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STANDARD TREATMENT GUIDELINES

AND

ESSENTIAL MEDICINES LIST

FOR LESOTHO

2005

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MINISTRY OF HEALTH & SOCIAL WELFARE

## **STANDING EXPERT COMMITTEE**

1. Mrs T Khetsi Ministry of Health & Social Welfare
2. Mrs M Ntšekhe Ministry of Health & Social Welfare
3. Dr M Moteetee Ministry of Health & Social Welfare
4. Dr

## **EDITORIAL COMMITTEE**

1. Mrs T Khetsi Ministry of Health & Social Welfare
2. Mrs M Ntšekhe Ministry of Health & Social Welfare
3. Dr M Moteetee Ministry of Health & Social Welfare
4. Ms M Tiheli Ministry of Health & Social Welfare
5. Ms N Hoohlo National University of Lesotho

## Acknowledgments

Production of this inaugural edition of the National Standard Treatment Guidelines (STGs) and Essential Medicines List (EML) for Lesotho is a result of hard and selfless work by a group of individuals. It is not possible to mention the names of all the people who contributed towards the development and production of this document.

We wish to express our sincere appreciation to the two consultants who were engaged to develop this document, Dr NC Moji and Mrs NG Masoga. Without their expertise and hard work, development of these Standard Treatment Guidelines (STGs) and Essential Medicines List (EML) for Lesotho would still be just a vision.

Particular acknowledgements and thanks are extended to Consultants at Queen Elizabeth II Hospital and those at Mophlomi Hospital for their useful and valuable input into various sections of the Standard Treatment Guidelines.

Finally, it would be remiss not to mention with gratitude the immense contribution of the Standing Expert and Editorial Committees of the Ministry of Health and Social Welfare, which were engaged in the reviewing and finalisation of the draft STGs and EML produced by the consultants, and oversaw the process to its conclusion. To all on the Standing Expert and Editorial Committees, we thank you.

## FOREWORD

The Government of Lesotho through the Ministry of Health and Social Welfare is committed to providing quality health care services to all Basotho. This can effectively be achieved by developing and implementing structured systems encompassing, among others, provision of competent health care professionals who will render basic health care services to the nation, as well as equitable access to these health care services at costs affordable to the Basotho. Provision of essential medicines is one of the key strategies of this goal.

This concept is enshrined in the National Medicines Policy (NMP) of Lesotho. It is indeed very gratifying to note that an important milestone towards achieving the objectives of the NMP has been reached. It is thus up to all the stakeholders in the provision of health to the nation to ensure that the other objectives of the NMP, closely intertwined with provision of good quality and affordable essential medicines are fulfilled. Of particular importance here is rational use of the available medicines, which entails rational prescribing and dispensing.

The STGs and EML have been produced through an extensive consultative process. They therefore represent a consensus of opinion of experts in the health field. They also take into account the current economic climate in the country as well as the Lesotho setting, and hence, are appropriately adapted to address our unique challenges.

Let us all as stakeholders commit to the provision of quality health care to the Basotho through efficient management of the limited supplies of medicines available to us. I therefore petition all health workers in Lesotho to use these STGs and EML to rationalize the selection and use of medicines.

May God bless you all.

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Dr M Phooko

Hon. Minister of Health and Social Welfare

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# STANDARD TREATMENT GUIDELINES 2005

## 1 INTRODUCTION

### 1.1 GENERAL REMARKS ABOUT THE USE OF STANDARD TREATMENT GUIDELINES (STGS)

Medicine is dynamic and therefore the development and adoption for use of standard treatment guidelines is not the end-all of our desire to improve the quality of care available to Basotho. It is the beginning of an unending process.

It is therefore important for the users to carry on their obligation to use the Standard Treatment Guidelines while providing the feedback to the Standing Expert Committee about their limitations or the need to include emerging conditions.

It is equally important that enabling policies and regulations be continually developed and reviewed to ensure adherence to the use of STGs by all our public and CHAL facilities.

STGs are a guide to management of the majority of patients. The users, where necessary, should consult more detailed textbooks and clinical manuals and adapt management of individual cases accordingly.

The rationale for use of certain drugs for various conditions is succinctly outlined in the relevant sections of the document. Feedback from the users of this document in the form of constructive criticism and/or proposed improvements that will be necessitated from time-to-time by new developments in the practice of medicine or by any relevant changes in our environment is highly solicited. This feedback is essential in ensuring that future editions of this document address the core challenges within the health care sector in an efficient and cost-effective manner, thus playing a major role in the achievement of the NMP goals. Feedback on this document can be forwarded to the Standing Expert Committee in the Directorate of Pharmaceuticals within the Ministry of Health and Social Welfare.

### 1.2 FORMAT UTILISED IN THE DEVELOPMENT OF THE STANDARD TREATMENT GUIDELINES

This section presents the structure of the outline followed when developing the Standard Treatment Guidelines:

#### 1.2.1 General Remarks

This section explains the condition. It discusses the prevalence and impact of the condition

#### 1.2.2 Diagnostic Criteria

This section highlights those important features of the disease that assist in establishing the diagnosis.

### **1.2.3 Treatment Guidelines**

This section details how the condition should be managed at the various levels in the health care delivery system. Particular emphasis is placed on key promotion and prevention aspects of the interventions proposed

### **1.2.4 Key Investigations**

This section discusses the various investigations necessary in making the diagnosis as well as in managing the condition

### **1.2.5 Comments**

Where necessary this section is used to emphasise the important features of the condition that need to be borne in mind when managing the particular condition

# CHAPTER ONE

## Notifiable Diseases and Other Infections

### 2 NOTIFIABLE DISEASES

These are a number of diseases that are under the WHO surveillance programme. They are grouped into three (3) categories as follows:

1. **Quarantinable Weekly Notifiable Diseases:** These include cholera, Plague, Yellow Fever and Haemorrhagic Fever
2. **Non-Quarantinable Weekly Notifiable Diseases:** These include Acute Flaccid Paralysis, Measles, Meningococcal Meningitis, Poliomyelitis, Rabies, Anthrax and Neonatal Tetanus
3. **Monthly Notifiable Diseases:** These include Hepatitis A and B, Whooping Cough, Relapsing Fever, Typhoid and Diphtheria

It is deemed essential that all users of these guidelines and all health care providers be familiar with these diseases as well as with the Immunisation Schedule defined for the country.

#### 2.1 IMMUNISATION SCHEDULE

Timing	Disease	Vaccine Name
At Birth	<ul style="list-style-type: none"><li>♣ Tuberculosis</li><li>♣ Poliomyelitis</li></ul>	<ul style="list-style-type: none"><li>♣ BCG</li><li>♣ OPV-O</li></ul>
At Six (6) Weeks	<ul style="list-style-type: none"><li>♣ Poliomyelitis</li><li>♣ Diphtheria</li><li>♣ Tetanus</li><li>♣ Hepatitis B</li><li>♣ Pertussis</li><li>♣ Tuberculosis (if not already given at birth)</li></ul>	<ul style="list-style-type: none"><li>♣ OPV-I</li><li>♣ DPT-1</li><li>♣ Hepatitis B</li></ul>
At Ten (10) Weeks	<ul style="list-style-type: none"><li>♣ Poliomyelitis</li><li>♣ Diphtheria</li><li>♣ Tetanus</li><li>♣ Hepatitis B</li><li>♣ Pertussis</li><li>♣ Tuberculosis (if not already given at birth)</li></ul>	<ul style="list-style-type: none"><li>♣ OPV-II</li><li>♣ DPT-II</li><li>♣ Hepatitis B</li></ul>

Timing	Disease	Vaccine Name
At Fourteen (14) Weeks	<ul style="list-style-type: none"> <li>♣ Poliomyelitis</li> <li>♣ Diphtheria</li> <li>♣ Tetanus</li> <li>♣ Hepatitis B</li> <li>♣ Pertussis</li> </ul>	<ul style="list-style-type: none"> <li>♣ OPV-III</li> <li>♣ DPT-III</li> <li>♣ Hepatitis B</li> </ul>
At Nine (9) Months	<ul style="list-style-type: none"> <li>♣ Measles Vaccine</li> </ul>	<ul style="list-style-type: none"> <li>♣ Measles-I</li> </ul>
At Twelve (12) Months	<ul style="list-style-type: none"> <li>♣ Measles Vaccine</li> </ul>	<ul style="list-style-type: none"> <li>♣ Measles-II</li> </ul>
At eighteen ( 18 ) Months	<ul style="list-style-type: none"> <li>♣ Diphtheria</li> <li>♣ Tetanus</li> </ul>	<ul style="list-style-type: none"> <li>♣ DT Booster</li> </ul>
At Five ( 5 ) <u>Months Years</u>	<ul style="list-style-type: none"> <li>♣ Diphtheria</li> <li>♣ Tetanus</li> </ul>	<ul style="list-style-type: none"> <li>♣ DT Booster</li> </ul>

## 2.2 TETANUS PROPHYLAXIS SCHEDULE

Toxoid Name/Designation	Timing
TT-1	First Antenatal Clinic visit
TT-2	Four (4) weeks after TT-1
TT-3	Six (6) months after TT-2
TT-4	One (1) year after TT-3
TT-5	One (1) year after TT-4

## 2.3 INTERVENTIONS AT COMMUNITY LEVEL

1. Encourage mothers to immunise their children
2. Educate mothers about the benefits of immunisation
3. Emphasise the need for attending postnatal clinics as scheduled

## 2.4 INTERVENTIONS AT THE HEALTH CENTRE LEVEL

1. Reinforce the above
2. Emphasise the need to and the importance of immunising children as scheduled

## 2.5 INTERVENTIONS AT THE HSA HOSPITAL LEVEL

1. Reinforce the above

2. Emphasise the need to and importance of immunising children as scheduled

### 3 TREATMENT GUIDELINES FOR SICK CHILDREN

#### 3.1 MEASLES

This is a disease condition that continues to affect many children and accounts for a significantly high proportion of outpatient morbidity and inpatient mortality. It is a viral infection, usually presenting with high fever, conjunctivitis, cough, diarrhoea and skin rash. One of the most easily identifiable diagnostic features is the appearance of spots that look like salt grains in the mouth, the so-called Koplik Spots.

##### 3.1.1 Community Level Interventions

1. Isolate the child
2. Continue to feed the child
3. Apply Tepid Sponging where fever is present
4. Refer to a higher level for further care

##### 3.1.2 Health Centre-Level Interventions

1. Encourage home-treatment where possible
2. Ensure that the child is fed well
3. Institute drug therapy where indicated:
  - ♣ For Fever: Paracetamol syrup/tabs 10-15mg/kg orally in 3-4 divided doses per day for 5 days
  - ♣ For Diarrhoea: Oral Rehydration Solution
  - ♣ **For Complications such as Otitis Media:** Amoxicillin 40mg/kg/24 hourly orally in 3 divided doses

OR

Erythromycin 25 mg – 50 mg/kg orally three times per day for 7 days

- ♣ For conjunctivitis: Tetracycline eye ointment twice daily

PLUS

Vitamin A 100 000iu – 200 000iu once per day for three days

## Refer patients with complications

### 3.1.3 Hospital Level intervention

1. Non-pharmacological management as above
2. Oxygen where indicated
3. Drug Management as appropriate and where indicated:
  - ♣ Vitamin A 100 000iu – 200 000iu daily for two days
  - ♣ Paracetamol 2.5 ml – 10 ml four times per day for 5 days
  - ♣ Benzyl Penicillin iv 100 000 – 300 000 u/kg/24 hours in 4 divided doses for 7days
  - ♣ Gentamycin 5-7.5mg/kg/24 hours in 3 divided doses for 5 days
  - ♣ Where convulsions present: Diazepam 0.25mg – 1.0mg/kg IV or PR

OR

Phenobarbital 10mg/kg Loading Dose STAT, then 5mg/kg/24 hourly nocte

**NOT TO EXCEED ADULT DOSE**

## 3.2 DIPHTHERIA

Diphtheria is caused by *Bordetella diphtheriae*. It is characterised by an inflammatory and exudative reaction that results in the formation of a greyish pseudo-membrane at the pharynx. Its most severe complications are myocarditis, neuritis, upper respiratory tract obstruction, nephritis, thrombocytopenia, broncho-pneumonia, and respiratory failure or even circulatory collapse. A patient with Diphtheria tends to present with a high fever, sore throat, and hoarse voice with stridor and is often very sick.

### 3.2.1 Community Level Interventions

1. Isolate the child.
2. Advice parents/care-givers about the seriousness of the condition
3. Refer immediately

### 3.2.2 Health Centre Level Interventions

1. Same as above
2. Monitor and record vital signs
3. Refer immediately

### 3.2.3 Hospital-level Interventions

1. Administer Diphtheria Anti-Toxin
2. Benzyl Penicillin iv 50 000 – 100 000u /kg/24 hourly for 7 days

OR

Pen VK 25mg -50mg/kg orally in 4 divided doses for 7 days

3. For Contacts: Diphtheria Vaccine, Pen VK 50mg/kg/24 hourly in 4 divided doses, OR Erythromycin 25mg – 50mg/kg/24 hourly orally in three divided doses for 7 days
4. For Carriers: Pen VK 50mg/kg/24 hourly orally in 4 divided doses OR, Erythromycin 25mg – 50mg/kg/24 hourly orally in 3 divided doses for 7 days

### 3.3 PERTUSSIS (WHOOPIING COUGH)

Pertussis is an acute inflammatory communicable respiratory tract infection caused by *Bordetella pertussis*. It is characterised by a paroxysmal cough that ends with a loud inspiratory whoop. Crying, eating or drinking usually precipitates the cough. Cyanosis, sweating, exhaustion and prostration usually accompany the cough.

#### 3.3.1 Community-Level Interventions

1. Supportive treatment.
2. Isolate the patient
3. Encourage mothers/care-givers to have children immunised
4. Refer

#### 3.3.2 Health Centre-Level Interventions

1. Immunise all children in the village/area
2. Educate mothers/care-givers about the need to immunise children
3. Attempt home-based management under supervision
4. Refer all cases with cough-related complications
5. Institute Drug therapy where indicated
  - ♣ Erythromycin 50mg/kg/24 hours orally in 4 divided doses for 7 days
  - ♣ Phenobarbital 0.15mg/kg/24 hours orally in 3 divided doses
  - ♣ Salbutamol 0.15mg/kg/24 hours orally in 4 divided doses if bronchospasm is present
  - ♣ Provide prophylaxis for close contacts

### 3.3.3 Hospital-Level Interventions

1. Manage as above
2. Administer Oxygen
3. Manage complications accordingly

## 3.4 TETANUS

Tetanus is an acute illness affecting muscle and is caused by tetanusspasm, a toxin produced by Clostridium tetani, a gram-positive anaerobic organism. The condition is characterised by stiffness of the neck, back and abdominal muscles with spontaneous muscle contractions/spasms (the so-called Tonic-Clonic Convulsions) triggered by even minimal stimuli. There is usually a history of injury or unhygienic care of the umbilical cord

### 3.4.1 Community-Level Interventions

1. Encourage mothers/care-givers to have children immunised
2. Teach mothers/care-givers, midwives and Traditional Birth Attendants about hygienic umbilical cord care
3. Treat wounds/lesions effectively
4. Refer all cases

### 3.4.2 Health Centre-Level Interventions

1. Do as above
2. Clean and dress wounds or umbilical cord stump
3. Refer

### 3.4.3 Hospital Level interventions

1. Do as above
2. Give IV fluids: normal saline or ringers lactate
3. Record and monitor vital signs
4. Administer Oxygen
5. Medication
  - ♣ Tetanus Human Immunoglobulin IM (500iu for Neonates and 2000iu for children)
  - ♣ Benzyl Penicillin 50 000 – 100 000u/kg/24 hourly I.M in 4 divided doses for 7 days  
PLUS
  - ♣ Diazepam 0.25mg/kg/24 hourly IM in 3 divided doses

OR

♣ Chlorpromazine 2mg/kg/24 hourly IM in 3 divided doses  
PLUS

♣ Phenobarbital 5 – 10 mg/kg/24 hourly IM in divided doses

**6. Tetanus Prevention**

♣ Wound Care

♣ Tetanus Toxoid  
PLUS

♣ Tetanus Immunoglobulin 75iu – 250iu IM

♣ Pen VK 125 – 500mg 6 hourly orally for 7 days

♣ Erythromycin 25 – 50mg/kg/24 hours orally in 4 divided doses for 7 days

**3.5 RABIES**

Rabies is an acute infectious disease of mammals, especially carnivores like dogs. In cases where it is suspected there is usually a history of a bite by an agitated and vicious dog. It is characterised by CNS irritability usually followed by paralysis and death if untreated. Therefore urgent medical attention is mandatory

The condition presents with a short period of mental depression, restlessness, malaise and fever. This may rapidly progress to uncontrollable excitement with excessive salivation and excruciatingly painful muscle spasm of the larynx and the pharynx.

**3.5.1 Intervention at Community Level**

1. Prompt cleansing of the dog bite wound with soap and water
2. Do not suture/close wound
3. Report the dog bite incident to a veterinary authority
4. Refer

**3.5.2 Intervention at Health Centre Level**

1. Do as above
2. Clean with antiseptic solution
3. Dress with antibiotic ointment
4. Medication

- ♣ Pen VK 125 –500 mg 6 hourly orally for 7 days

5. Refer

### 3.5.3 Hospital Level Intervention

1. Do as above
2. Secondary suturing of wound if determined to be clean
3. Medications

- ♣ Ampicillin 500 mg IV 6 hourly for 7 days

- ♣ Tetanus Toxoid 0.5ml IM

4. Post-exposure Prophylaxis

- ♣ For Immunised Patients: Rabies Vaccine 1ml IM (repeat on day 3)

- ♣ For Un-immunised Patients: Human Rabies Immunoglobulin 20iu/kg daily PLUS Rabies Vaccine 1ml IM

## 3.6 TYPHOID FEVER

Typhoid is endemic in developing countries. It is a faeco-oral infection spread by ingestion of contaminated food or water. The causative agent is *Salmonellae typhi*. Sporadic outbreaks are seen frequently in health facilities in the country. If untreated this condition may progress to develop fatal complications such as intestinal perforation, psychosis, peritonitis and/or myocarditis.

The condition usually presents with high fever, constipation or diarrhoea, headache, abdominal pain and general malaise. Typhoid fever also features in the differential diagnosis of acute confusional state.

### 3.6.1 Community Level Interventions

1. Safe excreta disposal
2. Assure availability of potable water supply
3. Promote proper personal hygiene
4. Ensure certification of food handlers
5. Refer suspected Cases

### 3.6.2 Health Centre Level Interventions

1. Non-pharmacological interventions as above
2. Medication



### **3.7.2 Health Centre Level Intervention**

1. Do as above
2. Refer suspected cases

### **3.7.3 Hospital level intervention**

1. Reinforce the above
2. Confirm the diagnosis
3. Stool specimen
4. Bed rest
5. Supportive care as required
6. Intensive rehabilitation

**3.8 CHOLERA, PLAGUE, YELLOW FEVER AND HAEMORRHAGIC FEVER ARE ALL QUARANTINABLE DISEASES. THOUGH THEY ARE NOT ENDEMIC IN LESOTHO, THEY ARE IMPORTANT GIVEN THE HIGH VOLUME OF TRAFFIC TO, AND FROM ENDEMIC AREAS**

### **3.9. MUMPS**

Mumps is caused by an RNA Myxovirus and is most common in spring. It most commonly affects children and teenagers up to the age of 15 years. Characteristic features of mumps are pain and swelling of the parotid gland (this is typified by an increase in size over a period of about 2-3 days; the sub-mandibular and/or the sub-maxillary glands may be involved). Additional complications may include aseptic meningitis, encephalitis and orchitis.

#### **Community Level Interventions**

1. Note that there is no specific treatment
2. Ice compression over the gland swelling
3. Pain relief through the use of Paracetamol and/or Aspirin

#### **Health Centre Level Interventions**

1. Do as above
2. Refer severe or non responding cases

### **3.9.3 Hospital level intervention**

1. Continue as above for health center level interventions
2. Prednisone 40mg daily may reduce very severe and painful swelling

### **RUBELLA (GERMAN MEASLES)**

Rubella remains common in developing countries where effective vaccines programmes are lacking. Characteristic features of the condition are fever, myalgia and posterior cervical lymphadenopathy; this can be accompanied by a faint macular erythema that develops on the face and spreads to the trunk. Arthralgia, thrombocytopaenic purpura, neuritis and heart block may also occur as complications. When the condition occurs in pregnancy the most common complications are cardiac and ophthalmologic teratological effects

#### **Community and Health Centre Level Interventions**

1. No specific medical treatment
2. Reassure the patient
3. Implement pain-relief with Paracetamol
4. Administer MMR Vaccine for all children in order to reduce incidence

### **CHOLERA**

This is an acute infection caused by the organism *Vibrio cholerae*. It affects the entire small bowel and is characterised by profuse watery diarrhoea, vomiting, muscle cramps, dehydration and syncope.

#### **Management**

This condition requires hospitalisation. The treatment is as follows:

1. Isolate patient
2. Ensure adequate nutrition
3. Administer Cholera Vaccine
4. Institute fluid replacement: IV Ringers lactate/normal saline
5. Treat with Co-trimoxazole, Tetracycline or Chloramphenicol:

Chloramphenicol 100mg/kg/24 hours orally in 4 divided doses for 7 days

Tetracycline 250mg four times daily for 7 days

Co-trimoxazole 400/80mg twice daily for 7 days

## **PLAGUE**

This is an acute infection caused by the bacillus *Yersinia pestis* (*Pasteurella pestis*). It presents as a Bubonic or Pneumonic form. The patient's pulse may be rapid and thready. Enlarged lymph nodes appear with or shortly before the fever. The most commonly affected lymph nodes are the femoral and inguinal nodes.

The Pneumonic form of the disease presents with an abrupt onset of high fever, chills, tachycardia, headache and cough.

### **Community Level Interventions**

1. Refer all suspected cases

### **Health Centre Level Interventions**

1. Monitor and record vital signs
2. Refer to hospital

### **Hospital Level Intervention**

1. Confirm diagnosis by isolating the organism from the blood, sputum and the swollen glands
2. Notify the authorities
3. Isolate the patient
4. Disinfect patient and his/her clothing
5. Monitor attending staff for fever and treat where indicated
6. Medication
  - ♣ Streptomycin 0.5mg-1gm IM daily for 7 days AND
  - ♣ Tetracycline 500mg orally 4 times daily for 7 days OR
  - ♣ Chloramphenicol 500mg orally 4 times daily for 7 days

## **VIRAL HAEMORRHAGIC FEVER**

This disorder is to be suspected in any person who has travelled to an endemic area and who develops fever with a bleeding tendency. Other features include pharyngitis, hepatitis and shock. Viruses implicated are arboviruses, arena-viruses and the Warburg and Ebola viruses

### **Treatment Guideline**

1. Emergency care at hospital
2. Isolate the patient

3. Notify the relevant authorities
4. Contact specialist centre for further advice

## **MALARIA**

Malaria is to be suspected in any traveller who has come from an endemic area and who develops fever with rigors, headache, fatigue, lassitude, and sometimes diarrhoea. Tender hepato-splenomegaly may be present. Jaundice and signs of pulmonary oedema may develop as complications

Treatment should not be attempted at either the community or health centre level. The hospital setting is the preferred location for treatment.

### **Treatment Guidelines**

1. Advocate for and promote regular anti-malaria prophylaxis when travelling to endemic areas
2. All suspected cases should be hospitalised without delay
3. Malaria parasites are demonstrable in peripheral blood slides (key diagnostic tool/procedure)
4. Supportive care with careful management of fluid balance
5. Specific malaria Treatment
  - P. vivax, P. ovale or P. malariae: Chloroquine 600 mg base initial dose,
  - Then single dose of 300mg after 6-8 hours and 300mg daily for 3 days OR
  - Primaquine 15mg daily for 4 days
  - P. falciparum: MILD: Sulfonamide 500mg plus Pyrimethamine 25mg as a single dose (adults 3 tablets, children ½ - 2 tablets per kg body weight); OR
  - Quinine orally 30mg/kg/24 hours in 3 divided doses; SEVERE Quinine orally 10mg/kg/8-hourly for 7 days
6. Malaria prophylaxis as recommended by the CDC

### **3.14.2 Key investigations**

- Full blood count
- Peripheral Blood Slide

# CHAPTER TWO

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## Respiratory Disorders

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### 1. CHEST PAIN

This is a common problem. When presented with chest pain, the aim is to exclude potentially fatal causes such as myocardial infarction, unstable angina, pulmonary embolism, aortic dissection or oesophageal rupture. Therefore any chest pain has to be treated seriously. If one cannot make a confident diagnosis of a minor self-limiting disorder one has to exclude other causes of chest pain.

#### 1.1 DIAGNOSTIC CRITERIA

The diagnostic criteria below is for potentially fatal causes only. The numerous other causes of chest pain are not described.

##### 1.1.1 Angina Pectoris

This is recurrent central chest pain often induced by exertion. It typically lasts for just a few minutes and is relieved by rest

##### 1.1.2 Myocardial Infarction

Characterised by a sensation of tightness and heaviness in the chest and a constrictive chest pain that persists for more than 30 minutes. This is a pain that is NOT relieved by rest. It may radiate to the left arm, neck or jaw. In addition the patient may be restless and apprehensive.

##### 1.1.3 Unstable Angina

With this condition pain is felt at rest or even with just minimal exertion

##### 1.1.4 Pulmonary Embolism

This is characterised by pleuritic chest pains associated with breathlessness in a patient with attendant risks for deep vein thrombosis (DVT)

##### 1.1.5 Aortic Dissection

This condition is characterised by severe chest pains of sudden onset accompanied by asymmetric peripheral pulses or even aortic regurgitation (detectable on auscultation)

##### 1.1.6 Oesophageal Rupture

In this condition chest pain follows vomiting. The chest pain is when the patient swallows. Other chest signs such as pleural effusion may accompany it

### 1.1.7 Pericarditis

With this disorder the severity of the chest pain is worsened by inspiration or by lying supine. The pain lessens when the patient sits upright

## 1.2 CLINICAL GUIDELINES

### 1.2.1 Community Level Interventions

1. Educate patients about the seriousness of chest pain
2. Encourage the adoption of “healthy lifestyles”(Refer to VHW manual)
3. Avoid known risk factors for Ischemic Heart Disease (IHD)(Refer to VHW manual)
4. Discourage self-induced vomiting (as in “purging” as part of traditional remedies)
5. Medications
  - ♣ For minor chest pain administer analgesics: Paracetamol 500mg or 1gm three times per day for 5 days
6. Refer immediately

### 1.2.2 Health Centre Level Interventions

1. Take measures as above
2. Monitor and record Vital Signs
3. Refer if a confident diagnosis of a minor ailment cannot be made

### 1.2.3 Hospital level Intervention

1. Reinforce non-pharmacological measures as described above
2. Investigate fully in order to better make an appropriate diagnosis
3. Manage according to the diagnosis made

## 2 COMMON COLD AND INFLUENZA

Influenza and colds are seen commonly in winter and are characterised by fever and cough with or without white sputum, and a runny nose. These two conditions account for a significant proportion of outpatient morbidity.

### 2.1 DIAGNOSTIC CRITERIA

Colds and influenza are self-limiting viral infections. A patient usually presents with a fever of sudden onset. The fever may be accompanied by a cough, runny nose, general malaise and arthralgia. The danger lies with

the potential for progression to complications such pneumonia, sinusitis, pharyngitis and otitis media in children.

## 2.2 CLINICAL GUIDELINES

### 2.2.1 Community Level Interventions

1. Bed Rest
2. Steam Inhalation
3. Tepid sponging for fever
4. Village health worker follow up of children after 2 days.
5. Medications
  - ♣ Paracetamol syrup 125mg-250mg 3 times daily for 5 days (Children)
  - ♣ Paracetamol 500mg-1 gm 3 times daily for 5 days (Adults)
6. Refer in the event of complications or HIV status

### 2.2.2 Health centre Intervention

1. Non-pharmacological intervention as above
2. Paracetamol 125 mg -250mg 3 times daily for 5 days (Children)  
Paracetamol 500-1gm 3 times daily for 5 days (Adults)  
ASA 300mg-600mg 3 times daily for 5 days (Adults)
3. If secondary infection is suspected give  
Pen VK 125mg-250mg 4 times daily for 7 days (Children)  
Pen VK 500mg-1gm 4 times daily for 7 days (Adults) OR  
Erythromycin 125mg - 250mg 4 times daily for 7 days (Children)  
Erythromycin 500mg - 1gm 4 times daily for 7 days (Adults)  
Refer if HIV suspected or major complication present

### 2.2.3 Hospital Intervention

- 1 Non-pharmacological intervention as above
- 2 Manage as per complications

## 2.3 Key Investigations

N.B Usually none unless complication are suspected

-Full Blood Count

-X-ray

# 3. BRONCHITIS

Acute bronchitis is a viral or bacterial infection of the bronchi that often arises as a complication of colds and/or influenza

## 3.1 DIAGNOSTIC CRITERIA

Bronchitis usually presents as a cough that may or may not be accompanied by wheezing. At onset the cough is usually not productive but may progress to being productive of yellowish or greenish sputum.

## 3.2 CLINICAL GUIDELINES

### 3.2.1 Community Level Interventions

1. Management is essentially similar to that for colds and influenza
2. Symptomatic relief with the following:
  - ♣ Cough Syrup 2.5 – 5ml 3 times daily (children); sedative
  - ♣ Cough syrup 10ml 3 times daily in adults

N.B if productive give expectorant cough syrup

  - ♣ Paracetamol Syrup 125mg-250mg 3 times daily in children and
  - ♣ Paracetamol tabs 500mg- 1gm 3 times daily in adults
3. Refer if no improvement or cough of more than a month

### 3.2.2 Health Centre Level Interventions

1. Manage conservatively as above
2. Antibiotics may be given if there is evidence of secondary bacterial infection or cardiac disease, previous pneumonia, in cases of bronchiectasis, in immunocompromised patients or in chronic overactive disease
3. Antibiotic Treatment: all given for 7 days

- ♣ Amoxycillin 62.6 – 250mg 3 times daily (children)
- ♣ Amoxycillin 500mg 3 times daily (adults) OR
- ♣ Erythromycin 62.5 – 250 mg 3-4 times daily (children)
- Erythromycin 500mg 3 times daily (adults)

4. Refer if there is evidence of cardiac disease etc

### 3.2.3 Hospital Intervention

- a. Reinforce non-pharmacological intervention as in common cold
- b. Treat as per complications

### 3.3 Key Investigation

- Full Blood count;
- Blood sugar
- X-ray;
- Sputum

## 4 ASTHMA

Bronchial Asthma is a condition characterised by episodic and chronic airways obstruction due to bronchospasm and inflammatory oedema. It is a condition that accounts for a significant proportion of both inpatient and outpatient morbidity. It is a dangerous disease.

### 4.1 DIAGNOSTIC CRITERIA

Asthma usually presents with acute or chronic symptoms of breathlessness, chest tightness, cough and an expiratory wheeze

### 4.2 CLINICAL GUIDELINES

#### 4.2.1 Community Level Interventions

1. Immediate referral of acute asthma
2. Educate sufferers and the community about the condition
3. Promote avoidance of exposure to factors that trigger asthma attacks
4. Encourage smokers to quit smoking
5. Train patients on the proper use of inhalers used for asthma
6. Allay anxieties that accompany the disease

#### 4.2.2 Health Centre Level Interventions

1. Reinforce above messages
2. For Acute Attacks:-
  - ♣ Nebulise with 0.5% Salbutamol solution PLUS
  - ♣ IV Hydrocortisone 1-2mg/kg (children),
  - ♣ Hydrocortisone 100 – 200mg IV Stat (adults) OR,
  - ♣ Prednisone 20 – 40mg po daily for 7 days
3. Observe and refer if no improvement

#### 4.2.3 Hospital Level intervention

1. Reinforce above messages
2. Hospitalise
3. For Acute Attacks:
  - ♣ Oxygen,6L/per mm Nebulise with Salbutamol, as above
  - ♣ IV Hydrocortisone 1-2mg/kg (children),
  - ♣ IV Hydrocortisone 100 – 200mg (adults)
  - ♣ IV Aminophylline 5 – 6mg/kg in 1 000ml of 5% Dextrose Solution
4. Antibiotics may be given for 7 days if there is an indication of a secondary infection:
  - ♣ Amoxicillin 500mg 3 times daily OR,
  - ♣ Tetracycline 500mg 4 times daily, OR
  - ♣ Cotrimoxazole 400/80mg 2 times daily.
5. Refer drug-resistant cases for specialist care
6. For Chronic Cases that have been stabilized:
  - ♣ Salbutamol Inhaler,
  - ♣ Theophylline 200 – 400mg 2 times daily OR
  - ♣ Salbutamol 4mg 3 times daily.

### 4.3 KEY INVESTIGATIONS

- |                            |                        |
|----------------------------|------------------------|
| -Full Blood count;         | -Peak flow measurement |
| -Blood gases and oxymeter; | -Blood sugar           |
| -Urea and Electrolytes;    | - X-ray                |

## 5. PNEUMONIA

Lower Respiratory Tract Infections constitute a major global health problem. This is in spite of the widespread availability of potent anti-microbial drugs. Pneumonia accounts for about 6% of deaths that occur in institutions as well as for a significant proportion of outpatient morbidity.

### 5.1 DIAGNOSTIC CRITERIA

Characteristic presentation is that of a fever of sudden onset, usually accompanied by a cold and/or productive cough. There are pleuritic stabbing chest pains and an accompanying shortness of breath

### 5.2 CLINICAL GUIDELINES

#### 5.2.1 Community Level Interventions

1. Record and monitor vital signs
2. Tepid sponging where fever present
3. Paracetamol 125mg-250mg stat (children)  
Paracetamol 500mg-1gm stat (adults)
4. Refer immediately

#### 5.2.2 Health Centre Level Interventions

1. Manage conservatively as above
2. Use analgesics for pain relief
  - ♣ Paracetamol 125mg-250mg 3 times daily (children ) for 5 days
  - ♣ Paracetamol 500mg-1gm 3 times daily (adults) for 5 days
  - ♣ ASA 300mg-600mg 3 times daily (adults) for 7 days
  - ♣ Oxygen 6L/min

3. Administer Oxygen if indicated
4. Give antibiotics:
  - ♣ Pen VK 125mg-250mg 4 times daily (children) for 7 days
  - ♣ Pen VK 500mg-1gm 4 times daily (adults) for 7 days or
  - ♣ Erythromycin 125mg-250mg 4 times daily (children) for 7 days
  - ♣ Erythromycin 500mg-1gm 4 times daily (adults) for 7 days
5. Refer to Hospital if no improvement after 3-4 days

### 5.2.3 Hospital Level Intervention

1. Conservative management as above
2. For uncomplicated Pneumonia then give:
  - ♣ Amoxycillin 500mg 8-hourly, orally for 7 days OR
  - ♣ Erythromycin 500mg 6-hourly, orally (if the patient is sensitive to Penicillin and/or features of Atypical Pneumonia or Influenzae are present)
3. For **complicated Pneumonia**
  - ♣ Amoxycillin 500mg IV 8-hourly for 7 days PLUS
  - ♣ Erythromycin 500mg IV 6-hourly for 7 days

**Nosocomial:**

  - ♣ Ampicillin 1gm IV 6-hourly for 7 days PLUS
  - ♣ Gentamycin 160mg loading dose STAT; then
  - ♣ Gentamycin 80mg 8-hourly for 7 days OR

**Inhalation Pneumonia:**

  - ♣ Metronidazole 500mg IV 8-hourly, PLUS
  - ♣ Ampicillin 1gm IV 6-hourly for 7 days OR
  - ♣ Claforan 1gram IV 12-hourly for 7 days

### 5.3 Key Investigations

-Full blood count;

-X-ray

-Blood sugar;

-Sputum culture and sensitivity

## 6. PNEUMONIA IN CHILDREN

Pneumonia is a common inflammatory process affecting the lung parenchyma and is caused by various infectious agents. The organisms most commonly implicated are *S. pneumoniae*, *H. influenzae*, *S. aureus*, *M. tuberculosis*, *Mycoplasma pneumoniae* and *Pneumocystis Carinii* (constitutes a common complication in immuno-compromised children)

### 6.1 DIAGNOSTIC CRITERIA

The onset is often acute with high fever, flaring of nostrils, cough, tachypnoea, dyspnoea, intercostal recession and intercostal retraction. The examination may reveal dullness on lung percussion, and bronchial breathing, crepitations and/or decreased breath sounds on auscultation.

### 6.2 TREATMENT GUIDELINES

#### 6.2.1 Community Level Interventions

1. Encourage early seeking of medical help
2. Tepid sponging if fever present
3. Maintain child's nutritional status adequately
4. Refer all cases as soon as possible

#### 6.2.2 Health Centre Level Interventions

1. Manage as above
2. Encourage frequent small feeds
3. Monitor and record vital signs
4. Refer all neonates and other patients with respiratory difficulties
5. Medications:
  - ♣ Penicillin Syrup 125 – 250mg orally 4 times daily for 7 days OR
  - ♣ Amoxycillin Syrup 62.5 – 250mg orally 3 times daily for 7 days PLUS
  - ♣ Paracetamol Syrup 2.5ml – 5ml 3 times daily for 5 days.

In cases of Penicillin Sensitivity Erythromycin 62.5 – 250mg 4 times daily for 7 days BEFORE meals, can be used

### 6.2.3 Hospital Level Interventions

1. Continue non-pharmacological interventions as above
2. Medications for children:
  - ♣ Amoxicillin 50mg/kg/24 hours in 3 divided doses (if <20kg body weight) for 7 days OR
  - ♣ Amoxicillin 250 – 500mg 6-hourly (if >20kg body weight) for 7 days
3. Medications for Neonates:
  - ♣ Ampicillin 50 – 100mg/kg IV 6 hourly PLUS,
  - ♣ Gentamycin 7.5mg/kg IV 24-hourly in 3 divided doses for 7 days

### Specific Treatment Where the Organism is known

1. *S. pneumoniae*:
  - ♣ Amoxicillin 100mg/1kg/24hrs in 3 divided doses for 7 days OR
  - ♣ Flucloxacillin 62.5 – 125mg 6-hourly for 7 days
2. Anaerobic Infection:
  - ♣ Metronidazole 7.5mg/kg 8-hourly for 7 days ( N.B never exceed adult doses)
3. Lobar Pneumonia:
  - ♣ Benzylpenicillin IV 50,000u/kg/24hrs in 4 divided doses for 7 days.
4. Mycoplasma and Chlamydial Infection:
  - ♣ Erythromycin 40 – 50mg/kg 6 hourly for 7 days

### 6.4 Key Investigations

- |                         |              |
|-------------------------|--------------|
| -Full blood count;      | -X-ray       |
| -Urea and electrolytes; | -Blood sugar |

## **7. PULMONARY TUBERCULOSIS**

Pulmonary Tuberculosis is caused by *Mycobacterium tuberculosis* and is a common lung infection that accounts for a significant proportion of all mortality in the country. It is characterised as a chronic granulomatous infection of the lung. It has now become a common complication found in malnourished and immune-compromised children

### **7.1 DIAGNOSTIC CRITERIA**

It presents with a chronic, productive cough that is almost always accompanied by night sweats and a pronounced loss of weight. There may be a history of contact with an infected person (or persons). Most children are initially asymptomatic and may only have a positive Mantoux Skin Test.

### **7.2 TREATMENT GUIDELINES**

#### **7.2.1 Community Level Interventions**

1. Refer all patients with a chronic cough for screening
2. Avoid sustained overcrowding
3. Ensure adequate nutrition
4. Supervise known TB patients to take their medications regularly and to complete the prescribed treatment (DOTS)
5. Refer all cases

#### **7.2.2 Health Centre Level Intervention**

1. Reinforce the above
2. Reassure the patient that TB is curable if medication is taken as prescribed
3. Record and monitor vital signs
4. Refer the patient

#### **7.2.3 Hospital Level Intervention**

1. Non-pharmacological measures as above
2. Ensure adequate nutrition
3. Confirm diagnosis by doing sputum examination
4. Treat pulmonary tuberculosis as extra-pulmonary TB as recommended below

(i) Treatment (in children)

1 <sup>st</sup> Phase (2 months)	2 <sup>nd</sup> Phase (4 months)	
PYRIFIN ❖ RIF 120mg ❖ INH 80mg ❖ PZA 250mg)	<b>Isoniazid/Rifampicin (100mg/150mg)</b>	
	5-10 kg	½ Tab: 50mg/75mg
	11-20 kg	1 Tab: 100mg/150mg
	21-30 kg	2 Tabs: 200mg/300mg

The duration of the 2<sup>nd</sup> Phase TB Treatment is 10 months for TB Meningitis, TB Spine and Tuberculoma

(ii) Treatment (in Adults)

- ❖ The first phase for sputum positive cases is to be under the DOTS approach.

**A] Adult New Cases** (i.e. new smear positive and other pulmonary and extra-pulmonary tuberculosis)

1. Initial phase (2 months duration)

MEDICINES	<50KG	>50KG
Isoniazid/Rifampicin 150mg/300mg	2 Tablets	2 Tablets
Pyrazinamide 500mg	3 Tablets	4 Tablets
Ethambutol 200mg	2 Tablets	3 Tablets

2. Continuation phase (4 months duration)

MEDICINE	<50KG	>50KG
Isoniazid/Rifampicin 150mg/300mg	2 Tablets	2 Tablets

**B] Adult Retreatment Cases** i.e. smear positive retreatment cases

e.g.

-Relapse

-Treatment failure

-Treatment after interruption.

