

**Republic of The Gambia**

**Standard Treatment Guidelines**

**Ministry of Health**

**Fifth Edition, 2023**

# PREFACE

Standard Treatment Guidelines (STGs) are systematically developed statements that assist healthcare providers in deciding on appropriate treatments for specific clinical problems. They usually reflect the consensus on the optimal treatment options within a health system and aim at beneficially influencing prescribing behaviour at all levels of care. Standard Treatment Guidelines (STGs) list the preferred pharmaceutical and non-pharmaceutical treatments for common health problems experienced by people in a specific health system. As such, they represent one approach to promoting therapeutically effective and economically efficient prescribing.

STG is a vital tool in the day-to-day work of health professionals and is equally useful to all other health practitioners working in both private-not-for-profit and private commercial health sectors who are strongly recommended by the Ministry of Health to make use of the STG to guide their diagnosis and make the most appropriate use of the medicines available to them.

The availability of essential drugs and their rational use are acknowledged as fundamental elements in the provision of health services. Experience has shown that even when pharmaceutical supply is based on an approved Essential Medicines List, ample opportunity exists for ineffective, unsafe, or wasteful prescribing. Inappropriate prescribing is one of the manifestations of irrational medication use behaviour. STGs provide the tool for health care providers to give quality standardised care at affordable cost.

Regular, objective, and transparent reviews of STGs are very important because the development process is a continual effort and not limited to a one-time production. This process includes gaining acceptance of the concept and preparing the text for wide consultation and consensus building. This is to ensure that users identify with and collectively own the process of development.

This document is the fifth edition of the Ministry of Health’s officially approved prescribers’ and dispensers’ guide for all levels of healthcare. As with earlier editions, the compilation of the STG has only been possible through wide collaborations with colleagues within the department, experts in different specialities (pharmacists, doctors, nurses,), academia and other stake holders

The Ministry of Health is particularly grateful to its development partners, experts, and other stakeholders for their continuous support to the health sector. It is with confidence that all users of this document would find this edition very useful.

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**Hon. Dr. Ahmadou Lamin Samateh**

**Minister of Health**

# ACKNOWLEDGEMENTS

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We offer sincere thanks and gratitude to each and every one that worked assiduously to produce a thorough and up-to-date document.

**TECHNICAL COMMITTEE: To be inserted**

**EDITORIAL COMMITTEE: To be inserted**

# INTRODUCTION

Appropriate use of medicines means that the patients receive medicines which satisfy their clinical needs, in doses which meet their own individual requirements, for adequate periods of time and at the lowest cost to them and the community. The STG hopes to achieve this by providing:

* Information on the essential elements of clinical diagnoses
* Guidance on required basic investigations.
* Guidance on when to refer or admit patients.

The STG should be used in conjunction with The Gambia Essential Medicines List, which provides guidance on the appropriate selection of medicines for each level of health care/facility.

The STG has been designed to be used as a guide for treatment choices and as a reference source to help improve the overall management of patients including when to refer, especially at the primary and secondary health care levels.

It is emphasised that the treatment choices herein given are in line with international best practices, supported by scientific evidence and agreed upon by a pool of national experts.

Deviation from the set treatment and care plans could be accommodated at **only the Specialist level.** All prescribers are therefore required to adhere to the treatment and care plan defined in the STG.

At General hospital level, adjustments to the treatment and care plan could be made by **only** the

**NATIONAL MEDICINES THERAPEUTIC COMMITTEE**

The appointed National Medicines Therapeutic Committee (NMTC) oversee, formulation and implementation of policies for selection and use of medicines. The main goal of the NMTC is to ensure that patients are provided with the best possible cost- effective and quality of care through determining what medicines will be available, at what cost, and how they will be used. The NMTC is also, amongst others, is tasked to carry out educational and other activities aimed at improving prescribing and dispensing practices in the health system.

Specifically, the NMTC shall be responsible for:

Improving the health and economic outcomes of health care particularly those related to medicine use both in hospital settings and minor + major clinics and PHC

Reinforcing upholding the principles of the National Medicines Policy and ensure its requirements relating to medicine use are monitored.

Supporting rational and cost-effective medicine use through collaborative medicine management, involving all health workers.

Ensuring the best possible medicine safety through monitoring, evaluating, and thereby preventing, as far as possible, adverse drug reactions (ADRs) and medication errors.

Developing and implement interventions to improve medicine use by prescribers, dispensers, and patients; this will require the investigation and monitoring of medicine use.

# PRESCRIBING GUIDELINES

Before writing any prescriptions consider the following points:

**Do I have to give medicine(s) as treatment for the diagnosed condition?**

**Not all** conditions or patients require a prescription for medicines. Non-medicine treatments and/or giving simple advice may be more suitable in certain situations.

**Is the prescribed treatment rational and likely to have optimum therapeutic effect?**

Rational treatment depends on appropriate diagnosis of the condition, appropriate knowledge of the relevant available medicines, appropriate selection from the most appropriate list of medicines and dosage form, correctly and completely prescribing the selected medicines stating clearly for each:

* the dosage
* the dose frequency
* the duration of treatment

**Is the selected dosage form the most appropriate?**

For medications meant for systemic effect, always use the oral route if possible as it is the cheapest and least harmful route.

Injections in particular are associated with several major risks including:

* Spread of infections, for example, HIV/AIDS, hepatitis, injection abscesses due to problems with re-use of syringes/needles and difficulties in ensuring sterility.
* Incorrect route of administration
* Poor injection technique, for example, using wrong type/size of needle, wrong location, and wrong depth of insertion.
* Difficulty in finding a vein (for Intravenous route)

**Have I used the correct name for each medicine?**

To avoid any possible confusion and to reduce prescribing costs:

* Always prescribe medicines by the full generic name and not a brand name, e.g. Paracetamol (not Panadol ®).
* Avoid using medicine name abbreviations unless officially defined and approved.

