Indira Gandhi National Open University
SCHOOL OF HEALTH SCIENCE

CHO-0002

Primary Health Care in Common Conditions

NATIONAL HEALTH MISSION
राष्ट्रीय स्वास्थ्य मिशन
राजस्थान



Management of Common Conditions and Emergencies including First Aid

1

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THE PEOPLE'S
UNIVERSITY

Indira Gandhi
National Open University
School of Health Sciences

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Block

1

MANAGEMENT OF COMMON CONDITIONS AND EMERGENCIES INCLUDING FIRST AID

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COURSE INTRODUCTION

As a Mid Level health care provider, you have to provide need based care to the communities, families and individuals at the place of their living. This course will enhance your knowledge and skills to provide comprehensive primary health care in common conditions as per protocols of sub centre. The focus is on management of common conditions related to various body systems and emergencies, first aid, Reproductive Maternal, Newborn, Child Health and Adolescent Health, Common Surgical Conditions and Essential Drugs. The main emphasis is on strengthening your knowledge and skills in identifying the problems/risk factors in early stages, refer the cases to appropriate health facility and provide follow up care to prevent the morbidity and mortality among individuals, community, and family at large.

This course comprises six blocks as given below:

Block 1 deals with management of common conditions and emergencies including first aid

Block 2 deals with maternal health

Block 3 deals with reproductive and adolescent health

Block 4 focuses on new born and child health

Block 5 presents an overview of common surgical conditions

Block 6 deals with essential drugs

Your responsibility is only to identify the problems, provide appropriate care at sub centre level as per protocols, refer and follow up. You have to note that your responsibility is not to prescribe the drugs in any condition.

We hope you will enjoy reading this course.

BLOCK INTRODUCTION

You have a key role in providing the comprehensive Primary health care to people at grass roots level during wellness and illness, so that the patient/case load at secondary and tertiary level health care services can be minimized. It has been observed that majority of population seeking health services at higher health care facility can be dealt at primary level more efficiently in a cost effective manner. In order to ensure need based health services at sub centre level, you need to update your knowledge and skills to manage the common conditions and emergencies at that level by identifying the problems, providing basic care, making appropriate referrals and providing follow up care. The block also focuses on updating your knowledge skills in First Aid and Disaster Management.

This block comprises six units as given below:

Unit 1 deals with Common Conditions -1 Gastro Intestinal System

Unit 2 explains Common Conditions - 2 Respiratory System

Unit 3 dealt with the Common Conditions -3 Heart, Urinary System and Blood Disorders

Unit 4 describes the Common Conditions - 4 Eye, Ear, Nose and Throat

Unit 5 explains First Aid in Common Emergency Conditions

Unit 6 focuses on Disaster Management.

We hope the information provided in this block will help you to provide effective health care to the individuals, families and communities at large.

UNIT 1 COMMON CONDITIONS-1 – GASTRO INTESTINAL SYSTEM

Structure

1.0 Introduction

1.1 Objectives

1.2 Pain

- 1.2.1 Assessment of Pain
- 1.2.2 Identify the Site of the Pain
- 1.2.3 Management of Pain
- 1.2.4 Referral of the Patient

1.3 Nausea and Vomiting

1.4 Diarrhoea

- 1.4.1 Cholera
- 1.4.2 Bacillary Dysentery
- 1.4.3 Amoebic Dysentery

1.5 Constipation

1.6 Jaundice

1.7 Gastrointestinal (GI) Bleeding

- 1.7.1 Upper Gastrointestinal (GI) Bleeding (Haematemesis)
- 1.7.2 Bleeding Per Rectum (Haematochesia)

1.8 Distension of Abdomen

1.9 Dysphagia and Dyspepsia

- 1.9.1 Dysphagia
- 1.9.2 Dyspepsia

1.10 Aphthous Ulcers

1.11 Let Us Sum Up

1.12 Model Answers

1.0 INTRODUCTION

In this unit, the focus is on conditions related to GI system like pain, nausea, vomiting, diarrhoea, constipation, jaundice, GI Bleeding (Upper Gastrointestinal (GI) bleeding and Bleeding Per Rectum), abdominal distension, dysphagia, dyspepsia and ulcer. Human beings suffer from day to day minor issues commonly rather than life threatening conditions or rare syndromes every day.

In primary care centres, patients will not present with a text book diagnosis written on their faces like amoebic diarrhoea, peptic ulcer or colon cancer etc. They present with certain symptoms which have to be analysed with the clinical signs based on our theoretical knowledge and practice skills. So, it is important to understand some of the common symptoms with which the patients are most likely to present in primary care settings where there is no access to major investigations or sometimes even the doctors may not be available.

1.1 OBJECTIVES

After completing this unit, you should be able to:

- identify the signs and symptoms of common GI disorders;
- enumerate common GI problems;
- enumerate the emergency and critical issues related to GI disorders; and
- provide primary care to the patients with GI problems.

1.2 PAIN

Pain is a warning created by nature for the living beings to look into the reasons responsible for it (the disease process). Hence, you should never ignore it, as this is the commonest symptom which brings a patient to you. History is important acute pain (pain of recent onset) is the most disturbing symptom and needs urgent attention. This is also the most rewarding problem to be solved by any practitioner when patient not only acquires smile on his face but also gets you a lot of appreciation, recognition and the most important being the satisfaction. Let us discuss assessment of pain in detail as givens below:

1.2.1 Assessment of Pain

Pain is a subjective feeling. Assess the pain with respect to onset, the aggravating and relieving factors, quality, its radiation, severity and whether the patient has taken any earlier treatment. Pain can be assessed as per the acronym 'OPQRSTUV' as shown in Table 1.1.

Table 1.1: Pain Assessment using the Acronym "O, P, Q, R, S, T, and U"

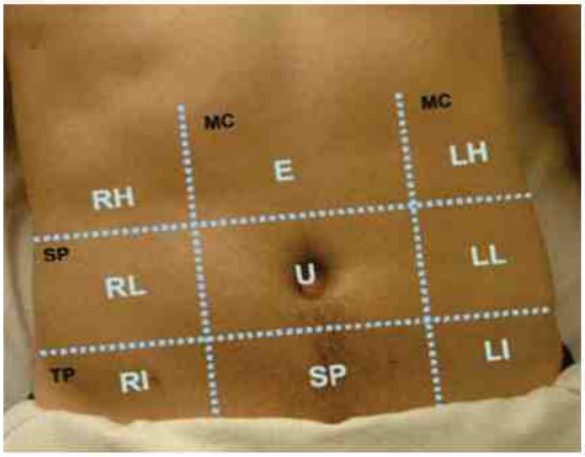
Pain Assessment Acronym	Description
O-Onset	When did it begin? For how long does it last? How often does it occur? (duration of symptoms)
P-Provoking and palliating	What brings it on? What makes it better? What makes it worse? (aggravating and relieving factors)
Q-Quality	What does it feel like? Can you describe it?
R-Region or radiation	Where is it? Does it spread anywhere?
S-Severity	What is the intensity of this symptom? (Use a grading from 0-10, a visual analogue scale, or facial expression scale). How bothered are you by this symptom? Are there any other symptoms that accompany the pain ?

Pain Assessment Acronym	Description
T-Treatment	What medications and treatments are you currently using? How effective are these? Are there any side-effects from the medications and treatments? What medications and treatments have you used in the past?
U-Understand how it impacts on you	What do you believe is causing this symptom? How is this symptom affecting you and your family?

1.2.2 Identify the Site of the Pain

Identification of the site of pain is very important clue to the cause of pain. (Fig. 1.1, Box 1)

Box 1.1



- **RH** = Right hypochondrium
- **E** = Epigastrium
- **LH** = Left hypochondrium
- **RL** = Right lumbar
- **LL** = Left lumbar
- **U** = Umbilical
- **RI** = Right iliac fossa
- **LI** = Left iliac fossa
- **SP** = Suprapubic region

Fig. 1.1: Regions of abdomen

- **Pain in right hypochondrium:**
  - Radiating to shoulder or infra scapular area: It could be because of gall bladder, diaphragmatic irritation. It could be base of lungs (pneumonia), inflammation of liver (hepatitis) etc. also. Pneumonia presents with fever, cough, hemoptysis etc. Hepatitis can have anorexia, nausea, vomiting, fever etc. (prodrome) followed by yellow discoloutaion of eyes, skin, urine etc. while prodromal symptoms may be disappearing. Do not forget to look at the skin, it may be herpes. Any skin infection, cellulitis, muscle related pain should not be ignored.
  - Shifting towards midline (epigastrium): It could be related to stomach. Gastritis is the commonest cause of pain in this area. Drugs, viral infections and simply acid related issues are the commonest reasons. Palpable and tender left lobe of liver could be liver related, the commonest being hepatitis and amoebic liver abscess. Severe pain radiating to back could very well be from pancreas.

- **Pain in left hypochondrium** in acute febrile illness or trauma could be a tender splenic aetiology or relate to chest cage. More common causes of left hypochondrial pain in practice are not due to splenic causes but rather issues related to chest wall, lungs, stomach etc.
- **Pain in any side of lumbar area** if radiating to renal angle and /or groin is related to renal/ureteric causes. The commonest in day to day practice is renal stones. If the pain is atypical or mainly towards the back, the cause may lie with vertebral column (the commonest reasons being postural and wear & tear).
- **Pain in the central abdomen (umbilical area)** points towards small intestine or peritoneal cavity. The most problems are day to day infections caused by bacteria. Tenderness, rigidity and a sick looking patient may be due to peritonitis, requiring urgent specialised intervention and so referral in time.
- **Pain in lower abdomen, either side are iliac fossae** (appendix and caecum on right, colon on left and adenexa on either side in women).
- **Suprapubic pain** could be related to urinary and uterine causes.

1.2.3 Management of Pain

Management of pain depends on the underlying condition. For severe episodic spasmodic pain, antispasmodics may be used. Analgesics should be selected based on pain severity, clinical context, and patient response.

Pharmacological Measures:

- Hyoscine Butylbromide: 10 mg orally or 20 mg IM/IV, 3–4 times daily, useful for colicky pain (e.g., ureteric, intestinal, biliary).
- NSAIDs (e.g., diclofenac 50–75 mg IM or ibuprofen) are first-line for moderate pain.

> **Remember :**
> Avoid NSAIDs in pregnancy and renal impairment.

- For severe pain, opioids like morphine (2.5–10 mg IV/SC) or pentazocine may be used with caution.
- Monitor for side effects and risk of dependency.
- Pethidine is no longer recommended due to its neurotoxic metabolites.
- Tamsulosin or other alpha-blockers may be given for ureteric colic.
- In pregnancy, morphine is safer than NSAIDs for short-term severe pain

1.2.4 Referral of the Patient

The patient with severe pain not responding to treatment and if there is tenderness, rigidity, tachycardia, tachypnea, hypotension should be immediately referred to the higher health care centres.

1.3 NAUSEA AND VOMITING

Nausea and vomiting could be a part of stomach related problems like gastritis or obstruction, and these can also be non specific features of any systemic illness.

Vomiting associated with abdominal distension and constipation may be a symptom of intestinal obstruction requiring immediate hospitalisation.

Diagnosis

- There could be many reasons for nausea and vomiting. Try to identify the cause while starting with the symptomatic treatment.
- The various causes may be vertigo, some GI problem, systemic illness, early pregnancy, renal failure etc.
- Ask the patient if vomiting is associated with nausea, abdominal pain, diarrhoea, food intake, certain drugs etc.

Pharmacological Treatment

Stable patients require oral symptomatic treatment, while sick or dehydrated patients may need IV fluids and parenteral drugs.

- Hospitalize if patient shows signs of dehydration or persistent vomiting.
- Encourage oral fluids early if tolerated, even in stable patients.
- Use antispasmodics or analgesics appropriately if pain is present.
- For nausea and vomiting:
- Ondansetron 4–8 mg IV/oral, repeat every 8 hours if needed.
- Metoclopramide 10 mg orally/IV (slow), not exceeding 30 mg/day due to risk of extrapyramidal symptoms.
- Domperidone is not recommended in children <12 years and should be used with caution due to cardiac risks.
- In pregnancy, avoid unnecessary drugs.
- Promethazine 25 mg orally/IM is considered safe in early pregnancy.
- Pyridoxine (Vitamin B6) is first-line for nausea in pregnancy.
- If motion sickness history exists:
- Cyclizine 50 mg orally up to 3 times/day can be used.

Health education

- Avoid stale food, cut vegetables/fruits kept in open.
- Drink potable water only.
- Avoid NSAIDS, especially if ulcer symptoms are present for any vomiting/ epigastric pain.
- Prevent dehydration. Encourage patients to take oral fluids frequently to prevent dehydration.

Referral: Immediately refer the patient if

- Dehydrated
- In shock

- Known diabetic or patient with glycosuria / hyperglycaemia.
- Septicaemia
- Jaundiced or unstable (simple acute viral hepatitis can be managed on OPD basis).
- Showing signs of intestinal obstruction, i.e. no stool or flatus passed with distension, vomiting
- Presenting with abdominal tenderness with guarding and rigidity
- Vomiting with fresh blood (not responding to routine measures).

Check Your Progress 1

i) Identify the site of the pain.

.....

.....

ii) Explain Pain in left hypochondrium.

.....

.....

iii) Diagnose Nausea and vomiting.

.....

.....

1.4 DIARRHOEA

Most common diarrhoeas are self limiting illnesses where taking care of hydration with oral fluids preparations and administration will belive symptoms.

Let us discuss Common problem which cause diarrhoea are cholera, dysentery as given below.

1.4.1 Cholera

Cholera is usually very acute severe watery diarrhoea. It occurs due to the infection with the bacteria Vibrio cholera. The main danger is rapid and severe dehydration. The suspected cases are to be notified.

Clinical features: The various clinical features are:

- Acute watery diarrhoea
- No blood in stool
- No mucous in stool
- No specific faecal odour
- Stool is often gray and turbid (rice water stool)
- Possible vomiting
- Severe dehydration which can have a rapid onset, can be severe, and is potentially fatal
- Possible shock

Assessment of the patient

- Obtain thorough history of the patient especially history of other cases in family, neighbourhood, or common water sources.

Management

The objectives of management are to:

- treat and prevent dehydration
- prevent spread to other people (inform authorities)
- notify the condition
- Plenty of oral rehydration solution (ORS) to prevent dehydration and possible shock. ORS-2200–4000 ml in the first four hours, plus as much water as they want in addition to ORS, till the symptoms of dehydration disappear.
- No antibiotic
- Maintain intake/output chart.
- Assess for dehydration as given in Table 1.2.
- IV fluids (dextrose 5% in sodium chloride 0.9%) may be started as per requirement.
- Check vital signs accurately two hourly. The duration of checking the vital signs may be increased or decreased depending upon the condition of the patient.

Rice water stools, well described for cholera usually need only fluids. However if patient has pulse rate of more than 100/minute, dry tongue, decreased urine output, sunken eyes or when the patient looks sick: all these signs are indicative of hospitalisation and parenteral treatment. But before referring these patients, make a point to put an IV cannula and hydrate them well with Ringer's lactate, as this can save a lot of lives.

Table 1.2: Assessment of Dehydration

Chief Complaints	Mild Dehydration	Severe Dehydration
Patients' appearance	Thirsty, alert, restless	Drowsy, cold, sweaty
Radial pulse	Normal rate and volume	Rapid, feeble, sometimes impalpable
Blood Pressure	Normal	<80, may be unrecordable
Skin elasticity	Pinch retract immediately	Pinch retract slowly (more than seconds)
Tongue	Moist	Very dry
Urine flow	Normal	Little or none
Estimated fluid deficit	40-50 ml/kg	100-110 ml /kg

Prevention

Advise the use of good individual and general hygiene practices:

- Hand washing with soap before handling food and after toilet use

- Boil water before drinking
- Use of safe latrines

Referral

- Severely ill patients (shock, anuria, altered sensorium)
- According to local policy.

Let us discuss, dysentery which can be bacillary or amoebic in nature.

1.4.2 Bacillary Dysentery

Bacillary Dysentery is the acute infection of the bowel usually caused by *Shigella.*

Assessment

Check for sudden onset of diarrhoea with the following:

- Blood in stools
- Mucous in stools
- Fever
- Often abdominal cramps
- Toxic appearance
- Possibly associated convulsions
- Lethargy

Management

- Prevent and treat dehydration.
- Start Tablet Ciprofloxacin 500 mg 12 hours for 5 days. (Contraindicated in pregnant women)

Follow-Up

- Ask the patient to come for follow up after 48 hours / SOS.
- Ask for the relief of symptoms.
- If she/he shows no improvement, switch to the other first-line antibiotic or to metronidazole.

Referral

- All cases with serious general symptoms, or not responsive to treatment after 48 hours.
- Malnourished patients.
- Severely dehydrated patients.
- Patients with comorbidities.

Health education

- Hand washing with soap before handling food and after toilet use
- Hand washing with soap after handling sick babies and children
- Washing soiled garments and bed clothes with soap
- Using safe latrines

1.4.3 Amoebic Dysentery

Amoebic dysentery is a condition characterised by diarrhoea caused by Entamoeba histolytica.

Assessment

Check the diarrhoea with the following:

- Blood in Stool
- Mucous in Stool
- Unpleasant odour
- Usually without fever
- May alternate with constipation, flatulence or both.
- If possible, a fresh stool examination (three specimens) will confirm live forms or cysts. For stool specimen collection refer BNSL-043, Block 2, Unit 2.

Management

- Rehydrate the patient with oral and/or IV fluid.
- Provide nutritional support.
- Prescribe metronidazole.

Referral

- Failure to respond to treatment
- For laboratory confirmation
- Worsening condition

Most common diarrhoeas are self limiting illnesses where taking care of hydration with oral fluids with oral hydration preparations will suffice. Blood in stool may be just Haemorrhoids (terminal bleed at the end of stools and not mixed with stools). Treat the diarrhoea. Haemerrhoids can be managed as per protocol. Large amount of blood mixed with stools with frequent stools will require hospitalisation and further evaluation. Bascillary and amoebic diarrhoeas can be diagnosed with stool routine and culture examinations and have to be treated with antibiotics (ofloxacin, ciprofloxacin, amikacin, ceftriaxone etc) and metronidazole respectively. Chronic diarrhoeas can usually be managed on OPD basis with investigations. Chronic haemerhoidal blood loss presents not infrequently with anaemia and needs appropriate management.

1.5 CONSTIPATION

Constipation is a change in the usual bowel habits. It is defined as decrease in frequency and liquidity of stool as compared to the normal pattern in a particular individual. The usual complaints of the patients are straining at defecation >25% of time, lumpy/hard stools, sensation of incomplete evacuation, or less than 3 bowel actions per week.

Constipation like any other symptom can be diagnosed with history and clinical examination.

Causes of Constipation

Various causes of constipation include:

- consuming low fiber diet and less fluid
- lack of exercise
- pregnancy
- old age
- side effects of certain drugs
- metabolic, endocrine, neurogenic causes, lower bowel abnormalities
- psychogenic disorders
- chronic use of enemas and laxatives
- cancer of the bowel
- ignoring the urge of passing stool
- change in environment etc.

Each cause needs to be looked into and corrected accordingly.

Chronic constipation may be a problem both for the patient and practitioner. Poor oral intake and its causes need to be looked into. These may vary from ill fitting denture to loneliness in elderly, non availability of food, poor intake of high roughage diets because of ignorance or bad eating habits. Any illness resulting into poor oral intake can cause constipation which can usually be managed with improved oral intake with roughage and promotion of fluid intake. Restriction of intake is not always due to anorexia alone, but many myths stopping oral intake by patient during illness is a frequent underlying cause.

Recent onset constipation, bleeding per rectum, anorexia and weight loss may be due to colonic malignancy. Hypothyroidism in elderly, especially females is not an uncommon aetiology of poor appetite and constipation. Laxatives, stool softeners and enemas at appropriate place will do the trick.

Assessment

- A thorough assessment of the patient is important.
  - Note the possible causative factors of constipation.
  - Duration and severity of problem.
  - What all interventions the patient has tried and their outcome.
  - Acute constipation associated with vomiting and if the patient has not passed even wind and appears ill, GIT obstruction may be suspected. These patients need to be referred immediately to a higher centre.

Non-pharmacological treatment: Health education plays a vital role for the individual as well as society at large. The non-pharmacological interventions should be tried first before moving on to laxatives.

- Advise high fiber diet (vegetables, salad, fruits, bran) and increased intake of fluid.
- Decrease the consumption of caffeinated drinks.
- Avoid suppression of urge to defecate.
- Make a regular bowel habit.

- Bulk forming agents like 'isapghula husk' also help to relieve mild constipation.
- Advise regular physical exercise such as walk for 1/2 to 1 hour daily and abdominal exercises.
- Discourage the continuous use of laxatives.

If the constipation is resolved, ask the patient to continue with these measures.

Pharmacological treatment: If there is no response with the above said non-pharmacological measures, then try the following pharmacological measures

- Lactulose 15–20 ml orally at night. Or Susp. magnesium sulphate 15–20 ml at night.

  Or Tab sodium picosulphate 10 mg at night. Or

- Isotonic polyethylene glycol (PEG) electrolyte solution 125–250 ml.

Any of these may be given 2–4 times a week. The dose can be decided as per the adequate relief.

- Phosphate enemas to be used on as and when required basis in patients having acute problem with severe constipation or sub-acute intestinal obstruction.

For symptomatic patients, laxatives and enema may be all that is required to relieve the acute constipation.

When to refer?

- If the patient has not passed stool or wind in the past 24 hours plus there is abdominal pain, distension and vomiting.
- If the patient continues to have severe constipation or symptoms get worsen.
- Any acute constipation–especially with vomiting, abdominal pain. Suspect acute abdomen.
- Acute or chronic constipation not responding after 2 weeks – suspect malignancy.
- Constipation due to intestinal obstruction as mentioned earlier will need urgent referral with IV fluids and Ryle's tube by an experience practitioner well versed with these problems.

Check Your Progress 2

i) Explain clinical features of Cholera.

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ii) Diagnose Bacillary Dysentery.

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iii) Causative agents of Amoebic Dysentery.

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1.6 JAUNDICE

Jaundice of recent onset with anorexia, nausea, vomiting may be very typical of acute viral hepatitis where management is with normal diet and symptomatic domiciliary care. (Various traditional ways, faith healing and myths are responsible most of the morbidity and need to be strongly discouraged). Patients with fever, vomiting, altered sensorium or bleed will need specialised care. Jaundice with right hypochondrial pain may be related to gall stones and needs investigation and appropriate treatment. Asymptomatic jaundice will need evaluation to rule out a hepatobiliary malignancy.

Viral hepatitis is an infection of the liver caused by hepatitis A virus (HAV), hepatitis E virus (HEV), hepatitis B virus (HBV), and hepatitis C virus (HCV). Hepatitis A and E are typically caused by ingestion of contaminated food or water. Hepatitis B, C and D usually occur as a result of parenteral contact with infected body fluids. All hepatitis viruses can cause acute hepatitis. Viral hepatitis types B and C can cause chronic hepatitis.

Clinical features of viral hepatitis :

- Fever, Chills, Headache
- Fatigue, Generalised weakness
- Body pain
- Anorexia
- Nausea
- Vomiting
- Dark urine
- Jaundice

Diagnosis of acute viral hepatitis is often easy, but diagnosis of chronic hepatitis **can be difficult as patient usually presents wth non-specific symptoms**. When a patient reports symptoms of fatigue, nausea, abdominal pain, darkening of urine, and jaundice, the diagnosis of acute viral hepatitis is likely and can be confirmed by blood tests. On the other hand, patients with chronic hepatitis due to HBV and HCV often have initially no symptoms or only mild non-specific symptoms such as chronic fatigue. Typically, these patients do not have jaundice until the liver damage is advanced. Therefore, these patients can remain undiagnosed for years to decades. In the later stages they can present with oedema, ascites, GI bleed (Hematemesis &/or malena) or alterd sensorium (hepatic encephalopathy) etc.

Management

Treatment of acute viral hepatitis and chronic viral hepatitis are different. Treatment of acute viral hepatitis involves rest if required, relieving symptoms and maintaining adequate intake of fluids plus normal balanced diet. Treatment of chronic viral hepatitis involves medications to eradicate the virus and taking measures to prevent further liver damage.

Acute hepatitis

- In patients with acute viral hepatitis, the initial treatment consists of relieving the symptoms of nausea, vomiting, and abdominal pain (supportive care).

- Careful attention should be given to medications, which can have adverse effects in patients with abnormal liver function (for example, acetaminophen, alcohol etc.).
- Only those medications that are considered necessary should be administered since the impaired liver may not be able to eliminate drugs normally, and drugs may accumulate in the blood and reach toxic levels.
- Moreover, sedatives and "tranquilizers" are avoided because they may accentuate the effects of liver failure on the brain and can precipitate hepatic encephalopathy. The patient must abstain from drinking alcohol, since alcohol is toxic to the liver.
- Patients with severe nausea and/or vomiting or altered sensorium etc. may need to be hospitalised for treatment and intravenous fluids.

Prevention

Improved sanitation, food safety and immunisation are the most effective ways to combat hepatitis A.

The spread of hepatitis A/E can be reduced by:

- Vaccine against Hepatitis A is available now.
- Control of infection at source of infection. This requires notification and contact tracing.
- Good hygiene and sanitation are of fundamental importance.
- Tap water should be avoided in high-risk areas. There should be adequate supplies of safe drinking water.
- Public education about transmission and prevention are needed, particularly in communities where HAV is endemic.
- There should be system of proper disposal of sewage within communities.
- There should be good personal hygiene practices such as regular hand-washing with safe water.

1.7 GASTROINTESTINAL (GI) BLEEDING

Let us discuss upper GI bleeding in detail as given below:

1.7.1 Upper Gastrointestinal (GI) Bleeding (Haematemesis)

Upper GI bleed remains a major medical problem. Various causes may include esophageal, gastric, duodenal ulcer, varices, tumours, vascular lesion etc.

It needs stabilisation of the patient before referral for endoscopy to ascertain the cause and treatment thereof. Not to forget that many small oral bleeds may be related to dental, nasal and throat related issues where proper history and a clinical examination is all that is required to refer the patient to the right clinician saving unnecessary harassment to the patient saving valuable time and other resources.

Remember:

Refer the patient to higher facility as soon as possible saving valuable time.

Signs and Symptoms

- Hematemesis &/or malena
- Coffee ground gastric aspirate
- Pain
- Hypovolemic shock
- Tachycardia
- Hypotension

Assessment: The signs of significant bleed are:

- **Vital signs:** BP < 90 mm Hg, HR > 100 beats/min.
- **Skin:** Pale, diaphoretic, Cool, clammy.
- **Cardiovascular:** Weak, thready pulse; Capillary refill > 3 sec

Management

Acute GI bleed is an emergency and needs active management. An assessment of severity of bleed should be done immediately. Severity of GI bleed is assessed as mild (patient has tachycardia but blood pressure is maintained), moderate (tachycardia with postural hypotension, tachypnoea, sweating, cold skin) and severe (hypotension and shock).

1) Check the blood pressure and pulse immediately as soon as the patient is brought to the centre.
2) Assess the airway, breathing, and circulation. Protect the airway with intubation to avoid respiratory compromise from aspiration of blood, especially in patients with altered mental status.
3) Provide oxygen as needed, and begin cardiac monitoring.
4) Insert atleast two large-bore IV cannulas and administer Ringer's lactate solution to maintain mean arterial pressure at 60 mm Hg or higher. Do not use normal saline for patients with liver disease, as it may lead to ascites. instead of saline use other fluids.
5) Be sure to monitor respiratory status closely as you administer fluids, and keep the head end of the bed elevated.
6) Obtain blood samples for laboratory tests, including haematocrit, haemoglobin, and coagulation studies, as well as for typing and cross matching for packed red blood cells. Arrange six units of packed cells if bleeding is significant.
7) Insert Nasogastric tube for the drainage of stomach contents and other measures, such as rapid fluid resuscitation and gastric lavage which may be required if bleeding is severe.
8) Catheterize the patient for the proper monitoring of the urine output.
9) If the patient is conscious, ask him/her about previous episodes of bleeding, dyspepsia, and jaundice, and intake of alcohol and drugs.
10) Once the patient has been stabilised, refer him for further management.

Subsequent follow up after referral is equally important as the underlying cause may require long term medication for variable duration to prevent subsequent episodes of GI bleeds.

1.7.2 Bleeding Per Rectum (Haematochesia)

It is commonly due to benign anorectal causes and evaluation by anorectal clinician will clinche the diagnosis. Haemerrhoids and fissures are the common diseases. Amoebic, basillary and other infective diarrhoea are next common conditions associated with bleeding. A relatively chronic diarrhoea with blood in stools could also be due to ulcerative colitis which is diagnosed with colonoscopy and confirmed with biopsy. Blood in stool especially in elderly with or without any other symptoms needs malignancy to be ruled out.

Give symptomatic management and refer the patient to the higher centre for further management.

1.8 DISTENSION OF ABDOMEN

Distension of abdomen when acute needs urgent evaluation. Acute pain with toxic symptoms could be due to intestinal perforation or peritonitis where abdomen is tender, with rigidity and rebound phenomenon. Intestinal obstruction will be associated with constipation, pain and vomiting. Sub-acute to chronic distension can be due to ascites. Cirrhosis of liver and tuberculosis are very common in our society. Malignancies can be diagnosed in most of the cases using ascitic fluid analysis, ultrasound, CT scan and tissue biopsy/ FNAC where required.

Give symptomatic management and refer the patient to the higher centre for further management.

1.9 DYSPHAGIA AND DYSPEPSIA

We shall now discuss the components of Dysphagia and Dyspepsia as given below:

1.9.1 Dysphagia

It needs prompt investigation in the form of oropharyngeal examination followed by upper GI Endoscopy to know the exact cause of the difficulty in swallowing. Simple throat inflammation to peptic stricture and melignancies are too frequent in clinical practice that treating these patients without diagnosis must be discouraged. However difficulty to swallow in day to day practice will be due to throat infection, inflammation due to allergy &/or acid reflux with psychological causes adding their own number to patient population in routine OPDs.

Give symptomatic management and refer the patient to the higher centre for further management.

1.9.2 Dyspepsia

Dyspepsia is a group of upper GI symptoms, often functional in origin. Symptoms are typically meal-related and include:

- Epigastric burning or pain
- Early satiety
- Post-meal fullness or bloating

- Loss of appetite, nausea
- Burping, regurgitation

It may overlap with GERD, peptic ulcers, IBS, cholelithiasis, or food intolerances. Initial evaluation includes thyroid profile, abdominal ultrasound, and upper GI endoscopy if alarm symptoms (weight loss, anemia, vomiting) are present.

Pharmacological Treatment

Treatment is based on symptoms and etiology. If no structural cause is found:

- Omeprazole 20 mg daily, 30–60 minutes before breakfast for 4–8 weeks is first-line.
- Antacids (liquid/chewable) can be used for short-term symptom relief.
- For bloating/dysmotility: Low-dose prokinetics like domperidone (use with caution, short term only), or itopride if available.
- For suspected or confirmed H. pylori infection (e.g., with ulcer or long-term NSAID use), use clarithromycin-based triple therapy:
- PPI + amoxicillin + clarithromycin for 14 days, followed by PPI for 4–6 weeks.

Health Education

- Limit caffeine, spicy and fatty foods
- Avoid alcohol, smoking, and unnecessary NSAIDs
- Eat smaller, frequent meals at regular intervals
- Avoid lying down for 2–3 hours post meals
- No late-night snacks

1.10 APHTHOUS ULCERS

Aphthous ulcers are the most common oral mucosal lesions in the general population. These are rounded ulcer with yellowish gray fibrinoid centre. These are quite painful. These ulcers have recurrent appearance even after successful treatment

Diagnosis: Before starting medications for aphthous lesions, it is important to determine the causes which are contributing to the disease. The various causes could be

- Recurrent trauma from tooth/denture.
- Sometimes aphthous ulcers can be the sign of systemic diseases, so it is essential to establish a correct diagnosis to determine suitable therapy.

Non-pharmacological treatment

- Advise adequate oral hygiene.
- Rinse the mouth with plain water especially after eating any thing.

Pharmacological treatment: Various treatment modalities may be used, though there is no definitive therapy.

- Advise symptomatic treatment with application of any gel containing local anaesthetic before taking meals (for relief of meal related pain).
- Topical medications, such as antimicrobial mouth-washes and topical corticosteroids (dexamethasone, triamcinolone, fluocinonide, or clobetasol), can be used to reduce pain and to improve healing.
- Systemic medications can be tried if topical therapy is ineffective.

Health education

- Maintain good oral hygiene.
- Avoid precipitating factors, if any.
- Ensure toothbrush has aligned and soft bristles.
- Avoid chewing betel leaf and other condiments, excessive carbonated drinks and spicy or sharp/crispy foods.
- Take plenty of green leafy vegetables.

Check Your Progress 3

i) Define Viral hepatitis.

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ii) Signs and Symptoms of upper gastro intestinal bleeding.

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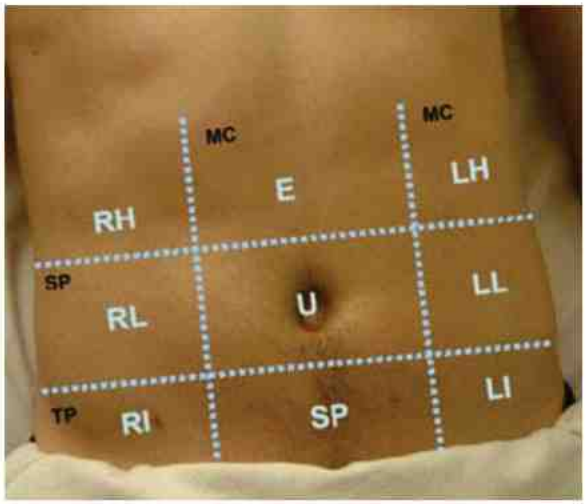
1.11 LET US SUM UP

Practice doesn't make a man perfect, rather proper practice makes a man perfect. So it is of paramount importance to make most of the learning from our teachers during formal learning not only in the initial years when we least understand the subject but also subsequently during any possible opportunities when we start understanding both the diseases as well as the life. Nothing can replace regular learning and updating when we start understanding the medical subjects in the real life. Thus during the service, we must not miss the opportunities to attend trainings and visit higher institutes of learning. Let us try to revise and understand some of the common symptoms with which the patients are most likely to present to us when we are working in primary care settings where we have no investigations, doctors etc. available to guide us.

1.12 MODEL ANSWERS

Check Your Progress 1

i) Identification of the site of pain is very important clue to the cause of pain.



- **RH** = Right hypochondrium
- **E** = Epigastrium
- **LH** = Left hypochondrium
- **RL** = Right lumbar
- **LL** = Left lumbar
- **U** = Umbilical
- **RI** = Right iliac fossa
- **LI** = Left iliac fossa
- **SP** = Suprapubic region

ii) Pain in left hypochondrium in acute febrile illness or trauma could be a tender splenic aetiology or relate to chest cage. More common causes of left hypochondrial pain in practice are not due to splenic causes but rather issues related to chest wall, lungs, stomach.

iii) Diagnosis

- There could be many reasons for nausea and vomiting. Try to identify the cause while starting with the symptomatic treatment.
- The various causes may be vertigo, some GI problem, systemic illness, early pregnancy, renal failure etc.
- Ask the patient if vomiting is associated with nausea, abdominal pain, diarrhoea, food intake, certain drugs etc.

Check Your Progress 2

i) Clinical features: The various clinical features are

- Acute watery diarrhoea
- No blood in stool

- No mucous in stool
- No specific faecal odour
- Stool is often gray and turbid (rice water stool)
- Possible vomiting
- Severe dehydration which can have a rapid onset, can be severe, and is potentially fatal
- Possible shock

ii) Diagnosis

Check for sudden onset of diarrhoea with the following:

- Blood in stools
- Mucous in stools
- Fever
- Often abdominal cramps
- Toxic appearance
- Possibly associated convulsions
- Lethargy

iii) Amoebic dysentery is a condition characterised by diarrhoea caused by Entamoeba histolytica.

Check Your Progress 3

i) Viral hepatitis is an infection of the liver caused hepatitis A virus (HAV), hepatitis E virus (HEV), hepatitis B virus (HBV), and hepatitis C virus (HCV). Hepatitis A and E are typically caused by ingestion of contaminated food or water. Hepatitis B, C and D usually occur as a result of parenteral contact with infected body fluids. All hepatitis viruses can cause acute hepatitis. Viral hepatitis types B and C can cause chronic hepatitis.

ii) Signs and Symptoms

- Hematemesis &/or malena
- Coffee ground gastric aspirate
- Pain
- Hypovolemic shock
- Tachycardia
- Hypotension

UNIT 2 COMMON CONDITIONS-2 – RESPIRATORY SYSTEM

Structure

2.0 Introduction

2.1 Objectives

2.2 Overview of Respiratory System

2.3 Primary Care for Acute Upper Respiratory System Infections

- 2.3.1 Catarrh (Rhinitis)
- 2.3.2 Common Cold (Viral Rhinitis),
- 2.3.3 Sinusitis
- 2.3.4 Pharyngitis
- 2.3.5 Laryngitis
- 2.3.6 Tonsillitis

2.4 Primary Care for Acute Lower Respiratory System Infections (LRTIs)

- 2.4.1 Bronchitis
- 2.4.2 Pneumonia
- 2.4.3 Bronchial Asthma

2.5 Screening, Referral and Follow up of Patients

- 2.5.1 Haemoptysis
- 2.5.2 Acute Chest Pain
- 2.5.3 Screening of Patient with Acute Chest Pain

2.6 Let Us Sum Up

2.7 Model Answers

2.8 Key Words

2.9 References

2.1 INTRODUCTION

In previous Unit you have already learnt about assessment, identification and referral of patients with conditions related to gastro intestinal system. In this unit we shall focus on assessment, identification and referral of patients with acute respiratory infections and conditions. The early assessment of various acute respiratory illnesses is very important for taking a prompt action and correctly deciding an appropriate management at your level before referral. In this unit, you will learn conditions related to respiratory system i.e. Acute Upper Respiratory System Infections and Acute Lower Respiratory System Infections.

2.0 OBJECTIVES

After completing this unit, you should be able to:

- assess and identify signs and symptoms of patients with Acute Upper Respiratory System Infections;
- assess and identify signs and symptoms of patients with Acute Lower Respiratory System Infections;

- explain the steps of primary care for patients with Acute Upper and Lower Respiratory System Infections; and
- identify and assess the patients with Hemoptysis and Acute Chest pain in patients above 35 years of age for early referral and follow up.

2.2 OVERVIEW OF RESPIRATORY SYSTEM

The respiratory system is composed of the upper and lower respiratory tracts, both are responsible for ventilation. The upper respiratory tract known as the upper airway warms and filters inspired air so that the lower respiratory tract (lungs) can accomplish gas exchange. The upper respiratory tract structures consist of the nose, sinuses and nasal passages, pharynx, tonsils and adenoids, larynx and trachea. The lower respiratory tract structures consist of the lungs which contain the bronchial and alveolar structures needed for gaseous exchange (Fig. 2.1). The disorders of respiratory system are common and are encountered by health professionals in every setting from community to the intensive care unit. To assess the respiratory system the nurse must be skilled at differentiating between normal and abnormal findings.

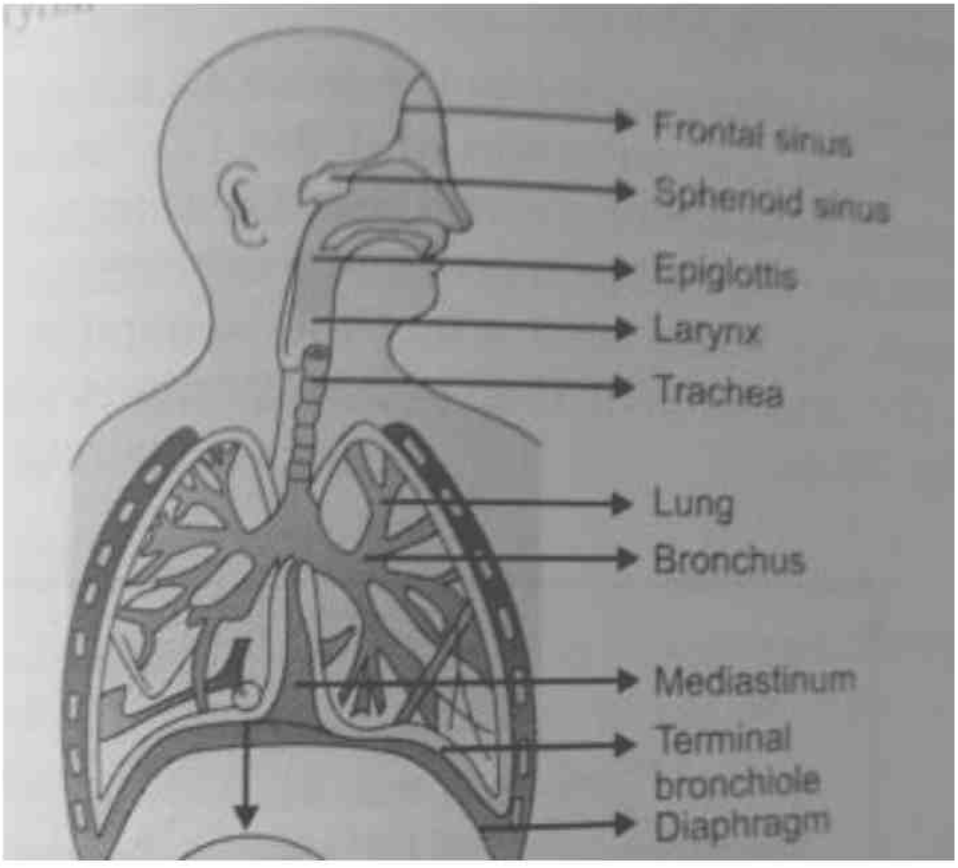


Fig. 2.1: Anatomy of Respiratory System

2.3 PRIMARY CARE FOR ACUTE UPPER RESPIRATORY SYSTEM INFECTIONS

The Upper Respiratory tract Infection is the most common cause of illness and affects most people on different occasions. Acute respiratory infections are those in which symptoms last for several days. Their effects are limited to mild and temporary discomfort to the patient which can be treated at the basic level by a competent and skilful health care giver. But occasionally these problems can

become complicated and need referral. The Upper Respiratory tract Infections (URIs) are viral or bacterial infections which can occur in any of the components of upper respiratory tract, like trachea, larynx, pharynx, sinuses etc. About 90% of URIs stem from a viral infection of the upper respiratory passages and subsequent mucous membrane inflammation. Some of the common acute upper respiratory infections which need prompt care are: catarrh (rhinitis), common cold (viral rhinitis), sinusitis, pharyngitis, laryngitis and tonsillitis.