**1. Initial phase (2 months duration)**

MEDICINE	<50KG	>50KG
Isoniazid/Rifampicin 150mg/300mg	2 Tablets	2 Tablets
Pyrazinamide 500mg	3 Tablets	4 Tablets
Ethambutol 200mg	2 Tablets	3 Tablets
Streptomycin IM 0.75mg-1gm	750mg	1gm

**2. Continuation phase (5 to 6 months duration)**

MEDICINE	<50KG	>50KG
Isoniazid/Rifampicin 150mg/300mg	2 Tablets	Tablets

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**C] Adult multi-drug resistant**

This should be managed as per culture and sensitivity

- ♣ **Sputum Negative Cases:** Treat with conventional antibiotic (as for pneumonia) for 2 weeks. Only if there is no improvement should a course of anti-TB medication be initiated

**EXTRA PULMONARY TUBERCULOSIS**

Extra pulmonary TB is tuberculosis in which the disease process occurs outside the lungs. The majority originate from lymphatic or haematogenic spread of mycobacteria from primary focus in the lung. The most common types of extra pulmonary tuberculosis are :

- ♣ TB Lymphadenitis
- ♣ Miliary Tuberculosis
- ♣ Pleural effusion
- ♣ TB meningitis
- ♣ TB pericardial effusion
- ♣ TB Peritonitis
- ♣ TB of bones and other organs

Extra pulmonary tuberculosis is often difficult to diagnose and the diagnosis may be presumptive after excluding other conditions

**( i ) Tuberculous lymphadenitis**

This has to be differentiated from persistent generalized lymphadenopathy (PGL) related to HIV. It should be suspected if lymph nodes are tender, painful, non symmetrical, matted, flactuent, rapidly growing or associated with fever, night sweats or weight loss.

**Diagnosis:** The diagnosis is made by 18g or 19g needle aspiration or biopsy of lymph node; Mediastinal and or intra-abdominal lymphadenopathy may be detected by X-ray, ultrasound or CT Scan.

**Treatment:** Treat as for PTB

**( ii ) Miliary Tuberculosis**

Miliary tuberculosis is caused by the widespread blood bone dissemination of TB bacilli. Patient present with fever, night sweats and weight loss and may have enlarged liver and spleen.

N.B. Miliary tuberculosis is under diagnosed as the end stage AIDS.

**Diagnosis:** Chest X-ray shows small miliary nodules uniformly distributed.

**Treatment:** Treat as for PIB

**( iii ) Tuberculous Pleural Effusion**

Tuberculous pleural effusion presents with chest pain, breathlessness, tracheal and mediastinal shift away from the side of the effusion and decreased chest movement

**Diagnosis:** Chest x-ray shows unilateral uniform white opacity, often with a concave upper border.

**Treatment:** Treat as for PTB

**(iv )Tuberculosis Meningitis**

Tuberculosis meningitis is a life-threatening condition with serious complications. Patients present with gradual onset of headache and decreased consciousness. There is neck stiffness and positive kerning's and Babinski signs

**Diagnosis:** Lumbar puncture shows elevated white cells with predominant lymphocytes, increased protein and decreased sugar in cerebrospinal fluid ( CSF)

**Treatment:** Treat as per PTB

**( v ) Tuberculous Pericardial Effusions**

Tuberculous pericardial effusions present with chest pain, shortness of breath, cough, dizziness and weakness due to low cardiac output. There may be signs and symptoms of heart failure.

**Diagnosis:** Chest X-ray shows a large globular heart with clear lung fields.

-ECG shows low voltage with tachycardia flattening or ST waves changes.

-Echocardiogram shows increased effusion in the pericardial sac with normal heart usually.

**Treatment:** Treat as per PTB

**( vi ) Tuberculous Peritonitis**

TB peritonitis presents with ascites .There may be palpable abdominal masses, bowel obstruction and fistula

**Diagnosis:** Ascitic Tap- Exudate with increased white cell and predominant lymphocytes.

**Treatment:** Treat as per PTB

### 7.3 KEY INVESTIGATIONS

- Sputum for AFB (X3);
- Pleural tap;
- Echocardiogram;
- HIV testing
- X-ray;
- Ascitic tap;
- Full blood count;
- Lymph node aspiration/biopsy;
- Lumbar puncture
- Blood sugar

#### **TB Associated with HIV/AIDS:**

First give (and complete) 1<sup>st</sup> Phase anti-TB treatment and only then start Anti-retrovirals

# CHAPTER 3

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## Cardiovascular Diseases

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### 1. ACUTE BREATHLESSNESS/DYSPNOEA

Onset of breathlessness (dyspnoea) may be sudden or gradual with or without a productive cough. The aim in acute breathlessness is to rule out lethal causes such as pneumothorax, pulmonary embolism, pulmonary oedema, and foreign body aspiration or Adult Respiratory Distress Syndrome. Causes range in nature from “local” (i.e., localised in the respiratory tract) to general (e.g. cardiac disease, respiratory disease, disease of the rib cage and metabolic disorders such as diabetic ketoacidosis and anaemia).

#### 1.1 DIAGNOSTIC CRITERIA

Presentation depends largely on the underlying cause:

##### 1.1.1. Pulmonary Oedema:

Should be suspected in patients with cardiac disease who develop sudden onset of breathlessness accompanied by wheezing and a productive cough

##### 1.1.2. Asthmatic Attack

Symptoms may be provoked by psychosomatic factors. This condition is characterised by a wheeze in the presence of a reduced peak flow rate. Diurnal or seasonal variations may be reported (Refer to page 48 on asthma)

##### 1.1.3. Pneumonia

This condition is characterised by a fever accompanied by cough (may or may not be productive) and pleuritic chest pains. Chest X-ray findings are supportive of the diagnosis (Refer to chapter 2 Pneumonia)

##### 1.1.4. Pulmonary Embolism

Suspect in the presence of risk factors for DVT where there is associated pleuritic chest pains and haemoptysis

##### 1.1.5. Cardiac Tamponade

There is usually a markedly raised jugular-venous pressure with a paradoxical pulse, cardiomegaly and reduced/muffled heart sounds

##### 1.1.6. Large Pleural Effusion

Dull percussion over thoracic cavity with reduced air entry into the side affected. Chest X-ray typically shows a tracheal shift away from the side with the effusion

## 1.2. TREATMENT GUIDELINES

1.2.1. Community Level interventions should consist only of IMMEDIATE referral

### 1.2.2. Health Centre Level Intervention

#### 1. Pulmonary Oedema:

- ♣ Frusemide 40 – 80mg STAT
- 2. Record and Monitor Vital Signs
- 3. Reassure patient and family
- 4. Refer

### 1.2.3. Hospital Level Intervention

1. Bed rest
2. Monitor and record vital signs
3. Confirm cause of dyspnoea
4. Manage as per cause
5. **Severe Pulmonary Oedema:**
  - ♣ Administer Oxygen 6L/min;
  - ♣ Diamorphine 10-15mg IV Slowly **PLUS**,
  - ♣ Frusemide 40 – 240mg IV bolus **PLUS**,
  - ♣ Glyceryltrinitrate spray 2 puffs,

## 1.3 Key Investigations

- |                         |                        |
|-------------------------|------------------------|
| -Full blood count;      | - X-ray                |
| -Blood sugar;           | -Urea and electrolytes |
| -Peak flow measurement; | -ECG                   |

## **2. HEART FAILURE**

Heart failure, in all its forms (i.e., mild, moderate and severe) is a common occurrence in the Lesotho setting. It accounts for approximately 5.3% of the institutional deaths that take place in Lesotho. It is a “clinical syndrome” that is characterised by the inability of the heart to maintain an adequate cardiac output.

### **2.1. DIAGNOSTIC CRITERIA**

#### **2.1.1. Right Ventricular Failure:**

Characterised by elevated venous pressure, palpable liver (hepatomegaly), dependant oedema

#### **2.1.2. Left Ventricular Failure**

Characterised by dyspnoea on exertion, cough, fatigue, orthopnoea, paroxysmal nocturnal dyspnoea and “crackles” in the chest

#### **2.1.3. Bi-Ventricular Failure**

Presents with signs and symptoms characteristic of both of the above

### **2.2. TREATMENT GUIDELINES**

#### **2.2.1. Community Level Interventions**

1. Education to facilitate early detection
2. Reduce physical activity/exertion
3. Restrict salt intake
4. Refer all cases.

#### **2.2.2. Health Centre Level Intervention**

1. Reinforce non-pharmacological interventions described above
2. Administer a diuretic, e.g. Frusemide 40mg daily or Hydrochlorothiazide (HCTZ) 25mg – 100mg daily with potassium replacement (Slow K 600mg orally, daily)
3. If there is no response after two (2) weeks or if the patient’s condition worsens, then refer patient to nearest Hospital

#### **2.2.3. Hospital Level Intervention**

1. Reinforce non-pharmacological interventions described above
2. Determine and confirm the cause of the heart failure
3. Avoid medications that may cause further stress to the heart, e.g. Beta Blockers



### 3.2. TREATMENT GUIDELINES

#### 3.2.1. Community and Health Centre Level Interventions

1. Refer for stabilisation

#### 3.2.2. Hospital Level Interventions

1. Admit
2. Institute bed rest
3. Administer Oxygen if cyanosed
4. Determine underlying cause of the heart failure
5. Medication

- ♣ Digoxin 0.005mg – 0.01mg/kg 24-hourly in 2 divided doses **PLUS**
- ♣ Spironolactone 1mg –3 mg/kg 24-hourly b.d or t.d.s
- ♣ Captopril 0.1 mg– 2mg/kg 24-hourly b.d or t.d.s
- ♣ Frusemide 1mg – 2mg/kg 24-hourly 1-4 times per day

#### 3.3 Key Investigations

- |                         |                    |                 |
|-------------------------|--------------------|-----------------|
| -X-ray;                 | -Full blood count; | -Blood sugar    |
| -Lipogram;              | -ECG;              | -Echocardiogram |
| -Urea and Electrolytes; |                    | - Urine         |

- ♣ **NB: It is essential that any underlying cause (e.g. cardiac tamponade, infections, and hypertension) be treated.**
- ♣ **Digoxin is contraindicated in bradycardia, hypertrophic cardiomyopathy, heart block and cardiac tamponade**

## 4. PULMONARY EMBOLISM

### 4.1. DIAGNOSTIC CRITERIA

This condition should be suspected in any patient with a history of pelvic surgery, obesity, previous cardiac disease or previous and/or current use of oral contraceptives and who presents with a history of sudden onset breathlessness, severe oppressive chest pains and haemoptysis.

## 4.2. TREATMENT GUIDELINES

### 4.2.1. Hospital Level Interventions

1. Bed Rest
2. Oxygen 6L/min
3. Heparin 5 000 i.u. IV bolus followed by 1 000 – 2 000 i,u IV hourly. Dose should then be adjusted based on APPT, which itself is expected to be 1.5 – 2 times the normal value

### 4.3 Key Investigations

- X-ray;
- Full blood count;
- Electrolytes
- Echocardiogram;
- Blood sugar;
- Urea + electrolytes
- Blood gases

## 5. RHEUMATIC FEVER

This is a febrile illness in which the body develops antibodies against its own tissues secondary to an inadequately treated Group A Streptococcal infection of the throat.

### 5.1. DIAGNOSTIC CRITERIA

The condition presents with a combination of signs and symptoms such as persistent fever, arthralgia and fleeting joint pains, heart murmurs and/or heart failure, rheumatic nodules, erythema marginatum and chorea.

### 5.2. TREATMENT GUIDELINES

#### 5.2.1. Community Level Interventions

1. Refer cases
2. Analgesics may be given e.g. Paracetamol syrup or Aspirin

#### 5.2.2. Health Centre Level Intervention

1. Refer to Hospital
2. **Medication:**
  - ♣ Analgesics as above
  - ♣ Pen VK 500mg 4 times daily for 7 days
  - ♣ Pen VK Syrup 125 mg 4 times daily for 7 days (children)

#### 5.2.3. Hospital Level Interventions

1. Bed Rest

2. **Medication (Adults):**

- ♣ Pen VK 500mg 4 times per day for 10 days **or for 7day**
- ♣ Erythromycin 500mg 4 times per day for 7 days if patient is allergic to Penicillin

3. **Medication (Children):**

- ♣ 1-5 yrs: Pen VK Syrup 125mg 4 times daily for 7 days
- ♣ 6-12 yrs: Pen VK Syrup 250mg 4 times daily for 7 days

If Penicillin sensitive:

- ♣ 1-5 yrs: Erythromycin 125mg 4 times daily for 7 days;
- ♣ 6-12 yrs: Erythromycin 250mg 4 times daily for 7 days
- ♣ Aspirin 100mg/kg 24-hourly in 4-6 doses daily for 2 weeks then reduce to 75mg/kg 24hrly daily for an additional 4-6 weeks (**DO NOT EXCEED 2g ASPIRIN IN A 24-hour PERIOD**)
- ♣ If patient has carditis with either heart failure or an enlarged heart (X-ray) then give Prednisone 2mg/kg daily, orally for 2 weeks
- ♣ In cases where heart failure is present administer Digoxin and diuretics as described in the section on Heart Failure

4. **For Secondary Prevention (prophylaxis until age 21)**

- ♣ <30 kg: Benzathine Penicillin 600 000 units IM monthly
- ♣ >30 kg: Benzathine Penicillin 1.2 million units IM monthly
- ♣ In cases of penicillin sensitivity: Erythromycin 500mg 2 times daily

5.3 **Key Investigations**

- Full Blood Count and ESR;
- Chest X-ray; -Anti-streptolysin -O titre
- ECG;
- Throat Swab

## 6. INFECTIVE ENDOCARDITIS

This is a microbial infection of the endocardium. It is characterised by fever, heart murmurs, petechiae, and anaemia, embolic phenomena, endocardial vegetations that may be seen by ECG. The vegetations may lead to valvular incompetence or obstruction, myocardial abscess or mycotic aneurysm

### 6.1. DIAGNOSTIC CRITERIA

Known or unknown rheumatic heart disease that presents with signs and symptoms as described above. This diagnosis should be considered in patients with prosthetic heart valves who present with signs and symptoms suggestive of endocarditis

### 6.2. TREATMENT GUIDELINES

#### 6.2.1. Community Level Interventions

1. Advice all known cardiac patients to consult with a doctor if they have ANY infection
2. Refer all cases

#### 6.2.2. Health Centre Level Interventions

1. Do as above
2. **Medication:**
  - ♣ Paracetamol 500 – 1 000mg 3 times daily for 5 days
  - ♣ Aspirin 300 – 600mg 3 times daily for 5 days
  - ♣ Pen VK 500mg 4 times daily for 5 days

#### **If Anaemic:**

- ♣ Iron Sulphate (FeSO<sub>4</sub>) 200mg 3 times daily PLUS
- ♣ Folic Acid 5mg Daily
- ♣ Refer all cases

#### 6.2.3. Hospital Level Interventions

1. Manage as above
2. Blood Culture x 3
3. **Medications (Adults):**
  - ♣ Gentamycin 80mg 8-hourly IV for 5 days **PLUS**
  - ♣ Benzyl Penicillin 4 – 6 million units 4-hourly IV for 7 days

- ♣ Refer to Specialist if progress not satisfactory

#### 4. Medications (Children): Treat for 4-6 weeks

- ♣ Gentamycin 5-7.5mg/kg 24hrly in the divided doses
- ♣ Benzyl Penicillin 200 000- 300 000 units/kg 24-hourly
- ♣ Refer to specialist if not satisfactory

#### 6.3 Key Investigations

- Chest X-ray;
- Full Blood Count and ESR
- ECG;
- Echocardiogram

## 7. PERICARDITIS

This condition is an inflammation of the pericardium. In some cases the cause maybe unknown (idiopathic); the majority of cases are due to infectious disease (viral, tuberculous, fungal and bacterial), acute myocardial infarction (MI), drugs (hydralazine, procainamide etc.), uraemia, collagen diseases, rheumatic fever, neoplasms, myxoedema and injury to the heart (post-cardiac surgery, trauma, or irradiation)

### 7.1. DIAGNOSTIC CRITERIA

It presents with severe chest pain which is made worse by inspiration or by delaying to expire. The pain lessens when the patient sits upright. There may be a history of influenza a few days before onset of chest pain.

### 7.2 TREATMENT GUIDELINES

#### 7.2.1. Community Level Interventions

1. Bed rest
2. Manage as per “Chest Pain”
3. Refer for further management

#### 7.2.2. Health Centre Level Interventions

1. Bed rest
2. Pain Relief:
  - ♣ Paracetamol 500mg-1000mg 3 or 4 times daily for 7 days OR
  - ♣ ASA 300mg-600mg 3 or 4 times daily for 7 days
3. Refer for further management

### 7.2.3 Hospital Level Interventions

1. Bed rest
2. Confirm the diagnosis
3. Establish the underlying cause
4. Manage the underlying cause
5. **Medications (Pain Relief):**
  - ♣ Paracetamol 500-1 000mg 3-4 times per day for 7 days OR
  - ♣ Aspirin 300-600mg 3-4 times per day for 7 days
6. **Medications (Bacterial Pericarditis):**
  - ♣ Gentamycin 80mg IV 8-hourly for 5 days **PLUS**
  - ♣ Flucloxacillin 500mg-1gram 6-hourly for 7 days **OR**
  - ♣ Ampicillin 500mg-1gram I.V 6-hourly for 7 days
7. **Medications (Recurrent Pericarditis/Underlying Collagen Diseases)**
  - ♣ Prednisone 40 mg orally daily (Adults) for 7 days then taper
  - ♣ Prednisone 2mg/kg/day (children) for 7 days then taper
8. **Tuberculous Pericarditis/Effusion**
  - ♣ T.B. treatment as described in the section on TB
  - ♣ Prednisone 40mg orally/day (adults) for 7 days then taper
  - ♣ Prednisone 2mg/kg/day (children) for 7 days then taper

### 7.3. Key Investigations

- Blood x 3 for Culture and Sensitivity;      -Chest X-ray
- Full Blood Count and ESR;                      -Urea and Electrolytes;    -ECG

## **8. CYANOTIC HEART DISEASE IN THE NEWBORN**

Cyanotic heart disease constitutes a group of diseases that present with blue discolouration of the skin and tongue. This is due to the inadequate oxygenation of the blood that typifies this group of diseases. This may be due to blood by-passing the lungs, intra-cardiac mixing of blood or reduced lung perfusion (for whatever reason). In the newborn it is vital to exclude respiratory disorder or central nervous system disorder as a cause.

### **8.1. DIAGNOSTIC CRITERIA**

The newborn exhibits little or even no improvement with administration of oxygen. There is tachypnoea with or without a heart murmur. Cardiac lesions are confirmed by the presence of cardiomegaly, with an abnormal cardiac shape and reduced pulmonary blood flow.

### **8.2. TREATMENT GUIDELINES**

#### **8.2.1. Community Level Interventions**

1. Refer without delay

#### **8.2.2. Health Centre Level Interventions**

1. Administer oxygen if it is available
2. Refer without further delay

#### **8.2.3 Hospital Level Intervention**

1. Administer 100% oxygen
2. Take blood for Blood Gases if possible
3. Chest X-ray
4. If there is no improvement and cardiac silhouette is suspicious then refer patient for specialist care

## **9. CONGENITAL HEART DISEASE IN ADULTS**

These are conditions wherein the cardiac lesion has not prevented a patient from surviving to adulthood. The commonest such lesions include patent ductus arteriosus (PDA), ventricula-septal defect (VSD) and, less commonly, atrio-septal defect (ASD).

### **9.1 DIAGNOSTIC CRITERIA**

The patients are acyanotic and the lesions may be found on routine medical screening for school or employment. The symptoms depend on the type of the defect and the severity of the complication

### **9.2 TREATMENT GUIDELINES**

The main objective is to detect congenital heart diseases early.

**9.2.1 Community Level Intervention**

Unlikely to be diagnosed at this level

**9.2.2 Health Centre Level Intervention**

Refer if suspected

**9.2.3 Hospital Level Intervention**

1. Full investigation including key investigations below
2. Refer for definitive treatment where indicated

**9.3 Key investigation**

- Chest X-ray
- ECG
- Echocardiogram

## **10 CARDIAC ARRHYTHMIAS/DYSRHYTHMIAS**

These are disorders of cardiac rate, rhythm and conduction. They are commonly seen and present as palpitations. Palpitations, by definition, are an awareness of the heart beating either rapidly, missing beats, or “thumping” in the chest. It should be noted that the distinction between palpitations that occur normally and those that reflect heart disease is not an easy one to make.

### **10.1 DIAGNOSTIC CRITERIA**

Cardiac arrhythmias may present with palpitations, dizziness, syncope attacks or sudden death. There may be associated chest discomfort, dyspnoea and headache. The pulse rate and regularity is an important feature. Commonly occurring arrhythmias are of four (4) types:

#### **10.1.1 Atrial Fibrillation**

This is an ineffective, irregular and rapid (120-160 beats/min) atrial rhythm. The incidence is higher in the elderly and the condition is often asymptomatic. The chief risk in this condition is embolic stroke

#### **10.1.2 Ventricular Extrasystoles (premature Ventricular contractions)**

Constitutes the most common form of arrhythmia that occurs after an MI. This condition is characterised by a regular pulse that has intermittent “missed beats” that may occur at regular or random intervals

#### **10.1.3 Complete Heart Block**

In this condition, the patient presents with a very slow pulse of between 30-40 beats per minute. Patients may be asymptomatic or present with attacks or complain of weakness or dyspnoea.

#### 10.1.4 Paroxysmal Supraventricular Tachycardia

Pulse is regular but very fast 150-200 beats/minute. Palpitations is the common manifestation of the condition. The attacks begin and end abruptly and may last for a few seconds to several hours. Patients may be asymptomatic except for awareness of rapid heart action or may experience mild chest pain or shortness of breath if episodes are prolonged.

### 10.2 TREATMENT GUIDELINES

#### 10.2.1.1 Community Level Interventions

1. Avoid precipitating factors such as smoking, alcohol, and tea/coffee
2. Reassure the patient since anxiety is a common symptom and most patients tend to be frightened
3. Refer

#### 10.2.2 Health Centre Level Intervention

1. Manage as above
2. Refer if rheumatic heart disease, myocardial infarction, uncontrolled hypertension, thyrotoxicosis, cardiomyopathy or digitalis poisoning cannot be ruled out

#### 3. Medication:

- ♣ Diazepam 2-5mg orally 2 times daily **PLUS**
- ♣ Imipramine 10-20mg orally 2 times daily
- ♣ Chlordiazepoxide

#### 10.2.3 Hospital Level Interventions

1. Non-pharmacological measures as above
2. Treat underlying cause
3. **For Atrial Fibrillation/Flutter**
  - ♣ Digoxin 0.25mg orally 2-3 times daily, then maintenance of 0.25mg once daily **OR**,
  - ♣ Verapamil 40mg orally 3 times daily **OR**,
  - ♣ Atenolol 50-100mg 3 times daily **PLUS**,
  - ♣ Aspirin 75-150mg daily
  - ♣ Treat underlying cause

4. **For Supraventricular Tachycardias**

- ♣ Non pharmacological measures as above
- ♣ Propranolol 10-40mg orally 4 times daily **OR**,
- ♣ Atenolol 50-100mg daily **OR**,
- ♣ Verapamil 40-120mg 3 times daily **OR**,
- ♣ Digoxin 0.25 –0.5mg daily
- ♣ Warfarin 2.5-5mg adjusted per INR

5. **For Ventricular Tachycardias**

- ♣ Cardioversion
- ♣ Lignocaine 50-100mg IV or infusion and follow with
- ♣ Amiodaron 200mg orally daily

6. **Heart Block**

- ♣ Atropine 0.6-1.2mg IV as a bolus dose **OR**,
- ♣ Adrenaline 5ml IV of 1:10 000 solution **OR**,
- ♣ Isoprenaline 0.5-5 micrograms per minute
- ♣ Refer for pacemaker

10.3 **Key Investigations**

- ECG;                      -Urea/electrolytes;                      -Thyroid function test
- Digoxin level;        -Lipid Profile;                              -Blood sugar
- ASOT-titre

**11 HYPERTENSION**

Hypertension is a major risk factor for stroke and myocardial infarction. It is usually asymptomatic, so screening is a vital component of management. Blood pressure has a skewed normal distribution within the general population. It is therefore impossible to define “hypertension”. The convention is to select a value above which risk is significantly increased, and the benefit of treatment is clear-cut. A figure of 160/100mmhg is usually quoted. For many years diastolic pressure was considered to be more important than

systolic pressure. However recent evidence indicates that systolic pressure is the most important determinant of cardiovascular risk.<sup>1</sup>

In the vast majority of cases (up to 95%) the cause is unknown. This is the so-called “essential hypertension”. In the remaining 5% of cases where a cause can be determined there are usually three categories of causes: renal disease, endocrine disease and “others”

### 11.1 DIAGNOSTIC CRITERIA

A diagnosis of Hypertension is made if the blood pressure is elevated above normal on three (3) separate occasions. In adults, a systolic pressure greater than 140mmHg or a diastolic pressure greater than 90mmHg fulfill the criteria. As stated above, hypertension is usually asymptomatic, except in cases of “malignant” hypertension. It is therefore **always necessary to undertake a full examination of the cardiovascular system and to check for retinopathy**. In the same vein, it is also necessary to assess the patient for features of a secondary cause, and to also check for end-organ damage (proteinuria and/or retinopathy), which can provide clues about the severity and duration of hypertension as well as the prognosis thereof.

### 11.2 TREATMENT GUIDELINES

#### 11.2.1 Community Level Interventions

1. Promote early detection and encourage the adoption of “healthy lifestyles”( Stop smoking, lose weight, do regular physical exercise, avoid excessive alcohol intake)
2. Restrict salt intake
3. Stress the importance of taking medications **as prescribed**
4. **Refer suspected cases/defaulters**

#### 11.2.2 Health Centre Level Interventions

1. Reinforce non-pharmaceutical interventions as outlined above
2. **Medication (for mild hypertension)**
  - ♣ Hydrochlorothiazide (HCTZ) 12.5mg orally, daily
  - ♣ If control not satisfactory after one (1) month, increase dose of HCTZ to 25mg daily
  - ♣ If control still not satisfactory after three (3) months, then refer to hospital
  - ♣ Refer all cases with a **systolic pressure >160mmHg or**

**Diastolic >100mmHg**

#### 11.2.3 Hospital Level Intervention

1. Reinforce non-pharmacological management as described above

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<sup>1</sup> See Oxford Handbook of Clinical Medicine, 4<sup>th</sup> Edition, and Page 300.

## 2. Medications<sup>2</sup>:

- ♣ Atenolol 50-100mg daily **OR**,
- ♣ Propranolol 40-80mg daily **OR**,
- ♣ Captopril 12.5-25mg daily **OR**,
- ♣ Hydralazine 25-50mg daily
- ♣ If control is not achieved with a combination of two drugs, it may be necessary to add a third drug such as Nifedipine 5-10mg 3 times daily
- ♣ In severe cases IV therapy may be instituted with Dihydralazine 10mg IV or Frusemide 40-80mg.

### 11.3. Key Investigations

- |                    |                  |                           |
|--------------------|------------------|---------------------------|
| -Chest X-ray;      | -ECG;            | -Urea and Electrolytes    |
| -Urine Microscopy; | -Echocardiogram; | -Full Blood Count and ESR |
| -Blood sugar;      | -Lipid profile;  | -Fundoscopy               |

### 11.4. Treatment of Hypertension Occurring in the Presence of Other Medical Conditions

N.B Therapy normally will be initiated at the hospital level

#### 1. Diabetes Mellitus

- ♣ HCTZ 12.5mg daily **OR**,
- ♣ Indapamide 2.5mg daily **OR**,
- ♣ ACE-inhibitor (captopril) 12.5mg once daily **OR**,
- ♣ Nifedipine 10-20mg once daily

#### 2. Heart Failure

- ♣ Frusemide 20-40mg daily **PLUS**,
- ♣ Captopril 12.5 –25mg once daily

#### 3. Renal Failure

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<sup>2</sup> The convention is to start with drugs of proven benefit i.e., thiazides or  $\beta$ -blockers. Calcium-channel blockers and ACE-inhibitors can be considered next

- ♣ Frusemide 20-40mg once daily **and/or**
- ♣ Captopril 12.5-25mg once daily **and/or**,
- ♣ Verapamil 40-70mg once daily

#### 4. **Coronary Artery Disease (CAD)**

- ♣ Atenolol 50-100mg daily **OR**,
- ♣ Captopril 12.5-25mg once daily **OR**,
- ♣ Verapamil 40-80mg once daily

#### 5. **Pregnancy induced hypertension**

- ♣ Refer to chapter II on obstetrics and gynaecology.

## 12. MALIGNANT HYPERTENSION

### 12.1. **DIAGNOSTIC CRITERIA**

This refers to severe hypertension (e.g. systolic pressure >200mmHg, diastolic pressure >~~(120)~~130mmHg) in conjunction with bilateral retinal haemorrhages and exudates; papilloedema may or may not be present. Common symptoms are headache and visual disturbances. The danger with this condition is that it may precipitate acute renal failure, heart failure, or encephalopathy all of which constitute hypertensive emergencies and require urgent treatment.

### 12.2. **TREATMENT GUIDELINES**

Most patients can be managed with oral therapy, except for those with encephalopathy. The main aim with treatment in this condition is to achieve a controlled reduction in blood pressure over days, **not hours**. It is critical to avoid sudden drops in blood pressure, as cerebral auto-regulation is poor, with a resultant rise in the risk for stroke.

#### 12.2.1. **Community level intervention**

Refer immediately

#### 12.2.2 **Health centre level intervention**

Refer without delay

#### 12.2.3 **Hospital level intervention**

All patients suspected of having this condition are to be admitted to hospital for management thereof.

1. Bed rest

## 2. Medications

- ♣ Frusemide 40-80mg twice daily, orally
- ♣ Nifedipine 10-20mg 8-hourly
- ♣ Hydralazine 25-50mg 8-hourly
- ♣ Atenolol 50-100mg twice daily, orally

## 3. For Encephalopathy

- ♣ The main aim should be to reduce blood pressure to approx. 110mmHg over a period of 4 hours
- ♣ Dihydralazine 10mg IV every 10-15 minutes **PLUS**,
- ♣ Frusemide 40-80mg IV 8-hourly

### 12.3. Key investigations

- |               |                         |                |
|---------------|-------------------------|----------------|
| -ECG;         | -Echocardiogram;        | -Lipid profile |
| -Blood sugar; | -Urea and electrolytes; | -Fundoscopy    |

## 13 PULMONARY OEDEMA

### 13.1 DIAGNOSTIC CRITERIA

Left Ventricular Failure (occurring either post-MI or secondary to Ischaemic Heart Disease) is the most common cause. Other cardiac causes include mitral stenosis, arrhythmias, and malignant hypertension. Non-cardiac causes, though rare, still occur. These include allergic reactions (e.g. IV contrast agents), fluid overload (usually iatrogenic secondary to excessive IV fluid infusion), smoke inhalation, acute respiratory distress syndrome (trauma, sepsis, post-op), infection, carbon monoxide poisoning, amniotic fluid embolus, SLE, and drug overdose (Aspirin, Glue).

The main symptoms associated with this condition are dyspnoea, paroxysmal orthopnoea, and pink frothy sputum. The patient usually presents in distress, pale, sweaty and with a rapid pulse and respiratory rate. JVP is usually raised and there is an accompanying wheeze (the so-called cardiac asthma) and “fine lung crackles”.

### 13.2 TREATMENT GUIDELINES

N.B This is a medical emergency diagnosed and managed at hospital level.

1. Treatment should be begun **BEFORE** investigations are initiated.
2. Sit the patient up

3. Give Oxygen by face mask: 100% **if there is no pre-existing lung condition**
4. Monitor ECG and treat any arrhythmias
5. Restrict fluids
6. Measure urine output
7. Frequent check of BP, Pulse, and Heart Sounds
8. U&E and ECG Daily
9. **Medications:**
  - ♣ Frusemide 40-160mg IV slowly
  - ♣ Diamorphine 10,-15mg IV slowly (ensure there is no liver failure or COPD)

### 13.3 Key Investigations:

- ECG and Echocardiogram;
- Chest X-ray
- FBC
- Arterial Blood Gases;
- U&E

## 14. MYOCARDIAL INFARCTION

### 14.1 DIAGNOSTIC CRITERIA

Characterised by a sensation of tightness and heaviness in the chest and a constrictive chest pain that persists for more than 30 minutes. This is a pain that is NOT relieved by rest. It may radiate to the left arm, neck or jaw. In addition the patient may be restless and apprehensive

### 14.2 TREATMENT GUIDELINES

1. Bed Rest
2. Reassurance given that patient is likely apprehensive
3. Oxygen 6l/min
4. **Medication:**
  - ♣ Aspirin 75mg-150mg daily PLUS
  - ♣ Glyceryl Trinitrate 0.5mg sublingually (may be repeated every 5-10 minutes);
  - ♣ Morphine or Diamorphine 10-15mgPLUS
  - ♣ Atenolol 50mg daily PLUS

- ♣ Heparin IV bolus dose of 5 000iu followed by 1 000 – 2 000iu 4-hourly as per APPT;
- ♣ If sever and symptomatic bradycardia is present administer Atropine IV 0.6 – 1.2mg
- ♣ Where appropriate supportive and diagnostic measures are available consider using thrombolytic agents such as Streptokinase

## 2. Unstable Angina

- ♣ Bed Rest
- ♣ Oxygen if hypoxic
- ♣ Reassurance if patient is apprehensive
- ♣ Medications (as with MI)

## 3. Chronic Stable Angina

- ♣ Non-pharmacological measures aimed at modifying the risk factors
- ♣ Patient education with regard to the condition
- ♣ **Medication:**
  - Isosorbide Dinitrate 5mg-40mg as indicated PLUS
  - Atenolol 50mg-100mg daily PLUS
  - Aspirin 75mg-150mg daily

### 14.3 Key Investigations

- Full Blood Count;                      -Chest X-ray;                      -ECG
- Echocardiogram;                      -Cardiac Enzymes;                      -Urea and Electrolytes
- CT Scan

# CHAPTER 4

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## Haematology

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### 1. ANAEMIA

Anaemia is a decrease in red blood cells or haemoglobin content due to blood loss, impaired production of red blood cells or increased destruction of red blood cells (i.e., common feature is low red cell mass). Anaemia is a symptom and not a diagnosis by itself.<sup>3</sup>

#### 1.1 IRON DEFICIENCY ANAEMIA

Iron deficiency is one of the commonest causes of anaemia. It results in what is referred to as microcytic, hypochromic anaemia. This loss of iron may be due to excessive blood loss or to the consumption of a diet low in iron. Other causes may be an increased iron requirement by the body or impaired iron absorption.

##### 1.1.1 Diagnostic Criteria

This type of anaemia presents with symptoms such as lethargy, fatigue, dizziness, dyspnoea and palpitations, all of which are suggestive of an impaired oxygen carrying capacity. There is pallor of the mucous membranes of the eyes, mouth, fingernail bed, and the palms of the hands. There may be muco-cutaneous lesions such as angular stomatitis, glossitis, koilonychias and brittle hair and nails

##### 1.1.2 Treatment Guidelines

#### 1. Community Level Interventions

- ♣ Health education about a balanced dietary intake
- ♣ Encourage consumption of dark, leafy green vegetables, meat, eggs, beans and peas
- ♣ Supply prophylactic treatment
  - ferrous sulphate/fumarate 200mg daily
  - Ascorbic acid 250 mg daily
  - Folic acid 5mg daily

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<sup>3</sup> If the low Haemoglobin is due to dilution from an increased plasma volume (as in pregnancy) the anaemia is called “physiological”

## 2. Health Centre Level Interventions

- ♣ Reinforce the above non-pharmacological interventions
- ♣ Supply
  - Ferrous Sulphate or Fumerate tablets 200mg 3-times daily (for children give 1 teaspoon Ferrous Sulphate Solution 3-times per day)
- ♣ Refer if condition deemed severe or if there are signs suggestive of heart failure

## 3. Hospital Level Interventions

- ♣ Reinforce non-pharmacological measures as above
- ♣ Determine cause of iron deficiency
- ♣ Manage the underlying cause of the anaemia
- ♣ Treat the complications
- ♣ Manage other causes of microcytic anaemia

## 1.2 MACROCYTIC ANAEMIA

This is anaemia characterised by marked macrocytosis. The usual cause is either a Vitamin B-12 or Folic Acid deficiency. Liver diseases, particularly in conjunction with chronic alcohol abuse, may also present with macrocytic anaemia.

Vitamin B-12 deficiency occurs most often as a consequence of either dietary insufficiency (as in a vegan diet) or as a result of intestinal malabsorption. For folic acid deficiency, the causes are commonly nutritional deficiency (as occurs in chronic alcoholism, old age and/or psychiatric disorders), malabsorption, increased (but unmet) requirement for folate by the body, and the use of folate-antagonist drugs.

### 1.2.1 Treatment Guidelines

#### 1. Community Level Interventions

- ♣ Health education regarding the importance of a balanced diet
- ♣ Prophylactic folic acid supplements during pregnancy (see Community Health Worker package)

#### 2. Health Centre Level Interventions

- ♣ Manage as above

- ♣ Refer

### 3. Hospital Level Interventions

- ♣ Reinforce non-pharmacological measures as described above
- ♣ Establish the diagnosis
- ♣ Replacement therapy as per laboratory result for 3 months

-Folic acid 5-10mg daily, orally;

-Vit B12, 1 000 units daily for 1 week, then maintain on 1 000 units weekly thereafter

-Ferrous sulphate/Fumerate

#### 14.3 Key Investigations

-Full blood count;

-Vitamin B12;

- Folate Level

# CHAPTER 5

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## Gastrointestinal Disorders

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### 1. GASTRO-ENTERITIS: INFECTIVE AND TOXIC

This is a group of syndromes whose presentation manifests primarily in the form of Upper Gastrointestinal Tract symptoms (nausea and vomiting), diarrhoea and abdominal discomfort. Viruses, bacteria, parasites and certain toxins or GIT-irritating substances may cause it. The loss of electrolytes and fluids that occurs in the presence of this condition is of grave significance, particularly in the old, the young, and those with pre-existing disease.

#### 1.1 DIAGNOSTIC CRITERIA

##### 1.1.1 Gastroenteritis with Mild Dehydration

This condition is characterised by frequent passing of watery stool accompanied by nausea and vomiting. Skin elasticity/turgor remains normal; and in children the anterior fontanelle is also normal

##### 1.1.2 Gastroenteritis with Moderate Dehydration

In this condition there is diarrhoea and/or vomiting with increased thirst and irritability. The pulse is rapid and weak and the patient presents with slightly sunken eyes. There is a slight loss of skin elasticity and the urine is concentrated.

##### 1.1.3 Gastroenteritis with Severe Dehydration

This condition is characterised by the presence of diarrhoea and/or vomiting accompanied by deeply sunken eyes and anterior fontanelle. The pulse is rapid, thready and feeble/impalpable.

#### 1.2. TREATMENT GUIDELINES

##### 1.2.2. Community Level Interventions

1. If there is a confirmed community outbreak, the relevant authorities should be notified as soon as possible
2. Encourage oral fluid intake
3. Administer Oral Rehydration Solutions or sugar salt solution if ORS not available.
4. Moderate-severe cases should be referred to Health Centre

### 1.1.2 Health Centre Level Interventions

1. Administer Oral Rehydration Solution
2. Monitor urinary output
3. Record and monitor vital signs
4. If there is no response
  - Set up IV line of 500ml ringers lactate
  - Refer

### 1.1.3 Hospital Level Interventions

1. Continue non-pharmacological measures as above
2. Administer IV Fluids and monitor fluid input and output
3. Establish the cause
4. Where an organism has been identified, specific treatment should be administered

#### ♣ Typhoid Fever:

- Chloramphenicol 500mg 4 times daily (as first line antibiotic) OR
- Ciprofloxacin 500mg twice daily for 7 days.

#### ♣ E. Coli:

- Cotrimoxazole 80/400mg 2 tablets twice daily, orally OR,
- Doxycycline 100mg twice daily, orally for 7 days

#### ♣ Shigellosis:

- Nalidixic Acid 1 gram 4-times daily OR
- Ampicillin 500mg 6-hourly IV OR
- Amoxycillin 500mg 8-hourly OR
- Cotrimoxazole 2 tablets twice daily for 7 days

#### ♣ Protozoal Diarrhoea:

- Metronidazole 400mg 8-hourly for 7 days

### 1.3 Key Investigations

- Full blood count;
- Urea and electrolytes;
- Blood sugar
- Stool-ova;
- Stool-culture

## 2 HEPATITIS

Hepatitis is an inflammation of the liver cells due to viruses, alcohol, drugs or toxins. There may be no symptoms or signs or there may be fatigue, right upper quadrant (RUQ) pain, joint pains, complications of cirrhosis and jaundice.

### 2.1. DIAGNOSTIC CRITERIA

Viral Hepatitis – viruses A, B, Non-A, Non-B. It presents with minor flu-like illness or fulminant, fatal liver failure. It is characterized by sudden onset of anaemia, malaise, nausea and vomiting and fever followed by jaundice.

### 2.2 TREATMENT GUIDELINES

#### 2.2.1 Community Level Interventions

5. Bed rest
6. Low fat, low protein, high carbohydrate diet
7. Counsel on avoidance of strenuous physical exercise
8. Counsel on avoidance of alcohol
9. Refer all cases

#### 2.2.2 Health Centre Level Interventions

1. Conservative management as above
2. Avoid use of medications
3. Vitamin B-complex 2 tablets daily for 5 days
4. Refer all cases for investigation

#### 2.2.3 Hospital Level Interventions

1. Conservative management as above
2. Confirm diagnosis
3. Notify the relevant authorities
4. **In Severe Cases:**
  - ♣ Dextrose 5% IV infusion
  - ♣ Add Vitamin B-complex 2cc IV to each litre of 5% Dextrose solution
  - ♣ Refer all cases with fulminant hepatitis, relapsing hepatitis or other complications

#### 2.2.4 Prophylaxis

1. **High-Risk Groups:** Active immunisation with recombinant Hepatitis B Vaccine
2. **Persons at Risk:** Passive immunisation with Hyper-Immune Serum Globulin
3. **Screen all Blood donations**

#### 2.3 Key investigations

- Liver function tests;
- Serum amylase;
- Clotting profile
- Blood Sugar;
- Full Blood Count;
- Ultrasound
- Urea and Electrolytes

### 3 NON VIRAL HEPATITIS

This could be due to alcohol, drugs or other toxins

#### 3.1 DIAGNOSTIC CRITERIA

Patient develops jaundice with no preceding flu-like syndrome. There may be history of ingestion of substances like alcohol or use of traditional medicines or other drugs like T.B. drugs etc.