**Have I taken into account all relevant patient criteria?**

When prescribing any medicine, always take into consideration important patient criteria such as:

* Age
* Sex
* Weight - especially children

**Likelihood of allergies**

* Presence of renal or hepatic disease. Many medicines may have to be used in reduced doses or avoided completely.
* Any other medicines the patient may be taking. These may cause unwanted medicine interactions or adverse effects.
* Pregnancy- only use medicines in pregnancy if the expected benefit to the mother is greater than any risk to the foetus and avoid all medicines if possible during the 1st trimester (the first three months of pregnancy).
* Breastfeeding- some medicines are expressed in breast milk and may harm the infant. It therefore essential to weigh the benefits of treatment against the risks.
* The likely degree of compliance with treatment, for example simpler, shorter dosage regimes increase the chance of the patient correctly following prescribed therapy.

**Is the prescribed medication likely to clearly benefit the patient?**

In all cases consider carefully the expected benefit of a prescribed medication against potential risks.

**Am I prescribing medicines for unnecessary symptomatic treatment?**

Do not overuse symptomatic treatments for treating minor self-limiting conditions for which simple home remedies may often be appropriate and effective.

**Do I really need to prescribe more than one medicine?**

Do not practice multiple prescribing (poly pharmacy), especially when the diagnosis is uncertain. It is a tremendous waste of resources and puts the patient at increased risk without corresponding clear benefit.

**Prescription Writing**

No incomplete, inaccurate, illegible or unclear prescription should be dispensed. All such prescriptions should be returned to the prescriber for clarification, completion, or correction before dispensing can proceed. To avoid such problems and associated delays, follow the guidance below in writing your prescriptions:

* All prescriptions should clearly indicate name and address (if available) of the prescriber.
* Write all prescriptions legibly in ink.
* Poor writing may lead to errors in interpretation by the dispenser which may have harmful and possibly disastrous consequences for the patient.
* Write the full name, age, gender, address of the patient, sign and date the prescription form.
* Write the title of the medicine or preparation using its full generic name. Unofficial abbreviations, trade names, and obsolete names should not be used.
* State the strength of the preparation required where relevant: Quantities of one gram or more should be written as 1g, 2.5g, 10g,etc
* Quantities <1g but >1mg should be expressed in milligrams rather than grams, for example, 500mg and not 0.5g
* Quantities <1mg should be expressed in micrograms and not in mg, for example, 100 micrograms rather than 0.1mg or 100mcg.
* If decimal figures are used, always write a zero in front of the decimal point where there is no other figure, for example, 0.5mL and not .5mL.

Always state dose regimen **in full**.

* Dose size
* Dose frequency
* Duration of treatment

For example: **Doxycycline** 100mg every 12 hours for 7 days. The quantity to be dispensed is calculated from the regimen.

Avoid use of the instructions like ‘prn’ or ‘to be used/taken as required’. State instead a suitable dose frequency. In the few cases where ‘as required’ is appropriate, always state the actual quantity of the medicine to be supplied.

For **oral liquids**: State doses in terms of:

* 5mL spoonful: for syrups, suspensions, and other paediatric preparations: or 10mL spoonful for adult mixtures.
* Doses other than 5mL or 10mL or multiples of these will be diluted to the nearest equivalent 5mL or 10mL quantity before dispensing.

Where relevant, always remember to include on the prescription any special instructions necessary for the correct use of a medicine or preparation, for example ‘before food’, ‘apply sparingly’, etc.

**In-patient Prescriptions:**

Write these prescriptions and records of dispensing and administration of in-patient medicines on in-patient treatment cards.

* Only use one card per patient at any one time.
* If medicine is to be given ‘as required’ clearly state a suitable dose frequency, or times of administration.
* For all medicines prescribed, always state the route of administration.
* When any changes or cancellations are made to a prescription card, or if treatment is to be stopped, clearly sign and date the card in the right place.
* If the timing of a medicine dosage is critical, ensure that you make suitable arrangements for the medicine to be given at the specific required time(s).

For inpatient prescriptions, no more than 48 hours’ worth of medicines will be dispensed at any one time. Prescribers are therefore encouraged to review prescriptions and rewrite or amend 48 hourly as may be necessary.

**Controlled medicine prescriptions:**

* Morphine injection
* Morphine oral solution
* Morphine tablet SR (Slow Release)
* Pethidine injection
* Pethidine tablets
* Pentazocine injection
* Propofol
* Ephedrine
* Misoprostol

These are all medicines of potential abuse. All procedures involving them should be carefully recorded in the appropriate record books. They may only be prescribed by authorized prescribers who must observe the following legal requirements:

* Prescriptions must be in the prescriber's own handwriting, signed and dated and with the prescriber's address.
* The name and address of the patient must be stated.
* The total amount of the item to be supplied must be stated in words and figures. It is an offence for a prescriber to issue and for a pharmacy to dispense prescriptions for Controlled medicines unless the requirements of the law are fully complied with.

**Adverse Drug Reactions (ADRs)**

Nearly all medicines may produce unwanted or unexpected adverse effects, some of which may be life threatening, for example anaphylactic shock, liver failure etc. Immediately report any serious or unexpected adverse effect suspected to be due to a medicine to the Pharmacovigilence focal persons Regional Health Officers (RHOs) for onward transmission to the Medicine Control Agency.

**Guide for Prevention of ADRs**

1. Avoid use of any medicine without a clear indication.
2. Only use medicines in pregnancy if absolutely essential
3. Check if the patient has had any previous reactions to the medicine or to similar medicines.
4. Reduce doses when necessary, for example, in the young, the elderly, and if liver or renal disease is present.
5. Always prescribe the minimum necessary medicines.
6. Carefully explain dose regimes to patients, especially those on multiple medicines, the elderly and anyone likely to misunderstand.
7. If possible, always use medicines with which you are familiar.
8. Look out for ADRs when using new or unfamiliar drugs.
9. Warn patients about likely adverse effects and advise them on what to do if they occur.

* **PAEDIATRIC PRESCRIBING**

Children, especially neonates differ from adults in their response to drugs. Special care is needed in the neonatal period (first 30 days of life) and doses should always be calculated with care as the risk of toxicity of drugs is increased. Persons aged from one month to 2 years are termed infants, whilst persons aged between 2 and 12 years are referred to as children.

Prescriptions should be written according to the guidelines in the Prescriptions Writing section of this STG. The age of the child should be stated on **ALL** prescriptions for children.

The term ‘child’ includes persons aged 12 years and younger.

**Dosage calculations**

In these guidelines, paediatric medicine doses are usually given according to body weight and not age, and are therefore expressed as mg/kg, etc.