Assessment: Let us now learn the assessment for the patient with upper respiratory infections as given below:

For assessing the patient with upper respiratory infections such as: catarrh, common cold, sinusitis, pharyngitis, laryngitis and tonsillitis, it is important for the community health nurse practioner to check for the following possible signs and symptoms given in (Box 2.1) below:

Box 2.1: Common Signs and Symptoms of Upper Respiratory Infections

- Running nose
- Nasal congestion
- Sneezing
- Postnasal drip
- Cough
- Sore throat
- Headache
- Difficulty in breathing
- Fever
- Fatigue
- In addition to above signs and symptoms, the patient has other symptoms associated with specific condition/ disease.

Primary care:

As the upper respiratory tract infections are mostly contagious, they spread from one person to another by coming in contact with respiratory droplets from sneezing, coughing etc. Thus exposure to objects like doors, sink faucets, table surfaces with viruses can lead very frequently to acute infections like rhinitis and common cold. Besides, infections like sinusitis, pharyngitis, laryngitis and tonsillitis can be caused by bacterial infections as well. Most of the upper respiratory infections occur during winter season. Individuals with low immunity are more prone to these problems. Therefore community health nurse practioner plays a significant role in educating these patients to practice following primary remedial measures before referring to the general practioner.

Primary Remedial Measures for Acute Upper Respiratory Tract Infection

a) Non-pharmacological measures:

- Taking ginger tea several times in a day is one of the most effective natural remedies for upper respiratory infection for being antibacterial and excellent cough expectorant in nature. Prepare the tea by boiling one or two teaspoons of freshly ground ginger in water for about ten minutes. Add some honey in it to make this more effective.

- Gargling with lukewarm salt water several times in a day can help relieve throat discomfort. It also helps to dislodge any phlegm that is hanging out and expels it out easily.
- Steam inhalation therapy (plain or added with menthol crystals or eucalyptus oil) during morning and evening is beneficial in loosening the trapped mucous and soothing the sore throat.
- Take 1 tablespoon of honey 1–3 times daily to control coughing by soothing the irritated mucous membrane. Take immediately before bed if cough is disrupting the sleep. Honey also has antibacterial properties due to its enzymes.
- Drinking a combination of garlic and lemon juice mixed in water daily is one of the therapeutic natural remedies for upper respiratory infection due to their antibacterial and antioxidant properties.
- Drinking warm milk mixed with half a teaspoon of turmeric powder twice a day is effective due to its antibacterial and antiviral properties.
- Sniffing few drops of eucalyptus oil placed on a clean cloth will reduce nasal congestion.
- Taking a combination of lemon juice extracted from one lemon and a teaspoon of honey in a glass of lukewarm water is a highly beneficial for fighting cold, cough and the flu naturally due to their antibacterial and antiviral properties. Follow this therapy for a few days by taking this mixture about one or two times in a day.
- Consuming a combination of onion juice and honey is useful in providing relief by soothing the throat during throat infection. Combination of carrot juice can also help in controlling the infection.
- Take adequate rest.
- Avoid physical and mental stress.
- Maintain proper hygiene to avoid the infection from spreading such as: covering mouth and nose during coughing and sneezing, wiping running nose with separate handkerchief and proper hand washing.

b) Dietary measures:

- When dealing with upper respiratory infection, it is recommended to take a diet rich in vitamin C and zinc. Vitamin C, in particular, helps strengthen the immune system and hence helps fight infection.
- Take chicken soup. Having antiviral action chicken soup really does act to knock out a cold or the flu and hasten healing.
- Take low fat dairy products, sprouts and vegetables high in protein with garlic, onion, carrot, lemon and ginger. Use spices like cardamom, black pepper, turmeric and clove.
- Avoid refined carbohydrates and flesh foods as well, atleast until you get rid of the infection.
- Drink plenty of water to replace fluid loss.
- Drink hot herbal teas added with honey which has antibacterial property.

c) Stop

Taking alcoholic, caffeinated beverages and smoking as it can make the condition worse causing irritation in the bronchial tubes. In addition, it also affects the immune system adversely.

Referral:

If the patients with upper respiratory tract infections do not respond to non-pharmacological measures / elementary treatment and show the recurrence of sign and symptoms or become very sick, such patients are then referred to a hospital for further diagnostic investigation and appropriate treatment.

2.3.1 Catarrh (Allergic Rhinitis)

Catarrh is a vasomotor rhinitis or allergic rhinitis caused by the body's natural reaction to an infection or irritation / allergen which causes the mucous membranes to swell and produce mucous. The common triggers for catarrh are cigarette smoke, air pollution, perfume, alcohol, spicy food, changes in the weather and stress.

Assessment:

Assessment includes identifying the problems of the patient by history taking and physical examination. Upon assessment, patient with catarrh will have the following possible signs and symptoms given in Box 2.2.

Box 2.2: Assessment of patient with catarrh for possible signs and symptoms

- A blocked or 'stuffy' nose
- A running nose or mucous that runs down the back of throat· Sore throat
- An irritating cough
- Headache
- Loss of smell or taste
- Pain in the face
- Generalised fatigue
- Body aches
- An occasionally mild hearing loss
- Or a crackling sensation in the middle ear

Primary care:

- Most cases require no specific treatment. But if it does not clear up on its own, then patient is advised to take following treatment:
  - Antihistamine drugs (levocitrizine 1 tablet 1 to 3 times a day) which help to relieve a blocked nose by reducing swelling of the blood vessels in the nose but this should not be used for more than a few days.
  - Tablet paracetamol stat if there is headache, fever or body ache.
  - Steam inhalation therapy: This involves inhaling steam from a bowl of hot but not boiling water which helps in softening and loosening any mucous form nasal cavities.

- Ask the patient to :
  - Gargle with hot water and salt, this will help in relieving the throat congestion and irritation.
  - Avoid common triggers such as cigarette smoke, dust, perfume, alcohol, caffeinated beverages, spicy food, cold breeze and congested environment.
  - Take adequate rest.
  - Follow dietary measures as mentioned above in Box 2.2.

Referral:

- If catarrh persists over a week then refer the patient to the hospital to rule out other conditions such as nasal polyps or allergy.
- Small nasal polyps are treated by shrinking them with steroid nasal sprays, but larger polyps may need to be removed with surgery.

2.3.2 Common Cold (Viral Rhinitis)

It is a common condition which often makes a patient to seek the medical advice at the sub-centre. It is caused by a virus which quickly spreads from person to person through coughing and sneezing.

Assessment:

On examination the patient having common cold may have signs and symptoms like sore throat, cough, and nasal congestion, running of nose, fever, headache and body aches.

Primary care:

If the patient with common cold reports to you, proceed as follows:

- Give him/ her decongestants (Chlorotone 1 tablet 3 times a day) to relieve the nasal congestion.
- Give paracetamol tablet/syrup for headache and body aches.
- Ask the patient to take lemon juice extracted from one lemon and a teaspoon of honey in a glass of lukewarm water for few days to relieve cold, cough and flu.
- Ask the patient to sniff few drops of eucalyptus oil placed on a clean handkerchief which will reduce nasal congestion.
- Advise the patient to maintain proper hygiene to avoid the infection from spreading such as: covering mouth and nose during coughing and sneezing, wiping running nose with separate handkerchief and proper hand washing.
- Advise patient to follow the dietary measures as mentioned in Box 2.2.

Referral:

If the patient does feel better within 3 days, refer to PHC for further treatment.

2.3.3 Sinusitis

Sinusitis means inflammation of the sinuses (such as: frontal, ethmoid and maxillary) caused by an infection. The cheekbone (maxillary) and frontal sinuses are the most commonly affected. Sinusitis is said to be acute if it lasts from 4–30 days.

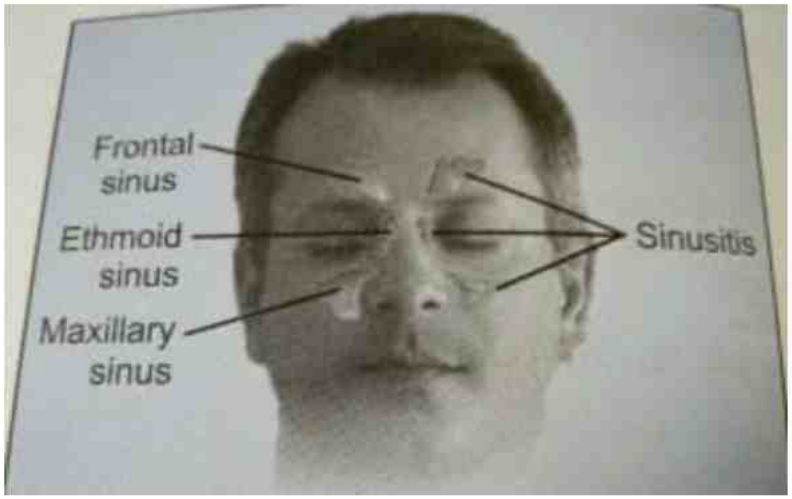


Fig. 2.2: Sites of Sinusitis

Remember:

Children are more prone than adults to complications. Swelling or redness of an eyelid or cheek in a child with sinusitis should be reported to a doctor urgently. As the infection may spread from a sinus to around an eye, into bones, into the blood or into the brain. These severe complications are estimated to occur in about 1 in 10,000 cases of acute sinusitis.

Causes:

Acute sinusitis is caused by:

i) **After a cold or flu:**

In most people, acute sinusitis develops after a cold or flu-like illness. Colds and flu are caused by germs called viruses which may spread to the sinuses.

ii) **Through dental infection:**

In some cases, infection spreads to a cheekbone (maxillary) sinus from an infected tooth.

iii) **Nasal allergy (Allergic Rhinitis):**

The allergy may cause swelling of the tissues on the inside lining of the nose and block the sinus drainage channels. This makes the sinuses more susceptible to infection.

iv) **Miscellaneous factors** causing blockage to sinus drainage channels (Box 2.3)

Box 2.3: Miscellaneous factors causing blockage to the sinus drainage channels

- Growths (nasal polyps).
- Objects pushed into the nose (especially in children, such as peas or plastic beads).
- Facial injury or surgery.
- Certain congenital abnormalities in children.
- Asthma.

- A poor immune system for example, people with HIV, people on chemotherapy etc.
- Inflammatory disorders such as sarcoidosis.
- Pregnancy, which makes you more prone to nasal inflammation (rhinitis).
- Previous injuries to the nose or cheeks.
- Medical procedures such as ventilation or the insertion of a tube through the nose into the stomach (nasogastric tube).
- Smoking.

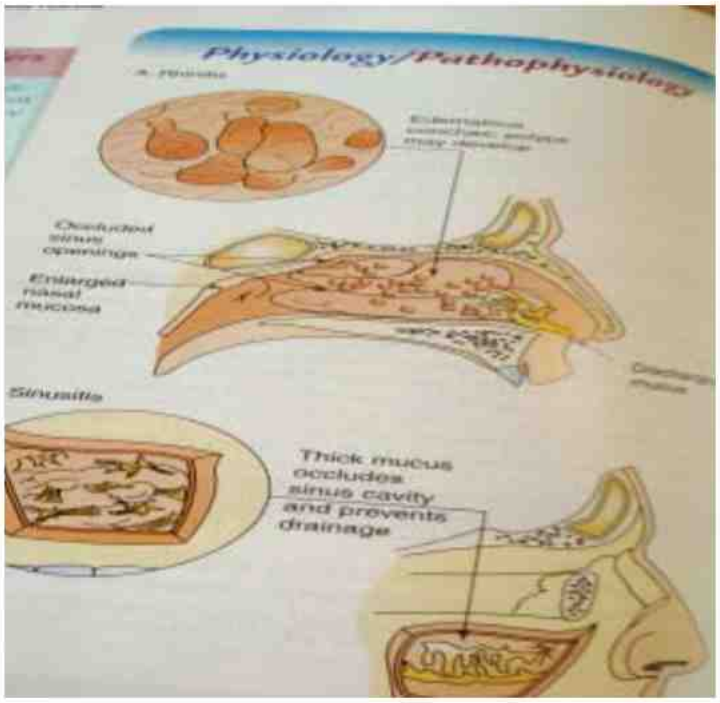


Fig. 2.3: Diagrammatic presentation of Rhinitis and Sinusitis

Assessment:

Acute sinusitis is usually assessed by enquiring and observing the patient for the following signs and symptoms with typical characteristics:

- Low grade fever with malaise.
- Tenderness and pain over the effected sinuses. The pain is often throbbing and worse when the patient is asked to bend the head forward. Chewing may be painful.
- Throbbing type of headache.
- Swelling in the lining of the nose.
- A blocked nose and sense of smell may also go for a while.
- A running nose. If the discharge is green /yellow, it is more likely that the patient have a bacterial infection in the sinuses. The green/yellow colour is due to infected mucous and pus. A running nose may dry up if the sinus drainage channels become blocked with thick mucous. If this happens, pain and tenderness over the infected sinus may become worse.
- Cough

- A feeling of pressure or fullness in the ears
- Tiredness

In children, symptoms may include:

- Irritability
- Ear discomfort
- Snoring
- Mouth breathing
- Bad breath
- Toothache
- Feeding difficulty
- Nasal speech

Primary Care:

In most cases of acute and mild sinusitis the immune system usually clears the viral or mild bacterial infection and symptoms generally go within a couple of weeks.

Remember :

- Antibiotics do not kill viruses. Also antibiotics can cause side-effects like diarrhoea, nausea, vomiting, skin rashes and fungal infection (thrush).
- Therefore in most cases of acute sinusitis, antibiotics are not needed.

As a community health nurse practioner, you can treat the patient as follows, which may help to relieve symptoms while waiting for the immune system to clear the infection include:

1) Give painkillers such as tablet paracetamol or ibuprofen to reduce pain and fever.
2) Give stronger painkillers such as codeine for severe pain for a short time.
3) Give decongestant nasal sprays / drops to relieve congestion and blockage in the nose.
4) Advise the patient to maintain hydration by taking plenty of fluids.
5) Advise the patient to apply warm face packs over the sinuses to ease the pain.
6) Teach the patient how to use saline nasal drops to relieve congestion and blockage in the nose.

Remember :

DO NOT use a decongestant spray or drops for more than 5–7 days at a time. If used for longer than this, these may cause a worse rebound congestion in the nose.

7) Advise the patient to take steam inhalation (breathing in moist heat through the nose and breathing it out through the mouth) to relieve nasal congestion.

Referral:

Refer the patient to hospital if:

- Signs and symptoms become severe or do not ease within a week.
- Patient has reported with following signs and symptoms:
  - Severe pain and / or swelling at the front of the head.
  - Swelling around the eye.
  - Swelling of the face.
  - Bloodstained discharge coming from the nose.
- There is H/O recurring sinusitis, as this may indicate an underlying problem.

2.3.4 Pharyngitis

Pharyngitis is a sore throat caused by inflammation of the back of the throat between the tonsils and the larynx. (also called the pharynx) which usually subsides within a week or less.

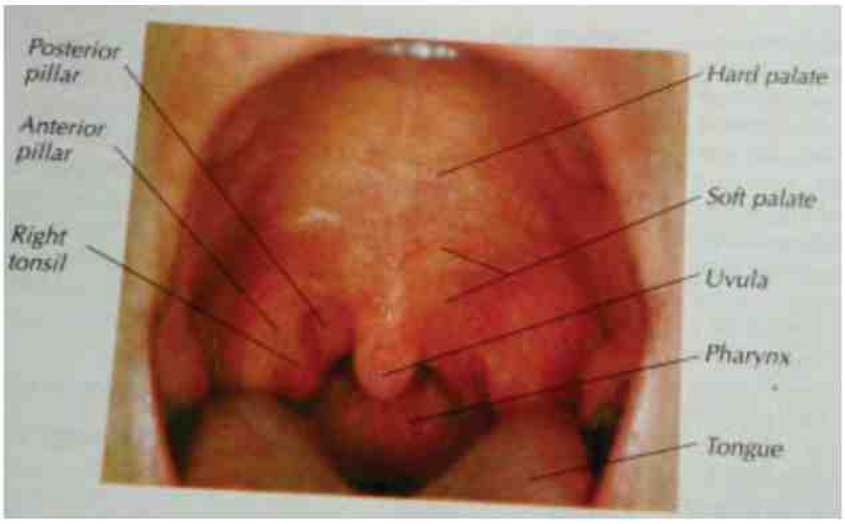


Fig. 2.4 : Structures surrounding the Pharynx

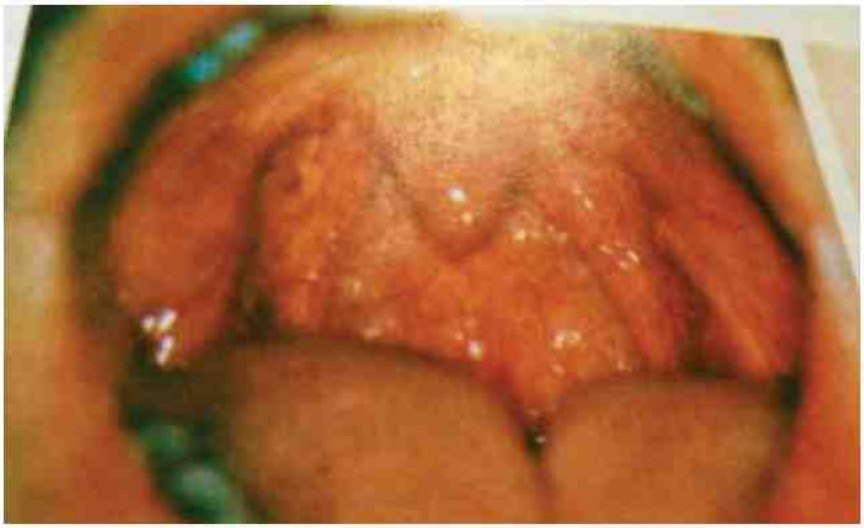


Fig. 2.5 : Diagrammatic presentation of Pharyngitis

Causes:

- Most sore throats are occur during colder months and are caused by viral infections such as the common cold, flu, mononucleosis, measles, chickenpox and croup.

- However, bacteria such as Group 'A' Streptococcus, whooping cough (caused by the bacteria Bordetella pertussis), and diphtheria can sometimes cause pharyngitis.
- The illness often spreads between people by breathing in bacteria or viruses that are spread in the air, or by touching a surface with germs on it.
- Other causes of a sore throat may include allergies, dryness, irritants, straining of throat muscles, gastroesophageal reflux disease (GERD), HIV infection, or tumours of the throat, tongue, or larynx (voice box).

Box 2.4: Risk Factors for Pharyngitis

- Cold and flu seasons
- Having close contact with someone who has a sore throat or cold /flu
- Smoking
- Exposure to second-hand smoke
- Frequent sinus infections
- Allergy

Assessment:

The common signs and symptoms which you will likely find during assessment in the patient with acute pharyngitis include:

Box 2.5: Common Signs and Symptoms with Acute Pharyngitis

- Sore throat
- Fever
- Headache
- Joint pain
- Muscle ache
- Skin rashes
- Enlarged lymph nodes in neck and armpits
- Swollen tonsils
- Loss of appetite
- Enlarged spleen and liver

Depending on cause of sore throat, symptoms vary as follows:

For example the patient having:

i) **Sore throat with cold** will report sneezing, coughing, a low grade fever (less than 102°F) and mild headache.

ii) **Sore throat with flu** will give complaint of fatigue, body aches, chills, fever higher than 102°F.

Primary Care:

One of the most common reasons which make a person to seek treatment is painful swallowing, soreness or scratchiness in the throat. The first aid treatment

will depend upon the cause of pharyngitis, therefore the first step is to find out the cause of sore throat and manage the case accordingly as follows:

1) Enquire whether the patient has symptoms of cold or flu. If the sore throat is associated with cold or flu caused by a virus, antibiotics will not help and it will go away of its own within five to seven days. For that time period advise the patient to:
   a) Take rest
   b) Quit smoking
   c) Avoid alcohol
   d) Drink warm liquids, such as lemon tea or tea with honey
   e) Gargle with warm salt water (1/2 tsp of salt in 1 cup of water) throughout the day
   f) Drink cold liquids or sucking on fruit-flavoured ice pops
   g) Suck on hard candies or throat lozenges (for adults only)
   h) Use a cool-mist vaporiser or humidifier.
2) Give NSAID such as acetaminophen, aspirin or ibuprofen to reduce inflammation.
3) If the sore throat is associated with bacterial infection and there are no symptoms of cold or flu, then give the patient a course of antibiotics (capsule amoxicillin 500 mg 8 hourly) for five to seven days in addition to above treatment.

> **Remember:**
>
> Children under 19 should not take aspirin.

Referral:

Refer the patient to ENT hospital (ear, nose and throat doctor) if:

- Signs and symptoms become severe or do not ease within a week.
- The cause of sore throat is other than common cold or flu.
- Patient has frequent bouts of sore throat.
- Explain the patient that the ENT Specialist will do physical examination by:
  – Looking at your throat, ears and nose with a lighted instrument.

Refer the patient to a Laboratory technologist for:

- Throat culture to rule out streptococcal or any other cause of infection.
- Blood test to determine whether an infection is more likely caused by a bacterial or viral agent.

AWARE the patient, about the complications of pharyngitis (given in Box 2.6) if not treated properly at appropriate time.

Box 2.6: List of Complications due to Untreated Pharyngitis

- **Suppurative Complications:**
  - Otitis Media
  - Sinusitis
  - Peritonsillar Abscess

- Retropharyngeal Abscess
- Cervical Adenitis.

- **Non suppurative Complications:**
  - Rheumatic Heart Disease
  - Post-streptococcal Glomerulonephritis.

2.3.5 Laryngitis

Laryngitis is swelling of the voice box, including the vocal cords. Vocal cords normally create sound by vibration. Swelling makes movement of the vocal cords difficult which makes you sound hoarse or prevents sound at all. Parts of larynx are shown in Fig. 2.6.

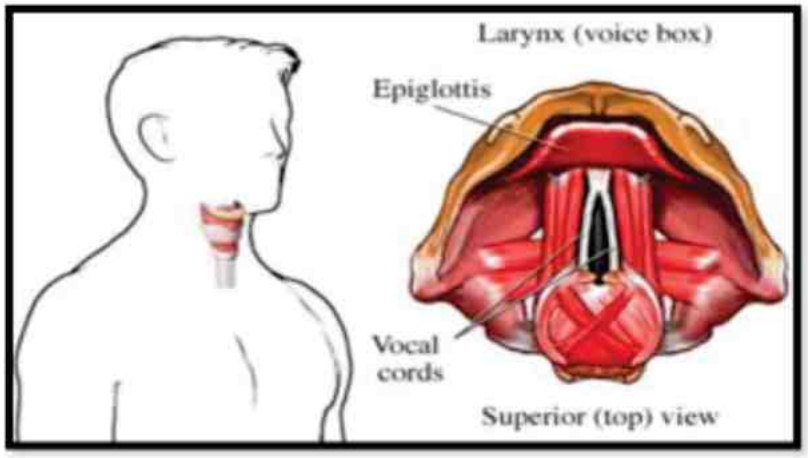


Fig. 2.6 : Parts of Larynx

Causes:

The voice box or vocal cords usually become inflamed from overuse, irritation, or infection. A variety of conditions can cause the inflammation that result in laryngitis. These include viral infections, environmental factors and in rare cases, bacterial infections.

Acute laryngitis is a temporary condition caused by:

- An underlying infection
- Overuse of vocal cords.
- Exposure to harmful chemicals/ allergens / smoke
- Acid Reflux

Assessment:

The physical assessment of the patient with laryngitis include:

a) Inspecting the patient for following signs and symptoms:
   - Weakened voice or Loss of voice or Hoarseness of voice
   - Dry throat
   - Throat irritation
   - Dry cough

b) Asking the patient if there is any H/O:

- Overusing of voice
- An underlying infection
- Exposure to harmful chemicals/ allergens / smoke
- Acid Reflux

c) Visual examination through special mirror by the doctor to view the vocal cords and voice box for signs of inflammations.

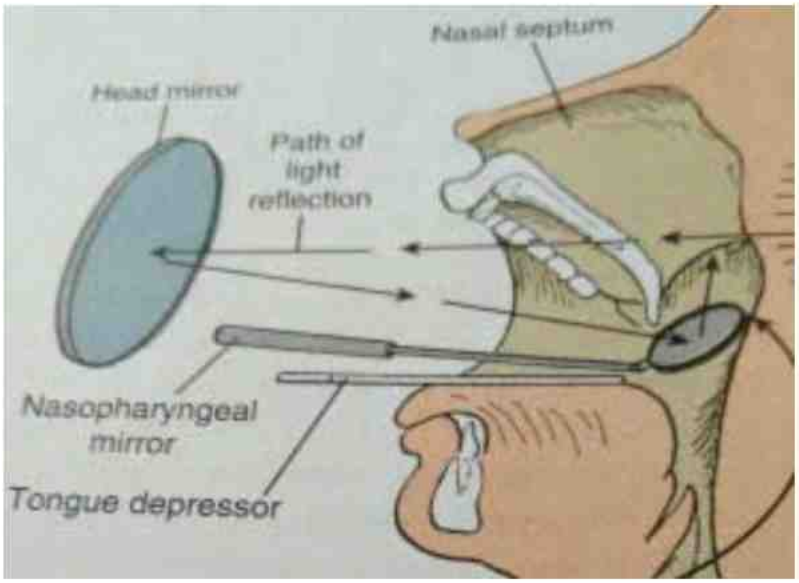


Fig. 2.7 : Visual Examination of Nasopharynx through Mirror

OR

d) Examination by Laryngoscope (if available) – An instrument having a thin flexible tube with a microscopic camera is passed by doctor through the mouth or nose to magnify the voice box for easy viewing to look for the following signs of laryngitis (Fig. 2.8):

- Redness
- Lesions on the voice box
- Widespread swelling

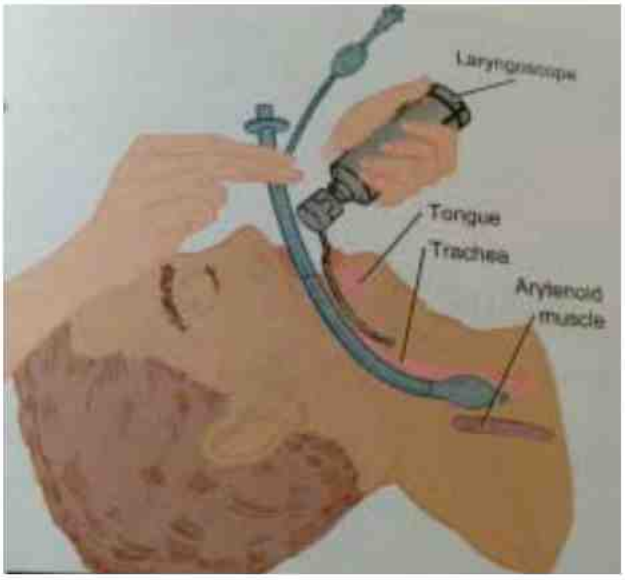


Fig. 2.8 : Laryngoscopy

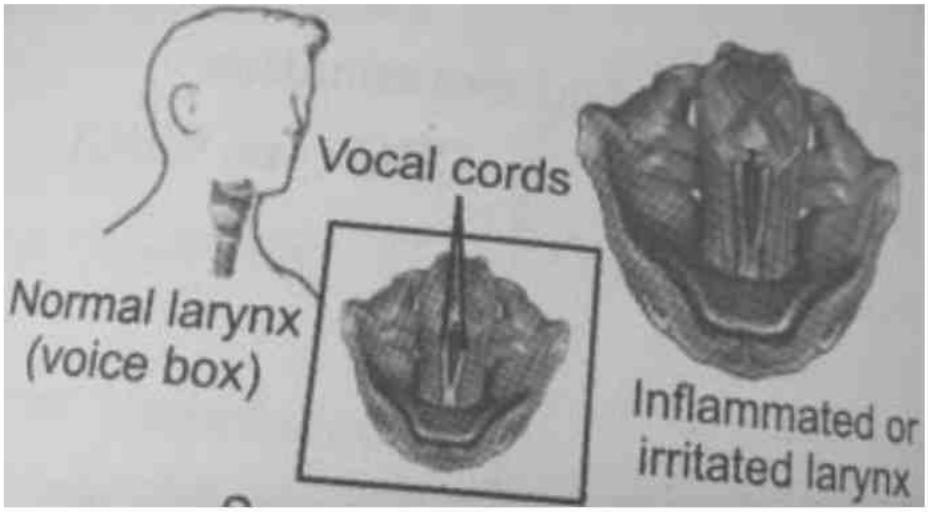


Fig. 2.9 : Laryngitis

Primary care:

Treating the underlying condition will cause the laryngitis to go away.

- If the cause of infection is viral, the symptoms will disappear without treatment and the patient will feel well within a week or two due to good immune system.
- If it is a bacterial laryngitis (although this form of laryngitis is rare). Then give antibiotics such as: capsule amoxicillin 500 mg 8 hourly to the patient for five to seven days.
- Give NSAID such as acetaminophen (Tylenol), aspirin or ibuprofen (Advil, Motrin) to reduce inflammation.
- Advise the patient to follow the instructions given below in the (Box 2.7)

Box 2.7: Instructions for the Patient with Acute Laryngitis to keep Vocal Cords Healthy

- Keep vocal cords moist and free from irritants.
- Use a humidifier or inhale steam to alleviate dryness.
- Give rest to the voice.
- Correct the way you use your voice and any abnormal speech patterns that place stress on your vocal cords and voice box.
- Get vocal therapy to correct the abnormal speech.
- Avoid screaming or talking loudly for long periods of time.
- Refrain from whispering, which can strain the voice.
- Drink plenty of fluids.
- Gargle with salt water.
- Avoid smoking and being around people who smoke.
- Avoid alcohol and caffeine intake.
- Wash the hands regularly to avoid catching colds and upper respiratory infections.
- Try to avoid toxic chemicals in the workplace if possible.

- Try to avoid clearing the throat. This increases both mucous production and irritation.
- Avoid decongestants which can dry the throat.
- Keep sucking on lozenges to keep the throat lubricated.
- Avoid seasonal allergies.
- Manage acid reflux with medications and healthy food habits.
- Avoid taking antibiotics for cold, flu or other viral respiratory infections, as these will usually go away of their own.
- It may take up to 2 weeks for your voice to completely return.
- Take prescribed antibiotics if the laryngitis is associated with a bacterial infection.

Referral:

Refer the patient to speciality hospital if:

- Hoarseness of voice, throat irritation and dry cough do not subside within a week.
- Patient has H/O recurring laryngitis, therefore to find out and treat underlying problem such as sinusitis.

Remember:

- Chronic laryngitis may require more extensive treatment and this is determined by the cause of the inflammation.
- Surgery may be required in cases where the vocal chords have been damaged as a result of polyp or nodule growth.
- In rare cases, vocal cord inflammation can cause respiratory distress. This situation requires immediate medical attention.

2.3.6 Tonsillitis

Tonsillitis is inflammation of the tonsils caused by viral or bacterial infection. The majority of cases of tonsillitis are caused by cold virus, with only 15 to 30% of cases being caused by bacteria such as streptococcus pyogenes. Tonsillitis occurs mainly in children but rarely in children less than two years of age.

Remember:

Tonsillitis caused by streptococcus pyogenes is highly contagious and tonsillitis caused by the Epstein-Barr virus is contagious the first time a person has it. In both cases, steps to prevent its spread should be taken (refer Box 28)

Assessment:

- Upon assessment the early complaints which a tonsillitis patient may report are:
  - Moderate to severe sore throat lasting longer than 2 days

- Cold symptoms such as: running nose, fever, chills
- Throat congestion.

- The other signs and symptoms of tonsillitis are:
  - Swollen and tender glands (lymph nodes) on the sides of the neck
  - Difficult or painful swallowing
  - Bad breath
  - Tiredness and headache
  - Stomach upset or pain
  - Mouth breathing, noisy breathing and/or snoring (due to enlarged tonsils blocking the airways)
- The assessment of Viral tonsillitis will include following features:
  - Teenager or younger child
  - Accompanied by symptoms of severe lethargy and tiredness, swollen glands in the neck, armpits and/or groin, and an enlarged spleen.
- Throat examination will reveal enlarged and reddened tonsils with spots of white/yellow pus.

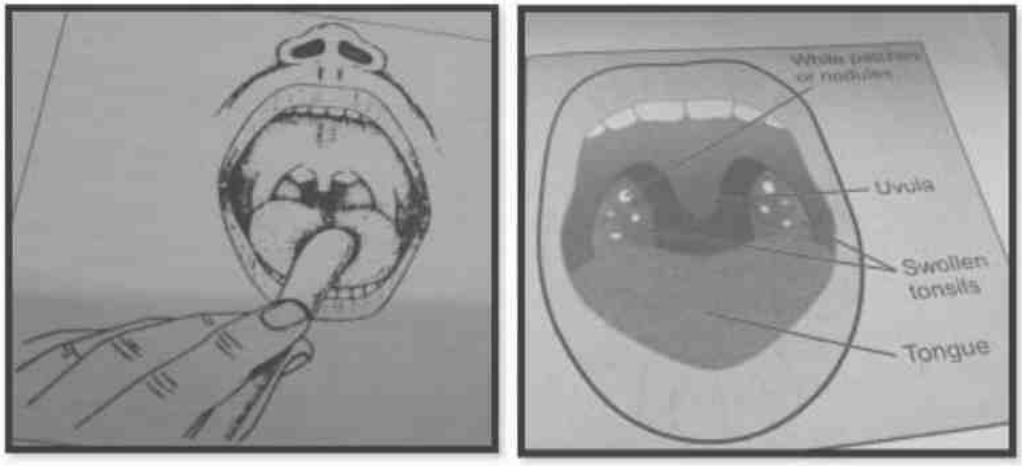


Fig. 2.10 : Throat Examination Showing Tonsillitis

Remember:

- Patients with viral tonsillitis usually recover with symptomatic treatment without antibiotics.
- Symptoms of tonsillitis usually resolve after three to four days but may last up to two weeks.

Primary care:

After doing thorough assessment the patient is advised to:

- Take rest till recovery of symptoms.
- Take paracetamol and ibuprofen for pain relief and reduction of fever.
- Take the full course of antibiotics as prescribed to prevent the infection returning and to reduce the likelihood of developing rheumatic fever or kidney disease.

- Take corticosteroids such as dexamethasone or prednisolone as prescribed by physician to reduce inflammation and swelling, particularly when it is making swallowing and breathing difficult.
- Gargle with salt water (1/2 teaspoon of salt to a cup of warm water) to soothen the throat.
- Suck on throat lozenges containing ingredients that are cooling and anti-septic.
- Drink plenty of fluids.
- Have regular soft and non spicy meals.
- Follow hygienic measures given in Box 2.8.

Box 2.8: Precautions for Preventing the Spread of Tonsillitis

- Avoid close contact with people who have tonsillitis to prevent passing on the infection.
- Children and other family members should be kept away from people with tonsillitis as much as possible.
- Hygienic measures should be used to prevent spread of infection such as :
  - Regular and thorough washing and drying of hands.
  - Using a tissue to cover coughs and sneezes.
  - No sharing of foods, liquids or eating utensils or drinking vessels.
  - Frequent cleaning of surfaces particularly in the kitchen and bathroom.

Referral:

- Refer the patient to ENT hospital:
  - If patient shows exacerbations of signs and symptoms and does not respond to the bacterial treatment.
  - For blood test to determine whether an infection is more likely caused by a bacterial or viral agent.
  - For throat culture to rule out streptococcal or any other cause of infection.
  - For surgical removal of tonsils (tonsillectomy) in case of chronic tonsillitis and for people who are allergic to antibiotics.
- **Explain** the patient that:
  - Surgery does carry least risks, including rare bleeding during and after the operation in some people.
  - Throat pain and difficulty eating is usual in the first few days after the operation.
  - Full recovery typically takes two to three weeks.

Remember:

- The streptococcus pyogenes bacteria can cause streptococcal throat infection and associated bacterial tonsillitis which can result in the serious complications of rheumatic fever and kidney disease. For this reason it is important to seek medical advice and treatment if streptococcal infection is suspected.
- The most common complication of viral tonsillitis occurs when the infection becomes deep-seated within the tonsil resulting in a peritonsillar abscess (a collection of pus beside the tonsil).
- Peritonsillar abscesses are extremely painful and if left untreated can spread into the neck, blocking the airways and becoming a life-threatening complication. It can usually occur in teenagers and young adults but can occur at earlier ages.
- Peritonsillar abscesses can be drained using a needle and syringe or by making an incision with a scalpel.
- Tonsillectomy is an option in those with a history of peritonsillar abscess.

Check Your Progress 1

1) List the common signs and symptoms of Upper Respiratory system Infections.

.....

.....

2) Discuss the primary care measures to be taken for the patient with common cold.

.....

.....

3) What instructions will you give to the patient with acute laryngitis to keep his/her vocal cords healthy?

.....

.....

4) Fill in the blanks:

a) The various risk factors of pharyngitis include .....

.....

b) The streptococcal throat infection if remain untreated can result in the serious complications of ..... and .....

c) A collection of pus around the tonsils called ..... is most common complication of ..... which occurs when the infection becomes deep-seated within the tonsil.

d) ..... is an instrument which is having a thin flexible tube with a microscopic camera and is passed by doctor through ..... to visualise the voice box for 3 signs of laryngitis such as:(i) ..... (ii) .....(iii) .....

2.4 PRIMARY CARE FOR ACUTE LOWER RESPIRATORY TRACT INFECTIONS (LRTIs)

In 2013 there were about 150 million LRTIs. These resulted in 2.7 million deaths down in 2013 from 3.4 million deaths in 1990, which estimated about 4.8% of all deaths in 2013.

The acute lower respiratory system infections include conditions like Bronchitis and Pneumonia which can be either bacterial or viral. (Asthma is not a lower respiratory tract infection, so it should not be mentioned in this chapter)

2.4.1 Bronchitis

Acute Bronchitis is a sudden inflammation of the lining of bronchial tubes which carry air to and from lungs. Acute bronchitis is a shorter illness usually lasts a few days or weeks. In this the irritated membrane swells and grows thicker, which narrows or shuts off the tiny airways in the lungs, resulting in coughing spells that may be accompanied by phlegm and breathlessness. (Fig.2.11)



Fig. 2.11 : Normal Bronchi Inflammation of Bronchioles

Causes:

Acute bronchitis can be either acute bacterial or viral infection in healthy patients with no history of recurrent disease. It affects on an average 40 adults per 1000 each year and follows a cold or viral infection such as the flu. Some of the factors that can increase the risk for acute bronchitis are given in Box 2.9.

Box 2.9: Risk Factors of Acute Bronchitis

- Contact with the person having bronchitis.
- Exposure to smoke or chemicals
- Dust or Air pollution
- A weakened immune system or taking drugs that weaken the immune system

Approximately 90 per cent of acute bronchitis infections are caused by viruses.

Assessment:

For assessing the patient with acute bronchitis it is important to check signs and symptoms given in Box 2.10 and enquire about their onset, duration and associated factors.

Box 2.10: Signs and Symptoms of Patient with Acute Bronchitis

Upon physical assessment, the bronchitis patient will usually have following S/S:

- Hacking cough with phlegm
- Chest discomfort or Soreness
- Occasional shortness of breath
- Fever (usually less than 101°F)
- Fatigue
- Mild headache
- Body aches
- Watery eyes
- Sore throat

Note: Most symptoms of acute bronchitis last for up to 2 weeks, but the cough can last up to 8 weeks in some people.

Primary Care

- Acute bronchitis is usually caused by a viral infection and improves without antibiotics. In most healthy children and adults, antibiotics are not recommended and may cause harm.
- Symptoms last 5–10 days, but cough may persist for 2–3 weeks.
- It shares symptoms with the common cold: cough, mucus, sore throat, nasal congestion.
- Symptom relief includes:
- Acetaminophen or ibuprofen for fever, body aches, or headache
- Cough suppressants or expectorants (e.g., guaifenesin) if needed for chest discomfort
- Steam inhalation and warm fluids for throat irritation
- Avoid antibiotics unless bacterial infection is strongly suspected (e.g., elderly with COPD or immunocompromised).
- Supportive care:
- Rest
- Drink plenty of fluids
- Saltwater gargles for sore throat
- Practice hand hygiene and cough etiquette to prevent spread

Prevention:

There are several steps (Box 2.11) which you can teach to the people to follow for preventing themselves from acute bronchitis.

Box 2.11: Steps for Prevention of Acute Bronchitis

- Avoid smoking and exposure to second hand smoke.
- Practice good hand hygiene.
- Avoid exposure to dust, chemicals or air pollution.
- Minimise contact with the person having bronchitis.
- As 50% of bronchitis cases are infected with Haemophilus influenzae, Streptococcus pneumoniae or Moraxella catarrhalis. Therefore keep you and your child up to date with recommended immunisations.

Referral:

Refer the patient immediately to hospital if he/she has any of the following:

- Temperature higher than 100.4°F
- Cough with thick or bloody mucous
- Shortness of breath or trouble breathing
- If the symptoms last more than 3 weeks
- If viral bronchitis does not subside of its own and needs to be treated by antiviral medications depending on the type of virus causing the infection.
- Repeated episodes of bronchitis
- Chronic heart or lung problems experience any new symptoms of acute bronchitis.
- A child younger than three months of age and has a fever.

Remember:

- Cough is the most common symptom of acute bronchitis which typically persists for approximately three weeks.
- Whenever you see a patient with cough look for the following:
  - Sputum- note whether it is clear or contains pus or blood
  - Chest pain
  - Shortness of breath
- If patient has either of these problems refer immediately to hospital.

2.4.2 Pneumonia

Pneumonia is an infection of the lungs that is characterised primarily by inflammation of the alveoli in the lungs or by alveoli which are filled with fluid (alveoli are microscopic sacs in the lungs that absorb oxygen).

Pneumonia can cause mild to severe illness in people of all ages. It is the leading cause of death in children younger than 5 years of age worldwide. In the United States, more than 3 million people develop pneumonia each year, and about 17% of these receive treatment in a hospital. Most people with pneumonia recover, but about 5% succumb to the condition.

Pneumonia and influenza together are ranked as the eighth leading cause of death in the US and approximately 50% of pneumonia cases are believed to be caused by viruses. Although the disease can occur in young and healthy people, it is most dangerous for older adults, babies, and people with other diseases or impaired immune systems.

Risk factors that increase the chances of getting pneumonia are given in Box 2.12.

Box 2.12: Risk Factors of Pneumonia

- Children younger than 1 year of age and adults older than 65 years of age.
- People who have recently recovered from viral infections such as: cold, flu, laryngitis etc.
- People who have other respiratory conditions, such as chronic obstructive pulmonary disease (COPD), emphysema and asthma.
- People who have a weakened or impaired immune system such as: HIV/AIDS, malignant diseases, stroke, dementia, Parkinson's disease, Cerebral palsy etc.
- Exposure to smoke/ dust/ air pollution.
- Cigarette smoking.
- Alcoholism.
- Other serious illnesses, such as heart disease, liver cirrhosis or diabetes mellitus.
- Recent surgery or trauma.