#### 3.2 TREATMENT GUIDELINES

##### 3.2.1 Community Level Interventions

1. Bed Rest
2. Withdraw the offending agent
3. Avoid strenuous physical exertion
4. Encourage Alcohol cessation
5. Restrict protein in diet
6. Refer

##### 3.2.2 Health Centre Level Interventions

1. Conservative management as above
2. Vitamin B-complex 2 tablets daily, orally
3. Refer

### 3.2.3 Hospital Level Interventions

1. Correct any electrolyte imbalances
2. Vitamin B-complex 1-2cc into 1 litre 5% Dextrose solution **PLUS**,
3. Vitamin B-12 1 000 micrograms daily, IM
4. Vitamin K 5-10mg daily IM or IV
5. Folic Acid 5mg daily, orally

### 3.3 Key Investigations

- Liver Function tests;
- Serum amylase;
- Clotting profile
- Blood sugar;
- Full blood count;
- Ultrasound
- Urea and Electrolytes

## 4 LIVER CIRRHOSIS

Liver cirrhosis is a chronic liver disorder characterized by disorganization of liver architecture by wide spread fibrosis resulting in nodule formation.<sup>4</sup> Alcohol is one of the common causes. The other causes are liver infections especially viral hepatitis and herbal medications.

### 4.1 DIAGNOSTIC CRITERIA

The presentation is varied. The patient may present with malaise, anorexia, vomiting or jaundice. Finger clubbing with hepatomegaly and splenomegaly and ascites may be present. Some cases may present with haematemesis and/or melaena or stupor with encephalopathy. Skin lesions such as palmar erythema and spider angiomas may be also be present.

### 4.2 TREATMENT GUIDELINES

#### 4.2.1 Community Level Interventions

1. Avoid the use of hepato-toxic agents such as alcohol, herbal medications or other unnecessary drugs
2. Restrict salt intake
3. Encourage high carbohydrate, low fat, low protein diet
4. Refer patient

#### 4.2.2 Health Centre Level Interventions

1. Reinforce management as described above.

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<sup>4</sup> In this condition, the resultant damage to the architecture of the liver is essentially irreversible

2. Record and monitor vital signs
3. Refer for further investigations

#### 4.2.3 Hospital Level Interventions

1. Non-pharmacological management as above
2. Establish the cause
3. Manage any complications present
4. **For Ascites:**
  - ♣ Therapeutic ascitic tap if respiratory difficulties caused by ascites are present
  - ♣ Frusemide 40mg daily, orally **PLUS,**
  - ♣ Spironolactone 25mg 3-times daily (**for children: 1-3mg/kg/24-hourly in 2-3 divided doses**)
5. **For Hypoalbuminaemia:**
  - ♣ Albumin 20% IV
6. **For Hypoglycaemia**
  - ♣ Dextrose 10% IV infusion
7. **For Encephalopathy:**
  - ♣ Lactulose 10-30ml 3-times daily (**5-30ml in children**) **PLUS,**
  - ♣ Neomycin 1-2 grams 6-hourly
8. **For Bleeding Oesophageal Varices:**
  - ♣ Endoscopic injection Sclero-therapy with Desmopressin
  - ♣ Variceal ligation where indicated
  - ♣ Propranolol 40mg daily, orally
9. **For Bleeding Diathesis:**
  - ♣ Vitamin K 5-10mg IV STAT

#### 4.3 Key Investigation

- |                        |               |                        |
|------------------------|---------------|------------------------|
| -Liver Function tests; | -Ascitic Tap; | -Blood Sugar           |
| -Full blood count;     | -Ultrasound;  | -Urea and Electrolytes |

## 5 PEPTIC ULCER DISEASE

Peptic ulcer is a circumscribed ulceration of the mucous membrane of the gastrointestinal tract penetrating through the muscularis mucosa and occurring in areas exposed to acid and pepsin. Duodenal ulcer and gastric ulcer are the two commonest types. The causes of duodenal and gastric ulcers may differ. Gastric ulcers unlike duodenal ulcers tend to develop later in life and are not associated with increased acid secretion. The usual peptic ulcer has a chronic and recurrent cause.

### 5.1 DIAGNOSTIC CRITERIA

#### 9.1.2. Duodenal Ulcers

The patient typically presents with epigastric pain that is described as gnawing or burning and is relieved by eating. The pain is usually at its most severe at night

#### 5.1.2 Gastric Ulcers

In some cases the patient may be asymptomatic. Where symptoms are present they typically consist of epigastric pain (indistinguishable from that of other causes) that is usually worsened by eating. There may be associated weight loss where the condition is chronic

### 5.2 TREATMENT GUIDELINES

#### 5.2.1 Community Level Interventions

1. Avoid any food that worsens symptoms. Also eat a little at a time but often and avoid eating just before bedtime (acid secretion is highest at night)
2. Stop smoking (smoking increases relapse rates in duodenal ulcer and slows healing rates in gastric ulcers)
3. Refer if no improvement

#### 5.2.2 Health Centre Level Interventions

1. Reinforce conservative management as described above
2. **Medication**
  - ♣ Cimetidine 400mg orally STAT, then 200mg AM and 400mg PM for 6 weeks
  - ♣ Aluminium Hydroxide/Magnesium Trisilicate 20ml STAT then, 15ml 4-times per day
3. Refer

### 5.2.1 Hospital Level Intervention

1. Reinforce conservative management as described above
2. **Medication**
  - ♣ As above **PLUS**,
  - ♣ Cimetidine 400mg STAT then 200mg AM and 400mg PM for 2 weeks **PLUS**
  - ♣ Amoxicillin 500mg-1 gram 3 times daily for 7 days
  - ♣ Metronidazole 400mg 3 times daily for 7 days
3. **The following categories of patients are to be referred**
  - ♣ Resistant Ulcer
  - ♣ Upper Gastro-intestinal Bleeding
  - ♣ Perforation
  - ♣ Oesophageal Stenosis
  - ♣ Suspected Malignancy

### 5.3 Key Investigations

- Full blood count;                      -Blood X-match;                      -Blood sugar
- Serum amylase;                      -Gastroscopy

## 6 ACUTE PANCREATITIS

This is a medical emergency caused by the inflammation of the pancreas. Biliary tract disease and alcoholic toxicity account for the majority of hospital admissions.

### 6.1 DIAGNOSTIC CRITERIA

Sudden onset of severe abdominal pain that reaches maximum intensity within minutes is a common presentation. The patient is acutely ill and sweaty with tachycardia and respirations are shallow and rapid. Nausea and vomiting is usually present. There may be mild to moderate muscular rigidity in the upper abdomen. Typical signs include local or generalised abdominal pain with peri-umbilical discoloration (Cullen's Sign) or discoloration at the flanks (Grey Turner's Sign)

### 6.2 TREATMENT GUIDELINES

#### 6.2.1 Community Level Interventions

1. Health education about the dangers of alcohol abuse

2. All suspected cases should be referred without delay

#### 6.2.2 Health Centre Level Interventions

1. Set up IV Line – Ringers Lactate or Normal Saline
2. Record and monitor Vital Signs
3. Administer Diclofenac 75mg IM STAT
4. Refer without delay

#### 6.2.3 Hospital Level Interventions

1. Cease/Discontinue oral food intake
2. Insert Naso-gastric Tube (NG-Tube)
3. Insert IV line for parenteral fluids
4. Record and monitor vital signs
5. Give nothing by mouth
6. Oxygen
7. Catheterise
8. Give antibiotics if there is fever with high white cell count
  - ♣ IV Ampicillin 500mg 6 hourly for 7 days **PLUS**
  - ♣ Pethidine 50-100mg IV 6-hourly
  - ♣ Cimetidine 200mg IV 6-hourly
9. **Correction of Electrolyte Disturbance:**
  - ♣ **For Hypocalcaemia:** Calcium Gluconate 10% 10ml IV as bolus infusion over 10 minutes
  - ♣ **For Hypomagnesaemia:** Magnesium Sulphate 25-50ml infusion IV
10. Refer the following for specialist intervention (See chapter six)
  - ♣ Acute Renal Failure
  - ♣ Pseudocyst
  - ♣ Disseminated Intravascular Coagulation (DIC)

## 7 APPENDICITIS

It is characterised by an inflammation of the vermiform appendix and is most commonly caused by bacterial infections. It is most common in adolescents and young adults.

### 7.1 DIAGNOSTIC CRITERIA

The condition typically presents with a central abdominal pain that eventually shifts to become localised in the right lower quadrant (RLQ). Anorexia is invariably present but nausea and vomiting may be present, though not prominently. Tenderness and guarding are present in the RLQ (at McBarney's Point). A positive Psoas sign (i.e., pain on passive hyper-extension of the thigh) strongly favours the diagnosis.

### 7.2 TREATMENT GUIDELINES

#### 7.2.1 Community Level Interventions

1. All suspected cases should be referred immediately for review

#### 7.2.2 Health Centre Level Interventions

1. Monitor and record vital signs
2. Give nothing by mouth
3. Refer

#### 7.2.3 Hospital Level Intervention

1. Emergency surgical intervention is indicated
2. Metronidazole suppositories in children

### 7.3 Key Investigations

-Full blood count;

-Blood sugar;

-Urea and Electrolytes

## 8 ACUTE PERITONITIS

This is an inflammation of the visceral and parietal peritoneum. The most common cause is bacterial infection. It may occur secondary to complications of abdominal surgery, pelvic infection or ruptured ectopic pregnancy.

### 8.1 DIAGNOSTIC CRITERIA

The patient typically presents with severe, localised or diffuse abdominal pain with associated rebound tenderness. The patient is often febrile with tachycardia and tachypnoea.

## 8.2 TREATMENT GUIDELINES

### 8.2.1 Community Level Interventions

1. Refer without delay
2. Do not feed

### 8.2.2 Health Centre Level Interventions

1. Monitor and record vital signs
2. Insert IV line Ringers Lactate or Normal Saline
3. Administer Diclofenac 75mg IM STAT
4. Do not feed
5. Refer

### 8.2.3 Hospital Level Interventions

1. Maintain on IV fluids
2. Institute early surgical intervention where indicated

#### 3. Medications:

- ♣ Ampicillin 500mg – 1 gram IV, 6-hourly **PLUS**,
- ♣ Gentamycin 80mg IV, 8-hourly **PLUS**,
- ♣ Metronidazole 500mg IV, 8-hourly
- ♣ Third generation cephalosporin

## 8.3 Key investigations

-full blood count;

-Urea and electrolytes;

-Blood sugar

# CHAPTER 6

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## Genito-Urinary Disorders

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### 1. URINARY TRACT INFECTIONS

This is an infection of the bladder and urethra. It is confirmed by the presence of microorganisms in a urine culture.

#### 1.1 DIAGNOSTIC CRITERIA

This condition presents with lower abdominal pains, fever and frequency of micturition. There is usually pain on passing urine, and this pain tends to be more severe towards the end of micturition. In addition, there may be associated blood and/or pus in the urine. At times UTI is asymptomatic. The presentation in neonates may be that of fever, poor feeding, failure to thrive, accompanying signs of renal failure, vomiting, jaundice, and hypothermia.

#### 1.2 TREATMENT GUIDELINES

##### 1.2.1 Community Level Interventions

1. Encourage high oral fluid intake
2. Counsel on improved personal hygiene
3. Refer all cases

##### 1.2.2 Health Centre Level Interventions

1. Non-pharmacological interventions as described above
2. **Medications:**
  - ♣ Cotrimoxazole 80mg/400mg 2 times daily for 7 days (see 1.2.3.2 below for children doses)
  - ♣ Paracetamol 500mg – 1 gram 6-hourly for 5 days adults
  - ♣ Paracetamol 125mg-250 mg 3 times daily for 5 days children
3. Refer all neonatal cases OR cases that do not respond to medication

##### 1.2.3 Hospital Level Intervention

1. Non-pharmacological management as above

2. Medication:

♣ Neonates and Infants:

-Gentamycin 2.5-5mg/kg 8-hourly for 5 days (2.5mg/kg for **Premature Babies**)  
**PLUS**

-Ampicillin 50mg-100mg/kg in 4 divided doses, for 7 days

♣ Older Children:

-Amoxicillin 20-40mg/kg in 4 divided doses **or**,

-Cotrimoxazole 200/40mg 2 times daily for 7 days

♣ Adults with Uncomplicated Cystitis:

-Amoxicillin 500mg 3 times daily **OR**,

-Cotrimoxazole 80/400mg, 2 tabs twice daily **PLUS**,

-Potassium Citrate 10ml 3 times daily for 7 days

♣ Complicated, Severe UTI:

-Ampicillin 500mg IV, 8-hourly for 7 days

♣ Non-responsive, Severe UTI:

-Ofloxacin 400mg 2 times daily for 7 days **OR**

-Ciprofloxacin 500mg 2 times daily for 7 days

2.3 Key investigations

-Urine microscopy/Culture/Sensitivity;

-Full blood count

-Urea and electrolytes;

-Blood sugar

## 2 PYELONEPHRITIS

Pyelonephritis is the inflammation/infection of the kidneys. In some instances the rest of the urinary tract may be involved. In a high percentage of cases of chronic pyelonephritis, vesico-ureteric reflux is or was present. The disease may be unilateral or bilateral.

## 2.1 DIAGNOSTIC CRITERIA

The patient presents with fever and renal angle tenderness. There may be kidney swelling as well. In some cases symptoms and signs of urinary tract infection may be present.

## 2.2 TREATMENT GUIDELINES

### 2.2.1 Community Level Interventions

1. Encourage increased oral fluid intake
2. Counsel on improvement in personal hygiene
3. Refer all cases

### 2.2.2 Health Centre Level Interventions

1. Non-pharmacological interventions as described above
2. **Medications:**
  - ♣ Ampicillin 250-500mg 6-hourly for 7 days **PLUS**
  - ♣ Paracetamol 500mg – 1 gram 6-hourly (**10-15mg/kg/dose in children**) for 7 days
  - ♣ Refer all cases

### 2.2.3 Hospital Level Interventions

1. Non-pharmacological measures as above
2. Establish the cause of the infection
3. **Medications: 500mg I**
  - ♣ Ampicillin (**50-100mg/kg 6-hourly in children**)500mg IV 6hourly for 7 days
  - ♣ Paracetamol ( **10-15mg/kg/dose in children**)500mg – 1 gram 8-hourly for 5 days
  - ♣ **Severe Infection:**
    - Add Gentamycin 80mg IV 8-hourly for 5 days (**2.5mg/kg/dose in children**)

## 3 GLOMERULONEPHRITIS

Glomerulonephritis is a disease of the kidney that affects the glomeruli. The disorder is due to the deposition of immune complexes in the glomerular basement membrane. The commonest type is acute post-Streptococcal glomerulonephritis.

### 3.1 DIAGNOSTIC CRITERIA

The condition presents as painless haematuria with peri-orbital or generalized oedema and hypertension. In some instances there is low urinary output.

### 3.2 TREATMENT GUIDELINES

#### 3.2.1 Community Level Interventions

1. Restrict fluid intake
2. Restrict salt intake
3. Record and Monitor fluid intake and output
4. Refer all cases

#### 3.2.2 Health Centre Level Interventions

1. Record and Monitor body weight
2. Record and Monitor fluid intake and output
3. Record and Monitor vital signs
4. Restrict salt and fluid intake
5. Refer all cases

#### 3.2.3 Hospital Level Interventions

1. Manage as above
2. Strict bed rest during the acute phase
3. Weigh patient daily
4. High carbohydrate, low protein and low fat diet
5. **Medications:**
  - ♣ Pen VK 250mg-500mg, 6-hourly orally for 7 days
  - ♣ Pen VK 50-100mg/kg/24-hours orally in children for 7 days
6. **Oedema and Hypertension**
  - ♣ Frusemide 40-80mg orally daily
  - ♣ Hydralazine 1-5mg/kg in 4 divided doses (children)  
Hydralazine 25mg 8- hourly orally daily (adults)

7. **Pulmonary oedema (see management of pulmonary oedema in chapter 3)**

3.3 **Key investigations**

- Urine-Urinalysis/Microscopy;
- Urea and electrolytes;
- Full blood count
- Ultrasound;
- Renal Biopsy

## 4 NEPHROTIC SYNDROME

Nephrotic syndrome is a kidney disorder characterized by proteinuria, oedema, hypoproteinaemia and hyperlipidaemia due to excessive loss of protein. In its pathogenesis there are two major categories to note; minimal change nephrotic syndrome and secondary nephrotic syndrome.

### 4.1 DIAGNOSTIC CRITERIA

The patient usually presents with a history of insidious swelling of the eyelids, associated abdominal swelling and swelling of the limbs. Investigations reveal proteinuria and hypoproteinaemia. There is usually also hyperlipidaemia and hypercholesterolaemia.

### 4.2 TREATMENT GUIDELINES

#### 4.2.1 Community Level Interventions

1. Restrict salt intake
2. Record and Monitor fluid intake and output
3. Refer all patients

#### 4.2.2 Health Centre Level Interventions

1. Manage as above
2. Record and Monitor vital signs
3. Record baseline weight
4. Refer

#### 4.2.3 Hospital Level Interventions

1. Non-pharmacological measures as above

2. **Medications:**

- ♣ Frusemide( **1-2mg/kg/day in children**)

- 40-80mg twice daily for Adult PLUS

- ♣ Spironolactone (1-3mg/kg/day in children)

-25-50mg 8-hourly in Adult

- ♣ Refer non-responding cases

#### 4.3 Key investigations

- Urine –Urinalysis/Microscopy;      -Full blood count;      -Blood sugar
- Urea and electrolytes;              -Ultrasound;              -Biopsy

## 5 ACUTE RENAL FAILURE

Acute renal failure is a clinical condition associated with rapid, steadily increasing azotemia (i.e. rapidly rising plasma urea or creatinine) with or without oliguria (urine outputs of <400ml per day or <30ml /hour for three consecutive hours). The cause of acute renal failure can be pre-renal (inadequate renal perfusion), post-renal (obstruction) and renal (kidney diseases).

### 5.1 DIAGNOSTIC CRITERIA

The manifestation of the condition depends on the degree of renal dysfunction, the rate of renal failure and etiological factors.

#### 5.1.1 Pre-renal Acute Renal Failure

Look for causes that may lead to extra-cellular volume depletion, cardiac and liver failure and vasodilatation from spasm.

#### 5.1.2 Post-renal Acute Renal Failure

History of urine voiding difficulty or urinary stream reduction is valuable in the diagnosis

#### 5.1.3 Renal Acute Renal Failure

This should be deduced from the existence of symptoms related to some known renal pathology such as nephrotic syndrome, glomerulonephritis etc.

### 5.2 TREATMENT GUIDELINES

#### 5.2.1 Community Level Interventions

1. Refer without delay

#### 5.2.2 Health Centre Level Interventions

1. Record and Monitor vital signs
2. Refer without delay

#### 5.2.3 Hospital Level Interventions

1. Restrict protein, potassium and phosphorus intake

2. Closely monitor fluid intake and output
3. Avoid use of drugs excreted through the kidneys
4. Refrain from vigorous correction of dehydration
5. Maintain proper/normal fluid balance, blood volume and blood pressure during and after operation
6. **Hyperkalaemia:**
  - ♣ 10% Calcium Gluconate 10-20ml over 2-5 minutes  
-0.5ml/kg IV over 10 minutes (children)
  - ♣ **MONITOR HEART RATE**
  - ♣ Sodium Bicarbonate 8.5 grams (44 milli-equivalents) over 5 minutes (adults)  
- 3 milli-equivalents/kg IV (children)
  - ♣ Regular Insulin 10 units in 50-100ml 50% glucose solution (**1ml/kg 50% glucose solution with regular insulin given at a rate of 1unit/5g of glucose**)
7. **Acidosis (RARELY REQUIRES DRUG THERAPY)**
  - ♣ Sodium Bicarbonate 8.5% IV guided by deficit OR, 1 gram orally 3 times per day
  - ♣ **In children:** if pH < 7.15 use the following formula: mEq NaHCO<sub>3</sub> required:  
= 0.3 x weight in kg x 12 mEq/L – SeNaHCO<sub>3</sub>
8. **Hypertension**
  - ♣ Frusemide 20-40mg daily or  
-Frusemide 1-2mg/kg/day (children)
  - ♣ Verapamil 40-80mg 8-hourly
9. **Seizures**
  - ♣ Phenobarbitone 10mg/kg IV STAT, then 5mg/kg nocte
  - ♣ Sodium Valproate 10-50mg/kg/day in 3 divided doses
10. **Anaemia**
  - ♣ Transfuse if Hb < 7.0gm/dl
11. **Diet**
  - ♣ Restrict salt and fluids

- ♣ Restrict fat and carbohydrates in the early stages

12. **Institute Dialysis if there is no response, Pulmonary renal failure**

5.3 **Key investigations**

- Urea and electrolytes;      -Creatinine;      -Full blood count
- Blood sugar;      -Urine-Urinalysis and microscopy;      -Ultrasound

## 6 CHRONIC RENAL FAILURE

6.1 **TREATMENT GUIDELINES**

1. Dietary Control
2. Restrict protein, salt and potassium (protein not more than 60gm/day)
3. Avoid magnesium and aluminium-containing substances
4. **Hypertension:**
  - ♣ Frusemide 20-160g daily AND/OR
  - ♣ Verapamil 40-80mg 8-hourly AND/OR
  - ♣ Ramipril 2.5-10mg daily
5. **High Phosphate:**
  - ♣ Calcium Carbonate 500mg – 1 gram per day
6. **Chronic Anaemia**
  - ♣ Treat the underlying cause
7. **Hyperparathyroidism**
  - ♣ Calciterol 0.25-1 microgram four times a day
8. **Aluminium Toxicity**
  - ♣ Deferoxamine 1-3mg IV over 2 hours
9. **Acidosis**

♣ Sodium Bicarbonate 300-600mg 3 times per day

**10. Acute Hyperkalaemia**

♣ Treat as indicated under Acute Renal Failure

**11. CCF, Fluid Overload**

♣ Frusemide 20-240mg twice a day

**6.2 Key investigations**

-Urea and electrolytes;

-Creatinine level and clearance

-Full blood count;

-Blood sugar;

-Urinalysis and microscopy

-Ultrasound

# CHAPTER 7

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## Sexually Transmitted Infections and HIV/AIDS

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### 1 SEXUALLY TRANSMITTED INFECTIONS

Sexually transmitted infections (STIs) are a group of diseases that are spread through sexual intercourse. They constitute a major public health problem in Lesotho. The need to control them is vital in the wake of the alarming prevalence of HIV/AIDS, which is wreaking havoc in our community. There is a very close relationship and association between common sexually transmitted infections and HIV/AIDS. The care and prevention of STIs is now one of the most important and effective strategies for the control of HIV/AIDS. Included in this group are the following syndromes.

1. **Genital Ulcer Syndrome:** May be caused by chancroid, Syphilis, herpes simplex and Lymphogranuloma venereum., granuloma inguinale
2. **Urethral Discharge Syndrome:** May be caused by gonorrhoea and non-gonococcal urethritis.
3. **Vaginal Discharge Syndrome:** Caused by trichomoniasis, candidiasis, bacterial vaginosis and cervical infection.

#### 1.1 DIAGNOSTIC CRITERIA

##### 1.1.1 Genital Ulcer Syndrome

The presence of small blisters or ulcers or a history of small recurrent ulcers or blisters suggests herpes simplex. If the condition presents as single small ulcers and painful matted glands the diagnosis is probably lymphogranuloma venereum, chancroid or syphilis

##### 1.1.2 Urethral Discharge Syndrome

There is a urethral discharge with associated dysuria and/or frequency of micturition

##### 1.1.3 Vaginal Discharge Syndrome

There is often a discharge that occurs in quantities greater than normal. If the discharge is white and thick, consider candidiasis; if greenish consider trichomoniasis and if yellow consider bacterial infection. The discharge is often mixed.

#### 1.2 TREATMENT GUIDELINES

##### 1.2.1 Community Level Interventions

1. Health Education on Safe Sex and promote use of condoms
2. Counsel the infected and reinforce the need to bring in the partner for treatment

3. Counsel on personal hygiene

4. Refer all cases

### 1.2.2 Health Centre Level Interventions

#### 1.2.2.1 For Genital Ulcer Syndrome:

1. Reinforce Health Education messages

2. Take blood for VDRL/RPR

3. **Treatment:**

#### ♣ Genital herpes:

-Counseling on nature of disease with emphasis on possible recurrences

-Lesions should be kept clean and dry, using talcum powder.

-Secondarily infected herpes lesions should be treated.

-Cotrimoxazole (400mg/80mg) 2 tabs p.o 2 times daily for 7 days or

-Erythromycin 500mg p.o 4 times daily for 7 days

-Pain relief if necessary

-Paracetamol 500mg 3 times daily for 5 days

-Primary herpetic episodes treatment

-Acyclovir 200mg 5 times daily p.o for 7 – 10 days

-Famciclovir 250mg p.o 3 times daily for 7 – 10 days

-Valacyclovir 1g p.o 2 times daily for 7 – 10 days.

#### ♣ Genital ulcer syndrome

Treatment of early syphilis

-Benzathine penicillin G L.A. 2.4 IM STAT OR

-Procaine penicillin G 600 000 u. IM daily for 10 days

For non pregnant patients who are allergic to penicillin use:

-Tetracycline 500mg 4 times daily for 15 days OR

-Doxycycline 100mg 2 times daily for 15 days OR

-Erythromycin 500mg 4 times daily for 15 days

Treatment for Chancroid

-Erythromycin 500mg 4 times daily for 7 days OR

-Azithromycin 1g p.o STAT, OR

-Ciprofloxacin 500mg 2 times daily for 3 days OR

-Ceftriaxone 250mg IM STAT

Treatment marked are safe for use during pregnancy and breastfeeding

**Treatment for early syphilis**

-Benzathine penicillin G.L.A 2.4 u IM STAT, OR

-Procaine penicillin G 600 000 u. IM daily for 10 days

PLUS

Treatment for lymphogranuloma Venereum and chancroid

-Erythromycin 500mg 4 times daily for 14 days

**♣ Urethral Discharge Syndrome:**

-Reinforce Health Education messages; take blood for RPR/VDRL;

- Ciprofloxacin 500mg orally STAT, OR
- Ofloxacin 400mg orally STAT, OR
- Ceftriaxone 125mg IM STAT, PLUS
- Doxycycline 100mg orally 2 times daily for 7 days OR
- Tetracycline 500mg 6-hourly orally for 7 days OR
- Erythromycin 500mg 6-hourly orally for 7 days OR
- Azithromycin 1gm orally STAT

-Ask the patient to return in a week's time if his symptoms persist.

-Refer if response not satisfactory

♣ **Vaginal Discharge Syndrome:**

- Reinforce health education and counselling messages as above
- Take High vaginal swab
- Do PAP smear;
  - Ciprofloxacin 500mg orally STAT, OR
  - Ofloxacin 400mg orally STAT, OR
  - Ceftriaxone 125mg IM STAT, **PLUS**
  - Doxycycline 100mg orally 2 times for 7 days OR
  - Tetracycline 500mg 6-hourly orally for 7 days OR
  - Erythromycin 500mg orally 6-hourly for 7 days OR
  - Azithromycin 1g orally stat

♣ **Trichomoniasis and bacterial vaginosis**

- Metronidazole 400mg 2 times daily for 7 days OR
  - Metronidazole 2g orally STAT, (less effective than multidose therapy for bacteria vaginosis) OR
  - Tiridazole 500mg orally 2 times daily for 5 days OR
  - Amoxicillin 500mg orally 3 times daily for 7 days (active against bacteria vaginosis only) OR
  - Clindamycin 300mg orally 2 times daily for 7 days PLUS
  - Nystatin vaginal pessaries 1 000 000 units daily for 2 weeks OR
  - Clotrimazole vaginal pessaries 200mg nightly for 3 days
- Refer if no improvement

♣ **Topical treatment for candidiasis**

- Clotrimazole 200mg pessaries nightly for 3 nights OR (also active against *trichomonas vaginalis*) OR
- Clotrimazole 500mg pessary STAT, OR
- Miconazole 200mg pessaries nightly for 7 nights OR

-Nystatin pessaries once daily for 14 days OR

-Econazole 150mg ovule STAT on retiring

-Provide appropriate antifungal cream for cases of pruritis vulvae

**NOTE: Ciprofloxacin, Doxycycline and tetracycline should not be used during pregnancy or lactation and in children below 12. Doxycycline should not be used and Ciprofloxacin should not be used in adolescents below 18 years.**

♣ **Lower abdominal pain syndrome**

-Treatment:

-Ciprofloxan 500mg orally STAT, OR

-Ofloxacin 400mg orally stat, OR

-Ceftriaxone 250mg IM STAT, OR

-Cefotaxamine 1g IM STAT, PLUS

Spectinomycin 2g IM STAT, PLUS

-Treatment for Chlamydia

-Doxycycline 100mg orally 2 times daily for 14 days OR

-Tetracycline 500mg orally 4 times daily for 14 days OR

-Erythromycin 500mg orally 3 times daily for 14 days PLUS

-Treatment for anaerobes

-Metronidazole 400mg orally 3 times daily for 14 days

**SCROTAL SWELLING SYNDROME**

♣ **Treatment of epididymo-orchitis**

-Treatment for gonorrhoea

-Ciprofloxacin 500mg orally STAT, OR

-Ofloxacin 400mg orally STAT, OR

-Ceftriaxone 125mg IM STAT, PLUS

Treatment for Chlamydia

-Doxycycline 100mg orally 2 times daily for 7 days OR

- Tetracycline 500mg orally 4 times daily for 7 days OR
- Erythromycin 500mg orally 4 times daily for 7 days OR
- Azithromycin 1g orally STAT

ADD: Scrotal support if necessary pain relief.

### 1.2.3 Hospital Level Interventions

1. Reinforce Health Education and Counselling messages as described above
2. Do other investigations in addition to RPR/VDRL, vaginal swab etc.
3. Syndromic management as above

### 1.3 Key investigations

- |              |               |                          |
|--------------|---------------|--------------------------|
| -VDRL/RPR;   | -HIV test;    | -Culture and sensitivity |
| -Microscopy; | -Blood sugar; | -Full blood count        |

## 2. HIV/AIDS

The classification of HIV infection and disease status should be made in accordance with the WHO Clinical Classification. This is outlined in the section that follows:

1. **Stage 1:** Positive HIV asymptomatic with or without generalized lymphadenopathy.
2. **Stage 2:** Positive HIV with symptoms of weight loss; recurrent upper respiratory infection; minor mucocutaneous manifestations and history of herpes zoster.
3. **Stage 3:** Positive HIV with weight loss; unexplained chronic diarrhoea; unexplained intermittent or constant fever; oral thrush; hairy leukoplakia; pulmonary TB; and severe bacterial infection.
4. **Stage 4:** Positive HIV with opportunistic infections such as pneumocystis carinii pneumonia; cryptococcal infection; extra pulmonary TB etc.

### 2.1 TREATMENT GUIDELINES

#### 2.1.1 Community Level Interventions

1. Educate on safe sexual practices
2. Emphasise the importance of using condoms AT EVERY SEXUAL CONTACT
3. Establish Voluntary Counselling and Testing Centres
4. Emphasis the importance of preventing mother-to-child transmission

5. Institute Nutritional Support Programmes
6. Educate on the availability of Anti-Retroviral Drugs and their use
7. Manage according to home based care manual
8. Refer all cases

#### 2.1.2 Health Centre Level Interventions

1. Reinforce the above
2. HIV tests
3. Training and support of home care giver
4. Manage opportunistic infection
5. Refer

#### 2.1.3 Hospital Level Interventions

1. Reinforce the above
2. For all suspected cases do FBC, differential and ESR; also do investigations to confirm HIV infection, then do CD4 count
3. If CD4 is above 350 then monitor and repeat 3-monthly
4. If either CD4 < 200 or Lymphocyte count is up to 100 000 OR full blood AIDS is noted/confirmed, then start on Anti-retrovirals and institute Triple Therapy recommended in the ARV protocol

#### 2.2 Key investigations

- |                    |                        |                |
|--------------------|------------------------|----------------|
| -HIV test;         | -Viral load;           | -CD4 count     |
| -Full blood count; | -Liver function tests; | -Lipid profile |

### 3. MANAGEMENT OF OPPORTUNISTIC INFECTIONS

#### 3.1 BACTERIAL RESPIRATORY INFECTION

Lower respiratory tract infections are more frequent and more severe in HIV/AIDS. They may present with classic lobar pneumonia, broncho-pneumonia or with unresponsive atypical pneumonia.

##### 3.1.1 Recommended Treatment

1. **1<sup>st</sup> Line:** Amoxicillin 500mg 3 times daily for 7 days

2. **2<sup>nd</sup> Line:** Cotrimoxazole 800mg/160mg 2 times daily for 10 days
3. **3<sup>rd</sup> Line:** Crystalline Penicillin 5 million units IV 6-hourly **PLUS**, Chloramphenicol 500mg IV 6-hourly for 7 days

### 3.2 PNEUMOCYSTIS CARINII PNEUMONIA

This is an opportunistic infection commonly associated with HIV/AIDS. In addition to other common symptoms patients have shortness of breath and cyanosis.

#### 3.2.1 Supportive Therapy

1. Oxygen
2. IV Fluids

#### 3.2.2 Recommended Therapy

1. **1<sup>st</sup> Line:** Cotrimoxazole 3200/1600mg 3 times daily for 7 days
2. **2<sup>nd</sup> Line:** Clindamycin 450mg 6-hourly **OR**,  
Primaganine 15-30mg daily for 7 days
3. **NB:** Severely ill patients may benefit from Prednisone 40-80mg daily

### 3.3 PNEUMOCYSTIS CARINII PNEUMONIA IN PAEDIATRICS

#### 3.3.1 Clinical Features

1. Dry cough
2. Progressive dyspnoea
3. Fever
4. Bilateral interstitial (ground glass) pattern on Chest X-ray<sup>5</sup>
5. Absence of purulent sputum
6. LDH < 1 000
7. Hypoxia or desaturation on effort

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<sup>5</sup> Features 4-7 are considered to be **TYPICAL** of Pneumocystis Carinii Pneumonia

### 3.3.2 Treatment

1. Cotrimoxazole 15-20mg/kg/SMZ 75-100mg/kg/TMP in 6 divided doses (4-hourly).
  - This can be given in the intravenous form in severe cases.
  - The duration of treatment is 21 days.
  - Adjunct therapy recommended in severe cases is as follows:

♣ Methyl prednisolone 2mg/kg/24-hours in 4 divided doses over **5 days**.

#### 2. Adjunct Therapy in PCP

- ♣ Prednisone 2mg/kg/24 hours for the first 7-10 days, followed by tapering then restart on 10<sup>th</sup> –14<sup>th</sup> days

#### Adolescents:

- ♣ Prednisone 80mg/day on day 1-5, 40mg/day on day 6-10, then 20mg/day on day 11-21, **THEN STOP**

#### 3. PCP Prophylaxis

Cotrimoxazole (TMP/SMZ)	
Body Weight	Dose Given (12-hourly)
<5kg	5ml
5-9.9kg	7.5ml
10-14kg	10ml
15-21kg	15ml or 1 ½ tabs
>22kg	20ml or 2 tabs

### 3.4 ATYPICAL MYCOBACTERIOSIS

This is an infection that is more common in Western countries than in Africa

#### 3.4.1 Recommended Therapy

##### 1. 1<sup>st</sup> Line:

-Clarithromycin 500mg 2 times daily **OR**,

-Ethambutol 15mg/kg daily for 7 days

##### 2. 2<sup>nd</sup> Line:

-Azithromycine 600mg daily **PLUS**

-Ethambutol 15mg/kg/day **PLUS**,

- Nifabutin 450mg daily for 7 days

### 3.5 ORAL CANDIDIASIS

This condition also constitutes a common opportunistic infection in HIV/AIDS

#### 3.5.1 Recommended Therapy in Adults

1. **1<sup>st</sup> Line:**

- Clotrimazole Lozenges 5 times daily **OR,**
- Nystatin Lozenges 200 000 units 5 times daily **OR**
- Ketoconazole 200mg daily for 7 days

2. **2<sup>nd</sup> Line:**

- Fluconazole 100mg daily, orally **OR,**
- Itraconazole 100mg daily to gargle with

#### 3.5.2 Therapy Recommended in Children

1. Nystatin Suspension 100 000 units 4 times daily for 7 days
2. Daktarin Gel 4 times daily for 7 days
3. Gentian Violet 0.5-1% for 7 days
4. Ketoconazole 3mg/kg/24 hours orally 7 days
5. Fluconazole 3mg/kg/24 hours orally for 7 days

### 3.6 VAGINAL CANDIDIASIS

#### 3.6.1 Recommended Therapy

1. **1<sup>st</sup> Line:**

- Fluconazole 100mg single dose orally **OR,**
- Clotrimazole 500mg single dose vaginally **OR,**
- Miconazole 200mg once daily vaginally **OR,**
- Clotrimazole 200mg daily vaginally for 7 days

2. **2<sup>nd</sup> Line:**

- Ketoconazole 200mg 2 times daily **OR,**
- Ketoconazole 200mg once daily for 7 days

### 3.7 OESOPHAGEAL CANDIDIASIS

#### 3.7.1 Recommended Therapy in Adults

1. **1<sup>st</sup> Line:** Fluconazole 200-400mg daily
2. **2<sup>nd</sup> Line:**
  - Ketoconazole 200-400mg 2 times daily **OR,**
  - Itraconazole 200mg daily

#### 3.7.2 Therapy Recommended in Children

1. Fluconazole 3mg/kg/day orally for 7 days
2. Ketoconazole 3mg/kg/day orally for 7 days or
3. Ketoconazole 50mg daily for 1-4 years and 100mg daily for 5-12 years for 7 days

### 3.8 CRYPTOCOCCAL MENINGITIS

#### 3.8.1 Recommended Therapy for adults

1. -Amphotericin B 0.7 – 1.4mg/kg IV daily for 14 days **PLUS,**  
- 5-Fluorocytosin 25mg/kg 4 times per daily, orally for 14 days
2. Fluconazole 400mg orally, daily for 8 weeks

#### 3.8.2 Recommended Therapy for Children

1. Fluconazole 6-12mg/kg/day once daily for 8 weeks

### 3.9 TOXOPLASMOSIS

This is a condition that is, in all likelihood, under-diagnosed in developing countries due to inadequate diagnostic facilities

#### 3.9.1 Recommended Therapy

1. Pyramethamine 100mg single dose orally **THEN,**
2. Pyramethamine 50-100mg 4 times daily for 6 weeks, **PLUS,**
3. Folinic Acid 10mg orally, daily for 14 days **PLUS,**
4. Sulphadiazine 2 grams 4 times daily for 6 weeks

### 3.10 HERPES SIMPLEX

#### 3.10.1 Recommended Therapy

1. Acyclovir 400mg 3 times daily, for 7-10 days **OR,**

2. Famciclovir 250mg 3 times daily for 7-10 days **OR,**
3. Valaciclovir 1 gram 2 times daily for 7-10 days

### 3.11 HERPES ZOSTER

#### 3.11.1 Recommended Therapy

1. Acyclovir 800mg 5 times daily for 7-20 days **OR,**
2. Famciclovir 500mg 3 times daily for 7-10 days

### 3.12 CYTOMEGALOVIRUS INFECTION

#### 3.12.1 Recommended Therapy

##### 3.12.1.1 1<sup>st</sup> Line Therapy

1. Ganciclovir 5mg/kg 2 times daily IV, for 2-3 weeks

##### 3.12.1.2 2<sup>nd</sup> Line Therapy

2. Foscarnet 90mg/kg 2 times daily IV for 3 weeks

#### 3. For Cytomegalovirus Retinitis:

-Valganciclovir 900mg 2 times daily for 21 days **PLUS**

-Ganciclovir Intraocular Implant

### 3.13 DERMATOMYCOSIS

This presents as a dry and itchy fungal skin rash

#### 3.13.1 Recommended Therapy

##### 3.13.1.1 1<sup>st</sup> Line Therapy

1. Topical Miconazole 3 times daily for 21 days **OR,**
2. Topical Clotrimazole 3 times daily for 21 days

##### 3.13.1.2 2<sup>nd</sup> Line Therapy

1. Ketoconazole 200mg orally, daily for 1-3 months **OR,**
2. Itraconazole 100mg orally, daily for 1-3 months

### 3.3 Key investigations

-HIV test;      -CD4;      -Viral load;      -Liver function test;  
 -Urine Urinalysis/microscopy;      -FBC;      -Culture and sensitivity

# CHAPTER 8

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## Central Nervous System Disorders

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### 1. HEADACHE

Headache is a common manifestation of acute systemic or intracranial infections. It is one of the symptoms in severe hypertension, cerebral hypoxia, head injury or intracranial tumours. It is also a feature in many diseases of the ear, teeth, throat, nose and eyes. Some patients have none of the above but have migraine, muscular tension headache or cluster headaches.

#### 1.1 DIAGNOSTIC CRITERIA

The differential diagnosis for headache is wide and varies from minor, to severe and to lethal conditions.

##### 1.1.1. Migraine

Headache generalized or unilateral throbbing accompanied by anaemia, nausea or vomiting. Prodromal signs of scintillating scotomas or mood changes may be present.