The main reason for this is that children of the same age may vary significantly in weight. Thus it is safer and more accurate to prescribe medicines according to body weight. Moreover, this should encourage the good practice of weighing children whenever possible.

The doses for children therefore require multiplying the required dose by the weight of the child in kilograms.

|  |
| --- |
| **Note: paediatric doses calculated using mg/kg should not exceed the normal adult dose**  For example: if the dose is stated as 8mg/kg (max.300mg), a child weighing 10kg should receive 80mg but a child weighing 40kg should receive 300mg (rather than 320mg) |

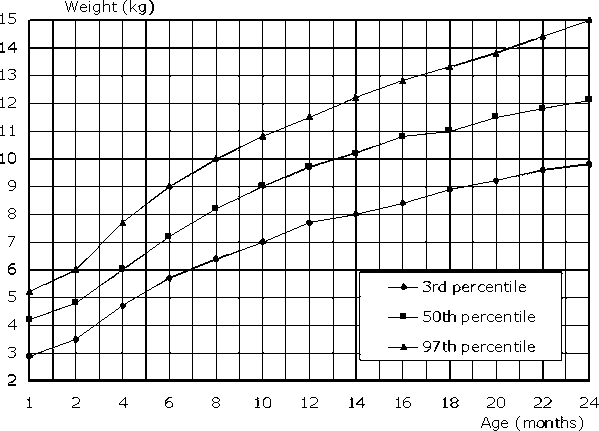
As a guide to prescribing by weight when a weighing scale is not available, the two following graphs are provided showing weights of children from 1-24 months and 2-15 years respectively.

Three lines are shown on each graph:

* The middle (50th percentile) line shows weights for average children.
* The lower (3rd percentile) line shows weights for children who are very small for their age.
* The upper (97th percentile) line shows weights for children who are very large for their age.

These graphs can therefore be used to estimate the weight of a child of known age after assessment of whether the child appears average, small or large size for that age.

**Weights of children aged 1-24 months**



**Example:**

Prescribing for an 8 month old baby who is fatter than usual, (i.e. larger than average weight for age):

* Follow the x-axis (age) of the graph to the 8 month mark.
* Follow the vertical from there to a point somewhere between the middle (50th percentile) and top (97th percentile) lines on the graph.
* From there follow a horizontal line left to cut the y-axis (weight).
* The estimated weight of the child is around 10kg.

**Weights of children aged 2-15 years**



**Example:**

Prescribing for an 8½ year old thin child, (i.e. less than average weight for age):

* + Follow the x-axis (age) of the graph to mid-way between the 8 and 9 year marks.
  + Follow the vertical from there until it meets the lower (3rd percentile) line on the graph.
  + From there follow a horizontal line left to cut.

***Parents must be warned to keep ALL medicines out of reach of children***

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# CHAPTER ONE

GASTRO-INTESTINAL CONDITIONS

## 1.1 HELMINTHIC INFECTIONS

DEFINITION/INTRODUCTION

* Soil-transmitted helminth infections are among the most common infections worldwide and affect the poorest and most deprived communities. They are transmitted by eggs present in human faeces which in turn contaminate soil in areas where sanitation is poor.

**Signs and Symptoms: varied presentations but below are the most common**

* Anal itching
* Cough
* Presence of worms in stool
* Skin itching
* Weight loss
* Anaemic symptoms-fatigue, pallor,
* Abdominal cramps and pain
* Nausea and Vomiting
* Constipation

Abdominal distention (occasionally)Investigations

* Stool microscopy – presence of ova, worms or microfilarias.
* FBC/Hb/PCV may be done if stool microscopy is not conclusive and there is high clinical suspicion for worm infestation (anaemia and eosinophilia may be present)

**Ascaris**

It is very common, especially in children. Worms can be vomited out and in rare cases may cause intestinal obstruction.

**TREATMENT**

**Mebendazole:** 100mg tablets - 1 tablet **12 hourly** for 3 days

**OR**

**Mebendazole:** 500mg tablet as a single dose **and should be chewed then swallowed**.

**NB! Mebendazole is not recommended in children under two (2) years old and is contraindicated in pregnancy.**

**Hookworm**

It is common and causes anaemia.

**TREATMENT**

**Mebendazole:**100mg tablet: 1 tablet **12 hourly** for 3 days (to be chewed or crushed then swallowed)

**OR**

**Albendazole:** 400mg as a **single dose** (to be chewed or crushed then swallowed)

**Treatment for anaemia**: **Ferrous (iron) Sulphate** tablets see section on anaemia.

**Trichuris**

It can cause rectal prolapsed, especially in children.

**TREATMENT**

**Mebendazole:** as above; Repeat if necessary, after 1-2 weeks (to be chewed or crushed then swallowed)

**OR**

**Albendazole:** 400mg as a **single dose** (to be chewed or crushed then swallowed)

**Enterobious vermicularis:Contagious!**

Main symptom – Perianal itching

***NB.*** *ADVISE PATIENT TO OBSERVE STRICT HYGIENIC CONDITIONS*

**TREATMENT: TREAT THE WHOLE FAMILY**

**Mebendazole:** 500mg tablet as a **single dose** (to be chewed or crushed then swallowed)

REPEAT TREATMENT AFTER TWO WEEKS

**Strongyloides stercoralis**

It is common in immune-compromised patients: e.g. children with malnutrition, HIV/AIDS patients

**NOTE: Steroids to be avoided in patients with strongyloides**

**TREATMENT**:

**Thiabendazole:** 25mg/kg twice daily for 2 days

**OR**

**Albendazole:** 400mg 12 hourly for 3 days

**OR**

**Ivermectin:** 200mcg/kg/day for 2 days

**Cutaneous larva migrans**

**LOCAL TREATMENT WITH:**

**Thiabendazole:** tablets crushed in soft paraffin and applied topically by occlusive dressings

**SYSTEMIC TREATMENT:**

**Thiabendazole:** 25mg/kg 12 hourly for 5 days

**OR**

**Albendazole:** 400mg 12 hourly for 3 days

**Tapeworm infestations**

Causative organisms: *Taenia saginata*, *Taenia Solium, Hymenolepis nana*

**TREATMENT**

**Praziquantel:** 5-10mg/kg as a **single dose** after a light breakfast

For *Hymenolepis nana:* 25mg/kg as a **single dose**.