Causes of pneumonia

When a person breathes pneumonia-causing germs into his/her lungs and body's immune system cannot prevent entry, the organisms settle in small air sacs called alveoli and continue multiplying. The body sends white blood cells to attack the infection; the sacs become filed with fluid and pus – causing pneumonia (Fig.2.12).

Pneumonia has bacterial, viral, fungal and nosocomial causes as mentioned below.

i) **Bacterial pneumonia**

Streptococcus pneumoniae is the most common cause of bacterial pneumonia. People who suffer from chronic obstructive pulmonary disease (COPD) or alcoholism most often get pneumonia from Klebsiella pneumoniae and Hemophilus influenzae. Atypical pneumonia, a type of pneumonia that typically occurs during the summer and fall months, is caused by the bacteria Mycoplasma pneumoniae.

ii) **Viral pneumonia**

Viral pneumonias are pneumonias that do not typically respond to antibiotic treatment. Adenoviruses, rhinovirus, influenza virus (flu), respiratory syncytial virus (RSV), and para influenza virus are all potential causes of viral pneumonia.

iii) **Fungal pneumonia**

Histoplasmosis, coccidiomycosis, blastomycosis, aspergillosis, and cryptococcosis are fungal infections that can lead to fungal pneumonia.

iv) **Nosocomial pneumonia**

Organisms that have been exposed to strong antibiotics and have developed resistance are called nosocomial organisms. If they enter the lungs, a person may

develop nosocomial pneumonia. Resistant bacteria are often found in nursing homes and hospitals.

For example: Methicillin-resistant Staph aureus (MRSA) can cause skin infections as well as pneumonia. Similarly, outbreaks of the H5N1 influenza (bird flu) virus and severe acute respiratory syndrome (SARS) have resulted in serious pneumonia infections.

Assessment:

The assessment of pneumonia includes:

- Physical examination and taking medical history of the patient for signs and symptoms (given in Box 2.13) which are assessed according to their onset, duration, and associated respiratory condition, because pneumonia symptoms can vary from mild to severe, depending on the type of pneumonia, age and health.

  Most people with pneumonia begin with cold and flu symptoms and then develop a high fever, chills, and cough with sputum.

OR

Most patients have previous H/O COPD or asthma with associated symptoms.

- Other confirmatory tests are:
  - Blood tests to measure white blood cell count in order to determine the severity and type of pneumonia whether the infection is bacterial, viral, fungal, etc
  - Chest x-ray to determine location and extent of pneumonia in the lungs.
  - Sputum test to determine the organism that is causing the pneumonia.

Box 2.13: Common Signs and Symptoms of Pneumonia (Fig. 2.13)

- Cough with sputum (greenish or yellow mucous, or even bloody mucous)
- Fever, which may be mild or high shaking chills
- Shortness of breath, which may occur during climbing stairs
- Chest pain that gets worse when taking a deep breath (pleuritic pain) or while coughing
- Headache, Muscle pain
- Fast heartbeat
- Fatigue and feeling very weak
- Excessive sweating and clammy skin
- Nausea, vomiting and diarrhoea
- Loss of appetite, low energy and fatigue
- Confusion or delirium especially in older people
- Dusky or purplish skin colour (cyanosis) due to poorly oxygenated blood
- Symptoms can also vary, depending on type of pneumonia

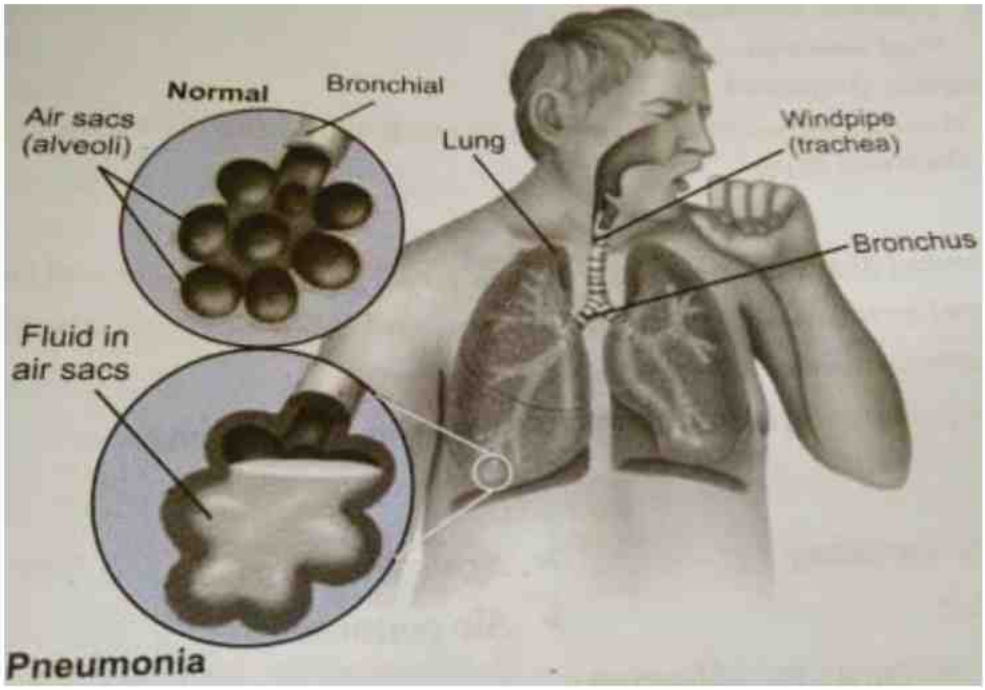


Fig. 2.12 : Diagrammatic presentation of pneumonia

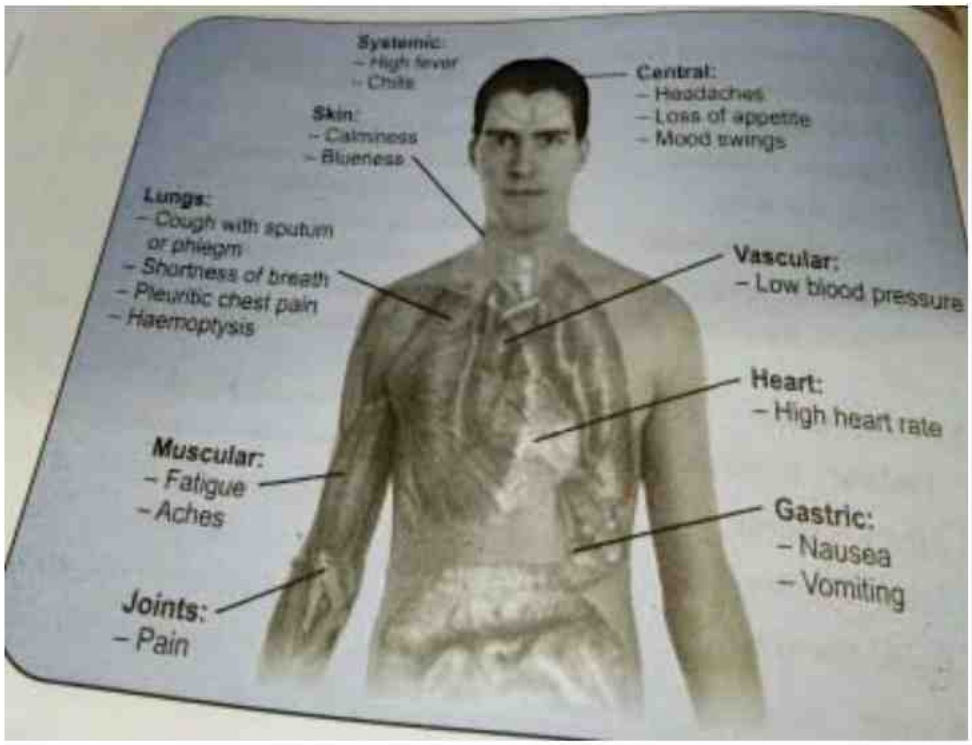


Fig. 2.13: Signs and symptoms of pneumonia

Primary Care

Treatment of pneumonia depends on the cause and severity.

- Bacterial pneumonia is treated with antibiotics.
- Viral pneumonia usually resolves on its own; antibiotics are not needed and may cause harm. Supportive care with rest, fluids, and fever control is key. Antivirals may be used for influenza or COVID-19.
- Fungal pneumonia requires antifungal treatment (typically in immunocompromised patients).

At Sub-Centre/PHC, treatment includes:

- Paracetamol 500 mg orally every 6–8 hours for fever and headache.
- Ibuprofen 200–400 mg twice daily if no contraindications (avoid in children unless prescribed).
- Avoid routine cough suppressants; prefer steam inhalation and warm fluids.
- Amoxicillin 500 mg orally every 8 hours for 5 days is the first-line for uncomplicated CAP.

In penicillin allergy, consider azithromycin 500 mg once daily for 3 days.

- Patients are advised to:
- Take adequate rest
- Drink plenty of fluids
- Follow preventive measures given in Box 2.14.

Box 2.14: Preventive Measures of Pneumonia

- Wash hands regularly
- Refrain from smoking
- Avoid exposure to dust, chemicals or air pollution
- Avoid seasonal allergies
- Eat healthy
- Exercise daily
- Stay away from sputum or cough particles from others with pneumonia
- Get yourself and your child vaccinated against influenza virus, measles, rubella, haemophilus influenzae, diphtheria, and chickenpox and bordetella pertussis for prevention from bronchopneumonia.

Note: There are two vaccines that are available to prevent pneumococcal disease (the bacterial infection that is the most common cause of pneumonia) such as:

i) Prevnar vaccine (pneumococcal conjugate vaccine), and

ii) Pneumovax vaccine (pneumococcal polysaccharide vaccine)

- Prevnar vaccine is generally administered as part of the normal infant immunisation procedure and is recommended for children less than 2 years of age or between two and four years with certain medical conditions.
- Pneumovax vaccine is provided for adults who are at increased risk of developing pneumococcal pneumonia, such as the elderly, diabetics, those with chronic heart, lung, or kidney disease, alcoholics, smokers, and those without a spleen.
- The pneumonia vaccine may not completely prevent older adults from getting pneumonia, but it can reduce the severity of a future pneumonia.

Referral:

Referral for hospitalisation of pneumonia patient may be required if:

- Symptoms are especially bad or a patient has a weakened immune system or other serious illness.
- He/she has recurrent attacks of pneumonia in order to prevent possible complications of emphysema or lung abscess.

At the hospital, patient may need Bronchoscopy – an invasive diagnostic procedure (which is done under anaesthesia) in which and a thin, flexible, and lighted tube is inserted through the nose or mouth to directly examine the infected parts of the lung.

After being diagnosed the patient is treated with:

- Intravenous antibiotics/ antiviral therapy / antifungal drugs depending upon the cause of pneumonia
- Bronchodilators such as deriphyline or aminophyline
- Oxygen therapy
- Physiotherapy
- Barrier nursing

2.4.3 Bronchial Asthma

Bronchial asthma – literally called as asthma is a reversible bronchospasm, in which there is inflammation and narrowing of bronchial lumen due to its hyperactive response to a certain stimuli which leads to wheezing and coughing and difficulty in breathing.

- **Changes taking place in airway passage during bronchial asthma are shown in Fig. 2.14.**

Bronchial Asthma effects air passages in 3 ways:

1) When a person has asthma, the air passages are inflamed which means that the airways are red and swollen. During the asthmatic attack, the lining of the passages swell causing the airways narrowing and thus reducing the flow of air in and out of the lungs.
2) Airway hyper responsiveness to a wide range of stimuli. Inflammation of the air passages makes them over extra sensitive to a number of different things that can trigger or bring on asthma symptoms.
3) Muscles within the breathing passages contract, causing even further narrowing of the airways called bronchospasm. This narrowing makes it difficult for the air to be breathed out (exhaled) from the lungs.

Changes in bronchial asthma are initiated by the action of:

- Mast cells, eosinophils and T lymphocytes found in the blood. Mast cells are the allergy-causing cells that release histamine. Histamine is a chemical substance that causes constriction of airways.
- Eosinophils and T lymphocytes are the types of white blood cell which are associated with allergy and inflammation in asthma leading to the airway hyper-responsiveness, airflow limitation and respiratory symptoms such as feeling of chest tightness and breathlessness that is felt often at night called

nocturnal asthma or in the early morning hours. Some patients may feel symptoms when they exercise called exercise-induced asthma.

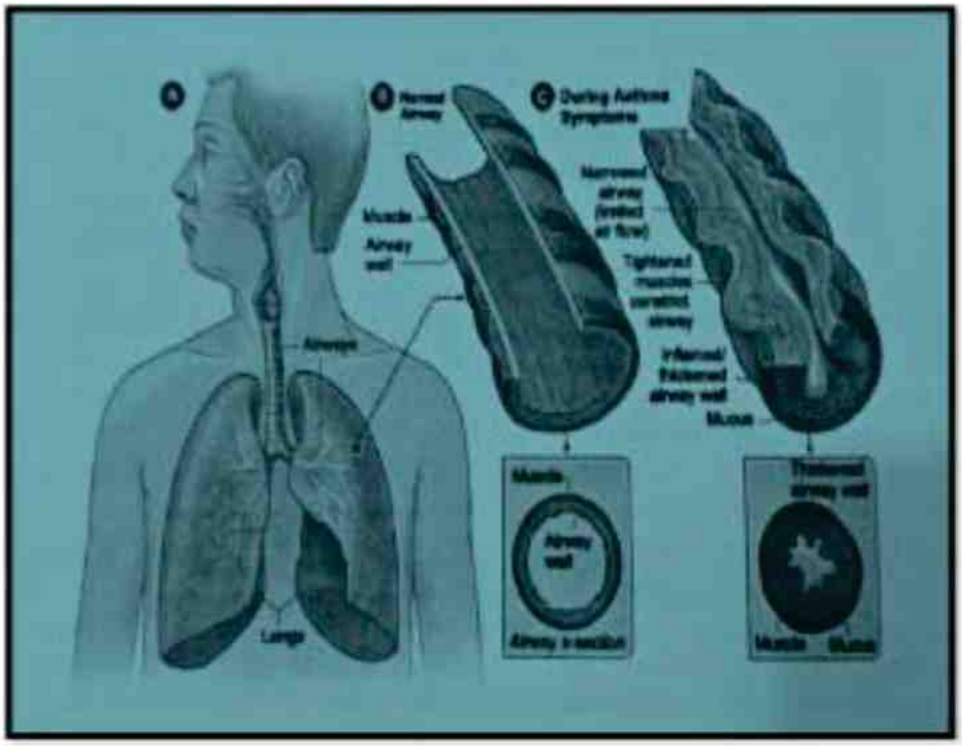


Fig. 2.14 : Changes taking place in Airway Passages during Bronchial Asthma

Assessment:

Clinically an asthmatic patient will complaint of periodic "attacks" of coughing, wheezing, shortness of breath, and chest tightness which frequently occur and/or gets aggravated at night or in the morning (Box 2.15).

Note

It is important that you assess the patient keenly for triggers and signs/ symptoms of bronchial asthma (given in the Box 2.15)

Box 2.15: Assessment of Patient for Triggers and Signs /Symptoms of Bronchial Asthma

a) **Bronchial Asthma Triggers:**

1) Smoking and second hand smoke
2) Infections such as colds, flu or pneumonia
3) Allergens such as food, pollen, dust mites and pet dander
4) Physical exertion
5) Air pollution and toxins
6) Weather, especially extreme change in temperature
7) Drugs such as aspirin, NSAIDs and beta-blockers
8) Food additives
9) Emotional stress
10) Singing, laughing or crying

11) Perfumes and fragrances

12) Acid reflux

b) **Signs / Symptoms:**

i) Shortness of breath (especially air hunger breathing– use of accessory muscles for breathing and tachypnea)

ii) Tightness of Chest

iii) Wheezing (especially expiratory wheezing)

iv) Excessive Coughing OR a cough that keeps the patient awake at night OR which is frequently associated with exposure to above triggers.

v) Cyanosis (A bad sign in asthma)

vi) Other s/s include: Elevated blood pressure, tachycardia, cold and moist skin, fever, anxiety and apprehension.

Prevention:

As bronchial asthma disease is reversible which can be controlled with proper and regular medications as well as by avoiding the triggering factors (given in Box 2.16) therefore it is very important on your part to clarify the questions (given in Box 2.16) and educate these patients thoroughly to enable them to manage effectively with the disease process.

Box 2.16: Questions to be Clarified for Controlling the Bronchial Asthma

The following are the few questions which may be asked by the patient and which need to be clarified by you for preventing the patient from frequent episodes of bronchial asthma:

- What is bronchial asthma?
- How do you get bronchial asthma?
- What are the various triggering factors? (refer Box 2.15)
- What measures to be taken to prevent yourself from these triggers? Such as: avoiding the dust, smoke, cold breeze, perfumes, food allergens and so on.
- What are the various signs and symptoms? (refer Box 2.15)
- How to notice the symptoms if these occur during onset of triggers such as dust, cold breeze, perfumes, food allergens or during exercise or after smelling smoke and explain it in the same manner to the doctor?
- How to take the medicine and why to take it regularly?
- How to make proper use of inhaler?
- Why to keep your rescue inhaler always with you?
- What are various natural home remedies and how to perform them? (refer Box 2.17)
- How to cope with the disease process by sharing problems with those who are asthma victims?

Remember:

- If you find any patient experiencing breathlessness, coughing, and wheezing (whistling sound coming from chest) recently, this means that the patient might have caught bronchial asthma.
- Tell the patient that he /she need to pay early attention to treat bronchial asthma because the prolonged state of asthma can harm lungs in the long run. And clarify the questions (given in Box 2.16) and effective treatment for asthma including natural asthma remedies (given in Box 2.17)

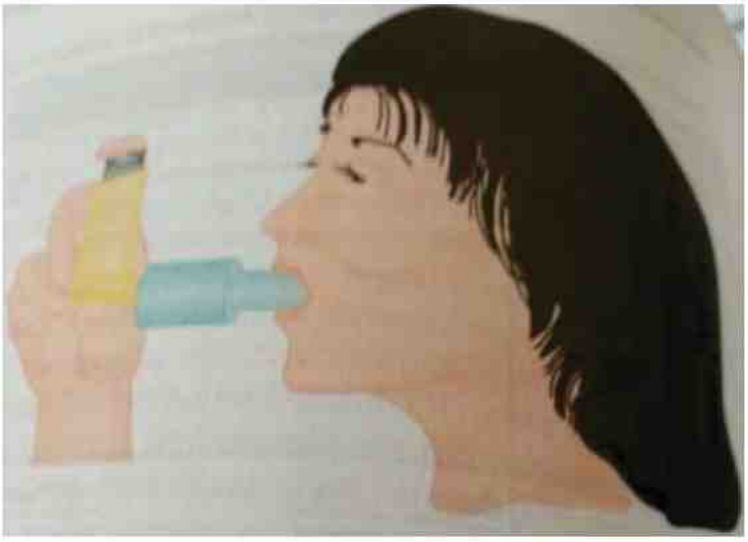


Fig. 2.15: Use of Inhaler

Natural Asthma Remedies:

Lifestyle management is very essential for asthma patients .There are two aspects for this – avoiding the asthma triggers and adopting such ways that increase resistance to allergy-causing factors. Here are certain dietary measures and natural home remedies (given in Box 2.17) which you can teach to patients with bronchial asthma:

Box 2.17: Dietary and Natural Home Remedies for Patients with Bronchial Asthma

- Take diet rich in vitamin B_6 (meat, vegetables and nuts), B_{12} (meat, milk, eggs and mushrooms) and B_5, Vitamin C (amla, guava, lychee, papaya, strawberry, orange, lemon and grapes) and folic acid (leafy vegetables such as: spinach, turnip greens, beans and peas, sunflower seeds and liver) as well as antioxidants (foods containing vitamin C & coconut, peanuts, olive oil, sunflower seeds, soyabeen and maize) to boost immune system.
- Add four minced garlic cloves in the tea while it is steaming. Drink this after it cools down a little. It is good for controlling wheezing and coughing.
- When experiencing asthma attack, get someone to rub mustard oil mixed with camphor on your back. This makes breathing easier.
- Take one cup of water and add half teaspoon of ginger juice. Drink it to get relief from symptoms.

- Drink plenty of water to hydrate yourself.
- Clean home regularly to keep dust at minimal levels.
- Avoid pets with fur or feather. When it is cold, cover your face with mask or cloth.
- Do only mild exercises which will not induce asthma. Such as: deep breathing and meditation. However swimming is not known to precipitate asthma. Also, if a particular activity triggers an asthma attack, it is advisable to take medication before initiating activity.
- Control heartburn and gastroesophageal Reflux Disease (GERD) by avoiding spicy foods and smoking to keep bronchial asthma under control.
- Avoid stress. As stress can precipitate the asthmatic attack.
- Avoid all the triggers for preventing yourself from the asthmatic attack. (refer Box 2.15)

Primary Care

When a patient presents with coughing, wheezing, breathlessness, or chest tightness, immediate steps are:

a) Stabilize the patient:

- Position in semi-Fowler's to ease breathing.
- Loosen tight clothing to reduce chest restriction.
- Provide humidified oxygen at 3–5 L/min if $SpO_2 < 94\%$.
- Obtain a quick history of bronchodilator or steroid use.
- Administer nebulized salbutamol 2.5–5 mg via oxygen-driven nebulizer every 20 mins for 1 hour.
- If moderate to severe, give oral/IV corticosteroids:

Hydrocortisone 100 mg IV or Prednisolone 40–50 mg oral.

- Avoid aminophylline as it is no longer first-line due to side effects.
- Monitor vital signs and SpO_2 regularly to assess improvement.

b) Collect baseline clinical data:

- Note onset, duration, and triggers of current episode.
- Past history of asthma and treatment adherence.
- Family history of asthma or allergies.
- Ask about interruption in controller therapy.

- Record any long-term medications being taken besides asthma drugs.
- Enquire whether patient has any related H/O causes/ triggers (as given in Box 2.15).

Referral:

Arrange for the referral of the patient to the specialty hospital for diagnostic investigations and appropriate treatment in case if patient fulfils the criteria given in the Box 2.18.

Box 2.18: Criteria for referral of Patient with Bronchial Asthma to a Specialty Hospital

i) Mild to moderate exacerbation with poor treatment response or even worsening of the condition despite above prescribed medications for atleast 24 hours.

ii) Critical cases of moderate exacerbations particularly the patients with high risk of asthma-related death.

iii) Severe or extremely severe episode of asthma exacerbation.

iv) For oxygen therapy and endo-tracheal intubation or if patient needs to be put on ventilator.

Check Your Progress 2

1) List down 10 triggers of Bronchial Asthma.

i) .....

ii) .....

iii) .....

iv) .....

v) .....

vi) .....

vii) .....

viii) .....

ix) .....

x) .....

2) Upon physical assessment, which signs and symptoms will you find in a patient with acute bronchitis?

i) .....

ii) .....

iii) .....

iv) .....

v) .....

3) List the steps of primary care which you will follow for taking care of a bronchial asthma patient at your level.

.....

.....

4) Fill in the blanks:

a) Bronchial asthma can be defined as .....
.....

b) Clinically an asthmatic patient will complaint of .....
which frequently occur and aggravate during .....
.....

c) The two vaccines which are available to prevent pneumococcal bacterial infection that is the most common cause of pneumonia are:

i) .....

ii) .....

(d) Bronchoscopy can be defined as .....

2.5 SCREENING, REFERRAL AND FOLLOW UP OF PATIENTS

We will discuss the conditions of patients with haemoptysis and acute chest pain in patients above 35 years of age.

2.5.1 Haemoptysis

Haemoptysis- (coughing up of blood) can be a sign of a serious medical condition. Infections, cancer, problems in pulmonary blood vessels or in the lungs themselves can be the various causes. Coughing up blood generally requires medical evaluation unless the haemoptysis is due to bronchitis. Haemoptysis can also occur from bleeding outside the lungs and airways. Severe nosebleeds or vomiting of blood from the stomach can result in blood draining into the windpipe (trachea). The blood is then coughed up, appearing as haemoptysis. In many people with haemoptysis, no cause is ever identified. Most people with unexplained haemoptysis are coughing up blood for not more than six months.

Causes of Haemoptysis :

The common conditions which give rise to coughing up of blood are given below in the Box 2.19.

Box 2.19: Causes of Haemoptysis

- Bronchitis (acute or chronic), the most common cause of coughing up blood. Haemoptysis due to bronchitis is rarely life-threatening.
- Pulmonary tuberculosis
- Bronchiectasis

- Lung cancer or non-malignant lung tumors
- Use of blood thinners (anticoagulation)
- Pneumonia
- Pulmonary embolism
- Congestive heart failure, especially due to mitral stenosis
- Trauma such as motor vehicle accident

Assessment of the patient with Haemoptysis

Whenever you will find any patient having the complaint of coughing up of bloodas community health nurse practioner, your first and the foremost responsibility is to thoroughly assess the patient by taking a comprehensive health history and doing a systematic physical examination including inspection, palpation, percussion and auscultation. The thorough respiratory assessment must be done to focus on determining the cause and amount of bleeding and any risk to breathing. You should proceed with the assessment of the patient as follows:

i) Ask the patient for how long he/ she is have been coughing up of blood and how it started.

ii) Ask the patient whether haemoptysis is associated with any of signs and symptoms given in the Box 2.20.

iii) Assess the patient for these signs and symptoms.

iv) Enquire whether patient has any related history of causes given in the Box 2.20.

v) Ask whether patient has been taking any long term drug therapy such as anticoagulants.

vi) Find out whether patient has received or left in between anti tubercle drug therapy.

Box 2.20: Signs and Symptoms of Haemoptysis

- Blood in mucous that lasts longer than a week, is severe or getting worse, or comes and goes over time.
- Chest pain
- Weight loss
- Soaking sweats at night
- Fever higher than 101^{o}F
- Shortness of breath with usual activity level

When to refer the patient with Haemoptysis?

At health centre you need to keep a constant watch on patients with bronchitis for having a small amount of blood in the mucous for less than a week and wait for their condition to improve. Because the most common reason for coughing up blood is acute bronchitis, which typically gets better on its own without treatment.

Remember:

If the coughing up blood does not subside after a week or 10 days and is accompanied by the above signs and symptoms (given in Box 2.20), it can be treated as a sign of a serious medical condition and the patient is referred to District hospital where cause is identified and treated to eliminate the threat of serious bleeding.

Referral of patient with haemoptysis for:

a) **Screening /Diagnostic Tests:**

Once the patient has been found at high risk, then without any delay patient must be shifted to a District hospital for screening to undergo following diagnostic tests to rule out the cause and treat it immediately:

- Chest X-ray to rule out the possible cause such as: a mass in the chest, areas of fluid or congestion in the lungs.
- Sputum test for examining acid fast bacilli.
- Tuberculin skin test for detecting mycobacterium tuberculosis.
- Computed tomography (CT scan). By producing detailed images of structures in the chest, a CT scan can reveal some causes for coughing up blood.
- Bronchoscopy. In which an endoscope (flexible tube with a camera on its end) is inserted (by an expert physician) through the nose or mouth into the windpipe and airways of patient to identify the cause of haemoptysis such as rupture of blood vessel or lung cancer etc. (Fig.2.16)

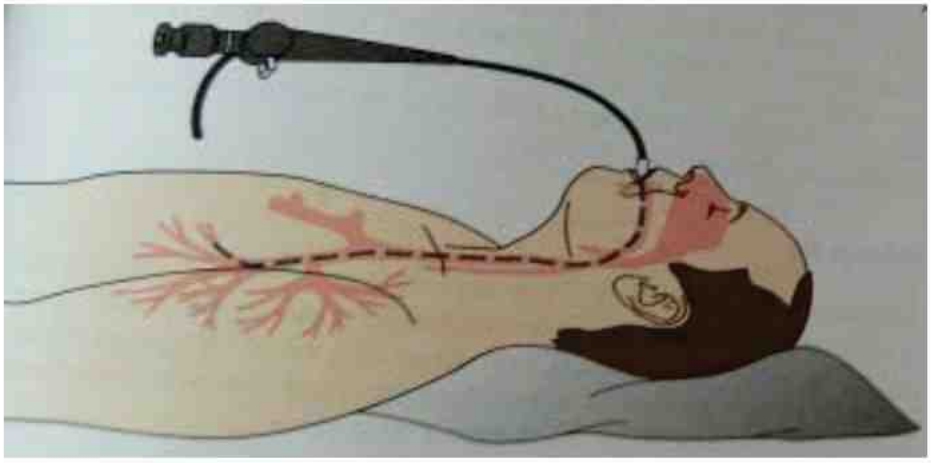


Fig. 2.16: Bronchoscopy

- Complete blood count (CBC) test for examining white and red blood cells including platelets in the blood.
- Urinalysis to detect any urine abnormalities.
- Blood chemistry profile test electrolytes and kidney function, which may be abnormal in some causes of haemoptysis.
- Coagulation tests. Alterations in blood's ability to clot can contribute to bleeding and coughing up blood.
- Arterial blood gas analysis to test the levels of oxygen and carbon dioxide in the blood. Oxygen levels can be low in people coughing up blood.
- Pulse oximetry. A probe (usually on a finger) tests the level of oxygen in the blood which can be low in these cases.

b) **Treatment:**

For people who are coughing up blood for more than a week, treatment aims to stop the bleeding and treat the underlying cause of haemoptysis as early as possible which include following interventions:

- Antibiotic therapy for pneumonia
- Anti microbial therapy for pulmonary tuberculosis
- Chemotherapy and/or radiation for lung cancer
- Steroid therapy for inflammatory conditions such as bronchitis
- People with excessively thin blood because of medication use, may require transfusion of blood products or other medications to curb blood loss
- Bronchial artery embolisation. In this procedure a catheter is inserted through the leg into an artery supplying blood to the lungs. By injecting dye and viewing the arteries on a video screen, the doctor identifies the source of bleeding. That artery is then blocked, using metal coils or another substance. Bleeding usually stops, and other arteries compensate for the newly blocked artery
- Bronchoscopy to treat some causes of coughing up blood. For example, a balloon is inflated inside the airway to stop bleeding.
- Surgery. Coughing up blood, if severe and life-threatening, may require surgery to remove a lung (pneumonectomy).

Note:

As a health worker you must be competent enough to assess the patient with acute chest pain for that it is important to know the possible causes of acute chest pain and their clinical findings and health history (given in Box 2.21)

2.5.2 Acute Chest Pain

Sudden pain in the chest is a common complaint in rural areas because diseases of respiratory system are more prevalent in rural community due to reduced resistance to infections in malnourished rural population. The condition can become more serious in young and aged than the adults and the middle aged.

The chest pain above 35 years of age can also be an urgent signal of a life threatening condition of heart disease leading to shortness of breath. Therefore as a health worker no time should be wasted in debating the cause of chest pain.

Causes of acute chest pain:

The common causes giving rise to chest pain very frequently are the diseases affecting the lungs and bronchi (Fig. 2.17) such as pneumonia, bronchitis, pulmonary embolism and heart diseases (Fig. 2.18) such as coronary artery disease (Fig. 2.19) including unstable angina and acute myocardial infarction; acute rheumatic heart disease, acute congestive heart failure. Besides other conditions which may lead to chest pain are gastro-esophageal acid reflux disease or anxiety disorders.

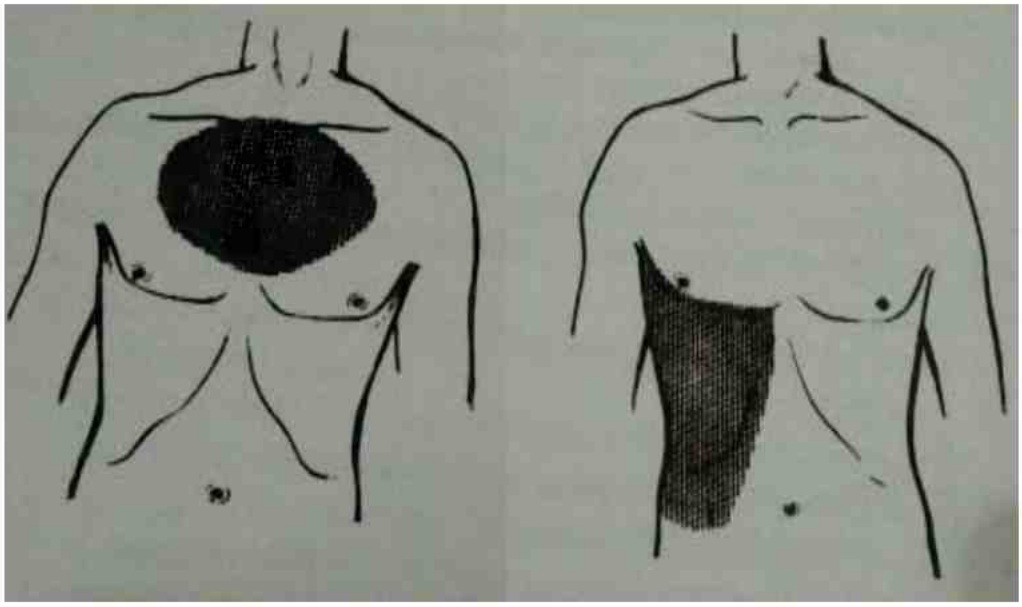


Fig. 2.17: (a) Pain in the Region of the Bronchi (b) Pain in the Region of the Lungs

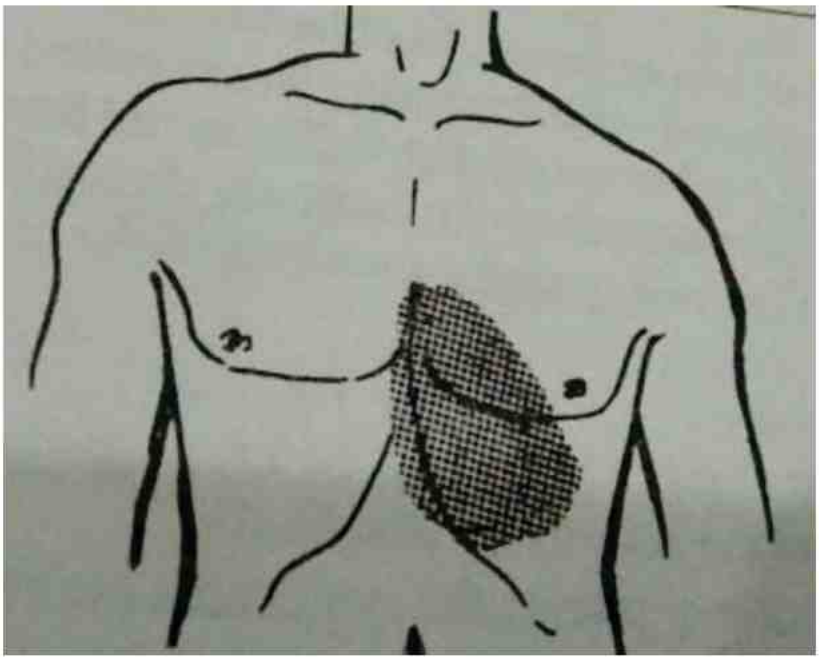


Fig. 2.18 : Pain in the Region of the Heart

Screening and referral:

One of the leading causes of death in the United States is the acute chest pain due to cardiac disease and 1.5 per cent of patients with chest pain presenting to a primary care settings have unstable angina or an acute myocardial infarction. The initial goal in patients presenting with chest pain is to determine if the patient needs to be referred for further investigations to rule out risk for coronary artery disease / pulmonary embolism.

Note:

Assess the patient's characteristics and risk factors quickly to determine whether the patient is at risk for coronary artery disease/ pulmonary embolism/ pericarditis /rheumatic heart disease/ heart failure. Such patients need quick referral to a speciality hospital for further investigation and treatment.

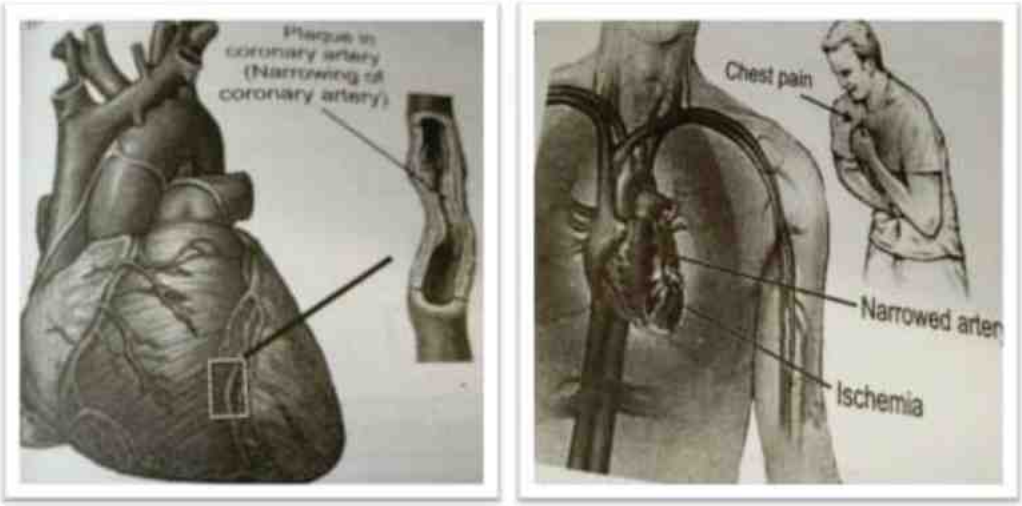


Fig. 2.19 : Patient Having Coronary Artery Disease

2.5.3 Screening of Patient for Acute Chest Pain

Once the patient with acute chest pain is brought to the health centre, the immediate responsibility of public health practioner and physician on duty is to stabilise the patient, take a thorough health history from patient and his/her relatives and do the complete physical assessment of patient's heart and chest to find out the cause of chest pain and any risk to coronary artery disease for immediate referral to a specialty hospital. The assessment of chest pain is made on following characteristics. (also refer Box: 2.21)

1) Clinical characteristics associated with an increased likelihood of acute myocardial infarction include male sex; age older than 60 years; diaphoresis; pain that radiates to the shoulder, neck, arm or jaw and a previous history of angina or acute myocardial infarction.

2) A twelve-lead electrocardiography is performed on the patient to find out any ST segment changes, left bundle branch block, presence of Q waves and T wave inversions which can increase the likelihood of acute coronary syndrome or acute myocardial infarction.

3) Patients with localised musculoskeletal pain that is reproducible by palpation, or pain reproducible by palpation in the parasternal/costochondral joints, likely have chest wall pain.

4) Gastro-esophageal acid reflux disease should be considered in patients with burning retrosternal pain, acid regurgitation, and a sour or bitter taste in the mouth.

5) Panic disorder and anxiety state often cause chest pain and shortness of breath.

6) Pericarditis / rheumatic heart disease/heart failure should be considered in patients with pleuritic chest pain that increases with inspiration or when reclining; pericardial friction rub and Electrocardiographic changes (diffuse ST segment elevation and PR interval depression without T wave inversion).

7) Pneumonia can be recognised by dullness of chest to percussion, fever, chest pain, and cough with sputum.

8) Pulmonary embolism should be assessed in patients with symptoms of chest pain, tachycardia and dyspnoea associated with clinical signs of DVT such as: asymmetric leg swelling, palpable calf pain or previous diagnosis of DVT with PE or bed rest immobilisation or surgery within the past four weeks.

Box 2.21: Assessment of Chest Pain

Causes	Clinical Findings and Health History
1. Acute myocardial infarction	• Strangulating chest pain radiates to shoulder, neck, arm or jaw • Third heart sound on auscultation • Hypotension
2. Chest wall pain (localised musculoskeletal pain)	• Localised muscle tension • Stinging pain • Pain reproducible by palpation • Absence of cough
3. Gastro-esophageal acid reflux disease	• Burning retrosternal pain • Acid regurgitation, • Sour or bitter taste in the mouth • One-week trial of high-dose proton pump inhibitor relieves symptoms
4. Panic disorder/anxiety state	• Single question: In the past four weeks, have you had an anxiety attack (suddenly feeling fear or panic)?
5. Pericarditis /rheumatic heart disease/ heart failure	• Pleuritic chest pain (increases with inspiration or when reclining and is lessened by leaning forward), • Pericardial friction rub
6. Pneumonia	• Dullness to percussion • Fever • Chest pain • Cough with sputum
7. Pulmonary embolism	• Heart rate greater than 100 beats per minute • Dyspnoea and chest pain • Clinical signs of DVT (asymmetric leg swelling, palpable calf pain) OR • Previous diagnosis of DVT with PE OR • Bed rest immobilisation OR • Surgery within the past four weeks

Treatment and referral for the patient with acute chest pain:

Whenever a person with acute chest pain reports at your PHC, as health worker you have to decide what assistance you can give depending upon the history and signs and symptoms presented by the patient. The immediate steps to be taken to stabilise the patient's condition include:

1) Make the patient to lie down in a comfortable position.

2) Start I/V line for giving drugs and fluids.

3) Administer humidified oxygen @ 3–5 l/mt if patient has shortness of breath.

4) Watch and record vital signs (TPR and blood pressure) every 2 hourly

5) Observe the patient continuously for the intensity of chest pain.

6) Get the patient's emergency investigations such as: blood tests, coaglogram, chest X ray, ECG done to find out the cause of chest pain.

7) Give the following prescribed drugs if the patient is found with pneumonic episode:

   a) Antibiotics (amoxicillin, levofloxine, doxycycline)

   b) Cough expectorants (Benadryl)

   c) Non steroid anti inflammatory analgesics (Ibuprofen)

8) Give inj. Morphine, and oral/ sublingual nitrates. Start nitro-glycerine I/V infusion as prescribed by physician if the signs and symptoms and history of patient support the chest pain due to acute coronary artery disease.

9) Refer the patient to district hospital if the patient:

   a) Does not improve with the treatment.

   b) Breathing is painful and difficult.

   c) Gives history of cough for more than two weeks or above.

   d) Upon assessment is found high risk for acute coronary syndrome/ pulmonary embolism/ pericarditis /rheumatic heart disease/ heart failure.

Check Your Progress 3

1) List the signs and symptoms of Haemoptysis.

   a) .....

   b) .....

   c) .....

   d) .....

   e) .....

   f) .....

2) Mention the various steps to be followed for doing assessment of a haemoptysis patient:

   i) .....

   ii) .....

   iii) .....

   iv) .....

   v) .....

   vi) .....

3) List the causes of acute chest pain:

   a) .....

   b) .....

   c) .....

   d) .....

4) Fill in the blanks:

   a) The patient with acute myocardial infarction has ..... chest pain which radiates to .....

   b) In pulmonary embolism patient the chest pain may be associated with following signs:

   i) .....

   ii) .....

   iii) .....

   c) In ..... a probe is connected to a finger to test the ..... in the blood.

   d) ..... is the most common cause of Haemoptysis.

2.6 LET US SUM UP

In this unit you have learnt the meaning, causes and signs and symptoms of some of the common acute upper respiratory tract infections such as: catarrh (rhinitis), common cold (viral rhinitis), sinusitis, pharyngitis, laryngitis and tonsillitis as well as acute lower respiratory tract infections such as: bronchitis, pneumonia and bronchial asthma. You have also learnt how to assess and manage the patients with these conditions at primary level and when the referral of these patients and further treatment is needed.