##### 1.1.2. Toxic States

In these conditions the headache is often moderate, generalized, pulsating and constant. A history of exposure to toxins is usually present.

##### 1.1.3. Expanding Lesions

Headache localised or generalized with progressive weakness of one side or convulsion. There may be accompanying cerebral changes.

##### 1.1.4. Meningeal Irritation

Headache ranges from dull to severe and radiates to the neck. There is usually an associated fever or other signs of infection. There may also be neck stiffness.

##### 1.1.5. Subarachnoid Haemorrhage

This is spontaneous bleeding into the subarachnoid space. When it does occur it is a sudden and frequently catastrophic event. Typical presentation is that of a sudden hemicranial, hemifacial or periorbital pain usually associated with neck or back pain

##### 1.1.6. Hypertension

Headache is throbbing, paroxysmal, occipital or vertex. There is usually an accompanying history of cardiovascular or renal disease.

### **1.1.7. Extra-Cranial Lesions**

Headache is often localized or generalized with symptoms and signs of eye, ear, nose and mouth disorders.

### **1.1.8. Conversion Hysteria**

The headache that occurs in this condition is often “bizarre” and may be made worse by emotional disturbance.

### **1.1.9. Muscle Tension**

The headache in this condition is intermittent, of moderate severity, fronto-occipital or generalised in location and has an associated feeling of muscle tightness or stiffness.

## **1.2 CLINICAL GUIDELINES**

### **1.2.1. Community Level Interventions**

1. Minor headaches may be controlled by analgesics:
  - ♣ Paracetamol 500mg - 1000mg 3 times daily
  - ♣ Aspirin 300mg - 600mg 3 times daily
2. Refer if the headache is severe and a cause can not be easily identified

### **1.2.2. Health Centre Level Interventions**

1. Manage as above
2. Treat underlying cause
3. Refer all complicated cases

### **1.2.3. Hospital Level Intervention**

- ♣ Manage as above
- ♣ Thorough history and clinical assessment
- ♣ Manage as per cause
- ♣ Refer complicated cases

### **1.2.4. Re-assess**

- ♣ Do specialized investigation where indicated
- ♣ Manage as per cause

## 2. MIGRAINE

### 2.1 DIAGNOSTIC CRITERIA

This is a condition characterized by throbbing headaches that are preceded or accompanied by reversible symptoms that reflect cortical or brain stem dysfunction. The most common type of aura consists of a positive visual phenomenon, usually in the form of a scintillating scotoma. An aura may also take the form of other focal neurologic symptoms or signs, including loss of sensation or weakness in an extremity. In general, the aura precedes the headache by less than 60 minutes, develops over 4 minutes or longer, and has a duration of less than one hour.

### 2.2 TREATMENT GUIDELINES

#### 2.2.1 Community Level Interventions

1. Reassure the patient
2. Advise to minimize tension states
3. Health education regarding the condition
4. Refer

#### 2.2.2 Health Centre Level Interventions

1. Institute non pharmacological measures as above
2. **Medications:**
  - ♣ Propranolol 20-160mg daily for 2 weeks **OR,**
  - ♣ Amitriptyline 10-25mg at bedtime for 2 weeks
  - ♣ **For Acute Attacks:**
    - Paracetamol 500mg- 1 gram 4 times daily for 7 days **OR,**
    - Ibuprofen 200-400mg 3 times daily **AND/OR,**
    - Ergotamine tartrate and Caffeine 1mg/100mg taken at the onset of headache or followed by 1mg/100 every 30 minutes warning symptoms. (NB maximum six tablets per attack)
3. Refer if no improvement

#### 2.2.3 Hospital Level Interventions

1. Institute non pharmacological measures as above
2. **For Acute Attacks:**



8. Refer all new cases

### 3.2.2. Health Centre Level Interventions

1. Manage as above
2. Refer for further investigations

### 3.2.3. Hospital Level Interventions

1. Non-pharmacological interventions as above
2. Investigate to determine the cause
3. Treat the underlying cause
4. If a large haematoma is found, surgical intervention may be necessary
5. **For a large infarct:**

♣ **With no oedema present:**

- Aspirin 75-150mg daily,
- Physiotherapy and treat underlying cause

♣ **With oedema present:**

- Manage as above;
- Dexamethasone 8-16mg 3 times daily may be necessary

♣ **If Fits Occur:**

- Add Carbamazepine 200mg OR
- Phenytoin 200mg

### 3.3 Key Investigations

- |                    |               |                        |                 |
|--------------------|---------------|------------------------|-----------------|
| -Full blood count; | -Blood sugar; | -Urea and electrolytes |                 |
| -X-ray;            | -ECG;         | -CT scan;              | -Echocardiogram |

## 4. PARKINSONISM

Parkinsonism is an idiopathic, slowly progressive degenerative central nervous system disorder characterised by slowness and poverty of movement, muscular rigidity, resting tremor and postural instability. It is a relatively common movement disorder. The lesion is in the basal ganglia where there is a loss of the pigment nervous of the substantia nigra, locus ceruleus and other brain stem cell groups.

#### 4.1 DIAGNOSTIC CRITERIA

1. Resting (pill-rolling) tremor of one hand
2. Lead-pipe or cog-wheel rigidity
3. Slowness and poverty of movement
4. Loss of facial expression
5. Festinating gait

#### 4.2 TREATMENT GUIDELINES

##### 4.2.1 Community Level Interventions

1. Refer for tests to confirm diagnosis and for initiation of therapy

##### 4.2.2 Health Centre Level Interventions

1. Refer as above

##### 4.2.3 Hospital Level Interventions

1. Confirm diagnosis
2. Do relevant tests to rule out treatable metabolic causes (e.g. Wilson's Disease)
3. **Medication:**
  - ♣ Carbidopa/Levo-Dopa 20/100 or 25/100mg 3 times daily (Increase dose gradually until control is achieved) **OR,**
  - ♣ Biperiden 2-12mg daily **OR,**
  - ♣ Trihexyphenidyl 6-20mg daily

## 5. MOVEMENT DISORDERS-CHOREA, HEMIBALLISMUS, MYOCLONUS AND DYSTOPIA

#### 5.1 DIAGNOSTIC CRITERIA

These movements may be seen in some disorders. They need to be differentiated from those that occur as a consequence of Parkinson's disease.

##### 5.1.1 Chorea

This presents as continuous, irregular and random movement that appears semi-purposive and fidgety. The gait has a jerky dance-like quality. These movements may be seen in Huntington's disease, in some people on the oral contraceptive pill, in systemic Lupus erythematosus and in Sydenham's Chorea.

### 5.1.2. Hemiballismus

This is characterised by sudden severe and unpredictable throwing movements of one limb. It is usually due to infarction in one of the subthalamic nuclei.

### 5.1.3 Myoclonic jerks

These are brief jerking movements of muscle and are usually due to a metabolic disturbance. They are sometimes likened to the effects of a brief electric shock. These movements are infrequent and discontinuous. If they occur early in the morning in the young, then they may be suggestive of Juvenile Myoclonic Epilepsy

### 5.1.4 Dystonia

Here the movements consist of slow, sustained irregular twisting of a limb or of the trunk. Spasmodic Torticollis is one form of dystonia in which the head turns to one side. The causes are varied and may include (but are not limited to) drugs and Wilson's disease or they may be idiopathic.

## 5.1 TREATMENT GUIDELINES

### 5.1.3. Supportive Treatment

1. Correct any underlying metabolic disorder
2. Discontinue any drugs that are implicated in the disorder
3. Supportive Counseling

### 5.1.4. Specific Treatment

1. Sodium Valproate for Myoclonic jerks
2. Clonazepam
3. Carbamazepine

## 6. EPILEPSY

This is a disorder characterized by recurrent episodes of paroxysmal brain dysfunction due to a sudden, disorderly, and excessive neuronal discharge. Epilepsy classification systems are generally based upon: (1) Clinical features of the seizure episodes (e.g., motor seizure), (2) Aetiology (e.g., post-traumatic), (3) Anatomic site of seizure origin (e.g., frontal lobe seizure), (4) Tendency to spread to other structures in the brain, and (5) Temporal patterns (e.g., nocturnal epilepsy).

### 6.1 DIAGNOSTIC CRITERIA

A detailed description from a witness of the fit is vital. It is extremely important not to diagnose epilepsy in error given that the therapy for this condition (or group of conditions) has significant side effects; also the

diagnosis is stigmatizing and has implications for employment, insurance and driving. Once the diagnosis is decided upon it is important to decide what type of epilepsy it is. The onset of the attack is the key to the decision as to whether the fit is partial or generalised. If the fit begins with focal seizures it is a partial seizure, however, if it develops rapidly, then it is generalised. The next question to be answered is the nature of the “triggering event”. Those triggered by external stimuli almost never require drug therapy.

## 6.2 TREATMENT GUIDELINES

Monotherapy is the recommended treatment approach. If fits are not controlled with even the maximum dose of a drug then it should be replaced with another. The old drug should be withdrawn in gradually decreasing doses whilst the new drug is being introduced.

### Community Level Interventions

1. Health education on management of fits
2. For known epileptics-encourage regular follow up and use of medication as prescribed
3. Encourage regular visit to anti-natal clinics
4. Refer all new cases

### Health centre level intervention

1. Non-pharmacological intervention as above
2. Control fits-
  - Diazepam 5mg IM STAT
  - Phenytoin 300mg -500mg orally STAT
3. Refer for further investigation

### 6.2.3 Hospital level intervention

1. Non-pharmacological intervention as above
2. Investigate every fit fully
3. Manage fits as follows

#### 6.2.3.1 Neonates

1. Phenobarbitone 10-20mg/kg/dose IV STAT
2. Phenytoin 10-15mg/kg/dose infused in Saline solution
3. Then Phenobarbitone **Maintenance Dose** of 5mg/kg/day nocte
4. **AVOID VALIUM**

#### 6.2.3.2 Infants/Children

1. Phenobarbitone 10mg/kg/dose
2. Phenobarbitone **Maintenance Dose** of 5mg/kg/day nocte
3. Diazepam 0.3mg/kg/dose
4. Phenytoin 10-15mg/kg/dose

#### 6.2.3.3 Anti-Convulsants in Children

##### I. Grand-Mal

1. Phenobarbitone 5mg/kg/day nocte
2. Phenytoin 5mg/kg/day in 3 divided doses
3. Sodium Valproate 10-50mg/kg in 2-3 divided doses
4. Carbamazepine 10-20mg/kg/day in 2-3 divided doses

##### II. Petit Mal

Ethosuximide 20-35mg/kg/day in 3 doses or nocte

##### III. Temporary Lobe epilepsy

Carbamazepine 10-20mg/kg/day in 2-3 divided doses

##### IV. Myoclonic Jerks/West Syndrome

Sodium Valproate 10-50mg/kg/day in 2-3 divided doses

##### V. Adjunct Drugs

Clonazepam 0.05mg/kg/day (drops or tablets). **Look out for excessive drowsiness**

#### 6.2.3.4 Anti-convulsants in adults

##### I Grand mal

Phenytoin 200 mg - 600 mg daily in divided doses

Carbamazepine 200 mg - 600 mg daily in divided doses

##### II Temporal lobe epilepsy

Carbamazepine 200 mg - 600 mg daily in divided doses

### III Psychomotor epilepsy

Carbamazepine 200 mg – 600 mg daily in divided doses

#### IV Status epilepticus

1. Oxygen
2. Diazepam 5mg IV slowly followed by 2mg/im up to 20mg or until fit stops
3. Dextrose 50ml of 50% solution
4. Pheytoin IV 50mg 1min
5. Thiamine 100mg IV if chronic alcohol abuse suspected
6. If fit continue give diazepam IV infusion 100mg in glucose 5% plus Phenobabitone IV 100mg/min

#### 6.4 Key investigations

- |                        |                          |                        |
|------------------------|--------------------------|------------------------|
| -Full blood count;     | -Blood sugar;            | -Urea and electrolytes |
| -ECG;                  | -X-ray;                  | -CT scan               |
| -Liver function tests; | -Thyroid function tests; | -EEG                   |

## 7 PYOGENIC MENINGITIS

Pyogenic meningitis is an acute septic inflammation of the meninges of the brain and spinal cord. Patients of all ages are susceptible to pyogenic meningitis but the general incidence and that of each organism varies widely in different ages. The common causative agents are *Streptococcus pneumoniae*, *Haemophilus influenzae* and *Nisseria meningitis*. In neonates *E.coli* is the common agent.

### 7.1 DIAGNOSTIC CRITERIA

This condition should be suspected in any febrile patient with severe headache, neck stiffness and/or a reduced level of consciousness. In older children and adults it presents with a severe, “bursting” headache associated with malaise, nausea, and anxiety. Patients are irritable, tend to resist all movements and have photophobia.

In young children there is fever with diarrhoea, restlessness and poor feeding. Neck stiffness is not a prominent feature. The baby’s fontanelle may bulge.

### 7.2 TREATMENT GUIDELINES

#### 7.2.1 Community Level Interventions

1. Refer without delay

### 7.2.2 Health Centre Level Interventions

1. Record and Monitor vital signs
2. Benzyl Penicillin IM 1.2-2.4million units STAT, PLUS  
Chloramphenicol IM 500 mg – 1 gm STAT
3. If severe or comatose then put up IV line of Normal Saline/Dextrose-Saline and give the above medication IV instead of IM
4. Refer all cases without delay

### 7.2.3 Hospital Level Interventions

1. Monitor and record vital signs
2. Establish the diagnosis
3. Blood culture and lumbar puncture should be included in the investigations done
4. Put up IV line of Normal Saline/Dextrose-saline for hydration and medication
5. Institute treatment as follows:

#### A] In adults

##### I. Where organism cannot be identified:

- ♣ Crystalline Penicillin 1 million units IV 6-hourly for 7 days **OR**,
- ♣ Ampicillin 1 gram IV 6-hourly for 7 days **PLUS**,
- ♣ Chloramphenicol 500mg IV 6-hourly for 7 days **PLUS**,
- ♣ Gentamycin 80mg IV 8-hourly for 7 days

##### II. Where the organism is known:

- ♣ **Nisseria meningitidis:**  
-Benzyl Penicillin 2 million units IV 4-hourly for 14 days
- ♣ **Streptococcus pneumoniae:**  
-Benzyl Penicillin 2 million units IV 4-hourly OR  
-Ampicillin 1 gram IV 6-hourly for 14 days
- ♣ **Haemophilus influenzae:**

-Chloramphenicol 500mg IV 6-hourly PLUS

-Ampicillin 1 gram IV 6-hourly for 14 days

♣ **E. Coli:**

-Gentamycin 80mg IV 8-hourly for 14 days

-Chloramphenicol 500mg IV 6-hourly for 14 days

♣ **Proteus:**

-Chloramphenicol 500mg IV 6-hourly for 14 days **PLUS,**

-Gentamycin 80mg IV 8-hourly for 14 days

**III Brain Abscess**

♣ Ampicillin 1 gram IV 6-hourly for 14 days **PLUS,**

♣ Chloramphenicol 500mg IV 6-hourly for 14 days **PLUS,**

♣ Gentamycin 80mg IV 8-hourly for 14 days

♣ Follow the above management with serial CT scan and surgical drainage if found necessary.

**B] In children**

**I. Treatment in Children ≤ 3 Months Old**

Drug	Dose/Route	Frequency/day	Duration
Ampicillin + Gentamycin	200-400mg/kg/day in 4 divided doses 5-7.5 mg/kg/day in 3 divided doses	4 times 3 times	14 days
X-pen + Gentamycin	100 000 – 300 000units per kg/day in 4 divided doses 5-7.5mg/kg/day	4 times 3 times	14 days
Cefotaxime	200mg/kg/day in 3 divided doses	3-4 times	14 days for severe meningitis or partially treated cases
Dexamethasone	0.15-0.5mg/kg/day in 4 divided doses	4 times	For 1 <sup>st</sup> 48 hours (>6/52 for Haemophilus)

## II Treatment in Children ≥ 3 Months Old

Drug	Dose/Route	Frequency/day	Duration
<b>Ampicillin</b> + <b>Chloramphenicol</b>	200-400mg/kg/day in 4 divided doses 100mg/kg/day	4 times 4 times	14 days
<b>Benzyl Penicillin</b> + <b>Chloramphenicol</b>	300 000units per kg/day in 4 divided doses 100mg/kg/day	4 times 4 times	14 days
<b>Cefotaxime</b>	200mg/kg/day in 3 divided doses	3-4 times	14 days for severe meningitis or partially treated cases
<b>Dexamethasone</b>	0.15-0.5mg/kg/day in 4 divided doses	4 times	For 1 <sup>st</sup> 48 hours (>6/52 for Haemophilus)

### 7.3 Key investigations

- Lumber puncture;
- Blood culture;
- Full blood count
- Blood sugar;
- X-ray;
- CT Scan;
- Urea and electrolytes

## 8 ACUTE VIRAL ENCEPHALITIS AND ASEPTIC MENINGITIS

Encephalitis is an acute inflammatory disease of the brain due to direct viral invasion or to hypersensitivity initiated by a virus or other foreign proteins. If the spinal cord structures are affected the condition is encephalomyelitis. Aseptic meningitis is diagnosed if there is a febrile meningeal inflammation characterized by CSF pleocytosis, normal glucose and an absence of bacteria on examination and culture. Aseptic meningitis may be infectious in origin.

### 8.1 DIAGNOSTIC CRITERIA

Viral infections of the central nervous system may usually present in one of three ways:

#### 8.1.1. Meningitis

In this condition fever, headache, vomiting, general malaise and neck stiffness are prominent features

#### 8.1.2. Encephalitis

In this condition meningitis may be associated with evidence of cerebral dysfunction such as altered consciousness, paresis, seizures or cranial nerve abnormalities

### 8.1.3. Asymptomatic

Here fever and general malaise may be present in the absence of any meningeal clinical manifestations. Hyphoritic pleocytosis is present in the cerebro-spinal fluid

## 8.2 TREATMENT GUIDELINES

### 8.2.1 Community Level Interventions

1. Refer without delay

### 8.2.2 Health Centre Level Interventions

1. Record and Monitor vital signs
2. Institute supportive care
3. Refer to hospital

### 8.2.3 Hospital Level Interventions

- 7 Notify the relevant authorities in order to facilitate appropriate Public Health response(s)
- 8 Confirm diagnosis with blood culture and CSF results
- 9 Institute supportive therapy
- 10 Institute specific therapy where indicated and where organisms have been identified

## 8.3 Key investigations

- |                   |                 |                   |
|-------------------|-----------------|-------------------|
| -Lumbar puncture; | -Blood culture; | -Full blood count |
| -Blood sugar;     | -X-ray;         | -CT scan          |

## 9 SUBACUTE MENINGITIS

This describes meningitis in which the duration of the disease **in the absence of antibiotics** is more than 2 weeks but less than three months. It may occur in systemic fungal infections, tuberculosis, disseminated malignant cells such as in the case of leukemia and metastatic carcinomas, syphilis and primary brain tumours. This is seen in increasing occurrence in association with HIV/AIDS.

### 9.1 DIAGNOSTIC CRITERIA

In this condition the illness evolves more slowly. Concomitant fever may be minimal and may be associated with headache and dementia. Cranial and peripheral nerve palsies may be present, especially in neoplastic meningitis. The differential diagnosis in this instance includes brain tumors, brain abscesses and subdural effusions.

## 9.2 TREATMENT GUIDELINES

### 9.2.1 Community Level Interventions

1. Refer without delay.

### 9.2.2 Health centre level intervention

Refer immediately

### 9.2.3 Hospital Level Interventions

1. Institute supportive care
2. Establish diagnosis using CSF examination results
3. Manage as indicated by the causative agent/organism
4. If diagnosis is still in doubt then refer

## 9.3 Key investigations

-Lumbar puncture;	-Blood culture;	-Full blood count
-Blood sugar;	-X-ray;	-CT scan

# 10 PERIPHERAL NEUROPATHY

Peripheral neuropathy is a syndrome of sensory, motor, reflex and vasomotor symptoms singly or in any combination produced by disease of a single nerve (mono-neuropathy) two or more nerves in separate areas (multiple mono-neuropathy) or many nerves simultaneously (poly-neuropathy). Some forms of peripheral neuropathy are inherited. Leprosy is one of the commonest causes but many other infections; nutritional deficiency states, toxins and metabolic disturbances may cause a neuropathy or peripheral or autonomic nerves.

## 10.1 DIAGNOSTIC CRITERIA

This is a disease complex as opposed to being a disease entity. It is important that clues to systemic disorders such as hypertension, rash, skin ulcers, weight loss, fever, lymphadenopathy or mass lesions be sought out.

### 10.1.1 Motor Neuropathies

These usually present with distal weakness of hands and feet accompanied by an inability to grip objects tightly in the hands

### 10.1.2 Sensory Neuropathies

The presentation here is usually one of sensory loss in the hands and feet. There is also an accompanying tingling sensation as well as a sensation of pins-and-needles in the hands and feet

### 10.1.3 Other Forms of Neuropathy

These may be associated with symptoms and signs suggestive of autonomic system failure

## 10.2 TREATMENT GUIDELINES

### 10.2.1 Community Level Interventions

1. Institute supportive care
2. Refer for confirmation

### 10.2.2 Health Centre Level Interventions

3. Institute supportive care
4. Record and monitor vital signs
5. Refer for confirmation of diagnosis

### 10.2.3 Hospital Level Interventions

1. Institute supportive care
2. Confirm diagnosis
3. Treat underlying cause

## 10.3 Key investigations

- Full blood count;                      –Urea and electrolytes
- Blood sugar;                            –Lumbar puncture

## 11 ACUTE POST-INFECTIOUS NEUROPATHY (GUILLAIN-BARRÉ SYNDROME)

This is an inflammatory, demyelinating radiculopathy that is usually triggered by infection. It is the most common acute neuropathy.

### 11.1 DIAGNOSTIC CRITERIA

The condition typically begins a few days or weeks after surgery, flu-vaccination or infection. The usual presentation is that an ascending neuropathy occurs. This ascending neuropathy may advance and affect all limbs at once. Unlike with other neuropathies, **here proximal muscles are more affected**, and trunk, respiratory or even cranial nerves may be affected as well. Sensory symptoms are common but signs are usually hard to detect. The danger here lies in the **progressive respiratory involvement that may result**. CSF examination typically reveals elevated proteins with no lymphocytosis.

## 11.2 TREATMENT GUIDELINES

### 11.2.1 Community and Health Centre Level Interventions

1. Record and monitor vital signs
2. Refer without delay

### 11.2.2 Hospital Level Interventions

1. Monitor respiratory function
2. Ensure normal hydration
3. Record and monitor vital signs
4. Institute bladder and bowel care
5. Prevent bed sores
6. Ensure psychological support
7. Institute physiotherapy for chest (secretion mobilisation) and limbs
8. **Medications:**
  - ♣ Analgesics:
    - Paracetamol 500mg -1g 3 times daily for 5 days (adults)
    - Paracetamol 125mg-250mg 3 times daily for 5 days (children)
  - ♣ Immunoglobulin 0.4g.kg as a single dose daily for 5 days
9. Ventilate in the event of respiratory paralysis

### 11.3 Key investigations

- |                   |                        |
|-------------------|------------------------|
| -Lumber puncture; | -Full blood count      |
| -Blood sugar;     | -Urea and electrolytes |

# CHAPTER 9

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## Metabolic Disorders

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### 1. DIABETES MELLITUS

Diabetes mellitus is a syndrome caused by the lack, or diminished effectiveness of endogenous insulin. It is characterised by hyperglycaemia and deranged metabolism. The insulin deficiency that occurs can be primary or can occur secondary to other factors. There are two types of insulin deficiency to note:

1. Type 1 - There is no adequate insulin and insulin has to be given for survival.
2. Type 2 – There is insulin in the blood but not effective. It is associated with obesity

#### 1.1 DIAGNOSTIC CRITERIA

Diabetes mellitus is diagnosed if a fasting blood sugar is more than 6.2 mmol/L or a two-hour post glucose challenge blood sugar level is more than 11.1 mmol/L **on two separate occasions.**

#### 1.2 TREATMENT GUIDELINES

##### 1.1.1 Community Level Interventions

1. Encourage adoption of healthy lifestyles
2. Encourage weight loss if the patient is obese or has body mass index (BMI) of more than 25
3. Reduce intake of fatty foods
4. Avoid the intake of refined sugar
5. Encourage to stop alcohol intake
6. Encourage to stop smoking
7. Refer all suspected cases

##### 1.2 Health Centre Level Interventions

1. Reinforce non-pharmacological interventions as described above
2. Institute dietary control as an initial management (i.e., diet alone with no drugs)
3. If dietary control on its own fails or the blood glucose levels are too high initiate the following:
  - ♣ Glibenclamide 5mg daily if not obese **OR,**

- ♣ Metformin 500-850mg 2 times daily if obese
4. The following categories of patients need to be referred:
    - ♣ Patients with diabetic complications
    - ♣ Patients with uncontrollable blood glucose
    - ♣ Patients who present on at least two occasions with non-responsive infections
  5. New diabetic cases
- 1.3 Hospital Level Interventions**
1. Emphasise non-pharmacological control measures
  2. Institute dietary control
  3. **For Non-Obese Patients:**
    - ♣ Glibenclamide 5mg 2 times daily **OR,**
    - ♣ Gliclazide 80mg 2 times daily
  4. **For Obese Patient:**
    - ♣ Metformin 500mg 3 times daily
  5. **Insulin Injection (indicated in the following):**
    - ♣ Type I DM or in uncontrolled DM in spite of the above measures
    - ♣ Severe infection
    - ♣ Hyperglycaemic emergencies
    - ♣ Pancreatitis
    - ♣ Pregnancy
    - ♣ Trauma or Surgery
  6. Management of Diabetic Keto-acidosis (see section 2 below)
  7. Management of Hyperosmolar non-ketotic coma (see section 3 below)
  8. Management of Hypoglycaemia (see section 4 below)

♣ **Key Investigations**

- Blood sugar;
- Urea and electrolytes;
- Serum amylase
- Full Blood Count;
- Urine MCS;
- Cardiac enzymes
- Thyroid function tests

**2(A) DIABETIC KETOACIDOSIS ( ADULTS)**

Diabetic ketoacidosis is a medical emergency due to relative or absolute lack of insulin. It occurs commonly in type 1 diabetes mellitus. The common precipitating factor is infection. Other causes may be surgery, myocardial infarction and stroke.

**2.1 DIAGNOSTIC CRITERIA**

This condition may constitute the mode of presentation. There is usually a 2-3 day history of gradual decline into dehydration, acidosis, and coma. The usual signs are hyperventilation and ketotic breath. In this condition **dehydration is more life threatening than any hyperglycaemia so its correction takes precedence.**

Investigations usually reveal a markedly elevated blood glucose level, acidosis, the presence of ketone bodies in the urine and hypocalcaemia.

**2.2 TREATMENT GUIDELINES**

This is a medical emergency that **should be treated at the hospital.**

**2.2.1 Health Centre Level Interventions**

1. These should be aimed at stabilising the patient
2. Set up a Normal Saline drip
3. Record and monitor vital signs
4. Refer without delay

**2.2.2 Hospital Level Interventions**

1. 1<sup>st</sup> Litre of Normal Saline to “run fast” (i.e., over 30 minutes)
2. 2<sup>nd</sup> Litre of Normal Saline to run in 1 hour
3. 3<sup>rd</sup> and subsequent Litres of Normal Saline to run 2-hourly (adjust fluid replacement according to response)
4. **Set up sliding scale for soluble insulin -hourly as follows:**  
  
Check blood sugar 2 hourly

- 4.1 20mmol/L; give 4 units IM/IV OR
- 4.2 18-20mmol/L; give 4 units IM/IV OR
- 4.3 15-17mmol/L; give 2 units IM/IV OR
- 4.4 12-14mmol/L; give 2 units IM/IV OR
- 4.5 Less 10mmol/recheck blood sugar every 2 hours (with hold insulin)
- 4.6 Monitor potassium and sodium 4-hourly
- 4.7 Monitor glucose 2-hourly

N.B Change infusion rate to 5% dextrose 5 drops per minute when blood glucose levels fall below 15mmol/L

## 2(B) PAEDIATRICS: DIABETIC KETOACIDOSIS

### (I) Treatment guidelines for diabetic ketoacidosis in children

Type I diabetes: characterised by server insulinopenia and dependence on exogenous insulin to prevent ketosis and preserve life

Type II diabetes: characterised by insulin resistance associated with defect in insulin secretions

DKA is characterised by hyperglycaemia, ketonuria, ketonaemia, acidosis and glycosuria, pre-coma or coma in addition to clinical features of diabetes mellitus. DKA results from insufficient or lack of insulin production.

Precipitating factors, crenotos first presentation include stress, eg trauma, infections, vomiting or psychological disturbances

### (II) Treatment aims

- 1.1 CORRECT FLUID DEFICITS, ELECTROLYTE IMBALANCES AND METABOLIC ACIDOSIS
- 1.2 INSULIN THERAPY TO CORRECT ONGOING KETOGENESIS AND LOWER PLASMA GLUCOSE
- 1.3 DETERMINE AND TREAT PRECIPITATING CAUSE (S) OF DKA
- 1.4 MONITOR RENAL FUNCTION, BLOOD PRESSURE, HYDRATION, BLOOD GLUCOSE, UREA AND ELECTROLYTES AND ACID-BASE STATUS

### (III) Fluid therapy

- I. Patient in shock: assume 10% dehydration.
  - ♣ Give N/saline 20mls/kg over one hour.
  - ♣ Re-asses after one hour and repeat 20mls/kg N/saline over one hour if still shocked. Then continue as for non-shocked patient

## II. Non-shocked patient

- ♣ If serum sodium is < 150mmol/L, give N/saline
- ♣ If serum sodium is >150mmol/L, give ½ normal saline
- ♣ Change to half-strength Darrow's solution when blood sugar is between 10-15mmol/L

Volume of fluid to give =  
replacement fluid to correct 10% dehydration + maintenance fluid according to age + ongoing losses

### Volume of fluid according to age

Solution	Age	Maintenance fluid volume per 24 hours
N/Saline 20mls/kg over 1 hour if in shock repeat as needed  or N/saline if (serum sodium) $\leq$ 450mmol/L or as half N/Saline if (serum sodium) $\leq$ >150mmol/L in absence of shock  Change to a dextrose-containing solution if serum glucose is 10-15mmol/L e.g half-strength Darrow's solution 5% dextrose/saline	$\leq$ 1 year	120mls/kg
	1-2 years	100mls/kg
	2-4 years	85mls/kg
	4-10 years	70mls/kg
	> 10 years	2-3litre
		<b>Give 50% of volume in first 12 hours and the remainder over the next 24 hours.</b>

### Potassium supplementation

Serum potassium mmol/L	Potassium supplementation (mmol/L) per litre of fluid
<3	40
3-4	30
4-5	20
>5-6	10
>6	None

**(IV) Insulin therapy**

- ♣ Use short acting insulin 0.1unit/kg IV hourly or by constant IV infusion if insulin pump is available.
- ♣ Monitor blood sugar hourly
- ♣ When acidosis has been corrected (base deficit <5) and blood sugar is 0.2-0.4 units/kg every 6 to 8 hours unit the child can fully tolerate food. The total 24 hours short acting insulin given serves as a guide to the subsequent 12hourly dose, 2/3 to be given in the morning and 1/3 in the evening.
- ♣ Monitor blood sugar before each dose and two hours after the meal.
- ♣ In a known diabetic with DKA, change to usual bd insulin dose when acidosis has been corrected and blood sugar is 10mmol/L.
- ♣ Give insulin before breakfast, and before evening meal, adjust the dose according to blood sugar.

**(V) Nutritional Requirements**

Carbohydrate	55%
Fat	30%
Protein	15%

- ♣ Involve dietitian.
- ♣ The child must eat six times a day, breakfast, mid-morning snack, lunch, mid-afternoon snack, dinner and 10.00 pm (late night) snack.

**CALORIE NEEDS FOR CHILDREN**

Age	Kcal requirement/kg body weight
0-12month	120
1-10years	100-75
11-15years(f)	35
11-15years(m)	80-50

- ♣ Educate the older child, parent or guardian about the disease, treatment and complications.
- ♣ Emphasise follow up. School teacher to be informed about the child illness

### 2.3 Key investigations

- |               |                    |                        |
|---------------|--------------------|------------------------|
| -Blood sugar; | -Full blood count; | -Urea and electrolytes |
| -Urinalysis;  | -X-ray;            | -ECG;                  |
|               |                    | -Glycolated Hb         |

## 3. HYPEROSMOLAR NON-KETOTIC COMA

Hyperosmolar non-ketotic coma is common in type II diabetes mellitus and is characterised by markedly increased plasma glucose with no ketonuria or acidosis. It may be precipitated by factors such as myocardial infarction.

### 5.2 DIAGNOSTIC CRITERIA

The history is longer than with ketoacidosis and is characterised by marked dehydration and a markedly elevated blood sugar. Acidosis is absent because **there has been no switch to ketone metabolism**. The patient with this condition is often old and is presenting for the first time (as a DM patient). The risk of DVT has been found to be high in this condition and full heparin anticoagulation is recommended as part of the management. There is usually a 5-6 day history of being unwell before sliding into a coma.

### 5.3 TREATMENT GUIDELINES

The management of this condition is undertaken only within an institutional setting. None of the interventions required can be undertaken in the community setting

#### 3.2.1 Health Centre Level Interventions

1. Record and monitor vital signs
2. Set up IV line normal saline (5% dextrose if blood sugar is not known)
3. Refer without further delay

#### 3.2.2 Hospital Level Interventions

1. IV Fluids as in DKA (if blood sugar is not known then give 5% dextrose initially and other fluids to be administered as per laboratory results).
2. This condition is more sensitive to insulin and smaller amounts of Rapid Acting (soluble) insulin should be used
3. Monitor electrolytes and blood glucose levels
4. Watch for thrombotic complications. Full heparin therapy may be part of management if indicated.

### 3.2 Key Investigations

- Blood sugar Urea and electrolytes;
- Full blood count
- Cardiac Enzymes;
- X-ray;
- ECG

## 6 HYPOGLYCAEMIA

Hypoglycaemia is very low blood sugar. This is a condition that occurs commonly in people with diabetes mellitus who are on hypoglycaemic treatment. It is a well-recognized occurrence in those on sulphonylurea therapy. Insulin therapy remains the commonest cause of hypoglycaemia. The other causes of hypoglycaemia are alcohol or aspirin overdose in children and insulinoma.

### 6.2 DIAGNOSTIC CRITERIA

Patients typically present with a history of odd behaviour (usually inappropriate aggression), heavy sweating, tachycardia, seizures and coma of rapid onset. The condition is to be suspected in patients on high insulin doses or in those who have had low food intake following insulin therapy and who present with the above signs and symptoms. The key lab finding is a blood glucose level less than 2.1mmol/L.

### 6.3 TREATMENT GUIDELINES

#### 6.3.2 Community Level Interventions

1. Early recognition is essential
2. Give sugar or sugary drinks if the patient is conscious
3. Refer immediately if unconscious

#### 6.3.3 Health Centre Level Interventions

1. Monitor blood glucose levels
2. Administer 20ml of Dextrose 50% solution<sup>6</sup> as a bolus dose, IV in a large vein.
3. Set up IV drip of 5% Dextrose
4. Refer

#### 6.3.4 Hospital Level Interventions

1. Administer 20ml of 50% dextrose solution as a bolus dose, IV
2. Start on 10% Dextrose infusion
3. With all of the above, **recovery should be prompt.**

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<sup>6</sup> This harms veins and it should therefore be followed by a 0.9% Saline Flush

4. If not, then give dexamethasone 4mg 4-hourly **to combat cerebral oedema** that occurs subsequent to prolonged hypoglycaemia.
5. Set up IV infusion with 5% Dextrose and admit.

#### 6.4 Key Investigations

-Blood sugar;                      -Full blood count;                      -Urea and Electrolytes

## 7 ENDEMIC AND MULTINODULAR GOITRE

Multi-nodular goitre is a commonly seen and endemic condition. It is due to low iodine in the diet. Most patients with endemic goitre are euthyroid. Excessive growth may occur in pregnancy. Very large multi-nodular goitre causes compression symptoms. Some patients may become hypothyroid while others may develop hyperthyroidism.

### 7.2 DIAGNOSTIC CRITERIA

This is a condition that is commonly widespread in communities that eat foods low in iodine. The usual presentation is that of a large, often multi-nodular swelling of the thyroid gland. As stated above, patients are usually euthyroid, but hyperthyroidism may develop. Hypothyroidism and malignancy occur only very rarely.

### 7.3 TREATMENT GUIDELINES

#### 5.2.1 Community Level and Health Centre Interventions

1. Encourage the use of iodated salt
2. Refer the patient if the swelling is very large and there are compression symptoms
3. Also refer if Hyper- or Hypothyroidism is suspected

#### 5.2.2 Hospital Level Interventions

1. Conservative management as above
2. Investigate blood for TSH, T3 and T4 levels
3. Refer if Hyper- or Hypothyroidism is suspected or if Thyroidectomy is indicated

#### 5.3 Key Investigations

-Thyroid function tests;                      -Blood sugar;                      -Full blood count

## 6 HYPOTHYROIDISM

This is a condition that occurs commonly and is easy to treat. It is a clinical state that results from a decreased production or secretion of thyroid hormone. The most common cause is iodine deficiency. It may result from previous treatment for hyperthyroidism or as a consequence of autoimmune disease.

## 6.1 DIAGNOSTIC CRITERIA

Symptoms consist of cold-intolerance, lethargy and fatigue, constipation and weight gain. Memory may be impaired and there may be a degree of mental impairment (“slowness”). As the condition progresses the patient may develop/notice puffiness around the eyes and a thickening of the lips and tongue. Hair and skin changes may also appear at this time.

## 6.2 TREATMENT GUIDELINES

All cases should be referred to hospital for management

### 6.2.1 Hospital Level Interventions

1. **Do Investigations** (TSH, T3 and T4 Levels)

2. **Medication:**

- ♣ L-thyroxine: start with 25 mg – 50 mg per day and increase in stages up to 100 mg - 200mg daily

### 6.3 Key investigations

-Thyroid function tests;

-Blood sugar;

-Full blood count

## 7 THYROTOXIC CRISIS

Thyrotoxic crisis is a life-threatening emergency that is often precipitated in severe hyperthyroidism by a major stress such as an injury, an infection or surgery.

### 7.1 DIAGNOSTIC CRITERIA

The patient has severe hyperthyroidism, which under stress presents with marked anxiety and agitation. There is pronounced tachycardia, tremor, fever, dehydration and cardiac failure and sometimes coma.

### 7.2 TREATMENT GUIDELINES

#### 7.2.1 Community level interventions

Refer immediately

#### 7.2.2 Health Centre Level interventions

1. Paracetamol 500mg-1g STAT
2. Set up IV line of Normal Saline and Ringer’s Lactate
3. Refer immediately

#### 7.2.3 Hospital Level Interventions

This is an emergency requiring expert intervention in a hospital

1. IV infusion of 0.9% Normal Saline, 500ml 4-hourly

2. **Antipyretic drugs:**

- ♣ Diclofenac 50mg 3 times daily **OR,**
- ♣ Paracetamol 500 mg -1 g 3 times daily

3. **Specific Medications:**

- ♣ Carbimazole 60 mg -120 mg orally
- ♣ Propranolol 1 gram -2 grams IV 6-hourly
- ♣ Propylthiouracil 25mg 4 times daily orally
- ♣ Potassium Iodide 10mg 4-hourly
- ♣ Dexamethasone 8mg IV 8-hourly

**7.3 Key Investigations**

-TSH levels;

-T3 and T4 Levels;

-FBC

-ECG;

-Chest X-ray

# CHAPTER 10

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## Nutritional Disorders

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### 1. PROTEIN ENERGY MALNUTRITION (PEM)

Protein Energy Malnutrition (PEM) describes a nutritional disorder wherein the intake of proteins and/or energy and other nutrients is below the minimal requirements for health, development and normal growth. The condition includes kwashiorkor, marasmus, marasmic-kwashiorkor and underweight-for-age.

1. **Kwashiorkor:** There is oedema and body weight is between 60-80% of the expected weight for the child's age
2. **Marasmus:** There is no oedema but body weight is below 60% of that expected for the child's age
3. **Marasmic-Kwashiorkor:** There is oedema plus a body weight 60% below that expected for the child's age
4. **Underweight-for-age:** There is no oedema but the body weight is 60-80% of that expected for the child's age

#### 1.1 DIAGNOSTIC CRITERIA

##### 1.1.1 Kwashiorkor and Marasmic-Kwashiorkor

1. Usually occurs in a child of 9-24 months of age and presents as follows:
  - ♣ Generalised pitting oedema
  - ♣ Growth failure
  - ♣ Muscle wasting
  - ♣ Hypo- and hyper-pigmented, desquamated, ulcerative or weeping skin lesions
  - ♣ Apathy, irritability and poor appetite
  - ♣ Repeated infections
  - ♣ Sparse, thin and reddish/grey hair discolouration

### 1.1.2 Marasmus

1. This condition usually occurs during the first year of life. It presents as follows:

- ♣ Emaciation with significant loss of subcutaneous fat
- ♣ Growth retardation
- ♣ Recurrent infections
- ♣ Oedema absent

## 1.2 TREATMENT GUIDELINES

### 1.2.1 Community Level Interventions

1. Exclusive breast feeding for 6 months
2. Encourage mothers to breast feed their children for up to two (2) years
3. Introduce weaning diet at 6 months
4. Immunise and monitor the child's growth monthly
5. Refer for further management

### 1.2.2 Health Centre Level Interventions

1. Conservative management as above
2. For the sick child give small frequent meals, gradually increasing calories and proteins
3. Give ORS if there is diarrhea and vomiting
4. Refer if no improvement

### 1.2.3 Hospital Level Interventions

1. Conservative measures as above
2. **Management of Acute Phase:**
  - ♣ Treat complications e.g dehydration, shock, infections, hypothermia, hypoglycemia and electrolyte imbalance
  - ♣ Give F75 with less calories every 2 hours for the first 48 hours. Stop all other foods (see annex for volumes)
  - ♣ After 48 hours give F100 3 hourly. (see annex for volumes)

### 3. Management of Recuperation Phase:

- ♣ Give high energy foods to enhance growth
- ♣ Educate mother/care-giver on proper nutrition and food preparation
- ♣ Educate mothers about proper nutrition
- ♣ Stimulation and play therapy for the child

#### 1.3 Key Investigations

-Liver function tests;

-Blood sugar;

-Full blood count

## 2. PELLAGRA

This condition occurs due to lack of Nicotinic Acid. Other nutritional disorders are likely to be present as well. It is commonly seen in alcoholics and in people who persistently eat an unbalanced diet.