#### 

**Schistosomiasis**

1. Schistosoma haematobium is common in the eastern part of the country.

Main symptoms: Haematuria, usually towards the end of urination.

**TREATMENT**

**Praziquantel:** 20mg/kg as a **single dose**, repeat the dose after 4-6 hours

**May need to be repeated after two weeks**

2. Schistosoma Mansoni: is rare in The Gambia

**Symptom**: no early symptoms; can cause diarrhoea may be with blood

Long term effect: Peri-portal fibrosis of the liver.

**TREATMENT**

**Praziquantel:** 20mg/kg as a **single dose**, repeat the dose after 4-6 hours

**May need to be repeated after two weeks**

Important complications of Schistosoma infection

1. Ectopic worms may lead spinal cord compression or cauda equina lesion, which can cause paralysis. If treated promptly, full functional recovery is possible.
2. Squamous carcinoma of the urinary bladder can occur with *Schistosoma haematobium* infection.

## 1.2 DIARRHOEAL DISEASES

Diarrhoea is the passage of loose or watery stools, usually at least three times in a 24hour period. However, it is the consistency of the stool rather than the number that is most important. Frequent passing of formed stools is not considered as diarrhoea. Babies fed with breast milk often pass loose, ‘pasty’ stools; this is not considered as diarrhoea. Mothers usually know when their children have diarrhoea and may provide useful working deﬁnitions in local situations.

**Young children and very old patients are particularly susceptible to dehydration due to diarrhoea.**

It is most practical to base treatment of diarrhoea on the clinical types of the illness, which can easily be determined when a patient is ﬁrst examined. Laboratory studies may be useful in certain diarrhoeal conditions.

***Clinical Types of Diarrhoeal diseases***

Four clinical types of diarrhoea can be recognised, each reflecting the basic underlying Pathology.

* **Acute Watery Diarrhoea (Including Cholera):** which lasts several hours or days: the main danger is dehydration and malnutrition if feeding is not continued. NB Dehydration from Cholera can be rapidly fatal. It is also a notifiable disease.
* **Bloody Diarrhoea:** which is also called Dysentery; the main dangers are damage of intestinal mucosa, sepsis, and malnutrition. Other complications including dehydration may also occur.
* **Persistent Diarrhoea:** Last for 14 days or longer, the main danger is malnutrition and serious non-intestinal infections, dehydration may also occur.
* **Diarrhoea with Severe Malnutrition (Marasmus or Kwashiorkor):** the main dangers are severe systemic infection, dehydration, heart failure, vitamin and mineral deﬁciency.

**DIARRHOEA IN CHILDREN**

The three essential elements in the management of all children with diarrhoea are:

* Rehydration therapy (prevention or treatment of dehydration)
* Zinc supplementation
* Counselling for continued feeding and prevention.

**NB\*:**

* **Antimicrobials** such as **Cotrimoxazole** should **NOT** be used except for children with bloody diarrhoea (probable shigellosis), with associated fever, suspected cholera with severe dehydration and other serious non-intestinal infections such as pneumonia and urinary tract infection.
* Antiprotozoal drugs e.g. **Metronidazole** are indicated **only** in amoebic dysentery.
* Anti-diarrhoeal’ drugs and anti-emetics (such as **Promethazine** and **Metoclopramide**) should **NOT** be given to young children with acute or persistent diarrhoea or dysentery.

##### Clinical History

A careful history is essential in the management of a child with diarrhoea:

* Frequency of stools
* Change in consistency of stool
* Presence or absence of fever
* Number of days of diarrhoea
* Blood in stools
* Report of a cholera outbreak in the area
* Recent antibiotic or other drug treatment
* Inconsolable crying in an infant.
* Exclusive breastfeeding or supplementary feeding

##### Investigations

* FBC
* Blood slide/film for malaria parasites
* Stool microscopy and culture especially if there is blood in stools
* Blood urea, creatinine and electrolytes

***Differential diagnosis in a child presenting with diarrhoea***

|  |  |  |
| --- | --- | --- |
|  | Diagnosis | In favour |
| 1 | Acute (watery) diarrhoea | More than three loose stools per day  No blood in stools |
| 2 | Cholera | Profuse watery diarrhoea (rice-water stool) with severe dehydration during cholera outbreak (this is key)  Positive stool culture for Vibrio cholerae  O1 or O139 |
| 3 | Dysentery | Blood and mucus mixed with the stools (seen or  reported) |
| 4 | Persistent diarrhoea | Diarrhoea lasting ≥ 14 days |
| 5 | Diarrhoea with severe  Malnutrition | Any diarrhoea with signs of severe acute  Malnutrition( see malnutrition section) |
| 6 | Diarrhoea associated with  recent antibiotic use | Recent course of broad-spectrum oral  Antibiotics |
| 7 | Intussusception | Blood and mucus in stools (red currant jelly)  – Inconsolable bouts of crying in an infant or  young child  Abdominal mass |

After diagnosis of diarrhoea is confirmed the hydration status of the child should be classified in order to determine the treatment plan as shown in the two tables below.

Table 1: Classification of the severity of dehydration in children with diarrhoea

|  | Classification | Signs or symptoms | Treatment |
| --- | --- | --- | --- |
| 1 | No dehydration | Not enough signs to classify as some or severe dehydration | \_ Give fluid and food to treat diarrhoea at home (see diarrhoea treatment plan A)  \_ Advise mother on when to return immediately  \_ Follow up in 5 days if not improving. |
| 2 | Some dehydration | Two or more of the following signs:  ■ restlessness, irritability  ■ sunken eyes  ■ drinks eagerly, thirsty  ■ skin pinch goes back slowly | \_ Give fluid and food for some dehydration (see diarrhoea treatment plan B)  \_ After rehydration, advise mother on home treatment and when to return immediately  \_ Follow up in 5 days if not improving |
| 3 | Severe dehydration | Two or more of the following signs:  ■ lethargy or unconsciousness  ■ sunken eyes  ■ unable to drink or drinks poorly  ■ skin pinch goes back very slowly (≥ 2 s) | \_ Give fluids for severe dehydration (see diarrhoea treatment plan C in hospital) |