You have also learned screening, referral and follow-up of Haemoptysis and Acute Chest pain in patients above 35 years of age.

2.7 MODEL ANSWERS

Check Your Progress 1

1) The common signs and symptoms of Upper Respiratory system Infections are:

   a) Running nose

   b) Nasal congestion

   c) Sneezing

   d) Postnasal drip

   e) Cough

f) Sore throat

g) Headache

h) Difficulty in breathing

i) Fever

j) Fatigue

k) In addition to above signs and symptoms, the patient has other symptoms associated with specific condition/ disease.

2. The patient with common cold is treated with the primary care as follows :

   a) Give him/ her decongestants (such as : Chlorotone 1 tablet 3 times a day) to relieve the nasal congestion.

   b) Give paracetamol tablet/syrup for headache and body aches.

   c) Ask the patient to take lemon juice extracted from one lemon and a teaspoon of honey in a glass of lukewarm water for few days to relieve cold, cough and flu.

   d) Ask the patient to sniff few drops of eucalyptus oil placed on a clean handkerchief which will reduce nasal congestion.

   e) Advise the patient to maintain proper hygiene to avoid the infection from spreading such as: covering mouth and nose during coughing and sneezing, wiping running nose with separate handkerchief and proper hand washing.

3. The following are the various instructions which will be given to the patient with acute laryngitis to keep his/her vocal cords healthy.

   - Keep vocal cords moist and free from irritants.
   - Use a humidifier or inhale steam to alleviate dryness.
   - Give rest to the voice.
   - Correct the way you use your voice and any abnormal speech patterns that place stress on your vocal cords and voice box.
   - Get vocal therapy to correct the abnormal speech.
   - Avoid screaming or talking loudly for long periods of time.
   - Refrain from whispering, which can strain the voice.
   - Drink plenty of fluids.
   - Gargle with salt water.
   - Avoid smoking and being around people who smoke.
   - Avoid alcohol and caffeine intake.
   - Wash the hands regularly to avoid catching colds and upper respiratory infections.
   - Try to avoid toxic chemicals in the workplace if possible.
   - Try to avoid clearing the throat. This increases both mucous production and irritation.
   - Avoid decongestants which can dry the throat.

- Keep sucking on lozenges to keep the throat lubricated.
- Avoid seasonal allergies.
- Manage acid reflux with medications and healthy food habits.
- Avoid taking antibiotics for cold, flu or other viral respiratory infections, as these will usually go away of their own.
- It may take up to 2 weeks for your voice to completely return.
- Take prescribed antibiotics if the laryngitis is associated with a bacterial infection.

4) Fill in the blanks:

a) The various risk factors for pharyngitis include:

flu, smoking, exposure to second-hand smoke, frequent sinus infections and allergy.

b) The streptococcal throat infection can result in the serious complications of Rheumatic fever and kidney disease.

c) A collection of pus around the tonsils called peritonsillar abscess is most common complication of viral tonsillitis which occurs when the infection becomes deep-seated within the tonsil.

d) Laryngoscope is an instrument which is having a thin flexible tube with a microscopic camera and is passed by doctor through the mouth or nose to visualise the voice box for the 3 signs of laryngitis: such as

(i) Redness (ii) lesions on the voice box (iii) widespread swelling.

Check Your Progress 2

1) The 10 triggers of Bronchial Asthma are:

a) Smoking and second hand smoke

b) Infections such as colds, flu or pneumonia

c) Allergens such as food, pollen, dust mites and pet dander

d) Physical exertion

e) Air pollution and toxins

f) Weather, especially extreme change in temperature

g) Drugs such as aspirin, NSAIDs and beta-blockers

h) Food additives

i) Emotional stress

j) Singing, laughing or crying

2) Upon physical assessment, the acute bronchitis patient may usually have following signs and symptoms:

a) Hacking cough with phlegm

b) Chest discomfort or Soreness

c) Occasional shortness of breath

d) Fever (usually less than 101° F)

e) Fatigue

f) Mild headache

g) Body aches

h) Watery eyes

i) Sore throat

3) The various steps of primary care to be given to a bronchial asthma patient include:

1) Make the patient comfortable by giving semi fowler's position to facilitate the full lung expansion and air exchange.

2) Loosen the clothes to prevent chest tightness.

3) Start a slow I/V infusion for giving emergency drugs and preventing dehydration.

4) Start humidified oxygen therapy at the rate of 3 to 5 liters/ minute (if available)

5) Start nebulisation with short acting beta 2 agonists like salbutamol, with or without anticholinergis ipratropium.

6) Obtain quick history of recent medication used particularly bronchodilator, steroid or inhaler.

7) Administer Inj. aminophylline 250 to 500 mg slowly through I/V or through I/V drip in 50 to 100 ml of dextrose 5% under supervision of physician on duty. The patient may also need Inj. hydrocortisone depending upon the condition of the patient.

8) Check the vital signs (temperature, respiration, pulse rate/ heart rate and blood pressure) as well as breath sounds constantly to see if the patient's vital signs are stabilised and his/her breathing has improved.

9) Obtain a comprehensive baseline data about the illness including:

a) Onset of signs and symptoms, duration, precipitating factors and treatment (if taken) of bronchial asthma

b) Previous H/O bronchial asthma or any other illness

c) Family H/O bronchial asthma or any other illness

d) Assess the patient for signs and symptoms

e) Enquire whether patient has any related H/O causes/ triggers

f) Find out whether patient has left the treatment of asthma in between.

g) Ask whether patient has been taking any long term drug therapy other than the asthmatic drugs.

4) Fill in the blanks:

a) Bronchial asthma can be defined as a reversible, bronchiospasm in which there is inflammation and narrowing of bronchial lumen due to its hyperactive response to a certain stimuli.

b) Clinically an asthmatic patient will complaint of periodic "attacks" of coughing, wheezing, shortness of breath and chest tightness which frequently occur and aggravate during night or in the morning .

c) The two vaccines which are available to prevent pneumococcal bacterial infection that is the most common cause of pneumonia are:

i) Prevnar vaccine (pneumococcal conjugate vaccine)

ii) Pneumovax vaccine (pneumococcal polysaccharide vaccine)

d) Bronchoscopy can be defined as an invasive diagnostic procedure in which a thin, flexible, and lighted tube is inserted through the nose or mouth to directly examine the infected parts of the lung.

Check Your Progress 3

1) The haemoptysis patient may have following signs and symptoms :

a) Blood with cough

b) Chest pain

c) Weight loss

d) Soaking sweats at night

e) Fever higher than 101^{o}F

f) Shortness of breath with usual activity level

2) The following are the various steps to be followed for doing assessment of a haemoptysis patient:

a) Ask the patient for how long he/ she have been coughing up of blood and how it started.

b) Ask the patient whether haemoptysis is associated with any other signs and symptoms such as: chest pain, weight loss, night sweats, fever, shortness of breath.

c) Assess the patient for these signs and symptoms.

d) Enquire whether patient has any related history of causes.

e) Ask whether patient has been taking any long term drug therapy such as anticoagulants.

f) Find out whether patient has received or left in between anti tubercle drug therapy.

3) The common causes giving rise to acute chest pain are :

a) Pneumonia

b) Bronchitis

c) Pulmonary embolism

d) Coronary artery disease

4) Fill in the blanks:

a) strangulating, shoulder, neck, arm or jaw.

i) Heart rate greater than 100 beats per minute

ii) Dyspnoea

iii) Clinical signs of deep vein thrombosis (asymmetric leg swelling, palpable calf muscle pain)

b) In pulse oximetry oxygen

c) Bronchitis

2.8 KEY WORDS

Antihistamine : A substance that blocks the release of histamine which induces allergic reaction and inflammatory reaction.

Antiviral : Destructive to viruses

Assessment : It includes health history and physical examination of the patient

Auscultation : A method of physical examination in which body sounds are listened by using stethoscope.

Bronchodilator : A substance that relaxes contractions of the smooth muscle of the bronchioles to improve ventilation of lungs.

Contagious : Spread of infection or disease from person to person by direct or indirect contact.

Confusion : Disorientation to time, place and person

Congenital : Present at birth

Cyanosis : Bluish discolouration of skin or mucous membrane.

COPD : Chronic Obstructive Pulmonary Disease.

Decongestant : A substance that reduces congestion.

Delirium : A state of disorientation.

Diaphoresis : Profuse sweating.

Dyspnoea : Difficulty in breathing.

DVT : Deep vein thrombosis.

Endo-tracheal intubation : Insertion of airway catheter through the mouth or nose into the trachea.

Exacerbation : An increase in the seriousness of the disease or disorder as marked by greater intensity in the signs and symptoms of the patient being treated.

Expectorant : A substance that promotes the ejection of sputum.

Flu : Any viral infection, especially of respiratory system.

Gaseous exchange : Involves delivering oxygen to the tissues through the blood-stream and expelling waste gases such as carbon dioxide during expiration.

Hormone : A substance secreted by endocrine gland.

Inflammation : A protective response of the body tissues to irritation or injury.

NSAID : Non Steroid Anti Inflammatory Drug.

Malignant	:	Cancerous
Nosocomial	:	Pertaining to hospital
Orthopnea	:	Inability to breath easily except in an upright position.
Palpation	:	Feeling the part of body with the hands.
Phlegm	:	It is a slimy substance made by the lining of the bronchial tubes.
Percussion	:	Technique of physical examination which is performed by striking finger of one hand, placed over the organ/body part with finger of another hand.
Perfusion	:	It is the filling of the pulmonary capillaries with blood.
Polyp	:	A fleshy growth that projects from the surface of mucous membrane.
PE	:	Pulmonary Embolism.
Reflux	:	An abnormal return flow of fluid.
Regurgitation	:	Return or backward flow food/acid /fluid or blood from stomach to esophagus and mouth
Retro-sternal	:	Behind the sternum
Sarcoidosis	:	A chronic granulomatous disease containing growths of non-necrotizing epithelial cells.
Tachycardia	:	Increased heart rate (> 100 beats/ minute).
Steroid	:	A substance containing hormone.
Ventilation	:	Movement of in or out of airways.
Vasomotor	:	Pertaining to nerves and muscles that control the calibre of blood vessels.

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UNIT 3 COMMON CONDITIONS -3 – HEART, URINARY SYSTEM AND BLOOD DISORDERS

Structure

3.0 Introduction

3.1 Objectives

3.2 Anatomy and Physiology of Heart

- 3.2.1 High Risk Factors of Heart Diseases
- 3.2.2 Common Heart Diseases and Their Signs and Symptoms
- 3.2.3 Role of Health Worker in Prevention and Management of Heart Diseases
- 3.2.4 Taking Appropriate Decision and Referral
- 3.2.5 Care of Patients Who are Already Suffering from Heart Diseases

3.3 Blood Disorders

- 3.3.1 Some Common Blood Disorders
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- 3.3.3 Management of Blood Disorders
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3.4 Urinary Tract Infections

- 3.4.1 Assessment for Urinary Tract Infections
- 3.4.2 Treatment
- 3.4.3 Urinary Tract Infection in Children

3.5 Let Us Sum Up

3.6 Model Answers

3.7 References

3.0 INTRODUCTION

In this unit we will discuss about conditions related to heart, blood related disorders and Urinary Tract Infection. Heart diseases are those diseases or condition which affects or damages the heart or blood vessels. Sometimes the word "cardiovascular diseases" is used to describe a number of diseases and conditions that affect the heart and vessels.

Blood related disorders are disorders of Erythrocytes (red blood cells- RBCs), leukocytes (white blood cells), and platelets (thrombocytes) and clotting factors disorders. Blood as compared to other organs, is unique in the sense that it is fluid. Blood related disorders involve entire human body. Patients with blood disorders may have few or no symptoms. Thus an understanding of development of diseases in patient and ability to assess the patient needs is very important.

Urinary Tract Infections include a wide range of clinical entities, including asymptomatic bacteriuria (ABU), cystitis (infections of the urinary bladder), prostatitis (infections of the prostate), and pyelonephritis (infections of the kidneys). Both UTI and ABU signify the presence of bacteria in the urinary tract, usually accompanied by white blood cells in the urine. In ABU there are no symptoms

attributable to the bacteria in the urinary tract and does not usually require treatment, while UTI typically implies symptomatic disease that requires antimicrobial therapy. Much of the literature concerning UTI, particularly catheter-associated infection, does not differentiate between UTI and ABU.

3.1 OBJECTIVES

After completing this unit, you should be able to:

- enumerate common heart diseases;
- list high risk factors of heart diseases;
- identify symptoms and signs of heart conditions;
- carry out assessment of heart conditions;
- provide appropriate care of individual, community and referral;
- explain and identify important blood disorders;
- identify clinical manifestations of various blood disorders;
- provide timely appropriate referral; and
- counsel patients and increase awareness about blood disorders in community;
- identify urinary tract infections; and
- provide care to patients suffering from UTIs.

3.2 ANATOMY AND PHYSIOLOGY OF HEART

Heart is the hollow and muscular organ located in center of chest, between two lungs. Its approximately weighs 300 gram, roughly of size of fist of individual. It pumps blood through the blood vessels of the circulatory system. Blood provides oxygen and nutrients to body, and also assists in the removal of metabolic wastes. Heart is made of four chambers, two atria and two ventricles. The pumping action of heart is because of rhythmic contraction (systole) and relaxation (Diastole) of its muscular wall. During systole (contraction of heart) all the chambers of heart are squeezed to eject blood in the blood vessel. During diastole (relaxation of heart) the heart chambers fill with blood which in turn will be ejected from heart to blood vessel during systole. One systole and one diastole called as one beat. Resting adult heart beats 60–80 times per minute. There are blood vessels which supply blood to heart called coronary arteries.

3.2.1 High Risk Factors of Heart Diseases

There is no a single cause of heart disease. It occurs because of accumulation of multiple high risk factors. There are some risk factors which can be changed (modifiable) and some cannot be changed (non modifiable) risk factors. The risk factors which cannot be changed are older age, sex, ethnicity and family history, but this is essential to know who are at risk of heart disease by understanding modifiable and non modifiable risk factors. The main risk factors for heart disease are. (Box 3.1)

Box 3.1: Risk factors for heart disease

Non modifiable risk factors	Modifiable risk factors
• Age • Sex • Genetic factors: Family history of heart attacks and strokes at an early age. • Ethnicity • A previous heart attack	• Overweight (Obesity) • Unhealthy diet • High blood pressure. • High blood cholesterol (high fat in blood) • Diabetes (High blood sugar) • Tobacco use • High alcohol intake • Physical inactivity • Stress • Some medicines • Some diseases like kidney diseases • Environmental factors: Increased stress, extremes of condition like too much high altitude (height)

Let us discuss the risk factors for heart diseases in terms of non modifiable and modificable as given below:

Age: Risk increases with age due to vascular and metabolic changes.

Sex: Adult men have a higher risk compared to women, but after menopause, the risk becomes nearly equal.

Genetic factors: A family history of early heart disease increases risk due to shared genetic traits, lifestyle, and diet.

Obesity: Excess body weight, especially abdominal fat, raises risk. Body Mass Index (BMI) = weight (kg) ÷ height (m^2). For Indians, 18.5–22.9 kg/m^2 is normal; 23–24.9 is overweight, and ≥25 is obesity. Waist circumference >90 cm (men) and >80 cm (women) is a key indicator.

High blood sugar (Diabetes): People with diabetes have 2–3 times higher risk of heart disease. Diagnostic cut-offs:

Fasting blood sugar ≥126 mg/dL

Random blood sugar ≥200 mg/dL

2-hour post-meal ≥200 mg/dL

Impaired glucose tolerance: 140–199 mg/dL post-meal

High blood pressure (Hypertension): A major risk factor.

Normal: <120/80 mmHg

Elevated: 120–129/<80 mmHg

Stage 1 HTN: 130–139/80–89 mmHg

Stage 2 HTN: ≥140/≥90 mmHg

Unhealthy diet: High salt (>5 g/day), high saturated/trans fats, refined foods, and low-fiber diets increase risk.

Alcohol use: Excessive alcohol intake raises blood pressure and heart risk.

Smoking: Damages blood vessels, accelerates plaque buildup, and lowers vessel elasticity.

Physical inactivity: Leads to obesity and fat deposition in vessels, forming plaques and narrowing arteries.

3.2.2 Common Heart Diseases and their Signs and Symptoms

Let us now discuss heart attack, heart failure, arrhythmia as given below:

- **Heart Attack (Ischemic Heart disease/ Coronary artery disease/ Angina Pectoris)**

Heart attack is one of the leading killers of both men and women in our country. The good thing is that the chances of surviving a heart attack are greater if people get immediate proper and timely medical care. These treatments can save lives and prevent disabilities. As a health worker, you play an important role in educating your community about the warning signs of a heart attack, the importance of getting immediate medical help, and take steps to surviving a heart attack.

i) **What is heart attack?**

A heart attack can take place when the blood supply to a part of the heart is stopped or hazardously reduced. The blood vessels which supply the heart muscle are called coronary arteries. Partial or complete block of coronary artery disease is the main cause of heart attack, when one or more arteries become diseased by formation of plaques in coronary arteries resulting in reduced blood flow. The plaque can obstruct the blood flow of an artery slowly, or suddenly by pieces of plaque may break away and cause a blood clot. Due to blocked or reduced blood supply the cells of the heart muscle start dying. This affects the rhythm and function of heart. So it cannot pump enough blood to meet body requirement and meet need of heart muscles requirement. So the part of heart gets damaged. This reduced blood flow can kill a person or can cause heart damage.

If he survives, his capabilities to perform his daily routine gets affected. The outcome depends on how much of the heart is damaged and how quickly a person gets medical treatment. Here timing is important! so prompt and timely treatment can save life. The sooner a heart attack is treated, the greater a person's chances of surviving. Suddenly heart can stop. Unless patient treated immediately, person may die immediately.

Warning signs and symptoms of a heart attack

- **Chest pain or discomfort:** Sudden severe chest pain with no known cause is major suspicion of heart attack. It may be of dull aching, choking, strangling, cramping, stabbing type of pain, pressure, heaviness or just discomfort. It

may be mild to severe. It may start suddenly or slowly. Some time it is silent as in diabetes. The chest pain may radiate to jaw, neck, arm, shoulders or back. It may associate with raised heart rate, difficulty in breathing, palpiatation, nauseas and increase or decrease blood pressure.

Angina is chest pain or discomfort that a person has if the heart does not get enough blood. Usually angina is felt as uncomfortable pressure, fullness, squeezing or pain in the center of the chest. A person may also feel the discomfort in the neck, jaw, shoulder, back or arm. These feelings are also signs of a heart attack, but if it is angina, the pain or discomfort will last only a few minutes before going away. If these symptoms last longer, it could be a heart attack. Following symptoms may be present with or without chest pain.

- Shortness of breath.
- Palpitations (unpleasant awareness of own heartbeat)
- Feeling weak, light-headed, or faint
- Confusion
- Difficulty in understanding

Immediate management

If you find any suspected case of heart attack do not wait call doctor and equipped ambulance and **refer patient to hospital management of heart attack is possible**. Also give 300 mg of aspirin by mouth if available. Transportation in equipped ambulance is the safest and best way to reach to the hospital. Do not let the patient walk because it may worsen the attack. Prefer wheel chair and ambulance. Put on oxygen mask and start oxygen. If you are sure about heart attack then give Sorbitrate sublingually and analgesic to relieve pain. Heart may stop beating during a heart attack. This condition is called sudden cardiac arrest. In this case you may need to give cardiopulmonary resuscitation.

Diagnosis of heart attack

The diagnosis is made by relevant history, physical exam and some investigation like electrocardiogram (ECG) and some blood test of certain markers for damage to the heart.

Treatment

The first treatment given will be medicines that dissolve clots, pain killers, Oxygen. To work best these medicines need to be given within three hours of a heart attack. If this treatment is not given or does not work, other procedures (methods) may be needed.

Unfortunatly, the most people wait several hours or even days before seeking medical attention. There may be delay in decision making too. The longer the delay in getting treatment, the more damage the heart is likely to have. Quick reactions to signs of a heart attack can greatly improve the chance of surviving the heart attack. We will discuss taking care of person after a heart attack at the end.

ii) **Heart failure**

Heart failure is inability of heart to pump blood efficiently to supply oxygenated blood and nutrients to rest of body. Blood moves more slowly through the body and less oxygen and nutrients reach the body and the brain. This results in easy fatigability and shortness of breath. The daily routine gets affected. When the

heart cannot pumps blood efficiently the blood cannot move in vessels properly so it may get stagnant blood vessels, in lungs and leak into the lungs and dependent parts of body. The fluid causes congestion and makes it hard to breathe. Therefore individuals with heart failure can develop swelling in the feet, in ankles, legs when they stand long or stomach and can suddenly gain weight. Therefore it is also called as "congestive heart failure". Collection of fluid in lung causes breathing difficulty.

Warning signs of heart failure

If people have heart failure, it is more likely that they must be a diagnosed case of heart or other disease.

- Breathlessness on exertion, laying down in bed or at rest. The shortness of breath when you are active, and while resting, and sleeping is one of major symptom of heart failure. There may create difficulty while sleeping so patient wants to elevate his head end by using more pillows. (Patient feels comfortable in upright position rather than lying down flat)
- Swelling in feet, ankle and legs. If we press on ankle or upper surface of feet with thumb there will pitting at pressed area, it called as pitting oedema.
- Increased swelling of feet, ankles, legs, and abdomen. There may be sudden weight gain (1kg or more in one day, 2.4 kg or more in one week).
- Palpitation (Awareness of own hearbeat): There may be faster heartbeat and one may feel like as if the heart is running fast.
- Pain in the abdomen.
- Easy fatigability.
- Confusion.
- Repeated, dry cough, especially when they are lying down.
- Blood in the cough.

What to do when encounter patient of heart failure?

The timely referral of patient with warning signs of heart failure can save life of patient and improve quality of life.

Confirmation of heart failure

The confirmation of heart failure is made by relevant history, physical examination and few investigations like chest X ray, ECG, echocardiography and some blood investigation.

iii) **Arrhythmia or irregularity of rhythm (Atrial Fibrillation and ventricular fibrillation)**

An arrhythmia is a problem with the rate or rhythm of the heartbeat. During an arrhythmia, the heart can beat too fast, too slow, or with an irregular rhythm. Normally, the heart contracts and relaxes in regular, evenly timed beats. It keeps a steady rhythm–about 60 to 100 beats per minute. Arrhythmias may be atrial (heart's upper chambers) or ventricular (heart's lower chambers) in origin. Atrial fibrillation is the most common type of arrhythmia. The irregular beating of heart may cause difficulty in pumping blood properly. For several different reasons, the heart sometimes begins beating irregularly, and it may beat too fast or too slow.

The most common cause is diseased heart valves. The risk of developing arrhythmias increases if patient is having, or have had, other pre-existing heart problems like heart failure, high blood pressure, diabetes, heart attack, Coronary artery disease (blockage of blood vessels in the heart) etc.

Signs and symptoms of Arrhythmias

Some people may not have any symptoms. Some may have one or more of the following signs:

- Palpitation: fast or irregular heartbeat
- Shortness of breath
- Chest discomfort or pain
- Lightheadedness or dizziness.
- Extreme weakness

Management

Check pulse. Try to see rhythm of heartbeat or pulse rate. (An easy way to see the regularity of the rhythm is either by palpation of the pulse, or auscultation of the precordium). If it is irregular then please refer this patient to health facility for further evaluation by doctor. Assurance to patient has positive impact.

Treatment for arrhythmia includes anti arrhythmic drugs or electric shock through special machine called as defibrillators. Some time needs surgery for pacemaker installation.

iv) **Hypertension (High Blood Pressure)**

Blood pressure is the force of blood pushing against the walls of arteries as the heart pumps blood through these blood vessels. If this pressure goes up and stays continuously high over a period of time, it can damage the body. High blood pressure is very common. But less than half of all people with high blood pressure are treated for blood pressure and taking medicine. The high blood pressure is dangerous because it is a separate heart diseases as well as its a risk factor for other heart diseases. It is a condition where heart has to pump blood very forcefully than normal to push blood through stiff vessels to get to all parts of the body. Often the heart must work harder if the arteries are too narrow or stiff or there is too much fluid in the body. If high blood pressure is not treated, then heart has to work very hard in adverse condition. A heart increases in size and become weaker.

As we discussed the normal blood pressure for an adult is systolic blood pressure (SBP) of <120 mm of Mercury (Hg) and diastolic blood pressure (DBP) <80 mm of Hg, which is written as 120/80 mm of Hg ("120 by 80 mm of Hg"). Anything more than this is either considered as prehypertension (SBP 120-139 mm of Hg or DBP 80-89 mm of Hg) or hypertension stage I (SBP 140-159 mm of Hg or DBP 90-99 mm of Hg) and hypertension stage II (SBP e"160 mm of Hg or DBPe"100 mm of Hg). We will learn about cautions to be taken while measuring blood pressure.

Signs and symptoms of Hypertension

Generally people suffering from hypertension will not have many symptom, unless it is of very severe grade. Therefore it remains undetected and silently it damage

the health of individual, therefore it is called as silent killer too. Some of the patient may have vague complaints like headache, generalise body pain, easy fatigability, heaviness in head etc. But unless we measure blood pressure we will not be able to know the blood pressure status of individual.

Record of blood pressure

It is simple but important skill, and needs practice to get correct measurement. It is important to take the blood pressure the right way and correct measurement. Knowing how to take a blood pressure will pay more than just guessing about hypertension. The instrument we use for blood pressure measurement is called sphygmomanometer. There are different types of instruments for measuring blood pressure available in market. Measuring BP in adults has two parts. One part is the blood pressure cuff, and the other part is the dial or monitor that shows the blood pressure numbers.

Preparation for measuring BP:

Before measuring Blood Pressure you need to know the following:

1) Do not measure BP immediately as person comes to you for BP measurement. Allow him to settle down. Because there is always a fare probability to measure higher blood pressure after walking, running, climbing stairs, eating large meal. Wait for 20–30 mins.
2) Check whether the person had coffee, tea or had smoked just minutes before the visit. If yes then wait for 20–30 mins.
3) Make him /her comfortable. Explain about the importance of BP measurement.
4) Avoid measuring BP on the side of injured arm, post- mastectomy side, AV fistula made for dialysis.
5) Check cuff of BP apparatus. Deflate it if it was inflated. Check mercury column, where it is? Is it at 0 (zero) mm of Hg marking? If no, release any pressure in cuff. If mercury column is at higher marking then probably you will record falsely higher BP of individual.

Steps in measurements

1) Ask individual to sit comfortably without any discomforting posture. You can take blood pressure while laying down too. Talk with person. Give time to the patient to relax.
2) Keep forearm of patient on table with palm facing upward. Keep cuff and instrument at same level as the heart.
3) Put the proper adult size blood pressure cuff on the patient's arm.
4) Place stethoscope, ear piece in both ear and diaphragm at inner side of elbow fold slightly toward chest of person where you can feel brachial artery pulsations.
5) Lock the knob on pressure bulb and Squeeze it to raise pressure in pressure cuff tied to arm. While inflating the cuff listen the sound by stethoscope. While inflating at some point you will stop listening sounds through stethoscope. Inflate it for more than 20–30 mm of Hg more from this point.

6) Then start deflating cuff slowly while waiting to listen sounds through stethoscope again.

7) Note down the blood pressure numbers corresponding where sound appears (record as systolic BP) and disappears again (record as diastolic BP).

8) Remove the cuff from the person's arm.

If you are confused or not able to measure it properly then you can repeat measurement after waiting for a while. Interpret the reading as discussed previously.

Management

Refer patient to doctor for further evaluation. This patient may need thorough examination and a few investigations to know the cause of hypertension in this patient. If we could find some cause of hypertension then we call it as "Secondary hypertension" that is the hypertension is caused by some other problem say kidney problem. If we could not find any cause then it is "Primary or essential hypertension".

Early treatment has positive outcome. So it should be encouraged to take treatment for preventing future heart problem and other complications. Care of known hypertensive patient we will discuss at the end of this module. Get investigated for ECG, chest X-ray, urine routine specifically urinary protein and sugar, serum creatinine.

There are many antihypertesion drugs available like thiazide diuretics, loop diretics, potassium sparing diuretics, aldosteron receptor blockers, beta adrenergic blockes, Angiotensin – converting enzyme (ACE) inhibiters, angiotensin II antagonist, calcium channel blockers. Generally treatment is started with Thiazide diuretics. But most of the time patient land up in muple drugs with rationale combination required.

3.2.3 Role of Health Worker in Prevention and Management of Heart Diseases

In community you may be the first person to be contacted for heart problem. As we studied, almost all heart problems need to be attended promptly without wasting time. Your right decision at given point of time can save patients' life.

- Discuss with individual or community members, regarding risk factors present in individuals or in the community.
- Create awareness about risk factor of heart disease.
- Modify the modifiable risk factors it will prevent good chunk of heart diseases in the community.
- Risk factors
- Living healthy life style
- Diet
- Work on risk factors in individual and community.
- Encourage community and individual to adopt healthy and active life style.
- Encourage people to have ideal weight. Discourage tobacco alcohol use in any form. Also discourage people taking alcohol. Help them to quit these addictions with the help of counsellor, doctor or psychiatrist.

- Advise all high risk people to get investigated for hypertension, high blood sugar, and high blood cholesterol.
- Screen people for high blood pressure, high blood cholesterol, and high blood sugar as advised in national programme for prevention and control of Cancer, diabetes, cardiovascular diseases and stroke guidelines. In this national programme (opportunistic screening is advised).
- During the camps/designated day health worker shall examine persons at and above the age of 30 years for alcohol and tobacco intake, physical activity, blood sugar and blood pressure.
- During the examination, health worker shall also carry out the measurement of weight, height, and calculate Body Mass Index (BMI) etc.
- Encourage people to adopt daily exercise or brisk walk to prevent development of risk factors.
- Encourage to play outdoor activities and sports and lose weight if overweight.
- Diet help individuals to adopt healthy dietary habit.
- Advise them to reduce salt intake <5gm/day in their diet. Avoid too much sweets and fatty food, fried food items. Include vegetables and fruits in diet.
- **Role in diagnosis of heart disease**

  Your knowledge of warning symptoms and signs of heart disease will make huge difference in patient's life. Keep high suspicion for symptom and signs of heart disease. Do not worry about being wrong, if your suspicion is wrong it will be bit embarrassing but if your suspicion was right then you will save life! You being wrong will still be an opportunity for screening of the patient and reassure them.

3.2.4 Take Appropriate Decision and Referral

- A timely right decision is must for positive outcome of heart diseases.
- Know health facilities in your area where heart problems can be dealt properly.
- Have communication with doctors in your working area.
- Have ambulance number for emergency.

3.2.5 Care of Patients Who are Already Suffering from Heart Disease

As mid level health care provider, you should give psychological support to the patient. Encourage them to have positive attitude to have good outcome. Understand what were specific advice given by doctor. Encourage them to stick the treatment protocol and medicine prescribed by doctor. Monitor risk factor in individual. Take routinely BP, check blood sugar, body weight of patient. Encourage them to have healthy life style. Advice them to adopt healthy dietary practices in their day to day life. Help them to quit alcohol and tobacco addiction. Though it is not easy but de-addiction will have very positive impact on outcome. Help them to keep all essential medicine in sufficient quantity. Clear the importance of routine follow up with doctor. Help them to keep good follow up. Understand any problem they are facing with medicine. Link them to doctor for any quarry.

Check Your Progress 1

1) What are the risk factors of heart disease?

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2) What are the symptoms of heart attack?

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3.3 BLOOD DISORDER

Blood is composed of cells and plasma. Cells include red blood cells white blood cells and platelets. Plasma is liquid part of blood composed of water, various proteins, such as albumin, globulin, fibrinogen and other clotting factors. The primary site of blood formation is bone marrow. Disease of blood cells and clotting factors are called as blood disorders. The cells in blood have limited life span so they are continuously produced and replaced from bone marrow.

3.3.1 Some Common Blood Disorders

Anaemia: There are three types of anaemia – nutritional, Haemolytic and due to blood loss. Let us discuss these as given below:

1) Nutritional anaemia
   a) Iron deficiency anaemia
   b) Megaloblastic anaemia
   c) Aplastic anaemia (related to immune system)
2) Haemolytic anaemia
   a) Sickel cell anaemia
   b) Thalassemia
3) Blood loss anaemia: Due loss of blood volume

   a. Abnormal generation of cells
      Polycythemia vera
      Leukaemia (Blood cancers)

   b. Bleeding disorders
      Throbocytopenia
      Disseminated Intravascular Coagulation
      Von Willebrand's disease
      Haemophilia

Anaemia: Anaemia is characterised by decrease in the number of red blood cells (RBCs) or by decrease in haemoglobin concentration. Haemoglobin is found in red blood cells, which helps in transporting oxygen to tissues in the body. So the decrease in RBCs or haemoglobin will decrease oxygen carrying capacity of blood. Hence body cells will receive less oxygen, which will affect the function of body in general. In severe cases patient may land up in heart failure. There are various causes of anaemia. For easy understanding the common anaemias were

classified in nutritional anaemia, haemolytic anaemia and blood loss anaemia. It is important to know the type of anaemia.

Iron deficiency anaemia: Iron deficiency is by far the commonest nutritional cause of anaemia; it may be associated with folate deficiency, especially during pregnancy, adolescence and in childhood. Along with nutritional deficiencies there are other causes like intestinal helminthes infestation and malaria which may predispose to anaemia. Patient may not be having any symptoms in mild cases. The vague symptoms like easy fatigability, shortness of breath, palpitations, headache etc are the common symptoms and there may be a history of eating mud in children. The diagnosis of iron deficiency anaemia will be done by complete blood counts (CBC) with peripheral smear and iron profile. There will be decreased haemoglobin, decreased pack cell volume. Serum iron and ferritin will confirm diagnosis but this investigation not possible in PHC. Smear showing microcytic hypochromic RBCs in our country can be suggestive of iron deficiency anaemia.

Megaloblastic anaemia: Megaloblastic anaemia is a condition in which the bone marrow produces unusually large, structurally abnormal, immature red blood cells (megaloblasts). Megaloblastic anaemia has several different causes. Deficiencies of either cobalamin (vitamin B12) or folate (vitamin B9) are the two most common causes. These vitamins play an essential role in the production of red blood cells.

Along with general symptoms like easy fatigability, shortness of breath, sore mouth, glossitis, the megaloblastic anaemia may present with neurological symptoms like tingling or numbness in the hands or feet. Additional symptoms may develop over time including balance or gait problems, vision loss due to degeneration (atrophy) of the nerve that transmits impulses from the retina to the brain (optic nerve), and mental confusion or memory loss. A variety of psychiatric abnormalities have also been reported in individuals with cobalamin deficiency including depression, insomnia (difficulty or unable to sleep), listlessness, and panic attacks. The spectrum of neuropsychological symptoms potentially associated with cobalamin deficiency is large and varied. A complete blood count with opinion on peripheral smear will give a good clue of diagnosis.

Aplastic anaemia: This is the condition in which insufficient quantity of blood cells like RBC, WBCs and platelets are produced at its site of production that is at bone marrow. The exact cause may not be known; mostly it is related with immune system. All the general symptoms of anaemia will be present along with bleeding tendency from gums, internal bleeding in organs or gastro intestinal tract due to decrease in platelets. The management of this anaemia requires expert opinion and evaluation; so refer this patient to health facility.

Sickle cell anaemia: Sickle cell anaemia is an inherited disorder of haemoglobin (Hb). The red blood cells (RBC) become hard, sticky and shaped like a farmer's sickle. These sickle cells block blood and oxygen flow in blood vessels, and break down more rapidly than normal RBCs. This can cause a low blood count (anaemia). There are two types one is called sickle cell disease (SCD) where haemoglobin pattern is SS and another is sickle cell trait where haemoglobin pattern is AS type. SCD is severe condition and will frequently have complications whereas most of the sickle cell trait patients lives life asymptomatically.

The complications of Sickle Cell Disease: SCD can block the flow of blood in small arteries in many parts of the body, causing variety complications. The

hallmark symptom of SCD is sickle cell crisis, it causes sudden attacks of severe pain. An infection or blockage of blood vessels in the lungs can lead to acute chest syndrome (ACS), another common and serious occurrence. The abnormal shape of red blood cells found in patients with SCD contributes to co-morbidities throughout the lifespan including pneumococcal infections and acute spleen sequestrations in infants, pulmonary hypertension, stroke, gallbladder disease, and organ damage. SCD is also associated with premature mortality. The sickle cell crisis can be an emergency so better refer the patient to facility for evaluation and management.

Sickle Cell Trait : SCT is different from SCD. Individuals with SCT cannot develop SCD later in life; however, they can pass the sickle cell gene to their children. Therefore pre-marriage counselling is important to these patients too.

Thalassemia: This is also a haemolytic condition where the proper haemoglobin formation gets affected (defect in beta globulin chain of haemoglobin). Patient will have symptoms of anaemia. Patient may need repeated blood transfusions so refer this patient to health facility.

Blood loss anaemia: There may be history blood loss from any site from body commonly haemorrhoid (piles), heavy menses or internal organs and gastro intestinal tract bleed etc. Some time bleeding cannot be noticed unless we do investigate for blood in stool or urine. Refer these patients for detail investigations.

Abnormal proliferation of blood cells: It may be polycythemia vera (abnormally increase in number of RBC) or leukaemias (blood cancers). Common symptoms include are reddish purple skin and mucosa in polycythemia vera especially after bathing and in leukaemia pallor, easy fatigability, shortness of breath, abnormal bleeding or bruising. There may be enlarged liver and spleen in these patients. Refer this patient to health facility.

Bleeding disorders: They are very annoying to the patients. Patient may have complaint about bleeding tendency from gums, mouth, nose, heavy bleeding during menses or concealed internal organ bleeding presenting as pain in abdomen, blood in vomiting. Bleeding spots or bruising in the skin is also common. There may be history of passing black coloured stool or red streak on stool. Patients need to be investigated for concealed bleeding in urine and stool. Refer this patient immediately.

3.3.2 Signs and Symptoms of Blood Disorders

General non specific symptoms in a patient of blood disorders include weakness, easy fatigability, shortness of breath, malaise, pallor (conjunctival, tongue and palmer) and recurrent infection are few of the symptoms which may appear to be non specific in nature.

Specific symptoms and signs which warrant urgent medical care are jaundice (yellowish discolouration of eyes), acute bleeding from gums, nose, anus, passing blood in stool or dark coloured stools, acute abdominal pain, acute chest pain, blood in vomiting, lump in abdomen (liver enlargement, Spleen enlargement), swellings around neck and other parts of body (lymph nodes), swelling over feet, ankle and legs.

On investigation an abnormally increase or decrease in the counts and shape and size of blood cells should raised the suspicion of blood disorder. Decrease in haemoglobin concentration is suggestive of anaemia.

3.3.3 Management of Blood Disorders

Management of blood disorder will be discussed under suspected case and diagnosed case. Care of suspected case of blood disorder.

Ask about previous history of similar complaints. Any history of blood loss, menorrhagia or amenorrhoea. Whether any history of blood transfusion in past?

Examine eyes for jaundice and pallor. See for pallor in tongue (pale and smooth tongue is suggestive anaemia), and palms. Search for any neck swelling, abdominal lump (liver mass on right side of lower chest cage and for spleen enlargement on left side of lower part of chest). Check for any bruises or bleeding spots in skin. Examine for spoon shaped fingernail. Check for pitting oedema (presence of pit on pressing on upper side of feet, ankles or lower leg). Check haemoglobin. Get complete blood count to know the cell counts with peripheral smear opinion for any abnormality of blood cells. If suspicion is of sickle cell anaemia or thalassemia get Hb electrophoresis to confirm type of sickle cell or thalassemia. The sickle cell crisis can be an emergency so better refer the patient to facility for evaluation and management.

If you had any suspicion based on above symptoms and signs then immediately you should refer this patient to doctor or health facility for further evaluation. Get thoroughly investigated and have a diagnosis after discussing with doctor.

Care of diagnosed case of blood disorder

Nutritional anaemia: For anaemia first try to know the type of anaemia. If you are sure it is mild Iron deficiency anaemia which is common in pregnancy, adolescent or in children then asses diet to known whether patient is taking iron rich foods or not. Advise patient to take iron rich food items like meat, poultry, fish, jaggery and groundnuts, green vegetables, cereals, legumes, nuts. Take iron rich diet with vit C or with citrus fruits. Provide oral Iron folic acid tablet to the patient. A tablet must contain 100 mg of elemental Iron and 5mg folic acid and it is given for 100 days in cases of pregnancy. For iron deficiency anaemia other than in pregnancy, encourage patient to comply with drug regimen by explaining the duration, importance and side effect of drug therapy as advised by doctor. Warn patient about its side effects like constipation and black colour to stool and explain it is not worrisome. For moderate to severe iron deficiency anaemia you may need to refer patient for injectable Iron or blood transfusion. The technique of giving injectable (parenteral) iron is called as Z track technique. In this technique use 2 inch needle. Retract skin over muscle of outer quadrant of buttock laterally before inserting needle to prevent leakage along track and staining of skin. Please rule out sickle anaemia or other haemolytic anaemia before prescribing Iron therapy.

For megaloblastic anaemia, injectable hydroxycobalamine or cynocobalamine (Vit B12) is given intramuscularly every month with oral folic acid tablets.

For aplastic anaemia, educate patient for his personal care like taking medicine regularly, preventing bleeding incidents. Avoid injections.

Sickle cell anaemia: Know the type of sickle cell anaemia whether it is sickle cell disease (SS pattern) or sickle cell trait (SA pattern) by haemoglobin electrophoresis. Advise to take more and more water and fluids. Avoid stressful conditions which will increase oxygen demand (any strenuous exercise), extreme heat or cold. Make arrangement with blood bank for any blood transfusion if

needed. Make them aware about signs of crisis. Administer analgesic and fluids to the patients who are in crisis. Teach family member about the care and crisis. These individuals need pre-marital counselling to prevent sickle cell disease in their children.

Thalassemia: Patient of major thalassemia needs frequent blood transfusion in every 3 to 4 weeks. Make available blood for transfusion from authorised blood bank. Encourage community members for blood donation which may help this kind of people.

Blood loss anaemia: Try to know the site and cause of blood loss. It may be haemorrhoids (piles), menorrhagia (excessive loss of blood during menses), internal gastro intestinal tract bleeding. Some time need more investigation to know the site of bleeding. After conferring diagnosis as patient need to stick to medication as advised by doctor. Act as bridge between patient and doctor to understand problem in patient.

Abnormal proliferation of blood cell occurs in polycythemia vera and blood cancers, it can be confirmed by complete blood count and bone marrow studies. Refer patient to health facility for detail management. Encourage patient and family for regular follow up with health facility.

