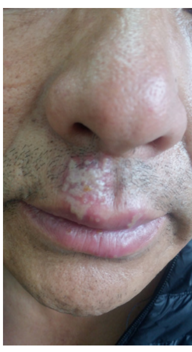


Fig. 16.9.a. Grouped vesicles in herpes labialis (Photo by: Dr.Ambika R. Pradhan)

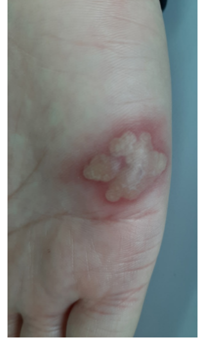


Fig. 16.9.a. Grouped vesicles in herpes labialis (Photo by: Dr.Ambika R. Pradhan)

16.1.3.4 Hand foot and mouth disease (HFMD)

DEFINITION

Common self-limiting, highly contagious vesicular eruption on palms and soles with erosive stomatitis. Common in children and in summer and early fall and can occur as outbreaks.

CAUSES

- *Coxsackievirus* A16 (common)
- *A6, Enterovirus* (EV71)

SYMPTOMS

- Prodrome of fever
- Malaise and sore throat for 1 to 2 days
- Slightly painful lesions on palms, soles and mouth

SIGNS

- Grayish oval vesicles with an erythematous halo on palms and soles and sometimes on dorsal surface, knees and buttock
- Initially starts as a macule and papule. Erythematous erosions in oral mucosa
- Can develop onychomadesis (loss of nail plate) after a few months.

MANAGEMENT

- Supportive - antipyretic and rest
- Nutritional support especially in small children and babies

HEALTH EDUCATION

- Benign and self-limiting and will resolve in about 10 days
- Advice regarding the chance of loss of a few nails and it will grow back

Fig. 16.10.a. Vesicles in
hand foot and mouth disease
(Photo by: Dr.Ambika R. Pradhan)

Fig. 16.10.b. Onychomadesis
(Photo: Bolognia)

16.1.3.5 Molluscum contagiosum

DEFINITION

Common infection in children and spread by direct contact. In adults, it can be transmitted sexually due to direct contact.

CAUSES

- *Pox virus*

SYMPTOMS

- Asymptomatic papules often mistaken for warts

SIGNS

- Shiny pink or white papule with a central punctum (umbilicated) that shows a cheesy material
- Usually multiple lesions.

MANAGEMENT

- It can be left alone, and will resolve in 6 to 9 months
- Treatment is usually destructive - induce mild inflammation and resolution
- Gentle manual expression of the contents

HEALTH EDUCATION

- Measures to reduce spread among the family

16.1.3.6 Viral warts

DEFINITION

Common infection of the skin or mucosa that causes benign papillomas or warts.

CAUSES

- Human papillomavirus (HPV). HPV-1, 2, 4 in common warts, 3 in plane warts, 6, 11, 16, 18 in anogenital warts
- Spread is via direct contact

SYMPTOMS

- Asymptomatic rough papules and plaques
- Plantar warts can be painful

SIGNS

- Various clinical forms
- Common warts are usually on hands and feet
- Plane warts are usually seen on the face
- Plantar warts have a rough surface and protrude only slightly from the skin
- Genital warts show cauliflower-like growths

MANAGEMENT

- Treatment is usually destructive; in children it can resolve spontaneously. Treatment will depend on the type of wart:
    - » 20% Salicylic acid local application daily or commercially available warts paints. Need to apply for about 12 weeks
    - » Cryotherapy with Liquid Nitrogen (available in JDWNRH) but painful
    - » 0.025% Tretinoin cream at night for plane warts on the face for about 12 weeks (to purchase and use sunscreen during the day)
    - » For anogenital wart - Podophyllin toxin application once per week under supervision with Vaseline cover for normal skin. Not to be used in pregnancy
    - » Imiquimod cream for anogenital and facial warts 2 to 3 times per week and wash off after 6 hours (to purchase)
    - » Facial warts are best treated with electrocautery

HEALTH EDUCATION

- Avoid scratching and picking on the warts to prevent spread

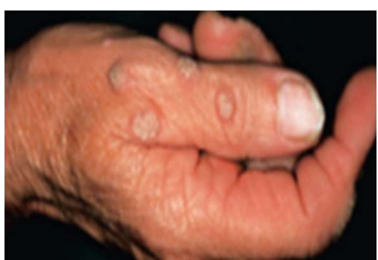


Fig. 16.11.a. common warts

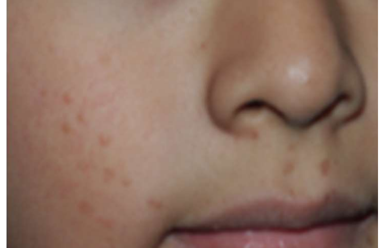


Fig. 16.11.b. Plane warts
(Photo: Bolognia)

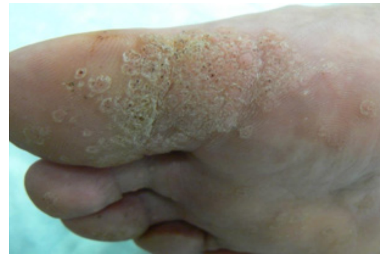


Fig. 16.11.c. Plantar warts

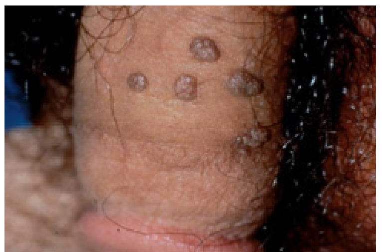


Fig. 16.11.d. Genital warts (Photo: AAD)

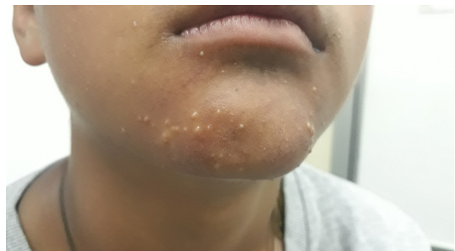


Fig. 16.11. e. Molluscum contagiosum

16.1.4 Parasitic infection

16.1.4.1 Scabies

DEFINITION

Pruritic infection is caused by an infestation of host-specific mites which live in the epidermis its entire life.

CAUSES

- Sarcoptes scabiei var. hominis
- Spread via close bodily contact with an infected person

SYMPTOMS

- Pruritus of the whole body that is worse at night
- Similar symptoms in the household and close contacts
- Gets itchy papules

SIGNS

- Small erythematous excoriated papules mainly on finger webs, behind the ears, waist area including umbilicus, ankles and feet
- Burrows may be seen
- Genital area in men and areola and vulva in females commonly affected
- In babies and elderly, the face may also be affected and infants may present with vesiculo-pustular eruption in hands and feet

MANAGEMENT

- Oral antihistamine for 1 to 2 weeks
- Topical therapy, 2 applications 1 week apart
    - » 5% Permethrin cream whole body application with special attention to web spaces, genital area and subungual area. Keep overnight and wash off the next day. Repeat after 1 week. Safe in pregnancy, lactation and babies above 2 months of age
    - » 10% Sulphur ointment daily application as above for 3 days and repeat after 1 week. Safe in pregnancy, lactation and babies (6% Sulphur in babies)
- Treat all family members even if asymptomatic
- Change and wash all clothes, including bed sheets, covers and towels

HEALTH EDUCATION

- As above and advice that itching usually takes about 2 weeks to settle

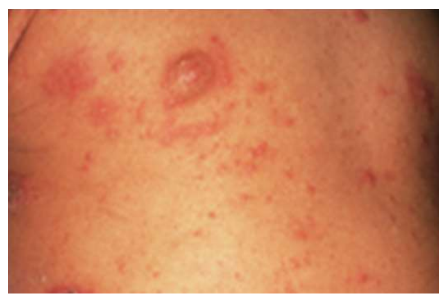


Fig. 16.12.a. Erythematous papules

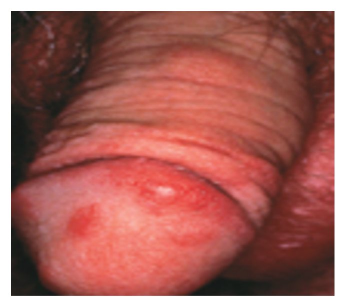


Fig. 16.12.b. Genital papules

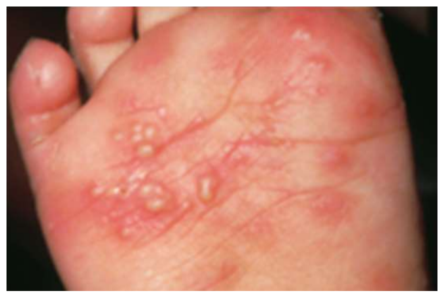


Fig. 16.12.c. Vesiculo-pustules (Photo; Bolognia)

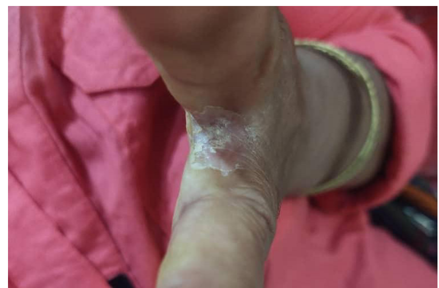


Fig. 16.12.d. Web dermatitis

16.2 Inflammatory

16.2.1 Eczema

DEFINITION

Group of common skin disorders which are itchy and present as either acute, subacute or chronic conditions.

CAUSES

- Eczema has many causes but the hall mark is the inflammation and it may be triggered or exacerbated by various external agents

SYMPTOMS

- Itch is the prominent symptom
- In an acute stage there may be oozing
- In chronic stage lesions are drier and may be thickened

SIGNS

Site and morphology will depend on the type of eczema:

- **Acute eczema** - erythematous edematous papules and plaques with vesicles, weeping and scaling. There is often secondary bacterial infection, commonly staphylococcus aureus
- **Chronic eczema** - may show the above features but its dry and less vesiculation. Lesions are more pigmented and thicker with exacerbated skin markings (lichenification) and can have fissures and erosions

Types of eczema

- **Nummular dermatitis** - Multiple coin shaped vesicular or crusted plaques. Common sites are limbs, it tend to persist for many months and can be recurrent
- **Vesicular hand dermatitis** - recurrent bouts of itchy vesicles or bullae on palms and feet. Last for a few weeks
- Contact dermatitis:
  - **Irritant contact dermatitis is (ICD)** seen with either contact with strong irritants for short duration or weak irritants for prolonged duration (eg. Detergents, alkalis, cutting oils)
  - **Allergic contact dermatitis (ACD)** - a type of delayed type IV hypersensitivity reaction where previous exposure to the allergen is needed to induce allergy. Common allergens are hair dye, nickel (in imitation jewellery, belts etc.), cement, preservatives in topical creams, certain plants etc. Both can present as acute and chronic and clinically may be indistinguishable. (A detailed history would aid in the diagnosis)

- » **Stasis dermatitis -** chronic eczematous lesions on lower limbs, may be associated with varicose veins, edema and hemosiderin deposits (seen as red macules)
- » **Lichen simplex and nodular prurigo -** fixed itchy lichenified plaque or papules or nodule due to chronic scratching and rubbing. Common sites are the nape of neck, legs and anogenital area
- » **Atopic dermatitis -** seen in infancy or early childhood. Initially face and later flexural areas are affected. Sometimes the disease can be severe and generalised

INVESTIGATIONS

- Pus swab if secondary bacterial infection suspected
- Patch test for ACD (in JDWNRH)

MANAGEMENT

Atopic dermatitis in adults

- Management is similar in all kinds of dermatitis
- Eliminate or avoid allergens where suspected
- For stasis eczema - refer for USG venous Doppler and varicose vein treatment
- **Acute weeping eczema**
  - » Rest
  - » Tab. Cetirizine 10 mg OD or BD
  - » In general weeping eczema needs to be dried, for this use Potassium Permanganate (KMnO4) soaks three times per day. The solution should be made dilute pink, almost transparent. Hands and feet can be directly soaked in the solution, for other areas can be applied over a gauze. Avoid contact with eyes. Another alternative is to soak with normal saline
  - » Wet wrap dressing can be done where available