***Table 2: Diarrhoea treatment plan A:***

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Treat diarrhoea at home**  **COUNSEL THE MOTHER ON THE FOUR RULES OF HOME TREATMENT:**  **1. Give as much extra fluid as the child will take.**  **Tell the mother to:**   * Breastfeed frequently and for longer at each feed. * If the child is exclusively breastfed, give ORS and clean water in addition to breast milk   **If the child is not exclusively breastfed, give one or more of the following:**   * ORS solution, food-based fluids (such as soup, rice water and yoghurt drinks) and clean water.   **It is especially important to give ORS at home when:**   * The child has been treated according to plan B or plan C during this visit. * The child cannot return to a clinic if the diarrhoea gets worse.   **Teach the mother how to mix and give ORS. Give the mother packets of ORS as needed to use at home.**  **Teach the mother how much fluid to give in addition to the usual fluid intake:**   |  |  |  | | --- | --- | --- | | Treatment by fluid therapy –Plan A | | | | Age | ORS – Basic Amount | ORS for every extra stool passed | | ≤ 2 years | 500 ml or more | 50–100 ml after each loose stool | | ≥ 2 years | 1000ml or more | 100–200 ml after each loose stool |   Tell the mother to:   * Give frequent small sips from a cup. * If the child vomits, wait for 10 minutes. Then continue, but more slowly. * Continue giving extra fluid until the diarrhoea stops. * Discard remaining constituted ORS after 12 hours at room temperature or after 24 hours in the refrigerator.  1. Give zinc supplements.  * \_ Tell the mother how much Zinc to give: * < 6 months: 10 mg per day for 10–14 days * ≥ 6 months: 20 mg per day for 10–14 days   Show the mother how to give zinc supplement:   * For infants, dissolve the tablet in a small amount of clean water, expressed milk or ORS in a small cup or spoon. * Older children can chew the tablet or drink it dissolved in a small amount of clean water in a cup or spoon.   REMIND THE MOTHER TO GIVE THE ZINC SUPPLEMENT FOR THE FULL  10–14 DAYS.  Continue feeding.  Know when to return to the clinic |

***Table 3: Diarrhoea treatment plan B:***

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Treat some dehydration with oral rehydration salts**  **GIVE THE RECOMMENDED AMOUNT OF ORS IN THE CLINIC OVER 4 HOURS as shown in table below**   |  |  |  |  |  | | --- | --- | --- | --- | --- | | **Treatment by fluid therapy: Plan B** | | | | | | Age | up to 4 months | 4 up to 12 months | 12 months  up to 2 years | 2 years  up to 5 years | | Weight | < 6 kg | 6–< 10 kg | 10–< 12 kg | 12–19 kg | | Amount of ORS | 200–400 ml | 400–700 ml | 700–900 ml | 900–1400 ml |  * Use the child’s age only if weight is not available. * If the child wants more ORS than shown, give more.   **Show the mother how to give ORS solution.**   * Give frequent small sips from a cup or spoon * If the child vomits, wait 10 min, then continue, but more slowly. * Continue breastfeeding whenever the child wants.   **After 4 hours:**   * Reassess the child and classify him or her for dehydration. * Select the appropriate plan to continue treatment. * Begin feeding the child in the clinic.   **If the mother must leave before completing treatment:**   * Show mother how to prepare it locally in case **ORS** is not available * Show her how much **ORS** to give to finish the 4-hour treatment at home. * Give her enough **ORS** packets to complete rehydration. Also give her additional packets as recommended in plan A. * Explain the four rules of home treatment:  1. Give extra fluid. 2. Give zinc supplements. 3. Continue feeding. 4. Know when to return to the clinic. |

**Diarrhoea treatment plan C:**

* A child with severe dehydration requires treatment with IV fluids in hospital.
* Start IV fluids immediately. Give 100 ml/kg **Ringer's lactate** solution or, if not available, **Normal saline (Sodium Chloride 0.9%)**, divided as shown in the Table for Plan C below:
* If you cannot give this and cannot pass a nasogastric tube immediately start **ORS** and refer to the next level of care. If the child can drink, give **ORS** by mouth while the drip is set up. **Treat severe dehydration quickly**.
* Reassess the child every 15-30 minutes. If hydration status is not improving, give the IV fluid more rapidly than as stated in the table above. Also give **ORS** (about 5 ml/kg body weight/hour) as soon as the child can drink: usually after 3-4 hours (infants) or 1–2 hours (children).
* When stable, follow the reassessment of an infant after 6 hours and a child after 3 hours. Classify dehydration. Then choose the appropriate plan (A, B, or C) to continue treatment.

|  |
| --- |
| **If only NG tube therapy can be given**   * Start rehydration by tube with ORS solution: give 20 ml/kg per hour for 6hrs (total, 120 ml/kg).   **Reassess the child every 1–2 hour:**   * If there is repeated vomiting or increasing abdominal distension, give the fluid more slowly. * If hydration status is not improving after 3hrs, send the child for IV therapy.   **After 6 hours, reassess the child and classify dehydration.**  Then, choose the appropriate plan (A, B or C) to continue treatment. |

**PERSISTENT DIARRHOEA**

It is divided into non-severe and severe persistent diarrhoea.

**Severe persistent diarrhoea** is when the child shows signs of some or severe dehydration.

* Assess the degree of dehydration and treat according to plan B or C. Investigate child thoroughly (and consider Lactose intolerance) If malnourished address dehydration according to the malnutrition section of this booklet.

**Non severe Persistent diarrhoea** is when the child is not dehydrated.

* Treatment can be carried at home with mineral and vitamin supplements.
* Consider lactose intolerance. (if indicated Child should be put on low lactose or lactose free diet)

## DYSENTERY IN CHILDREN

Dysentery is diarrhoea presenting with frequent loose stools mixed with blood (not just a few smears on the surface). Most episodes are due to *Shigella*, and nearly all require antibiotic treatment. Shigellosis can lead to life-threatening complications, including intestinal perforation, toxic mega colon and haemolytic uraemic syndrome.