Bleeding disorder:

Avoid bleeding by preventing use of sharps, needles and hard tooth brush. Advise to take stool softeners and plenty of water. Advise to watch on bleeding like number of pad used in menses, colour of urine and stool. Advise to have routine follow up with treating doctor and investigate for concealed blood loss in urine and stool.

3.3.4 Importance of Counselling in Blood Disorder

As health worker you may need to help to take right decision regarding their disorder. For example, you may need to give pre-marriage counselling to the haemolytic anaemia patients. Advise to avoid marriage between two sickle cell disease patients. Help them to take decision regarding treatment centers and treatment facilities available nearby. Have contact number of blood bank in case you need to direct them to avail blood in emergency. Encourage community members to donate blood.

Check Your Progress 2

1) Name the common blood disorder.

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2) When you will suspect blood disorders?

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3.4 URINARY TRACT INFECTIONS

A patient with Urinary Tract Infection (UTI) may be symptomatic or asymptomatic. UTI usually presents with

Cystitis: The typical symptoms of cystitis are burning micturition, dysuria, increased frequency of micturition, and urgency. Nocturia, hesitancy, suprapubic discomfort, and haematuria may also be present. Unilateral back or flank pain is generally an indication that the upper urinary tract is involved.

Pyelonephritis: Mild pyelonephritis can present as low-grade fever with or without lower-back or costovertebral-angle pain. In severe cases high grade fever, rigors, nausea, vomiting, and flank pain may be present. Symptoms are generally acute in onset, and symptoms of cystitis may not be present. Fever is the main feature distinguishing cystitis and pyelonephritis. The fever of pyelonephritis typically exhibits a high, spiking "picket-fence" pattern. When it is due to obstructive pathology, urine flow may be decreased.

Prostatitis: It may be infectious as well as non-infectious, although infectious form is less common than the non-infectious form. Acute bacterial prostatitis presents as dysuria, frequency, and pain in the prostatic, pelvic, or perineal area. Fever and chills are usually present, and symptoms of bladder outlet obstruction like hesitancy, dribbling and urgency are common. Chronic bacterial prostatitis presents more insidiously as recurrent episodes of cystitis, sometimes with associated pelvic and perineal pain.

3.4.1 Assessment for Urinary Tract Infections

UTI can be diagnosed quite accurately on the basis of symptoms and laboratory tests are seldom needed to initiate the treatment. In absence of complicating factors like pregnancy, STD/RTI, comorbidities, the symptoms of UTI can diagnose about 90% of the infections correctly. The biochemical, pathological and microbiological investigations are needed to reach the etiology of the disease. Care should be taken about complicating symptoms like vaginal discharge, in presence of which the patient may require further evaluation. Other diagnosis that should be considered when a woman presents with dysuria and vaginal discharge are cervicitis, vaginitis, and urethritis. Women with multiple sexual partners, frequent sexual intercourse, with inconsistent use of condoms are at increased risk of STD/RTI and these should be excluded before initiating treatment for UTI. An approach to diagnosing and initiating the treatment among UTI patients has been presented in the following table.

Clinical Presentation	Patient Characteristics	Diagnostic and Management Considerations
Acute onset of urinary symptoms • Dysuria • Frequency • Urgency	Non-pregnant healthy women with clear history suggestive of UTI	• Consider uncomplicated cystitis • No urine culture needed
	Women with unclear history or risk factors for STD	• Consider uncomplicated cystitis or STD • STD evaluation and pelvic examination
	Male with perineal, pelvic or prostatic pain	• Consider acute prostatitis • Urinalysis, culture and urological evaluation may be needed

Clinical Presentation	Patient Characteristics	Diagnostic and Management Considerations
	Patients with indwelling urinary catheter	• Consider catheter associated UTI • Exchange or remove catheter • Urinalysis and urine and/or blood culture for assessment
	All other patients	• Consider complicated UTI and refer to higher centres for urinalysis, assessing any anatomical or functional abnormality.
Acute onset of • Backpain • Nausea/vomiting • Fever • Possible cystitis symptoms	Otherwise healthy non-pregnant women All other patients	• Consider uncomplicated pyelonephritis • Urine culture may be needed • Consider complicated pyelonephritis and refer to higher centre for further assessment
Non localising systemic symptoms • Fever • Altered mental status	Patients with sign and symptoms of systemic infections and no obvious cause	• Consider complicated UTI or pyelonephritis and refer to higher centre for further assessment and management
Recurrent acute urinary symptoms		• Refer to higher centre for further assessment and management

Although urine cultures would be ideal in diagnosing UTI, in primary care settings investigations like blood and urine culture, ultrasonography etc. are not available. Microscopic examination of urine is also seldom available depending on the expertise of the laboratory technician. If available it may help in visualising pus cells and RBCs in the urine. A peripheral smear may help in determining if the leucocyte count is raised which may signify inflammatory response to the pathology and bacteria in the urinary tract.

A rough differentiation of pyelonephritis and cystitis can be made by determining the presence of proteins in the urine. Urine dipstick test or heat coagulation test may be performed for the same by collecting 10–15 ml urine in a test tube and heating the upper portion. Appearance of turbidity shows proteins in urine. As proteins are excreted in urine in case of renal pathology, it signifies pyelonephritis if detected in urine. Benedicts test or dipstick test for glucose may also be performed which signifies chronic renal pathology.

3.4.2 Treatment

Antibiotics remain the mainstay for all symptomatic cases of UTI. However, asymptomatic bacteriuria, such as in catheterized patients, should not be treated unless in specific cases (e.g., pregnancy, before urologic procedures). Treating such cases unnecessarily increases adverse effects and antibiotic resistance. Empirical antibiotic therapy should be started based on clinical judgment without delaying for lab tests.

Antibiotics:

1) **Nitrofurantoin:** First-line for uncomplicated cystitis. Dose: 100 mg twice daily for 5 days. Not effective for pyelonephritis due to low tissue levels. Contraindicated in advanced kidney disease and late pregnancy.

2) **Fosfomycin:** Recommended as a single 3 g dose for uncomplicated cystitis. Useful in settings with rising resistance.

3) **Trimethoprim - sulfamethoxazole (Cotrimoxazole):** Can be used if local resistance is <20%. Dose: Double strength tablet twice daily for 3â€“5 days. Avoid in pregnancy and renal impairment.

4) **Fluoroquinolones:** Reserved for complicated UTI or pyelonephritis due to resistance risks. Ciprofloxacin 500 mg twice daily for 7 days may be used in such cases but should be avoided in mild infections.

5) **Beta-lactams:** In pregnancy, amoxicillin-clavulanate or cephalosporins (e.g., cefixime 200 mg twice daily for 5 or 7 days) are preferred. Avoid fluoroquinolones, cotrimoxazole, and nitrofurantoin (in third trimester).

6) **Prostatitis in Males:** Treat uncomplicated UTI or prostatitis with fluoroquinolone or cotrimoxazole for 7 or 14 days. Recurrent cases may need up to 12 weeks of antibiotics under urological supervision.

7) **Analgesics:** Analgesics such as paracetamol provide relief from pain and fever. In cases of obstructive uropathy, injectable analgesics may be needed for acute symptoms.

8) **General Measures:** Encourage adequate fluid intake and frequent urination to prevent urinary stasis. These measures aid in faster recovery and reduce the risk of recurrence.

3.4.3 Urinary Tract Infection in Children

UTI affects about 6–8% of girls and 1.5–2% of boys. They are important cause of morbidity and may also cause renal damage if not treated effectively. The incidence is higher in boys in infancy and later in girls.

Vesico-ureteric reflux, obstructive uropathy, neurogenic bladder, malnutrition, immunosuppressive therapy and conditions, renal parenchymal disease are important predisposing factors for UTI among children.

In neonates unexplained fever may be the only presenting symptom of UTI. Occasionally the infant may present with failure to thrive or poor weight gain, diarrhoea, vomiting, jaundice and sometimes features of systemic toxicity signifying sepsis may also be present.

UTI presenting with oedema over face typically present in the morning which progresses to feet and legs in few days. Haematuria, polyuria, dysuria, flank pain, ureteric colic, polydipsia, and enuresis may be present. These features signify underlying renal pathology like glomerulonephritis. Chronic renal conditions may also present with rickets, symptomatic hypertension, collagen vascular diseases, anaemia along with UTI.

Diagnosis: Children require the use of diagnostic tests more often than adults for confirming the diagnosis. The diagnostic tests are similar to what has been described among adults. Differentiating between upper and lower urinary infections practically is not useful in deciding the initial treatment in children.

Treatment: In young infants UTI is often associated with sepsis and requires injectable antibiotic therapy with ampicillin, aminoglycoside or a cephalosporin for 10–14 days. If available an initial dose should be given in such cases and patient should be referred to higher centre for further management. I.V. fluid should be initiated in case of fluid or electrolyte imbalance.

In older children if the child is taking orally, oral amoxicillin in 30–50 mg/kg/day in 3 divided doses or oral cefixime in dose of 10–20 mg/kg/day in 2 divided doses should be given. The treatment should be continued for 7–10 days. In case the child does not respond in 24–36 hours, the child should be referred to a higher centre for management in view of non-response to treatment which may be due to resistance or some other underlying abnormality.

The general measures in management of UTI in children are same as that in adults.

Check Your Progress 3

1) When do you suspect a person to have UTI?

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.....

2) What measures do you take to manage UTI?

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.....

3.5 LET US SUM UP

Heart diseases are the major cause of death in adult and elderly people in country. The common heart diseases are heart attack, heart failure, arrhythmias and hypertension. There are non-modifiable and modifiable risk factors for heart

diseases. Non-modifiable risk factor are age, sex, genetic factors and ethnicity. The modifiable risk factor are high blood sugar, hypertension, high cholesterol, overweight, unhealthy life style, unhealthy dietary pattern, alcohol and tobacco consumption. The most common symptoms are chest pain, chest discomfort, breathlessness, palpitation, swelling over feet, ankle, legs, breathlessness on exertions, sleep or at rest. All the suspicious cases of heart diseases need prompt response. The timely response can save life.

The common blood disorder are anaemia (nutritional, haemolytic or blood loss), disorders of abnormal proliferation of blood cells like leukaemia (blood cancer) and bleeding disorders. The diagnosis of blood disorder is crucial for its management. So it is essential to have clear diagnosis of patient suffering from type blood disorder. The management include dietary advise and medications in mild case of nutritional anaemia. For moderate and severe cases needs parental iron or blood transfusion and other specific medications. Haemolytic anaemia may need blood transfusion. In sickle cell disease prevention of crisis is important. For leukaemia and bleeding disorder a specialised treatment is required.

We have also discussed urinary tract infections and its treatment in children.

3.6 MODEL ANSWERS

Check Your Progress 1

Non modifiable risk factors	Modifiable risk factors
• Age • Sex • Genetic factors: Family history of heart attacks and strokes at an early age • Ethnicity • A previous heart attack	• Overweight (Obesity) • Unhealthy diet • High blood pressure. • High blood cholesterol (high fat in blood) • Diabetes (High blood sugar) • Tobacco use • High alcohol intake • Physical inactivity • Stress • Some medicines • Some diseases like kidney diseases • Environmental factors: Increased stress, extremes of condition like too much high altitude (height)

2) Symptoms of heart attack.

- Chest pain or discomfort: Sudden severe chest pain with no known cause is major suspicion of heart attack. It may be of dull aching, Choking, strangling, cramping, stabbing type of pain, pressure, heaviness or just discomfort. It may be mild to severe. It may start

suddenly or slowly. Some time it is silent as in diabetes. The chest pain may radiate to jaw, neck, arm, shoulders or back. It may associate with raised heart rate, difficulty in breathing, palpiatation, nauseas and increase or decrease blood pressure. Angina is chest pain or discomfort that a person has if the heart does not get enough blood. Usually angina is felt as uncomfortable pressure, fullness, squeezing or pain in the center of the chest. A person may also feel the discomfort in the neck, jaw, shoulder, back or arm. These feelings are also signs of a heart attack, but if it is angina, the pain or discomfort will last only a few minutes before going away. If these symptoms last longer, it could be a heart attack. Following symptoms may be present with or without chest pain.

- Shortness of breath
- Palpitations (unpleasant awareness of own heart beat)
- Feeling weak, light-headed, or faint
- Confusion
- Difficulty in understanding

Check Your Progress 2

1) Some of common blood disorders

A. Anaemia:

Nutritional anaemia	a) Iron deficiency anaemia b) Megaloblastic anaemia c) Aplastic anaemia (related to immune system)
Haemolytic anaemia	a) Sickel cell anaemia b) Thalassemia

B. Abnormal generation of cells
- Polycythemia vera
- Leukaemia (Blood cancers)

C. Bleeding disorders
- Throbocytopenia
- Disseminated Intravascular Coagulation
- Von Willebrand's disease
- Haemophilia

2) General non-specific symptoms in a patient of blood disorders include weakness, easy fatigability, shortness of breath, malaise, pallor (conjunctival, tongue and palmer) and recurrent infection are few of the symptoms which may appear to be non-specific in nature.

Specific symptoms and signs which warrant urgent medical care are jaundice (yellowish discolouration of eyes), acute bleeding from gums, nose, anus, passing blood in stool or dark coloured stools, acute abdominal pain, acute chest pain, blood in vomiting, lump in abdomen (liver enlargement, Spleen enlargement), swellings around neck and other parts of body (lymph nodes), sweeling over feet, ankle and legs.

Check Your Progress 3

1) UTI can be diagnosed quite accurately on the basis of symptoms and laboratory tests are seldom needed to initiate the treatment. In absence of complicating factors like pregnancy, STD/RTI, comorbidities, the symptoms of UTI can diagnose about 90% of the infections correctly. The biochemical, pathological and microbiological investigations are needed to reach the etiology of the disease

2) General measures: The general measures for UTI patients include plenty of fluids and frequent emptying of bladder which will reduce urinary stasis, reduce the chances of infection and thus help in recovery.

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UNIT 4 COMMON CONDITIONS-4 – EYE, EAR, NOSE AND THROAT

Structure

4.0 Introduction

4.1 Objectives

4.2 Common Eye Problems

- 4.2.1 Primary Care for Local Infection of Eye
- 4.2.2 Redness of Eye
- 4.2.3 Conjunctivitis
- 4.2.4 Trachoma
- 4.2.5 Stye
- 4.2.6 Initial Diagnosis and Referral of Refractive Errors

4.3 Common Ear-Nose-Throat (ENT) Problems

- 4.3.1 Epistaxis
- 4.3.2 Acute Suppurative Otitis Media (ASOM)
- 4.3.3 Sore Throat
- 4.3.4 Deafness

4.4 Let Us Sum Up

4.5 Key Words

4.6 Model Answers

4.7 References

4.0 INTRODUCTION

In this unit we will discuss some very common eye and Ear-Nose-Throat (ENT) conditions affecting various age groups. Ophthalmic conditions affect all age groups. Refractive errors, vitamin A deficiency, conjunctivitis, trachoma, cataract, glaucoma, Eye injuries are common cause of ocular morbidity. Ear-Nose-Throat conditions can affect all age groups. Children are affected frequently- as many as 40% Ear-Nose-Throat patients comprise children/ paediatric age group.

Let us review the common eye problems and Ear-Nose-Throat conditions and learn appropriate management.

4.1 OBJECTIVES

After completing this unit, you will be able to:

- enumerate common eye problems;
- recognise clinical manifestations of common eye problems;
- enumerate and advise appropriate investigations and treatment and nursing care;
- enumerate common Ear-Nose-Throat (ENT) conditions;
- recognise the signs and symptoms of common Ear-Nose-Throat (ENT) conditions; and
- enumerate and advise appropriate investigations and treatment and nursing care

4.2 COMMON EYE PROBLEMS

We will discuss about general primary care for local infections of eye followed details of specific eye infections such as Redness Eye, conjunctivitis, trachoma, stye and initial diagnosis and referral of refractive errors.

4.2.1 Primary Care for Local Infection of Eye

Before discussing the primary care, let us go through symptoms and signs, assessment for general eye problems as given below:

Symptoms and signs of eye infections.

- Pain, itching, or sensation of a foreign body in the eye
- Photosensitivity (aversion to bright light)
- Redness or small red lines in the white of the eye
- Discharge of yellow pus that may be crusty on waking up
- Watering of eyes
- Swelling of eye
- Whitening of black of eye
- Swollen eyelids
- Constant involuntary blinking (blepharospasm)
- Crusting over of the eyelid

Primary care and nursing management

Assessment (WHATSUP)

- What part of the eye is affected? Eyelid, conjunctiva, cornea?
- How does it feel? Pressure? Itchy? Painful? No pain? Irritated? Spasm?
- Aggravating and alleviating factors. Worse when rubbing eyes, blinking? Photosensitivity?
- Timing. Was there exposure to a pathogen? Previous infection or irritation? Length of time, symptoms have persisted?
- Severity. Is there visual impairment?
- Useful data for associated symptoms
- Immunosuppressant drugs?
- Do other members of the family or peer group have symptoms?
- Are decongestant eye drops used?
- Are there exudates?
- Are the eyelids sticks together on awakening?
- Does patient wear contact lenses, soft contact lenses overnight, disposable contact lenses?
- Does Patient have dry eyes?
- Infection with tuberculosis, syphilis, HIV?

- What is typical eye hygiene?
- Perception by the patient of the problem. What does patient think is wrong?
- Pain related to inflammation or infection of the eye or surrounding tissues.
- Sensory-perceptual alteration (visual) related to blepharospasm, photophobia, diminished visual acuity (corneal opacity, eye patching), visual distortions (exudates, ophthalmic ointment).
- Risk for injury related to visual impairment.
- Risk for infection related to poor eye hygiene.
- Knowledge deficit related to disease process, prevention and treatment.

Primary care

1) Checking of visual acuity (refer BNSL-043, Block 2, Unit 5)
2) Relief of acute pain – analgesics, topical local anesthetic.
3) Cleaning of eyes with clean water.
4) Cleaning of hands to prevent spread of infection.
5) Dry hot compresses.
6) Conjunctival swab for culture sensitivity.
7) Contact lenses wearer to switch to glasses.
8) Avoid unusual strain and stress to eyes.
9) Specific management as per cause.

Check Your Progress 1

i) What are common signs and symptoms of eye infections

.....

ii) First step to assess eye infection is.....

iii) In case of infection contact lens wearer should.....

iv) Most important step to prevent spread of infections.....

Let us discuss common local infections which affect eyes as given below:

4.2.2 Redness of Eye

Definition: Eye redness refers to a red appearance of the normally white part of the eye. The eye looks red or bloodshot because blood vessels on the surface of the eye widen (dilate), bringing extra blood into the eye.

Causes

Conjunctivitis may due to following causes.

- Bacterial
- Viral (most common cause)
- Chlamydia
- Allergic

- Irritants
- Blepharitis (inflammation of eye lids)
- Stye
- Subconjunctival haemorrhage
- Keratitis
- Corneal abrasion
- Corneal ulcer
- Iridocyclitis
- Acute glaucoma
- Conjuctival or corneal foreign body
- Trichiasis- abnormally positioned eyelashes that grow back towards the eye touching cornea or conjunctiva
- Episcleritis
- Scleritis

First Aid and Nursing Management

- Visual acuity.
- Eye and hand hygiene to prevent spread
- Investigations for underlying cause
- Dark goggles
- Specific management as per cause
- Conjunctival swab for culture sensitivity
- Do not bandage the eye without ascertaining the cause
- Do not use steroids without ascertaining the cause

When to refer the patient?

- Associated diminution of vision is there
- Symptoms not improving after conservative management
- Any of the symptoms more pronounced
- In case of very severe pain
- Bulging of eyes is noted (proptosis)
- There is white in black of eye

Detailed Eye examination and investigations (to be done by ophthalmologist)

- Visual acuity
- Torch light examination
- Intra Ocular Pressure (IOP) measurement
- Slit lamp examination
- Fundus examination
- Conjuctival swab for culture sensitivity

- In case of corneal ulcer: KOH mount, Gram stain, Sample for culture sensitivity from the lesion

Management is specific for the cause of the lesion.

- Bacterial conjunctivitis: Dry hot fomentation, Topical antibiotics, dark goggles
- Viral conjunctivitis: Supportive treatment. Cold compress, dark goggles, topical antibiotics to prevent superadded infection.
- Glaucoma:
  - Intra Occular Pressure (IOP) lowering drugs.
    - Daimox
    - I/V mannitol
    - Timolol etc.
- Scleritis/episceritis:
  - Topical steroids
- Iridocyclitis:
  - Topical steroids
- Stye:
  - Dry hot fomentation, Topical antibiotics, oral antibiotics, epilation of affected hair follicles
- Trichiasis:
  - Epilation (removal of hair) of eye lashes

Check Your Progress 2

1) What are common causes of red eye?

   .....

   .....

   .....

2) Blepharitis is inflammation of .....

3) Conjuctival swab is taken for .....

4) ..... should not be used without ascertaining the underlying cause.

5) Trichiasis can be treated by.....

6) What action to be taken if red eye is associated with diminution of vision.

   .....

   .....

   .....

4.2.3 Conjunctivitis

Let us now discuss another important eye condition as given below:

Definition: It is an inflammation or swelling of the conjunctiva. The conjunctiva is the thin transparent layer of tissue that lines the inner surface of the eyelid and covers the white part of the eye. Often called "pink eye", conjunctivitis is a common eye disease.

1) **Allergic Conjunctivitis:** Allergic conjunctivitis occurs more commonly among people who already have seasonal allergies. They develop it when they come into contact with a substance that triggers an allergic reaction in their eyes.

2) **Giant papillary conjunctivitis** is a type of allergic conjunctivitis caused by the chronic presence of a foreign body in the eye. People who wear hard or rigid contact lenses, wear soft contact lenses that are not replaced frequently, have an exposed suture on the surface of the eye or have a prosthetic eye are more likely to develop this form of conjunctivitis.

3) **Infectious Conjunctivitis**

Bacterial conjunctivitis:

- Staphylococcal: most common cause of bacterial conjunctivitis
- streptococcal : produces peudomembranous conjunctivitis
- Pneumococcal
- Haemophilus influenza
- Moraxella- axenfeld
- Neisseria gonorrhoeae
- Cornebacterium diptheriae: acute membranous conjunctivitis

4) **Viral conjunctivitis:** It is most commonly caused by contagious viruses associated with the common cold. Adeno virus and picorna virus are most common causes.

5) **Chemical Conjunctivitis:** Chemical Conjunctivitis can be caused by irritants like air pollution, chlorine in swimming pools, and exposure to noxious chemicals.

Assessment

Conjunctivitis can be diagnosed through a comprehensive eye examination.

- Patient history to determine the symptoms, when the symptoms began, and whether any general health or environmental conditions are contributing to the problem.
- Visual acuity measurements to determine whether vision has been affected.
- Evaluation of the conjunctiva and external eye tissue using bright light and magnification.
- Evaluation of the inner structures of the eye to ensure that no other tissues are affected by the condition.
- Supplemental testing, which may include taking cultures or smears of Conjunctival tissue. This is particularly important in cases of chronic conjunctivitis or when the condition is not responding to treatment.

Treatment - Treating conjunctivitis has three main goals:

1) Reduce or lessen the course of the infection or inflammation.

2) Prevent the spread of the infection in contagious forms of conjunctivitis.

3) The appropriate treatment for conjunctivitis depends on its cause.

Allergic conjunctivitis

1) The first step is to remove or avoid the irritant, if possible.

2) Cold compresses and artificial tears to relieve discomfort in mild cases.

3) In more severe cases, non-steroidal anti-inflammatory medications and antihistaminic.

4) Persistent allergic conjunctivitis may also require topical steroid eye drops.

Bacterial conjunctivitis

1) Antibiotic eye drops or ointments

2) Dry hot fomentation

3) Dark goggles

Viral conjunctivitis

1) Usually self limiting supportive treatment. Cold compress, dark goggles, topical antibiotics to prevent superadded infection.

Chemical conjunctivitis

1) Careful flushing of the eyes with saline is a standard treatment for chemical conjunctivitis.

2) Chemical conjunctivitis also may need to use topical steroids.

When to refer the patient

- Associated diminution of vision is there
- Symptoms not improving after conservative management
- Any of the symptoms more pronounced
- In case of very severe pain
- Bulging of eyes is noted (proptosis)
- There is white in black of eye.

Check Your Progress 3

1) Why we use dark goggles in case of conjunctivitis?

.....

.....

.....

2) Conjunctivitis spread by .....

3) What are 3 main goal of treatment of conjunctivitis?

.....

.....

.....

4) Most important step in treatment of chemical conjunctivitis is

.....

4.2.4 Trachoma

Definition: This disease is a chronic keratoconjunctivitis caused by the obligate intracellular bacterium Chlamydia trachomatis.

Mode of spread

Trachoma is spread through direct contact with infected eye, nose, or throat fluids. It can also be passed by contact with contaminated objects, such as towels or clothes. Certain flies can also spread the bacteria.

Symptoms

Symptoms begin 5 to 12 days after being exposed to the bacteria. The condition begins slowly, appearing as inflammation of the tissue lining the eyelids (conjunctivitis, or "pink eye"). Untreated, this may lead to scarring.

- Mild itching and irritation of the eyes and eyelids
- Discharge from the eyes containing mucous or pus
- Eyelid swelling
- Light sensitivity (photophobia)
- Eye pain

Symptoms and signs as per WHO grading

- Trachomatous inflammation, follicular (TF) – Five or more follicles of >0.5 mm on the upper tarsal conjunctiva.
- Trachomatous inflammation, intense (TI) – Papillary hypertrophy and inflammatory thickening of the upper tarsal conjunctiva obscuring more than half the deep tarsal vessels.
- Trachomatous scarring (TS) – Presence of scarring in tarsal conjunctiva.
- Trachomatous trichiasis (TT) – Atleast one ingrown eyelash touching the globe, or evidence of epilation (eyelash removal)
- Corneal opacity (CO) – Corneal opacity blurring part of the pupil margin.

Assessment

- As per clinical examination at torch light and Slit lamp.
- Microbiological examination.

Treatment

The WHO recommends 2 antibiotics for trachoma control: oral azithromycin single dose and tetracycline eye ointment.

The World Health Organization (WHO) developed the SAFE strategy.

S = surgical care

A = antibiotics

F = facial cleanliness

E = environmental improvement

Treatment is the onetime use of azithromycin or the topical use of 1% tetracycline ointment.

When trachoma has progressed to inward-turning of the lashes, surgery is necessary to correct this and prevent the lashes from scarring the cornea.

Nursing action

- Visual acuity
- Identification of stages of trachoma
- To teach patient importance of hygiene and environmental factors in prevention and containment of infection
- Early institution of antibiotics ointments to the patient
- Identification of advanced stages of trachoma as per WHO grading and referral of such patients.

Check Your Progress 4

1) Trachoma is caused by .....

2) Treatment of choice of trachoma is .....

3) WHO has developed .....strategy for trachoma

4) In case of inward – turning of lashes, what should be done?

.....

.....

.....

5) Enumerate stage of trachoma as per WHO grading system.

.....

.....

.....

4.2.5 Stye

Definition: Stye or external hordeolum is an inflammation of a gland of Zeis that opens into the lash follicle. An abscess forms, which usually points near an eyelash. Stye needs to be differentiated from other common causes of lid swelling like chalazion

Signs and symptoms

- Swelling, often with pointing on the lid margin situated near a lash
- Pain, watering
- Redness, discharge

Patient's needs

- Relief of pain and swelling

Treatment

- Topical antibiotics
- Antibiotics ointments
- Removal of affected lash
- Rarely, oral antibiotics

Primary care and nursing management

- Visual acuity
- Eye and hand hygiene to prevent spread
- Explain the treatment to the patient
- Explain the patient how to apply ointment and drops
- If styes recur, the patient should be investigated for diabetes mellitus
- Refraction error in case of recurrent stye

Check Your Progress 5

1) Stye is inflammation of .....

2) In stye pus point is present near.....

3) Stye needs to be differentiated from which condition?

.....

.....

.....

4) Abscess in case of stye may be drained by .....

4.2.6 Initial Diagnosis and Referral of Refractive Errors

The refractive power of eye:

The 'refractive power' of the eye is the degree to which the eye is able to refract the light rays. This power is expressed in dioptres. One dioptres brings rays of light to a focus over one metre. Ten dioptres bring rays of light to a focus over one-tenth of a metre or 10 cm. The refractive power of the eye is 60 dioptres. (that of the lens is 17 dioptres and of the cornea 44 dioptres).

Types of refractive errors

- Myopia
- Hypermetropia

- Astigmatism
- Presbyopia

Myopia (short sightedness)

- A short-sighted person has a long eyeball. The light rays therefore come to a focus in front of the retina.
- The vision is usually more blurred for distant vision than near vision as the lens can accommodate for near vision.
- If a concave lens is placed in front of the eye, the light rays will diverge before converging through the cornea and lens and will come to a focus at the retina.
- A concave lens is spherical and is known as a 'minus' lens.

Hypermetropia (long sightedness)

- A long-sighted person has a short eyeball. The light rays therefore come to a focus behind the retina causing blurred vision.
- A long-sighted person consequently has to accommodate for their distant vision to be clear. No further accommodation is possible for near vision, so this is blurred.
- If a convex lens is placed in front of the eye, the light rays will converge more sharply and come to a focus on the retina. A convex lens is a spherical lens because its shape is equal in all meridians. It is known as a 'plus' lens.

Presbyopia

- From the age of about 40 years, the lens in the eye no longer has the ability to accommodate for near vision.
- The light rays therefore fall behind the retina before coming to a focus. This is known as presbyopia.
- Convex or plus lenses are needed to bring the image into focus on the retina.
- Prescription power of lens increases with increasing age.

Astigmatism

- The astigmatic cornea has an uneven curvature so that there is no point of focus of the light rays on the retina.
- A cylindrical lens placed in front of the eye with its axis corresponding to the abnormal plane on the cornea will focus the light rays.
- The cylindrical lens can either be concave or convex.
- Most spectacles combine both spherical (plus or minus) lenses with cylindrical lenses to provide a compound lens to correct myopia/hypermetropia and astigmatism.

Assessment

- Initial assessment involves checking visual acuity of the patient both for distance and near.
- Vision with pin hole is important as it gives clue to visual potential of eye.
- Refraction of eye can be determined under full cycloplegia with automated refractometer or retinoscopy. (objective refraction)

- Patient is then called for Post Mydriatic test for prescription of final glasses after cycloplegic affect of the drug is over. (subjective refraction)
- Refraction and prescription of glasses can be done by optometrist, trained ophthalmic nurse or ophthalmologist.

Nursing action

- It is very important to indentify and diagnose refractive errors early.
- Visual acuity testing is most important screening method for the same.
- Specially in children early diagnosis and correction is important as uncorrected refraction can leads to development of Amblyopia. (State of permanent diminution of vision)
- After screening patient may be referred to designated centers for further diagnosis and prescription of glasses.

Check Your Progress 6

1) Hypermetropia is also known as .....
2) Myopia is also known as .....
3) ..... is defect of accommodation.
4) Myopia correction is done by .....lenses.
5) Hypermetropia correction is done by .....lenses.
6) Uncorrected refractive error in children can cause.....

4.3 COMMON EAR-NOSE-THROAT (ENT) PROBLEMS

We will discuss Epistaxis, Acute Suppurative Otitis Media (ASOM), Sore Throat, and Deafness.

4.3.1 Epistaxis

Definition

Bleeding from inside the nose is called epistaxis. It is also called nosebleed in common language or nakseer in the local language and is seen in all ages – children, adults, elderly.

Causes

These can be divided into:

- Local
- General
- Idiopathic

Local Causes

Nose

1) Trauma : Finger nail trauma, direct injury to nose, nose surgery, facial fractures

2) Infections : Viral or bacterial rhinitis, sinusitis, fungal infections like rhinosporidiosis, tuberculosis, syphilis, atrophic rhinitis
3) Foreign Bodies : Non-living, Living: maggots, leeches
4) Neoplasms/Cancers of Nose/Paranasal Sinuses: Haemangioma, papilloma, carcinomas
5) DNS (Deviated Nasal Septum)
6) Atmospheric changes : High altitudes

Nasopharynx : Adenoiditis, Juvenile angiofibroma, malignant tumours

General Causes

1) Cardiovascular System : Hypertension, pregnancy (hypertension and hormonal), arteriosclerosis (thickened arteries)
2) Blood and Blood Vessel Disorders : Aplastic anaemia, leukemia, purpura (platelet disorders), vitamin K deficiency, haemophilia
3) Chronic liver and kidney disease
4) Acute General infections : Influenza, measles, chicken pox, rheumatic fever, typhoid, pneumonia, malaria, dengue, chikungunya
5) Drugs : Excessive use of analgesics/painkillers (for joint pains, headaches), anticoagulant therapy (blood thinners) used for heart and other conditions
6) Other Causes : Mediastinal tumours; vicarious menstruation (nosebleed at time of menses).

Idiopathic

No cause found.

Classification

Anterior : Blood flows out from front of the nose

Posterior : Blood flows back into the throat and is swallowed-patient later has coffee-coloured vomitus due to altered blood.

First Aid and Nursing Management

- Make patient sit and pinch the nose with thumb and index finger for 10 minutes. This compresses the vessels in anterior septum (called Little's area) which is the commonest site of bleeding. It is known as Trotter's method.
- Apply cold compresses to nose and face to cause vasoconstriction.
- Make patient sit up and record blood loss taking place through spitting/ vomiting.
- Reassure patient and check pulse, BP, respiratory rate.
- Maintain haemodynamics. Fluids and blood may be required id BP falls below 100/60 mm of Hg.
- Investigate for underlying local/general cause.

Investigations : To rule out bleeding disorders

- Complete blood count

- Bleeding time, clotting time
- PT/PTTK and INR

Drug Therapy

Patient may be given intravenous Tranexaminic acid 500 mg stat dose, to arrest bleeding. Up to three such doses can be given over 24 hours.

Specific Management

- **Cauterization :** If the bleeding point has been located, in anterior epistaxis- the point is coagulated with electrocautery or silver nitrate. It can be done under endoscopic vision also.
- **Anterior Nasal Packing :** Ribbon gauze soaked in antibiotic ointment is folded upon itself and inserted along floor of nose and then whole nasal cavity. This stops bleeding by pressure.
- **Posterior Nasal Packing :** Simplest method is to insert a Foley's catheter through one nostril and inflating it with 5–10 ml saline. Then catheter is pulled forward and anterior nasal packing is done.
- **TESPAL- Trans-Nasal Endoscopic Sphenopalatine Artery Ligation :** Specialised procedure done in the operation theatre, where this vessel is located and ligated under endoscopic guidance.

Check Your Progress 7

1) Commonest cause of epistaxis is .....
2) First measure to take in a patient with epistaxis, after checking vital signs is.....
3) Maximum duration of nose-pinch to stop bleeding is ..... minutes.
4) Fluid resuscitation should be considered if blood pressure falls below ..... mm Hg.
5) Best posture for a patient with active bleeding is sitting upright, to prevent ..... of blood.

4.3.2 Acute Suppurative Otitis Media (ASOM)

Definition, Causes

It is an acute inflammation of the middle ear cleft, that is Eustachian tube, middle ear and mastoid air cells. It is very common in small children especially of lower socioeconomic group. It usually follows upper respiratory tract infection. It can be caused by viruses or bacteria.

Predisposing Factors

- Recurrent attacks of common cold
- Infection of tonsils/adenoids
- Allergies
- Sinusitis
- Cleft palate.

Causative Organisms

Streptococcus pneumonia (commonest), Haemophilus influenza, Moraxella catarrhalis.

Clinical Symptoms: History and Examination

History : Patient will present with history of earache, which occurs within 3 to 5 days after an attack of common cold. There may also be

- Fever
- Decreased hearing
- Pus discharge from ear due to spontaneous rupture of tympanic membrane

Examination

- Child is irritable
- May be febrile
- Ear canal may or may not contain pus discharge
- Always make sure to examine ear canal to rule out inflammation of skin (otitis externa). In otitis externa light pressing of tragus will cause severe pain while this is not the case in ASOM.

Management

- **Ear toilet :** If there is discharge, it should be mopped gently with cotton buds. This will make eardrops more effective.
- **Antibiotic Ear Drops :** Only in cases with ear discharge.
- **Analgesics & Antipyretics :** Paracetamol (Crocin) is both analgesic as well as antipyretic (reduces fever) Dose is 15 mg/kg/day in divided doses.
- **Antibiotics :** If fever and earache do not subside even after 48 hours of the above management, antibiotics must be started. Amoxicillin or co-amoxiclavulanic acid are the most commonly used. Dose: 40 mg/kg/day in divided doses for at least 7 days.
- **Steam inhalation :** Helps to remove congestion.

Follow up : All children must be followed up after one week to rule out any hearing loss or persistent symptoms. Referral to ENT surgeon must be sought if symptoms persist beyond two weeks.

Check Your Progress 8

1) Commonest manifestation of ASOM is .....

2) .....is the most commonly used effective drug in patients of ASOM.

3) Antibiotics must be considered if there is no improvement in symptoms after .....hours of conservative management.

4) Ear discharge occurs only when there is .....of the tympanic membrane.

4.3.3 Sore Throat

Definition

Sore throat can be technically classified as *pharyngitis* or *tonsillitis* (inflammation of the pharynx and tonsils) and *laryngitis* (inflammation of larynx). The clinical features may overlap with each other. Sore throat can be acute or chronic.

Etiology

Acute sore throat can be bacterial, viral or fungal. Most common causative organisms are :

Bacteria : Streptococcus pneumonia, Haemophilus influenza

Viruses : Rhinovirus, influenza virus, Herpes virus

Fungal : Candida sp.

Chronic sore throat : Chronic acid reflux, environmental pollution, vocal abuse (excessive and inappropriate use of voice).

Signs and Symptoms

History

- Throat pain
- Fever - may or may not be present
- Pain during swallowing food-This may lead to decreased ability to eat. In severe pain patient may not eat at all leading to dehydration and starvation.
- Swelling in neck - Due to infected lymph nodes.

Examination

- General features - Patient is febrile, toxic-looking. Vital signs: Tachycardia may be present. If patient is dehydrated blood pressure will be low.
- Local Examination of Throat - Congestion (redness) of tonsils and/or posterior pharyngeal wall.

Management

- Plenty fluids, soft diet
- Analgesics : Paracetamol (Crocin), also lowers fever
- Antibiotics: Co-amoxiclavulanic acid, Azithromycin
- Steam inhalation

When to consider admission of patient

- Patient cannot eat or drink at all
- Patient not improved after 48 hours of management at home
- Unstable vitals (blood pressure less than 100/60 mmHg)

Check Your Progress 9

1) Neck swelling in a case of sore throat is because of swollen .....

2) Patient unable to eat or drink at all will need admission for ..... fluids and antibiotics.

4.3.4 Deafness

Definition

Inability to hear is called deafness. It can be present in children and adults. It can be:

- acute or chronic depending on duration, more than 3 months-chronic,
- conductive or sensorineural-

Conductive : Due to defects in : Ear canal, tympanic membrane (eardrum) or ossicles;

Sensorineural : Due to defect in auditory nerve or cochlea

Assessment

For diagnosis of the condition it is necessary to take history of illness and do an examination of the ear.

History

Adults

- Patient will complain of inability to hear; difficulty in conversations
- Patient may have history of ear discharge
- Ask about history of dizziness and ringing of ears
- Also take history of continuous exposure to loud sound for example, patient works in a noisy factory

Child

- Mother/caregiver will complain that child does not respond to loud sounds. Also child does not speak
- Ask history of ear discharge
- Ask history of low weight at birth/jaundice or high-grade fever within a week of birth/ICU admission

Examination

- Conversation in a low voice will help to find out if patient has significant hearing loss. In case of a child, make a loud sound (clap) and check if the child has startle reflex or blinks.
- Examine ear canal to rule out wax or ear discharge.

Management

Adult

- Ear discharge : Treat with ear drops. Once ear is dry, refer for hearing test PTA (pure tone audiometry) and further management

- Ear discharge + dizziness : Refer immediately for intravenous treatment as dizziness may indicate complication of ear disease.
- Only hearing loss: Refer for PTA

Child

- Ear discharge: Eardrops- then refer for hearing test- child below 5 years: OAE (otoacoustic emissions) - a screening test, and BERA (brainstem-evoked response audiometry)
- Only hearing loss: Refer for hearing test.

Sudden deafness in either adult or child should be immediately referred to an ENT specialist.

Further Management

- **Conductive hearing loss:** Ear surgery like tympanoplasty-repair of eardrum
  Ossiculoplasty- repair of ear ossicles
- **Sensrineural hearing loss:**
  - Hearing aids
  - Cochlear implants - It is a device which is fitted inside the mastoid bone after surgery and helps hearing. Minimum age to operate is 6 months.

Important Note: Deafness in a child must be addressed urgently and referred for hearing test at the earliest. Earlier the diagnosis, better the chances of the child for hearing and speech either via hearing aids or cochlear implants.

Check Your Progress 10

1) Deafness can be conductive or .....
2) A mother may suspect deafness in an infant if there is no ..... reflex in child on hearing loud sounds.
3) Hearing test to be done in a child younger than 5 years of age is .....
4) Minimum age to get a cochlear implant to remedy deafness is .....

4.4 LET US SUM UP

We have learnt about 4 common ENT conditions – epistaxis, ASOM, sore throat and deafness. We have covered basic causes of these conditions, patient symptoms and signs, and basic management of these problems. Situations in which patient must be referred to a higher centre have also been described.

4.5 KEY WORDS

Aplastic Anemia : A condition in which bone marrow stops formation of all kinds of blood cells

Adenoiditis : Inflammation of the adenoid tissue – a kind of lymphoid tissue present in nasopharynx

Analgesic	:	Pain relieving drug. Examples: Paracetamol, Diclofenac, Ibuprofen
Anticoagulant	:	Drugs used as blood thinners; prevent blood from clotting. Used in some heart conditions
Cauterization	:	Burning with help of heat/chemicals
Epistaxis	:	Bleeding from nose
Inflammation	:	An acute reaction of the body involving migration of white blood cells, proliferation of blood vessels and healing
ICU	:	Intensive Care Unit. Very sick patients are admitted for round-the-clock monitoring and care
PT/INR	:	Prothrombin Time/International Normalised Ratio. Tests to detect defect in clotting of blood
Ligation	:	Tying off of blood vessels to stop bleeding
Maggot	:	Larva form of fly *Chrysomia* species
Neoplasm	:	Abnormal growth of a cluster of cells anywhere in body
Tympanic Membrane	:	Eardrum
Startle Reflex	:	When an infant gives sudden jerk of body in response to a loud sound/stimulus

4.6 MODEL ANSWERS

Check Your Progress 1

i) Symptoms and signs of eye infections.