    - Oral or topical antibiotics if infection is suspected
    - Oral Prednisolone 10 mg TDS for 5 to 7 days for severe inflammation
    - 1% Hydrocortisone cream BD for the face and flexural areas
    - 0.1% Triamcinolone ointment BD for body lesions
    - Apply steroid creams for 2 weeks and review for response. If severe, review in 1 week

- **Chronic eczema**
    - Management is similar but ointment formulations and heavy creams are preferred
    - KMnO4 soaks, oral antibiotics and oral steroids are usually not required
    - Moisturise and keep the area moist
    - Steroid under occlusions at night for 1 week can be tried
    - For steroid strength and type see above

HEALTH EDUCATION

- Daily bathing, clip the nails short
- Rest the area, avoid scratching
- Moisturise frequently especially once the lesion is dry - can use a cream that is meant for dry skin or petroleum gel
- Advice on the correct concentration of KMnO4, strong solution (purple or dark) will stain the skin, clothes and nails
- Counsel on the nature of eczema and eczema being recurrent.
- Advice regarding sensitization (worsening of eczema with treatment) to certain topical medication e.g. Neomycin that is used in eczema treatment

FOLLOW UP

- Every 2 to 4 weeks to see the treatment response. Long-term topical steroids should not be prescribed

MANAGEMENT

Atopic dermatitis in children

- Antihistamine (Cetirizine), dose according to age
- 1% Hydrocortisone cream LA BD for face and body for small babies
- 0.1% Triamcinolone ointment BD for body lesions in older children or if Hydrocortisone cream is not helping
- Soak with normal saline for oozing lesions
- Mupirocin ointment BD together with topical steroid if yellow crust is seen

HEALTH EDUCATION

- Daily bathing, preferable at bedtime, pat dry and immediately moisturise the whole body and face, then apply medications over the lesions
- Avoid using soaps in children with atopic dermatitis. Use mild soaps like Dove soap once a week
- Moisturise the whole face and body 2 to 3 times per day. Can use heavy creams and vaseline petroleum gel
- Avoid triggers like excessive heat and cold, wool, fleece (wear cotton clothes inside), pets and dust
- Use medication during flare up and stop once better
- Most atopic dermatitis will get better as a child gets older

FOLLOW UP

- Refer to dermatologist if the above treatment does not help

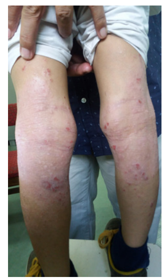


Fig. 16.13.a. Flexural dermatitis in atopic dermatitis

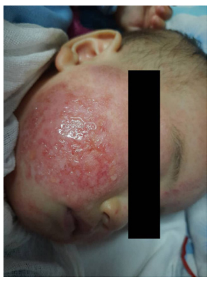


Fig. 16.13.b. Acute facial dermatitis in atopic dermatitis

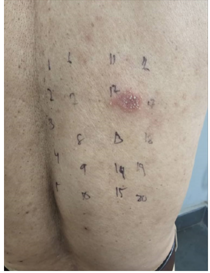


Fig. 1613.c. Acute infected eczema with yellow crust

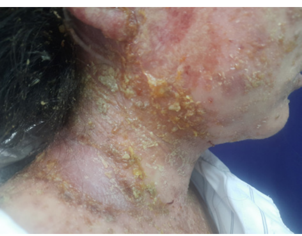


Fig. 16.13.d. Acute allergic contact dermatitis to betadine

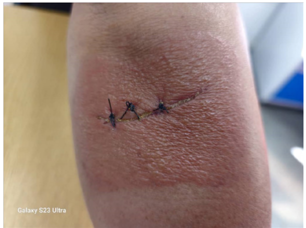


Fig. 16.13.e. Strong allergic reaction to paraphenylenediamine (a component in hair dye)- patch test.

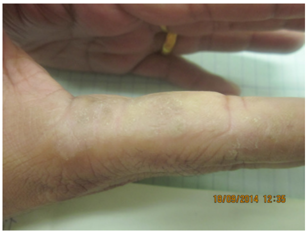


Fig. 16.13.f. Chronic irritant contact dermatitis (Photo by: Dr. Ambika R. Pradhan)

16.2.2 Seborrheic dermatitis

DEFINITION

Chronic mild eczema is limited to body regions with high sebum production and skin folds.

CAUSES

- Linked to excess sebum production and overgrowth of yeast commensal (Malassezia)

SIGNS & SYMPTOMS

- Infant (first 3 months of life) and adult (4th to 6th decade) forms. Usually, a mild course with a predilection for the scalp, face, pre-sternal regions and intertriginous areas
- **Infantile seborrheic dermatitis** - mild greasy scales adherent to the vertex and anterior fontanelle. Superadded infection with candida spp. may occur
- **Adult seborrheic dermatitis** - Chronic relapsing course. It presents as red scaly plaques on the scalp (dandruff), eyebrows, behind ears and face with greasy scales or dry scaly plaques on the pre-sternal and interscapular area or intertriginous lesions (armpits, umbilicus and groins)

MANAGEMENT

Infantile seborrheic dermatitis

- Gently massage with oil and wash with mild shampoo daily
- 2% Miconazole cream local application if lesions persistent
- 1% Hydrocortisone cream initially to reduce inflammation
- Avoid mechanical removal of scales and strong shampoos

Adult seborrheic dermatitis

- 2% Miconazole cream with 1% Hydrocortisone cream for facial and intertriginous areas
- Moderately potent steroids (0.1% Triamcinolone ointment or 0.05% Fluticasone cream) and Miconazole for body lesions
- Cetirizine 10 mg OD or BD
- Wash daily and use moisturisers

HEALTH EDUCATION

Counsel regarding the chronic relapsing course in adult type

16.2.3 Napkin dermatitis

DEFINITION

Common type of napkin eruption due to irritation.

CAUSES

- Use of waterproof plastic plants, prolonged use of soiled diapers, contact with urine and faeces and overgrowth of yeast.

SIGNS & SYMPTOMS

- Moist, glazed and sore erythema of inner parts of thighs, genitalia and buttock area with sparing of skin folds

MANAGEMENT

- 2% Miconazole cream for a few days may help
- If marked inflammatory 1% Hydrocortisone cream for a few days
- Cloth napkins should be changed frequently and washed thoroughly
- If possible, change to disposable diapers, and it needs to be changed several times a day and in the middle of the night, should not be kept overnight
- Wash after every nappy change and use emollient (moisturisers)
- Keep napkins free for a few hours a day if possible
- Barrier creams that contain zinc can be used to prevent napkin dermatitis

HEALTH EDUCATION

- As above

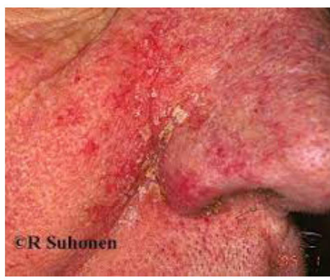


Fig. 16.14.a. Seborrhoeic dermatitis, erythema with greasy scales. (Photo: DermNet)

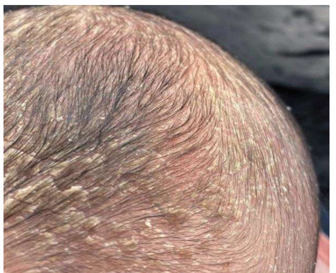


Fig. 16.14.b. Infantile seborrhoeic dermatitis

16.2.4 Psoriasis

DEFINITION

Chronic non-infectious inflammatory skin disease. Skin, scalp, nails and joints can be affected and has a systemic association with metabolic syndrome.

CAUSES

- Poly-genetic predisposition and environmental factors (like trauma, infections, medications, smoking, alcohol and stress) that trigger an immune response

SIGNS & SYMPTOMS

- Sharply demarcated erythematous plaque with thick silvery scales
- Itch may or may not be present
- Morphology is similar in all types. Involvement of the scalp is an important clue to diagnosis
- Nails show pitting and subungual hyperkeratosis (thickening of the nail plate)

Several types:

- **Chronic plaque psoriasis -** common type as described above
- **Guttate psoriasis -** the eruption of small papules (drop-like) with scaling. Associated with streptococcal upper respiratory tract infection. More common in children and adolescents
- **Flexural psoriasis** - well-demarcated erythematous plaques without scaling
- **Erythrodermic psoriasis** - the whole body becomes red with scaling
- Pustular psoriasis - usually acute pustular eruption, can be generalised or localised

INVESTIGATIONS

- Biopsy seldom required
- Routine blood investigations and viral markers, RPR and THPA
- X-ray of hands if arthritis of small joints

MANAGEMENT

- Management needs to be individualised and will depend on the site and body surface area (BSA) involved and the effect on the quality of life.
- Topical therapy:
  - » 1% Hydrocortisone cream local application bd for facial lesions and intertriginous areas
  - » 0.1% Triamcinolone ointment BD for lesions on the body
  - » 5% Coal tar with 6 % Salicylic acid at bedtime for plaques and scalp lesions. Avoid using it on the face and intertriginous areas. Wash in the morning, moisturize and use topical steroids over the lesions
  - » Coat tar shampoo can be used for the scalp (to purchase)
  - » Antihistamine if itch present
  - » Treat underlying medical conditions (hypertension, diabetes, dyslipidemia)

- Systemic therapy in:
  - Extensive lesions (BSA >10%)
  - Lesion on cosmetically sensitive areas - face and hands
  - Presence of arthritis
  - Poor response to topical treatment
  - Refer to higher centre to start systemic therapy

HEALTH EDUCATION

- Counsel that the disease is chronic and treatment needs to be continued long term
- Daily bathing and moisturising with vaseline petroleum gel or heavy cream at least twice a day
- Coat tar may stain clothes and bedsheets

FOLLOW UP

- For treatment response

16.2.5 Pityriasis rosea

DEFINITION

Acute self-limiting skin condition seen primarily in adolescents and young adults that mainly affects the trunk and proximal limbs.

CAUSES

- Maybe associated with reactivation of human herpes virus (HHV) 6 and 7 and certain drugs

SIGNS & SYMPTOMS

- Initially slightly erythematous solitary plaque (herald patch) with peripheral scale (collarette of scale) which is followed by eruption of new lesions after a few days

- Most plaques are oval and oriented along skin lines (fir tree appearance on the back). Atypical variants may occur. Often asymptomatic or mild itch

INVESTIGATIONS

- RPR/TPHA to exclude secondary syphilis, especially in adults

MANAGEMENT

- Patient education and reassurance that lesions will disappear on their own in 6 to 8 weeks
- Cetirizine 10 mg OD if itch is present
- 0.1% Triamcinolone ointment BD for symptom relief

HEALTH EDUCATION

- As above.

FOLLOW-UP

- Refer to a higher centre if the lesion is persistent

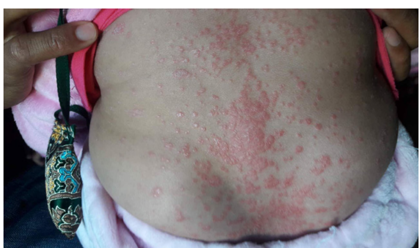


Fig. 16.15.a. Shiny erythematous papules and plaques in a child with psoriasis (Photo by: Dr.Ambika R. Pradhan)

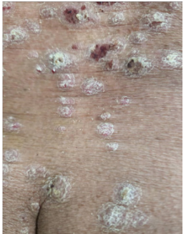


Fig. 15.b. Scaly plaques in psoriasis

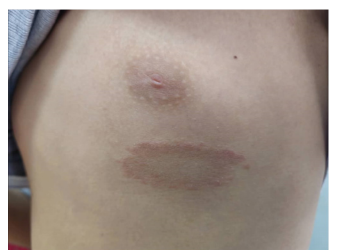


Fig. 16.15.c. Herald patch in Pityriasis rosea

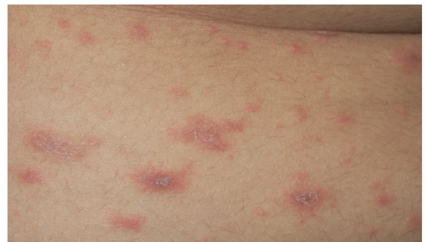


Fig. 16.15.d. Pityriasis rosea. Oval plaques showing collarette of scales (Photo: Bolognia)

16.2.6 Urticaria

DEFINITION

Acute condition characterised by the development of wheals (hives) or angioedema (swelling of mucous membrane and skin) or both.