**Signs and Symptoms**

The diagnostic signs of dysentery are frequent loose stools mixed with visible red blood. Other findings may include:

* Abdominal pain
* Fever
* Lethargy
* Dehydration
* Rectal prolapse.
* Convulsions

|  |
| --- |
| **Treatment**  Admit if child is less than two months old, severely ill, lethargic, abdominal distension and tenderness or convulsions or any other serious condition.  Assess the level of dehydration and treat according to plan A, B or C.  Give Ciprofloxacin at 15 mg/kg oral or IV twice a day for 3 days  OR  Give Ceftriaxone IV or IM at 50–80 mg/kg per day for 3 days to severely ill children or as second-line treatment.  Give Zinc supplements as for children with watery diarrhoea.  NB: For minor and major health centres give a stat dose and refer to next level |

Treatment can be altered when stool culture and sensitivity results are available.

The basis for the management of each type is to prevent or treat dangers that each present.

## DYSENTERY IN ADULTS

Signs and Symptoms

* Fever
* Abdominal pain
* Diarrhoea with blood and mucus in stools

###### i) BACILLARY DYSENTARY

**CAUSE**: *Shigella* infection

**TREATMENT**

**ADULTS**: **Oral Rehydration Salt** (**ORS**) as per type of dehydration

**PLUS**

**Ciprofloxacin** (I.V or Oral): 250-500mg twice daily for 5 days

**PLUS**

**Hyoscine butyl bromide** tablets 10mg three times daily for 1-3 days

**OR**

**Hyoscine butyl bromide** I.M. 20mg twice daily for 1-3 days

ii) AMOEBIC DYSENTRY: common in rainy season

**CAUSE**: *Entamoebic histolytica*

**Signs and Symptoms**

Afebrile and usually painless bloody stools; often longstanding.

***Diagnosis*: Stool microscopy (fresh stool) for ova**

**TREATMENT**

Treat with **Metronidazole:** *either*200-400mg *or* 250-500mg orally 3 times daily (8 hourly) for 5 days

IN SEVERE CASES

Treat with **IV Metronidazole** 500mg 8 hourly and assess after 24-48 hours then change to oral as necessary for 5-7 days

**PLUS**

**Hyoscine butyl bromide** as above

Rehydrate with **I.V fluids or ORS**

**NB!** It is difficult to differentiate between the two aetiological agents (amoebia / shigella) without access to a laboratory. **Treat for both in cases** of severe bloody diarrhoea if no laboratory facility available.

iii) Amoebic Mass (Amoeboma) –History of persistent mucoid/bloody diarrhoea, abdominal pain fever/chills and abdominal mass (commonly the right iliac fossa).

**Treatment**:

* Metronidazole 800mg, oral, 8 hourly for 10 days.
* If mass persists request for Barium enema (where available abdominal USS for differential diagnosis) and refer to centre with surgical capacity as soon as possible.

**PERSISTENT DIARRHOEA IN ADULTS**

**Signs & Symptoms**

It presents with watery diarrhoea, with or without blood, lasting more than 14 days.

**Treatment:**

**ADULTS**: refer for investigation; stool microscopy and culture

Exclude HIV and other immunosuppressive conditions, if there is weight loss and fever.

**Refer as soon as possible to a Major Health Centre or hospital for further investigation**

**TYPHOID FEVER**

**Cause**: *Salmonella typhi*

**Signs and Symptoms**

Fever - usually continuous, severe headache, abdominal discomfort, constipation at the beginning, followed by diarrhoea. Often, patient is lethargic and sometimes confused.

**Investigations**

* Blood film for malarial parasite to exclude malaria
* Blood, stool, and urine culture

TREATMENT

ADULTS: **Ciprofloxacin (oral,** 500mg 12 hourly for 14 days

**OR**

**Azithromycin (oral)** 500mg-1g once a day for 7 days

**OR**

**Chloramphenicol (oral)** 250-500mg 6 hourly for 14 days

CHILDREN: **Ciprofloxacin** 10mg/kg 12 hourly for 10 days

**OR**

**Azithromycin (oral)** 10-20mg/kg once a day for 7 days

**OR**

**Chloramphenicol** 25mg**/**kg 6 hourly for 14 days

**MAJOR COMPLICATIONS AND MANAGEMENT**

**REFER in case of the following**

i) HEMORRHAGE: (Bleeding Per Rectum)

ii) PERFORATION: (Severe abdominal pain and tenderness, rebound tenderness or gaurding)

**Treatmen**t:

* Nil Per Oral (NPO), Set large bore cannula and give normal saline, pass NG
* Tube and urethral catheter, start IV antibiotics (stat dose **Ampicillin** 500mg,
* **Metronidazole** 500mg and **Gentamycin** 80mg).
* Do an erect chest X-Ray if available and **REFER**.

**CHOLERA**

**CAUSE**: *Vibrio cholera*

**Signs and Symptoms**

* + Copious watery diarrhoea, sometimes in the form of rice water stools

**CHOLERA** should be suspected when:

* + A patient older than 5 years develops severe dehydration from acute watery diarrhoea.
  + Or any patient above 2 years with acute watery diarrhoea in an area where there is an outbreak of cholera.

**Steps in the management of cholera**

The basic principles of infection control, including barrier nursing must be always adhered to in the management of patients suspected of cholera

1. ASSESS FOR DEHYDRATION: (see section on diarrhoea)
2. REHYDRATE the patient and monitor frequently:

**A. Severe dehydration**

1. Give **IV Fluids: Compound Sodium Lactate or** **Normal Saline**: 30ml/kg as rapidly as possible (may mean setting multiple I.V. lines) within 30 minutes,
2. Then 70ml/kg within 2 - 3 hours.
3. Give **ORS** (5ml/kg/hr) as soon as the patient can drink in addition to the I.V fluids.
4. In children, use N/G tube to rehydrate.

**Reassess the patient every 3 hours until fully rehydrated**:

* If there are still signs of severe dehydration, repeat the IV therapy already given.
* Monitor urine output; continue I.V fluid replacement until good urine output is achieved (0.5-1ml/kg/hour) and vomiting has subsided.
* If pulse is strong, BP normal and kidney function established (as evidence by adequate urine output), continue as under moderate dehydration.