- Pain, itching, or sensation of a foreign body in the eye
- Photosensitivity (aversion to bright light)
- Redness or small red lines in the white of the eye
- Discharge of yellow pus that may be crusty on waking up
- Watering of eyes
- Swelling of eye
- Whitening of black of eye
- Swollen eyelids
- Constant involuntary blinking (blepharospasm)
- Crusting over of the eyelid

ii) Assessment (WHATSUP)

a) What part of the eye is affected? Eyelid, conjunctiva, cornea?

b) How does it feel? Pressure? Itchy? Painful? No pain? Irritated? Spasm?

c) Aggravating and alleviating factors. Worse when rubbing eyes, blinking? Photosensitivity?

d) Timing. Was there exposure to a pathogen? Previous infection or irritation? Length of time, symptoms have persisted?

e) Severity. Is there visual impairment?

f) Useful data for associated symptoms

g) Perception by the patient of the problem. What does patient think is wrong?

iii) Contact lenses wearer to switch to glasses

iv) Cleaning of hands to prevent spread of infection

Check Your Progress 2

i) Conjunctivitis may due to following causes.

- Bacterial
- Viral (most common cause)
- Chlamydia
- Allergic
- Irritants
- Blepharitis (inflammation of eye lids)
- Stye
- Subconjunctival haemorrhage
- Keratitis
- Corneal abrasion
- Corneal ulcer
- Iridocyclitis
- Acute glaucoma
- Conjuctival or corneal foreign body
- Trichiasis- abnormally positioned eyelashes that grow back towards the eye touching cornea or conjunctiva
- Episcleritis
- Scleritis

ii) Blepharitis is inflammation of eye lids

iii) Conjunctival swab for culture sensitivity

iv) Do not bandage the eye without ascertaining the cause

v) Epilation of trichiatic lashes

vi) Refer the patient to higher medical facility when associated diminution of vision is diagnose

Check Your Progress 3

i) During Bacterial conjunctivitis

ii) Bacteria and Virus

iii) Treating conjunctivitis has three main goals:

a) Reduce or lessen the course of the infection or inflammation.

b) Prevent the spread of the infection in contagious forms of conjunctivitis.

c) The appropriate treatment for conjunctivitis depends on its cause.

iv) Careful flushing of the eyes with saline is a standard treatment for chemical conjunctivitis.

Chemical conjunctivitis also may need to use topical steroids.

Check Your Progress 4

i) Bacterium Chlamydia trachomatis.

ii) The WHO recommends 2 antibiotics for trachoma control: oral azithromycin single dose and tetracycline eye ointment.

iii) The World Health Organization (WHO) developed the SAFE strategy.

S = surgical care

A = antibiotics

F = facial cleanliness

E = environmental improvement

iv) Surgery is done to correct inward-turning of the lashes and prevent the lashes from scarring the cornea.

v) Stage of Trachoma as per WHO grading system

- Trachomatous inflammation, follicular (TF)–Five or more follicles of >0.5mm on the upper tarsal conjunctiva.
- Trachomatous inflammation, intense (TI)–Papillary hypertrophy and inflammatory thickening of the upper tarsal conjunctiva obscuring more than half the deep tarsal vessels.
- Trachomatous scarring (TS)–Presence of scarring in tarsal conjunctiva.
- Trachomatous trichiasis (TT)–Atleast one ingrown eyelash touching the globe, or evidence of epilation (eyelash removal)
- Corneal opacity (CO)–Corneal opacity blurring part of the pupil margin.

Check Your Progress 5

i) a gland of Zeis

ii) An eyelash

iii) other common causes of lid swelling like chalazion

Check Your Progress 6

i) long-sightedness

ii) short sightedness

iii) Presbyopia

iv) concave lens

v) convex lens

vi) Amblyopia

Check Your Progress 7

1) Fingernail trauma

2) Pinch the nose

3) 10

4) 100/60

5) Aspiration

Check Your Progress 8

1) Earache

2) Paracetamol

3) 48

4) Rupture

Check Your Progress 9

1) Lymph Nodes

2) Intravenous

Check Your Progress 10

1) Sensorineural

2) Startle

3) BERA

4) 6 months

4.7 REFERENCES

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UNIT 5 FIRST AID IN COMMON EMERGENCY CONDITIONS

Structure

5.0 Introduction

5.1 Objectives

5.2 First Aid in Common Emergency Conditions

- 5.2.1 High Fever
- 5.2.2 Low Blood Sugar
- 5.2.3 Minor Injuries
- 5.2.4 Fractures
- 5.2.5 Fainting
- 5.2.6 Bleeding
- 5.2.7 Shock
- 5.2.8 Stroke
- 5.2.9 Bites
- 5.2.10 Burns
- 5.2.11 Choking
- 5.2.12 Seizures (Fits)
- 5.2.13 Road Traffic Accidents (RTAs)
- 5.2.14 Poisoning
- 5.2.15 Drowning
- 5.2.16 Foreign Bodies

5.3 Let Us Sum Up

5.4 Model Answers

5.4 Key Words

5.5 References

5.0 INTRODUCTION

In the previous unit, you have gone through the common problems related to eyes, ENT, its identification and management. In this unit you shall learn the skills for providing First Aid measures to persons in common emergency conditions e.g. High fever, hyperglycemic shock (diabetic coma), hypoglycemic shock (insulin coma), fracture, wound, minor injuries, haemorrhage, shock, drowning and surgical trauma have been described in depth. In this unit we shall focus on the First Aid measures for common Emergency Conditions such as: High fever, low blood sugar, minor injuries, fractures, fainting, bleeding, shock, stroke, bites, burns, choking, seizures (fits), Road Traffic Conditions (RTAs), poisoning, drowning and foreign bodies and how to manage the patients with such conditions.

5.1 OBJECTIVES

After completing this unit, you will be able to:

- list the factors, causes, assessment for common emergency conditions;

- explain First Aid measures for common emergency conditions such as: high fever, low blood sugar, minor injuries, fractures, fainting, bleeding, shock, stroke, bites, burns, choking, seizures (fits), Road Traffic Conditions (RTAs), food poisoning, drowning and foreign body aspiration; and
- manage the persons in need of common emergency conditions such as: High fever, low blood sugar, minor injuries, fractures, fainting, bleeding, shock, stroke, bites, burns, choking, seizures (fits), Road Traffic Conditions (RTAs), poisoning and drowning and foreign body aspiration.

5.2 FIRST AID IN COMMON EMERGENCY CONDITIONS

First Aid(s) are the prompt preventive and therapeutic measures taken to help an accident victim or a person suddenly falling ill with acute emergencies. The measures taken largely depend on the nature of the injury or disease. The early assessment of such emergencies is very important for taking a prompt action and correctly deciding an appropriate management at your level before referral. Therefore as a public health nurse practioner, you need to have professionally a sound knowledge in order to identify and manage various common emergencies as mentioned below.

5.2.1 High Fever

High Fever also known as pyrexia is when a person's temperature in the mouth is over 37.7°C (99.9°F). Temperature can also be measured in the rectum (anus) or in the arm pit. It is usually a common medical sign of an underlying condition, most often an infection.

Factors influencing the body temperature

The person's normal body temperature may vary by factors such as eating, exercise, sleeping and day and night time. Our body temperature is usually highest at around 6 pm and lowest at about 3 am.

Causes

An elevated body temperature (fever) is one of the ways our immune system attempts to combat an infection. Usually the rise in body temperature helps the individual to resolve an infection. However, sometimes it may rise too high, in which case the fever can be serious and lead to complications. Some of the causes of high fever are:

- An infection - such as streptococcal throat, flu, chickenpox or pneumonia
- Over-exposure of skin to sunlight (sunburn), Heat stroke
- Prolonged strenuous exercise
- Silicosis – a type of lung disease caused by long-term exposure to silica dust
- Amphetamine abuse
- Alcohol withdrawal (Refer for other causes to Practical 4, Block 3)

Signs / symptoms : The patient with high fever may have following common signs and symptoms:

- Feeling cold when nobody else is shivering

- Lack of appetite
- Pallor
- Dehydration
- Headache and body ache, the individual is much more sensitive to pain
- Lethargy and Depression
- Sleepiness
- Sweating, Hot flushed skin
- Irritability, confusion, delirium and convulsions.

Assessment of high fever in patients especially in children is clinically very important to prevent them from developing convulsions. (Refer for details to Practical 4, Block 3)

Remember:

- Children with a high temperature may develop a febrile seizure, also known as a febrile fit or febrile convulsion, most of which are not serious and may be the result of an ear infection, gastroenteritis, or a respiratory virus (a cold). Less commonly, febrile seizures may be caused by something more serious, such meningitis, a kidney infection or pneumonia.
- Febrile seizures most commonly occur in children aged 6 months to 6 years and affect boys more often than girls.
- The seizure occurs because the body temperature rises too fast rather than because it has been sustained for a long time.

First aid management of patient with high fever: (Refer for details to Practical 4, Block 3)

Box 5.1: First Aid Measures for Treating the High Fever in Various age Groups

- **Infants and toddlers:**

  0-3 months having rectal temperature of 100.4°F (38°C) or higher. Refer to the doctor, even if the child does not have any other signs or symptoms. 3-6 months having rectal temperature up to 102°F (38.9°C). Encourage the child to rest and drink plenty of fluids. Medication is not needed. Refer to the doctor if the child seems unusually irritable, lethargic or uncomfortable.

  Above 6- months and upto 3 years having rectal temperature up to 102°F (38.9°C). Give the child acetaminophen. Read the label carefully for proper dosage. Refer to the doctor if the fever does not respond to the medication within one day.

- **Above 3 years and upto 17 years** having temperature up to 102°F (38.9°C) taken rectally for children up to 3 years of age or taken orally for children older than 3. Give the child ibuprofen. Encourage the child to rest and drink plenty of fluids. Refer to the doctor if the fever does not respond to the medication or lasts longer than one day doctor or if the fever is accompanied by a severe headache, stiff neck, shortness of breath, or other unusual signs or symptoms.

  Do not give aspirin to an infant or toddler.

- **18 years and above** having oral temperature up to 102°F (38.9°C). Take acetaminophen or ibuprofen or aspirin. Read the label carefully for proper dosage and be careful not to take more than one medication containing acetaminophen, such as some cough and cold medicines. Consult the doctor if the fever does not respond to the medication, is consistently 103°F (39.4°C) or higher, or lasts longer than three days or if the fever is accompanied by a severe headache, stiff neck, shortness of breath, or other unusual signs or symptoms.

Remember:

- Fever is commonly caused by bacterial/viral infections. Good hygiene practices help reduce the risk of developing an infection. This includes hand washing before and after meals, and after going to the toilet.
- A person with a fever caused by an infection should have as little contact as possible with other people, to prevent the infection from spreading. Whoever is caring for the patient should regularly wash their hands with warm soap and water.

5.2.2 Low Blood Sugar

(For details rafer to Practical 4, Block 3).

Low blood sugar known as hypoglycemia is the most common medical emergency which may be associated with either over dose of insulin intake or by inadequate caloric intake.

Signs and Symptoms

Patient with low blood sugar level may have following Signs and Symptoms:

- Irritability
- Confusion
- Tremors
- Blurring of vision
- Coma
- Seizures
- Tachycardia
- Hypotension
- Cold and clammy skin
- Diaphoresis

First treatment

Note:

It is difficult to differentiate whether patient has hypoglycemia or hyperglycemia. Therefore it is better and medically advisable to treat the patient initially as a case of hypoglycemia.

Whenever a patient has such problem, treat him/her as follows:

If patient is conscious:

- Give him/her reassurance
- Give liquids containing additional sugar such as tea with increased sugar or 4 to 6 ounces of fruit juice or 5 to 6 hard candies.

If patient is unconscious:

- Place glucose powder under tongue.
- Refer the patient immediately to nearest PHC or hospital. (for further treatment refer to Practical 4, Block 3)

5.2.3 Minor Injuries

Injury can be defined as a trauma to any part of the body. Minor injuries may include: cuts, wounds, sprains, strains, minor fractures and joint dislocations, superficial minor burns, insect stings and animal bites.

First aid measures for taking care of minor injuries:

All minor injuries need to be treated according to the specific conditions as discussed below:

a) **First aid measures for taking care of cuts and wound:**

If a patient with a minor cut or wound reports to you, proceed with the following steps:

i) Ensure the safety of the patient.

ii) Wash the hands well before touching the injured area of the patient.

iii) If the wound is dirty wash it thoroughly with soap and water, then apply firm pressure for around 5 minutes. This will stop most bleeding.

iv) Elevate the wound, above the level of the heart if possible. When bleeding has reduced clean the area with the antiseptic lotion and keep it dry.

v) Use a sterile dressing to avoid touching the wound directly.

vi) Administer a dose of tetanus toxide injection.

vii) Give an anti inflammatory analgesic such as tablet lyzer D at once to reduce pain and swelling.

viii) Give antibiotic such as amoxicillin 500 mg 6 hourly for 5 days if needed.

b) **First aid measures for taking care of sprains, strains, fractures and joint dislocations:**

The patient with these conditions is given immediate care commonly called **RICE.**

R: Rest the injured part

I: Ice the area

C: Compress with a bandage

E: Elevate the injured part to divert the blood flow away from the area

(Refer for details to Practical 4, Block 3)

c) **First aid measures for taking care of burns:**

It includes following steps:

i) Run the burnt part under the cold water or apply an ice pack until pain subsides.

ii) Clean and bandage the burned area to avoid the possibility of infection.

(Refer to Practical 4, Block 3 for further steps)

d) **First aid measures for taking care of patient with insect stings and animal bites:**

Proceed with the following steps:

i) Apply pressure with a clean bandage or towel to stop bleeding.

ii) Clean and scrap the area to remove carefully the wings of the insect.

iii) Give immediately a dose of tetanus toxide.

iv) Apply antihistamine ointment to reduce itching, swelling and pain

v) Treat the sting or bite according to type of insect or animal (as mentioned under bites)

5.2.4 Fractures

Fracture is an injury that causes break in the bone. The bone may be crack or split into pieces. The break is usually complete, but in the young the bone can be bent without breaking completely. This is called a greenstick fracture. Correct first aid management of fractures, in both conscious and unconscious casualties, is essential in order to reduce the amount of tissues damage, bleeding, pain and shock.

Causes A fracture is caused by:

- **Direct force** - A blow that breaks the bone at the point of impact
- **Indirect force** - When the bone breaks at some distance from the point of impact, e.g. where a fall on an outstretched hand results in a fracture of the collar bone.
- **Abnormal muscular contraction** - A sudden contraction of a muscle may result in a fracture, e.g. an elderly person snapping the knee cap after tripping and trying to prevent a fall.

Types : The types of fractures are**:**

i) **Closed -** Skin is unbroken and blood is lost into tissues

ii) **Open -** A wound leads to be fracture, or bone protrudes through the skin. Blood loss may be severe, and infection can result.

iii) **Spiral fractures** are caused by twisting of the bones such as those which may occur in skiing accidents.

iv) **Transverse fractures** are horizontal breaks directly across the bone also called stress fractures caused by repetitive, damaging motion such as running or jumping.

v) **Greenstick fractures** usually the result of sudden force and are characterised by a splintering of the top layer of the bone which resemble like a piece of bark peeled from a tree and are commonly found in children.

vi) **Comminuted fractures** are those in which the bone shatters into fragments. These fractures are caused by severe force such as car accident. As shown in Fig. 5.1 (a) and (b).

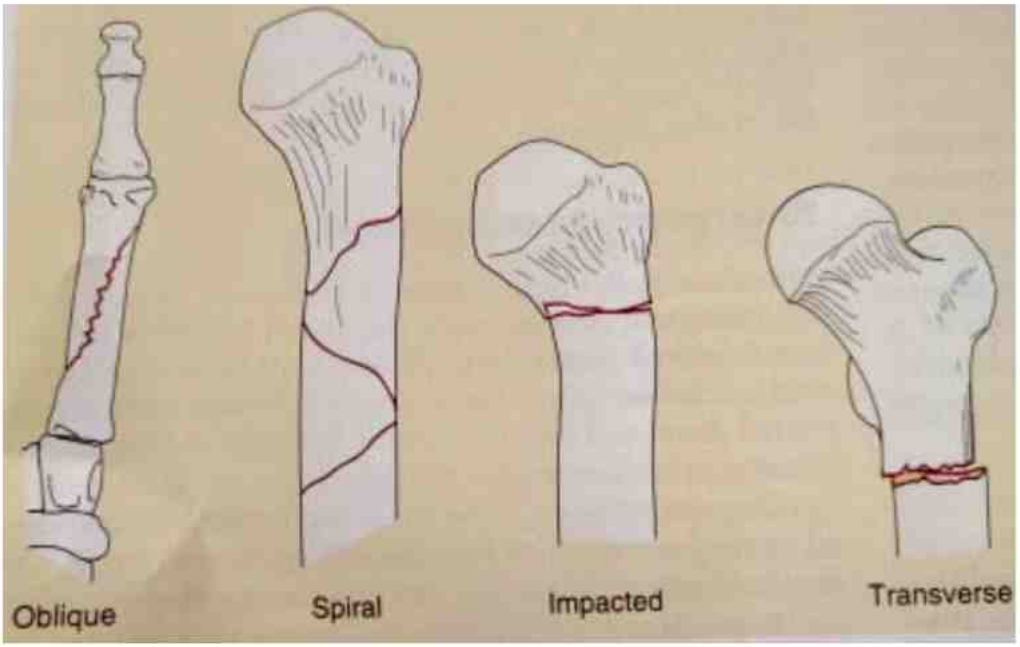


Fig. 5.1: (a) Types of fractures

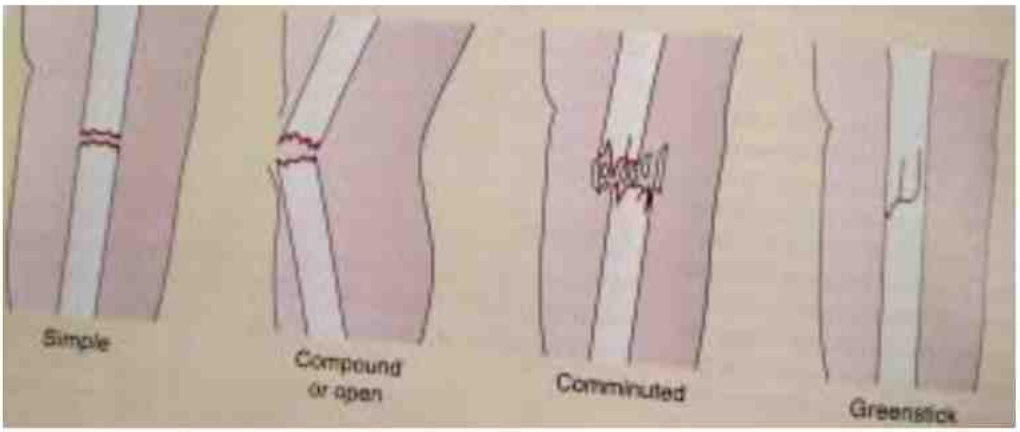


Fig. 5.1: (b) Types of fractures

Signs and Symptoms: A patient with fracture may present with following possible signs and symptoms:

- The break may have been felt or heard
- Pain at or near the site of the injury
- Difficult or impossible normal movement of the limb
- Deformity, abnormal twist or shortening of limb
- Tenderness at the site of fracture, when gentle pressure is applied
- Swelling over and around the fracture
- Bruising at the site of fracture
- A coarse grating sound if one end of the bone moves against the other. This is called crepitation.

Assessment and First aid treatment of fracture: (Refer to Practical 4, Block 3)

5.2.5 Fainting

Fainting or Syncope is a temporary loss of consciousness caused due to lack of oxygen in the brain characterised by rapid onset, short duration and spontaneous recovery.

Causes:

i) Prolonged standing

ii) Sitting for long periods followed by suddenly standing causes blood to collect in leg veins, depriving the heart of blood to send to brain and thereby causing fainting.

iii) Being in hot and/or crowded places may precipitate an episode.

Signs and Symptoms:

The fainting is usually preceded with:

- Weakness, nausea or dizziness or light headedness followed by unconsciousness.
- Difficulty in speaking or weakness in limbs may occur due to obstructed blood flow through the blood vessels of the neck and brain.
- Irregular heartbeat.
- Flushing of the face

First Aid Treatment:

Whenever you will find a person fainting, immediately proceed as follows:

i) Make the person to lie flat atleast for 15 minutes or to sit if lightheadedness is present.

ii) Open the airway and assess for breathing.

iii) Provided that the person is breathing, raise the person's legs above the level of his/her heart.

iv) Loosen any restrictive clothing around the neck or the waist of the person.

v) Consciousness is usually quickly regained with these first aid measures.

vi) If the person remains unconscious, check for breathing and heart rate again and look for another cause.

vii) Call an ambulance and refer the person quickly to hospital for immediate assessment and treatment.

Check Your Progress 1

1) List the common signs and symptoms of high fever.

   a) .....

   b) .....

   c) .....

   d) .....

   e) .....

2) Discuss the First Aid measures for treating the high fever in infants and toddlers.

   .....

   .....

.....

.....

.....

.....

3) List down the immediate steps which you will take for managing a case with low blood sugar level.

.....

.....

.....

.....

.....

4) Fill in the blanks:

a) The patient with the conditions such as .... is given immediate care commonly called RICE.

b) The word RICE stands for:

R: .....

I: .....

C: .....

E: .....

c) ..... is a coarse grating sound produced if one end of the bone moves against the other.

5.2.6 Bleeding

It can be defined as loss of blood from blood vessels which may be cut, torn or damaged accidentally or due to disease. The bleeding is visible to the naked eye when it is external accompanying various injuries, such as scrapes, cuts, puncture wounds, open fractures or amputations or if an object is impaled in the skin. This is called EXTERNAL HAEMORRHAGE. But when the bleeding is not visible to the naked eye as the loss of blood from the blood vessels may be taking place into chest or abdominal cavity or inside the skull. Such type of haemorrhage is called INTERNAL HAEMORRHAGE.

Types of bleeding

Whether bleeding is external or internal, it has following three types:

Arterial bleeding

- The blood is bright red in colour
- It spurts at each contraction
- Flow is pulsatile

Venous bleeding

- Blood is dark red in colour
- It does not spurt
- It has steady flow

Capillary bleeding

- Blood is red in colour
- It does not spurt
- It has slow but even flow

Causes of bleeding (refer to Practical 4, Block 3)

- **Signs and Symptoms of bleeding** (refer to Practical 4, Block 3)

S/S of the patient depends upon the type of bleeding as follows:

a) **External Bleeding:**

i) Evidence of major external blood loss

ii) S/S of shock:

i) Patient complains of thirst

ii) Blurring of vision, fainting and giddiness

iii) Face and lips become pale

iv) Skin feels cold and clammy

v) Pulse becomes faster but weaker

vi) Restlessness

vii) Breathing becomes shallower (air hunger)

viii) Unconsciousness may occur

b) **Internal Bleeding:**

i) History of sufficient injury to cause internal bleeding

ii) Wounds that have penetrated skull

iii) Wounds that have penetrated chest or abdomen

iv) History of medical condition which may cause internal bleeding (ulcer)

v) Pain and tenderness around the affected area, swelling and tension may be felt

vi) Symptoms and signs of shock

vii) Blood may appear from one of the body orifices, nose, ear, mouth, rectum, urethra and vagina.

viii) Fracture of bones especially long bones of upper arm and thigh.

First-Aid Treatment

First aid for a bleeding victim is crucial. When the bleeding is severe, there may be the symptoms of shock. Therefore it is very important to seek immediate medical attention for:

a) Severe Bleeding, cuts that are more than skin deep

b) Cuts with ragged edges

c) Cuts with deeply embedded dirt, impaled objects

d) Amputation.

What so ever will be the type and cause of bleeding immediately proceed as follows:

i) Control bleeding with direct pressure. (Fig. 5.2)

ii) Cover wound with sterile dressing or clean cloth, diaper, or sanitary napkin. (Fig. 5.3)

iii) Place your gloved hand over dressing.

iv) Press firmly. Continue pressure until bleeding stops.

v) DO NOT remove dressing. If soaked through add more material and continue pressure.

vi) If no broken bone suspected, elevate wound higher than level of heart. DO NOT move limb if you think it is broken.

vii) Elevate area above the heart. If it does not appear broken.

Refer the patient to the hospital:

a) If the patient has symptoms of shock

b) If a cut is longer than about $^{1}/_{3}$ inch (¾ centimeter), is on the face, appears deep, or has edges that separate

c) If bleeding does not stop on its own or within several minutes after pressure is applied

d) If there are symptoms of a nerve or tendon injury, such as loss of sensation, loss of movement, or numbness.

e) If a scrape is deep or has dirt and particles that are difficult to remove.

f) If there is a punctured wound, particularly if foreign material is in the wound.



Fig. 5.2: Controlling bleeding by applying direct pressure



Fig. 5.3 : Applying a dry dressing to a wound

Box 5.2: Some Important Instructions for Taking Care of Bleeding

- If bleeding does not slow after 5 minutes of direct pressure, have victim lie down, continue direct pressure on wound, and apply pressure to pressure point between wound and heart.
- For wounds on arms, press on brachial artery: Use your fingers to apply pressure to inner side of victim's upper arm, between elbow and shoulder, in groove between muscles.
- For wounds on legs, press on femoral artery in groin: Use heel of hand to apply pressure at middle of crease where thigh meets groin.
- Release pressure point as soon as bleeding stops.
- Once bleeding is controlled, secure original dressings with bandage.
- Observe for shock (see shock).
- DO NOT give food or drink.

5.2.7 Shock

It is a condition of severe depression of body's vital functions following an injury, haemorrhage, severe pain or emotional.

The degree of shock varies from person to person, depending on one's temperament and sensitivity to pain. The young, the aged, weak, anemic persons develop shock quickly when suffering from shock producing conditions. (Refer to Practical 4, Block 3 for further details)

Causes

The most important causes of shock are:

i) Abdominal injuries

ii) Profuse bleeding

iii) Severe burns

iv) Fractures (especially when severe and when improperly handled)

v) Severe wounds

vi) Chest injuries

vii) Skull injuries

Types

Shock following injury is of two types:

1) Primary shock which occurs immediately after injury and is caused by excessive stimulation of the nerve endings at the injury site.
2) Secondary shock which develops within half an hours after injury and is caused by loss of blood (haemorrhage), externally or internally.

Signs of Shock

The patient may have the signs according to the type of shock as given in the box 5.3

Box 5.3: Signs of Shock According to Type

Primary Shock	Secondary Shock
i. Pallor of face and lips	i. Pallor of face and lips
ii. Beads of sweat on the forehead	ii. Beads of sweat on the forehead
iii. Clamminess of the skin	iii. Clamminess of the skin
iv. Cold hands and feet	iv. Cold hands and feet
v. Shallow breathing	v. Shallow breathing
vi. Rapid and feeble pulse	vi. Rapid and feeble pulse
	vii. Vomiting
	viii. Restlessness
	ix. Vacant expression
	x. Unconsciousness (at a later stage)

First Aid Treatment

It is Important to Treat Primary Shock if Secondary Shock is to be Avoided



Fig. 5.4 : Emergency treatment of the patient in shock

The steps to be followed in order to treat the shock are: (Fig. 5.4)

i) Lay the patient down on a stretcher or a bed. If neither is available lay him/her down on the ground on a sheet or blanket.

ii) Raise the foot of the stretcher or bed about 25 cm of the ground.

iii) Keep the patient warm by covering him/her with the blanket. If available, use a hot water bottle but be careful not to overheat him/her or burn.

iv) Stop any bleeding.

v) Give the patient hot tea with plenty of sugar if conscious.

vi) Splint fractures and cover wounds before sending the patient to primary health centre.

vii) Transfer the patient immediately to primary health centre or hospital.

5.2.8 Stroke

A stroke, sometimes called a "brain attack", occurs when blood flow to an area in the brain is cut off. The brain cells, deprived of the oxygen and glucose needed to survive, die. If a stroke is not treated early, permanent brain damage or death can result.

Types of Stroke

a) **Ischemic Stroke**

It is similar to a heart attack, except it occurs in the blood vessels of the brain. About 80% of all strokes are ischemic. Clots can form in the blood vessels in the brain or leading to the brain, or even in blood vessels elsewhere in the body and then travel to the brain. These clots block blood flow to the brain cells. Ischemic stroke can also occur when too much plaque (fatty deposits and cholesterol) clogs the brain's blood vessels.

b) **Haemorrhagic stroke**

It occurs when a blood vessel in the brain breaks or ruptures. The result is blood seeping into the brain tissue, causing damage to brain cells. The most common causes of haemorrhagic stroke are high blood pressure and brain aneurysms.

Signs and Symptoms of Stroke

The s/s of stroke depend upon its cause and the part of the brain effected however the major signs and symptoms as reported by a stroke patient as well as found upon examination of a stroke patient include:

a) **Common Signs and Symptoms**

- A sudden feeling of weakness or numbness of the face, arm, or leg on one side of the body.
- Loss of vision or dimming (like a curtain falling) in one or both eyes.
- Loss of speech, difficulty in talking or understanding what others are saying.

- Sudden, severe headache with no known cause.
- Fainting or unstable walking usually combined with another symptoms like light headedness, dizziness and confusion.
- Sudden loss of long-term or short-term memory.

b) **Signs and Symptoms related to cause**

- In cerebral thrombosis the symptoms occur gradually, sometimes fading and progressing over several days.
- In cerebral embolism the symptoms come on quickly.
- A stroke caused by subarachnoid haemorrhage is signaled by the sudden onset of headache, nausea, vomiting, confusion and seizures.

First Aid Treatment

Stroke is an acute medical emergency. Immediate treatment can save the life of victim or increase the chance of recovery by preventing or reducing permanent brain damage. Follow quickly the steps of EMERGENCY TREATMENT as given below:

i) Keep patient lying down on his/her side.

ii) Keep the head high, turned on side to prevent aspiration of vomit.

iii) Keep the patient quiet and cover the patient lightly with blanket.

iv) Observe for signs and symptoms shock and treat it (see shock in Practical 3, Block 3)

v) Shift the patient quickly to hospital.

Prevention

Make the public aware about that:

- Up to 50% of all strokes are preventable.
- Many risk factors such as: blood pressure, dyslipdemia, obesity stress, smoking, alcohol etc. can be controlled and prohibited before they cause problems by practicing healthy lifestyle pattern like healthy food, exercise, adequate sleep and rest and recreation .

5.2.9 Bites

Bites are the wounds caused by piercing or stinging of the flesh of a person by an animal, insect or by another person.

Types of Bites: Let us now go through the types of bites as given below:

1) **Insect Bite**

Insects such as bees, wasps, bed bug, hornet, jelly fish, scorpion and spider cause stings which are very painful. The insect bites can be classified according to s/s and treatment into:

a) **Bee/ wasp/ bed bug, hornet stings, jelly fish:** (Fig. 5.5)



Fig. 5.5: Bees and Wasps

These occur frequently in rural areas, especially if their nests are disturbed.

Signs and symptoms

The following are the various important signs and symptoms :

a) Sharp pain at the site of sting.

b) Swelling around the affected area with the central reddened puncture point.

c) Sting may be there in the wound.

d) If the person is prone to allergies, the person may go into shock.

e) Stings in the mouth and throat may cause swelling leading to asphyxia.

Treatment

The insects have sting which is left at the site of the puncture and has to be removed to prevent the person from danger. The treatment includes following step:

i) **Removal of sting**

   a) If the sting has been left embedded in the skin hold tweezers as near to the skin as possible grasp the sting and remove it.

   b) Do not squeeze the poison sac because this will force the remaining poison into the skin.

ii) **Local treatment**

   a) Bee venom is acid and it should be neutralised by application of ammonia, soda.

   b) Wasp venom is alkaline and it should be neutralised by application of vinegar, or lemon juice.

   c) For jelly-fish stings, apply calamine lotion.

   d) Apply cold compress and spirit at the site of sting.

   e) Give Ibugesic tablet to relieve pain and swelling.

   f) Give antihistamine (avil tablet) for allergy.

iii) **Treatment of insect stings inside the mouth or throat**

   a) To reduce swelling, give ice to suck.

b) Rinse the mouth with cold water or solution of water and bicarbonate of soda.

c) If breathing becomes difficult, shift the patient immediately to hospital.

iv) Refer the patient immediately to the hospital, if patient does not recover or shows symptoms of shock.

b) **Scorpion / Spider sting**

In many parts of the India scorpions and spiders are common and their stings are likely to occur in dark places as they are often found lurking in such places. Their stings are very dangerous and can be poisonous, their stings cause severe pain and in children signs of shock may be present. (Fig. 5.6)



Fig. 5.6: Spider

Signs and Symptoms

The patient with history of scorpion or spider will have following signs and symptoms:

a) Itching and swelling at the effected site (such as eye may be closed due to swelling).

b) Burning pain and increased sensation or numbness near the site of bite.

c) Restlessness, lacrimation, salivation.

d) Nausea, vomiting.

e) Profuse sweating, 4–6 hours after bite.

Treatment

Whenever a patient with a scorpion or spider sting reports to you, proceed with the following steps:

- Examine the site of sting.
- If the sting is on the extremity, apply a tourniquet proximal to the site of sting and release it every 5 to 10 minutes for a few seconds to prevent gangrene formation.
- Apply ice packs on the region to slow down the absorption of poison.
- Apply cold compress or fresh potassium permanganate solution on the wound. It stops the pain immediately.
- Give Ibugesic tablet to relieve pain and swelling.
- Give antihistamine (avil tablet) for allergy.
- Look for the signs of shock, particularly in children.
- Refer the patient immediately to the hospital, if patient does not recover or shows symptoms of shock.

2) **Snake Bite**

All snake bites are not fatal. Only a small quantity of venom may be fatal. Most people die from fear and venom is not the point of consideration.

Signs and Symptoms

While asking the history, patient will tell that he /she has been bitten by a snake and will have following signs and symptoms

- The punctured wound produced by the fangs of the snake will be clearly visible.
- Local Signs and Symptoms such as:
  - Bleeding, numbness at the site of bite.
  - Swelling and burning pain at the site of bite. (Fig 5.7)
- Signs of poisoning such as:
  - Drowsiness.
  - Dimness of vision.
  - Difficulty in breathing and speech.
  - Area becomes bluish purple after bite in twelve hours.
  - Dribbling of saliva, paralysis.
  - Convulsions, coma.



Fig. 5.7 : Swelling of hand and tissue death on first finger due to Snake bite

Assessment

- Site may show one or more punctures, a small abrasion and perhaps a linear laceration.

- In non poisonous snakes bite semi-circular row of teeth marks may be seen.
- Local swelling appearing within few minutes after bite is a sign of poisonous snake bite.
- Respiratory symptoms.
- Paralysis.

Treatment

Snake bites are punctured wounds, caused by fangs of snakes. As for as treatment is concerned, these are treated as minor wounds. However you should always assume it as poisonous and proceed with the treatment of the patient as follows:

- Lay the patient down.
- Give him complete rest.
- Calm and reassure him.
- Do not make him to walk.
- Tie immediately a piece of cloth or a tourniquet, tightly above the bite to prevent the venous blood return. It should be loosened for a few seconds at a regular interval of about 10 minutes.
- If the case is seen within one hour of the bite:
  - Take a scalpel or a clean razor blade and make four to six cuts 1cm deep over the area of bite.
  - Squeeze the part hard so that the blood flows out of the cuts.
  - Wash cuts gently with normal saline or antiseptic lotion if available otherwise with soapy water. (Fig. 5.8)

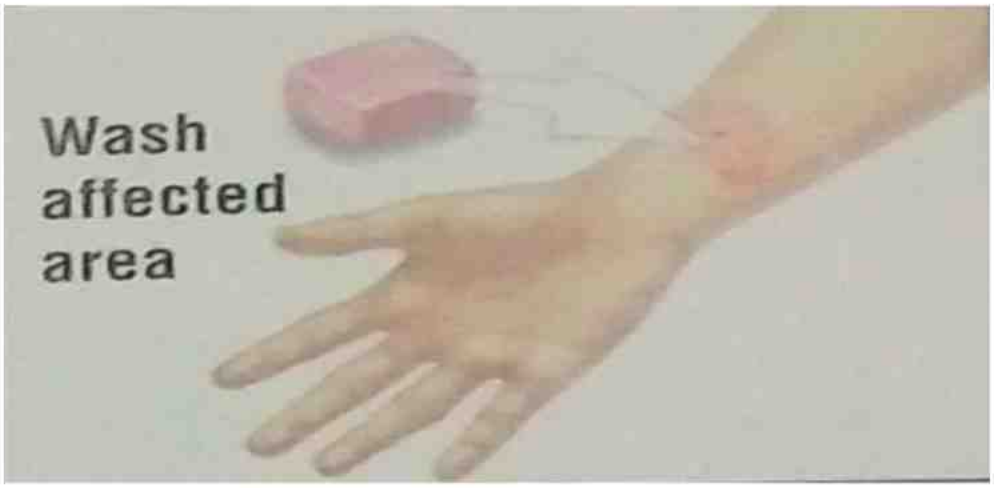


Fig. 5.8: Wash the site of bite gently with soapy water

- Apply a clean dressing.
- Immobilise the affected limb.
- Apply Ice packs on the wound.
- Treat shock.
- Shift the patient to hospital immediately.
- Take the killed snake, if available for identification. This will help the doctors for proper management.

Remember :

- Excision of the bitten area is a doubtful practice, particularly if the area is on the limb.
- Sucking the poison from the site is controversial practice.

3) **Dog Bite**

In India where rabies is endemic, if a person is bitten by a dog, it should be taken seriously. Wounds following a dog bite are potentially infected because dirt and germs are introduced into wound from the teeth of the dog.

Remember :

- Dog bite may cause fatal medical condition i.e. fear of water called hydrophobia.
- The dog should be watched for 10 days.
- If the dog is healthy after this period then there is no danger of rabies.

The patient will report the following complaints:

1) History of bite.
2) Discomfort, pain at the site of bite.

Signs and Symptoms of Rabies

- Headache, nausea and vomiting.
- Agitation, confusion and hallucination.
- Difficulty in swallowing.
- Foaming at mouth.
- Respiratory paralysis.
- Patient will have difficulty in drinking water.

Treatment

Whenever the patient with dog bite reports to you, proceed with following steps:

a) If the dog is known to the patient and behaves normally:
   - Wash the wound well with soap and flush with running water by syringe.
   - Apply antiseptic lotion such as betadine.
   - Bandage the wound with sterile dressing.
   - Give a dose of tetanus toxide.
   - Give anti inflammatory analgesic tablet such as lyzer D for pain.
   - Give antibiotic such as capsule amoxicillin 500 mg 8 hourly for five days.
   - Tell the patient to watch the dog for 10 days for the abnormal behaviour as follows:
     - If the dog no longer eats

- If the dog no longer barks
- Shivers, becomes aggressive, barks at those it knows
- Has convulsions and saliva dribble from it's mouth
- If the dog has died or was killed, send the carcass to the nearest veterinary dispensary for investigation.

b) If the dog is not known to the patient :

- Give the patient above treatment and
- Refer the patient to doctor immediately for anti-rabies vaccine.

Remember:

- The SAME TREATMENT applies to the bites or scratches of OTHER ANIMALS.
- Even a minute dog bite from a strange dog can give rise to RABIES, therefore always REFER the patient in such case.

5.2.10 Burns

Burns are the leading cause of accidental death. Burns are caused by flame, hot liquids, hot surfaces, chemicals, radiations or electric current. (Refer to practical 4, Block 3 for further details)

Types of burns

i) **Thermal Burns**

Thermal burns are most common, typical causes includes fire in the home, auto accidents, playing with matches, poorly stored gasoline, faulty electric systems, space heaters, fire crackers and kitchen accidents. (Fig 5.9)



Fig. 5.9: Thermal burns

ii) **Chemical Burns**

Chemical burns are caused by contract, ingestion, inhalation injection or acids or alkalis.

iii) **Electric Burns**

Electric burns may arise from contact with malfunctioning electric wiring, flash electrical arcs from high voltage power line or machines or even from lightning.

How to Determine Burns Severity?

Severity of burns is determined by many factors such as :

a) Depth of burn

b) Percentage of body surface area (size of burns)

c) Location

d) Age

e) Medical history

f) Cause of burn

Depth of burn

Depth of burn is typically divided into three major categories:

1) A superficial burn or first degree, where the skin is partially destroyed. After a burn, the skin becomes red, extremely sensitive to the touch, wet and swollen.

2) A partial thickness burn or second degree burn is deeper. Blisters form and are filled with a clear, thick liquid. The area is painfully sensitive to touch and is swollen.

3) A full thickness burn or third degree is still deeper where structures beneath the skin such as muscles, bones, nerve endings etc. are severely affected. It is often difficult to determine the depth of a burn until several days after the injury. The box 5.4 and Fig. 5.10 shows perentage of Burnt Skin Surface.

Box 5.4: Rule of Nine Method for Calculating Percentage of Burnt Skin Surface

Head and neck:	9%
Right upper extremity:	9%
Left upper extremity:	9%
Anterior trunk:	18%
Posterior trunk:	18%
Right lower extremity:	18%
Left lower extremity:	18%
Perineum:	1%

First Aid Management of Burns

Major goals of first aid are:

- Stop the burning.
- Assess airway, breathing and circulation.

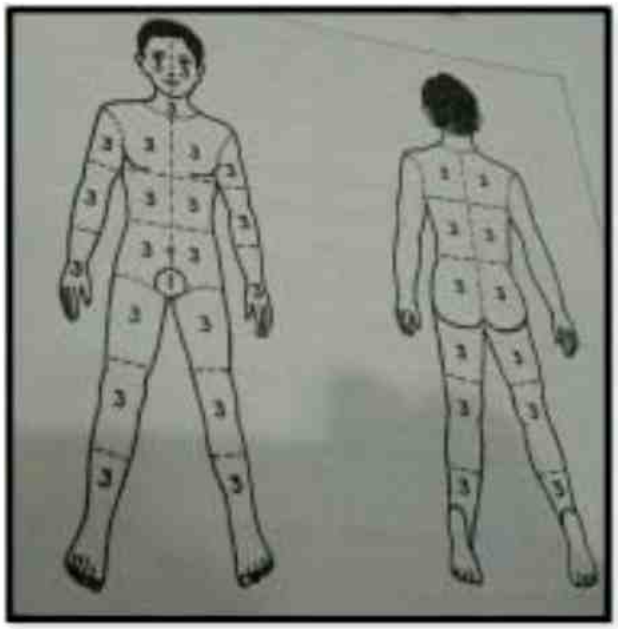


Fig. 5.11: Distribution of skin surface by percentage

- Begin cardiopulmonary resuscitation, if necessary.
- Conserve body heat.
- Minimise wound contamination.
- Transport patient to nearby hospital.

For thermal burns

i) Remove the person from the source and extinguish burning.

ii) Drop the person to the ground

iii) Log roll the person to extinguish the flames and cool the wound quickly.

iv) Douse the burnt area with cool water within 10 minutes of injury. This may halt burn process in the tissues which may minimise burn depth and reduce pain considerably. (Fig. 5.11)

Drink plenty of water and donot run (Fig. 12 and Fig. 5.13)



Fig. 5.11: Pour cold water over burnt area

v) Remove jewellery from the burned area as metal retains heat and may continue burning, it may be constricting when edema develops.

vi) Do not attempt to remove adherent clothing.