### 2.1 DIAGNOSTIC CRITERIA

The classical triad of signs is diarrhoea, dementia and dermatitis. Other signs include neuropathy, depression, tremor, rigidity, ataxia and fits. Patients typically present with dark, dry scaling skin on areas of the body exposed to the sun. The tongue is large and red. diarrhoea is common and there may be manifestations of mental disorders ranging from depression to frank psychosis.

### 2.2 TREATMENT GUIDELINES

#### 2.2.1 Community Level Interventions

1. Health education about the benefits and importance of a balanced diet
2. Encourage adequate food intake before ingestion of alcohol
3. Manage alcohol abuse
4. Refer for further management

#### 2.2.2 Health Centre Level Interventions

1. Conservative measures as above
2. Give Nicotinamide 100mg three times daily
3. Refer severe cases or those with complications such as psychosis

#### 2.2.3 Hospital Level Interventions

1. Conservative measures as above
2. Niacin 100mg three times daily

3. Give specific treatment for complications such as dementia or psychosis

### 2.3 Key investigations

- Liver function tests;
- Blood sugar;
- Full blood count

## 3. OBESITY

This is defined as an increase in body weight beyond skeletal and physical standards as the result of an excessive accumulation of fat in the body. More than two times the ideal weight is considered OBESITY. This condition is most common in females in their middle ages. The commonest cause is overeating. In some instances the obesity may occur secondary to other disorders or conditions such as hypothyroidism, Cushing's disease or trauma. In some cases it occurs secondary to the (prolonged) use of drugs such as corticosteroids.

### 3.1 DIAGNOSTIC CRITERIA

1. If Body Mass Index (BMI)<sup>7</sup> > 25
2. The above may be accompanied by breathlessness on even minor exertion, heat intolerance, menstrual disorders or even psychological problems such as depression

### 3.2 TREATMENT GUIDELINES

#### 3.2.1 Community Level Interventions

1. Health education regarding the benefits of healthy lifestyles
2. Encourage regular exercise
3. Advocate for behaviour modification

#### 3.2.2 Health Centre Level Interventions

1. Conservative management as described above
2. Analgesics for osteoarthritis or other sources of pain
3. Refer if complications are present

#### 3.2.3 Hospital Level Interventions

1. Conservative measures as above
2. Manage associated features such as hypertension, ischaemic heart disease, etc.
3. There is normally no indication for drug therapy except in special cases where Diethylpropion 75mg daily may be given as short term therapy to support dietary restrictions.

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<sup>7</sup> BMI = body weight divided by the square of the individual's height (Weight/Height<sup>2</sup>)

### 3.3 Key investigations

- Lipogram;
- Blood sugar;
- Full blood count
- Cardiac enzymes;
- ECG

# CHAPTER 11

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## Obstetrics and Gynaecology

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### 1. ANAEMIA IN PREGNANCY

Anaemia in pregnancy is a common dietary disorder, may be due to low dietary iron intake that is aggravated by increased iron demand because of the presence of foetus. It is important to bear in mind and rule out other causes of anaemia

#### ♣ DIAGNOSTIC CRITERIA

It may be asymptomatic or present with tiredness and weakness with pale mucous membranes and nails. If severe, additional symptoms such as tinnitus may be present. Frank heart failure may also be present if the condition is severe. Laboratory value for diagnosis (WHO)

Haemoglobin < 11.0g/dl is regarded as anaemia

Haemoglobin 9-10g/dl = mild

Haemoglobin 7-8.9/dl = moderate

Haemoglobin < 7g/dl = severe.

#### ♣ TREATMENT GUIDELINES

##### 1.1 Community Level Interventions

1. Advice on increasing intake of foods rich in iron such as fresh, green, leafy vegetables, beans, peas and meat
2. Prophylactic intake of iron supplements, folic acid and vitamin c
3. Refer

##### 1.2 Health Centre Level Interventions

1. Conservative management as above
2. Ferrous Sulphate/Fumerate 200mg 3 times daily PLUS
3. Folic Acid 5mg daily PLUS
4. Vitamin C 10mg 2 times daily
5. Encourage ante-natal-clinic attendance

6. Refer if the anaemia is severe or if it is associated with another medical disorder

### 1.3 Hospital Level Interventions

- 4 Conservative management as above
- 5 Establish the cause of the anaemia and manage appropriately
- 6 Correct the anemia as appropriate
- 7 Manage complications such as heart failure if they are present

### 1.3 Key Investigations:

- |                    |                |
|--------------------|----------------|
| -Full Blood count; | -Blood x-match |
| -Film appearance;  | -Blood sugar   |

## 2. ABORTION

Abortion is a common gynaecological problem. It is defined as an expulsion of the products of conception before 28 weeks of gestation. There are two major categories that need to be recognized:

1. **Spontaneous Abortion:** It happens on its own
2. **Criminal Abortion:** It happens because there has been some interference by instrumentation or drugs

### Forms of Abortion include

1. Threatened abortion- There is mild bleeding per vaginum with no abdominal pain and cervix is closed.
2. Inevitable abortion- bleeding per vaginum, associated with abdominal pain and opened cervix.
3. Complete abortion- When there is complete expulsion of the products of conception.
4. Incomplete abortion-When only part of the product has been expelled
5. Missed abortion –when there is death and retention of the product of conception
6. Recurrent-when there has been three or more consecutive spontaneous abortion

## ♣ **DIAGNOSTIC CRITERIA**

There is always a history of missed periods with vaginal bleeding and abdominal cramps. There is no fever unless an infection is present. In this instance there is usually an accompanying foul smelling vaginal discharge. Pregnancy test is positive.

## ♣ **TREATMENT GUIDELINES**

### 2..1 **Community Level Interventions**

1. Health Education regarding sexuality
2. Encourage safe sexual practices
3. Stress importance of seeking medical help early for vaginal bleeding that follows periods of amenorrhoea
4. Refer

### 2..2 **Health Centre Level Interventions**

1. Manage as above
2. **For Mild Vaginal Bleeding with no Fever:**
  - ♣ Ergometrine 0.5mg IM STAT
  - ♣ Refer if bleeding persists after 24 hours
3. **For Moderate or Severe Bleeding WITH NO TEMPERATURE:**
  - ♣ Ergometrine 0.5mg IM STAT **PLUS,**
  - ♣ IV Line with 5% Dextrose in Normal Saline if patient is in shock
  - ♣ Refer immediately
4. **If there are signs of infection:**
  - ♣ Benzyl Penicillin 1.2 million unit IM stat PLUS
  - ♣ Metronidazole 400 mg 3 times daily for 7 days
5. **If the internal Os is open**
  - ♣ This may indicate a “threatened” abortion or
  - ♣ It may indicate a “complete” abortion
  - ♣ Manage as appropriate

- ♣ In both above scenarios Ergometrine is not indicated

## 6 If internal Os is open

- ♣ Refer patient for evacuation
- ♣ Administer Ergometrine 0.5 mg IM STAT
- ♣ Put up IV line if ringer lactate or 5% Dextrose in Normal Saline
- ♣ Refer

### 2..3 Hospital Level Interventions

1. Conservative management as above
2. Evaluate the uterus to determine if products of conception are still present
3. **For Severe Infection:**
  - ♣ Ampicillin 1 gram IV STAT then, 500mg IV 6-hourly for 7 days**PLUS,**
  - ♣ Metronidazole 500mg IV 8-hourly for 7 days**PLUS,**
  - ♣ Gentamycin 80mg IV 8-hourly for 5 days

### ♣ Key Investigations:

-Full Blood count;      -HCG;      -X-match;      -Blood sugar

## 3. ECTOPIC PREGNANCY

Ectopic pregnancy is a gynaecological emergency that may present as an acute abdomen. In this condition pregnancy implants outside the uterus and commonly in the fallopian tube, a situation that may lead to rupture. This is a fatal condition.

### ♣ DIAGNOSTIC CRITERIA

There may or may not be a history of missed periods associated with abnormal vaginal bleeding history of 1 or 2 missed periods with mild vaginal bleeding and lower abdominal pain. There may also be marked tenderness with or without rebound tenderness. In severe cases the patient may be very pale, may have a distended abdomen and refuse to straighten her hips and may be in shock. It is a great masquerader and high index of suspicion is needed. Pregnancy test is usually positive.

### ♣ TREATMENT GUIDELINES

#### 3..1 Community Level Interventions

1. Refer without delay

### 3.2 Health Centre Level Interventions

1. Record and monitor vital signs
2. Set IV line with 1 Litre of Normal Saline or Ringer Lactate
3. Advise patient not to eat or drink anything
4. Refer without delay

### 3.3 Hospital Level Interventions

1. Record and monitor vital signs
2. IV line with normal saline
3. Confirm diagnosis (history with or without ancillary investigations)
4. Emergency laparotomy

#### ♣ Key Investigations:

- HCG;
- Ultrasound;
- Full Blood count
- Blood X-match;
- Blood sugar

## 4. ANTE-PARTUM HAEMORRHAGE

Ante-partum haemorrhage is an obstetric emergency defined as bleeding per vagina after 28<sup>th</sup> week of gestation. It is an obstetric emergency. The most dreaded causes of ante-partum haemorrhage are:

1. **Placenta Praevia:** In this condition the placenta is located in the lower segment of uterus (i.e., away from the fundus).
2. **Placenta Abruption:** Here there is early separation of part of the placenta before delivery. This results in the bleeding that is characteristic of this condition

#### ♣ DIAGNOSTIC CRITERIA<sup>8</sup>

##### 4.1 Placenta Praevia

There is usually painless vaginal bleeding with bright red blood.

##### 4.1.2 Abruptio placentae

In this condition the patient has severe abdominal pains with marked tenderness on palpation. Where vaginal bleeding does occur, the blood is dark red in colour. The uterus, on palpation is found to be “woody hard”.

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<sup>8</sup> In both the conditions discussed herein, severe bleeding is accompanied by weakness/lethargy, thirst and shock

♣ **TREATMENT GUIDELINES**

**4.1 Community Level Interventions**

1. Refer immediately.

**4.2 Health Centre Level Interventions**

1. Record and monitor vital signs
2. Put up IV line with Normal saline or Ringer's Lactate
3. Advise the patient not to eat or drink anything
4. Refer Immediately

**4.2.3 Health level interventions**

1. Asses clinical condition
2. Record and monitor vital signs
3. Set up IV line of Normal saline or Ringer's Lactate
4. Emergency ultra sound to confirm diagnosis
5. No oral feeds
6. Appropriate Obstetric intervention

**4.3 Key Investigations**

- |                    |                |
|--------------------|----------------|
| -Full blood count; | -Blood X-match |
| -Blood sugar;      | -Ultrasound    |

**5. POST-PARTUM HAEMORRHAGE**

Post-partum haemorrhage refers to blood loss, per vagina, of more than 500 cc in the period immediately following delivery. This blood loss may be due to genital tract lacerations, retained placenta or uterine inertia.

♣ **DIAGNOSTIC CRITERIA**

**5.1 Uterine Inertia**

In this condition the uterus is soft with no genital lacerations. The placenta is usually expelled complete without any parts being retained in the uterus. The problem here is an inability of the uterus to contract post-delivery. It is a problem usually encountered after a prolonged labour. Other causes include grand multiparity or grossly distended uterus secondary to multiple pregnancy.

## 5.2 Retained Placenta

In this condition parts of the placenta (products of conception) are retained in the uterus secondary to abnormally adherent placenta or other causes during delivery. The uterus is then not able to contract fully and bleeding results. There are usually no genital lacerations. The placenta on inspection is found not to be complete

## 5.3 Genital lacerations

In this condition the uterus is fully contracted and the bleeding occurs from cervical or vaginal tears acquired during delivery

### ♣ TREATMENT GUIDELINES

#### 5.1 Community Level Interventions

1. If the uterus is found, on examination, to be soft then do a “uterus rub” to induce/stimulate the uterus to contract
2. Put in-place a vaginal pack
3. Refer without delay

#### 5.2 Health Centre Level Interventions

##### 1. Uterine Inertia:

- ♣ Catheterise the bladder
- ♣ Uterine rub
- ♣ Ergometrine 0.5mg IM and repeat 10-20 minutes later.
- ♣ Put up an IV line of Normal saline or Ringer’s Lactate
- ♣ Refer if uterus does not contract

##### 2. Genital Laceration:

- ♣ Suture the lacerations
- ♣ If suturing is not possible pack the vagina and refer

##### 3. Retained Placenta

- ♣ Put IV line of Normal Saline or Ringer’s Lactate
- ♣ If the placenta is incomplete, then refer
- ♣ If the entire placenta is still in the uterus, attempt manual removal. If the removal fails or the staff is inexperienced, then refer

### 5.3 Hospital Level Interventions

- ♣ Reassess and set up an IV line of Normal saline or Ringer's Lactate
- ♣ Give nothing by mouth
- ♣ Catheterise bladder

#### 1. Uterine Inertia

- ♣ IV line with Normal saline or Ringer's Lactate
- ♣ Ergometrine 0.5mg IV STAT then repeat in 5 minutes
- ♣ If Ergometrine is not successful follow up with Oxytocin ( 10-20 units IV)

#### 2. Genital Laceration

- ♣ IV line with Normal saline or Ringer's Lactate
- ♣ Suture the lacerations under local/general anaesthesia
- ♣ Give antibiotics
  - Ampicillin 500 mg 4 times daily for 7 days PLUS
  - Metronidazole 400mg twice a day for 7 days

#### 3. Retained Placenta

- ♣ IV line with Normal saline or Ringer's lactate
- ♣ Empty the bladder with catheter
- ♣ Sedate patient and attempt manual removal
- ♣ If not successful refer for specialist care
- ♣ Give
  - Ampicillin 500 mg IV 6 hourly PLUS
  - Metronidazole 500mg IV 8 hourly for 7 days

### 5.3 Key Investigations

-Full Blood;                      -Blood Grouping and X-Match;                      -Blood sugar

## 6. PUPERAL SEPSIS/PYREXIA

Puerperal pyrexia is a persistently elevated temperature of 38<sup>o</sup> C (or more) occurring within the first 10 days of the post-partum period. This may be due to puerperal sepsis that results from urinary tract infection, mastitis, thrombo-phlebitis or other systemic infections such as tuberculosis.

### ♣ DIAGNOSTIC CRITERIA

#### 6.1 Puerperal Sepsis

Characterised by high temperature associated with lower abdominal tenderness and a foul-smelling vaginal discharge. There is also tenderness on bi-manual examination of the uterus

#### 6.2 Urinary Tract Infection

Characterised by high fever with frequency of micturition and dysuria and renal angle tenderness

#### 6.3 Mastitis

Characterised by high temperature in the presence of a swollen and painful/tender breast(s)

#### 6.4 Thrombo-phlebitis

Characterised by high temperature accompanied by pain in the leg or thigh

#### 6.5 Other Systemic Infections

There is high temperature associated with signs and symptoms suggestive of systemic infection

### ♣ TREATMENT GUIDELINES

#### 6.1 Community Level Interventions

1. Give paracetamol 500mg -1gm stat
2. Refer

#### 6.2 Health Centre Level Interventions

##### 1. For Puerperal Sepsis:

- ♣ If no shock: Amoxycillin 500mg orally four times daily for 7 days/  
-Ampicillin 500mg orally four times daily for 7 days**PLUS**,  
-Metronidazole 400mg orally three times daily for 7 days
- ♣ If shock present: Benzyl Penicillin 1.2 million units IM STAT;
- ♣ start IV infusion of Normal saline or Ringer's lactate
- ♣ Elevate legs,

- ♣ Refer immediately
- 2. **For Urinary Tract Infection:**
  - ♣ See section on UTI
- 2. **For Mastitis**
  - ♣ Give analgesic:
    - Paracetamol 500 mg -1 gm 3 times daily for 5 days
  - ♣ Antibiotic:
    - Cloxacillin 500mg 6hourly for 7 days
  - ♣ Continue expressing breast milk
  - ♣ If abscess forms, Refer
- 3. **Thrombo-phlebitis**
  - ♣ Apply firm crepe bandage and refer

### 6.3 Hospital Level Interventions/Specialist

#### 6..3.1 Puerperal Sepsis

- ♣ Resuscitate patient
- ♣ Antibiotic
  - Ampicillin 500mg IV 6 hourly for 7 days
  - Gentamycin 80mg IV 8 hourly for 7 days
  - Metronidazole 500 mg IV 8 hourly for 7 days
- ♣ If no improvement Refer

#### ♣ Key Investigations

- |                    |                |
|--------------------|----------------|
| -Full Blood Count; | -Blood culture |
| -Ultrasound;       | -Vaginal swab  |

## 7. HYPERTENSION IN PREGNANCY

Hypertension disorders of pregnancy are a leading cause of maternal morbidity. Early detection and timely intervention is essential to prevent maternal and prenatal complications.

## 7.1 DIAGNOSTIC CRITERIA

A diastolic blood pressure (BP) of 90mmHg or more, on 2 occasions at least 4 hours apart. It can be with or without proteinuria (presence of 2 proteins or more on reagent strip (dipstick) testing on 2 midstream urine specimen at least 4 hours apart; or  $\geq$  300mg protein in 24 hours specimen of urine.)

## 7.2 TREATMENT GUIDELINES

### 7.2.1 Community Level Intervention

Refer without delay

### 1.2.2 Health Centre Level Intervention

- ♣ Record and monitor vital signs
- ♣ If diastolic blood pressure is 90-109mmHg refer immediately
- ♣ Give Diazepam 10mg STAT orally
- ♣ If diastolic blood pressure is  $\geq$  110mmg or patient has symptoms of headache, visual disturbances, epigastric pain, hyperreflexia, dizziness, fainting or vomiting,
- ♣ Start iv drip with Ringer's lactate, give
  - Hydrallazine 6.25mg IM, OR
  - Nefedipine 5mg S/L STAT, PLUS
  - Diazepam 10mg IM STAT
- ♣ Transfer to hospital

### 1.2.3 Hospital Level Intervention

- ♣ Record and monitor vital signs
- ♣ Iv infusion of ringer's lactate
- ♣ Manage with reference to guidelines or arrangement of hypertensive disorders in Lesotho.

## 8 DIABETES MELLITUS

It is a medical condition complicating pregnancy, characterised by hyperglycaemia and deranged metabolism due to absolute or relative lack of insulin

### TYPES INCLUDE

- 3.2.4 Established diabetics- These are pregnant women already known to have diabetes mellitus and on either insulin or hyperglycaemic agents treatment

- 3.2.5 Gestational diabetes - These are woman who developed symptoms of diabetes mellitus or deranged sugar metabolism during pregnancy

## 8.1 DIAGNOSTIC CRITERIA

Diabetes mellitus is diagnosed if a fasting blood sugar level is  $>8\text{mmol/L}$  or a two-hour post-glucose challenge blood sugar level is more than  $11.1\text{mmol/L}$ .

## 8.2 TREATMENT GUIDELINES

### 8.2.1 Community Level Interventions

- ♣ Refer to chapter on metabolic disorders (Diabetes)
- ♣ Refer patient immediately.

### 8.2.2 Health Centre Level Interventions

- ♣ Refer to chapter on management of diabetes
- ♣ Do not give oral hypoglycaemia drugs in pregnancy
- ♣ Refer patient

### 8.2.3 Hospital Level Interventions

- ♣ Refer to chapter on management of Diabetes mellitus
- ♣ Do not give oral hypoglycaemias agent
- ♣ Refer patient to specialist center

## 8.3 Key investigations

- ♣ Refer to chapter on diabetes mellitus

# 9 PELVIC INFLAMMATORY DISEASE

Pelvic inflammatory disease refers to any infection and resultant inflammation of the female genital tract. There are four distinct stages to the infection:

1. **Stage 1:** Acute salpingitis where there is local adnexal tenderness without rebound involvement
2. **Stage 2:** Acute salpingitis with peritonitis. In this stage there is local adnexal tenderness with guarding and rebound tenderness.

3. **Stage 3:** Acute salpingitis with tubo-ovarian complex. This is a palpable tubal mass that is highly tender
4. **Stage 4:** Tubo-ovarian complex with peritonitis. In this condition there is septicaemia with or without shock

## 9.1 DIAGNOSTIC CRITERIA

The patient presents with fever and lower abdominal pains with or without guarding or rebound tenderness. In some cases pain may be dull with pelvic tubal mass easily detectable by ultra sound. In acute PID ectopic pregnancy and appendicitis have to be ruled out.

## 9.2 TREATMENT GUIDELINES

### 9.2.1 Community Level Interventions

1. Supportive Care
2. Paracetamol 500mg-1g orally STAT
3. Refer

### 9.2.2 Health Centre Level Interventions

1. Supportive Care
2. Counselling about sexually transmitted infections
3. Remove ( IUCD ) if patient has one in place
4. **Medications:**
  - ♣ Erythromycin 500mg 6-hourly orally for 7 days
  - ♣ Doxycycline 200mg STAT then 100mg 2 times daily orally for 7 days
  - ♣ Metronidazole 400mg 8hours orally for 7 days orally
  - ♣ Paracetamol 500mg – 1 g 8-hourly for 5 days
5. Refer severely ill patients or those who do not respond well to treatment

### 9.2.3 Hospital Level Interventions

Supportive care as above

1. **Stage 1:**
  - ♣ Ciprofloxacin 500mg orally, STAT OR
  - ♣ Ofloxacin 400mg orally STAT, PLUS

- ♣ Doxycycline 200mg orally STAT, then 100mg 2 times daily for 7 days OR
- ♣ Tetracycline 500mg 6-hourly for 7 days PLUS
- ♣ Erythromycin 500mg 6-hourly orally for 7 days OR
- ♣ Ceftriaxone 500mg - 1g STAT, PLUS
- ♣ Metronidazole 400mg 8-hourly orally for 7 days

2. **Stage 2:**

- ♣ Metronidazole 500mg IV 8 hourly for 7 days PLUS
- ♣ Augmentin 1.2 grams IV 8-hourly for 7 days

3. **Stage 3:**

- ♣ To the above treatment add Gentamycin 80mg IV 8-hourly for 7 days

4. **Stage 4:**

- ♣ In addition to antibiotic therapy, it may be necessary to do an exploratory laparoscopy/laparotomy

### 9.3 Key Investigations

- |                    |                         |             |
|--------------------|-------------------------|-------------|
| -Full blood count; | -Urea and Electrolytes; | -Ultrasound |
| -Blood culture;    | -Blood sugar            |             |

## 10 PROBLEMS OF THE NEWBORN

Safe and supervised delivery is fundamental. This minimises problems related to birth injuries. A newborn with low Apgar scores who manifests signs of inactivity such as inability to cry, difficulty in breathing, reduced spontaneous movements and refusal to eat has to be identified and managed promptly.

The common causes are birth asphyxia, neonatal infection, prematurity, maternal sedation during labour, metabolic disorders and congenital malformations in the newborn.

### 10.1 DIAGNOSTIC CRITERIA

1. Low Apgar score
2. Pallor or cyanosis
3. Jaundice
4. Bradycardia or tachycardia

5. Heart murmurs

## 10.2 TREATMENT GUIDELINES

### 10.2.1 Community Level Interventions

1. Basic Newborn care (keep baby dry and warm, etc)
2. Refer without delay

### 10.2.2 Health Centre Level Interventions

1. Basic newborn care
2. Administer oxygen if indicated and available
3. Refer for further investigations

### 10.2.3 Hospital Level Interventions

1. Basic newborn care
2. Administer oxygen as indicated
3. IV line: 5%-20% Dextrose
4. Investigate and determine underlying causes
5. Refer if cause identified requires specialist care

## 10.3 Key Investigations

- |                    |                 |                       |
|--------------------|-----------------|-----------------------|
| -Full blood count; | -Blood culture; | -Random blood glucose |
| -Chest X-ray;      | -Urine culture; | -Lumbar puncture      |

### 10.3.1 General Remarks

The major objective is to identify and treat the cause promptly and adequately. It should be emphasized that all high risk obstetric cases should be advised to deliver in the hospital or specialised hospital where indicated.

# 11 PREMATURITY

Prematurity is defined as the birth of an infant before 37 completed weeks of gestation. Associated with this is a birth weight of less than 2.5kg. Factors associated with prematurity are antepartum haemorrhage, infections, multiple pregnancy and early rupture of membranes.

## 11.1 DIAGNOSTIC CRITERIA

1. Infant born before completing 37 weeks of gestation
2. Birth weight of less than 2.5kg

## 11.2 TREATMENT GUIDELINES

### 11.2.1 Community Level Interventions

1. Basic newborn care
2. Refer without delay

### 11.2.2 Health Centre Level Interventions

1. Basic newborn care
2. Breast feed starting 2-6 hours after birth (feeds should be frequent)
3. If the baby is unable to feed then feed expressed breast milk via a naso-gastric tube
4. Refer if any complications of prematurity manifest

### 11.2.3 Hospital Level Interventions

1. Admit
2. Nurse in incubator or infant crib with overhead heater
3. Record and monitor vitas signs
4. Feed via NG-Tube using breast milk expressed from child's mother
5. Administer warm, humidified oxygen
6. Treat infection promptly
7. Administer Vitamin K 0.5-1mg IM STAT
8. Give oral vitamin supplement (syrup form)
9. Ensure that baby is immunised before being discharged
10. Refer complicated cases

## 11.3 Key Investigations

-Full blood count;

-Blood glucose

-Urea and Electrolytes;

-Liver function tests

### 11.3.1 Comment

The main objective in the care of infants born prematurely is to provide stable temperature, feed adequately and to prevent and treat complications or diseases of prematurity.

## 12 NEONATAL JAUNDICE

Neonatal jaundice may develop as a result of liver immaturity and therefore be self-limiting. But severe neonatal jaundice due to excess hyperbilirubinaemia on the brain of the newborn infant (kernicterus) may cause death or be associated with cerebral palsy. Neonatal jaundice therefore may be physiological or pathological.

### 12.1 DIAGNOSTIC CRITERIA

#### 12.1.1 Physiologic Jaundice

In this condition the jaundice usually appears around the 2<sup>nd</sup> day after birth. The newborn usually shows no signs of anaemia or other illness. The condition results from a rise in the levels of un-conjugated bilirubin

#### 12.1.2 Pathologic Jaundice

Here the jaundice appears within the 1<sup>st</sup> 24-hours after birth. The baby is often sick and appears unwell. The condition may result from a rise in the levels of both conjugated and un-conjugated bilirubin.

### 12.2 TREATMENT GUIDELINES

#### 12.2.1 Community Level and Health Centre Interventions

1. Refer all jaundiced newborn children

#### 12.2.2 Hospital Level Interventions

1. Admit
2. Determine and treat the underlying cause
3. Administer Phototherapy if the cause is a rise in un-conjugated bilirubin
4. Refer for specialist care if the cause is not clear

### 12.3 Key Investigations

-Liver function tests;                      -Random blood glucose;                      -Urea and Electrolytes

#### 12.3.1 General Remarks

It should be noted that in cases of neonatal jaundice the risk of brain damage is increased in the presence of hypoxia, hypoglycaemia, acidosis, prematurity, hypothermia, hypo-albuminaemia and haemolysis.

# CHAPTER 12

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## Psychiatric Disorders

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### 1. ACUTE PSYCHOTIC DISORDERS

This very common condition seen in medical and psychiatric practice covers a wide range of disorders of emotional and behavioural function. These disorders are characterised by an acute onset of symptoms such as restlessness, aggressive behaviour, change of mood and change in cognitive functioning. They may include conditions such as delirium (which itself may be due to infection, head injury, drug intoxication, renal dysfunction or the post-ictal state). It may also be associated with other functional disorders such as acute transient psychotic disorder, acute polymorphic psychotic disorder and schizophrenia-like psychosis)

#### 1.1 TREATMENT GUIDELINES

##### 1.1.1 Community and Health Centre Level Interventions

1. Supportive Restraint
2. Open communication
3. Refer

##### 1.1.2 Hospital Level Interventions

###### 1. Medications:

- ♣ Haloperidol 5-10mg 8-12 hourly orally or I.M for sedation
- ♣ Thioridazine 25-50mg 12-hourly, orally
- ♣ Chormethiazole especially in alcohol-related mental disorder

**NB:** Manage the acute functional psychotic disorder as appropriate; treat epilepsy where/if present. Give low doses of non-phenothiazine e.g Haloperidol neuroleptics and anti-depressants in epileptic cases so as not to precipitate fits.

#### 1.2 Key Investigations

- Full blood count;                      -Urea and Electrolytes;                      -Chest X-ray
- CT-Scan when indicated (especially where organic brain disorder is suspected)
- Liver function tests;                      -ECG

## 2 ANXIETY DISORDERS

This is a group of disorders in which anxiety is a common feature. When it occurs as the primary symptom it is referred to as “Generalised Anxiety Disorder”. Other disorders associated with anxiety symptoms are phobias, obsessive-compulsive disorder, and agoraphobia with or without panic, panic disorder and Post-Traumatic Stress Disorder. By far the most common is Generalised Anxiety Disorder.

### 2.1 DIAGNOSTIC CRITERIA

#### 2.1.1 Phobic Disorders

These are characterised by the presence of irrational or exaggerated fear of objects, situations or bodily functions not inherently dangerous or appropriate as a source of the anxiety.

#### 2.1.2 Post-Traumatic Stress Disorder

This is usually precipitated by experience of an overwhelming near-death situation such a Road Traffic Accident, Rape or experience/involvement in war. The main features include recurrent episodes of intrusive recollection of the stressful event, anxiety, palpitations, nightmares and an inability to cope with situations that remind the individual of the stressful event.

#### 2.1.3 Obsessive-compulsive Disorders

These are characterised by the recurrence of intrusive ideas, fantasies and actions that the patient realises as his thoughts and also recognises them as being irrational and embarrassing. The patient finds it difficult to rid his/her mind of these due to antecedent internal resistance. The disorder is usually associated with severe anxiety and may lead to impairment of social and occupational functioning.

### 2.2 TREATMENT GUIDELINES

#### 2.2.1 Community Level Interventions

1. Non-pharmacological measure
2. Teach and encourage adoption of relaxation techniques
3. Encourage regular physical exercise
4. Discuss the underlying source of the anxiety
5. If the condition manifests in a severe manner, refer

#### 2.2.2 Health Centre Level Interventions

1. Reinforce the above
2. Institute counselling and other supportive measures
3. Add medication.
  - ♣ Diazepam 5-10mg nocte for one week (Adult) **OR,**



### 3.2.1 Community level interventions

Refer

### 3.2.2 Health Center level

1. Non-pharmacological measures
2. **Give:**
  - ♣ Diazepam 5-10mg nocte **PLUS,**
  - ♣ Imipramine 50-75mg twice daily
3. Refer

### 3.3 Key investigations

None

## 4. ALCOHOL RELATED MENTAL DISORDERS (ALCOHOLISM)

These include alcohol abuse, alcohol dependence, intoxication, withdrawal. There is an increasing incidence of female drinking that has become a major problem. Alcohol abuse is associated with a lot of neuro-psychosocial problems.

### 4.1 DIAGNOSTIC CRITERIA

1. Subjective compulsion to drink alcohol
2. Drinking at the expense of other important activities
3. Development of a stereotyped pattern of drinking
4. Increased tolerance of alcohol
5. Experiencing withdrawal symptoms if unable to drink for 2-3 days

### 4.2 TREATMENT GUIDELINES

#### 10.2.1 Community Level Interventions

1. Individual counselling
2. Group therapy
3. Couple or family counselling
4. Establishment of voluntary therapy
5. Refer

### 10.2.2 Health Centre Level Interventions

1. Reinforce the need to stop drinking
2. Establish the need to stop drinking
3. Emotional support

### 10.2.3 Hospital Level Interventions

1. Non-pharmacological measures as above
2. Manage delirium tremens and alcohol withdrawal symptoms
  - ♣ Diazepam 5-10mg P.O/I.V slowly every-6-8hrs titrating against the response
  - ♣ Reduce the dose by 20% daily
  - ♣ Discontinue after 5-7 days

#### OR

- ♣ Chlordiazepoxide 25 – 50 mg
  - ♣ Increased or decreased by 20% depending on the state of the patient
  - ♣ Tapered over 5 days
- 3 Refer for detoxification where appropriate
  - 4 **Detoxification:**
    - ♣ Chordiazepoxide 30-40mg per day in divided doses
    - ♣ Carbamazepine 200mg 8-hourly
    - ♣ Thiamine and Nicotinic acid as supplements to all patients; 100mg daily
    - ♣ Monitor fluid and electrolyte balance

### 5 Management of lifetime abstainers

Antabuse may be helpful if patient is cooperative

Carbamazepine/Lithium carbonate if secondary to mood disability

Behavior Therapy

Relaxation training, assertiveness training, self control skills

-Alcohol Anonymous

### 10.3 Key Investigations

-Full blood count;                      -Blood glucose;                      -Liver function tests  
-Chest X-ray especially if malnourished;                      -ECG

## 11 DELIRIUM, DEMENTIA AND OTHER COGNITIVE DISORDERS

These were formally known as “Organic Brain Syndrome”. They present with transient or permanent brain dysfunction and cognitive impairment of varying degrees. Functional disorders such as depression, anxiety and irritability are frequently present. Behavioural disturbance may include problems of impulse control, attention deficit and depression.

### 5.1 DIAGNOSTIC CRITERIA

#### 5.1.1 Delirium

This is a state of impaired consciousness associated with a disturbance of behaviour, affect, thought and perception. It develops suddenly and often gets worse at night. Hallucinations and illusions are common and are usually visual in nature.

#### 5.1.2 Dementia

This is a syndrome presenting as an acquired global impairment of higher mental functions occurring in clear consciousness. The most common symptoms are poor memory, gradual deterioration in social, intellectual and occupational functioning. These changes may also be associated with anxiety, depression or psychotic symptoms.

#### 5.1.3 Amnesic Syndrome

This is characterised by an impairment of memory, particularly short-term memory, as the primary symptom. It occurs in clear consciousness and confabulation may be present. The characteristic feature is the inability to lay down new memory with a variable degree of retrograde amnesia and peripheral neuropathy.

#### 5.1.4 Organic Personality Disorder

This is a disorder characterised by general irritability and a low frustration threshold. It is often accompanied by verbal and physical aggressive behaviour

### 5.2 TREATMENT GUIDELINES

#### 5.2.1 Community Level Interventions

1. Nutritional education
2. Avoidance of alcohol
3. Community trauma reduction efforts
4. Health Education regarding alcohol and substance abuse

5. Refer severe cases

#### 5.2.2 Health Centre Level Interventions

1. Reinforce the above
2. Control confusional state with:
  - Diazepam 10mg OR
  - Lorazepam 2-4mg orally daily
3. Refer

#### 5.2.3 Hospital Level Interventions

1. Non-pharmacological support as described above
2. Establish the diagnosis
3. Manage according to the diagnosis

#### 5.2.4 Delirium Tremens

- ♣ Chlordiazepoxide 25-75mg orally daily
- ♣ Diazepam 5-10mg IM or IV 6-8 hourly.
- ♣ Omit dose if patient is sedated

#### 5.2.5 Dementia

Social support

Occupational therapy assessment

Thioridazine 25-50mg 2 times daily **OR,**

Haloperidol 1.5-2.5mg 3 times daily

#### 5.2.6 Amnesic Syndrome

- ♣ Exclude irritable cause
- ♣ Thiamine 100mg 3 times daily

#### 5.2.7 Organic Personality Disorder

- ♣ Behaviour therapy
- ♣ Carbamazepine 100mg 3 times daily **OR,**

- ♣ Sodium valproate 200 mg 2 times daily

## 6 SCHIZOPHRENIA

This is a commonly occurring psychotic disorder. It constitutes a major distress to the individual sufferer and to the family as a whole. It is a syndrome characterised by a fundamental disturbance of the personality associated with a loss of reality. It has a tendency to run a chronic course in the absence of identifiable organic disease.

### 6.1 DIAGNOSTIC CRITERIA

1. Auditory hallucinations such as audible thoughts or thought echo, running commentary and paranoia
2. Passivity-feeling, impulse feeling, thought withdrawal, thought broadcasting or somatic passivity
3. Delusional perception
4. Form of thought block, irrelevant speech and loosening of association
5. Affect incongruence and flattening or blunting of affect
6. Lack of volition

### 6.2 TREATMENT GUIDELINES

#### 6.2.1 Community Level Interventions

1. Counselling
2. Family therapy
3. Occupational rehabilitation
4. Refer all newly diagnosed/suspected cases

#### 6.2.2 Health Centre Level Interventions

1. Reinforce the above
2. Medication:
  - ♣ Chlopromazine 50-300mg daily in divided doses
3. If not manageable refer

#### 6.2.3 Hospital Level Interventions

- ♣ Haloperidol 5-10mg IM or PO. Repeat every 4-6hrs

- ♣ When calm and manageable, do physical examination
- ♣ Start oral medication if co-operative
  - Chlopromazine 75-300mg daily in divided doses
- ♣ Inj. Akineto 5mg IM if develops extra pyramidal symptoms
- ♣ Refer to specialized care hospital if the patient does not improve

## 7. DEPRESSIVE EPISODE

A depressed mood and loss of interest or pleasure are the key symptoms of depression. Patient may say they feel hopeless, helpless and worthless. There are three degrees of depression with psychotic symptoms.

### 7.1 DIAGNOSTIC CRITERIA

1. Reduced attention and concentration
2. Lack of self esteem
3. Ideas of guilt, black views of future
4. Disturbed sleep and appetite
5. Vague underlying somatic complains
6. Psychotic Depression
7. Delusion- involves ideas of sin, poverty, imminent disasters, e.t.c.
8. Olfactory hallucination
9. Severe psychomotor retardation

#### a. TREATMENT GUIDELINES

### 7.2.1 Community Level Intervention

1. Early detection of symptoms
2. Counselling/support
3. Steps to avoid suicidal attempts
4. Refer

### 7.2.2 Health Centre Level

1. If there is attempt of suicide refer immediately to Hospital

2. Reinforce above
3. Start anti depressant drug treatment
  - ♣ Amitriptyline or Imipramine 50-75mg orally daily
  - ♣ Diazepam 5-10mg nocte for 5-7 days if there is restlessness, agitation or insomnia
4. Do not give Drugs to suicidal patient, always advise relative to keep medicine with them.
5. Counselling/support to patient and family members
6. Explore family/psycho-social factors in history/counseling

### 7.2.3 Hospital Level

1. Medical Treatment if there is suicidal attempt
2. Start anti depressive drugs treatment as above; continue for 4-6 month
  - ♣ Imipramine/Amitriptyline 25-75mg daily
3. Continue with counselling/support
4. Consider family/behaviour therapy-as changing behaviour is considered the effective way to alleviate depression
5. If no response refer to tertiary care level

### 7.3 Key investigations

-Full blood count;

-Blood sugar

## 8. MOOD (AFFECTIVE) DISORDERS

In these disorders, the fundamental disturbance is a change in mood or affect. This mood change is normally accompanied by a change in the overall level of activity and symptoms are wither secondary or easily understood in context of such changes.

### MANIC EPISODE:

Underlying characteristics of this disorder are elevated mood and an increase in the quantity and speed of physical and mental activity. Three degrees of severity are specified e.g. Hypomanic without psychotic symptoms; manic without psychotic symptoms and manic with psychotic symptoms.

### 8.1 DIAGNOSTIC CRITERIA:

1. Persistent elevation of mood
2. Increased energy and activity/decreased need for rest and sleep

3. Over talkativeness
4. Grandiosity, excessive optimism
5. Flight of ideas, pressure of speech
6. Speech becomes incomprehensible
7. Delusions, hallucinations
8. Aggression, violence, self neglect.

## 8.2 TREATMENT GUIDELINES

### 8.2.1 Community level

Early detection of symptoms

1. Protective restraint if violent
2. Safety of others and patient
3. Family Support
4. Referred to Health Centre

### 8.2.2 Health Centre level Intervention

1. Reinforce above
2. Medication
  - ♣ Chlorpromazine 50-300 mg orally daily in divided doses
3. If not manageable refer

### 8.2.3 Hospital Level Intervention

1. Haloperidol 5-10mg I/M or
2. Repeat every 4-6hrs
3. Start oral medication if co-operative
  - ♣ -Inj. Akineton 5mg I/M if develops extra pyramidal symptoms
4. Refer to specialist hospital if patients does not improve

## 8.3 Key investigations

-Full blood count;

-Blood sugar

# CHAPTER 13

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## Ear, Nose and Throat Disorders

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### 1. EPISTAXIS

Nose bleeding is a very common condition. The bleeding can be unilateral or it can be bilateral. It may be due to local causes such as trauma, repeated nose picking, infections such as rhinitis or sinusitis, etc. It can also occur secondary to systemic causes such as hypertension, bleeding disorders, anaemia, leukaemia, etc. Epistaxis can also be due to hormonal factors (puberty and pregnancy) or to environmental factors such as high altitude or extremes of temperature.

#### 1.1 TREATMENT GUIDELINES

It should be remembered that the aim here is to stop the bleeding.