CAUSES

- Mast cell driven, histamine and other mediators released from mast cells result in urticaria. Urticaria can be acute (less than 6 weeks duration) or chronic (more than 6 weeks duration). It can occur in all age groups. It can be further classified as:
  - » **Spontaneous urticaria** (acute and chronic) - no definite eliciting factor
  - » **Inducible urticaria -** specific triggers such as cold, heat, cholinergic, solar, pressure, aquagenic and contact
- History - Onset, duration, reoccurrence, infections (URTI, dental caries, H. Pylori infection), known allergies, food allergies, drugs and contact history

SIGNS & SYMPTOMS

- Itchy erythematous raised lesions (wheals) that typically last 30 minutes to 24 hours

- Angioedema presents as swelling of lips, tongue, painful swelling on skin and resolution slower than urticaria

INVESTIGATIONS

- If inducible urticaria, find the cause
- Acute Urticaria usually does not require a blood test
- In chronic urticaria do CBC, ESR, CRP - to look for eosinophils and signs of infection and inflammation

MANAGEMENT

- Goal of treatment is to treat until it is gone efficiently and safely. Aim for complete symptom control.
- Search for and eliminate the underlying cause which is not always possible
- Cetirizine 10 mg OD, upscale to bd if symptoms are not controlled
- Medication should be taken daily, continuous until no longer needed
- In severe exacerbation, oral Prednisolone 10 mg TDS for 5 to 7 days
- Calamine lotion application over the lesion may be soothing

HEALTH EDUCATION

- Counsel patients that chronic spontaneous Urticaria will last for several months and treatment needs to be continued.
- Avoidance of triggers (if any)

FOLLOW UP

- Refer to the higher centre if not responding to the above treatment

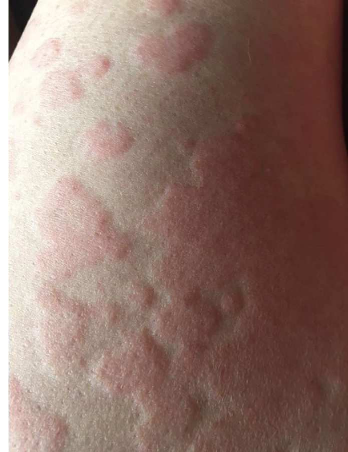


Fig. 16.16.a. Typical wheal seen in Urticaria

16.2.7 Acne

DEFINITION

Multifactorial disorder of the pilo-sebaceous unit with significant psychological and economic impact. Usually seen in teenagers, it starts around 12 to 14 years of age.

CAUSES

- Hormonal changes in puberty, excess sebum production, overgrowth of cutibacterium acnes and inflammation are involved in acne pathogenesis
- Topical creams, dietary factors, hormonal changes, oral medications and occupation needs to be considered

SYMPTOMS

- Recurrent facial eruption that starts in early teens
- Sometimes the back and chest can be involved too

SIGNS

- Papules, Pustules, comedones
- In severe cases nodules, cyst and scars are seen

MANAGEMENT

No topical medications are available in the hospital for acne treatment. Treat both facial and truncal acne. Acne should be treated to prevent scarring.

- For mild acne topical therapy with Clindamycin gel and 2.5% or 5% Benzoyl Peroxide gel can be used alone or in combination
- For moderate to severe acne refer to a higher centre
- Oral Doxycycline 100 mg OD for 4 to 6 months together with topical therapy and skin care (for moderate to severe)
- Refer to a dermatologist if the above treatment does not help

HEALTH EDUCATION

- Wash face and neck twice a day
- Use mild cleansers or 2% Salicylic acid face wash BD
- Avoid oily creams - apply gel or lotion formulation
- Use sunscreen regularly
- Acne will continue throughout teens, therefore topical medication and skincare routine needs to be continued

FOLLOW UP

- Especially for moderate and severe acne to see treatment response

16.2.8 Rosacea

DEFINITION

Common dermatosis affects the face that is mainly seen in adults.

CAUSES

- Exact causes are not known
- Mainly seen in fair skin
- Sunlight exposure, abnormal vascular response, proliferation of skin mites, demodex spp. and inflammation play a role

SYMPTOMS

- Patients may complain of initial episodic erythema of the central face with burning sensation
- It may be triggered by sunlight, alcohol, hot and spicy food
- Later they develop fixed erythema with papules and pustules and plaques
- Patients may have eye symptoms

SIGNS

- Erythema with telangiectasia on central face and forehead
- Papules, pustules and late complication, rhinophyma (rough enlarged nose with dilated pores) may be seen

MANAGEMENT

- Avoid all irritating soaps and creams on your face
- Use mild cleansers and moisturisers
- Use sunscreen daily and protective sun gear (hats etc.)
- 1% Metronidazole cream (to purchase) BD for 6 months
- Refer to higher centres if papules and pustules present or topical therapy does not help
- Oral Doxycycline 100 mg OD for 4 to 6 months

HEALTH EDUCATION

- As above and avoid alcohol and sun exposure
- Do Not use steroid creams as it will exacerbate the condition

FOLLOW UP

- Refer to a dermatologist if the above treatment does not help

16.2.9 Papular Urticaria (insect bite reaction)

DEFINITION

Excessive, possibly allergic reactions to insect bites is commonly seen in children and mostly in summer months.

CAUSES

- Exaggerated reaction to insect bites

SYMPTOMS

- Itchy often recurrent papules mainly on the limbs and waist areas

SIGNS

- Group or lines of erythematous papules, occasionally surrounding urticaria and bullae may be seen
- Erosions and ulceration especially due to excoriations and develop secondary infection

MANAGEMENT

- Antihistamine (Cetirizine), dose according to age
- Frequent application of Calamine lotion will be soothing and prevent scratching
- 0.1% Triamcinolone ointment over the lesions only BD

HEALTH EDUCATION

- Each lesion will last 5 to 7 days
- Can get crops of new lesions
- Avoid keeping pets at home
- Reduce dust at home
- Change of place or environment may help in some cases
- Reaction usually resolves as the child gets older (most by 6 to 7 years of age)

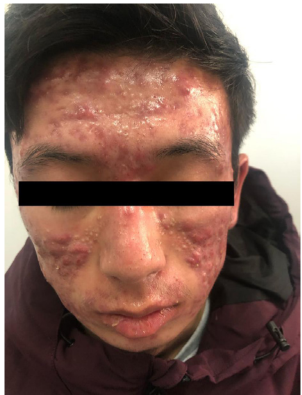


Fig. 16.17.a. Severe acne

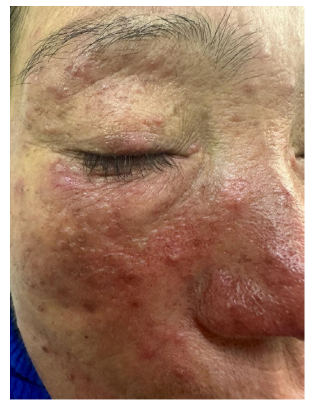


Fig. 16.17.b. Rosacea (erythema, papules and telangiectasia) (Photo by: Dr.Tshewang Choden)

16.3 Adverse drug reaction

Skin is a common target for adverse drug-induced reactions, and most are simple drug exanthem and urticaria which resolve on their own once the drug is stopped. It is important to recognize a few specific types of drug rash that can be life-threatening for prompt treatment and referral.

If an adverse drug reaction is associated with fever, lymphadenopathy, facial oedema, targetoid lesions (target-like plaques), vesicles and bullae the possibility of severe drug reaction.

16.3.1 Fixed drug eruption

DEFINITION

Common simple drug eruption occurs 1 to 2 weeks after exposure on the same spot as before. On subsequent exposure, the reaction occurs within 24 hours.

CAUSES

- Common drugs are Sulfonamides, NSAIDs, Paracetamol, Barbiturates, Carbamazepine and Tetracyclines

SIGNS & SYMPTOMS

- Erythematous plaques with a dusky or violaceous hue, can develop bullae over it
- Resolve with hyperpigmentation
- Can be a single lesion or multiple
- Can present as oral or genital ulcer as well

MANAGEMENT

- Stop the offending drug
- Cetirizine 10 mg OD if required
- 0.1% Triamcinolone ointment BD
- If severe, a short course of oral steroids

HEALTH EDUCATION

- Reappearance of reaction if medication is taken again

16.3.2 Steven Johnson Syndrome/Toxic Epidermal Necrolysis (SJS/TEN)

DEFINITION

Rare potentially fatal adverse drug reaction with variable severity and painful

mucocutaneous eruption.

CAUSES

- Common drugs can be remembered with the pneumonic SATAN.
  - S - Sulfonamides, sulfasalazine
  - A - Allopurinol
  - T - Tetracycline, Thioacetazone
  - A - Antiepileptics
  - N - NSAIDS, Nevirapine

SIGNS & SYMPTOMS

- Temporal relationship with the drug and typical clinical findings:
  - Typically begin within 8 weeks after onset of drug exposure
  - Fever, stinging eyes, myalgia, pain on swallowing precede cutaneous eruption by 1 to 3 days
  - Lesion starts on the trunk then spreads to the face and proximal extremities. Palms and soles are affected. Lesions can be targetoid, dusky erythematous papules that merge to form sheets of erythema and form blisters and erosions
  - Erythema and erosion develop on eyes, oral mucosa and genital mucosa
  - Pain is a prominent symptom, rather than itch
- **Based on skin detachment,** can be classified as:
  - SJS-skin detachment <10% BSA
  - SJS/TEN overlap – skin detachment 10 to 30% BSA
  - TEN-skin detachment > 30%

MANAGEMENT

- Early recognition and stop all offending drug (s)
- Supportive care:

  - » Clean eyes with normal saline, consult ophthalmology
  - » Oral care by using mouthwash and applying Mupirocin around the mouth
  - » Clean genital area and apply Mupirocin or Neomycin ointment around the erosion
- Gentle handling of skin to avoid skin detachment
- Vaseline gauze dressing for erosions
- Pain management with analgesics
- Refer to the higher centre once suspected

HEALTH EDUCATION

- Offending drugs should never be restarted

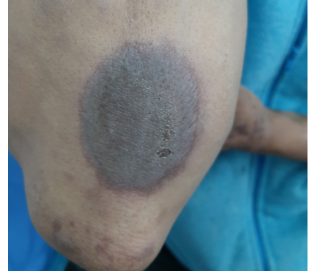


Fig. 16.18.a. Fixed drug eruption

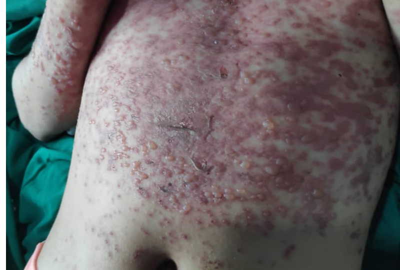


Fig. 16.18.b. Sheets of erythema with vesicles and early erosion in SJS/TEN

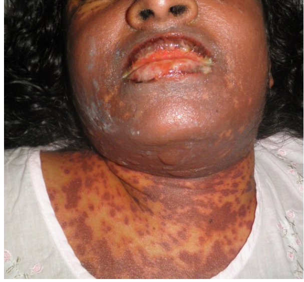


Fig. 16.18.c. Facial and oral involvement in SJS/TEN
(Photo by: Dr.Ambika R. Pradhan)

16.4 Pigmentary disorders

16.4.1 Vitiligo

DEFINITION

Acquired disorder of skin pigmentation that affects the melanocytes (pigment producing cells in the epidermis).