Fig. 5.12: Drink plenty of fluids



Fig. 5.13: Do not run

In chemical burns

- Brush off dry chemical and immediately rinse with a lot of clean cold water for 15–20 minutes.
- Prolong contact with chemicals increase the burn severity.

For electric burns

- Turn off the source of electricity immediately. If it is not possible,
- Separate the person from electric current by using non-conductive equipments e.g. dry wool, rope.
- If underground or overhead electric wires are involved in the accident. Contact the electric utility company for assistance.
- When the person is disconnected from the source of electricity, quickly assess cardiopulmonary function and start CPR immediately if necessary.
- Do not apply ointment or cream to a burn at this time.
- Transport the patient to the hospital immediately. (Fig. 5.14)

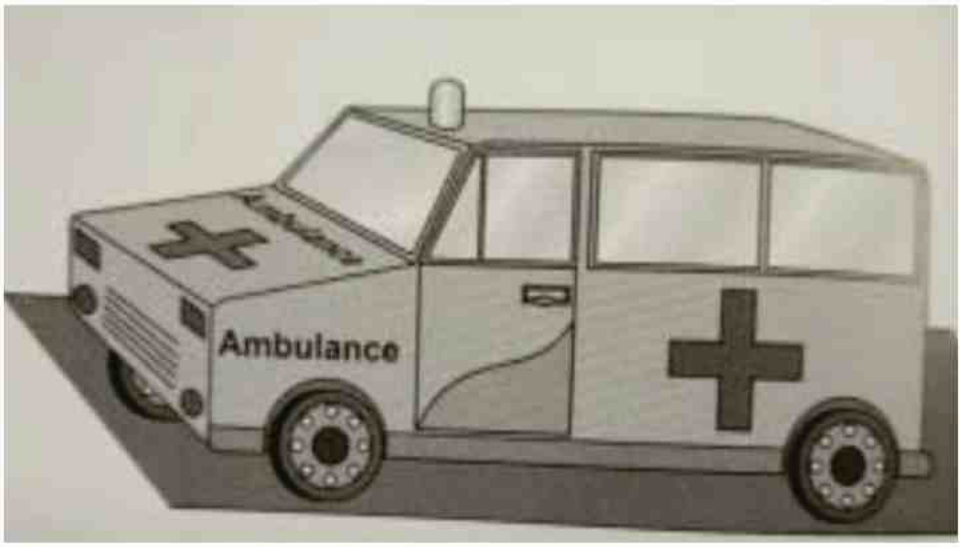


Fig. 5.14: Shift the patient to the hospital immediately

Box 5.5: Formulas for Calculating Fluid in Burn

Parkland Formula (Modified Baxter Formula) - Gold Standard:
Total fluid requirement in first 24 hours =
4 ml x body weight (kg) x %TBSA burned
(using Ringer's Lactate)

1st 8 hours → Administer 50% of the total fluid.

Next 16 hours → Administer remaining 50%.

Fluid calculation starts from time of injury, not hospital arrival.

Additional Notes (as per latest practice):
Only second-degree burns or higher are included in %TBSA.

Colloids are usually not given in the first 24 hours.

Urine output goal:

Adults: 0.5–1.0 mL/kg/hr

Children: 1.0–1.5 mL/kg/hr

5.2.11 Choking

Chocking also called asphyxia (a lack of oxygen or an excess of carbon dioxide in the body) which occurs due to obstruction in windpipe.

Causes

- It is most common in children; a piece of marble, a weed, a coin or a button may get struck in the air passage.
- In adults food may go down in the wrong way and lead to choking.

First aid treatment

The aim of the first aid is to remove the foreign body or obstruction.

a) **First aid in adult**

i) When victim is standing

- The first aider should stand behind the victim and wrap his arms around the waist,
- And then grasp the fist with your other hand and
- Place the thumb of the fist against the abdomen (belly) slightly above the navel and below the rib cage,
- Press your fist into victim's abdomen with a quick upward thrust.
- Repeat several times till the foreign body is expelled out of the windpipe.

ii) When victim is sitting

The first aider should stand behind the chair and performs the same manoveur as mentioned above.

iii) When victim is lying

- Turn him supine,
- Facing the victim, kneel astride the victim's legs,
- With your hands one on the top of another, place the heel of your bottom hand over the abdomen between the naval and rib cage,
- Press in the victims abdomen with a quick upward thrust,
- Repeat several times,
- Before the patient vomits, place him on his side,
- And wipe to prevent asphyxia,
- Following expulsion of foreign body give him artificial respiration if needed.

b) **First aid in infant**

- Hold the infant upside down by legs and slap his back hard three or four times.
- If not successful, lay the infant prone with his head hanging downwards over the knee and give sharp slaps between shoulders.
- If still not successful, induce vomiting by passing two fingers right to the back of the throat.

c) Refer immediately to hospital if above measures fail.

Check Your Progress 2

1) List the 3 features of arterial bleeding are:

   a) .....

   b) .....

   c) .....

2) List the signs of primary shock.

   a) .....

   b) .....

   c) .....

   d) .....

   e) .....

   f) .....

3) List the steps of First Aid treatment that you will follow for taking care of a patient with snake bite at your level:

   a) .....

   b) .....

   c) .....

   d) .....

   e) .....

   f) .....

   g) .....

   h) .....

4) Fill in the blanks:

   a) A sudden feeling of weakness or numbness of the face, arm or leg on one side of the body is the common symptom of .....

   b) Tie immediately a piece of cloth or a tourniquet, tightly ..... site of the bite to prevent ..... It should be loosened for a few seconds at a regular interval of ..... to prevent the risk of .....

   c) List the factors which determine the severity of burn:

      i) .....

      ii) .....

      iii) .....

      iv) .....

      v) .....

   d) Chocking is ..... which occurs due to ..... in windpipe.

5.2.12 Seizures (Fits)

Seizures are intermittent episodes of brief and nearly undetectable to long periods of vigorous shaking of the muscles affecting the part or whole of the body usually accompanied by loss of consciousness.

Remember:

- Fits can be distinguished from the spasms, which are muscle contractions and do not particularly affect all muscles of the body as in a fit.
- In both the patient has no control in starting or stopping the fit or spasm

Types of fits

The common 2 types of the seizures which you will likely see and which present with the fits include:

a) **Convulsive seizures**

These occur in infants and in young children which is an ALARMING SIGN for onset of any fever or illnesses such as whooping cough, viral respiratory tract infection etc.

b) **Epileptic seizures**

The epilepsy is the disorder of brain which may be result of injury or infection stroke, brain tumours or birth defects. Epileptic seizures are the result of excessive and abnormal nerve cell activity in the cortex of the brain.

The difference between convulsive and epileptic seizures is that:

- In comparison to convulsive seizures epilepsy usually occurs in older children and adults.
- The fits in epilepsy come on long intervals and the patient is either known to be an epileptic or his relatives will tell you that the patient has had similar fits before.
- Signs of injury, caused by previous uncontrolled epileptic fit may be seen on the body.

Signs and Symptoms

The signs and symptoms of a patient having an episode of epileptic seizure depend upon the type of seizure which is discussed below:

c) **Generalised seizures**

In this type of seizure all the areas of the brain (the cortex) are involved therefore referred to as grand mal seizures. Such patients have following signs and symptoms:

- The patient suddenly utters a loud cry out and falls down,
- The whole body becomes stiff for several seconds to a minute followed by rhythmic jerky movements of the arms and legs which slow before stopping.
- The eye balls are rolled upwards.
- The patient froths at the mouth and clenches his/her teeth.
- The patient goes to a deep sleep.

- The patient may appear to not be breathing and turn blue. This may be followed by a period of deep, noisy breathes.
- The patient may pass urine or stool without knowing it.
- On awakening he is not aware of what happened to him during the attack.
- The person will frequently be confused after a generalised seizure for quite some time (minutes to hours).

d) **Partial or focal seizures**

In this type of seizure only part of the brain is involved, so only part of the body is affected. Depending on the part of the brain affected, symptoms may vary such as:

- The hand of the patient may show rhythmic or jerky movements.
- Small repetitive movements such as picking at one's clothes or smacking of the lips.
- Sometime the patient appears dazed or confused.

e) **Absence or petit mal seizures**

- These are most common in childhood.
- Impairment of consciousness is present with the person often staring blankly.
- Repetitive blinking or other small movements may be present.
- Typically, these seizures are brief, lasting only seconds. Some patients may have many of these in a day.

First aid treatment

i) **Convulsive seizures**

If the child has fits or convulsions proceed as follows:

- Take history to find out how the fits started and progressed.
- Check temperature for high fever, if present:
  - Give him cold sponging with a wet towel.
  - Place a cold compress on the head.
- Keep the child on his side to prevent him/her from aspirating the vomit.
- Prevent the child from injuring himself.
- Place a rolled cloth between the teeth to prevent him from biting the tongue.
- Look the child for teething symptoms.
- Look the child for signs of infection and neck stiffness if present.
- Refer the child immediately to hospital for investigation and treatment.

ii) **Epileptic seizures**

If a patient has an epileptic fit, proceed as follows:

- Make sure that the patient is safe and protect him/her from danger due to fall, fire, roadside accident or drowning. Remove any nearby dangerous and sharp object.

- Lie the patient down while turning his/her face on one side. Place a cushion under his/her head.
- Clear the people from around the patient to give him/her sufficient fresh air.
- Place a rolled cloth between the teeth to prevent him/her from biting the tongue.
- DO NOT try to restrain the patient during the fit.
- DO NOT give him water or anything by mouth during fit.
- When the seizure has stopped, clean the secretions from the mouth. Check for breathing and make patient comfortable.
- Look for any card indicating a history of epilepsy and prescription.
- Give the prescribed medicine and let the patient rest for a while. Keep monitoring the person until the patient is fully recovered.
- After the patient regains consciousness, give him a hot tea with sugar.

Remember:

Patient should be admitted to hospital as an emergency in case of the following if :

- It is a first seizure
- More than three seizures occur in an hour
- If a seizure lasts for more than five minutes
- If there is not prompt response to treatment
- If there is response to treatment but seizures were prolonged or recurrent before treatment was given.
- If there is difficulty monitoring the patient

5.2.13 Road Traffic Accidents (RTAs)

Global Context (WHO - 2018 Global Status Report on Road Safety):

Road traffic injuries remain the leading cause of death for children and young adults aged 5-29 years.

Globally, 1.35 million people die each year as a result of road traffic crashes.

The burden is highest in low- and middle-income countries, including India.

The goal of halving road traffic deaths by 2030 is part of the UN Sustainable Development Goals (SDG 3.6).

India-Specific Facts (as per NCRB 2022 and MoRTH 2023 reports):

In 2022, India reported over 1.68 lakh road accident deaths and more than 4.4 lakh injuries.

Over 70% of fatalities occur among young adults (18-45 years).

Pedestrians, motorcyclists, and bicyclists still account for a large proportion of fatalities.

Uttar Pradesh had the highest number of road accident deaths, followed by Tamil Nadu and Maharashtra.

Therefore the only chance of survival for the accident victims remains emergency care and treatment they receive within the first hour of the tragedy (called the golden hour) by a competent health care professional.

Guidelines for handling road traffic accidents

- In road, traffic accidents casualties may have to be moved in order to save lives.
- They should be moved immediately if:
  - Casualty is unconscious
  - Risk of spinal injury
  - Severe internal bleeding
  - Danger of further injury from fire
  - Breathing and heart beat have stopped
- If the above situations are not present then carry out full examination and determine the extent of injuries before moving them.

Immediate Action

- Look for any indication of dangerous substances being present.
- Send somebody to telephone the emergency services immediately.
- Do not pull casualties from the vehicle. This may cause further injuries.
- Minimise the risk of fire by switching off the engines and if possible, disconnect the battery because fires often begin in the wiring under the dashboard.
- Do not allow anyone to smoke near the vehicle.
- Instruct the bystanders to setup warning triangles atleast 200 meters away from the accident site. If the triangles are available ask them to direct traffic.
- Immobilise the car. Apply hard brake; put the car in the gear or place blocks under the wheels. If the car is on its side, and there are passengers inside, do not try to right it, just make sure that it will not roll over.
- Look inside the vehicle for any small children who may have fallen out of site or be hidden under blankets or luggage. Check the area immediately surrounding the vehicle for any passengers who may have been thrown out of vehicle or who may be wandering about. Determine the number of persons in the vehicle before the accident.

Moving a Casualty

- Casualty should be moved very carefully.
- Immobilise the casualty.
- Make sure that there are enough persons to support all parts of body.
- Each person should be aware of this role.
- Removal should be carried out in one continuous movement.

Removal of trapped casualty

- If the casualty is trapped under a vehicle and it has to be removed because of danger of fire, then try to move the vehicle away from the casualty first. If this is not possible then immobilise the vehicle as described above and move the casualty as gently as possible.

- Mark the exact position of the casualty or vehicle before moving either because the police man needs this information.
- Accident victims may be trapped in the vehicle by an impacted steering wheel. Such persons should be watched carefully for unconsciousness. If this occurs then the casualties had should be placed in the open airway position. It should be watched carefully till the arrival of the skilled help.

5.2.14 Poisoning

Poisons are the harmful substances and when sufficient doses are consumed either accidentally (by mistake or by ignorance) or for suicidal purpose, it may prove very dangerous or may kill a person.

Routes of taking poisons

1) Eating or drinking poisonous substances by mouth.
2) Inhaling household or industrial gases, chemical vapours or fumes from fire and exhaust by lungs.
3) By injection into the skin as a results of bites from some animals, insects, snakes or by hypodermic syringes.
4) Absorption through the skin by contact with poisonous sprays such as pesticides and insecticides.

Mechanism of Action of Poison

1) Swallowed (ingested) poisons act directly on the food passages resulting in vomiting, pain and diarrhoea.
2) Corrosive poisons may severely burn the lips, mouth, gullet and stomach thus causing intense pain.
3) Fumes and gases cause choking which may result in difficulty of breathing and unconsciousness.
4) Some poison work in the blood stream, central nervous system and prevent breathing, heart action, and other vital life process.
5) Some poisons act by displacing the oxygen in the blood and preventing its distribution to the tissues.

Assessment of the patient with poisoning

The assessment of the patient with poisoning varies, often depending on the nature of the poison and the method of entry into the body. It includes following:

1) General information from patient or witness suggesting contact with a poison.
2) Checking of the container having poison or poisonous plant.
3) Observing the patient for the following signs and symptoms:
   i) The patient may be delirious having convulsions without previous history of such condition.
   ii) Signs and symptoms of asphyxia such as:
      - Fast and shorter breaths
      - Fast and feeble pulse

- Cyanosis on face, lips, fingers and nails
- Consciousness is lost partially or totally
- Froth may appear at the mouth and nostrils
- Fits may occur

iii) Vomiting

iv) Diarrhoea

v) Burns on lips, mouth after contact with corrosive poisons.

First aid management of patient with poisoning

General steps to be followed in treatment of the patient with poisoning include:

1) First of all inform the police.
2) Collect information from the patient or persons accompanying the patient.
3) Preserve any suspecting material like a bottle containing pills or liquid for information to the treating doctor.
4) If the patient has vomited, preserve the vomited material also which can give some clues about the type of poison ingested.
5) If the patient is conscious and there are:
   - No burns on lips or mouth then induce vomiting by giving plenty of fluids or milk and by touching the fauces (inside the mouth). Preserve the vomited material for analysis.
   - If the lips or mouth show signs of burning, cool them by giving water or milk to drink. Do not induce vomiting.
6) If the patient is unconscious but breathing normally, treat as for the shock (see Practical 4, Block 3).
7) If breathing and heart beat stop begin resuscitation immediately (as described in drowning: Practical 4, Block 3).
8) If convulsions are present (treat as described in management of seizures).
9) Shift to immediately to hospital.

Remember:

- Do not contaminate yourself with any poison that may be around the casualty's mouth.
- Any strong acid or alkali often causes burns of face, mouth, and throat such as: ammonia, turpentine, bleachers, toilet cleaners, corn and wart removes, any petroleum product like petrol, paint thinner, turpentine, polish etc.

Types of poisoning and their first aid treatment

The various common types of poisoning and their first aid treatment are mentioned below in the Box 5.6.

Box 5.6: Common Types of Poisoning

Type and Meaning	Signs and Symptoms	Treatment
I. Food Poisoning • It occurs by consumption of food, which is contaminated by bacteria and is stored or cooked incorrectly. • The most common types of bacteria are: **a) Staphylococci** • They multiply in food and produce a poisonous substance toxin. **b) Salmonellae** • They multiply in bowel and cause dysentery like illness. Salmonella is infectious and can spread through poor personal and kitchen hygiene.	**a) Staphylococcal Poisoning** The following s/s appear within two to six hours of eating the contaminated food: • Nausea and vomiting. • Headache. • Abdominal pain. • Diarrhoea. • Symptoms and signs of shock. **b) Salmonella Poisoning** They appear within few hours of eating the food or are delayed for a day or two. • Fever • Nausea and vomiting • Diarrhoea • Abdominal pain • Signs and symptoms of shock	• Keep the patient at rest. • Give plenty of fluids to drink. • Induce vomiting. • Shift the patient to hospital.
II. Acid Poisoning • It can be suicidal or homicidal or accidental. • The various common acids used are nitric, sulphuric, hydrochloric, carbolic, oxalic and acetic acids.	• Burns on or around the lips. • Burning in the mouth, throat and stomach often followed by heavy vomiting. • Diarrhoea and intense thirst. • In severe cases patient may have unconscious, signs and symptoms of asphyxia, shock or seizure.	1) **General** Same as in general management of poisoning 2) **Specific** • Do not induce vomiting. • Give half litre of water or milk to which milk of magnesia (50 grams) has been added. • If milk or water is not available then olive oil, butter, white of an egg and barley water can be given. • Shift the casualty immediately to hospital.

Type and Meaning	Signs and Symptoms	Treatment
III. Alkali Poisoning • It can be also suicidal or accidental. • Alkalies commonly used are ammonia, potassium hydroxide and sodium hydroxide, bleachers, detergents washing soda.	• Membrane of the mouth may be white and swollen. • There may be soapy appearance in the mouth. • Abdominal pain. • Vomiting may contain blood and mucous.	1) **General:** Same. 2) **Specific:** • Do not induce vomiting. • Give plenty of fluids: vinegar and citric acid, lemon or orange juice or barley water. • Shift the patient immediately to hospital.
IV. Common Indian Plant Poisoning **a) Castor Oil Plant** • Poisoning is common among children.	• Pain in throat and abdomen. • Nausea • Vomiting • Diarrhoea	• Give plenty of water • Induce vomiting • Shift to hospital
b) Jamal Gota	• Burning pain in mouth, throat and abdomen. • Salivation, vomiting and gripping pain. • Diarrhoea	Same as above
c) Cannabis Sativa • Bhang, ganja, hashish are used as intoxicants. • In large amount it causes intoxication.	• Excitement • Visual hallucination • Euphoria, laughter • Marked increase in appetite • Homicidal tendencies • Giddiness, tingling and numbness • Narcosis • Dilated pupil and deep sleep • In large dose respiratory failure and death may occur.	Same as above
d) Dhatura (Safed dhatura and kala dhatura) • Dried leaves and dried seeds are used as poisoning.	• Bitter taste, dry mouth and throat • Burning pain in the stomach • Difficulty in swallowing and talking • Giddiness, ataxia, intoxication • Dry hot skin, rise in temperature • Delirium tries to run	Same as above

Type and Meaning	Signs and Symptoms	Treatment
	away from bed, picks up bed clothes, tries to pull imaginary threads from the tips at his fingers and develops dreadful hallucinations of sight and hearing, convulsions & coma.	
e) Aconite: (Mitha Zahar, Dudhia Vish)	• Severe burning and tingling of lips, mouth, tongue and throat • Dysphagia • Salivation • Vomiting • Abdominal colic • Vertigo • Muscle spasm and twitching • Impairment of vision	Same as above
f) Cocaine • Obtained from coca plant.	• Restlessness, talkativeness • Dry mouth and throat • Reflexes are increased • Tingling and numbness in hands, feet and tongue • Giddiness, nausea and vomiting • Cyanosis, dilated pupils, fast pulse • Profuse perspiration • Delirium, hallucination and convulsions.	Same as above
g) Mushroom  **Fig. 5.15: Mushroom**	• Burning of throat and stomach. • Pain in abdomen • Vomiting and diarrhoea • Urine may contain blood • Cyanosis, rapid pulse, convulsions • Headache, giddiness, cramps, visual disturbances • Coma	• Give castor oil to drink • Induce vomiting. • Shift patient to hospital

Type and Meaning	Signs and Symptoms	Treatment
h) Tobacco • Tobacco poisoning may occur due to excessive smoking, accidental swallowing or the application of leaves or juice to skin or wound.	• Burning, acid sensation, in mouth, throat, oesophagus and stomach • Increased salivation • Nausea, vomiting headache, giddiness • Numbness, tremors • Profuse perspiration • Visual and auditory disturbances • Rapid pulse and respiration	• Give plenty of fluids orally • Induce vomiting • Shift patient to hospital
i) Opium • It is also called afim.	**1) Stage of euphoria** • Increased sense of well-being. • Talkativeness • Fast pulse • Convulsions in children **2) Stage of stupor** • Headache • Giddiness • Desire to sleep • Cyanosis • Itching: Itching all over the body **3) Stage of narcosis** • Coma • Pinpoint pupil • Difficulty in respiration	• Plenty of fluids orally • Induce vomiting • Shift to hospital
V: Drugs **a) Phenobarbitone overdose**	• Euphoria • Talkativeness • Headache • Giddiness • Desire to sleep	• Plenty of fluids orally. • Induce vomiting if patient is conscious • Give hot coffee or tea
b) Aspirin Overdose	• Abdominal pain • Vomiting • Drowsy • Ringing in the ears • Difficulty in breathing • Profuse sweating • Fast pulse	• General treatment of poisoning • Shift to hospital .

Type and Meaning	Signs and Symptoms	Treatment
VI: Metal Poisoning **a) Lead**	• Metallic taste in mouth • Nausea and abdominal pain • Vomiting • Stools may be bloody dark in colour • Headache, drowsiness, cramps, convulsions, numbness • In chronic poisoning, a blue line is seen on gums	• Give plenty of warm water • Milk, white of egg, barley water can be given • Induce vomiting • Shift to hospital .
b) Mercury	• Metallic taste in mouth • Burning pain in mouth and stomach • Tongue and throat is corroded with grey white coating • Nausea and vomiting • Stools may be bloody dark in colour • Headache, convulsions, numbness	• Same treatment as in lead poisoning
VII: Organic Chemical Poisoning **a) DDT**	• Nausea, vomiting, vertigo, tremors • Convulsions • Coma • Respiratory failure	• Give plenty of tap water • Induce vomiting • Shift to hospital
b) Insecticides	• Pain in abdomen • Vomiting • Tremors • Ataxia • Convulsions	• Give plenty of fluids orally • Induce vomiting • Shift the patient immediately to hospital
VIII. a) Organophosphorus Compounds • Used as pesticides and insecticides in agriculture and homes • Very lethal • Used in suicidal and homicidal purpose	• Characteristic smell • Nausea and vomiting • Pain in abdomen, diarrhoea • Lacrimation, sweating and bronchial secretions • Blurring of vision • Pin-pointed pupil • Cramps	• Remove contaminated clothing • Wash the skin with soap and water • Give plenty of water • Artificial respiration

Type and Meaning	Signs and Symptoms	Treatment
	• Confusion, convulsions, coma	• Resuscitation • Shift the patient immediately to hospital
b) Cyanide • Very lethal poison • Used as inhalation or ingestion	• Headache, dizziness • Nausea, hypotension • Dyspnoea, drowsiness • Convulsions, Cyanosis • Unconsciousness • Foam in the mouth • Respiratory failure • Characteristic smell of bitter almonds	• Start resuscitation immediately • Shift the patient to hospital immediately
IX. Alcohol Poisoning	• Smell of alcohol • Vomiting, Convulsions • Slurred speech • Inco ordination • Double vision • Visual impairment • Flushing of face • Rapid pulse • Dilated pupils • Shallow breathing	• Give water, milk or white of egg • Induce vomiting • Shift the patient to hospital

5.2.15 Drowning

Drowning is the third leading cause of accidental death in the United States following auto accidents and falls. (Refer to Practical 4, Block 3 for further details).

It is the result of complete immersion of the nose and mouth in water or any other liquid. The water enters the windpipe and lungs, clogging the lungs completely which can lead to death due to suffocation and lack of oxygen (hypoxia).

Near drowning is an event in which a drowning victim can be resuscitated back to life.

Causes

- Drowning is the second-leading cause of death in children between 14 years of age and under because they are curious and attracted to water but are not yet able to understand how dangerous it is.
- In adults more than two third of all drowning accidents in United States involve alcohol consumption. As alcohol intake impairs both judgment and physical coordination, thereby greatly increasing the likelihood of a drowning death.
- Suicidal attempt is another cause of drowning.

First Aid Management

(Details explained in Practical 4, Block 3)



Fig. 5.16: Rescuing a drowning victim

5.2.16 Foreign Bodies

A foreign body is a substance that can enter in the skin, eye, ear, nose, throat, esophagus or stomach and if not removed in time, can lead to complication or even cause death of the victim. The First Aid management of common foreign bodies is described below:

1) **Foreign Body under the Skin**

Causes

Skin may be pierced by thorns, glass, iron pieces, needles etc.

First Aid Management

If the patient with the foreign body under skin reports to you treat him/her as follows:

1) If the piercing object is large and embedded in the skin and difficult to deal with, do not interfere.
   a) Dress the wound gently.
   b) Immobilise the part with splint.
   c) Give a dose of tetanus toxide.
   d) Give a dose of anti inflammatory analgesic such as injection voveran stat.
   e) Refer the patient immediately to the hospital.

2) If the wound is small and you can deal with it at the sub-centre, proceed as follows:

   a) Sit or lay the patient down.

   b) Handle the injured part gently.

   c) Clean the wound with boiled water. Always clean away from, not towards the wound.

   d) Remove the foreign matter gently with sterile forcep.

   e) Stop the bleeding using direct pressure.

   f) Apply antiseptic ointment/ lotion and cover with a clean dry dressing.

   g) Give a dose of tetanus toxide.

   h) Give anti inflammatory analgesic such as tablet lyzer D for pain.

   i) Give cap amoxicillin 500 mg 8 hourly for five days.

2) **Foreign Body in the Eye**

Causes

- Wings of insects, dust and coal, metal particles from lathes, wood particles and loose eyelashes are common objects that get lodged in the eye. They cause pain and later redness if they are not removed soon.
- Sometimes splinters that get lodged in the cornea may cause severe trouble and penetrating foreign bodies are a danger to the eye itself.

Signs and Symptoms

A foreign body that enters the eye can cause:

- Irritation or eye discomfort
- Tearing (Fig 5.17)
- Blurred vision, light sensitivity
- Uncontrolled eyelid contractions
- Redness of conjunctiva (white of the eye)
- Swelling of the eyelid
- The object may even cause the scratch in eyeball's transparent tissue (cornea) and eye may become infected with bacteria.

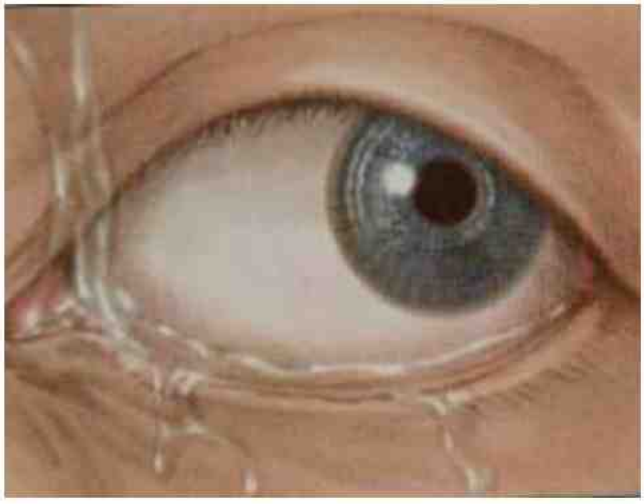


Fig. 5.17: Lacrimation of eye due to foreign body

First Aid Management

If the patient has foreign body in the eye, proceed as follows:

i) Restrict the patient from rubbing the eye. In the case of a child, tie his hands together at the back.

ii) Seat the patient so that light falls on the eye.

iii) Pull the lower lid down. If the foreign body is floating and not embedded remove it with a narrow moist swab. The corner of a handkerchief twisted to a fine point will also do. Sometimes the eye's own tears may wash out the object.

iv) If the foreign body is not visible, it may be under the upper eyelid. Hold the head of patient to one side with eyelids open. Flush the eye(s) with clear water or saline solution for fifteen minutes.

v) Ask the patient to keep the eye(s) open as blinking repeatedly may scratch the cornea.

vi) If unsuccessful, pull the upper lid forwards, push the lower lid upwards and let go of both the lids. The lashes of the lower lid usually dislodge the foreign body. Try this two or three time.

vii) If the foreign body is embedded in the eye, particularly in the cornea (the black of the eye), do not touch it. OR

viii) If the foreign bodies are penetrating causing pain and bleeding, ask the patient not to rub his eye. Just apply a soft and sterile pad and light bandage, and refer him quickly to the hospital.

ix) When injury with corrosive acid, alkali or juices from plants are suspected, blinking eyelids under water a number of times or flushing with a large quantity of water is the best thing to do. Then apply a soft pad and light bandage. Refer the patient to the hospital at once. (Refer to Practical 6, Block 2 for details).

Remember:

Never Attempt to Remove an Object that is Embedded in the Eye or on the Cornea

3) **Foreign Body in the Ear**

Causes of the foreign body in the ear include:

- Solid objects (round or irregular such as: pea, beans)
- Insects such as: mosquito, fly etc.
- Wax excessive wax formation can block the air passage

Signs and Symptoms

Any foreign body that enters the ear passage can cause:

- Disturbance in hearing or dizziness
- Ear irritation or itching and ear ache
- wriggling sensation in the ear due to presence of insect
- Swollen, red and hot ear

First Aid Management

If the patient has foreign body in the ear passage, proceed as follows:

i) First of all ask the patient whether he knows that something has gone into his/her ear.

ii) Assess the patient for above signs and symptoms.

iii) Enquire whether patient has had trouble with ear wax before.

iv) If the foreign body is an insect, fill the ear with glycerine or coconut or mustard oil or warm salt water. The insect will float up and can be removed easily.

v) If there is nothing floating up, leave it alone, do not meddle at all.

vi) Refer the patient to the hospital as soon as possible.

4) **Foreign Body in the Nose**

First Aid Management

If the patient with a foreign body in the nose reports to you, carry on with the following steps:

a) Make the patient breathe through the mouth.

b) Do not try to remove the foreign body.

c) If the patient is a child, tie his hands behind his back.

d) Refer the patient immediately to hospital.

5) **Foreign Body in the Throat**

First Aid Management

The patient with a foreign body in the throat should be treated as follows:

a) If some large, irregular objects have got stuck in the throat and if visible, these may be taken out by using the fingers.

b) In a child, hold the child's head downward and tap on the back of the neck and the foreign body may fall out.

c) In the case of fish bones or thorn these may get lodged by piercing some part of the throat. In these cases, keep the patient calm and refer him/her to the hospital.

6) **Foreign Body in the Oesophagus**

If a person swallows a foreign object, it will usually pass through the digestive system uneventfully. But some objects can lodge in the throat or oesophagus.

First Aid Management

Whenever a patient with a foreign body in the oesophagus reports to you, proceed with the following instructions:

1) If an object such as button battery of a tiny watch or calculator or coin or fish bone or thorn or a piece of bone gets stuck in the oesophagus, it should be removed as quickly as possible to avoid further injury to the oesophageal lining.

2) If a person who has swallowed an object is coughing forcefully, encourage him or her to continue coughing and do not interfere. If a swallowed object blocks the airway and the person's condition worsens i.e. the cough becomes silent or breathing becomes more difficult.

3) Then follow the **steps of First Aid** recommended by **American Red Cross** as follows:

   a) **Give 5 back blows.** First, deliver five back blows between the person's shoulder blades with the heel of your hand.

b) **Give 5 abdominal thrusts.** Perform five abdominal thrusts (also known as the **Heimlich manoeuver)**. Abdominal thrusts may injure infants. Use chest compressions instead.

c) **Alternate between 5 back blows and 5 abdominal thrusts** until the blockage is dislodged.

d) If you are the only rescuer, perform back blows and abdominal blows.

e) If another person is available, have that person call for help while you perform first aid.

f) If the person becomes unconscious, help him or her to the ground and begin CPR.

g) After attempted rescue breaths, check the mouth for an object and if visible remove it.

h) Do not perform a blind finger sweep because this could push an object farther into the airway.

Steps to perform the Heimlich manoeuver on someone else

a) **Stand behind the person.** Wrap your arms around the waist. Tip the person forward slightly.

b) **Make a fist with one hand.** Position it slightly above the person's navel. (Fig. 5.19)

c) **Grasp the fist with the other hand.** Press hard into the abdomen with a quick, upward thrust, as if trying to lift the person up.

d) **Perform a total of 5 abdominal thrusts,** if needed. If the blockage still is not dislodged, repeat the five-and-five cycle.



Fig. 5.18: Step: 2 Heimlich manoeuver on yourself

Remember:

A modified version of the technique is sometimes taught for use with **pregnant or obese people**. The rescuer places his or her hand in the **center of the chest** to **compress** rather than in the **abdomen.**

- **Steps to perform the Heimlich manoeuver on yourself**

If you are choking and alone, call your local emergency number immediately. You cannot perform back blows on yourself. But you can perform abdominal thrusts. Proceed with following steps:

a) **Place a fist** slightly above your navel.

b) **Grasp your fist** with the other hand and bend over a hard surface – a counter top or chair will do. (Fig. 5.19)

c) **Push your fist** inward and upward. (Fig. 5.20)



Fig. 5.19: Step 1: Heimlich manoeuver on yourself



Fig. 5.20: Step 2: Heimlich manoeuver on yourself

1) **Foreign Body in the Stomach**

First Aid Management

a) Smooth objects like coins, buttons and safety pins may be swallowed. The stomach and the intestines most often adjust themselves in such a way as to expel them. There is most often no need to panic.

b) Do not give laxatives or bananas routinely.

c) Refer the patient to the hospital.

Check Your Progress 3

1) List signs and symptoms of Generalised seizures:

a) .....

b) .....

c) .....

d) .....

e) .....

f) .....

g) .....

h) .....

2) Mention the steps of first aid treatment to be followed, if a patient has an epileptic fit.

a) .....

b) .....

c) .....

d) .....

e) .....

f) .....

g) .....

h) .....

i) .....

j) .....

3) List the s/s of asphyxia:

a) .....

b) .....

c) .....

d) .....

e) .....

f) .....

1) Mention the steps to perform the Heimlich manoeuver if someone else has aspirated a foreign body which is blocked in his/her throat or oesophagus:

a) .....

b) .....

c) .....

d) .....

e) .....

f) .....

g) .....

h) .....

i) .....

5) Fill in the blanks:

a) .....Seizure is an alarming sign for onset of any fever or illness in .....and in ——— children.

b) While removing foreign body from the eye, never attempt to remove an object that is embedded in the ..... or on.....

c) List down the most common 2 types of bacteria causing food poisoning:

i) .....

ii) .....

5.3 LET US SUM UP

In this unit we have discussed the meaning, causes and signs and symptoms and First Aid measures of various Common Emergencies including: high fever, low blood sugar, minor injuries, fractures, fainting, bleeding, shock, stroke, bites, burns, choking, seizures (fits), road traffic accidents (RTAs) poisoning including food poisoning, drowning and foreign body aspiration.

Certain new terms are clarified in Key Words. You may use a medical dictionary for further clarifications of terms. However, further reading is solicited to keep you updated for which certain references are given.

5.4 MODEL ANSWERS

Check Your Progress 1

1) Common signs and symptoms of high fever

   a) Feeling cold when nobody else is shivering

   b) Lack of appetite

   c) Dehydration

   d) Headache and body ache, the individual is much more sensitive to pain

   e) Lethargy and Depression

   f) Sleepiness

   g) Sweating

   h) Irritability, confusion, delirium and convulsions.

2) First Aid measures for treating the high fever in infants and toddlers are

   i) **0-3 months** having rectal temperature of 100.4°F (38°C) or higher.

   - Refer to the doctor, even if the child does not have any other signs or symptoms.

   ii) **3-6 months** having rectal temperature up to 102°F (38.9°C).

   - Encourage the child to rest and drink plenty of fluids.
   - Medication is not needed.
   - Refer to the doctor if the child seems unusually irritable, lethargic or uncomfortable.

   iii) **Above 6-months and upto 3years** having rectal temperature up to 102°F (38.9°C).

   - Give the child acetaminophen.
   - Read the label carefully for proper dosage.
   - Refer to the doctor if the fever does not respond to the medication within one day.

3) The immediate steps for managing a patient with low blood sugar level

   a) If patient is conscious:

      - Give him/her reassurance
      - Give liquids containing additional sugar such as tea with increased sugar or 4 to 6 ounces of fruit juice or 5 to 6 hard candies.

   b) If patient is unconscious:

      - Place glucose powder under tongue.
      - Refer the patient immediately to nearest PHC or hospital.

4) a) sprains, strains, fractures and joint dislocations

   b) The word **RICE** stands for

   R: Rest the injured part

   I: Ice the area

C: Compress with a bandage

E: Elevate the injured part to divert the blood flow away from the area.

c) Crepitation

Check Your Progress 2

1) Three features of arterial bleeding are:
   a) The blood is bright red in colour
   b) It spurts at each contraction
   c) Flow is pulsatile

2) Signs of primary shock are:
   a) Pallor of face and lips
   b) Beads of sweat on the forehead
   c) Clamminess of the skin
   d) Cold hands and feet
   e) Shallow breathing
   f) Rapid and feeble pulse

3) Steps of first aid treatment to be taken immediately for a patient with snake bite include:
   a) Lay the patient down.
   b) Give him complete rest.
   c) Calm and reassure him.
   d) Do not make him to walk.
   e) Tie immediately a piece of cloth or a tourniquet, tightly above the bite to prevent the venous blood return.
   f) If the case is seen within one hour of the bite:
      - Take a scalpel or a clean razor blade and make four to six cuts 1cm deep over the area of bite.
      - Squeeze the part hard so that the blood flows out of the cuts.
      - Wash cuts gently with normal saline or antiseptic lotion if available otherwise with soapy water.
      - Apply a clean dressing.
      - Immobilise the affected limb.
      - Apply Ice packs on the wound.
   g) Treat shock.
   h) Shift the patient to hospital immediately.

4) Fill in the blanks:
   a) stroke
   b) venous blood return, 10 minutes, ischemia

c) Factors determining severity of burn are:

i) Depth of burn

ii) Percentage of body surface area (size of burn)

iii) Location

iv) Cause of burn

v) Age

d) A lack of oxygen or an excess of carbon dioxide in the body, obstruction

Check Your Progress 3

1) Signs and symptoms of generalised seizures are:

a) The patient suddenly utters a loud cry out and falls down.

b) The whole body becomes stiff for several seconds to a minute followed by rhythmic jerky movements of the arms and legs which slow before stopping.

c) The eye balls are rolled upwards.

d) The patient froths at the mouth and clenches his/her teeth

e) The patient goes to a deep sleep.

f) The patient may appear to not be breathing and turn blue. This may be followed by a period of deep, noisy breathes.

g) The patient may pass urine or stool without knowing it.

h) On awakening he is not aware of what happened to him during the attack.

2) First aid treatment for an epileptic fit patient:

a) Make sure that the patient is safe and protect him/her from danger due to fall, fire, roadside accident or drowning. Remove any nearby dangerous and sharp object.

b) Lie the patient down while turning his/her face on one side. Place a cushion under his/her head.

c) Clear the people from around the patient to give him/her sufficient fresh air.

d) Place a rolled cloth between the teeth to prevent him/her from biting the tongue.

e) DO NOT try to restrain the patient during the fit.

f) DO NOT give him water or anything by mouth during fit.

g) When the seizure has stopped, clean the secretions from the mouth. Check for breathing and make patient comfortable.

h) Look for any card indicating a history of epilepsy and prescription.

i) Give the prescribed medicine and let the patient rest for a while. Keep monitoring the person until the patient is fully recovered.

(j) After the patient regains consciousness, give him a hot tea with sugar.

3) Signs and symptoms of asphyxia are :
   a) Fast and shorter breaths
   b) Fast and feeble pulse
   c) Cyanosis on face, lips, fingers and nails
   d) Consciousness is lost partially or totally
   e) Froth may appear at the mouth and nostrils
   f) Fits may occur

4) Steps of performing the Heimlich manoeuver
   a) Stand behind the person.
   b) Wrap your arms around the waist.
   c) Tip the person forward slightly.
   d) Make a fist with one hand.
   e) Position it slightly above the person's navel.
   f) Grasp the fist with the other hand.
   g) Press hard into abdomen with a quick upward thrust, as if trying to lift the person up.
   h) Perform a total of 5 abdominal thrusts, if needed.
   i) If the blockage still is not dislodged, repeat the five-and-five cycle.

5) a) Convulsive seizures, infants, young children
   b) Eye, cornea
   c) i) Staphylococus
      ii) Salmonellae

5.5 KEY WORDS

Aneurysm : A weakness or thinning in the wall of a blood vessel.

Ataxia : Lack of coordination of movements.

Coma : A state of profound unconsciousness.

Dizziness : Laziness.

Dysphagia : Difficulty in swallowing.

Dyslipdemia : Abnormal blood lipid levels.

Embolism : Presence of dislodged blood clot called embolus in a blood vessel.

Euphoria : Feeling a state of mood elation or excitement.

Hallucination : Sensory perception that does not result from an external stimulus e.g. hearing of unknown voices.

Insecticide : A chemical agent that kills insects.

Narcosis : A state of mental clouding or deep sleep.

S/S : Signs and Symptoms

SOS	:	If necessary
Stat	:	At once
Thrombosis	:	Formation of blood clot (thrombus) within the blood vessel.
Thrust	:	Push
Tremor	:	Shaking movements resulting from alternate contraction and relaxation of muscles

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UNIT 6 DISASTER MANAGEMENT

Structure

6.0 Introduction

6.1 Objectives

6.2 Disaster

6.3 Types of Disasters

- 6.3.1 Natural Hazards
- 6.3.2 Technological or Man-Made Hazards

6.4 Magnitude of Disasters

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6.5 Disaster Preparedness/ Risk Reduction

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6.10 Let Us Sum Up

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6.12 References

6.0 INTRODUCTION

In the previous Unit 5 you have learnt First aid in common emergency condition. During your experience you may also encounter some sudden natural and man made calamities, so you should prepare to manage these disasters. A disaster occurs when a hazard impacts on vulnerable people. The combination of hazards, vulnerability and inability to reduce the potential negative consequences of risk results in disaster. In this unit you will learn meaning, types magnitude risk reduction emergency preparedness of disasters.