##### 1.1.1 Community Level Interventions

1. With the patient breathing through the mouth pinch the nostrils for 5-10 minutes
2. Apply a cold water pack or an ice pack

##### 1.1.2 Health Centre Level Interventions

1. Manage as above
2. Pack nose with ribbon gauze dipped in adrenalin, liquid paraffin or nitrofurazone
3. If the patient is hypertensive **do not use adrenalin**

##### 1.1.3 Hospital Level Interventions

1. Manage as above
2. Anterior nasal packing/Posterior nasal packing
3. Investigate further if cause not immediately clear/obvious
4. Ligation or cautery of nasal blood vessels
5. Refer if bleeding is part of head injury and give

♣ Chloramphenicol 500mg IV 6 hourly PLUS

♣ X-pen 2 mega units 6 hourly

## 1.2 Key investigations

-Full blood count;

-Clotting profile;

- X-ray

## 2 ALLERGIC RHINITIS

This is quite common throughout the year, but is particularly so during spring. It is a symptom complex that includes hay fever and perennial rhinitis. It is characterised by seasonal or perennial sneezing, nasal congestion, pruritis and often conjunctivitis and pharyngitis. Perennial allergic rhinitis may be due to inhalant substances such as house dust, carpet fibres, smoke and spores; or it may be due to ingested substances such as milk, fish, cheese, drugs, etc.

The condition can also be precipitated by an acute viral respiratory tract infection. Dental infections may lead to chronic maxillary sinusitis.

### 2.1 DIAGNOSTIC CRITERIA

The skin over the area of the sinus that is involved may be tender and swollen. In addition there may be a persistent fever that is associated with a nasal discharge. The nasal mucous membranes is red and may be covered with a muco-purulent discharge. The pain in the sinuses is worsened by stooping or coughing.

#### 2.1.1 Frontal Sinusitis

In this condition the pain is localised in the frontal area of the head and there is a persistent frontal headache

#### 2.1.2 Maxillary Sinusitis

Here the pain is felt in the cheek area below the eyes. There may be an associated toothache and a frontal headache

#### 2.1.3 Ethmoidal Sinusitis

This is characterised by pain seeming to be situated behind and between the eyes and is accompanied by a “splitting headache”

#### 2.1.4 Sphenoiditis

Here pain is referred to the vertex or the patient may complain of a severe occipital headache.

### 2.2 TREATMENT GUIDELINES

#### 2.2.1 Community Level Interventions

1. Steam inhalation to promote drainage of blocked sinuses
2. Analgesics to relieve pain and headache
3. Refer if there is no improvement

### 2.2.2. Health Centre Level Interventions

1. Manage as above
2. Rule out dental infections
3. Initiate antibiotics for at least 7 days
  - ♣ Pen VK 500mg 4 times daily **OR**,
  - ♣ Erythromycin 500mg 4 times daily

### 2.2.3. Hospital Level Interventions

1. Manage as above
2. Antibiotics
3. Antihistamines:
  - ♣ Chlorpheniramine 2-4mg 3 times daily OR
  - ♣ Astemizole 10mg OD
4. Nasal Decongestants:
  - ♣ Oxymetazoline or Xylometazoline nasal drops
5. Steam inhalation using Benzoin tincture.

## 2.3 Key Investigations

-Full blood count;

-X-rays of Paranasal Sinuses

## 3. VESTIBULITIS

This is a diffuse infection of the skin of the anterior nares and may occur due to frequent trauma such as occurs in constant nose picking. Persistent nasal discharge leads to excoriation and infection of the skin of the nasal vestibule

### 3.1. TREATMENT GUIDELINES

#### 3.1.1. Community Level Interventions

1. Counsel on avoidance of nasal picking or forceful blowing of the nose
2. Analgesics for pain control
  - ♣ Paracetamol 500mg-1g 3 times daily for 5 days
3. Refer if condition does not improve

### 3.1.2. Health Centre Level Interventions

1. Institute antibiotic therapy
  - ♣ Pen VK 500mg 4 times daily for 7 days OR
  - ♣ Erythromycin 500mg 4 times daily for 7 days
2. Analgesics for pain control
  - ♣ Paracetamol 500mg -1g 3 times daily for 5 days
3. Nasal decongestants
  - ♣ Oxymetazoline or Xylometazoline
4. Refer if condition deteriorates

### 3.1.3. Hospital and Specialist Interventions

1. Manage as above
2. Local application of Neomycin or Polymyxin with Hydrocortisone ointments is indicated
3. Treat underlying cause (i.e., infective agent)

## 3.2 Key Investigations

-Full blood count;

-X-ray

## 4. EXTERNAL OTITIS

This is an inflammation of the skin lining the external auditory canal. It can be acute (furuncle/pimple) or it can be chronic. This condition usually comes about when a patient scratches his/her ear with a sharp object resulting in lacerations that then become infected

### 4.1. DIAGNOSTIC CRITERIA

Typical presentation is that of pain and swelling over the pinna and external auditory canal. (It)The may or may not be an associated ear discharge.

### 4.2. TREATMENT GUIDELINES

#### 4.2.1. Community Level Interventions

1. Analgesics for pain control
  - Paracetamol 500mg-1g 3 times daily for 5 days or
  - ASA 300mg-600mg 3 times daily for 5 days

2. Keep ears dry and do not scratch

#### 4.2.2. Health Centre Level Interventions

1. Manage as above
2. Institute antibiotic therapy

–Adults:

- ♣ Pen VK 500mg 4 times daily for 7 days
- ♣ Erythromycin 500mg 4 times daily for 7 days or
- ♣ Cotrimoxazole 800/160 mg 2 times daily for 7 days

-Children:

- ♣ Pen VK 125mg 4 times daily
- ♣ Erythromycin 125 mg 4 times daily or
- ♣ Cotrimoxazole 5 ml-7.5 ml 2 times daily

3. Refer if no improvement

#### 4.2.3. Hospital Level/Specialist Interventions

1. Analgesics for pain management as above
2. Antibiotics as above
3. Clean ear of debris and pack with Beclamethasone or Hydrocortisone ointment
4. Abscess may require Incision and Drainage

#### 4.3. Key investigations

-Full blood count;

-Pus swab

-Blood sugar;

-X-ray

## 5. OTITS MEDIA

Acute otitis media is a pyogenic bacterial infection in the middle ear. It usually occurs secondary to upper respiratory infections. It is most common in young children. The common causative bacteria isolated tend to differ depending on the age of the patient.

## 5.1. DIAGNOSTIC CRITERIA

Patients usually present with a severe headache associated with fever. Nausea and vomiting may also occur. The tympanic membrane is found to be erythematous and may be bulging. Ear discharge follows perforation of the tympanic membrane. The child is often crying and is irritable.

## 5.2. TREATMENT GUIDELINES

### 5.2.1. Community Level Interventions

1. Tepid sponging to reduce temperature
2. Analgesics for pain control

-Adults:

- ♣ Paracetamol 500mg-1g 3 times daily or
- ♣ ASA 300mg- 600mg 3 times daily

-Children:

- ♣ Paracetamol 2.5ml-5ml 3 times daily
3. Advice on maintenance of the child's nutrition and hydration
  4. Refer

### 5.2.2. Health Centre Level Interventions

1. Manage as above
2. **Medication:** - give antibiotics for 7 days
  - ♣ Pen VK 125-250mg 3 times daily in children
  - ♣ Pen VK 500mg 3 times daily in adults **OR,**
  - ♣ Amoxycillin 125-250mg 3 times daily in children
  - ♣ Amoxicillin 500mg 3 times daily in adults **OR,**
  - ♣ Erythromycin 125-250 mg 3 times daily in children
  - ♣ Erythromycin 250-500mg 3 times daily in adults
3. Refer if there is poor response or if complications<sup>9</sup> develop

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<sup>9</sup> The usual complications in this condition are: Acute Mastoiditis, Facial Palsy and Meningitis

### 5.2.3. Hospital Level Interventions

1. Manage as above
2. Treat complications if any develop

### 5.3 Key investigations

-Full blood count;

-Pus swab

-Blood sugar;

-X-ray

## 6. MASTOIDITIS/MENINGITIS

### 6.1. TREATMENT GUIDELINES

#### 6.1.1. Routine Treatment

1. Ampicillin 125-500mg IV 6-hourly **PLUS**,
2. Cloxacillin 50-100 mg/kg 6-hourly **PLUS**,
3. Metronidazole 7.5mg/kg 8-hourly

#### 6.1.2. Treatment in the Presence of Penicillin Allergy

1. Erythromycin 25-50mg/kg 6-hourly **PLUS**,
2. Metronidazole 7.5mg/kg 8-hourly orally

#### 6.1.3. Treating an Abscess

1. Drain the abscess
2. Institute antibiotic therapy as above or as per culture and sensitivity

## 7. TONSILLITIS

Acute tonsillitis is mainly a disease of childhood but is also frequently seen in adults. It constitutes an acute inflammation of the tonsils. The main organism implicated in the causation of this condition is  $\beta$ -Haemolytic Streptococci. Tonsillitis accounts for approximately 5% of outpatient morbidity and 25% of ENT consultations in the country.

### 7.1. DIAGNOSTIC CRITERIA

The patient presents with a sore throat and difficulty and pain on swallowing. Physical examination reveals enlarged and inflamed tonsils. There may be multiple white spots on the inflamed tonsillar surface. A sudden onset fever is also typical of this condition.

## 7.2. TREATMENT GUIDELINES

The main aim with treatment is to eradicate the infection and prevent the development of complications such as acute rheumatic fever and acute glomerulonephritis.

### 7.2.1. Community Level Interventions

1. Gargle with warm saline
2. Analgesics for pain control
  - ♣ Paracetamol 500 mg -1g 3 times daily in adults OR
  - ♣ ASA 300mg -600 mg 3 times daily for 5 days
  - ♣ Paracetamol 125 mg-250 mg 3 times daily in children for 5 days
3. Refer all cases

### 7.2.2. Health Centre Level Interventions

1. Reinforce non-pharmacological management as described above
2. Emphasise the importance of completing any medication prescribed
3. **Medication:**
  - ♣ Pen VK Syrup 125mg -250mg 6-hourly for 7 days in children
  - ♣ Pen VK tabs 500mg 6-hourly for adults **OR,**
  - ♣ Erythromycin syrup 125mg -250mg 6-hourly for 7 days for children
  - ♣ Erythromycin 250mg -500mg 6-hourly for adults
  - ♣ Analgesics for pain control as above
4. Refer any cases where complications<sup>10</sup> are present

### 7.2.3. Hospital Level Interventions

1. Reinforce above management
2. **Where Organism has not been isolated:**
  - ♣ Benzyl Penicillin IV 250,000 units/kg/24hrs in 4 divided doses for 7 days plus

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<sup>10</sup> The “usual” complications here are rheumatic fever, Glomerulonephritis anaerobic Organism: Metronidazole 400mg s, h/o rheumatic fever or rheumatic heart disease, peri-tonsillar abscess or other localised complications

- ♣ Metronidazole 7.5mg/kg 8hly for 7 days (Children)
- ♣ Metronidazole 400 mg thrice daily for 7 day (Adults)

3. **Where organism is known**

**Streptococci:** Benzyl Penicillin as above or

- ♣ Pen VK 125ml- 250ml 6 hourly orally for 7 days in children
- ♣ Pen VK 500mg-1gm 6 hourly orally for 7 days in adults

**Staphylococci :**

- ♣ Cloxacillin IV 50-100mg/kg/24hrs in 4 divided doses for 7 days (Children)
- ♣ Cloxacillin 500mg 3 times daily for 7 days (Adults)
- ♣ Flucloxacillin 125mg-250mg 6 hrly for 7 days (Children)
- ♣ Flucloxacillin 500mg 4 times daily for 7 days (Adults)

**Anaerobic:**

- ♣ Metronidazole as above

**Haemophilus Influenza:**

- ♣ Ampicillin 50mg-100mg /kg/24hrs iv in 4 divided doses for 7 days (Children)
- ♣ Ampicillin 500mg-1gm IV 6hrly for 7 days (Adult)
- ♣ Amoxycillin 125mg-250 mg 8 hrly for 7 days (Children)
- ♣ Amoxycillin 500mg 4 times daily for 7 days (Adult)

3. **In the presence of Penicillin Allergies**

**Streptococci:**

- ♣ Erythromycin 25mg -50mg /kg/24hrs im/iv 4 divides drops for days
- ♣ Erythromycin 500mg thrice daily for 7 days ( Adult)

**Staphylococci:**

- ♣ Clindamycin 10mg-40mg /kg/24hrs IV 3 divided doses for 7 days (Children)
- ♣ Clindamycin 15mg-25mg /kg/24hrs oral..

### **Haemophilus Influenza:**

- ♣ Cefotaxime 50-100mg /kg/24hrs iv in 3 divided doses for 7 days OR
- ♣ Cefotaxime 1gm thrice daily in 7 days (Adult)

#### **4. In the presence of Penicillin and Cephalosporin Allergies**

- ♣ Chloramphenicol 50mg-100mg 1kg/24hrs IV/orally in 4 divided doses for  
7 days (Children)

- ♣ Chloramphenicol 500mg-1gm thrice daily in 7 days (Adults)

#### **5. For Peri-tonsillar or Retropharyngeal Abscesses**

- ♣ Incision and Drainage
- ♣ Antibiotics as indicated above

#### **6. Tonsillectomy where indicated once the infection is under control**

### **7.4 Key Investigations**

-Full blood count;

-Throat swab

## **8 PHARYNGITIS**

This is an inflammation of the pharyngeal mucosa following a common cold or mucosal irritation by irritants applied locally.

### **8.1 DIAGNOSTIC CRITERIA**

The patient complains of a sore throat and fever. Examination reveals a diffuse congestion of the pharyngeal wall, uvula and adjacent tissues.

### **8.2 TREATMENT GUIDELINES**

#### **8.2.1 Community Level Interventions**

- 1.** Analgesics for pain control
  - ♣ Paracetamol 500mg-1g 3 times daily for 5 days (adults) OR
  - ♣ ASA 300mg-600mg 3 times daily for 5 days
  - ♣ Paracetamol 125mg-250mg 3 times daily 5 days (children)
- 2.** Warm saline gargles
- 3.** Refer if there is no improvement

### 8.2.2 Health Centre Level Interventions

1. Manage as above
2. Antibiotics if infection is present
  - ♣ Pen VK 500mg-1gm 4 times daily for 7 days (adults)
  - ♣ Pen VK 125mg-250mg 4times daily (children) OR
  - ♣ Erythromycin 500 mg 4 times daily for 7 days in (adults)
  - ♣ Erythromycin 125mg-250mg 4 times daily for 7 days (children)
3. Refer if there is no improvement

### 8.2.3 Hospital Level Interventions

1. Determine underlying cause and treat as appropriate

### 8.3 Key investigations

-Full blood count;

-Throat swab;

-Blood sugar

## 9 LARYNGITIS

Acute Laryngitis usually follows viral infections of the upper respiratory tract. Bacteria are secondary invaders. Predisposing factors include excessive vocal use, smoking, exposure to irritant fumes, intubation procedures and others.

### 9.1 DIAGNOSTIC CRITERIA

The patient typically presents with a hoarse voice and discomfort in the throat. A dry cough may occasionally be present. Dyspnoea may be seen in severe cases

### 9.2 TREATMENT GUIDELINES

#### 9.2.1 Community Level Interventions

1. Rest the voice
2. Steam inhalation
3. Analgesics
  - ♣ Paracetamol 500mg-1g 3 times daily for 7 days (adults) OR
  - ♣ ASA 300 mg - 600 mg 3 times daily for 7 days
  - ♣ Paracetamol 125mg-250mg 3 times daily for 7 days (children)

4. Refer if there is no improvement

#### 9.2.2 Health Centre Level Interventions

1. Manage as above
2. Institute antibiotic therapy if indicated
  - ♣ Pen VK 500mg-1g 4 times daily for 7 days (Adults)
  - ♣ Pen VK 125mg-250mg 4 times daily for 7 days (children) OR
  - ♣ Erythromycin 500mg 4 times daily for 7 days (adults)
  - ♣ Erythromycin 125mg -250mg 4 times daily for 7 days (children)

#### 9.2.3 Hospital Level/Specialist Interventions

1. Manage as above
2. Do indirect/direct laryngoscopy to ascertain the cause
3. Administer steroids (locally/spray or IV)
  - ♣ Hydrocortisone 100 mg IV 8 hourly 2 days
  - ♣ Prednisone 20 mg-30 mg orally daily for 5 days and taper accordingly
4. Treat the cause
5. Perform a Tracheostomy in severe cases

#### 9.3 Key investigations

-Full blood count;

-Blood sugar

## 10 VERTIGO

Meticulous history-taking is an important tool as far as vertigo is concerned. The first order of business is to determine whether there is really vertigo, or whether what presents is a syncopal attack (patient gets a blackout, falls momentarily and quickly regains consciousness) or just giddiness. In vertigo there may be rotating sensation associated with vomiting.

### 10.1 DIAGNOSTIC CRITERIA

Vertigo in the presence of an ear discharge indicates labyrinthitis. Vertigo of central origin is associated with other neurological features. Positional vertigo is seen in critical patients only. Upper respiratory Catarrh followed by vertigo may be indicative of labyrinthitis. Patients on ototoxic medication may also get vertigo. Vertigo associated with hearing loss and tinnitus may be due to Miniere's disease. Vertigo can also present as one of the complications in hypertension.

## 10.2 TREATMENT GUIDELINES

### 10.2.1 Community Level Interventions

1. Calm the patient
2. Refer

### 10.2.2 Health Centre Level Interventions

1. Institute Vestibular Suppressants
  - ♣ Promethazine 12.5-25mg 2 times daily OR
  - ♣ Prochlorperazine 5mg-10mg 3 times daily for 5 days
2. Refer for further management if no response

### 10.2.3 Hospital Level/Specialist Interventions

1. Identify the cause of the vertigo and manage accordingly

## 10.3 Key investigations

- Full blood count; -X-ray

# CHAPTER 16

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## Dental Disorders

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### 1. BACTERIAL INFECTIONS

#### 1. DENTAL CARIES:

Is a bacterial destruction of the tooth substance caused by acids as a co-product by bacterial plaque and carbohydrates.

#### 1.1. DIAGNOSTIC CRITERIA

Clinically in its early stages, can be seen as a white spot on the smooth surface of the tooth. In a later stage appears as a black spot, or even a cavity in the tooth surface. Patient normally complains of pain on hot/cold intakes. Pain persists for a short time or subsides immediately after the removal of the stimulus.

#### 1.2. TREATMENT GUIDELINES

##### 1.2.1 Community Level:

Health Education on: reduction of sugar intake, intake of optimum level of fluoride in water, fluoridated-toothpaste, milk, or salt.

##### 1.2.2 Health Centre:

- As above.
- Analgesics Paracetamol 250/500mg tds.
- Referral to Dentist.

##### 1.2.3 Hospital:/Dentist

- History taking.
- X-Ray.
- Filling.

#### 1.3 Key investigations

- x-ray
- Full blood count
- Blood sugar

## 2 PERIODONTAL DISEASES:

A: Chronic periodontal diseases

B: Acute periodontal diseases

### A. CHRONIC PERIODONTAL DISEASES:

#### 1. CHRONIC GINGIVITIS:

It is a bacterial infection of the gingival tissues.

##### 1.1 DIAGNOSTIC CRITERIA:

The clinical feature is characterized by the triad of swelling, redness and bleeding of the gingiva in gentle probing.

##### 1.2 TREATMENT GUIDELINES:

###### 1.2.1 COMMUNITY LEVEL:

Health education on proper oral hygiene, smoking cessation, and regular visits to dental services.

###### 1.2.2 HEALTH CENTRE:

- As above.
- Clorhexidine gluconate 0.2% mouth rinse OR
- Hydrogen peroxide mouth rinse.
- Tetracycline 250 mg qds for 5 days (avoid in pregnancy and teeth calcification period) OR
- Erythromycin 250/500 mg qds for 5 days. OR
- Phenoxymethyl penicillin Tabs 250/500 mg qds for 5 days PLUS
- Metronidazole 200 mg tds for 5 days.
- Ibuprofen 400mg tds for 5 days.

###### 1.2.3. HOSPITAL LEVEL

- As above.
- Scaling (professional removal of calculus).
- Advanced cases need surgical management.

##### 2.3 KEY INVESTIGATIONS

- Full blood count
- Blood sugar

#### 3. CHRONIC PERIODONTITIS:

Is a bacterial infection of the periodontal tissues (soft and hard tissues, which support the teeth).

##### 3.1 DIAGNOSTIC CRITERIA:

Clinically characterized by development of periodontal pockets, resorption of the alveolar bone (seen on the X-ray), and mobility of teeth in advance cases.

### 3.2. TREATMENT GUIDELINES:

#### 3.2.1. COMMUNITY LEVEL:

Health education on: proper oral hygiene, smoking cessation, and regular visits to dental services.

#### 3.2.2. HEALTH CENTRE:

- As above.
- Clorhexidine gluconate 0.2% mouth rinse OR.
- Hydrogen peroxide mouth rinse.
- Tetracycline 250 mg qds for 5 days (avoid in pregnancy and teeth calcification period). OR
- Erythromycin 250/500 mg qds for 5 days. OR
- Phenoxymethyl penicillin Tabs 250/500 mg qds for 5 days PLUS
- Metronidazole 200 mg tds for 5 days.
- Ibuprofen 400mg tds for 5 days.
- Refer to dentist

#### 3.2.3 HOSPITAL LEVEL

- As above.
- X-Rays.
- Scaling (professional removal of calculus).
- Advanced cases need surgical management (extractions, splinting)

### 3.3. KEY INVESTIGATIONS

- X-ray
- Full blood count
- Blood sugar.

## B. ACUTE PERIODONTAL DISEASES:

### 1. ACUTE NECROTISING ULCERATIVE GINGIVITIS (ANUG):

Is a bacterial infection caused by fusobacterium and borellia Vincent.

#### 1.1. DIAGNOSTIC CRITERIA:

Characterise by: painful papillary yellowish-white ulcers, which bleed readily. Patients also often complain of a metallic taste and the sensation of their teeth being wedged apart. Regional lymphadenitis, fever, and malaise may occur in some cases. It is associated with poor oral hygiene.

#### 1.2. TREATMENT GUIDELINES:

##### 1.2.1. COMMUNITY LEVEL:

- Health education on: proper oral hygiene, smoking cessation, and regular visits to dental services.
- Refer to Health centre

**1.2.2. HEALTH CENTRE:**

- As above.
- Analgesics, Paracetamol 250/500 tds for 5 days.
- Metronidazole 200/400 mg tds for 5 days.
- Refer to Dentist if persists.

**1.2.3. HOSPITAL LEVEL**

- ♣ As above.
- ♣ Thorough Debridement

**1.3. KEY INVESTIGATIONS**

- Full blood count
- Blood sugar
- Biopsy (where indicated )

**5. ACUTE PERIODONTITIS (PERIODONTAL ABSCESS):**

It is a localized collection of pus within a periodontal pocket. It occurs either due to the introduction of virulent organisms into an existing pocket or decreased drainage potential. May also occur due to impaction of a foreign body such as a fishbone in a pre-existing pocket or even in an otherwise healthy periodontal membrane.

**1.1. DIAGNOSTIC CRITERIA:**

Characterized by a collection of pus in the buccal sulcus near an affected tooth/teeth. Need to distinguish from apical abscess.

<b>Apical abscess</b>	<b>Periodontal abscess</b>
Non-vital	Usually vital
TTP	Pain on lateral movements
May be mobile	Usually mobile
Loss of lamina dura on X-Ray	Loss of alveolar crest on X-Ray

**1.2. TREATMENT GUIDELINES:**

**1.2.1. COMMUNITY LEVEL:**

- Health education on: proper oral hygiene, smoking cessation, and regular visits to dental services.
- Refer to Health centre.

**1.2.2. HEALTH CENTRE:**

- As above.
- Emergency; incision and drainage under LA.
- Debridement of the pocket.
- Systemic antibiotic, e.g. metronidazole 400 mg tds &/or amoxicillin 250-500 mg tds for 5 days.

### 1.2.3. HOSPITAL LEVEL

- As above.
- Conventional treatment for periodontal pockets, combined periodontal-endodontic lesion.

### 1.3 KEY INVESTIGATIONS

- Full blood count
- Blood sugar

### 6. DENTO-FACIAL INFECTIONS:

The vast majority of infections in this area requiring surgical treatment are bacterial, usually arising from necrotic pulps, periodontal pockets, or pericoronitis. Rarely, can be life threatening if allowed to progress, e.g. to the fascial spaces of the neck or the cavernous sinus, or as a focus for subacute bacterial endocarditis. Need to differentiate between a cellulitis and an abscess.

#### DIFFERENCES BETWEEN CELLULITIS AND ABSCESS:

Characteristic	Cellulitis	Abscess
Duration	Acute	Chronic
Pain	Severe	Mild
Size	Large	Small
Location	Diffused	Localised
Palpation	Daughy-indurated	Fluctuant
Degree of seriousness	Greater	Less
Presence of pus	No	Yes
Bacteria	Aerobic	Anaerobic

#### PRINCIPLES OF THERAPY OF ODOTOGENIC INFECTIONS:

- I. Determine the severity of the infection.
- II. Evaluate the status of the patient's host defence mechanism.
- III. Determine whether a general dentist or specialist should treat the patient.
- IV. Treat the infection surgically. [Incision & Drainage].
- V. Support the patient medically. [Intake of fluids].
- VI. Choose and prescribe the appropriate antibiotic.
- VII. Evaluate the patient frequently.

#### Criteria for referral to a specialist:

1. Rapidly progressive infection.
2. Difficulty in breathing.
3. Difficulty swallowing.
4. Fascial space involvement.
5. Elevated temperature [greater than 101 F].
6. Severe jaw trismus. [Less than 10mm].
7. Toxic appearance.
8. Compromised host defences

#### Indications for use of antibiotics:

1. Acute –onset infection.
2. Diffuse swelling.
3. Compromised host defences.
4. Involvement of Fascial spaces.
5. Severe pericoronitis.
6. Osteomyelitis

## **6. DENTO-FACIAL ABSCESS:**

### **6.1. DIAGNOSTIC CRITERIA:**

Is usually simple and clinically based on pain, swelling, hotness, and discharge of pus.

### **6.2 TREATMENT GUIDELINES:**

#### **6.2.2 COMMUNITY LEVEL:**

- Health education on: proper oral hygiene, smoking cessation, and regular visits to dental services.
- Refer to Health centre.

#### **6.2.3 HEALTH CENTRE LEVEL:**

As above.

Incision and drainage.

Antibiotics, Amoxicillin OR Phenoxymethyl penicillin 500 mg qds 5/7 days.

Metronidazole 400 mg tds 5/7 days.

Paracetamol 500 mg tds 5/7 days.

#### **6.2.4 HOSPITAL LEVEL:**

As above.

Incision and drainage.

Antibiotics, Amoxicillin OR Phenoxymethyl penicillin 500 mg qds 5/7 days.

Metronidazole 400 mg tds 5/7 days.

Paracetamol 500 mg tds 5/7 days.

Extraction of the causing tooth/teeth.

### **6.3 KEY INVESTIGATIONS**

-Full blood count

-Blood sugar

## **7. LUDWING'S ANGINA:**

It is an emergency and life threatening condition. Aetiology: Periapical infection and pericoronitis around lower third molars, it spreads to sublingual space the to opposite sublingual space, sub mental space is infected by lymphatic spread.

### **7.1. DIAGNOSTIC CRITERIA:**

It is a massive firm cellulitis affecting the submandibular + sublingual + sub mental spaces bilaterally. Signs and symptoms: External massive firm bilaterally submandibular swelling with some extension down the anterior part of the cheek to the clavicles. Internal swelling develops rapidly and involves the sublingual tissues, the floor of the tongue raised to the palate and more extent is protruded from the mouth –illness and pyrexia, deglutition and speech are difficult, dyspnoea, oedema of the glottis and resurging obstruction within 12-24h.

### **7.2. TREATMENT GUIDELINES:**

### 7.2.1. COMMUNITY LEVEL:

- Health education on: proper oral hygiene, smoking cessation, and regular visits to dental services.
- Refer immediately to Health centre.

### 7.2.2. HEALTH CENTRE:

As above.

Immediately Incision and drainage.

Antibiotics, Amoxycillin 500mg tds, OR Phenoxymethyl penicillin 500 mg IV qds 5/7 days.

Metronidazole IV 400 mg tds 5/7 days.

Paracetamol 500 mg tds 5/7 days.

### 7.2.3. HOSPITAL:

As above.

Immediately Incision and drainage with U shaped incision of submandibular region.

Antibiotics, Amoxycillin 500 mg tds, OR Phenoxymethyl penicillin 500 mg qds 5/7 days.

Metronidazole 400 mg tds 5/7 days.

Paracetamol 500 mg tds 5/7 days.

Extraction of the causing tooth/teeth.

## 3. VIRAL INFECTIONS

### AN APPROACH TO ORAL ULCERATION:

Oral ulceration is probably the commonest oral mucosal disease seen; it may also be the most serious. Therefore, to facilitate diagnosis, there is a need for asking about the following:

**DURATION:** If more than 3 weeks, referral for biopsy is mandatory.

If for recent onset, ask whether blistering preceded it. Are the ulcers multiple? Is any other part of the body is affected and have similar ulcers been experienced before? Then look at the site &/or distribution of ulcers.

**BLISTERING** preceding the ulcers suggests herpetic gingivostomatitis. Blistering with lesions elsewhere in the body suggests erythema multiforme, or hand foot and mouth disease.

**DISTRIBUTION:** Limited to the gingival suggests acute narcotising ulcerative gingivitis. Unilateral distribution suggests herpes zoster. Under a denture or other appliance suggests traumatic ulceration.

**RECURRENCE** of ulcers after apparent complete resolution is characteristic of recurrent aphthae.

**PAIN:** The presence or absence of pain is not particularly useful diagnostically, although the character of pain may be of value.

### **ULCERS WHICH NEED EARLY DIAGNOSIS include:**

*Herpes Zoster* As early aggressive treatment with Acyclovir may reduce post-herpetic neuralgia.

*Erythema multiforme* In order to avoid re-exposure to the antigen.

*Erosive Lichen Planus* As this may benefit from systemic steroids.

*Oral Squamous Cell Carcinoma* is for obvious reasons.

## **PRIMARY HERPETIC GINGIVOSTOMOTITIS:**

### **1.1 DIAGNOSTIC CRITERIA:**

Presented as a widespread stomatitis with vesicles, which break down to form shallow painful ulcers; enlarged, tender cervical lymph nodes; fever and general malaise for 10-14 days.

### **1.2 TREATMENT GUIDELINES:**

#### **1.2.1 COMMUNITY LEVEL:**

- Health education on: proper oral hygiene, smoking cessation, and regular visits to dental services.
- Refer immediately to Health centre.

#### **1.2.2 HEALTH CENTRE:**

- As above.
- Topical and systemic analgesia.
- A soft or liquid diet with high fluid intake.
- Clohexidine mouthwash tds for 7 days.
- Acyclovir lozenges 200 mg 5 times' daily for 5 days. OR
- Severely ill patients or immunocompromised patients should be referred to hospital.

#### **1.2.3 HOSPITAL LEVEL:**

- As above.
- Severely ill patients or immunocompromised patients should receive Acyclovir tablets 200/400 mg 5 times daily for 5 days.

## **2. HERPES LABIALIS/ COLD SORES:**

### **2.1 DIAGNOSTIC CRITERIA:**

Usually occurs on the skin of lip or nose supplied by one branch of trigeminal nerve, classically at the mucocutaneous junction, or rarely as intra-oral blister.

### **2.2 TREATMENT GUIDELINES:**

#### **2.2.1 COMMUNITY LEVEL:**

- Health education on: proper oral hygiene, smoking cessation, and regular visits to dental services.
- Refer immediately to Health centre.

#### **2.2.2 HEALTH CENTRE:**

- As above.
- Topical and systemic analgesia.

- A soft or liquid diet with high fluid intake.
- Clohexidine mouthwash tds for 7 days.
- Acyclovir cream 5% 5 times daily for 5 days.
- Severely ill patients or immunocompromised patients should be referred to hospital.

### **2.2.3 HOSPITAL:**

- As above.
- Severely ill patients or immunocompromised patients should receive Acyclovir tablets 200/400 mg 5 times daily for 5 days.

## **3. HERPES ZOSTER:**

The virus responsible for herpes Zoster (herpes virus varicella) is a DNA virus and responsible of two completely dissimilar diseases in humans—chickenpox and herpes zoster. There is little evidence that contact with one of these diseases is responsible for the initiation of the other.

### **3.1 DIAGNOSTIC CRITERIA:**

The characteristic superficial lesion of herpes zoster is a vesicular eruption in an area of distribution of a sensory nerve. When the eruption affects the trigeminal nerve, the facial skin and the oral mucosa in the sensory area may be affected. Ophthalmic division is more affected division. The initial symptoms are of pain and tenderness in the affected area, the prodromal phase may last for 2-3 days and is succeeded by appearance of vesicles in a rash, and this marks the secondary infection. When the ophthalmic division is involved there may be corneal ulceration, the distribution of vesicles intra-orally. Unilateral and often confined to the area of a single branch of trigeminal nerve. If untreated the vesicles and oral ulceration fade over a period of 2-4 weeks, following fading of the vesicles the major complication of the condition – post – herpetic neuralgia and may persist for a year.

### **3.2 TREATMENT GUIDELINES:**

#### **3.2.1 COMMUNITY LEVEL:**

- Health education on: proper oral hygiene, smoking cessation, and regular visits to dental services.
- Refer immediately to Health centre.

#### **3.2.2 HEALTH CENTRE:**

- As above.
- Topical and systemic analgesia.
- A soft or liquid diet with high fluid intake..
- 2% tetracycline mouth wash qds for 7 days.
- For the ulceration of the skin is the use of 90% Idoxynidine.
- Severely ill patients or immunocompromised patients should be referred to hospital.

#### **3.2.3 HOSPITAL:**

- As above.
- Severely ill patients or immunocompromised patients should receive Acyclovir tablets 200/400 mg 5 times daily for 5 days.

## 4. FUNGAL INFECTIONS

### 1. ACUTE CANDIDIASIS:

#### 1.1 DIAGNOSTIC CRITERIA:

It appears as creamy lightly adherent plaques on erythematous oral mucosa, usually on the cheek, palate, or oropharynx. Occasionally symptom-less, but more commonly causes discomfort on eating. The plaque can be gently stripped off, leaving a raw under surface.

#### 1.2 TREATMENT GUIDELINES:

##### 1.2.1 COMMUNITY LEVEL:

- Health education on: proper oral hygiene, smoking cessation, and regular visits to dental services.
- Refer immediately to Health centre.

##### 1.2.2 HEALTH CENTRE:

- As above.
- Nystatin sugar free suspension 100000 units rinsed, then swallowed qds for 10 days. OR
- Nystatin pastille 1 qds for 10 days.
- Clohexidine mouth wash qds for 7 days.
- Refer to hospital if persists.

##### 1.2.3 HOSPITAL:

- As above.
- Investigate immunosuppression and treat accordingly.
- Fluconazole 50 mg OD for 10 days.

### 2. ANGULAR CHEILITIS:

#### 2.1 DIAGNOSTIC CRITERIA:

It appears as red-cracked, macerated skin at the angles of the mouth, often with a gold crust.

#### 2.2 TREATMENT GUIDELINES :

##### 2.2.1 COMMUNITY LEVEL

- Health education on: proper oral hygiene, smoking cessation, and regular visits to dental services.
- Refer immediately to Health centre.

##### 2.2.2 HEALTH CENTRE:

- As above.
- Miconazole cream for 10 days.
- Refer to hospital if persists.

##### 2.2.3 HOSPITAL:

- As above.

- Miconazole cream for 10 days.
- Investigate immunosuppression and treat accordingly.
- Fluconazole tablets 50/100 mg OD for 10 days.

### **3. RECURRENT APHTHOUS STOMATITIS**

#### **3.1 DIAGNOSTIC CRITERIA:**

##### **(a) MINOR APHTHOUS ULCERS:**

Usually appear as a group of 1-6 ulcers at a time of variable size (2-5 mm). They last about 10 days and heal without scarring. Mainly occur on buccal or labial mucosa, floor of the mouth or tongue, and extremely rarely on the attached gingival or hard palate. Prodromal discomfort may precede painful ulcers

##### **(b) MAJOR APHTHOUS ULCERS:**

A more severe variant with fewer, but larger ulcers (up to 10 mm), which may last 5-10 weeks. They are associated with tissue destruction and scarring and any site in the mouth and oropharynx may be affected.

#### **3.2 TREATMENT GUIDELINES:**

##### **3.2.1 COMMUNITY LEVEL:**

- Health education on: proper oral hygiene, smoking cessation, and regular visits to dental services.
- Refer immediately to Health centre.

##### **3.2.2 HEALTH CENTRE:**

- As above.
- Clohexidine 0.2% mouth wash qds for 7 days.
- Analgesics topical/systemic.
- Hydrocortisone lozenges dissolved in the mouth qds for 5 days.
- Refer to hospital if persists.

##### **3.2.3 HOSPITAL:**

- As above.
- Investigate immunosuppression and treat accordingly.
- Systemic steroids Prednisolone 30 mg as enteric coated tablets. Regimen dependent on the condition treated.

### TOOTH TRAUMA:

#### 1. TOOTH CONCUSSION:

##### 1.1 DIAGNOSTIC CRITERIA:

It is the injury to supporting tissues of tooth, without displacement.

##### 1.2 TREATMENT GUIDELINES;

###### 1.2.1 COMMUNITY LEVEL:

- Health education on: proper oral hygiene.
- Reassurance and advice soft diet intake.
- Refer immediately to health centre.

###### 1.2.2 HEALTH CENTRE:

- As above.
- Paracetamol 250/500 mg tds for 5 days.
- Thymol mouth wash.

###### 1.2.3 HOSPITAL:

- As above.

#### 2. LUXATION:

##### 2.1 DIAGNOSTIC CRITERIA:

Displacement of tooth (laterally, labially, or palatally).

##### 2.2 TREATMENT GUIDELINES:

###### 2.2.1 COMMUNITY LEVEL:

- Health education on: proper oral hygiene.
- Reassurance and advise soft diet intake.
- Refer immediately to health centre.

###### 2.2.2 HEALTH CENTRE:

- As above.
- Paracetamol 250/500 mg tds for 5 days.
- Refer immediately to hospital.

###### 2.2.3 HOSPITAL:

- As above.
- Re-position tooth as soon as possible under LA.
- Splint the tooth/teeth for 2-3 weeks.
- Keep under review.

- Root canal treatment may be needed.

### **3. SUBLUXATION:**

#### **3.1 DIAGNOSTIC CRITERIA:**

Actually means partial displacement, but is commonly used to describe loosening of a tooth without displacement.

#### **3.2 TREATMENT GUIDELINES:**

##### **3.2.1 COMMUNITY LEVEL.**

- Health education on: proper oral hygiene.
- Reassurance and advise soft diet intake.
- Refer immediately to health centre.

##### **3.2.2 HEALTH CENTRE LEVEL:**

As above.

- Paracetamol 250/500 mg tds for 5 days.
- Refer immediately to hospital.

##### **3.2.3 HOSPITAL LEVEL:**

If minor, as above.

If mobile, splint for 1-2 weeks and watch vitality.

### **4. INTRUSION:**

#### **4.1 DIAGNOSTIC CRITERIA:**

Is displacement of tooth into its socket. Often accompanied by fracture of alveolar bone.

#### **4.2 TREATMENT GUIDELINES:**

##### **4.2.1 COMMUNITY LEVEL:**

- Health education on: proper oral hygiene.
- Reassurance and advise soft diet intake.
- Refer immediately to health centre.

##### **4.2.2 HEALTH CENTRE LEVEL:**

- As above.
- Paracetamol 250/500 mg tds for 5 days.
- Refer immediately to hospital.

##### **4.2.3 HOSPITAL LEVEL:**

- Teeth with immature roots (X-RAY) are likely to erupt and therefore no immediate treatment is required.
- Teeth with closed apices need orthodontic treatment to facilitate RCT.
- Extirpation and placement of ZOE dressing is advisable.

## SOFT TISSUE INJURIES

### 5.1 DIAGNOSTIC CRITERIA:

**Abrasion:** does a friction between an object and the surface of the soft tissue cause a wound. This wound is usually superficial, denudes the epithelium, and occasionally involves deeper layer.

**Contusion:** is more commonly called a bruised and indicates that some amount of tissue disruption has occurred within the tissues, which resulted in subcutaneous or submucosal haemorrhage without a break in the soft tissue surface.

**Laceration:** is a tear in the epithelial and sub epithelial tissues. It is perhaps the most frequent type of soft tissue injury, is caused most commonly by a sharp object.

### 5.2 TREATMENT GUIDELINES:

#### 5.2.1 COMMUNITY LEVEL:

- Health education on: proper oral hygiene.
- Reassurance and advise soft diet intake.
- Refer immediately to health centre.

#### 5.2.2 HEALTH CENTRE:

- As above.
- Paracetamol 250/500 mg tds for 5 days.
- Refer immediately to hospital.

#### 5.2.3 HOSPITAL:

- As above.
- Cleansing of the wound.
- Debridement of the wound.
- Haemostasis in the wound.
- Closure of the wound.
- Prophylactic Antibiotics

# CHAPTER 17

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## Eye Diseases

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### 1. CONJUNCTIVITIS

Conjunctivitis is an inflammation of the eye conjunctiva. Bacterial or viral infections, allergic reaction, chemical irritant, foreign body, and systemic infections may cause it.

#### 1.1. DIAGNOSTIC CRITERIA

Conjunctivitis presents with red, mildly irritable conjunctiva and photophobia. There is excessive lacrimation. Normal vision is preserved in this condition (i.e., there is no visual impairment). There may also be present a discharge which may be yellow (bacterial), mucopurulent (viral) or mucoid and strings or watery (allergic reaction). The cornea is clear and pupils are normal.