CAUSES

- Autoimmune and oxidative stress induced destruction of melanocytes

SIGNS & SYMPTOMS

- Asymptomatic, well-defined milk white or chalk white macules and patches
- Hair may be white within the lesion

MANAGEMENT

- 1% Hydrocortisone cream BD for facial lesions (preferred is Tacrolimus as long-term treatment is required)
- 0.1% Triamcinolone for lesions elsewhere
- Refer to dermatologist for extensive lesions
- Psychological support as disease has a significant impact on QOL

HEALTH EDUCATION

- Treatment response is better if disease is localised or limited
- Treatment response is better in children
- Long term treatment is needed
- Disease may occur in areas of trauma, tight clothing (belt area)

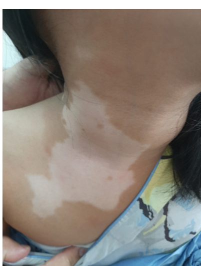


Fig. 16.19.a. Patch of Vitiligo

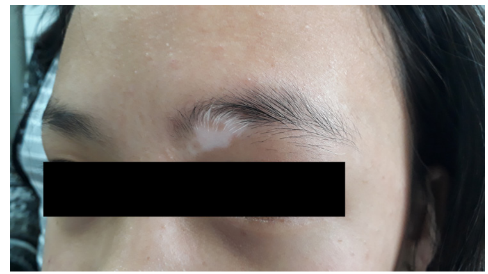


Fig. 16.19.b. Patch of vitiligo with poliosis (white hair) (Photo by: Dr. Ambika R. Pradhan)

CHAPTER 17
DENTAL

Dr. Sonam Choeki, Dentist, JDWNRH

17.1 Toothache

DEFINITION

A toothache is a pain in or around a tooth.

CAUSES

- Odontogenic causes
  - » Dental caries
  - » Periodontitis
  - » Periodontal pocket
  - » Gingivitis
  - » Eruption or extraction of third molar / impacted tooth
  - » Abscess/infection
  - » Cracked tooth syndrome
  - » Tooth fracture (broken tooth)
  - » Abrasion or attrition
  - » Post extraction
  - » Dislodged filling
  - » Non-odontogenic causes

- ◊ Soft tissue infection
- ◊ Foreign body/food impaction
- ◊ Sinus infection or congestion

SIGNS & SYMPTOMS

- A sharp, throbbing, or constant tooth pain.
- Swelling around the tooth
- Fever or headache
- Unable to touch or chew food
- Bad breath or foul taste
- Disturbed sleep
- Facial swelling and infection
- Infections can spread to the soft tissue around the jaws, and neck causing cellulitis and suppuration

MANAGEMENT

- Pharmacological treatment:
  - » If infected, Cap. Amoxicillin 250-500 mg 8 hourly for 5 days
  - » Tab PCM 250 - 1000 mg PRN for pain and fever
- Refer to a dentist/Dental hygienist for further management

ORAL HEALTH EDUCATION

- Emphasise the importance of maintaining good oral hygiene
- Rinse with warm salt water
- Cold compression for swelling

17.2 Teething

DEFINITION

Teething is a natural process that can be uncomfortable for infants and toddlers

as their teeth begin to erupt at around 5-8 months of age.

Fig. 17.1 Teething rings

Source: https://feji.us/hnm9ck

SIGNS & SYMPTOMS

- Inflamed and sore gums
- Irritability, disturbed sleep, and drooling which can cause rashes around the mouth
- Mild temperature rise
- Gnawing or wanting to chew on hard things
- Diarrhoea

MANAGEMENT

- Pharmacological treatment:
  - » Syrup Paracetamol 125 mg/5 ml PRN for pain and fever

HEALTH EDUCATION

- Educate parents and caregivers to gently massage the baby's gums with your finger wrapped in a clean moist gauze pad or soft cloth to provide relief from discomfort
- Advise the use of a teething ring or silicone teethers
- Emphasise the importance of maintaining good oral hygiene even during teething

- Caution against using over-the-counter teething gels or medications that contain Benzocaine or Lidocaine, as they can be harmful to infants and young children if ingested in large amounts
- Remind parents and caregivers to schedule regular dental check-ups to monitor the baby's oral health and development
- Encourage them to seek medical attention if the baby develops a fever, diarrhoea, or other symptoms that are not typical of teething

17.3 Bleeding after extraction

At-home Management:

- Apply Pressure: Immediately after the extraction, bite down on a clean gauze pad placed directly over the extraction site. Maintain firm pressure for at least 30-45 minutes. If bleeding persists, replace the gauze with a new one and continue applying pressure.
- Ice Pack: Applying an ice pack to the outside of the mouth can help constrict blood vessels and reduce bleeding. Wrap the ice pack in a cloth or towel to avoid direct contact with the skin.
- Avoid Spitting or Rinsing: Refrain from spitting forcefully or rinsing your mouth for the first 24 hours, as this can dislodge blood clots and prolong bleeding.
- Elevate Your Head: Keep your head elevated while lying down to minimize blood flow to the head, which can help reduce bleeding.
- Avoid Activities that Increase Blood Pressure: Activities such as heavy lifting, strenuous exercise, or bending over should be avoided to prevent increased blood pressure, which can exacerbate bleeding.
- Avoid Smoking and Alcohol: Smoking and alcohol consumption can interfere with blood clot formation and increase bleeding. Avoid these substances for at least 24 hours after the extraction.
- If bleeding persists beyond the initial home care period, contact dental personnel for further evaluation.

17.4 Infections

17.4.1 Oral candidiasis/thrush

DEFINITION

It is an opportunistic infectious disease in which the fungus Candida albicans accumulates on the lining (mucosa) of the mouth. It causes creamy white lesions usually on the tongue or inner cheeks. Can also be seen in neonates (0-30 days after birth) too.

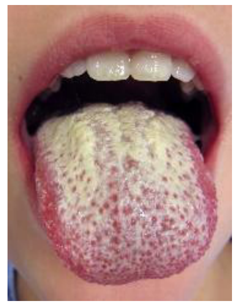


Fig. 17.2 Oral Candidiasis

Source: https://feji.us/p027rk

CAUSES

- Occurs due to an overgrowth of the yeast-like fungus Candida albicans

SIGNS & SYMPTOMS

- White patches on the tongue, lips, cheeks, and palate which can be wiped off
- Slightly raised lesions with a cottage cheese-like appearance
- Redness, burning, or soreness that may be severe enough to cause difficulty eating or swallowing
- Slight bleeding if the lesions are rubbed or scraped off
- Cracking or redness at the corners of the mouth
- A cottony feeling in the mouth

- Loss of taste sensation
- Redness, irritation, and pain under dentures
- Infants may have trouble feeding

Risks Factors

- Immunocompromised conditions (e.g. HIV/AIDS, diabetes)
- Use of corticosteroids or antibiotics
- Wearing dentures
- Undergoing cancer treatment
- Poor oral hygiene habits

MANAGEMENT

- Eliminate possible causative factors
- Pharmacological treatment:
  - » Nystatin paste 100,000 IU/ml PO 6 hourly for 7-14 days
  - » For severe cases in immunocompromised hosts, Itraconazole 100-200 mg PO 24 hourly for 7 days, or Fluconazole 150 mg PO 24 hourly for 7 days
- Referral for further management

HEALTH EDUCATION

- Prevent recurrence of oral candidiasis by
  - » Maintaining good oral hygiene
  - » Practising healthy lifestyle habits
  - » Avoid sharing utensils or personal items with others
  - » Avoiding sugary or acidic foods and beverages that can fuel fungal growth
  - » Avoiding unnecessary use of antibiotics
  - » Disinfecting dentures

- Recommend consuming probiotic-rich foods (e.g. yoghurt) to promote a healthy balance of oral flora
- Stress the importance of follow-up care to monitor the progress of treatment
- Encourage regular dental check-up

17.5 Aphthous ulceration

DEFINITION

Aphthous ulcers or recurrent aphthous stomatitis (RAS) are small, shallow painful lesions that develop on the mucosa in the mouth, at the base of the gums or throat.

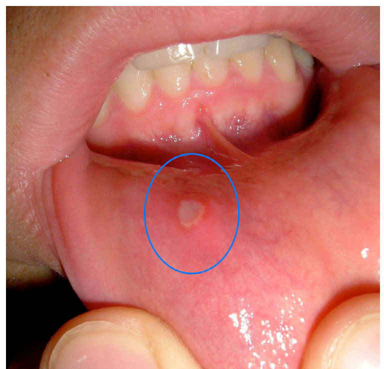


Fig. 17.3 Aphthous ulcer

Source: https://feji.us/tcz6qo

CAUSES

- Trauma
- Stress and hormonal changes
- Viral
- Bacterial
- Carcinogenic
- Dietary factors (e.g. acidic or spicy foods)

- Nutritional deficiencies
- Unclear immunological pathogenesis

SIGNS & SYMPTOMS

- Tingling or burning sensation a day or two before the sore appears
- Round or oval sores with a white or yellow centre and a red border on the cheeks or gums, tongue, and other areas of the mouth
- Pain and fever
- Bad breath
- Discomfort while eating or talking
- Swollen lymph nodes

MANAGEMENT

- Local application of topical steroids and topical nonsteroidal inflammatory agents
- Use of topical steroids is contraindicated for viral ulcers
- Administer Vitamin B, C, Zinc, Folate or Iron supplements
- If the ulcer is a long-standing (>2 weeks) non-healing chronic ulcer, or if they have additional symptoms such as fever, difficulty swallowing, or swollen glands, refer for further management

HEALTH EDUCATION

- Emphasise the importance of maintaining good oral hygiene to prevent infection and promote healing
- Rinse with mild, alcohol-free mouthwash
- Avoid acidic or spicy foods and beverages that can irritate the sores
- Avoid habits or behaviours that can exacerbate aphthous ulcers
- Provide strategies for stress management

17.6 Premalignant lesions

DEFINITION

Premalignant lesions are abnormal tissues that have the potential to develop into cancer if left untreated. The different types of premalignant lesions are leukoplakia (white patches), erythroplakia (red patches), OSMF, and oral lichen planus.

Leukoplakia is the most common precancerous lesion and is defined as a white plaque-like lesion of the oral mucosa that cannot be rubbed off and cannot be diagnosed as a specific disease.

Erythroplakia appear as red velvety patches which are not associated with any trauma or inflammation and are less common but 90 percent or more may undergo malignant transformation. It tends to occur more frequently in older individuals.

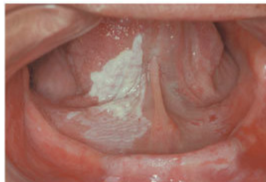


Fig. 17.4 Leukoplakia

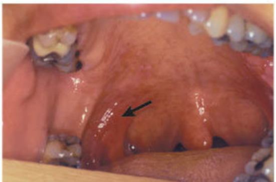


Fig. 17.5 Erythroplakia

Source: https://shorturl.at/nNV9N

CAUSES

- Although the cause is unknown, any irritation from sharp and rough teeth edges, ill-fitting dentures, or fillings that rub against the cheek or gum
- Chronic smoking or chewing tobacco
- Chronic inflammation
- Prolonged alcohol use

SIGNS & SYMPTOMS

- White or grayish irregular or flat-textured patches that can't be wiped off
- It isn't painful and may go unnoticed for a while
- Thickened or hardened areas along with raised red lesions which are more likely to show precancerous changes

MANAGEMENT

- Symptomatic management
- Administer dietary supplements like Vitamin A, C, B-Complex, and Iron
- Refer to a dentist for further management

HEALTH EDUCATION

- Stress the importance of early detection and prompt evaluation of the lesions to prevent progression to cancer
- Encourage individuals to perform regular self-examinations of their oral cavity
- Seek professional dental or medical evaluation if they notice any suspicious changes
- Lifestyle modifications
- Emphasise the importance of regular dental check-ups for early detection and monitoring of oral health conditions

17.7 Oral submucous fibrosis

DEFINITION

It is a chronic, progressive condition that affects the oral mucosa, leading to stiffness and fibrosis of the oral tissues.