6.1 OBJECTIVES

After completing this unit, you should be able to:

- explain the meaning of disasters;
- identify the types of disasters;
- explain the magnitude of disasters;
- enumerate the common problems of disasters;
- identify emergency measure; and
- provide life saving techniques.

6.2 DISASTER

Disaster is a sudden calamitous event bringing great damage, loss, or destruction; *broadly*: a sudden or great misfortune or failure.

A **disaster** is a serious disruption of the functioning of a community or a society involving widespread human, material, economic or environmental losses and impacts, which exceeds the ability of the affected community or society to cope using its own resources.

There are a range of challenges, such as climate change, unplanned-urbanisation, under-development/poverty as well as the threat of pandemics that will shape humanitarian assistance in the future. These aggravating factors will result in increased frequency, complexity and severity of disasters.

What makes them vulnerable to that threat or hazard?

Counteracting vulnerability requires:

- reducing the impact of the hazard itself where possible (through mitigation, prediction and warning, preparedness);
- building capacities to withstand and cope with hazards;
- tackling the root causes of vulnerability, such as poverty, poor governance, discrimination, inequality and inadequate access to resources and livelihoods.

6.3 TYPES OF DISASTERS

Disasters can take many different forms, and the duration can range from an hourly disruption to days or weeks of ongoing destruction. Broadly speaking there are two types of Disasters i.e. **Natural and Man-made**. It can be further divided into sub categories (Fig. 6.1)

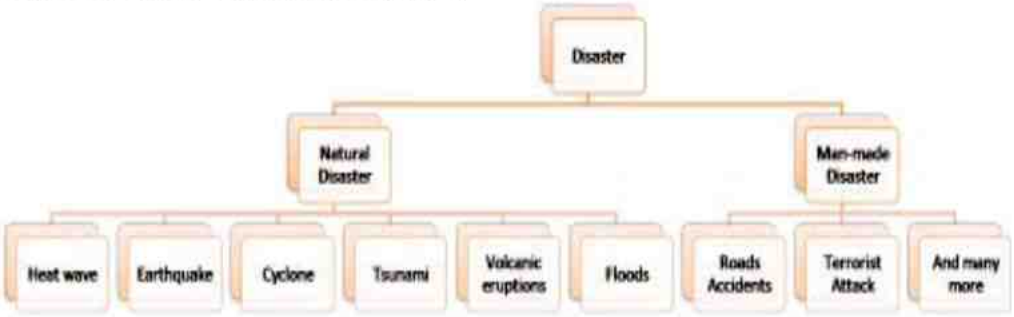


Fig. 6.1 : Types of Disaster

6.3.1 Natural Hazards

The disasters that are caused by nature are termed as natural disasters e.g., earthquake, cyclone etc.These are primarily natural events. It is possible that certain human activities could may be aid in some of these events, but, by and large, these are mostly natural events. These are naturally occurring physical phenomena caused either by rapid or slow onset events which can be

Geophysical: earthquakes, landslides, tsunamis and volcanic activity

Hydrological : avalanches and floods

Climatological : extreme temperatures, drought and wildfires,

*Meteorologica*l : cyclones and storms/wave surges

Biological :disease epidemics and insect/animal plagues.

Hurricanes and tropical storms: Hurricanes and tropical storms are among the most powerful natural disasters because of their size and destructive potential. Tornadoes are relatively brief but violent, potentially causing winds in excess of 200 mph. Both earthquakes and tornadoes strike suddenly without warning.

Flooding is the most common of natural hazards, and requires an understanding of the natural systems of our environment, including floodplains and the frequency of flooding events. Wildfires are more prevalent in the event of a drought. Here are some examples of natural disasters:

Earthquake: Earthquake is a sudden and violent shaking of ground causing great destruction as a result of movement of earth's crust. An earthquake has the potential to tsunami or volcanic eruption. Earthquake of magnitude 9.2 on the Richter's scale in 2004 in Indonesia is the second largest earthquake ever recorded. The deadliest earthquake happened in Central China, killing over 800,000 in 1556. People during that time and region lived in caves and died from the caves collapsing.

Cyclone: Cyclones (or more properly called Tropical Cyclones) are a type of severe spinning storm that occurs over the ocean near the tropics. The most famous Australian historic cyclone was Cyclone Tracy, December 1974, where around 11 people died in Darwin, Northern Territory. The direction they spin depends on which hemisphere they are in. In the Southern hemisphere they spin in a clockwise direction and Northern hemisphere they spin in an anti-clockwise direction.

Tsunami: Tsunamis are giant waves, initiated by a sudden change, usually in relative position of underwater tectonic plates. The sudden jerk is enough to propagate the wave; however, its power can be enhanced and fed by lunar positioning and boundaries that focus its energy.

Volcanic eruptions: Volcanic disasters are caused by lava flows, volcanic mudflows and pyroclastic flows triggered by volcanic activities such as eruptions. It covers extensive areas; volcanic disasters can cause a large-scale damages and serious personal injury. Secondary disasters such as debris flows are often triggered by rainfall after a volcanic eruption. In the 1815, the Indonesian eruption threw rocks more than 100 cubic km of ash killing 92,000 people. The greatest volcanic explosion occurred in Indonesia in 1883, which resulting in rocks hurling 55 km up into the air. The explosion was heard in Australia and generated a 40 m high tsunami, killing 36,000 people.

Floods: Flooding is the unusual presence of water on land to a depth which affects normal activities. Flooding can arise from: overflowing rivers (river flooding), heavy rainfall over a short duration (flash floods), or an unusual inflow of sea water onto land (ocean flooding). Ocean flooding can be caused by storms such as hurricanes (storm surge), high tides (tidal flooding), seismic events (tsunami) or large landslides.

6.3.2 Technological or Man-Made Hazards

Disasters also can be caused by humans. These are mostly caused due to certain human activities. The disasters which are caused as a result of human activities are termed as Man-Made Disasters e.g., Road accident, terrorist attack. The disasters themselves could be unintentional, but, are caused due to some intentional activity. Most of these (barring coordinated terrorist activities) are due to certain accidents – which could have been prevented – if sufficient

precautionary measures were put in place. Hazardous materials emergencies include chemical spills and groundwater contamination. Workplace fires are more common and can cause significant property damage and loss of life. Communities are also vulnerable to threats posed by extremist groups who use violence against both people and property.

High-risk targets include military and civilian government facilities, international airports, large cities and high-profile landmarks. Cyber-terrorism involves attacks against computers and networks done to intimidate or coerce a government or its people for political or social objectives.

These are events that are caused by humans and occur in or close to human settlements such as complex emergencies/conflicts, famine, displaced populations, industrial accidents and transport accidents. This can include environmental degradation, pollution and accidents.

There are a range of challenges, such as climate change, unplanned-urbanisation, under-development/poverty as well as the threat of pandemics, that will shape humanitarian assistance in the future. These **aggravating factors** will result in increased frequency, complexity and severity of disasters. Some of the examples of man-made disasters are as follows:

Road Accidents: Road accidents are common in India due to reckless driving, untrained drivers and poor maintenance of roads and vehicles. According to Lifeline Foundation, the Ahmedabad based organization working for road safety, India accounts for 13 per cent of road accident fatalities worldwide. With 130,000 deaths in 2007, India tops in the number of people killed in road accidents, surpassing China's 90,000. Most of these deaths occurred due to bad road designs and lack of proper traffic management systems to separate different streams of traffic.

Building and Bridge Collapse: Building collapses are frequent in India where construction is often hastily done, with little regard for safety regulations, particularly in the western part of the country.

Terrorist Attack: Devastating acts such as the terrorist attacks on the World Trade Centre and the Pentagon have left many concerned about the possibility of future incidents in the United States and their potential impact. Terrorism may involve devastating acts using weapons of mass destruction ranging from chemical agents, biological hazards, a radiological or nuclear device, and other explosives.

6.4 MAGNITUDE OF DISASTERS

Whether a result of human activities or natural, disasters can be further divided into the following categories depending on the scope or area affected:

6.4.1 Local Disasters

Are limited to your property and/or local community. Examples would include tornados, which could level or otherwise severely damage your home and/or the homes of your neighbours. Another example would be the derailment of a freight train resulting in the release of toxic gases from a tanker car into your neighbourhood and surrounding area. Other examples would include floods and forest fires.

6.4.2 Regional Disasters

Effect a larger area but are limited to one region of the country. Hurricane Katrina was an example of a regional disaster. Other examples would include earthquakes, droughts and crop failures.

6.4.3 National Disasters

As the name implies would affect the entire nation. A war would be an example. Other examples would include an economic depression, severe stock market crash or collapse of the currency.

6.4.4 Global Disasters

Affect the entire planet. In today's global economy it would be easy for a national disaster to quickly escalate to a global one. An economic depression in the US, for example, would affect our trading partners as well. With the US dollar acting as the major reserve currency for most of the world, a collapse of the currency would be disastrous for nearly every nation, including those as far off as China and Japan. In fact, never before in history has the potential for a human-caused disaster of global proportions been more possible. In our highly-mobile society it is also very possible for a natural disaster, such as an epidemic, to quickly spread around the globe becoming a pandemic. Furthermore, according to many scientists, human activities, such as pollution, radioactive contamination, chemtrails, and genetically-modified organisms (GMO) to name just a few, are threatening the delicate ecological balance that has existed on the Earth for millions of years.

As we have seen, the amount of provisions that you will want to store will depend on how long you anticipate an emergency could last, which in turn will depend on the magnitude or scope of the disasters that you consider possible for your area. If a hurricane hits your community, a one-week supply of food and water will probably be sufficient, for certainly help will arrive within a week. But a collapse of the currency, resulting in a global disaster, might require that you store enough supplies to last for months.

Check Your Progress 1

1) Explain types of disasters.

.....

.....

2) Define Local Disasters.

.....

.....

3) Define any three natural disasters.

.....

.....

6.5 DISASTER PREPAREDNESS/ RISK REDUCTION

Disaster preparedness can prevent a bad situation from becoming worse. Emergencies come in many forms and having the right checklist, supplies and kit for any possible contingency can aid in making your family safe. Planning ahead also helps everyone understand what to do should a disaster strike. In some instances it may be several days before vital services can be prepared and surviving this period may be difficult. Disaster preparedness is highlighted every year during the month of September. When disaster strikes, having a plan of action already in place can be key to ensuring positive response and recovery outcomes!

6.5.1 Importance of Disaster Preparedness

In an emergency situation it is easy to be afraid and anxious over what is happening. Disaster preparedness reduces these feelings and helps communities and families know what to do in the event of a disaster and where to seek shelter during a tornado, where to take refuge and how to care for basic medical issues. It can also help alleviate some of the devastation by reducing the impact of a disaster. For example, homeowners who live in a fire zone in the forest can clear away underbrush from their homes to help prevent future forest fires from burning down their homes. In addition, they can store valuables in fire proof boxes in case a fire does reach the house.They should be ready to evacuate their homes and take refuge in public shelters and know how to care for their basic medical needs. People also can reduce the impact of disasters (flood proofing, elevating a home or moving a home out of harm's way, and securing items that could shake loose in an earthquake) and sometimes avoid the danger completely

Disasters disrupt hundreds of thousands of lives every year. Each disaster has lasting effects, both to people and property. If a disaster occurs in any community, local government and disaster-relief organisations will try to help people, but the individuals need to be ready as well. Local responders may not be able to reach them immediately, or they may need to focus their efforts elsewhere. Masses should know how to respond to severe weather or any disaster that could occur in their area– hurricanes, earthquakes, extreme cold, flooding, or terrorism. They should also be ready to be self-sufficient for at least three days. This may mean providing for own shelter, first aid, food, water, and sanitation.

6.6 EMERGENCY PREPAREDNESS

Emergency preparedness includes measures which enable governments, organisations, communities, and individuals to respond rapidly and effectively to disaster situations. Preparedness measures include the formulation to viable disaster plans, the maintenance of resources, and the training of personnel.

Emergency preparedness is a programme of long term development activities whose goals are to strengthen the overall capability of a country to manage efficiently all types of emergency. It should bring about an orderly transition from relief through recovery, and back to sustainable development.

Objectives

- To ensure that appropriate systems, procedures and resources are in place.
- To provide prompt effective assistance to disaster victims, thus facilitating relief measures and rehabilitation of services.

The reasons for community preparedness are:

- Members of the community have the most to lose from being vulnerable to disasters and the most to gain from an effective and appropriate emergency preparedness programme.
- Those who first respond to an emergency come from within the community.
- Resources are more easily pooled at the community level and every community possesses capabilities. Failure to exploit these capabilities is poor resource management.
- Sustainable development is best achieved by allowing emergency affected communities to design, manage and implement internal and external assistance programme.

Disaster preparedness is an ongoing multispectral activity. It forms an integral part of the national system responsible for developing plans and programmes for disaster management which includes prevention, mitigation, preparedness, response, rehabilitation and reconstruction.

Disaster preparedness depends on the coordination of a variety of sectors to carry out the following tasks:

- Evaluate the risk of the country or particular region to disaster
- Adopt standards and regulations
- Organise communication, information and warning systems
- Ensure coordination and response mechanisms
- Adopt measures to ensure the financial and other resources are available for increased readiness and can be mobilised in disaster situation
- Develop public education programmes
- Coordinate information sessions with news media
- Organise disaster simulation exercises that test response mechanisms.

Coordination of effort

Disaster preparedness and the response operations to which preparedness essentially applies involve a wide range of activities and organisations. If these activities are to be successfully carried out by the organisations concerned, a system for achieving coordinated effort is clearly needed. This system is usually provided through the organisational framework. For instance, a provincial disaster committee would normally coordinate activities within its area of responsibility. However, additional coordinating responsibilities may be designated to organisations or individuals, if deemed necessary. Arrangements to achieve successful coordination of effort must obviously be made, as a part of preparedness, before disaster impact.

Operational Facilities and Systems

Adequate preparedness of the various facilities and systems which are required

for response operations is also most important. Such facilities and systems usually include:

- emergency or stand-by communications;
- a warning system, including provision of warning and information to the general public;
- a system for activating the organisational structure and its resource organisations (usually by designating stages such as Alert, Standby, and Action);
- emergency operation centers (which form the focal points of information management);
- a system for damage survey and assessment of needs;
- emergency relief arrangements (for food, shelter materials, medical assistance, etc.).

Equipment and Supplies

If stockpiles of emergency equipment and supplies are held, these need appropriate surveillance to ensure their serviceability and ready availability. Emergency equipment needs to be held at the levels where it will be primarily used (e.g., equipment for local self-help teams, such as picks and shovels, needs to be held at the community level). Sometimes safe storage (and thus ready availability) poses some problems. However, these can usually be overcome locally. In one case, the village schoolmaster was made responsible for storing and maintaining emergency stocks and schoolchildren had a part in checking and accounting for them. Where there is a possibility that equipment and supplies from the private sector may need to be co-opted or requisitioned, preparedness arrangements for this eventuality need to be maintained.

Some Problem Areas in Preparedness:

Because of its diversity and the large number of organisations which it usually involves, preparedness can produce certain problem areas, as indicated below.

Organisation and Planning

- Inadequate policy direction for overall disaster management will tend to have adverse effects on the event and standard of preparedness.
- Lack of appropriate counter-disaster plans will also result in an inadequate preparedness.
- Outdated plans will also tend to affect preparedness standards.
- If disaster management organisational structure is inadequate or inappropriate, preparedness measures will unlikely be fully effective.
- Over concentration on response and recovery measures may lead to low preparedness standards. This also tends to be a fairly common failing in disaster management.

Resource

- Unless there is a complete inventory of resource organisations, plus clear allocation of roles and responsibilities to those organisations, gaps or overlaps in preparedness arrangements are likely to exist.

Coordination

- Inadequate coordination in disaster management may result in substandard and/or variable levels of preparedness, because departments and organisations may be working to different preparedness criteria and different priorities.
- Friction and/or lack of cooperation between disaster-related organisations can have very bad effects on preparedness. Such problems may arise from inter-organisational rivalry, poorly defined areas of responsibilities, or clashes of personality between senior officials.

Readiness

- Without a national or central disaster management section or center to serve as a focal point, it is very difficult to monitor standards of preparedness.
- For instance, emergency operations centers may become inadequately prepared to respond quickly to the onset of disaster; emergency equipment, such as stand-by power generators, may be allowed to become unserviceable; and emergency communications equipment may not be adequately serviced and tested.

Training and Public Awareness

- Lack of suitable training for disaster management personnel will obviously result in low standards of preparedness.
- Inadequate public awareness and information concerning disasters usually contributes significantly to poor preparedness.

If preparedness measures are to be fully effective, they need to be clearly set out in appropriate plans. Such plans usually need to apply at the national, provincial/ regional, and local government levels. If preparedness measures are set within this planning framework, responsibilities for them can be clearly and officially defined. This also helps ensure that the measures can be systematically monitored and kept up-to-date. The production of effective counter-disaster plans usually involves considerable negotiation with resource organisations (e.g., government departments, NGOs), especially to ensure that their capability is used to the maximum extent. This is important because, especially in severe disaster circumstances, the total capability of these organisations is needed to deal with the many operational tasks which arise.

Individual preparedness

Every citizen in the country is part of a national emergency management system that is all about protection – protecting people and property from all types of hazards. Think of the national emergency management system as a pyramid with you, the citizen, forming the base of the structure. At this level, you have a responsibility to protect yourself and your family by knowing what to do before, during, and after an event. To get started it is important to put together a disaster preparedness checklist. To start this, determine the best escape routes in case of an emergency. Also set up a meeting place in case loved ones are separated. The checklist should also include an emergency contact and each family member should have a copy of this.

Some examples of what people can do follow:

Before : Know the risks and danger signs. Purchase insurance, including flood insurance, which is not part of your homeowner's policy. Develop plans for what to do.

During: Put your plan into action. Help others. Follow the advice and guidance of ofûcials in charge of the event.

After: Repair damaged property. Take steps to prevent or reduce future loss.

It is sometimes necessary to turn to others within the local community for help. The local level is the second tier of the pyramid, and is made up of paid employees and volunteers from the private and public sectors. These individuals are engaged in preventing emergencies from happening and in being prepared to respond if something does occur. Most emergencies are handled at the local level, which puts a tremendous responsibility on the community for taking care of its citizens. Among the responsibilities faced by local officials are:

- Identifying hazards and assessing potential risk to the community.
- Enforcing building codes, zoning ordinances, and land-use management programmes.
- Coordinating emergency plans to ensure a quick and effective response.
- Fighting fires and responding to hazardous materials incidents.
- Establishing warning systems.
- Stocking emergency supplies and equipment.
- Assessing damage and identifying needs.
- Evacuating the community to safer locations.
- Taking care of the injured.
- Sheltering those who cannot remain in their homes.
- Aiding recovery efforts.

If support and resources are needed beyond what the local level can provide, the community

Basic Preparedness

- A series of worksheets to help you obtain information from the community that will form the foundation of your plan. You will need to find out about hazards that threaten the community, how the population will be warned, evacuation routes to be used in times of disaster, and the emergency plans of the community and others that will impact your plan. Guidance on specific content that you and your family will need to develop and include in your plan on how to escape from your residence, communicate with one another during times of disaster, shut-off household utilities, insure against financial loss, acquire basic safety skills, address special needs such as disabilities, take care of animals, and seek shelter.

Disaster preparedness supplies: That should be on hand include blankets, medical supplies, water and food. Often basic necessities such as electricity, gas, water, sewage treatment and telephone service can be cut in an emergency. People also frequently need to evacuate their homes. It helps to have some essential

tools, clothing, sanitary supplies and medications easily accessible. These items can be packed in a pack that can be quickly grabbed if a disaster strikes.

No matter what type of catastrophe strikes, it is vital to be prepared. With the right knowledge and the right equipment, it is possible to survive a natural or man-made disaster. Once you have a plan in place, implement the tools necessary to keep your family safe, fed, hydrated and sanitary. In addition, be sure to review any plans regularly with them to ensure that they know what to do if disaster should strike your home or community.

Community and Other Plans ask local officials the following questions about your community's disaster/ emerge

Does my community have a plan?	Yes	No
Can I obtain a copy?	Yes	No
What does the plan contain?		
How often is it updated?		
What should I know about the plan?		
What hazards does it cover?		

In addition to finding about your community's plan, it is important that you know what plans are in place for your workplace and your children's school or day care center. Ask your employer about workplace policies regarding disasters and emergencies, including understanding how you will be provided emergency and warning information. Contact your children's school or day care center to discuss their disaster procedures.

School Emergency Plans

Every school needs to have school emergency plan. School should have plan for communicating with families during a crisis. The school should stores adequate food, water, and other basic supplies. School should be prepared to shelter-in-place if need be, and where they plan to go if they must get away. In such situations parents may not be permitted to drive to the school to pick up your children Monitor local media outlets for announcements about changes in school openings and closings, and follow the directions of local emergency officials.

Workplace Plans

If you are an employer, make sure your workplace has a building evacuation plan that is regularly practiced. Take a critical look at your heating, ventilation and air conditioning system to determine if it is secure or if it could feasibly be upgraded to better filter potential contaminants, and be sure you know how to turn it off if you need to. Think about what to do if your employees can not go home. Make sure you have appropriate supplies on hand.

Emergency plan for the family

Families need to be prepared to respond to emergencies by creating a family disaster plan. This process can be started by gathering family members and reviewing the information i.e. hazards, warning systems, evacuation routes and community and other plans. Discuss with family what to do if family members are not home when a warning is issued. Additionally, family plan should address the following:

- Escape routes
- Family communications
- Utility shut-off and safety
- Insurance and vital records
- Special needs
- Caring for animals
- Safety Skills

6.7 BASIC DISASTER SUPPLIES KIT

The following items are recommended for inclusion in your basic disaster supplies kit:

- Three-day supply of non-perishable food.
- Three-day supply of water – one gallon of water per person, per day.
- Portable, battery-powered radio or television and extra batteries.
- Flashlight and extra batteries.
- First aid kit and manual.
- Sanitation and hygiene items (soap).
- Matches and waterproof container.
- Whistle.
- Extra clothing.
- Kitchen accessories and cooking utensils, including a can opener.
- Photocopies of credit and identification cards.
- Cash and coins.
- Special needs items, such as prescription medications, eye glasses, contact lens solutions, and hearing aid batteries.
- Items for infants, such as formula, diapers, bottles, and pacifiers.
- Other items to meet your unique family needs.

If you live in a cold climate, you must think about warmth. It is possible that you will not have heat. Think about your clothing and bedding supplies. Be sure to include one complete change of clothing and shoes per person. Maintaining Your Disaster Supplies Kit Just as important as putting your supplies together is maintaining them so they are safe to use when needed.

6.8 COMMON PROBLEMS TO ALL DISASTER

Now let us go through the effects of disasters as given below:

Effects of disaster

Disasters throughout history have had significant impact on the numbers, health status and life style of populations.

- Deaths

- Severe injuries, requiring extensive treatments
- Increased risk of communicable diseases
- Damage to the health facilities
- Damage to the water systems
- Food shortage
- Population movements

Health problems common to all Disasters

- Social reaction
- Communicable diseases
- Population displacements
- Climatic exposure
- Food and nutrition
- Water supply and sanitation
- Mental health
- Damage to health infrastructure

Social Reactions

After a major natural disaster, behaviour only rarely reaches generalised panic or stunned waiting. Spontaneous yet highly organised individual action accrues as survivors rapidly recover from their initial shock and set about purposefully to achieve clear personal ends. Earthquake survivors often begin search and rescue activities minutes after an impact and within hours may have organised themselves into groups to transport the injured to medical posts. Actively antisocial behaviour such as widespread looting occurs only in exceptional circumstances.

Rumours abound, particularly of epidemics. As a result, considerable pressure may be put on the authorities to undertake emergency humanitarian work such as mass vaccinations against typhoid or cholera, without sound medical justification. In addition, people may be reluctant to submit to measures that the authorities think necessary. During warning periods, or after the occurrence of natural disasters, people are reluctant to evacuate, even if their homes are likely to be or have been destroyed.

These patterns of behaviour have two major implications for those making decisions about humanitarian programmes.

1) Patterns of behaviour and demands for emergency assistance can be limited and modified by keeping the population informed and by obtaining necessary information before embarking on extended relief programmes.
2) The population itself will provide most rescue and first aid, take the injured to hospitals if they are accessible, build temporary shelters, and carry out other essential tasks. Additional resources should, therefore, be directed toward meeting the needs that survivors themselves cannot meet on their own.

Communicable Diseases

- The risk of epidemic outbreaks of communicable diseases is proportional to population density and displacement. These conditions increase the pressure on water and food supplies and the risk of contamination (as in refugee camps), the disruption of pre-existing sanitation services such as piped water and sewage, and the failure to maintain or restore normal public health programmes in the immediate post-disaster period.
- In the longer term, an increase in vector-borne diseases occurs in some areas because of disruption of vector control efforts, particularly following heavy rains and floods. Residual insecticides may be washed away from buildings and the number of mosquito breeding sites may increase. Moreover, displacement of wild or domesticated animals near human settlements brings additional risk of zoonotic infections.
- In complex disasters where malnutrition, overcrowding, and lack of the most basic sanitation are common, catastrophic outbreaks of gastroenteritis (caused by cholera or other diseases) have occurred, as in Rwanda/Zaire in 1994.

Population Displacements

- When large, spontaneous or organised population movements occur, an urgent need to provide humanitarian assistance is created. People may move to urban areas where public services cannot cope, and the result may be an increase in morbidity and mortality. If much of the housing has been destroyed, large population movements may occur within urban areas as people seek shelter with relatives and friends.

  Example: Surveys of settlements and towns around Managua, Nicaragua, following the December 1972 earthquake indicated that 80% to 90% of the 200,000 displaced persons were living with relatives and friends; 5% to 10% were living in parks, city squares, and vacant lots; and the remainder were living in schools and other public buildings. Following the earthquake that struck Mexico City in September 1985, 72% of the 33,000 homeless found shelters in areas close to their destroyed dwellings.

- In internal conflicts, such as occurred in Central America (1980s) or Colombia (1990s), refugees and internally displaced populations are likely to persist.

Climatic Exposure

The health hazards of exposure to the elements are not great, even after disasters in temperate climates. As long as the population is dry, reasonably well clothed, and able to find windbreaks, death from exposure does not appear to be a major risk in Latin America and the Caribbean. The need to provide emergency shelter therefore varies greatly with local conditions.

Food and Nutrition

Food shortages in the immediate aftermath may arise in two ways. Food stock destruction within the disaster area may reduce the absolute amount of food available, or disruption of distribution systems may curtail access to food, even if there is no absolute shortage. Generalised food shortages severe enough to cause nutritional problems do not occur after earthquakes.

Flooding and sea surges often damage household food stocks and crops, disrupt distribution, and cause major local shortages. Food distribution, atleast in the

short term, is often a major and urgent need, but large-scale importation/donation of food is not usually necessary.

In extended droughts, such as those occurring in Africa, or in complex disasters, the homeless and refugees may be completely dependent on outside sources for food supplies for varying periods of time. Depending on the nutritional condition of these populations, especially of more vulnerable groups such as pregnant or lactating women, children, and the elderly, it may be necessary to institute emergency feeding programmes.

Water Supply and Sanitation

Drinking water supply and sewerage systems are particularly vulnerable to natural hazards, and the disruptions that occur in them pose a serious health risk. The systems are extensive, often in disrepair, and are exposed to a variety of hazards. Deficiencies in established amounts and quality of potable water and difficulties in the disposal of excreta and other wastes result in the deterioration of sanitation, contributing to conditions favourable to the spread of enteric and other diseases.

Mental Health

Anxiety, neuroses, and depression are not major, acute public health problems immediately following disasters, and family and neighbours in rural or traditional societies can deal with them temporarily. A group at high risk, however, seems to be the humanitarian volunteers or workers themselves. Wherever possible, efforts should be made to preserve family and community social structures. The indiscriminate use of sedatives and tranquilizers during the emergency relief phase is strongly discouraged. In industrialised or metropolitan areas in developing countries, mental health problems are reported to be significant during long-term rehabilitation and reconstruction and need to be dealt with during that phase.

Damage to the Health Infrastructure

Natural disasters can cause serious damage to health facilities and water supply and sewage systems, having a direct impact on the health of the population dependent on these services. In the case of structurally unsafe hospitals and health centers, natural disasters jeopardize the lives of occupants of the buildings, and limit the capacity to provide health services to disaster victims. The earthquake that struck Mexico City in 1985 resulted in the collapse of 13 hospitals. In just three of those buildings, 866 people died, 100 of whom were health personnel. Nearly 6,000 hospital beds were lost in the metropolitan facilities. As a result of Hurricane Mitch in 1998, the water supply systems of 23 hospitals in Honduras were damaged or destroyed, and 123 health centers were affected. Peru reported that nearly 10% of the country's health facilities suffered damage as a result of El Niño events in 1997-1998.

6.9 DISASTER RESPONSE

Disaster Response including emergency measure and life saving techniques are discussed below:

Purpose

- Response measures are those which are taken immediately prior to and following disaster. Such measures are directed towards saving life and

protecting property and to dealing with the immediate damage caused by the disaster.

- Response operations usually have to be carried out under disruptive and sometimes traumatic conditions. Often, they are difficult to implement and they tend to make heavy demands on personnel, equipment, and other resources. Thus, without a sound basis of planning, organisation, and training, response operations are unlikely to achieve optimum success.

Important Characteristics of Response

Effective response to the impact of disaster is critical mainly to:

- limit casualties,
- alleviate hardship and suffering,
- restore essential life support and community systems,
- mitigate further damage and loss, and
- provide the foundation for subsequent recovery.

Some Problem Areas in Response

1) **Background Factors**

   These may particularly apply to preparedness, for instance lack of adequate policy direction, poor organisation, and inadequate planning.

2) **Inadequate Preparedness**

   This can be caused by plans becoming outdated, low standards of readiness on the part of resource organisations, poor public awareness, and disaster of unexpected magnitude.

3) **Warning Factors**

   These may include inadequate warning lead time, errors in warning systems (e.g., radio broadcast stations) due to effects of disaster impact, and failure of people to respond to warning.

4) **Slow Activation of the Response System**

   This may be due to warning factors, poor system for activation, lack of functional readiness (e.g., in emergency operations centers), lack of testing and exercising the response system, and coincidence with some national event (e.g., national holiday).

5) **Effects of Impact and Crisis Pressure**

   These may include disruption to or loss of communications, destruction or delayed availability of planned resources (e.g. transport, relief supplies), damage to key installations such as power supplies, emergency operations centers, communications facilities, high damage levels generally, and loss of key personnel.

6) **Difficulties in Survey of Damage and Assessment of Needs**

   These may arise from adverse weather conditions following disaster impact (e.g., postcyclonic low cloud and heavy rain), lack of suitable aircraft for

survey purpose, difficulties of ground survey (perhaps caused by problems of access and movement), inadequate planning and preparation to cover this requirement, which has to cover a number of detailed aspects, and loss of vehicles or vessels.

7) **Inaccurate and/or Incomplete Information from Survey**

This can cause serious response problems through inaccurate figures of people who are homeless, without food and shelter, and in need of medical assistance.

8) **Convergence**

Convergence onto the disaster area or site by large number of people and vehicles can seriously interfere with response operations.

9) **Poor Information Management**

This may arise from a number of aspects, such as gathering and collation of information, evaluation of information, decision making, and dissemination of decisions and information.

10) **Inadequate Relief Commodities**

This may involve essential items, such as food supplies, water supplies, and shelter materials (tents, tarpaulins, etc.)

Requirements for Effective Response

Wide international experience has shown that effective response depends fundamentally on two factors information and resources.

Without these two vital components, the best plans, management arrangements, expert staff, etc. all become virtually useless. Bearing this fundamental premise in mind, the major requirements for effective response are summarised below.

Readiness of Resource Organisations

The readiness of resource organisations (both government and non-government) to respond to disaster situations, often at very short notice, is a very important requirement for response operations. Sometimes, failure on the part of only one designated organisation may seriously upset the total response effort.

Warning

The main needs for warning are initial detection, as early as possible, of the likelihood that a disaster will occur. Origination of the warning process as early as practicable, bearing in mind that false or unnecessary warning must be avoided. In this regard, however, precautions can be built into the warning sequence by ensuring that, where doubt exists, only key officials are initially informed.

- Effective means of transmitting warning information.
- Facilities to receive and assess warning information.
- Response decisions, as a result of assessing warning information.
- Dissemination of response decisions and, as appropriate, broadcast of warning information to the public. This preliminary reaction might include:
- Closing of schools, offices, and other public places;

- Checking emergency power supplies and similar facilities;
- Taking precautions in households to ensure supplies of food; and drinking water.

It is re-emphasised that preliminary reaction of this kind usually needs to be planned beforehand and, where necessary, the relevant information passed to disaster-related organisations and the public.

Evacuation

The evacuation of communities, groups or individuals is a frequent requirement during response operations. Evacuation is usually precautionary (in most cases undertaken on warning indicators prior to impact to protect disaster-threatened persons from the full effects of the disaster) or post-impact (to move persons from a disaster-stricken area into safer, better surroundings and conditions).

Activation of the Response System

For rapid and effective response, there usually needs to be a system for activating disaster management officials and resource organisations. It is useful to implement activation in stages. These might be Alert, Stand-by, and Action. The benefit of this arrangement is that if, after the initial warning, the disaster does not materialise, activation can be called off. Thus, full mobilisation of resources can be avoided and the minimum of disruption is caused to normal life. It is advisable for government departments and other resource organisations to work to this system of stages in their own internal plans.

Coordination of Response Operations

Coordination of the action taken in response operations is very important. Good coordination ensures that resource organisations are utilised to best effect, therefore avoiding gaps or duplication in operational tasks.

Communications

As with all aspects of disaster management, good communications are essential for effective response.

Survey and Assessment

It is virtually impossible to carry out effective response operations without an accurate survey of damage and consequent assessment of relief and other needs. To be fully effective, survey and assessment needs to be carefully planned and organised beforehand. It usually calls for:

- survey from the air,
- survey by field teams, and
- accurate reporting from disaster management and other official authorities in or near the disaster area.

Major Emergency Response Aspects

Following the impact of disaster, there are usually varying degrees of damage to, or destruction of, the systems which support everyday life. Communities therefore need help (usually urgently) to subsist through the emergency phase and beyond. Key aspects of this assistance include:

Rescue

To rescue persons who may be trapped in buildings and under debris, isolated by floodwaters, or need rescuing for any other reason.

Treatment and Care of Victims

To render first aid.

To ensure identification tagging of casualties.

To identify needs in terms of medical treatment, hospitalisation, and medical evacuation; and to deal with these accordingly.

To dispose of the dead.

Evacuation

To determine whether persons need to be evacuated from the stricken area immediately, or whether such a requirement is likely to arise later.

Shelter

To provide shelter for victims whose housing has been destroyed or rendered unusable. This may involve:

- making urgent repairs to some housing,
- issuing tents and/or tarpaulins to provide means of temporary shelter,
- groups of homeless people in community buildings such as schools.

Food

To organise and distribute food to disaster victims and emergency workers.

To estimate damage to crops and food stocks.

To estimate food reserves and available (including unharvested crops).

Communications

To re-establish essential radio, telephone, telex, and facsimile links.

Clearance and Access

To clear key roads, airfields, and ports to allow access for vehicles, aircraft, and shipping; also to prepare helicopter landing sites.

Water and Power Supplies

To re-establish water and power supplies, or to make temporary arrangements for them. Providing potable water is often difficult, particularly in the early post-impact stages. Water-purifying equipment might therefore have to be obtained and/or water purifying tablets to be issued.

Temporary subsistence supplies

To provide supplies such as clothing, disaster kits, cooking utensils, and plastic sheeting, to enable victims to subsist temporarily in their own area, thus helping reduce the need for evacuation.

Health and Sanitation

To take measures to safeguard the health of people in the stricken area and to maintain reasonable sanitation facilities.

Public Information

To keep the stricken community informed on what they should do, especially in terms of self-help, and on what action is on hand to help them.

To prevent speculation and rumor concerning the future situation.

Security

To maintain law and order, especially to prevent looting and unnecessary damage.

Construction Requirements

To estimate high-priority building repair and replacement requirements.

Disaster Welfare Inquiry

To make arrangements to handle national and international inquiries concerning the welfare of citizens and residents, including tracing of missing persons.

Maintenance of Public Morale

Depending on cultural and other local circumstances, to make arrangements for counselling and spiritual support of the stricken community. This may involve religious bodies, welfare agencies and other appropriate organisations.

Allocation of Tasks

If planning and preparedness have been properly carried out, the majority of response tasks, will have been designated beforehand to appropriate government departments and other resource organisations. For instance:

- Public works department to undertake debris clearance tasks, etc.
- Medical and health department to implement health and sanitation measures.
- Police to maintain law and order, and to assist with control of people and vehicles around the disaster area.
- Red Cross to carry out first aid and other emergency welfare assistance.

The disaster management authority may need to give attention to tasks such as emergency feeding and emergency shelter programmes, since these tend not to be in the normal day-to-day schedules of government departments and other organisations.

Priorities for the implementation of response tasks are usually decided by the appropriate level of disaster committee. These priorities may have to be changed frequently and both disaster management authorities and resource organisations need to be capable of accepting and implementing such changes.

Availability of Relief Supplies and Commodities

The ready availability of relief supplies and commodities is an important factor in effective response. After disaster impact, there is usually an urgent need to provide and distribute:

- food,

- drinking water,
- clothing,
- shelter materials,
- medical supplies and assistance.

Disaster management action therefore needs to cover two main areas:

- Obtaining the various commodities from government stores, emergency stockpiles, commercial supplies, and international assistance sources; and
- Organising the distribution of these commodities according to the best possible orders of priority.

In order to move towards safer national development, development projects should be sensitive towards disaster mitigation. With the kind of economic losses and developmental setbacks that the country has been suffering year after year, it makes good economic sense to spend a little extra today in a planned way on steps and components that can help in prevention and mitigation of disasters, than be forced to spend many multiples more later on restoration and rehabilitation. The design of development projects and the process of development should take the aspect of disaster reduction and mitigation within its ambit; otherwise, the development ceases to be sustainable and eventually causes more hardship and loss to the nation.

Check Your Progress 2

1) Explain the reasons for community preparedness.

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.....

.....

2) What are the items are recommended for inclusion in your basic disaster supplies kit?

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6.10 LET US SUM UP

The combination of hazards, vulnerability and inability to reduce the potential negative consequences of risk results in disaster. A disaster occurs when a hazard impacts on vulnerable people. Vulnerability in this context can be defined as the diminished capacity of an individual or group concept is relative and dynamic. Disaster may be natural and man-made. Magnitude of disaster is the result of human activities or natural. Disaster preparedness can prevent a bad situation from becoming worse.

6.11 MODEL ANSWERS

Check Your Progress 1

i) Disasters can take many different forms, and the duration can range from an hourly disruption to days or weeks of ongoing destruction. Broadly speaking there are two types of Disasters i.e. **Natural and Man-made**.

ii) **Local Disasters** are limited to your property and/or local community. Examples would include tornados, which could level or otherwise severely damage your home and/or the homes of your neighbours.

iii) **Hurricanes and tropical storms:** Hurricanes and tropical storms are among the most powerful natural disasters because of their size and destructive potential. Tornadoes are relatively brief but violent, potentially causing winds in excess of 200 mph. Both earthquakes and tornadoes strike suddenly without warning.

Earthquake: Earthquake is a sudden and violent shaking of ground causing great destruction as a result of movement of earth's crust. An earthquake has the potential to tsunami or volcanic eruption. Earthquake of magnitude 9.2 on the Richter's scale in 2004 in Indonesia is the second largest earthquake ever recorded.

Cyclone: Cyclones (or more properly called Tropical Cyclones) are a type of severe spinning storm that occurs over the ocean near the tropics.

Check Your Progress 2

i) The reasons for community preparedness are:

- Members of the community have the most to lose from being vulnerable to disasters and the most to gain from an effective and appropriate emergency preparedness programme.
- Those who first respond to an emergency come from within the community.
- Resources are more easily pooled at the community level and every community possesses capabilities. Failure to exploit these capabilities is poor resource management.
- Sustainable development is best achieved by allowing emergency affected communities to design, manage and implement internal and external assistance programme.

ii) The following items are recommended for inclusion in your basic disaster supplies kit:

- Three-day supply of non-perishable food.
- Three-day supply of water – one gallon of water per person, per day.
- Portable, battery-powered radio or television and extra batteries.
- Flashlight and extra batteries.
- First aid kit and manual.
- Sanitation and hygiene items (soap).
- Matches and waterproof container.

- Whistle.
- Extra clothing.
- Kitchen accessories and cooking utensils, including a can opener.
- Photocopies of credit and identification cards.
- Cash and coins.
- Special needs items, such as prescription medications, eye glasses, contact lens solutions, and hearing aid batteries.
- Items for infants, such as formula, diapers, bottles, and pacifiers.
- Other items to meet your unique family needs.

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NOTE

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Certificate in Community Health for Nurses (BPCCHN)
Theory Course

CHO - 0002 Primary Health Care in Common Conditions

Block-1 : Management of Common Conditions and Emergencies including First Aid

Unit 1 : Common Conditions – 1 Gastro Intestinal System
Unit 2 : Common Conditions – 2 Respiratory System
Unit 3 : Common Conditions – 3 Heart, Urinary System and Blood Disorders
Unit 4 : Common Conditions – 4 Eye, Ear, Nose and Throat
Unit 5 : First Aid in Common Emergency Conditions
Unit 6 : Disaster Management

Block – 2 : Maternal Health

Unit 1 : Introduction to RMNCAH+N Programme
Unit 2 : Antenatal Care
Unit 3 : Intranatal Care
Unit 4 : Early Identification, Management and Referral of Complications
Unit 5 : Postpartum Care

Block – 3 : Reproductive Health and Adolescent Health

Unit 1 : Gynecological Conditions
Unit 2 : Family Planning Methods, Spacing Techniques and Counseling
Unit 3 : Abortion Methods and MTP Act
Unit 4 : Counselling in Reproductive and Sexual Health Including Problems of Adolescents
Unit 5 : Management of Teenage Pregnancy

Block – 4 : Newborn and Child Health Care

Unit 1 : Essential Care of Newborn at Birth
Unit 2 : Management of Common Neonatal and Child Health Problems
Unit 3 : Integrated Management of Neonatal and Childhood Illness
Unit 4 : Introduction to Rashtriya Bal Swasthiya Karyakaram
Unit 5 : Universal Immunisation Programme (UIP)

Block-5 : Overview of Common Surgical Conditions

Unit 1 : Common Surgical Conditions -1
Unit 2 : Common Surgical Conditions -2
Unit 3 : Congenital Malformations
Unit-4 : Screening for Common Cancers

Block – 6 : Essential Drugs

Unit 1 : Essential Drugs – 1
Unit 2 : Essential Drugs – 2
Unit 3 : Essential Drugs – 3