#### 1.2. TREATMENT GUIDELINES

##### 1.2.1. Community Level Interventions

1 Refer all cases

##### 1.2.2. Health Centre Level Interventions

1. Cleanse the affected eye
2. **Medication:**
  - ♣ Tetracycline eye ointment **OR,**
  - ♣ Chloramphenicol eye ointment
3. **For the Newborn**
  - ♣ Cleanse both eyes
  - Medication:**
    - ♣ Chloramphenicol eye ointment **PLUS**
    - ♣ Benzyl Penicillin
    - ♣ **Parents should be treated for syphilis**
4. In both Cases refer if there is no improvement

### 1.2.3. Hospital Level Interventions

1. Manage as above
2. Remove any foreign objects that may be in the eye
3. Administer antibiotic eye ointment and apply an eye patch

## 2. STYE

Stye is an infection associated with abscess formation of either the sebaceous glands (internal stye) or a hair follicle (external stye) along the margin of the eyelid.

### 2.1. DIAGNOSTIC CRITERIA

The condition typically presents as a red, tender swelling along the margin of the eyelid (external stye) or on the inside of the eyelid (internal stye or meibonian stye). In both cases the eyelid is extremely painful.

### 2.2. TREATMENT GUIDELINES

#### 2.2.1. Community Level Interventions

1. Apply hot water compresses on the affected eye three to four times a day
2. Refer if there is no improvement

#### 2.2.2. Health Centre Level Interventions

1. Manage as above
2. Tetracycline eye ointment 3 times daily **OR**,
3. Chloramphenicol eye ointment 3 times daily
4. Refer if there is no improvement

#### 2.2.3. Hospital Level Interventions

1. Manage as above
2. Give systemic antibiotic
  - ♣ Amoxicillin 500mg 3 times daily for 7 days
  - ♣ Erythromycin 500mg 4 times daily for 7 days
3. Drain abscess if all else fails

## 3. EYE INJURIES

Trauma to the eye or adjacent structures is a common occurrence. It requires meticulous examination in order to accurately determine the full/true extent of any injury. Conjunctival and corneal injuries by foreign bodies are the most common eye injuries. These can be serious if ocular penetration is unrecognized or if secondary infection follows a corneal abrasion.

### 3.1. DIAGNOSTIC CRITERIA

1. History of injury to the eye followed by the sensation of “something being in the eye”
2. Blurry vision
3. Conjunctiva is red/bloody

### 3.2. TREATMENT GUIDELINES

#### 3.2.1. Community Level Interventions

1. Irrigate eye and remove any foreign bodies with moist, sterile cotton wool
2. If unable to remove FB and corneal injury is suspected **refer at once**

#### 3.2.2. Health Centre Level Interventions

1. Look for foreign body and remove if possible
2. Apply Tetracycline eye ointment or Chloramphenicol eye ointment if possible
3. Apply an eye pad
4. Refer

#### 3.2.3. Hospital Level Interventions

1. Manage as at Health Centre
2. Refer for specialist attention if unable to remove foreign body or if unsure about corneal injury

#### 3.2.4. Anterior Chamber Haemorrhage

This is a serious condition that may be followed by recurrent bleeding, glaucoma or blood staining of the cornea.

1. Bed rest
2. Binocular bandage
3. Sedative-Diazepam 2.5, to 5, three times a day for 5 days
4. If intra-ocular pressure rises, administer Acetazolamide 250mg – 1g daily in divided doses

### 3.2.5. Trauma to Globe

This may result in severe damage to internal structures. It constitutes an emergency **that should only be treated by an ophthalmologist.**

### 3.2.6. Eyelid Burns

1. Cleanse with sterile isotonic saline solution
2. Apply petrolatum gauze or antibiotic eye ointment  
-Tetracycline or chloramphenicol eye ointment 3 times daily for 7 days
3. Apply sterile pressure dressing
4. Refer to ophthalmologist for further evaluation

### 3.2.7. Chemical Burns

1. Copious irrigation with water or other bland fluid
2. Administer long-acting cycloplegic drops
3. Antibiotic eye ointment  
-Tetracycline or chloramphenicol eye ointment 3 times daily for 7 days
4. Eye pad for protection
5. Administer analgesic  
-Paracetamol 500mg-1g 3 to 4 times daily for 5 days
6. Refer to ophthalmic nurse or ophthalmologist

## 4. GLAUCOMA

This is an ocular disease, occurring in many forms, having as its primary characteristics an unstable or a sustained increase in the intraocular pressure, which the eye cannot withstand without damage to its structure or impairment of its function.

### 4.1. DIAGNOSTIC CRITERIA

The consequences of the increased pressure may be manifested in a variety of symptoms, depending upon type and severity, such as excavation of the optic disk, hardness of the eyeball, corneal anaesthesia, reduced visual acuity, seeing of coloured halos around lights, disturbed dark adaptation, visual field defects, and headaches.

-Acute glaucoma presents as a sudden-onset pain in the eye associated with nausea and vomiting and blurred vision. The conjunctiva is red with a clear watery discharge, whilst the cornea is cloudy with a dilated oval pupil.

-Chronic simple glaucoma presents as a gradual loss of peripheral vision in association with headache on and off  $\pm 4\%$  of the population above the age of 35 years is prone to chronic simple Glaucoma.

-Congenital glaucoma with tearing, large corneas

-Secondary glaucoma follows after trauma, tumours, surgery, with pain and increased pressure

-Absolute glaucoma presents with pain and blindness when treatment has either not been given or it has failed

#### **4.2. TREATMENT GUIDELINES**

##### **4.2.1. Community and Health Centre Level Interventions**

ALL PATIENTS SHOULD BE REFERRED WITHOUT DELAY

##### **4.2.2. Hospital Level Interventions**

1. Administer two drops of 2% pilocarpine and apply an eye pad
2. Diamox 250mg (T)9 I.D. for one week
3. Refer

##### **4.2.3. Specialist Level Interventions**

1. Pilocarpine Drops 1-2% 3 times daily **OR**,
2. Pilocarpine Gel 4% at bedtime **OR**,
3. Timolol eye drops **AND**,
4. Acetazolamide 250mg 3 times daily, orally
5. Mannitol 1.5-2mg/kg as 15-25% solution IV, over thirty minutes in the care of acute angle glaucoma
6. Operations (trabeculectomy) in the case of congenital glaucomas, and chronic simple glaucoma

## **5. IRITIS**

This is an inflammation of the iris, ciliary body and choroids. Presentation is with reduced vision, photophobia, pain, red eye. Findings: are flare, fear of torch light or slit lamp light, keratic precipitates (white blood cell deposits on the corneal endothelium), adhesions of the iris on the lens (synechiae)

#### **5.1. TREATMENT GUIDELINES**

##### **5.1.1. Community Level Interventions**

- 1 Refer all cases

**5.1.2. Health Centre Level Interventions**

1. Analgesics for pain control
2. Apply eye pad
3. Refer

**5.1.3. Hospital Level Interventions**

1. Administer steroid eye drops FML, predforte, spersadex or a combination with antibiotic, maxitrol, spersadex comp.
2. Atropinise the involved eye with atropine to ease off adhesions of the iris from the lens
3. Give analgesics
4. Investigate in order to justify any need for systematic antibiotics. Include full blood count, differential and ESR. Check serology as well and x-ray.
5. Keep the eye padded.

**1.2 Key investigations**

-Full and differential blood count;

-ESR

-HIV;

-blood sugars

**DIFFERENTIAL DIAGNOSIS OF A RED EYE AND TREATMENT**

	<b>Conjunctivitis</b>	<b>Acute Angle Glaucoma</b>	<b>Uveitis</b>	<b>Corneal Ulcer</b>	<b>Foreign Body</b>
Redness	Diffuse	Circum Corneal	Circum Corneal	Circum Corneal	Circum Corneal
Discharge	Watery/Purulent	Nil	Nil	Watery/purulent	Watery/purulent
Pupil	Normal	Mid-dilated	Irregular	Meiotic (small)	Meiotic (small)
Light	Normal response to light	Normal response	Photophobia	Slight Photophobia	Slight Photophobia
Pain	Nil	Present +++	Present +++	Present +++	Present +++
Visual Acuity	Normal	Abnormal (low)	Abnormal (low)	Abnormal (low)	Abnormal (low)
Karatic Precipitates (Endothelial cell deposits)	Nil	Nil	Present +++	Nil	Nil
Flare	Nil	Nil	Present +++	Nil	Nil
Treatment	1) Decongestant eye drops for viral conditions and allergic conditions. 2) Antibiotic eye drops for Bacterial purulent infection	1) Pilocarpine 4% eye drops 2)Glycerol p.o. Mannitol i.v 3) Surgery by Ophthalmologist	1) Steroid eye drops 2) Mydriatic eye drops 3)Analgesic 4) Refer for further investigations	1)Broad spectrum antibiotic and PAD 2) If viral refer to ophthalmologist	1) Removal of foreign body 2) Eye ointment (broad spectrum and PAD) 3) If difficult refer to Ophthalmologist

# CHAPTER 18

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## Skin Disorders

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### 1. ECZEMA

Eczema is a pruritic papulovesicular dermatitis occurring as a reaction to many endogenous and exogenous agents. It may be aggravated by the ingestion of certain foods, or due to perspiration, irritation by clothes or by emotional stress.

#### 1.1 DIAGNOSTIC CRITERIA

The condition presents with a dry, papular, scaly rash with thickened skin at the wrists, elbow creases and behind the knees. In infants the cheeks, scalp and neck may also be involved. Intense itchiness and scratching occurs.

#### 1.2 TREATMENT GUIDELINES

##### 1.2.1 Community Level Interventions

2. Avoid skin irritation (such as occurs when scratching) or excessive exposure to the sun
3. Avoid offending foods or other materials known to cause allergic reaction
4. Encourage personal hygiene
5. Saline swabs

##### 1.2.2 Health Centre Level Interventions

1. Conservative management as above
2. Apply saline swabs
3. **For Vesicular Lesions:**
  - ♣ Betamethazone ointment
  - ♣ Chlorpheniramine 4 mg 3 times daily for 7 days
  - ♣ Promethazine 10 mg 3 times daily for 7 days
4. **For Chronic Dry Lesions**
  - ♣ Liquid paraffin **PLUS/OR,**

- ♣ Mepyramine Cream

5. **Oozing Lesions**

- ♣ Calamine lotion

6. **Infected Lesions**

- ♣ Add Pen VK 500 mg 4 times daily for 7 days (Adults)
- ♣ Pen VK 125 mg -250 mg 4 times daily for 7 days (Children) OR
- ♣ Erythromycin 500 mg 4 times daily for 7 days (Adults)
- ♣ Erythromycin 125 mg -250 mg 4 times daily for 7 days (Children)

1.3 **Key investigations**

- Usually not useful;
- RAST or skin test;
- Full blood count

## 2 CONTACT DERMATITIS

This is an acute or chronic inflammation, produced when substances such as necklaces or metal compounds, cosmetics, industrial agents etc. come into contact with the skin. It is characterized by sharply demarcated skin rash in predisposed people.

2.1. **DIAGNOSTIC CRITERIA**

It presents with an itchy, burning or stinging sensation in the affected areas. Early eruption may be red and raised followed by red, macules, papules or vesicles or bullae.

2.2 **TREATMENT GUIDELINES**

2.2.1. **Community Level Interventions**

1. Remove/avoid irritant
2. Saline swabs

2.2.2 **Health Centre Level Interventions**

1. Remove/avoid irritant
2. Administer cool compressions with saline water
3. Apply
  - ♣ Calamine lotion OR
  - ♣ Mepyramine cream AND

- ♣ Betamethazone ointment if the condition is severe

4. Refer complicated cases or those that do not respond to treatment

### 2.2.3 Hospital Level Interventions

1. Manage as above
2. For severe and extensive cases administer Prednisone 40 mg daily, then taper accordingly

### 2.3 Key investigations

-Usually laboratory investigation not useful

-RAST or skin test;

-Blood sugar

## 3 DRUG REACTION

It is an acute or chronic inflammatory skin reaction to a drug. This is most commonly seen with penicillins and sulphonamides but it can occur with various other drugs.

### 3.1 DIAGNOSTIC CRITERIA

Typically there is development of itching followed by red raised wheals with a sharp border that may fade after few hours. In the case of a very severe reaction with dyspnoea or collapse, wheezing or rhonchi may occur.

### 3.2 TREATMENT GUIDELINES

#### 3.2.1 Community Level Interventions

1. In the case of a mild reaction withdrawal of the drug will, in a few hours, result in a cessation of the allergic reaction
2. Stop all medicines if patient on drugs
3. Refer if the reaction is severe

#### 3.2.2 Health Centre Level Interventions

1. Discontinue the offending drug
2. Give oral fluids
3. Note on the patient's Bukana **in red ink**, the name of the drug that caused the reaction

#### 4. Medications:

- ♣ Adrenaline 1:1 000 0.5 ml IM stat **PLUS**,
- ♣ Promethazine 12.5mg-25mg IM stat

5. Refer severe cases

### 3.2.3 Hospital Level Interventions

1. Manage as above
2. Treat as for Erythema multiforme/Stevens-Johnson Syndrome

### 3.3 Key investigations

-Usually laboratory investigation not useful

## 4 ERYTHEMA MULTIFORME/STEVEN'S-JOHNSON SYNDROME

This is inflammatory eruption characterized by systemic erythematous, edematous or bullous lesions of the skin or mucus membranes. In over 50% of cases there is no cause found. In some cases drugs, x-ray therapy and infectious causes are implicated. It should be remembered that almost any drug can cause erythema multiforme e.g. penicillin, sulfonamide and barbiturates.

### 4.1. DIAGNOSTIC CRITERIA

**Stevens Johnson Syndrome:** This is a severe form of erythema multiforme. It is characterised by the development of bullae on the oral mucosa, pharynx, ano-genital region and the conjunctiva.

### 4.2 TREATMENT GUIDELINES

#### 4.2.2 Community Level Interventions

1. Frequent mouthwashes if the affected area is oral mucosa or pharynx
2. Analgesics
  - ♣ Paracetamol 500 mg -1g 3 times daily for 7 days (adults)
  - ♣ Paracetamol 125 mg -250 mg 3 times daily for 7 days (children)
3. Refer

#### 4.2.3 Health Centre Level Interventions

1. Manage as above
2. Institute liquid diet and warm water mouth washes with 10% Sodium Bicarbonate Solution if indicate
3. Analgesics
  - ♣ Paracetamol 500 mg - 1g 3 times daily for 7 day (adults)
  - ♣ Paracetamol 125 mg – 250 mg 3 times daily for 7 days (children)

4. Promethazine 12.5 mg IM stat

5. Refer

#### 4.2.4 Hospital Level Interventions

1. Manage as above

#### 2. Medication for severe cases

- ♣ Promethazine 5ml per day for 7 days (children)
- ♣ Promethazine 25mg 3 times daily for 7 days (adults)
- ♣ Prednisone 1 mg - 2mg/kg hourly for 7 days (children)
- ♣ Prednisone 40 mg – 60 mg daily for 7 days (adults)
- ♣ Hydrocortisone 100 mg – 200 mg iv 8 hourly for 2 days
- ♣ Amoxicillin 125 mg – 250 mg 8-hourly for 7 days (children)
- ♣ Amoxicillin 250 mg -500 mg 8-hourly for 7 days (adults)
- ♣ 10% sodium bicarbonate where indicated

#### 4.3 Key Investigations

-Full blood count;

-Urea and electrolytes;

-Blood sugar

## 5 ACNE

This is a chronic disorder of the pilosebaceous apparatus associated with an increase in sebum secretion. It is characterized by the development of open comedones (blackheads), closed comedones (whiteheads), and pustular nodules. The cause is unknown, but heredity and age are predisposing factors.

### 5.1. DIAGNOSTIC CRITERIA

The lesions may present as blackheads, whiteheads pustules and tender red swellings on the face, chest, back or shoulders. In severe cases scarring may be seen. They may be painful and itchy.

### 5.2 TREATMENT GUIDELINES

#### 5.2.1 Community Level Interventions

1. Encourage patient not to squeeze or scratch the lesions
2. Wash affected area two to three times daily
3. Avoid using oily creams

4. Refer if severe

#### 5.2.2 Health Centre Level Interventions

1. Manage as above
2. Doxycycline 100 mg 2 times daily for 14 days, then 2 times daily for 2 months **PLUS**,
3. Mepyramine Cream
4. Refer if severe

#### 5.2.3 Hospital/Specialist level

NB Acne is normally managed outside hospital

- ♣ Manage as above
- ♣ Manage complications appropriately

#### 5.3 Key investigations

-Full blood count;                      -Blood sugar;                      -Pus swab where indicated

## 6 BOILS

Boils are localized painful infections of the hair follicles. They usually occur in the hairy parts of the body.

### 6.1 DIAGNOSTIC CRITERIA

Boils vary in size. They may present either as red papules or as large red macules. In both instances they are tender. Although firm at first the lesions may become soft and develop a yellow centre that may open or rupture spontaneously.

### 6.2 TREATMENT GUIDELINES

#### 6.2.1 Community Level Interventions

1. Wash with soap twice a day
2. Do not pinch or squeeze the lesions
3. Paracetamol 500mg-1g 3 times daily for 5 days
4. Refer

#### 6.2.2 Health Centre Level Interventions

1. Manage as above
2. Check for and rule out conditions such as Diabetes Mellitus

3. Medications:
  - ♣ Pen VK 250mg-500mg 6-hourly for 7 days **OR**,
  - ♣ Erythromycin 250mg-500mg 6-hourly for 7 days
  - ♣ Paracetamol 500mg-1gm three times daily for 5 days

### 6.2.3 Hospital/Specialist level

N.B- Boils are mainly managed outside the hospital unless there are complications

-Manage as above

-Treat the complications accordingly

### 6.3 Key investigations

-Full blood count;

-Blood sugar;

-Pus swab

## 7 CELLULITIS, ERYSIPELAS AND IMPETIGO

Cellulitis is an infection of the skin and subcutaneous tissue. It may be preceded by skin infections such as impetigo, folliculitis or erythema. Superficial or penetrating wounds have also been implicated as possible causes.

### 7.1 TREATMENT GUIDELINES

#### 7.1.1 Community Level Interventions

1. Nutritional Education
2. Analgesics
  - ♣ Paracetamol 500mg 1g 3 times daily for 7 days (adults)
  - ♣ Paracetamol 125mg-250mg 3 times daily for 7 days (children)
3. Elevate affected part if possible
4. Refers

#### 7.1.2 Health Centre Level Interventions

1. Manage as above
2. Medications:
  - ♣ Pen VK 250mg-500mg 6-hourly for 7 days **OR**,

- ♣ Erythromycin 250mg 6-hourly for 7 days
- ♣ Paracetamol 500mg-1g 8-hourly for 7 days **OR,**
- ♣ Aspirin 300mg-600mg 8-hourly for 7 days

3. Refer if severe or if complications develop

### 7.1.3. Hospital Level Interventions

1. Manage as above

#### 2. Medications:

- ♣ Ampicillin 500mg IV 6 hourly for 7 days
- ♣ Cloxacillin 500mg I.V 6 hourly for 7 days
- ♣ Oral Erythromycin 500mg 4 times daily for 7 days

### 7.3. Key investigations

-Full blood count;

-Blood sugar

## 8. PSORIASIS

Psoriasis is a common genetically determined, chronic, inflammatory skin disease characterized by rounded erythematous, dry, scaling patches.

### 8.1. DIAGNOSTIC CRITERIA

The lesions have a predilection for nails, scalp, genitalia, extensor surfaces, and the lumbosacral region. Accelerated epidermopoiesis is considered to be the fundamental pathologic feature in psoriasis.

The condition may be precipitated by local trauma, severe sunburn, irritation, the use of topical medication etc. Complications associated with this condition include psoriatic arthritis, exfoliative psoriatic dermatitis and pustular psoriasis.

### 8.2. TREATMENT GUIDELINES

#### 8.2.1. Community Level Interventions

1. Health Education
2. Daily warm baths
3. Refer new cases

#### 8.2.2. Health Centre Level Interventions

1. Manage as above



### 9.2.2. Health Centre Level Interventions

1. Treat the patient and all other household members
2. Shave hair
3. Bath and apply benzyl benzoate from the neck down. Repeat after 3 days
4. Wash all garments with hot water and dry in sun

### 9.2.3. Hospital Level Interventions

NB: The condition usually managed outside hospital

1. Manage as above
2. Treat secondary infection with antibiotics
3. Pen VK 250mg-500mg 4 times daily
4. Erythromycine 250mg-500mg 4 times daily

### 9.3. Key investigations

-Full blood count;

-Blood sugar;

-Microscopy

## 10. SCABIES

Scabies is a contagious cutaneous inflammation caused by the bite of the mite *SARCOPTES SCABIEI*. It is characterized by pruritic papular eruptions and burrows and affects primarily the axillae, elbows, wrists, and genitalia, although it can spread to cover the entire body.

### 10.1. DIAGNOSTIC CRITERIA

Scabies presents as marked pruritis that is most intense when the patient is in bed. The inflammatory skin lesions occur predominantly on the finger webs, the flexor surface of the wrist, lower limbs and buttocks.

### 10.2. TREATMENT GUIDELINES

#### 10.2.1. Community Level Interventions

1. Advice on the need for frequent washing of clothes
2. Advice on the need for proper personal hygiene

#### 10.2.2. Health Centre Level Interventions

1. Manage as above
2. Advice all household members to wash twice daily and apply benzyl benzoate Lotion
3. **For Secondary Infection:**

- ♣ Pen VK 250mg-500mg 6-hourly orally for 7 days **OR**,
- ♣ Erythromycin 250mg-500mg 6-hourly orally for 7 days

### 10.3. Key investigations

- Full blood count;
- Blood sugar;
- Swab for microscopy

## CHAPTER 19

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### Neoplasms

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#### 1. TUMOURS

Neoplasms are abnormal tissue growths that affect various parts of the body. They may present as benign or malignant tumours. The aim is to detect early malignant changes and manage accordingly. The common malignancies are carcinoma of the breast, cervix, skin, oesophagus, prostate and lung.

#### 1.1. TREATMENT GUIDELINES

##### 1.1.1. Community Level Interventions

1. Refer any abnormal swellings, growths or ulcerations early

##### 1.1.2. Health Centre Level Interventions

1. Health Education regarding common malignancies and their presentation
2. Early detection
3. Refer

##### 1.1.3. Hospital Level Interventions

1. Re-emphasize early detection
2. Screen for malignancies
3. Confirm diagnosis

##### 1.1.3.1. Carcinoma of the cervix:

1. Regular PAP smears
2. If PAP smear is positive, refer the patient

**1.1.3.2. Breast carcinoma:**

1. Breast palpation to detect the presence/absence of tumours
2. Excise and send tumour for histology
3. If malignancy is confirmed, then refer

**1.1.3.3. Carcinoma of the prostate**

1. Regular PR examination in elderly males
2. Prostate specific antigen( PSA) levels for suspect cases
3. Refer if PSA is over 5ng/ml

**1.1.3.4. Carcinoma of the bronchus**

1. Chest X-ray for all patients presenting with haemoptysis
2. Refer all suspicious cases

**1.1.3.5. Carcinoma of the oesophagus**

1. Refer all patients experiencing difficulty in swallowing

**1.1.3.6. Hepatoma**

1. Refer all suspected cases

**1.3. KEY INVESTIGATIONS**

- |                |                                   |                 |
|----------------|-----------------------------------|-----------------|
| -PAP smear;    | -Prostrate specific antigen(PSA); | -X-Ray          |
| -Bronchoscopy; | -Gastroscopy;                     | -Barium swallow |
| -CT scan;      | -Biopsy                           |                 |

# CHAPTER 20

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## Trauma

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### 1. LACERATIONS, WOUNDS AND FRACTURES

Wounds caused by mechanical agents, chemical agents, human and animal bites are commonly seen in various health institutions. Wounds may be superficial or deep. Some may be associated with broken bones.

#### 1.1. DIAGNOSTIC CRITERIA

There is usually a history of injury to the site affected. The patient presents with pain around the area of injury and there may be associated bleeding.

#### 1.2. TREATMENT GUIDELINES

##### 1.2.1. Community Level Interventions

If bleeding is present, apply pressure (see community health workers manuals)

Splint any suspected long bone fractures

Check for other injuries

If suturing is required, dress the wound and refer without delay

##### 1.2.2 Health Centre Level Interventions

1. Clean and debride wound

2. Suture if the wound is less than 6 hours old and there are no complications except for:

- ♣ Gunshot wound
- ♣ Compound fracture
- ♣ Dog or
- ♣ Human bite

Paracetamol 500 mg – 1 g 3 times daily

3. Refer all dog or human bite and gunshot wounds

### 1.2.3. Hospital Level Interventions

1. Clean and debride wound
2. Suture if the wound is fresh
3. If infected, do secondary suturing after infection has been controlled. In the meantime do daily dressing
4. Manage shock if patient is in shock
5. Give antibiotics if infection is present
  - ♣ Amoxycillin 500 mg -1 gm 3 times daily for 7 days **OR**
  - ♣ Erythromycine 500 mg 3 times daily for 7 days **OR**
  - ♣ Chloramphenicol 500 mg 4 times daily for 7 days
6. **For Human Bite**
  - ♣ Clean thoroughly and dress DO NOT suture
  - ♣ Amoxycillin 500 mg 3 times daily for 7 days **OR**
  - ♣ Chloramphenicol 500 mg 4 times daily for 7 days **PLUS**
  - ♣ Metronidazole 400 mg 3 times daily for 7 days
  - ♣ Analgesics for pain control as above
  - ♣ Tetanus prophylaxis if available
  - ♣ Secondary suturing after infection has cleared if indicated
7. **Other Animal Bites**
  - ♣ Clean thoroughly and do not suture
  - ♣ Antibiotic therapy as above
  - ♣ Dress daily until healed

### 1.3. Key investigations

-Full blood count;

-X-ray;

-Blood sugar

## 2. MAJOR TRAUMA

Major trauma is associated with fractures, multiple lacerations and other major injuries. Major trauma may occur as a result of motor vehicle accidents or fights. The aim in handling major trauma is to look for life-threatening complications which if missed may endanger the patient's life.

### 2.1. DIAGNOSTIC CRITERIA

There is usually a history of trauma or accident. If the patient is conscious he/she may complain of pain at specific places on his/her body. Some patients may present with confusion, some semi-conscious and others may be in coma and/or shock.

### 2.2. TREATMENT GUIDELINES

#### 2.2.1. Community Level Interventions

1. Clear airway
2. Minimise bleeding and dress wounds
3. Assess cardiac function
4. Administer analgesics for pain control
  - ♣ Paracetamol 500 mg – 1 g 3 times daily for 7 days
5. Splint long bone fractures
6. If unconscious put in coma position and protect the spine.
7. Refer

#### 2.2.2. Health Centre Level Interventions

1. Manage as above
2. Catheterise bladder in unconscious patient.
3. Set up IV line normal saline or ringer's lactate
4. Do not feed patient
5. If there are open wounds clean and dress and give IV ampicillin 500 mg 6 hourly or chloramphenicol 500 mg 6 hourly
6. Refer

#### 2.2.3. Hospital Level Interventions

1. Manage as above
2. Search systematically for any signs of major injury such as:



Detailed history about the mechanism of injury (i.e how did it happen, when, any vomiting). Then or later nature of vomitus, find if flatus or stool has been passed since the injury, nature of urine passed, location and radiation of pain

1. Check vital signs and record them (i.e blood pressure, pulse, temperature and respiration)
2. Note the general conditions such as pallor, dehydration and distress
3. Put up IV line of normal saline/or ringer's lactate with a large bore needle
4. Refer at once

### 3.2.3 Hospital level intervention/filter clinic

1. Note detailed history as above
2. Examine the patient completely with particular reference to other injuries, hand injury, neck/spine injury and limb injuries. Look for "tell tale" bruising on abdomen, back or renal angle.
3. If acute abdomen-trauma suspected
  - ♣ Give nothing by mouth
  - ♣ Set up IV line with Ringer's Lactate/or Normal Saline with a wide bore needle (i.e not less than 18G).

NB If at filter Clinic transport as comfortably as possible to the nearest hospital.

4. If patient unconscious assume cervical injury until proven otherwise
5. Move patient carefully and apply rigid cervical collar (improvise one).
6. If the patient is in shock resuscitate

**N.B. Do not transport an inadequately resuscitated patient and ensure that the patient is accompanied by a nurse with a running IV line.**

7. Start appropriate antibiotics if perforation of bowel, bladder rupture or renal injury is suspected e.g. small bowel perforation.
  - ♣ Ampicillin 500mg-1g IV 6 hourly OR
  - ♣ Gentamycin 80 mg IV 8hourly PLUS
  - ♣ Metronidazole 500mg IV 8 hourly PLUS
  - ♣ Cefotaxime 1gm IV 12 hourly for 7 days

-Urinary Tract Injury:

- ♣ Ampicillin 500mg-1g IV 6 hourly PLUS
  - ♣ Gentamycin 80mg 8 hourly IV for 7 days
8. Give oxygen (N.B oxygen is a therapeutic modality and will benefit patient with shock, peritonitis and head injury.)
  9. Refer

## **B. Penetrating Abdomen trauma**

**(e.g. Stab wound by knife or other instruments; Gunshot wound)**

### **3.2.1 (1) Community Level**

Refer immediately

### **3.2.2 (2) Health Centre intervention**

1. Detailed history
2. Check and record vital sign
3. Give nothing by mouth
4. If transport journey to nearest hospital more than 2 hours give analgesic
  - ♣ Paracetamol 500 mg -1g STAT
  - ♣ Diclofenac 75 mg IM STAT

N.B As above avoid narcotic analgesic for patient with suspected head injury.

5. Insert an IV line of Ringer's lactate or Normal saline with a wide bore needle.
6. Give nothing by mouth
7. Clean if gunshot wound thoroughly with saline and dress prior to transport
8. Stab wound may be cleaned and closed if the clinic has the capacity or else just clean and dress
9. Herniated bowel must be covered with sterile (if possible) or clean abdominal swabs.
10. Refer

### **3.1.3 (3) Hospital Level Intervention**

1. History and examination as above
2. Give nothing by mouth

**3. Stab wound:**

- ♣ Insert IV line Ringer's lactate or Normal saline
- ♣ Under local anaesthesia- clean and excise edge and close.
- ♣ Stab wound with bowel herniation-examine it and close any perforation you see with 2.0G or vicryl.
- ♣ Reduce bowel into abdomen even if you have to increase the stab wound and close skin only
- ♣ Give analgesic
  - Diclofenac 75 mg IM, STAT
- ♣ (Avoid narcotics in suspected head injury)
- ♣ Refer without delay.

**4. Gunshot wound**

- ♣ Clean and dress wounds
- ♣ NB Do not suture

5. If bowel is herniated out manage as above

6. Administer analgesics:

-Diclofenac 75 mg IM, STAT

7. Insert a nasogastric tube

8. Catheterise patient

9. Record and monitor vital signs

10. Give antibiotic as above

11. Refer

**3.3 Key investigations**

-Full blood count;

-Blood x-match;

-Blood sugar

N.B Queen Elizabeth II Hospital Casualty Doctor to inform doctor covering surgery or consultant directly if patient critical {Patient is under care of casualty officer until surgical doctor is available to see patient}.

## 4. HEAD INJURY

Definition: Any episode of trauma to the head. We will exclude maxillo-facial injuries and eye injuries from this discussion.

Epidemiology: In Lesotho trauma of all kinds accounts for about 40% of all casualty patients, and is therefore the single highest cause of emergency admissions. 1998 to QEII (It may now be superceded by HIV – related illness). Every doctor working in a hospital in this country must of necessity therefore have a clear idea how to manage all kinds of physical trauma. 2 main causes of head injuries are:

Assault - usually with sticks or knobkiere

Road traffic accidents

### 4.1. DIAGNOSTIC CRITERIA:

Head injury may be associated with ophthalmic ENT and dental injuries which are discussed in appropriate sections (see appropriate paragraphs).

It is classified into two: 1. Involving scalp only; 2. Traumatic brain injury

#### **Mild head injury**

- 80% of cases

- Glasgow coma scale 13-14

- Involves a “brief” period of loss of consciousness

- Good progress with minimal or no long term sequelae

#### **4.1.2 Moderate Head Injury**

- Glasgow coma scale 9-12

- Confused patient with focal neurological deficits but able to follow simple commands

-Good prognosis

-Some mild long-term sequelae

#### **4.1.3 Severe head injury**

- Glasgow coma scale <8 (This is the definition of coma)

-Unable to follow commands initially

- Significant long-term disability

### **4.2. CLINICAL GUIDELINES**

#### **4.2.1. Community level Interventions**

1. Clean and dress any wound
2. If unconscious, ensure airway is patent
3. Keep patient warm
4. Put in coma position
5. Prevent spinal injury
6. Refer immediately

#### **4.2.2. Health Centre Interventions**

1. Take full history from patient, relatives or whoever has brought patient where indicated
2. Clean and suture wound as appropriate
3. Record and monitor vital signs
4. Inset IV line Normal saline or Ringer's lactate
5. Catheterise
6. Refer

**4.2.3 Hospital Level Interventions**

1. History as above
2. Examine patient thoroughly and note level of consciousness

**USE GLASGOW COMA SCALE**

SCORE	MOTOR RESPONSE	SCORE	VERBAL	SCORE	EYE
6	obeys verbal command	5	Oriented and Converses	4	Eye open spontaneously command
5	Localises painful stimulus	4	Disoriented and converses	3	Eye open to verbal command
4	Flexes limb to painful stimulars	3	Inappraited words	3	Eye open to pain
3	Abnormal flexion painful stimulare	2	Inappropriate sound	2	Eye open to pain
2	. Extension to painful stimulus	1	No response		
1	No response				

3. Clean and suture wound as appropriate
4. Manage as above
5. Refer if indicated especially moderate and severe head injury

**Key Investigations**

-Full blood count;

-Blood sugar;

-X-ray

-CT scan;

-Urea and electrolytes

## **5. COLD INJURIES**

Cold injury is defined as injury by cold causing structural and functional disturbances of small blood vessels, cells, nerves and skin or a generalized lowering of body temperature. Hypothermia occurs when the body cannot maintain normal temperature. Inadequate clothing, substance abuse or debility may enhance this. The falling core temperature leads to lethargy, clumsiness, mental confusion, irritability and hallucination followed by slow respiration and slow irregular heartbeat. Frostbite on the other hand is limited to an exposed area that becomes hard, white and anaesthetic. On warming the area becomes red, swollen and painful.

### **5.1 DIAGNOSTIC CRITERIA**

There is usually a history of exposure to extremes of cold. Physical examination reveals low temperature, very slow pulse rate and slow respiration.

### **5.2 TREATMENT GUIDELINES**

#### **5.2.1 Community Level Interventions**

5. Wrap patient up in warm blankets
6. Move to a warm environment
7. Clean and dress frostbites or cold injured areas
8. Refer

#### **5.2.2 Health Centre Level Interventions**

1. Manage as above
2. Place in warm room
3. monitor vital signs for 4 hours
4. Give warm drinks if patient is conscious and can swallow and vital signs are stable in 4 hours
5. Relieve pain
  - ♣ Paracetamol 500 mg -1g 3 times daily.
6. Refer if vital signs are abnormal

#### **5.2.3 Hospital Level Interventions**

1. Keep patient warm
2. Monitor and record vital signs

3. Manage as indicated

**5.3 Key investigations:** None

## 6 BURNS

Burns are defined as skin and tissue damage caused by fire, hot liquid, chemical agents, electrical current or hot metallic or non-metallic objects. They may be superficial or deep. The early sequelae of severe burn injuries are hypovolaemia and shock due to loss of water, plasma, third space losses and destruction of the red cells.

### 6.1 DIAGNOSTIC CRITERIA

#### 6.1.1 Superficial burns

These are painful first-degree burns with dry minor blisters and erythema. There also may be an associated painful loss of epidermis.

#### 6.1.2 Deep burns

These are characterised by a complete loss of skin. They are painless, dry, charred and whitish third-degree burns

### 6.2 TREATMENT GUIDELINES

#### 6.2.1 Community Level Interventions

1. Leave blisters intact
2. Put burnt area under cold water tap soon after they happen if they are due to hot liquids or steam
3. Refer

#### 6.2.2 Health Centre Level Interventions

1. Remove clothing and gently clean the wound with water
2. Remove loose skin and debride dead tissue
3. Assess the extent of the burns
4. **Minor Burns:**
  - ♣ Leave blisters intact
  - ♣ Puncture with sterile needle and keep blister skin intact
  - ♣ Apply 1% Silver Sulphadiazine for all burns or furacin or paraffin gauze for full-thickness burns
5. Refer all major burns

### 6.2.3 Hospital Level Interventions

1. Gently clean the burns and remove loose skin and debride dead tissue
2. **Full-thickness Burns:**
  - ♣ Cover facial burns with 1% Silver sulphadiazine
  - ♣ All other burns cover with 1% silver sulphadiazine or paraffin gauze
  - ♣ Change dressings daily
3. **If Patient is in Shock**
  - ♣ Fluid resuscitation with Ringer's Lactate
  - ♣ Record and monitor fluid input and output
  - ♣ Calculate/estimate daily protein and energy needs and support accordingly
  - ♣ Administer systemic antibiotics on the basis of culture and sensitivity (C&S)
  - ♣ Analgesics for pain control (Paracetamol if pain mild-moderate; pethidine if severe)
  - ♣ For circumferential 3° burns fasciotomy is indicated
4. Refer if burns are extensive

### 5.3 Key Investigations

- |                                   |                        |
|-----------------------------------|------------------------|
| -Full blood count;                | -Urea and Electrolytes |
| -Blood, urine and wound cultures; | -Blood sugar           |

### 5.4 Comment

All burns involving the hand, face, eye, ear, feet, perineum, or neonates must be referred. Major burns, electrical and chemical injuries as well as inhalation injuries where possible should be referred to specialist hospital.

## 7. RETENTION OF URINE

This is mainly an adult male problem. It only rarely occurs in children and female patients.

In middle-aged and elderly patients, the most common cause is enlargement of prostate which is a physiological change in men.

In young adult and also in middle aged person this is due to stricture of urethra which is commonly due to STD infection and sometimes due to trauma

## 7.1. DIAGNOSTIC CRITERIA

1. Suprapubic pain which can be agonizing
2. Inability to pass urine or dribbling of urine from distended bladder
3. Palpable mass bladder above the pubic bone
4. Enlarged prostate by rectal examination
5. Patient may present with pus discharging sinus in the perineum which is certainly due to stricture of the urethra

## 7.2. CLINICAL GUIDELINES

### 7.2.1. Community and health center level intervention

1. Ask the patient to relax do not force and pass urine standing while a water tap is opened for running water. This running water sound sometimes assist them to pass urine
2. A hot bath also sometimes help the patient to pass urine
3. If no progress refer to the district hospital

### 7.2.2 Hospital interventions

1. Try the above methods again
2. If not successful catheterise the patient with 18 or 20 G foley catheter. In most of the cases with prostate hypertrophy it is successful.
3. If not successful try to pass a rigid feeding tube of size 12f
4. If patient has perineal sinus do not attempt to catheterise
5. If all procedure are unsuccessful the patient will need suprapubic cystostomy
6. In distended bladder it is an easy procedure and all district medical officer should be familiar with this
7. If doctor is not familiar with suprapubic cystotomy then he/she should relieve distention of bladder by suprapubic puncture by 14-16 G canulae and transfer the patient
8. Refer all cases with prostate enlargement, malignant, urethral stricture

## 7.3 Key investigations

-Full blood count;

-Blood sugar

-Prostate specific antigen;

-X-ray

## 1. GUIDELINES FOR REFERRAL OF A PATIENT WITH ACUTE ABDOMEN

**Defination:-** In case of blunt or penetrating abdominal injuiry- trauma management guideline should be followed, as the first step.

-The referring doctor should take detailed history from the patient or relatives in case of infants and patient with mental comfusion/coma from any cause. History of intake of traditional medicine, operation, recent trauma or haemorrhage must be sought and documented.

-The referring doctor must perform a through clinical examination which should always include a rectal examination and note down his findings in detail.

-Two peripheral I.V line should be secured with wide bore( not less than 18G in adult) cannulae and Ringer's Lactate or Normal Saline solution drips be infused; but with great caution in infants, children or elderly patients where over hydration carries grave consequences

-A wide bore naso-gastric tube must be inserted and attached to a drainage bag to drain freely.

-The patient must be catheterized (in the absence of urethral trauma) for accurate measurement of urinary output( at hospital only).

-The following investigations must be done and result recorded in the referral note:

- ♣ HB
- ♣ PCV
- ♣ WBC
- ♣ Urea and electrolytes
- ♣ Random blood glucose
- ♣ Serum amylase and L.F.Ts( may be indicated in individual)
- ♣ Urinalysis (microscopy, glycosuria, protienuria )

-The following radiograph must be taken at the reffering hospital:

- ♣ Chest radiograph ( erect PA film)
- ♣ Scout abdominal film(erect and supine)
- ♣ If the patient is unable to sit up, a lateral decubitus instead of erect is satisfactory

-An experienced nurse,who should at least ensure the patency of IV line and management of IV fluid on the way,must accompany the referred patient.

-The patient should be referred to the Casualty Department and NOT to the Surgical Out Patient Department of Queen Elizabeth II Hospital Maseru.