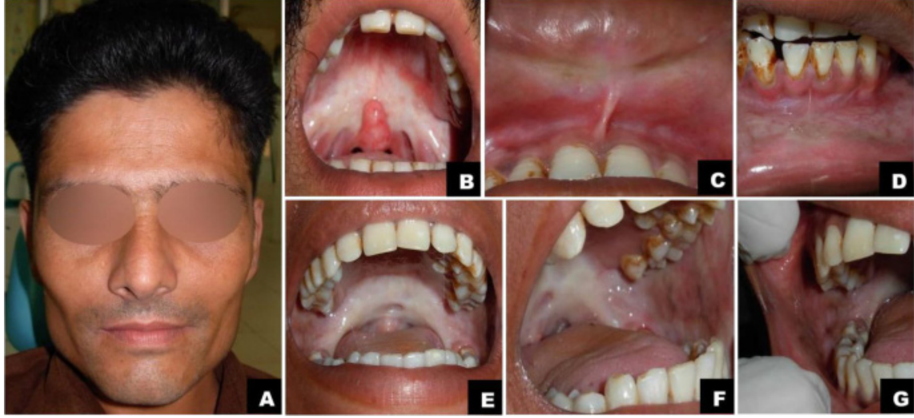


Fig. 17.6 Clinical stages of OSMF

Source: https://shorturl.at/sWsJH

CAUSES

- Autoimmunity
- Chewing betel nut and betel quid
- Associated with tobacco use (smoking or chewing)
- Consumption of spicy food
- HPV infection
- Nutritional deficiencies

SIGNS & SYMPTOMS

- Progressive stiffness or rigidity of the oral mucosa
- Difficulty in opening the mouth (trismus)
- Blanching (white opaque) of the oral mucosa
- Recurrent ulcer and burning sensation on eating spicy food
- Xerostomia
- Change of voice, difficulty in deglutition
- Poor oral hygiene
- Decreased mobility of soft palate

MANAGEMENT

- Administer dietary supplements like Vitamin A, B-complex, Vitamin C, and Iron
- Refer to the dentist for further management

HEALTH EDUCATION

Encourage individuals to maintain good oral hygiene practices
Dietary modifications
Quit the habit as soon as possible
Physiotherapy to improve mouth-opening
Emphasise the importance of regular oral screenings and check-up
Educate individuals about the increased risk of oral cancer

17.8 Oral cancer

DEFINITION

Cancer develops in any of the parts of the oral cavity or the oropharynx. 90% of oral cancers are squamous cell carcinomas; about 5% are verrucous (vascular malformation) carcinomas, and a small percentage are adenocarcinomas.

CAUSES

Risk factors

- Tobacco use of any kind
- Heavy alcohol use
- Excessive sun exposure to the lips
- Human Papillomavirus (HPV)
- A weakened immune system

SIGNS & SYMPTOMS

- Long-standing (>2 weeks) non-healing chronic ulcer in the oral cavity
- A white or reddish patch or lumps inside the mouth

- Bleeding and non-painful ulcer or growth
- Regional lymphadenopathy
- Decrease appetite, reduced weight
- Poor oral hygiene
- Loose tooth
- Mouth pain
- Difficulty in opening mouth
- Difficulty chewing, swallowing
- Difficulty in tolerating spicy food

MANAGEMENT

- Symptomatic treatment and referral for further management

HEALTH EDUCATION

- Stress the importance of routine dental check-ups and oral cancer screening
- Practice sun safety
- Dietary modifications
- Quit the habit as soon as possible
- Emphasise the importance of regular oral screenings and check-up

17.9 Trauma

DEFINITION

Dental trauma encompasses injuries to the teeth, gums, and surrounding tissues, including jaw fractures. These fractures can result from accidents, falls, or blunt force trauma, leading to pain, swelling, and difficulty in chewing or speaking. Immediate medical attention is vital to properly diagnose and treat jaw fractures to restore function and prevent further complications.

17.9.1 Jaw fracture

DEFINITION

A break (fracture) in the jawbone.

CAUSES

- Road traffic accidents
- Fall injuries
- Sports injuries
- Assaults and trauma

SIGNS & SYMPTOMS

- Pain, mobility of fractured segment of tooth or bone
- Bruising in the jaw or cheek area
- Step deformity or change in symmetry
- Painful or restricted TMJ movement
- Bleeding from the traumatic site
- Difficulty breathing, swallowing, talking or eating

INVESTIGATIONS

- Radiography of the fracture site

MANAGEMENT

- Primary treatment for bleeding and pain
- Suture for soft tissue trauma
- Refer to Oral-Maxillo-facial surgeon for bone fractures

17.9.2 Avulsion

DEFINITION

Dental avulsion is the complete displacement of a tooth from its socket in alveolar bone owing to trauma.

CAUSES

- Road traffic accidents
- Fall injuries
- Sports injuries
- Assaults and trauma

SIGNS & SYMPTOMS

- Commonly avulsed teeth are the incisors
- Extreme pain with a bleeding socket
- Raw wound with or without lip and labial mucosa injury

MANAGEMENT

- Refer to the dentist promptly as dental avulsion success rates are time-dependent (within 20-40 minutes of injury)
- Place the avulsed tooth back in the socket gently but well rinsed with saline, with care taken not to damage the root surface.
- If immediate replantation is not possible, place the tooth in an appropriate storage solution like saliva (under the patient's tongue or cheek), fresh whole milk, and saline.
  - » Pharmacological treatment:
  - » Cap. Amoxicillin 250-500 mg 8 hourly for 5 days
- Tab. Ibuprofen 400 mg 8 hourly for 3-5 days

HEALTH EDUCATION

- Encourage the use of protective gear during sports activities, such as mouth guards for contact sports
- Advise soft diet

17.10 Temporomandibular disorders (TMD)

DEFINITION

Temporomandibular joint disorders (TMDs) are a group of conditions that affect the temporomandibular joint (TMJ), jaw muscles, and nerves surrounding it, causing pain and dysfunction.

CAUSES

- Jaw injury or trauma
- Teeth grinding or clenching (Bruxism)
- Wear and tear of the joint
- Misalignment of the jaw or teeth
- Arthritis or other joint disorders
- Stress and tension

SIGNS & SYMPTOMS

- Pain around the jaw, ear, and temple
- Limitation of jaw movement
- Muscle tenderness and stiffness
- Clicking, popping, or grinding noises when you move your jaw
- Pain may be worse when chewing or stressed
- Referred pain to the head, face, and neck region
- Disturbed sleep

MANAGEMENT

- Reassurance and counselling on the role of stress and para-functional habits such as clenching and grinding the teeth
- Heat application to the sides of the face with a heating pad or hot towel
- Wearing a mouth guard or splint to prevent teeth-grinding
- Physiotherapist consultation for jaw exercises and massage

- Pharmacological treatment:
  - » Amitriptyline 25 mg PO HS for 1 month. If the treatment is successful, a maintenance dose should be given for 2-4 months.
- If these treatments do not help, referral for further management

17.11 Oral health during pregnancy

DEFINITION

Oral changes seen during pregnancy include gingivitis, gingival hyperplasia, pyogenic granuloma, salivary changes, enamel erosion due to gastric acid secretion and acid reflux, increased caries risk, tooth mobility, tooth loss, etc.

Managing Oral Health during Pregnancy

- Assess their current dental health
- Educate the patients about the oral changes during their pregnancy
- Emphasise strict oral hygiene practices to control plaque build-up
- Schedule regular dental checkups at 3-month intervals
- Consider fluoride or Sodium bicarbonate rinses

17.12 Oral hygiene practices for children and adults

Children

- Gently wipe a baby's gums after each feed using a clean, moist gauze pad or soft cloth
- Avoid allowing babies to fall asleep with a feeding bottle in their mouth
- Discourage the consumption of sugary drinks
- Discourage thumb sucking, pacifier use, and sippy cups
- Start brushing as soon as the first tooth appears
- Supervise tooth brushing until the child can brush their teeth correctly on their own
- Children aged 0-3 should use a smear of toothpaste and children over the age of 3 should use a pea-sized amount

- Take the child for a check-up when the first tooth comes in or by their first birthday.

Adult

- Use a soft bristle toothbrush
- Change the brush at least every after 3 months
- Brush at least twice a day for 2-3 minutes particularly at night before going to bed with a fluoridated toothpaste (≥1500 ppmF)
- Use the correct technique of tooth brushing; never use force
- Floss at least once a day
- Avoid foods and drinks that are high in sugar, especially in between meals, or at least rinse/brush your teeth after eating
- Avoid smoking and other forms of tobacco
- Drinking plenty of water helps maintain saliva production, which helps wash away food particles and bacteria that can cause toothaches.
- Ensure regular dental checkups at 6 monthly intervals

CHAPTER 18: PALLIATIVE CARE

Dr. Tara Devi Laabar (PhD), Sr. Lecturer, FNPH
Ms. Sangay Wangmo, Lecturer, FNPH
Ms. Ambika Luitel, Nurse, JDWNRH
Ms. Yangdon, Nurse, JDWNRH

Introduction

Palliative care is a holistic approach of care aimed at relieving severe health related suffering among patients and families affected by a life-limiting illness. Palliative care aims to improve the patient's quality of life by addressing the complex symptoms including physical, psychosocial and spiritual and the needs of the family. Although, initially, palliative care was initiated only after the curative treatment ceased, today it can be initiated at the time of diagnosis, along with the therapeutic treatment, continued throughout the illness trajectory till the end-of-life as terminal care and extended as grief and bereavement support to the family members following the death of their loved one **(Fig. 18.1)**

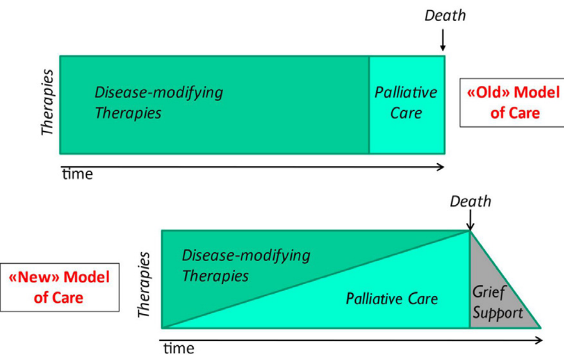


Fig. 18.1 Old and new models of palliative care[1]

Definition of Palliative Care

Palliative care is defined as *"an approach that improves the quality of life of patients (adults and children) and their families who are facing problems associated with life-threatening illness. It prevents and relieves suffering through the early identification, correct assessment and treatment of pain and other problems, whether physical, psychosocial or spiritual."*[2]

For patients with advanced disease, severe health related suffering may result from any or all of the various causes. The term 'Total Pain' is used to describe the sum of a patient's suffering which is what has to be addressed in palliative care **(Fig. 18.2)**.

[1] Romano, M. (2022). Ten Questions and some reflections about palliative care in advanced heart failure patients. *J. Clin. Med. 2022, 11(23), 6933;* https://doi.org/10.3390/jcm11236933

[2] World Health Organization. WHO Definition of Palliative Care. 2003 [cited 2018 26 March]. Available from: http://www.who.int/cancer/palliative/definition/en/

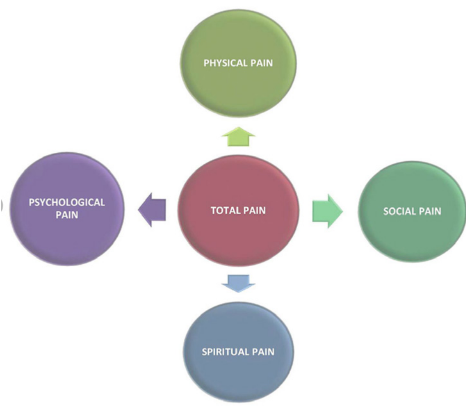


Fig. 18.2 Total Pain and its causes[3]

Principles of Palliative Care

1. Assessment and effective management of pain and other symptoms (nausea, vomiting, constipation, breathlessness) including psychosocial and spiritual distress.
2. Communication
3. Ensuring patient-and family-focussed care
4. End-of-life care
5. Grief and bereavement support

Management of physical pain

1. Assessment

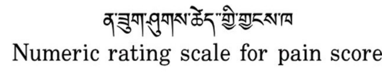
Assessment of pain is essential to determine the cause and to guide management. It includes good history taking, examination and documentation. The PQRST mnemonic is a valuable tool for pain assessment in palliative patients.

[3] Pal, S. et al., (2024) Development and Validation of Total Pain Scale for Evaluation of Total Pain in Cancer Patients. https://www.researchgate.net/figure/Conceptual-model-of-total-pain_fig1_372298411

Table 18.1. Pain History

Onset	When did the pain start?
Provocative/Palliation factors	What makes the pain worse? What makes the pain better?
Quality	What exactly is it like? • Dull aching pain • Sharp pain • Burning pain • Lancinating pain, etc
Radiation	Does it spread anywhere?
Severity	How severe is it? • Mild • Moderate • Severe OR apply numerical rating scale (NRS)
Temporal factors	Does it come and go? Is it worse at any particular time of the day or the night?

The severity of pain can be assessed using the pain scales such as the one demonstrated in **Fig. 18.3**.



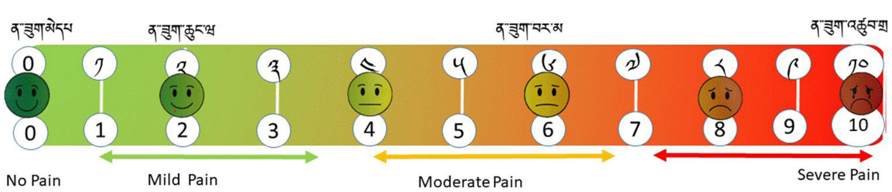


Fig. 18.3 Pain scale

Physical pain can be classified into:

Somatic pain

a. Visceral pain

b. Neuropathic pain

c. Bone pain

d. Mixed pain

2. Pain Management

The WHO analgesic ladder provides a good guide for adequate cancer pain management **(Fig. 18.4.a)** and **Fig. 18.4.b** demonstrates the pain management for chronic non-cancer pain.

The WHO analgesic ladder specifies treatment on pain intensity, from simple analgesics for mild pain to opioid analgesics for moderate and severe pain, especially for cancer pain, involving three steps:

- Step 1 Non-opioid plus optional adjuvant analgesics for mild pain
- Step 2 Weak opioid plus non-opioid and adjuvant analgesics for mild to moderate pain
- Step 3 Strong opioid plus non-opioid and adjuvant analgesics for moderate to severe pain

Whereas, the management of chronic non-cancer pain involves the integration of interventional therapies in Step 3 such as acupuncture, cupping, yoga, massage and so on before upgrading to strong opioids (Step 4).[4]

[4] Yang, J. et al., (2020). The Modified WHO Analgesic Ladder: Is It Appropriate for Chronic Non-Cancer Pain? Journal of Pain Research 2020:13 411–417. DOI https://doi.org/10.2147/JPR.S244173

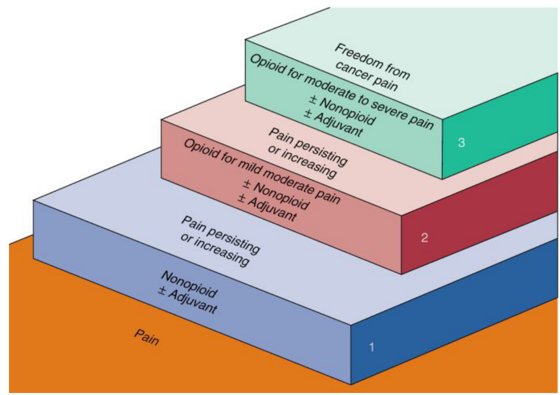


Fig. 18.4.a. The WHO Analgesic Ladder for cancer pain

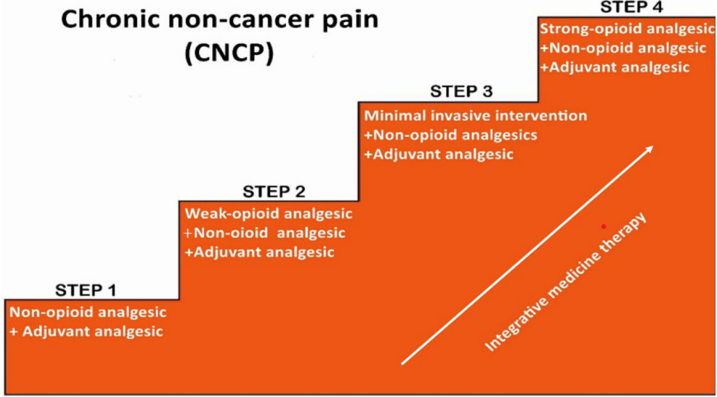


Fig. 18.4.b. A 4-step Analgesic Ladder for chronic non-cancer pain

The WHO ladder provides five simple recommendations for the usage of analgesics:

- By mouth
- By clock
- By ladder
- By individual

- Attention to the details.[5]

Other physical symptoms and their management

1. Respiratory Symptoms

Table 18.2. Respiratory symptoms

Symptom	Assessment	Management
Dyspnoea	1. History 2. Rating the intensity 3. Physical examination 4. Selective investigations (X-ray, Ultrasonogram) if appropriate	1. Administer oxygen (4 litre/ minute) for a period of 15 minutes after explaining to the patient that it can be continued if beneficial. 2. Morphine 2.5-5 mg Q4H (If the patient is already on morphine for pain, the dose can be increased by 30%–50%) 3. Corticosteroids (dexamethasone 4–8 mg/day 4. Non-pharmacological management: » Provide care to the patient in a well-ventilated room » Fan should be switched on or use a hand fan » Loosen the garments worn » Help the patient sit or lie down in his/her most comfortable position » Make arrangements for him/her to lean comfortably when seated. Give water as and when required » Prevent crowding in the patient's room Breathing and relaxation techniques can be useful if patients had training on them before the acute episode of dyspnoea

[5] Hagedorn, J. M. (2022) World Health Organization Analgesic Ladder. https://link.springer.com/chapter/10.1007/978-3-030-87266-3_67

Symptom	Assessment	Management
Cough	1. History 2. Rating the intensity 3. Physical examination	» Non-opioid cough suppressants can be of help in a minority » Bronchodilators (Salbutamol) are often helpful » Opioids are the drugs of choice in symptomatic management of cough in advanced disease.
Haemoptysis	1. History 2. Physical examination	1. Suction, oxygen, intravenous fluids 2. Stop NSAIDs or anticoagulants if any 3. Inj. Vitamin-K 1.0-2.5 mg IV up to 5 mg OR Tranexamic acid 1.5 g followed by 1 g TDS are of little value 4. Benzodiazepines can be used. Midazolam 2.5-5.0 mg, Lorazepam 1-2 mg sublingual 5. Using dark coloured bed sheets and wipes to reduce the visual impact of bleeding has also been suggested

2. Gastrointestinal Symptoms

Table 18.3. Gastrointestinal symptoms

Symptom	Assessment/Causes	Management
Nausea and Vomiting	**Assessment:** 1. History 2. Rating the intensity 3. Physical examination Causes: **a. Chemical causes** (Opioids, digoxin, anticonvulsants, antibiotics, cytotoxic chemotherapy, toxins like food poisoning, ischemic bowel, gut obstruction or Metabolic organ failure, hypercalcemia, ketoacidosis uraemia and hyponatremia are the common causes' **b. Gastrointestinal causes** (Gastric stasis due to anticholinergic drugs/ ascites/ hepatomegaly/ gastritis, Stretch/distortion of GIT due to constipation, intestinal obstruction / mesenteric metastases, Serosal stretch/ irritation (liver metastases, ureteric obstruction) **c. Cranial causes** (Cerebral oedema, Intracranial tumour, Intracranial bleeding, Cerebral infections skull metastases, Meningeal infiltration) **d. Other causes** (Common examples are movement associated nausea and vomiting, Anxiety induced nausea and vomiting, Anticipatory emesis"	• Haloperidol • 5HT 3 antagonist (Ondansetron) with corticosteroid • Prokinetic agents like metoclopramide • Drugs to reduce gastric secretions (Glycopyrrolate, Atropine) • Corticosteroids • High dose corticosteroids • Dexamethasone and prednisolone • Movement associated: Give Cinnarizine • Anxiety induced / Anticipatory emesis: Give Benzodiazepines"

Symptom	Assessment/Causes	Management
Constipation	**Assessment** » History » Physical examination » Per rectal examination » X ray abdomen/ Ultra sonogram may be performed **Causes** » The use of opioid analgesics » Hypercalcemia, Intestinal obstruction and Spinal cord compression."	**Laxatives:** • Senna 2 HS/ Syrup lactulose 30 ml HS • Tab. Bisacodyl may be used if available • Glycerine suppositories • Soap and water enema • Attention need to be given to » Diet » Fluid intake » Mobility » Privacy for toileting » Pain
Diarrhoea	**Revise current medication to rule out drugs as possible cause: Laxatives** » Mg containing antacids » Theophylline/ Deriphyllin » CNS drugs » Anti arrhythmic » Antibiotics	» Oral hydration solution » Loperamide (4 mg STAT followed by 2 mg after every unformed stool) » Octreotide for refractory diarrhoea (Remember that it is expensive!)

3. Lymphoedema

- Lymphoedema is defined as the accumulation of lymphatic fluid within the interstitial space due to an imbalance between the production and transportation of interstitial fluid resulting in edema. It usually presents as swelling of one or more extremities along with the swelling of the corresponding trunk.

- Though lymphoedema is a chronic, incurable condition, it can be managed effectively and its effects can be alleviated.

Table 18.4. Symptoms, causes and management of Lymphoedema

Symptom	Causes	Clinical features	Management
Lymphoedema	• Surgery (lymph node dissection, scaring) • Trauma (circumferential wound, burns) • Malignancy (lymph node infiltration, tumour compression) • Infection (lymphadenitis) • Venous disease (chronic venous insufficiency) • Immobility (dependency edema)	• Swelling of the affected limb (can be both pitting and non-pitting) • Heaviness, fullness and tightness of affected limb • Hyperkeratosis • Papilloma • Joint stiffness • Lymphorrhea • Positive Stemmer's sign (inability to pinch and lift the skinfold at the base of the second toe or middle finger)	• Treating a patient with lymphoedema usually requires a multidisciplinary team. The management is broadly classified into » Skincare » Compression garments » Massage » Exercise

4. Fungating wound

- A person with a chronic, non-healing malignant ulcer is affected from all domains of life - physically, psychologically, socially, and spiritually.
- The management requires a holistic approach with an aim to improve the quality of life of the patient
- Principles of management of fungating wound:
  - » Promote comfort

» Build confidence
» Prevent isolation
» Improve the quality of life

Table 18.5. Symptoms, causes and management of Fungating wound

Symptom	Cause	Clinical features	Management
Fungating wound	Fungating wounds are caused by direct infiltration of the skin, tissues, mucosa and blood and lymph vessels by a local tumour, from a metastatic deposit from a distant primary site or from a primary skin tumour, such as squamous cell carcinoma, basal cell carcinoma or malignant melanoma	• They can grow in the shape of a fungus or cauliflower. • Pain. • -Malodour. • -Heavy exudate. • -Peri-wound excoriation. • -Capillary bleeding. • -Local Infection."	• Incident pain can be managed by administering the rescue dose of analgesic half an hour before dressing or timing the dressing half an hour after the regular dose. • Ketamine can be given sublingually as 0.25-0.5 mg/kg, 15 minutes before dressing. The same drug used for injection is given sublingually. • It is crucial to completely wet the dressing before removing it from the wound. Removing a dry dressing causes additional injury, bleeding, and pain. • Non-adherent dressing like paraffin gauze is less painful on removal. But they cannot be used in the presence of active infection. • Bupivacaine gauze soaking reduces pain when applied before dressing • Metronidazole powder can be mixed with lignocaine jelly to make a paste to minimise the pain and odour.

Management of psychological, social and spiritual distress

Besides physical pain, it is essential to assess psychological, sociocultural and spiritual pain which are a source of considerable suffering among patients with a terminal illness and their families. While there are several symptom assessment tools used internationally,[6] there are no validated tools yet to be used in Bhutan.

However, assessing cognitive and sensory functions, observing the patient's behaviour, their mood/feelings/emotions and their thought processes helps us understand their psychological issues. Similarly, assessing their identity and role, functioning and relationships helps in understanding their social concerns and, likewise, exploring their insights and perception about the illness informs the spiritual dimension.