## 2. CASUALTY PROTOCOL FOR COMPOUND (OPEN) FRACTURE.

Assess the WHOLE patient and give priority to head injury and spine injury. Set into resuscitation before going for the fracture

Always do the following:

- ♣ Check the distal blood supply. Use nail bed capillary refilling to assess. Remove all encircling rings and other ornaments worn on an injury limb.
- ♣ Assess the size of the wound and look for exposed bone. Classify into;less than 5cm and greater than 5cm.
- ♣ Suture clean puncture wound and clean wound of about 2cm after cleaning and irrigating Suture loosely, you do not need tight skin closure. A few suture will do. Then apply a POP BACKSLAB not full plaster.
- ♣ Severe wound with exposed bone should be thoroughly irrigates with AT LEAST 2 LITRES of Normal Saline or sterile/boiling water. Scrub with gauze while irrigating.
- ♣ Leave the wound open, dress with sterile gauze, add orthopaedic wool padding and bandage on the backs
- ♣ lab.
- ♣ Admit the patient, start intravenous( give adult cloxacillin 500 IV 6 hourly a s a stat dose at casualty) and make sure the limb is elevated.
- ♣ Always inform the surgeon on call about any compound fracture with a wound greater than 5cm+ exposed bone( i.e any type II fracture with contamination and ALL type III wound)

NEVER do following:

- ♣ Suture gunshot wound

- ♣ Suture a wound that has not been irrigated
- ♣ Apply a full POP to fresh compound fracture
- ♣ Use tap water to irrigate a wound, unless boiling first and cooled. Solution of preference is Normal Saline.
- ♣ Send the patient to the ward without a plaster support. Fractures are VERY painful.
- ♣ If you are in any doubt, PLEASE ASK SOMEONE Department of Surgery, QE II Hospital

### 3. CASUALTY PROTOCOL FOR COMPOUND (OPEN) FRACTURES

Trauma continue to form the bulk of casualty work and ultimate outcome with these patients depends on how well the 1<sup>st</sup> contact care is carried out. This is the casualty.

Proper initial management of a compound fracture determines if the patient will go home soon, lose the limb or live with year of osteomyelitis. You as the casualty doctor who receives the patient are just as important as the surgeon who finally manages the patient

A compound fracture is any fracture with an overlying wound in which there is a communication between the fracture site and the outside, A gunshot wound with a fracture is a compound fracture.

They are classified as follow:

- Type I-The wound is less than 2cm long and is relatively clean.
- Type II-The wound is 2-5cm long and fairly contaminated with soil, grass, clothing, car paint, and e.t.c
- Type III-The wound is greater than 5cm, bone is exposed, severely soiled with soft tissue damage. There may be vascular or/and nerve injury.

This classification determines the management

#### A. BLOOD GIVING SET 10 DROPS/ML (ADULT)

TO GIVE		SET COUNT IN DROPS/MIN

1 Litre/4hrs	250/hr	40 drops/min
1 litre/6hrs	100mls/hr	27 drops/min
1 litre/8hrs	125mls/hr	20 drop/min

**B. SOLUTION GIVING SET 15 DROPS/MIN**

TO GIVE	SET COUNT IN DROPS/MIN
1L/4hrs	60 drops/min
1L/6hrs	42 drops/min
1L/8hrs	30 drops/min

**PAEDS**

**BLOOD GIVING SET 60 DROPS/min**

TO GIVE	SET COUNT DROPS/Min
150mls/kg/24hrs	
Eg 3kg=450mls/24hrs=18.7 or 19mls/hrs	

# CHAPTER 21

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## Medical and Surgical Emergencies

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### 1. CARDIAC ARREST

Cardiac arrest is defined as sudden loss of consciousness with absent femoral or carotid pulses. The commonest cause is ventricular fibrillation.

#### 1.1 TREATMENT GUIDELINES

2. Thump the sternum firmly
3. Clear the airway
4. Start ventilation and chest massage
5. Defibrillate if a defibrillator is available; start with 200 Joules
6. Attach to ECG monitor if one is available
7. Administer oxygen

#### 1.1.1 Ventricular Fibrillation/Tachycardia with no Pulse (if no response after 400 Joules)

2. Adrenaline 1mg IV in 10 units of 1:10 000 solution/ml??
3. Counter shock if there is still no response
4. Lignocaine 100mg as an IV bolus (10ml of 1% solution)
5. Sodium Bicarbonate 50mmol IV over 10 minutes (i.e., 50 ml of 8.4% solution)

#### 1.1.2 Asystole

2. Adrenaline 1mg IV followed by atropine 1 mg IV
3. Sodium Bicarbonate as above

4. Pacing if available

### 1.1.3 Bradycardia

1. Administer Atropine 1 mg IV and repeat as required
2. Start Isoprenaline IV infusion 2-20mg in dextrose 5% solution or in Normal Saline solution
3. Pacing if available

### 1.1.4 Electromechanical Dissociation

2. Adrenaline 1 mg IV and repeat as required
3. Calcium Chloride 10ml of 10% solution over 5 minutes
4. Sodium Bicarbonate 50mmol IV over 10 minutes

### 1.15.1 Rule Out the Following

2. Tension Pneumothorax
3. Cardiac Tamponade
4. Severe Hypoxia
5. Hypovolaemia from massive haemorrhage
6. Severe acidosis

## 1.3 Key investigations

-ECG

-ECG Monitor

## 2. ANAPHYLACTIC SHOCK

This is shock due to an acute hypersensitivity reaction secondary to exposure to a previously encountered antigen. The reaction may include rapidly progressing urticaria, respiratory distress, vascular collapse, systemic shock, and death.

### 2.1 TREATMENT GUIDELINES

1. Adrenaline 0.5-1mg IV or IM stat **PLUS**,
2. Hydrocortisone 200mg IV STAT
3. Chlorpheniramine 10mg IM over 1 minute and repeat 8-hourly if necessary
4. If systemic BP is less than 90mmHg, start up a drip and administer an infusion of colloid

## 3. SHOCK

Shock is a state of circulatory collapse that leads to reduction in delivery of oxygen and other nutrients to vital organs which if prolonged leads to irreversible multiple organ failure. This is caused by excessive haemorrhage or fluid loss or acute myocardial infarction.

### 3.1 TREATMENT GUIDELINES

#### 3.1.1 Hypovolaemic Shock

1. Insert large line cannula and give IV fluids quickly
2. Ringer's Lactate or Sodium Chloride 0.9% (if colloid is available, it can also be given in order to raise blood pressure quickly)
3. Give oxygen via nasal line or via face mask
4. Insert urine catheter in order to monitor fluid output
5. Record and monitor blood pressure and pulse

#### 3.2 key investigations

-ECG;

-ECG monitor

-Blood sugar;

-Urea and electrolytes

## CHAPTER 22

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### Poisoning

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## 1. POISONING

Poisoning whether accidental or intentional is a common problem.. It is often seen in the family setting following family quarrel.

## **1.1. ORGANOPHOSPHATE POISONING**

Ingestion of organophosphate insecticides or rat poisoning is common. The major problem is the inhibition of cholinesterase enzyme in the body, which results in accumulation of acetylcholine in the muscarinic and nicotinic synapses. The major complications are respiratory failure, cardiac arrhythmia or coma.

### **1.1.1. DIAGNOSTIC CRITERIA**

Following ingestion one presents with miosis, blurred vision, bradycardia or bronchospasm. There is often increased bronchial secretion, lacrimation, salivation or sweating. Emesis and hypoglycaemia may occur. The muscles are weak with fasciculation and cramps. Hypertension or ventricular tachyarrhythmia may occur. There may be central nervous system effects such as headache, dizziness, restlessness, confusion, seizures or coma.

### **1.1.2. TREATMENT GUIDELINES**

1. Emergency admission to hospital or specialised centre
2. Frequent suction of secretions
3. Gastric lavage
4. Administer activated charcoal – 300gm
5. Monitor and record vital signs (include pupil size and level of consciousness)
6. Atropine IV (to combat muscarinic effects) and/or Obidoxime to combat cholinesterase effects
7. Lignocaine IV for Ventricular Tachyarrhythmia
8. Refer to Intensive Care if respiratory and cardiac manifestations are severe

## **2. PARAFFIN POISONING**

A common accidental occurrence in children

### **2.1.1. DIAGNOSTIC CRITERIA**

There is history of paraffin ingestion with paraffin odour. One may later develop fever, nasal flaring with intercostal retraction and dyspnea coarse crepitations are present. There may be evidence of pulmonary oedema, bronchopneumonia or atelectasis.

### **2.1.2. TREATMENT GUIDELINES**

1. Admit child and monitor and record vital signs
2. Oxygen if indicated
3. Do not empty stomach
4. Watch for complications such as respiratory failure, pneumonitis or secondary bacterial infection

5. For severe and prolonged respiratory symptoms, cover with antibiotics

### 3. PARACETAMOL POISONING

Paracetamol ingested in large quantity is highly toxic. It can damage the liver.

#### 3.1. DIAGNOSTIC CRITERIA

**Stages of Paracetamol Toxicity have been noted:**

1. **Stage 1:** Presents with anorexia, nausea, vomiting, abdominal cramps, pallor and sweating
2. **Stage 2:** This is marked by pain in the right upper quadrant due to liver damage
3. **Stage 3:** There is a peak in liver function enzyme abnormalities secondary to extensive liver damage
4. **Stage 4:** There is resolution of liver damage with clinical damage

#### 3.2. TREATMENT GUIDELINES

1. Admit and do gastric lavage
2. Monitor liver function tests
3. Administer Acetylcysteine IV if available

## 4. SPECIFIC POISONS TREATMENT GUIDELINES

### 4.1. BARBITURATES

The patient presents with headache, confusion, ptosis, excitement, delirium, loss of corneal reflex, respiratory failure, and coma.

1. Empty stomach up to 24 hours after ingestion of the barbiturates
2. Ipecac emetic (in the period immediately after barbiturate ingestion) **OR,**
3. Gastric lavage
4. Activated charcoal
5. Oxygen
6. Insert IV Line
7. Support Respiration where indicated
8. Good nursing care

#### **4.2. BENZODIAZEPINES**

Here the patient usually presents with sedation or coma

1. Ipecac Emesis
2. Gastric lavage
3. Supportive Care

#### **4.3. CARBON MONOXIDE POISONING**

This condition presents with headache, vertigo, dyspnoea, confusion, dilated pupils, convulsion, and coma

1. Oxygen 100% by mask
2. Absolute bed rest
3. Support respiration when indicated
4. Watch for cardiac and central nervous system (CNS) complications

#### **4.4. NARCOTICS**

May present with pinpoint pupils, drowsiness, shallow respiration, spasticity or respiratory failure

1. No emetics should be given
2. Gastric lavage
3. Administer Naloxone 2-20mg
4. Administer oxygen
5. Respiratory support
6. Insert IV line to support circulation

#### **4.5. ETHANOL POISONING**

May present with emotional lability impaired coordination, flushing, nausea and vomiting, stupor to coma, respiratory depression.

1. Ipecac emesis
2. Gastric lavage
3. IV glucose infusion to prevent hypoglycaemia
4. Monitor and record vital signs
5. I.V. Thiamine 100mg

#### **4.6. TOBACCO POISONING**

Patient presents with excitement, confusion, muscular twitching, weakness, abdominal cramps, clonic convulsions, depression, rapid respiration, palpitations, collapse, coma paralysis, respiratory failure.

1. Ipecac emesis
2. Gastric lavage and activated charcoal
3. Oxygen
4. Diazepam to control convulsions
5. Supportive care

# CHAPTER 23

## Laboratory Tests and Investigations

### 1. INVESTIGATIONS AND LABORATORY TESTS

#### 1.1. HAEMATOLOGY

TEST	NORMAL RANGE
Red Cell count	$4.5 \times 10^9/L$
Haemoglobin	13.0 – 18.0 gm/dl
Haematocrit	0.40 – 0.50/l
Mean Corpuscular Volume (MCV)	81 – 100fl
Mean Corpuscular Haemoglobin (MCH)	28 –35 pg
Mean Corpuscular Haemoglobin Concentration (MCHC)	16 –32 gm/dl
White Cell Count	$4.0 \times 10^9/L$
Neutrophils	$2.0 – 7.5 \times 10^9/L$
Lymphocytes	$1.0 – 4.0 \times 10^9/L$
Monocytes	$0.0 – 0.95 \times 10^9/L$
Eosinophils	$0.0 – 0.4 \times 10^9/L$
Basophils	$0.0 – 0.1 \times 10^9/L$
Platelets	$140 – 420 \times 10^9/L$
Partial Thromboplastin Time (PTT)	25-35 seconds
Prothrombin Time (PT)	11-15 seconds
Thrombin Time	24-35 seconds
International Normalised Ration (INR)	
Blood Group + Rhesus	
Erythrocyte Sedimentation Rate (ESR)	0-10mm/L
Plasma Viscosity	1.5 –1.72 mpas

## 1.2. CHEMISTRY

TEST	NORMAL RANGE
Creatinine	80 – 130 micro-mol/L
Urea	2.5 – 6.7 micro-mol/L
Sodium	136 – 144mmol/L
Potassium	3.5 – 5.5mmol/L
Uric Acid	
Calcium	2.1 – 2.6mmol/L
Phosphate	0.8 – 1.45mmol/L
Blood Glucose-Fasting	
Blood Glucose-Random	
Glycosylated Haemoglobin	
Triglycerides	0.3-2.3mmol/L
Cholesterol	3.5-5.4mmol/L
HDL Cholesterol	1.0-2.7mmol/L
LDL Cholesterol	1.0-3.3mmol/L
Lactic Dehydrogenase	270-510mmol/L
Total Creatinine Kinase	15-195mmol/L
Creatinine Kinase MB	0-25mmol/L
Alkaline Phosphatase	40-120mmol/L
Aminotransferase-Alanine	10-40mmol/L
Aspartate (AST)	10-40mmol/L
Gamma Glutaryl Transpeptidase (GGT)	5-50mmol/L
Total Bilirubin	2-20 micro-mol/L
Conjugated Bilirubin	0.8 micro-mol/L
Unconjugated Bilirubin	60-80 micro-mol/L
Total Protein	60-80gm/L
Albumin	37-52gm/L
Albumin: Globulin Ratio	0.9-2.7
Amylase	20-110 micro-mol/L

### 1.3. SEROLOGY

- ♣ Rheumatoid Factor
- ♣ Anti-Streptolysin-O Titre: 0-200lu/ml

### 1.4. VIRAL TITRES

TEST	NORMAL RANGE
Hepatitis-B Surface Antigen	
HIV	
Total T Cells	940-2380cmm
CD4 Counts	510-1320cmm
CD4: CD8 Ratio	0.85-3.13

### 1.5. ENDOCRINE TESTS

TEST	NORMAL RANGE
Free Thyroxine (T4)	10-25mmol/L
Triiodothyronine (T3)	3.5-6.5mmol/L
Thyroid Stimulating Hormone (TSH)	0.35 – 5.5 Hiu/L
Follicle Stimulating Hormone (FSH)	Varies by cycle
Leutenizing Hormone (LH)	Varies by cycle
Progesterone	
Oestrogen	
Human Chorionic Gonadotropin (HCG)	

### 1.6. TUMOURS

TEST	NORMAL RANGE
$\alpha$ -Fetoprotein (AFP)	
Prostrate Specific Antigen (PSA)	
Acid Phosphatase	

### 1.7. MICROBIOLOGY

TEST	NORMAL RANGE
Urine Mid-stream Culture and Sensitivity (MCS)	
Faeces Culture and Sensitivity	
Blood Culture	
Pus Swab	
Cerebrospinal Fluid Culture and Sensitivity	
Stool for Ova and Cysts	
Stool for Occult Blood	

### 1.8. OTHER TESTS

TEST	NORMAL RANGE
Sperm Count and Motility	
Urine Creatinine Clearance/24 hours	
Urine-24 Hour Protein clearance	
Urine-24 Hour Cortisol Clearance	
Urine-VMA Levels in 24 Hours	
Widal Test-O Titre	
Widal Test-H Titre	
Vitamin B-12	
Folate	
Radiology and Sonar	
Ordinary X-rays	
Ultrasound-Gynae	
Ultrasound-General	
Proctoscopy	
CT-Scan	
Heart Sonar	
Gastroscopy	
Bronchoscopy	
ECG	
PAP-Smear	
Mammography	
Histopathology	

**LESOTHO**

**ESSENTIAL**

**MEDICINES**

**LIST**

Level of care	Description	Dosage form(s)
1.	<b>ANAESTHETICS</b>	
1.1.....	<b>General anaesthetics</b>	
A	Enflurane	Solution
A	Halothane	Inhalation
A	Ketamine	Injection, 50mg, HCl
A	Nitrous oxide	Inhalation
B	Oxygen	Inhalation
	<b>Local anaesthetics</b>	
B	Lignocaine	Injection, 1%, 2%, HCl
A	Lidocaine + epinephrine	Injection 1%, 2% (hydrochloride) + epinephrine 1:200,000 in vial; dental cartridge 2% (hydrochloride) + epinephrine 1:80,000
2.	<b>ANALGESICS, ANTIPYRETICS, NON-STEROIDAL ANTI-INFLAMMATORY MEDICINES, MEDICINES USED TO TREAT GOUT</b>	
B	Acetylsalicylic acid	Tablets, 300mg
B	Allopurinol	Tablet, 100mg
A	Colchicine	Tablets, 500mcg
A	Diamorphine plus	
A	Diclofenac	Tablet, 25mg, 50mg; injection 75mg/3ml
B	Ibuprofen	Tablets, 200mg, 400mg
A	Indomethacin	Capsules, 25mg; suppositories 100mg
	Morphine	Tablets, 10mg Injection, 10mg in 1ml ampoule (sulphate or hydrochloride)
C	Paracetamol	Tablets, 500mg Syrup 125mg/ml
A	Pethidine	Injection, 50mg/ml 100mg/2ml

<b>3. ANTIALLERGICS AND MEDICINES USED IN ANAPHYLAXIS</b>		
<b>C</b>	Calamine	Lotion 5%
<b>B</b>	Chlorpheniramine	Tablets, 4mg (hydrogen maleate); injection, 10mg (hydrogen maleate) in 1-ml ampoule
<b>A</b>	Dexamethasone	Injection, 4mg dexamethasone phosphate
<b>B</b>	Liquid paraffin	Liquid
<b>A</b>	Mepyramine	Tablet, 100mg
<b>B</b>	Promethazine	Tablet, 10mg, 25mg (hydrochloride); elixir or syrup, 5mg (hydrochloride)/5ml; injection, 25mg (hydrochloride)/ml in 2-ml ampoule
<b>4. ANTIDOTES</b>		
<b>A</b>	Acetyl cysteine	Injection, 200 mg/ml in 10ml ampoule
<b>B</b>	Atropine	Injection, 1mg (sulphate) in 1ml ampoule
<b>A</b>	Calcium gluconate	Injection, 100mg/ml in 10-ml ampoule
<b>C</b>	Charcoal, activated	Powder, tablet
<b>B</b>	Naloxone	Injection, 400mcg (hydrochloride) in 1 ml ampoule
<b>A</b>	Obidoxine chloride	Injection, 250mg/ml
<b>5. ANTICONVULSANTS/ANTIEPILEPTICS</b>		
<b>A</b>	Carbamazepine	Tablet, scored, 100mg, 200mg
<b>A</b>	Chlormethiazole	Capsule, 25mg
<b>A</b>	Chlorpromazine	Tablets, 25mg, 100mg; injection 50mg/2ml
<b>B</b>	Diazepam	Injection, 5mg/ml in 2-ml ampoule
<b>A</b>	Haloperidol	Tablet, 5mg; injection, 5mg/ml
<b>B</b>	Phenobarbitone	Tablet, 15-100 mg; elixir, 15mg/5ml

**B** Phenytoin Tablet or capsule, 25-100mg; injection, 50mg/ml in 5ml vial (sodium salt)

**A** Thioridazine Tablet, 25mg, 100mg

## 6. ANTI-INFECTIVES

### Anthelmintics

**B** Mebendazole Tablet (chewable), 100mg, 500mg

**A** Niclosamide Tablet (chewable), 500mg

### 6.2 Antibacterials

#### 6.2.1 Beta lactams (penicillin based)

**B** Amoxicillin  
(*HIV\**) Capsule or tablet, 250mg, 500mg (anhydrous); powder for oral suspension, 125mg (anhydrous)/5ml

**B** Ampicillin Powder for injection, 500mg, 1g (sodium salt) in vial

**B** Benzylpenicillin Powder for injection, 600mg (=1 million IU), 3g (=5 million IU) (sodium or potassium salt)

**B** Cloxacillin Capsule, 250mg; syrup 125mg/ml; injection, 250mg/ml

**A** Flucloxacillin Capsule, oral solution, injection

**B** Phenoxymethylpenicillin Tablet, 250mg (as potassium salt); powder for oral suspension, 250mg (as potassium salt)/5ml

#### 6.2.2 Other antibacterials

**A** Amphotericin B  
(*HIV\**) Powder for injection 200mg/5ml

**A** Azithromycin  
(*HIV\**) Capsule, 250mg, 500mg; suspension

**A** Cefotaxime Injection, 500mg, 1g (as sodium salt) in vial

**A** Ceftriaxone Powder for injection, 250mg (sodium salt) in vial

**B** Chloramphenicol Capsule, 250mg; oral suspension, 125mg (as palmitate)/5ml; powder for injection, 1g (sodium

		succinate) in vial; oily suspension for injection, 0.5g (as sodium succinate)/ml in 2-ml ampoule
A	Ciprofloxacin	Tablet 250mg, 500mg (as hydrochloride)
A	Clarithromycin (HIV*)	Tablet, 250mg, 500mg (expensive)
A	Clindamycin (HIV*)	Capsule, 150mg; injection, 150mg (as phosphate)/ml
B	Doxycycline	Capsule or tablet, 100mg (hydrochloride)
A	Erythromycin	Capsule or tablet, 250mg (as stearate or ethyl succinate); powder for oral suspension, 125mg/5mg (as stearate or ethyl succinate); powder for injection, 500mg (as lactobionate) in vial
A	Gentamycin	Injection, 10mg, 40mg (as sulphate)/ml in 2-ml vial
A	Nalidixic acid	Tablet 250mg, 500mg
A	Neomycin	Cream, ear or eye ointment
A	Ofloxacin	Tablet, 200mg, 400mg
B	Sulphamethoxazole+trimethoprim (Co-trimoxazole, HIV*)	Tablet, 100mg+20mg, 400mg + 80mg; oral suspension, 200mg + 40mg/5ml; injection, 80mg + 16mg/ml in 5-ml and 10-ml ampoules
B	Tetracycline	Capsule or tablet, 250mg
A	Vancomycin	Powder for injection, 250mg (as hydrochloride) in vial

### 6.2.3 Antileprosy medicines

B	Dapsone	Tablet, 25mg, 50mg, 100mg
B	Rifampicin	Tablet, 150mg, 300mg

### 6.2.4 Antituberculosis medicines

B	Ethambutol	Tablet, 100mg
B	Isoniazid/Rifampicin	Tablet, 75mg/150mg (junior strength); 150mg/300mg (adult strength)
B	Pyrazinamide	Tablet, 400mg

A	Streptomycin	Powder for injection, 1g (as sulphate) in vial
<b>6.3 Antifungal</b>		
A	Fluconazole (HIV*)	Capsule 50mg; injection 2mg/ml in vial; oral suspension 50mg/5ml
A	Fluorocytosin (HIV*)	Capsule, 250mg; infusion, 2.5g in 250ml
B	Griseofulvin	Tablet, 125mg, 500mg
A	Itraconazole (HIV*)	Capsule, 100mg (expensive)
A	Ketoconazole (HIV*)	Tablet, 200mg
A	Miconazole (HIV*)	Topical cream, 200mg/g; oral gel 20mg/g
B	Nystatin	Lozenges, oral suspension, ointment, pessaries

#### 6.4 Antiviral medicines

##### 6.4.1 Antiherpes

A	Acyclovir	Tablet, 200mg; powder for injection 250mg (as sodium salt)
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##### 6.4.2 Antiretrovirals

A	Abacavir	Tablet, 300mg (as sulphate), oral solution, 100mg (as sulphate)/5ml
A	Efavirenz	Capsule, 50mg, 100mg, 200mg
A	Lamivudine	Tablet, 150mg, oral solution 50mg/5ml
A	Nevirapine	Tablet, 200mg; oral suspension 50mg/5ml
A	Stavudine	Tablet, 40mg
A	Zidovudine	Tablet, 300mg; capsule 100mg, 250mg; oral solution or syrup, 50mg/5ml; solution for iv infusion, 10mg/ml in 20-ml vial

*Anti-infective medicines for opportunistic diseases are listed under their respective groups, with indication – HIV\**

A	Acyclovir	Tablet, 200mg; powder for injection 250mg (as
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		sodium) in vial
<b>A</b>	Famciclovir	Tablet, 125mg, 250mg, 500mg
<b>A</b>	Foscarnet	Injection, 24mg/ml
<b>A</b>	Ganciclovir	Injection, 500mg in vial
<b>A</b>	Valaciclovir	
<b>A</b>	Valganciclovir	
<b>6.5</b>	<b>Antiprotozoal medicines</b>	
<b>B</b>	Metronidazole	Tablet, 200-500mg; injection, 500mg in 100-ml vial; oral suspension 200mg (as benzoate)/5ml
<b>6.6</b>	<b>Antimalarials</b>	
<b>A</b>	Chloroquine	Tablet, 100mg, 150mg (as phosphate or sulphate); syrup, 50mg (as phosphate or sulphate)/5ml; injection 40mg (as hydrochloride, phosphate or sulphate)/ml in 5-ml ampoule
<b>A</b>	Doxycycline	Capsule or tablet, 100mg (hydrochloride)
<b>A</b>	Primaquine ( <i>HIV*</i> )	Tablet, 7.5mg, 15mg (as diphosphate)
<b>A</b>	Pyrimethamine ( <i>HIV*</i> )	Tablet, 25mg
<b>A</b>	Quinine	Tablet, 300mg (as bisulphate or sulphate); injection 300mg (as dihydrochloride)/ml in 2-ml ampoule
<b>A</b>	Sulphadoxine + pyrimethamine (Fansidar)	Tablet, 500mg + 25mg
<b>7</b>	<b>ANTIMIGRAINE MEDICINES</b>	
<b>B</b>	Acetylsalicylic acid	Tablet, 300mg
<b>A</b>	Amitriptyline	Tablet, 10mg, 25mg
<b>A</b>	Carbamazepine	Tablet, scored, 100mg, 200mg
<b>A</b>	Dihydroergotamine	Injection, 1mg/ml

<b>A</b>	Ergotamine + caffeine	Tablet, 1mg+100mg
<b>B</b>	Ibuprofen	Tablet, 200mg, 400mg
<b>B</b>	Paracetamol	Tablet, 500mg
<b>A</b>	Propranolol	Tablet, 20mg, 40mg, 80mg

**8. ANTINEOPLASTIC AND IMMUNOSUPPRESSIVE MEDICINES**

Refer

**9. ANTIPARKINSONISM MEDICINES**

<b>A</b>	Biperiden	Tablet, 2mg (hydrochloride); injection, 5mg (lactate) in 1-ml ampoule
<b>A</b>	Levodopa + carbidopa	Tablet, 100mg + 10mg; 250mg + 25mg

**10. MEDICINES AFFECTING THE BLOOD**

**10.1.....Antianaemia medicines**

<b>B</b>	Ferrous sulphate	Tablet, 200mg; mixture, 12mg/5ml
<b>B</b>	Folic acid	Tablet, 5mg

**10.2 Medicines affecting coagulation**

<b>A</b>	Heparin	Injection, 5000iu/ml
<b>A</b>	Warfarin	Tablet, 5mg

**11. PLASMA SUBSTITUTES**

<b>A</b>	Iron dextran	Injection 50mg/ml
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**12. CARDIO VASCULAR MEDICINES**

**Antianginal medicines**

<b>B</b>	Aspirin	Tablet, 300mg
<b>A</b>	Atenolol	Tablet, 50mg, 100mg
<b>A</b>	Atropine	Injection, 0.5mg/ml, 1mg/ml

<b>B</b>	Ferrous sulphate	Tablet, 200mg
<b>B</b>	Folic acid	Tablet, 5mg
<b>A</b>	Glyceryl trinitrate	Tablet (sublingual), 500mcg
<b>A</b>	Isosorbide dinitrate	Tablet (sublingual), 5mg
<b>B</b>	Paracetamol	Tablet, 500mg

#### **Antiarrhythmic medicines**

<b>A</b>	Adrenaline	Injection, 1 mg/ml (as hydrochloride) in ampoule
<b>A</b>	Amiodarone	Tablet, 100mg, 200mg; injection, 50mg/ml
<b>A</b>	Atenolol	Tablet, 50 mg, 100 mg
<b>A</b>	Atropine	Injection, 0.5mg/ml, 1mg/ml
<b>A</b>	Diazepam	Tablet, 2mg, 5mg
<b>A</b>	Digoxin	Tablet, 62.5 mcgs, 250 mcgs; oral solution 50 mcgms/ml; injection 250 mcgms/ml in 2-ml ampoule.
<b>A</b>	Imipramine	Tablet, 25mg, 50mg
<b>A</b>	Isoprenaline	Tablet, 30mg, injection, 0.1mg/ml
<b>A</b>	Lignocaine	Injection, 2% (without preservative)
<b>B</b>	Propranolol	Tablet, 40mg
<b>A</b>	Verapamil	Tablet, 40mg, 80 mg (hydrochloride)

#### **12.3 Antihypertensive medicines**

<b>A</b>	Amiloride	Tablet, 5mg
<b>A</b>	Atenolol	Tablet, 50-100mg
<b>A</b>	Captopril	Tablet, 25mg, 50mg
<b>A</b>	Dihydralazine	Injection, 25mg
<b>A</b>	Frusamide	Tablet, 40mg; injection, 10mg/ml

A	Hydralazine	Tablet, 10mg, 50mg
B	Hydrochlorthiazide	Scored tablet, 25 mg
A	Indapamide	Tablet, 1.25mg, 2.5mg
A	Magnesium sulphate	Injection, 50%
A	Methyldopa	Tablet, 250 mg
A	Nifedipine	Tablet, 10mg sustained release
A	Verapamil	Tablet, 40 mg, 80 mg (hydrochloride); injection, 2.5 mg (hydrochloride)/ml in 2-ml ampoule

#### Medicines used in heart failure

A	Adrenaline	Injection, 1 mg/ml (as hydrochloride) in ampoule
A	Captopril	Tablet, 25mg, 50mg
A	Digoxin	Tablet, 62.5 mcgs, 250 mcgs; oral solution, 50 mcgs/ml; injection, 250 mcgs/ml in 2-ml ampoule.
A	Dobutamine	Injection, 12.5mg/ml
A	Dopamine	Injection, 40mg/ml
B	Hydrochlorthiazide	Scored tablet, 25 mg

### 13. DERMATOLOGICAL MEDICINES

#### 13.1 Antifungal medicines

B	Benzoic acid + salicylic acid	Ointment 6% + 3%
A	Miconazole	Ointment or cream, 2% (nitrate)
B	Nystatin	Ointment 100,000 iu/g

#### Anti-infective medicines

C	Methyrosanilinium chloride (gentian violet)	Aqueous solution, 0.5%
A	Neomycin sulphate + bacitracin	Ointment, 5mg neomycin sulphate +

		500 iu bacitracin zinc/g
<b>B</b>	Potassium permanganate	Aqueous solution 1:10,000
<b>A</b>	Silver sulphadiazine	Cream, 1%

#### **Anti-inflammatory and antipruritic medicines**

<b>A</b>	Betamethasone	Ointment or cream 0.1% (valerate)
<b>C</b>	Calamine	Lotion
<b>A</b>	Hydrocortisone	Ointment or cream, 1% (acetate)
<b>A</b>	Sulphadiazine ( <i>HIV*</i> )	Tablet, 500mg; injection, 250mg (sodium salt) in 4-ml ampoule

#### **Medicines affecting skin differentiation and proliferation**

<b>A</b>	Benzoyl peroxide	Lotion or cream, 5%
<b>A</b>	Coal tar	Solution, 5%
<b>A</b>	Dithranol	Ointment, 0.1%
<b>A</b>	Fluorouracil	Ointment, 5%
<b>B</b>	Mepyramine	Cream, 2g/100g
<b>A</b>	Podophyllum resin	Solution, 10-25%
<b>A</b>	Urea	Ointment or cream, 10%

#### **13.5 Scabicides**

<b>B</b>	Benzyl benzoate	Lotion, 25%
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### **14. DISINFECTANTS AND ANTISEPTICS**

#### **14.1 Antiseptics**

<b>B</b>	Chlorhexidine	Solution, 5% (digluconate) for dilution
<b>C</b>	Ethanol	Solution, 70% (denatured)
<b>A</b>	Polyvidone iodine	Solution, 10%

#### **14.2 Disinfectants**

<b>A</b>	Chloroxylenol	Solution, 4.8%
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<b>15.</b>	<b>DIURETICS</b>	
<b>A</b>	Frusemide	Tablet, 40mg, injection, 10mg/ml
<b>A</b>	Spirolactone	Tablet, 25 mg
<b>16.</b>	<b>GASTROINTESTINAL MEDICINES</b>	
	<b>Antacids and other anti-ulcer medicines</b>	
<b>B</b>	Aluminium hydroxide	Tablet, 500mg; oral suspension, 320mg/5ml
<b>A</b>	Cimetidine	Tablet, 200mg, 400mg, injection
<b>A</b>	Magnesium hydroxide	Oral suspension, equivalent to 550mg magnesium oxide/10ml
<b>A</b>	Ranitidine	Tablet, 150mg (hydrochloride); oral solution 75mg/5ml; injection, 25mg/ml in 2-ml ampoule
	<b>Antiemetics</b>	
<b>A</b>	Metoclopramide	Tablet, 10 mg (hydrochloride); injection, 5 mg (hydrochloride)/ml in 2-ml ampoule
<b>B</b>	Promethazine	Tablet, 10mg, 25mg (hydrochloride); elixir or syrup, 5mg (hydrochloride)/5ml
	<b>Laxatives</b>	
<b>A</b>	Lactulose	Syrup 3.3g/5ml
<b>16.4</b>	<b>Antihaemorrhoidal medicines</b>	
<b>B</b>	Haemorrhoidal suppositories	Suppositories
<b>16.5</b>	<b>Medicines used in diarrhoea</b>	
<b>C</b>	Oral Rehydration Salts	
<b>17.</b>	<b>HORMONES, OTHER ENDOCRINE MEDICINES AND CONTRACEPTIVES</b>	
<b>17.1</b>	<b>Contraceptives</b>	
	<b>Hormonal</b>	
	LPPA List	
<b>17.1.2</b>	<b>Barrier methods</b>	
<b>C</b>	Condoms	Male and Female condoms

### Insulins and other antidiabetic agents

<b>B</b>	Glibenclamide	Tablet, 5mg
<b>A</b>	Gliclazide (Diamicon)	Tablet, 80mg
<b>B</b>	Metformin	Tablet, 500mg, 850mg
	Insulin –	
<b>A</b>	Actrapid	Injection
<b>A</b>	Actraphane	Injection
<b>A</b>	Monotard	Injection

### Systemic hormonals, excluding sex hormones

<b>A</b>	Carbimazole	Tablet, 5mg
<b>A</b>	Dexamethasone	Tablet, 0.5mg; injection, 5mg/1ml
<b>A</b>	Diethylpropion	Tablet 25mg (as hydrochloride)
<b>B</b>	Hydrocortisone	Injection, 100mg
<b>A</b>	L-thyroxine	Tablet, 100mcg (scored)
<b>A</b>	Prednisone	Tablet, 5mg
<b>A</b>	Prozylthiomacil	

### 18. VACCINES

<b>A</b>	Human rabies immunoglobulin	Injection
<b>A</b>	Rabies vaccine	Injection
<b>A</b>	Tetanus toxoid	Injection

### 19. MUSCLE RELAXANTS

<b>A</b>	Suxamethonium	Injection, 50mg (chloride)/ml in 2-ml ampoule
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### 20. OPHTHALMOLOGICAL PREPARATIONS

#### 20.1 Anti-infective agents

<b>B</b>	Chloramphenicol	Eye drops, 0.5%, eye ointment, 1%
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#### Miotics and antiglaucoma agents

<b>A</b>	Acetazolamide	Tablet, 250mg, injection, 500mg/ml
<b>A</b>	Mannitol	Infusion, 20%
<b>A</b>	Pilocarpine	Eye drops, 2%, 4%
<b>A</b>	Timolol	Eye drops, 0.5%

	<b>20.3 Mydriatics</b>	
<b>A</b>	Atropine	Eye drops 0.1%, 0,5%, 1% (sulphate)
	<b>21. OXYTOCICS AND ANTIOXYTOCICS</b>	
	<b>Oxytocics</b>	
<b>B</b>	Ergometrine	Injection 0.5mg/ml (as maleate)
<b>A</b>	Fenfluramine	Tablets 20mg, 40mg; sustained release capsule 60mg
	<b>21.2 Antioxytocics</b>	
<b>A</b>	Salbutamol	Tablet, 4mg (as sulphate); injection, 50mcg (as sulphate)/ml in 5-ml ampoule
	<b>22. PSYCHOTHERAPEUTIC MEDICINES</b>	
<b>A</b>	Amitryptiline	Tablet, 25 mg (hydrochloride)
<b>A</b>	Artane	Tablet 5mg
<b>A</b>	Benzhexol	Tablet 5mg
<b>A</b>	Biperiden	Injection 5mg/ml
<b>A</b>	Carbamazepine	Scored tablet, 100 mg, 200 mg.
<b>A</b>	Carbidopa	Tablet 25mg (in combination with levodopa)
<b>A</b>	Chlordiazepoxide	Capsule, 10mg
<b>A</b>	Chlormethiazole	Capsule, 192mg
<b>A</b>	Chlorpromazine	Tablet, 100 mg (hydrochloride); syrup, 25 mg (HCl)/5ml; injection, 25 mg (HCl)/ml in 2-ml ampoule.
<b>A</b>	Clonazepam	Tablets, 0.5mg, 1mg, 2mg; drops 2.5mg/ml; injection 1mg/ml
<b>A</b>	Dihydroergotamine	Injection 1mg/ml (as mesylate)
<b>A</b>	Ergotamine	Tablet 2mg (as tartrate)
<b>A</b>	Fluphenazine	Injection, 2 mg, (decanoate or enantate) in 1-ml ampoule.
<b>A</b>	Haloperidol	Tablets, 1.5mg, 5mg; injection

		5 mg in 1-ml ampoule
A	Imipramine	Tablets, 25mg, 50mg
A	Levodopa	Tablet 100mg, 250mg (in combination with carbidopa)
B	Phenytoin	Tablet 50mg, 100mg; oral liquid 30mg/5ml
A	Sodium valproate	Tablet 200mg, oral liquid 200mg/5ml
A	Thioridazine	Tablets, 25mg, 100mg
A	Tryptiline	

### 23. MEDICINES ACTING ON THE RESPIRATORY TRACT

A	Aminophylline	Tablets 100mg, 200mg; injection 25mg/ml
B	Hydrocortisone	Injection 100mg
A	Phenobabitone	Tablets 8mg, 15mg; elixir 15mg/5ml; injection 30mg/ml
A	Potassium iodide	Tablet 130mg; oral solution 500mg/ml; syrup 325mg/5ml
A	Prednisone	Tablet 5mg
B	Salbutamol	Tablets 2mg, 4mg; syrup 2mg/5ml; inhaler 100mcg/inhalation; nebuliser solution 5mg/ml
A	Theophylline	Tablet, 100 mg, 200 mg, 300 mg

### 24. SOLUTIONS CORRECTING WATER, ELECTROLYTE AND ACID-BASE DISTURBANCES

#### ORAL

A	Calciferol	Capsule / tablet 50,000 iu
A	Magnesium sulphate	Injection 0.5mg/ml
C	Oral Rehydration Salts (ORS)	Sachet
A	Potassium chloride	Powder for solution

A	Sodium bicarbonate	Injection 8.4%, infusion 4.2%
	<b>Parenteral</b>	
B	Glucose	Injectable solution, 5%, 10% isotonic; 50% hypertonic
	<b>24.3 Miscellaneous</b>	
B	Tetanus human immunoglobulin	
B	Water for injection	2-ml, 5-ml, 10-ml ampoules
	<b>25. VITAMINS AND MINERALS</b>	
B	Folic acid	Tablet 5mg
A	Folinic acid ( <i>HIV*</i> )	Tablet, 5mg, 10mg, 15mg, 25mg; injection, 3mg/ml, 5mg/ml
B	Vitamin A	Tablet / capsule 100,000 iu
B	Vitamin B12	Injection 1mg/ml
B	Vitamin K <sub>1</sub>	Tablet 10mg; injection 1mg/0.5ml, 10mg/ml

## SPECIALIST DRUGS ONLY

### Antibacterials

A	Ofloxacin	Tablet, 200mg, 400mg
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## 2. ANTINEOPLASTIC AND IMMUNOSUPPRESSIVE MEDICINES

### 2.1.....Immunosuppressive medicines

A	Azathioprine	Tablet, 50mg; powder for injection, 100mg (as sodium salt) in vial
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A	Cyclosporin	Capsule, 25mg;
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### Cytotoxic medicines

A	Chlorambucil	Tablet, 2mg
A	Fluorouracil	Injection, 50mg/ml in 5-ml ampoule
A	Mercaptopurine	Tablet, 50mg
A	Methotrexate	Tablet, 2.5mg (as sodium salt); powder for injection, 50mg (as sodium salt) in vial

A	Vinblastine	Powder for injection, 10mg (sulphate) in vial
A	Vincristine	Powder for injection, 1mg, 5mg (sulphate) in vial

## CARDIO VASCULAR MEDICINES

### Antianginal medicines

A	Atenolol	Tablet, 50mg, 100mg
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### 3.2 Antihypertensive medicines

A	Atenolol	Tablet, 50mg, 100mg
A	Captopril	Tablet, 25mg, 50mg

## DIURETICS

A	Spironolactone	Tablet, 25 mg
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## 5. GASTROINTESTINAL MEDICINES

### Antacids and other anti-ulcer medicines

A	Omeprazole	Capsule, 20 mg
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## 6. OPHTHALMOLOGICAL PREPARATIONS

### 6.1 Miotics and antiglaucoma agents

A	Timolol	Eye drops, 0.5%
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