Communication

Good communication amongst healthcare professionals involved in the patient's care is vital to many aspects of palliative care. With the patients and families, communication involves certain rules:

- conduct the interview in person (not by telephone)
- ensure privacy, prevent interruptions
- sitting down (not standing over the bed)
- allow enough time
- at least one family member or friend should accompany the patient

Provide information on the:

- the medical situation
- what treatment can be offered
- the possible benefits and burdens of any treatments
- avoid precise prognostication
- as much or as little information as they want

[6] The University of Wollongong. PCOC Assessment tools, https://www.uow.edu.au/ahsri/pcoc/palliative-care/assessment-forms/

Information should be conveyed

- in a caring and sympathetic way, not abruptly or bluntly
- in a way they can understand clearly (avoiding euphemisms) truthfully
- in a positive manner
- use independent interpreters (if required)

Ensure active listening and effective communication with the patient and his/family regarding the disease progress, possible treatment options and the prognosis. Clarify their doubts and reassure your support as and when required. Involve relevant professionals including social workers (if available), counsellors and spiritual leaders. Whenever necessary, consult palliative care champions (where available) and refer (if required).

Breaking the bad news

Bad news is medical information that indicates a life limiting diagnosis or prognosis. Effectively managing such communication helps the patient adjust to the illness and improve outcomes. The key steps in breaking bad news in clinical settings are described using mnemonics **SPIKES**:[7]

- **S**etting: yourself, patient, situation
- **P**atient view /perception: what does the patient know and think of his/her situation
- **I**nvite the patient know/seek
- **K**nowledge giving:
    - » Warning shot
    - » Small chunks of information
    - » Gauge patient's response/understanding
    - » Encourage questions, allow time

[7] Greater Manchester Health and Social Care Partnership. Palliative Care Pain & Symptom Control Guidelines for Adults [Internet]. 2022 Nov [cited 2024 Mar3];(Fifth Edition). https://www.england.nhs.uk/north-west/wp-content/uploads/sites/48/2020/01/Palliative-Care-Pain-and-Symptom-Control-Guidelines.pdf

- **E**motions managed (empathise/validate/explore)
- **S**trategy and summary: plan for follow up, What happens next

Ensure patient-centred care

Categorising patients by their underlying disease, based on the similarity of the medical problems encountered, fails to recognize the psychosocial features and problems that make every patient a unique individual. These unique characteristics can greatly influence suffering and need to be taken into account when planning palliative care for individual patients.

Palliative care involves sensitivity, sympathy and compassion, and demonstrates concern for all aspects of a patient's suffering and not just the medical problems. It also implies a non-judgemental approach in which personality, intellect, ethnic origin, religious belief or any other individual factors do not prejudice the delivery of optimal care.

Support for carers and family members

The family members of patients with advanced disease are subject to considerable physical, psychological, emotional and financial distress, especially if the patient is being managed at home. Particular attention must be paid to their needs as the success or failure of palliative care may depend on the caregivers' ability to cope. The priority needs among Bhutanese family members caring for their loved ones diagnosed with advanced illness included understanding their relatives illness, managing symptoms, providing personal care, financial aspects, dealing with their own feelings and emotions and knowing what to expect in the future.

End-of-life care

End-of-life care is support for people who are in their last year, months, weeks or days of life. Palliative care providers can explore the patients' end-of-life wishes and plan the care accordingly. End-of-life care helps patients to live well as much as possible and die respectfully in peace and with dignity.

Table 18.6. Management of symptoms at end-of-life

Symptom	Cause	Management
Noisy Moist Breathing (Death Rattle) Death Rattle refers to noisy breathing in patients too weak to expectorate or are literally dying.	It is produced in upper airways by secretions (either saliva or the bronchial secretions) during the respiratory cycle. It does not cause hypoxia.	Non-pharmacologic: • Reassurance to family • Semi-prone position • Withdrawal of parenteral hydration Pharmacological 1. Atropine 1mg or Glycopyrrolate 0.2 mg subcutaneously/ sublingually. Can be repeated 3-4 times a day. Start drugs early because they do not affect existing respiratory secretions 2. Hyoscine Hydrobromide 0.4 mg or Hyoscine Butylbromide 20 mg are also helpful subcutaneously. 3. Injection Morphine 1.5 – 3 mg +/_ Midazolam 2-3 mg subcutaneously"

Symptom	Cause	Management
Restlessness	Restlessness in an unconscious/ semi-conscious dying person can be due to a variety of causes Detailed history and careful physical examination is required.	1. Treat the cause if identified: Unrelieved physical symptoms » Delirium » Drugs causing restlessness » Dehydration 2. If restlessness is not associated with, delirium, it can be managed with subcutaneous Midazolam (2-3 mg increments every 30 minutes till the patient settles) 3. For restlessness associated with delirium, Haloperidol 3-5 mg/ day subcutaneously need to be added to Midazolam"

Symptom	Cause	Management
Confusion (delirium)	• Medications, including opioids and steroids. • Withdrawal from drugs, including alcohol, nicotine, sedatives and antidepressants. • Infections. • Constipation • Urinary retention • Dehydration • Organ failure, such as liver or kidney failure • Uncontrolled pain."	1. Treat underlying causes 2. Review and stop non-essential medications 3. Check for opioid toxicity 4. Reduce dose/change opioid 5. Administer a low dose antipsychoti 6. Drug of choice is Haloperidol (3 mg) 7. Olanzapine (2.5-5 mg) or Quetiapine (25-100 mg) can also be used, but do not have any advantage over low dose haloperidol 8. Benzodiazepines (Diazepam 2-10 mg) preferable over antipsychotics in delirium tremens and Parkinson's Disease

Grief and bereavement support

Grief is defined as an intense sorrow, especially caused by someone's death. Bereavement is an active process through which mourners pass over a period of time while they struggle to adapt and cope with their changed reality, both internal and external. While grief and bereavement are regarded as a painful yet normal and healthy process with its individually determined path, family members are often faced with a number of challenges including psychological, emotional, spiritual distress and financial issues after losing their loved one.

- What supports the response to grief?
  - » Normalising the experience for people who are grieving is extremely important. Disruption of sleep and appetite, exhaustion, deep sadness and mourning can cause people to feel like they are "going crazy". It is not uncommon for people to express wanting to be with the person who has died and to talk about suicide.
  - » Listening: Listening is a key element to be a good supporter to someone in grief.
  - » Letting people know they are supported and not left alone. Cultural practices and mourning rituals can be helpful in supporting people, so they don't feel lonely. Offering your presence to the bereaved family is important. Support from close family and friends (including visits and continued presence) is vital to the normal grieving process.
  - » Anniversaries and other "firsts". First time the person goes shopping, goes to church or temple, to school or to a social outing. All these 'firsts' are difficult and will stir up grief. It is not uncommon for people to feel very intense grief at the time of the anniversary of the death or during special times such as birthdays.
  - » Talking about grief
    - ◊ One of the best ways to support a caregiver after their loved one has died is to support them to talk about the experience of caring and grieving. Remembering, sharing stories (good and not so good) help the person to continue to feel close to the person who has died
    - ◊ Platitudes are when we say things like "they are better now they are not in pain" or "it's the will of God" or other remarks. These relay the speaker's values and attitudes about someone else's grief and are to be avoided. Such comments may contribute to feelings of isolation and cause further distress. Likewise, it is not helpful to compare another person's grief to your own
  - » General awareness within the community about the grieving process

can be helpful for bereaved families. This can include discussion groups, pamphlets etc.

- Counselling and formal support services can help the small number of people who may need professional support after the death of a loved one. Only a small percentage of people need the help of a professional counsellor. Most people are supported and cared for by their family, friends, personal community, and the wider community in a way that helps them to recover well.

Conclusion

Palliative care is a developing concept in Bhutan and this chapter is included in the Standard Treatment Guide for the first time. The Ministry of Health and the Khesar Gyalpo University of Medical Sciences of Bhutan have been initiating various training programs on palliative care. With such training, palliative care can be provided at all levels of healthcare and by all categories of healthcare professionals.

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Annexure

1. Mental status examination

MENTAL STATUS EXAMINATION		
Grooming	□ Neat □ Dishevelled □ Inappropriate	□ Bizarre □ Other______________
Interpersonal Style And Behaviour	□ Appropriate, Cooperative □ Domineering, Demanding □ Passive, Submissive □ Threatening □ Hostile, Aggressive □ Provocative □ Guarded □ Silly □ Impulsive	□ Fearful □ Withdrawn □ Crying □ Preoccupied □ Ambivalent □ Agitated □ Bizarre □ Other ________________
Motor Activity	□ Appropriate □ Relaxed □ Slow □ Sedated □ Psychomotor Retardation □ Restless □ Pacing	□ Hyperactive □ Mannerisms □ Stereotypy □ Tremors □ Tics □ Poor Coordination □ Other ________________
Eye Contact	□ Maintains Good Eye Contact □ Avoids Eye Contact	□ Intense /Fixed Gaze □ Stares Into Space □ Other ________________
Speech	□ Spontaneous □ Non-spontaneous □ Paucity of speech □ Normal rate □ Increased rate □ Pressured speech □ Slow rate □ Increased Response Time □ Tone maintained □ Monotonous □ Excited	□ Threatening □ Normal volume □ Soft volume □ Loud □ Mute □ Incoherent □ Stuttering □Broken speech □ Slurring □ Other ________________

MENTAL STATUS EXAMINATION		
MOOD AND AFFECT		
Affect	□ Appropriate/full □ Constricted □ Labile □ Blunted or flat	□ Inappropriate to stated mood and thought □ Other ________________
Mood	□ Very happy □ Happy □ Calm	□ Anxious □ Angry
COGNITION		
Orientation	□ Person □ Place □ Object □ Time □ Self	□ Irritable □ Depressed/sad □ Suspicious □ Other ________________
Memory (Jigme, sun, black)	□□□ Immediate/Registration □□□ Short-term/Recall □ Long-term	
Attention	□ Series 7 □ Series 3 □ Days of the week backwards	□ Able to follow conversation □ Impaired
Intellect	□ Below average □ Average □ Above average	□ Superior □ Cannot determine □ Other ________________
Abstract reasoning (similarities between apple and an orange, car and bicycle)	□ Normal □ Literal □ Concrete □ Personalised □ Other ________________	
PERCEPTION		
Hallucinations	□ None □ Auditory □ Visual □ Tactile	□ Gustatory □ Olfactory □ others ________________

MENTAL STATUS EXAMINATION		
Sensory Distortions	□ None □ De-realisation □ Depersonalization	□ Visual distortion □ Impaired sense of time □ Illusions
THOUGHTS		
Process	□ Unremarkable □ Tangential □ Circumstantial □ Flight of ideas	□ Blocking □ Loosening of associations □ Confabulation □ Perseveration
Delusions	□ Absent □ Present □ Type(s) ______________	
Risk of harm	□ None □ Suicidal ideation □ Suicidal plan/recent attempt □ Non-suicidal self-injurious behaviour	□ Aggression/violence □ Homicidal thoughts/plans/ attempts
Insight	□ Good □ Fair	□ Limited □ Absent, denies problems
Judgement	□ Good □ Fair □ Poor	□ Limited □ Significantly impaired
Other comments and observations		

2. Mental health screening and counselling tool for field level workers (MERIT)

ADDRESS:	NUMBER OF FAMILY MEMBERS:	DATE OF SCREENING:
PHONE NUMBER:	No. of Adults: No. of Children:	FAMILY INCOME:

Sl. no	QUESTIONS		
A	**ALCOHOL AND TOBACCO ABUSE**		
1	Have you or anybody in your family been consuming alcohol in the past few months **If YES,**	**YES**	**NO**
	1a. Has that caused any health problems?		
	1b. Has that caused difficulty in working regularly/ problems in your relationship with family/ friends?		
2	Do you or anybody in your family consume BEEDI/ GUTKA/CIGARETTES/ KAINI/ KADDI PUDI - early in the morning (Just after waking up from bed) in the past few months	**YES**	**NO**
B	**ANXIETY**	**YES**	**NO**
3	Have you or any member of your family experience uncontrolled anxiety/stress/tension/worries/nervousness for no reason or for trivial reasons in the past few weeks or months		
C	SADNESS /SOMATOFORM Symptoms	**YES**	**NO**
4	In the past few weeks/months, have you or anybody in your family experienced sadness or felt tired without any reason or have experienced multiple physical or bodily complaints despite assurances by the doctor against the presence of a physical ailment?		
D	**PEOPLE WHO ARE DISORGANISED, VIOLENT, FEARFUL**	**YES**	**NO**

5	Has anybody in your family heard voices in isolation/seeing things that others don't see and Smile or talk to himself/ herself or behave in a strange manner anytime in the past few weeks or months?	
6	Has anybody in your family experienced suspiciousness/ odd beliefs or making tall claims such holding super powers etc in the past few weeks or months?	
7	Does anybody in your family have poor self-care (not bathing or changing clothes for many days) or wanders aimlessly in the past few weeks or months	
8	Has anybody in your family experienced excess happiness without any apparent reason, over talkativeness, hyperactivity and increased self-esteem in the past few weeks or anytime in the past	
9	Have you or anybody in the family experienced suicidal ideas or attempted suicide recently or in the past? **YES**	**NO**

DETAILS OF FAMILY MEMBERS WITH POSSIBLE MENTAL ILLNESS					
Sl No	**Name**	**Gender M/F/ Others**	**Age**	**Medical History**	**Mental Health issue (YES/NO)**
1					
2					
3					

Basic Counselling by CHWs (or Field Level Workers)

Individual with mental illness and family members both should be involved in counselling

General Counselling

- Informing and educating about the presence of possible mental health issue
- Explaining the need for doctor's evaluation – starting treatment early to prevent further dysfunction and enable early improvement
- Informing them about various resources for treatment – Availability of

doctors who will evaluate and initiate treatment at Local PHC/ District Hospital/ Tertiary care Centre

- Once doctor evaluation is done and medication or other advice is given
- **Onset of action** of psychiatric medications is slow- it takes around 2-3 weeks before the effect of the medications starts
- **Longer duration of treatment:** Treatment needs to be continued even after complete improvement is achieved as per the doctors' advice. For a few conditions, treatment goes on for a few months and for others, it may be longer
- **Do Not stop medications suddenly:** Medication should be continued as per advise of the doctor

Follow-up Counselling

- Check about their well-being, ask about the improvement they have achieved
- Ask if they are experiencing any side effects of the medication
- Advice to follow-up with the doctor regularly
- Follow-ups should be done even after complete improvement is achieved as long as the doctors suggest – it is best to discuss with the doctors about this issue.
- Medications should be continued even after complete improvement is achieved
- Encourage patient and family to discuss their doubts about the treatment if any with you and the treating doctor

What to do if the person stops treatment?

First and foremost, do not get angry or criticise patient

- Enquire about the reason for stopping with an intention to help them with that reason.
- Check for relapse of symptoms
- Advise them to consult doctor at the earliest

- If a person with Alcohol addiction or problems due to other habit-forming substances resumes using the substance- discuss with the person and family and advice to seek help from the doctor at the earliest

Psychological First Aid for Suicide attempt

If you come across somebody who has recently attempted suicide or expressed suicidal ideas or plans to commit suicide, provide Psychological First aid (steps given below)

If the suicide attempt is within few hours or in one day, check for any medical complications and refer to nearest hospital immediately. No attempt should be taken lightly

If the attempt is sometime before,

1. **Provide support:** allow person to talk about their feelings and distress
2. **Look for support systems:** inform the family members about the attempt and tell them the following: being non- critical, allowing the person to talk and express their feelings;
3. **Refer to a doctor** for further assessment treatment and counselling
4. **Follow up** with the person after assessment/ treatment is carried out

3. CAGE-AID questionnaire

Patient Name_________________________________ Date of Visit_________

When thinking about drug use, include illegal drug use of prescription drug other than prescribed.

1. Have you ever felt that you ought to cut down your drinking or drug use?
   □ Yes □ No

2. Have people annoyed you by criticizing your drinking or drug use?
   □ Yes □ No

3. Have you ever felt bad or guilty about your drinking or drug use?
   □ Yes □ No

4. Have you ever had a drink or used drugs first thing in the morning to steady your nerves or to get rid of a handover?
   □ Yes □ No

Scoring:

Regard one or more positive responses to the CAGE-AID as a positive screen.

4. Alcohol use disorder interview est (AUDIT)

Patient name: ______________________ Date: ______________________

Alcohol screening questionnaire (AUDIT)

Drinking alcohol can affect your health and some medications you may take. Please help us provide you with the best medical care by answering the questions below. (Refer below for standard drinks)					
	0	1	2	3	4
1. How often do you have a drink containing alcohol?	Never	Monthly or less	2 - 4 times a month"	2 - 3 times a week"	4 or more times a week
2. How many drinks containing alcohol do you have on a typical day when you are drinking?	0 - 2	3 or 4	5 or 6	7 - 9	10 or more
3. How often do you have five or more drinks on one occasion?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily
4. How often during the last year have you found that you were not able to stop drinking once you had started?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily
5. How often during the last year have you failed to do what was normally expected of you because of drinking?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily

Drinking alcohol can affect your health and some medications you may take. Please help us provide you with the best medical care by answering the questions below. (Refer below for standard drinks)

Question					
6. How often during the last year have you needed a first drink in the morning to get yourself going after a heavy drinking session?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily
7. How often during the last year have you had a feeling of guilt or remorse after drinking?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily
8. How often during the last year have you been unable to remember what happened the night before because of your drinking?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily
9. Have you or someone else been injured because of your drinking?	No		Yes, but not in the last year		Yes, in the last year
10. Has a relative, friend, doctor, or other health care worker been concerned about your drinking or suggested you cut down?	No		Yes, but not in the last year		Yes, in the last year

Have you ever been in treatment for an alcohol problem
□ Never □ Currently □ In the past

Ara	Bhutan Grain Whiskey or Old Monk	Druk Lager or Foster
Alcohol Percentage: 40-63% **1 unit:** 45ml	**Alcohol Percentage:** 42.8% **1 unit:** 40ml **1 bottle:** 18 units	**Alcohol Percentage:** 4% **1 bottle:** 1.5 units **1can:** 1 unit
K5 or Raven Vodka	**Rockbee**	**Vintra or Raven**
Alcohol Percentage: 40% **1 unit:** 45ml **1 bottle:** 17 units	**Alcohol Percentage:** 30-60% **1 unit:** 60ml **1 bottle:** 20 units	**Alcohol Percentage:** 13.5% **1 unit:** 125ml **1 bottle:** 6 units
11000 or 15000	**Glory-Amber Ale or Dragon Stout**	**ZumZin**
Alcohol Percentage: 8% **1 can:** 2 units **1 bottle:** 3 units	**Alcohol Percentage:** 5% **1 can:** 1.5 units	**Alcohol Percentage:** 12% **1 unit:** 140ml **1 bottle:** 5 units
Red Panda, Druk Supreme or Dragon Frost	**The Bhutanese -Red Rice, Dark or Wheat Beer**	**Takin**
Alcohol Percentage: 5% **1 bottle:** 2 units	**Alcohol Percentage:** 5% **1 bottle:** 1 unit	**Alcohol Percentage:** 16% **1 unit:** 110ml **1 bottle:** 6.5 units

Scoring and interpreting the AUDIT:

1. Each response has a score ranging from 0 to 4. All response scores are added for a total score.
2. The total score correlates with a risk zone, which can be circled on the bottom left corner.

Score	Zone	Explanation	Action
0-3	I – Low Risk	Someone using alcohol at this level is at low risk for health or social complications.	Positive Health Message – describe low risk drinking guidelines
4-9	II – Risky	Someone using alcohol at this level may develop health problems or existing problems may worsen.	Brief intervention to reduce use
10-13	III – Harmful	Someone using alcohol at this level has experienced negative effects from alcohol use.	Brief Intervention to reduce or abstain and specific follow-up appointment (Brief Treatment if available)
14+	IV – Severe	Someone using alcohol at this level could benefit from more assessment and assistance.	Brief Intervention to accept referral to specialty treatment for a full assessment

Positive Health Message: An opportunity to educate patients about the low-risk drinking levels and the risks of excessive alcohol use.

Brief Intervention to Reduce Use: Patient-centred discussion that uses Motivational Interviewing concepts to raise an individual's awareness of his/her substance use and enhance his/her motivation to change behaviour. Brief interventions are typically 5-15 minutes, and should occur in the same session as the initial screening. Repeated sessions are more effective than a one-time intervention. The recommended behaviour change is to cut back to low-risk drinking levels unless there are other medical reasons to abstain (liver damage, pregnancy, medication contraindications, etc.).

Brief Intervention to Reduce or Abstain (Brief Treatment if available) & Follow-up: Patients with numerous or serious negative consequences from their alcohol use, or patients who likely have an alcohol use disorder who cannot or are not interested in obtaining specialised treatment, should receive more numerous and intensive BIs with follow up. The recommended behaviour change is to cut back to low-risk drinking levels or abstain from use. Brief treatment is 1 to 5 sessions, each 15-60 minutes. Refer for brief treatment if available. If brief treatment is not available, secure follow-up in 2-4 weeks.

Brief Intervention to Accept Referral: The focus of the brief intervention is to enhance motivation for the patient to accept a referral to specialty treatment. If accepted, the provider should use a proactive process to facilitate access to specialty substance use disorder treatment for diagnostic assessment and, if warranted, treatment. The recommended behaviour change is to abstain from use and accept the referral.

More resources: www.sbirtoregon.org

5. Depression screening tool: patient health questionnaire (PHQ)-9

Questionnaire		Not at all	Several days	More than half the days	Nearly every day
1	Little interest or pleasure in doing things	0	1	2	3
2	Feeling down, depressed or hopeless	0	1	2	3
3	Trouble falling or staying asleep, or sleeping too much	0	1	2	3
4	Feeling tired or little energy	0	1	2	3
5	Poor appetite or overeating	0	1	2	3
6	Feeling bad about yourself – or that you are a failure or let yourself or your family down	0	1	2	3
7	Trouble concentrating on things, such as reading the newspaper or watching television	0	1	2	3
8	Moving or speaking so slowly that other could have noticed, or the opposite – being so fidgety or restless that you have been moving around lot more than usual	0	1	2	3
9	Thoughts that you would be better off dead or of hurting yourself in some ways	0	1	2	3
Total score					

PHQ-9 Score	Depression Severity	Proposed Treatment Actions
0-4	Non-Minimal	None
5-9	Mild	Watchful waiting; repeat PHQ 9 at follow-up
10-14	Moderate	Review treatment plan if not improving in past 4 weeks; Consider discussion of additional support such as pharmacotherapy
15-19	Moderately Severe	Consider adjusting treatment plan and/or frequency of sessions; Discuss additional supports such as pharmacotherapy; For Sonder Mind Anytime Messaging clients, consider converting from asynchronous to synchronous therapy channels
20-27	Severe	Adjust treatment plan; focused assessment of safety plan and pharmacotherapy evaluation/ re-evaluation; If emergent then refer to higher level of care; Likely Not a candidate for asynchronous/ text therapy

6. Suicide screening tool: ASQ-3

Patients Name:____________________ Age/Sex:______ Date:___________

Ask the patient:

In the past few weeks, have you wished you were dead?

Yes No

In the past few weeks, have you felt that you or your family would be better off if you were dead?

Yes No

In the past week, have you been having thoughts about killing yourself?

Yes No

Have you ever tried to kill yourself?

Yes No

If yes, how?

When?

If the patient answers Yes to any of the above, ask the following acuity question:

Are you having thoughts of killing yourself right now?

Yes No

If yes, please describe:

Next steps:

- If patient answers "No" to all questions 1 through 4, screening is complete (not necessary to ask question #5). No intervention is necessary *(*Note: Clinical judgement can always override a negative screen)*.

- If a patient answers "Yes" to any of questions 1 through 4, or refuses to answer, they are considered a positive screen, and needs immediate intervention.

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