**B. Maintain hydration**

After a patient has been fully rehydrated, on-going fluid losses need to be replaced by **ORS** solution. As a guide, give patient:

Under 24 months: 100ml **ORS** / loose stool

2 - 9 years: 200ml **ORS** / loose stool

10 years and more: as much as required, 250 - 300ml **ORS** / loose stool

Patients, whose on-going stool output is very large, may have difficulty in drinking the volume of **ORS** needed to maintain hydration. Vomiting may occur and abdominal distension. Stop **ORS** and give **Compound Sodium lactate** IV 50ml/kg/3hrs. After this is done, usually oral rehydration can continue.

**KEEP PATIENT UNDER OBSERVATION UNTIL DIARRHOEA HAS STOPPED OR IS INFREQUENT AND OF SMALL VOLUME**.

**3. GIVE ORAL ANTIBIOTIC**

**TREATMENT:**

**ADULTS**:

**Doxycycline (oral)** 100mg 12 hourly for 5 days

**OR**

**Ciprofloxacin (oral)** 250-500mg 12 hourly for 5 days

In pregnancy: **Erythromycin (oral)** 500mg 6 hourly for 5 days

**CHILDREN**:

**Ciprofloxacin** 10-30mg/kg divided in two doses for 5 days

**OR**

**Erythromycin**

**6 -12yrs,** 250-500mg 6 hourly for 5 days

**1-5yrs,** 125-250mg 6 hourly for 5 days

**Less than 1yr,** 62.5-125mg 6 hourly for 5 days

**Zinc supplementation for diarrhoea as above**

**4. FEED THE PATIENT**

Resume feeding with a normal diet when vomiting has stopped.

Continue breastfeeding in infants and young children.

**Investigations**

* Blood film for malarial parasite to exclude malaria
* Blood, stool and urine culture

Laboratory diagnosis should be made, where available and once confirmed it should be **REPORTED** immediately to Epidemiology and Disease Control unit (EDC).

## 1.3 OTHER GASTRO-INTESTINAL DISORDERS

**GASTRO-OESEPHAGEAL REFLUX DISEASE (GORD/GERD)-ACID REFLUX**

Gastroesophageal reflux disease (GORD/GERD) is caused by a backflow of gastric or duodenal contents or both past the lower oesophageal sphincter into the oesophagus without belching or vomiting. It is classified into non-erosive and erosive. Failure to treat may lead to oesophagitis, ulceration, strictures, and rarely adenocarcinoma.

It is most frequent in middle-aged and elderly women. Pregnancy and obesity resulting in increased intra-abdominal pressure promotes their development in earlier years.

**Signs and Symptoms:**

* Heartburn, especially on stooping or lying down immediately after eating.
* Epigastric and retrosternal pain mimicking angina pectoris, radiating to the back, arms and jaws.

**Treatment**

**Non-pharmacological**

* Advise weight loss, if overweight/obese
* Eat small, frequent and regular meals and avoid fatty foods
* Avoid smoking and alcohol
* Avoid stooping/ bending down from the waist especially after eating
* Avoid tight clothes
* Elevate head of bed or use a pillow

**Pharmacological Treatment**

**Antacids: Magnesium trisilicate OR Aluminium hydroxide OR compound magnesium trisilicate**

**Tablets**: chew one or two tablets and repeat as necessary after meals, up to four times per day.

**Suspension**: 10-20 mls after meals, up to four times a day

**OR**

**Bismuth** and **Dimethicone** preparations / suspension can also be used in combination with antacid.

For severe cases:

**Omeprazole** 20mg 12 hourly for 4-8 wks

**OR**

**Esomeprazole** 20mg once daily for 4-8wks

**PLUS**

**Metoclopramide tablets:** 10mg 8 to 12 hourly.

**Refer to next level of care if symptoms persist**

**CONSTIPATION**

**Signs and Symptoms:** Hard, infrequent stools and difficulty passing them. Highly subjective, individual variations in bowel habits must be borne in mind (establish patients’ previous normal bowel habits).

**Treatment: Non-Pharmacological**

* Advise drinking plenty of fluids
* Eat lots of fruits and vegetables (increase high fibre intake)
* Regular exercise

**Pharmacological:**

**If necessary, FOR ADULTS**:

**Bisacodyl** 5mg, 1-2 tablets as a single dose at night

**OR**

**Senna** 2-4 tablets as a single dose at night

**OR**

**Lactulose** 15ml twice daily, adjust according to response

**CHILDREN: Glycerine** suppositories

Less than 1yr-1mg at night

1-12yrs 2mg at night

**USE LAXATIVES WITH CAUTION IN CHILDREN AND PREGNANT WOMEN**

Persistency of constipation despite appropriate intervention requires re-evaluation of the underlying cause (surgical causes of constipation should be ruled out). Prolonged use of laxative should be discouraged to avoid hypokalaemia and its consequences.

**PEPTIC ULCER DISEASE (PUD)**

**Causes:**

* Excessive Secretion of gastric acid
* Inadequate protection of the lining of the stomach and duodenum
* *Helicobacter pylori (H.pylori)* infection
* Non-Steroidal Anti-inflammatory Drugs (NSAIDs)
* Stressful situations

**Signs and Symptoms**:

* Epigastric pain and tenderness which can be located by one finger “pointing sign”. There may be vomiting and or haematemesis.
* In gastric ulcer the pain is usually worsened by food, and relieved by alkalis.
* In duodenal ulcer the pain typically comes when the patient is hungry and may wake the patient up in the middle of the night. The pain is relieved by food

**Investigations**

* Upper Gastrointestinal endoscopy (oesophagogastroduodenoscopy) Barium meal
* Stool examination for H. Pylori
* Rapid urease test (breath or biopsy)
* H pylori antigen and antibody testing

**Treatment**

**Non-pharmacological**

Change of lifestyle

* Diet; small frequent meal; avoid coffee, tea, fizzy drinks
* Avoid smoking and alcohol
* Avoid acetylsalicylic acid(Aspirin), Diclofenac, Ibuprofen and other NSAIDs
* Avoid pepper and spicy foods; Avoid citrus fruits, e.g. lime
* Avoid eating late
* Avoid anxiety and stress

**Pharmacological**

* Antacids: Magnesium Trisilicate OR Aluminium hydroxide OR Compound Magnesium Trisilicate
* Chew 2 tablets four times daily for 2 weeks
* If pain persists or black stools or hematemesis, REFER to next level of care

Where there is a possibility of doing endoscopy, confirm diagnosis and treat as follows:

**Esomeprazole** 20mg daily for 6-8 weeks, repeat if ulcer not fully healed

**OR**

**Omeprazole** 20mg daily for 6-8 weeks, repeat if ulcer not fully healed

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| For the eradication of *H.pylori the organism must be investigated and found to be the causative organism before initiating the following treatment.*   |  |  |  |  | | --- | --- | --- | --- | | *Table 4*: Recommended regimens for *Heliccobacter pylori* eradication in adults | | | | | PPI | Antibacterial | | | |  | Amoxicillin, oral | Clarithromycin, oral | Metronidazole, oral | | Esomeprazole, oral, 20mg 12 hourly | 1g 12 hourly | 500mg 12 hourly | ---------- | | ------------ | 500mg 12 hourly | 400mg 12 hourly | | Omeprazole oral, 20mg 12 hourly | 1g 12 hourly | 500mg 12 hourly | ------- | | 500mg 8 hourly | ----------- | 400mg 8 hourly |  |  |  |  | | --- | --- | --- | | *Table 5*: Recommended regimens for *Heliccobacter pylori* eradication in children | | | | Age of child | Antibacterial  (to be used in combination with **OMEPRAZOLE**) | | | 1-6 years | Amoxicillin 250mg 12 hourly  PLUS | Clarithromycin 62.5mg -125mg 12 hourly | | Amoxicillin 125mg 8 hourly | PLUS  Metronidazole 100mg 8 hourly | | 6-12 years | PLUS  Amoxicillin 500mg 12 hourly | Clarithromycin 187.5-250mg 12 hourly | |  | PLUS  Amoxicillin 250mg 8 hourly | Metronidazole 200mg 8 hourly | | 12-18 years | PLUS  Amoxicillin 1g 12 hourly | Clarithromycin 250-500mg 12 hourly | | PLUS  Amoxicillin 1g 12 hourly | Metronidazole 400mg 8 hourly | |

**NB! All radiological proven gastric ulcers may have endoscopy and biopsy taken to exclude Carcinoma of stomach**.

* **Complications of Peptic Ulcer Disease**

**Haemorrhage** (**Bleeding**)

Patient may present with vomiting blood or black tarry stools (melena) or both.

**Management**:

* NPO, Set IV line (large bore cannula), Hb and grouping and infusion of **Normal Saline (Sodium Chloride 0.9%)**
* Give stat doses of IV Omeprazole 40-80mg, (where not available IV **Ranitidine** 50mg),
* IV tranexamic acid 1g stat in 100mls normal saline (if available) and

**REFER to centre with surgical capacity immediately with ongoing resuscitation.**

**NB\* If tolerated 40mg oral omeprazole can be given instead of IV Ranitidine.**

**Perforations**

May present with sudden onset severe abdominal pain that is persistent, with possible tenderness and guarding and later with fever, vomiting and constipation.

**Management**:

NPO, Set large bore cannula and give **Normal Saline (Sodium Chloride 0.9%)**, pass urethral catheter and NG Tube, start IV antibiotics (stat dose **Ampicillin** 500mg, **Metronidazole** 500mg and **Gentamycin** 80mg), IV **Ranitidine** 150mg stat, and **REFER to centre with surgical capacity immediately.**

**Obstruction** Patient may have a long standing history of recurrent epigastric pains associated with hunger, now having frequent vomiting of copious amounts of foul smelling vomitus containing food eaten 1 to 3 days prior.

**Management**:

NPO, Set large bore cannula and give **Normal Saline(Sodium Chloride 0.9%)**, pass NG Tube and do gastric lavage, pass urethral catheter, start IV antibiotics (stat dose **Ampicillin** 500mg, **Metronidazole** 500mg and **Gentamycin** 80mg) IV **Ranitidine** 150mg stat, and **REFER to centre with surgical capacity immediately.**

**NB\* If you suspect or make diagnosis of GOO DO NOT GIVE RINGERS LACTATE**

1. **ULCERATIVE COLITIS**

Ulcerative colitis is a chronic condition of unknown cause in which there are changes in the structure of the mucosa and sub mucosa of the wall of the colon, with widespread inﬂammation and superﬁcial ulceration.

**Signs and Symptoms**

* Diarrhoea, with blood and mucus in the faeces
* Sepsis
* Dehydration and malnutrition in severe forms.

NB: The disease may be conﬁned to the rectum in which case there may be paradoxical constipation.

**Management:**

**Refer to a specialist.**

OESOPHAGITIS/GASTRITIS DUE TO CAUSTIC SODA INGESTION (See section under poisoning)

1. **OESOPHAGEAL STRICTURE**

An oesophageal stricture is an abnormal narrowing or tightening of the oesophagus and patient may present with inability to swallow solids or both solids and liquids.

Usually occurs as a complication of caustic soda ingestion (poisoning) especially in children. In adults it could be a complication of reflux oesophagitis and oesophageal malignancy should be ruled out. **Management:**

* If Patient can tolerate liquids advice only liquid intake and REFER.
* However, if the patient cannot tolerate both solids and liquids; set an IV line, give fluids and REFER for a possible feeding gastrostomy to improve the nutritional state of the patient.

**NB**: Patient will however need further corrective procedures like oesophageal dilatation or replacement surgery.

**F. TRACHEO-OESOPHGEAL ANOMALY**

This includes **oesophageal atresia** and **tracheo-oesophageal fistula**.

Neonate may present with regurgitation of breast milk, persistent coughing whilst breast feeding or with repeated signs and symptoms of respiratory tract infection.

**Management:**

**REFER immediately to a facility with surgical and neonatal care capacity.**

**G. GASTRIC TUMOURS**

It may present with dull epigastric pains, anorexia, early satiety, indigestion, nausea, weight loss, vomiting blood, black tarry stools or simply anaemia.

NB\* Gastric tumours can sometimes mimic peptic ulcer disease symptoms.

**Management**:

* Send for endoscopy or Barium meal (if available), and REFER.

**H. SMALL INTESTINE PATHOLOGIES**

**Intestinal Obstructions** Often presents with:

* abdominal pain,
* abdominal distension
* vomiting,
* constipation at times.

It may be due:

* Adhesions – Often has a history of previous abdominal surgery.
* Hernia – A Hernial orifice (Umbilical, Inguinal or femoral) has an irreducible swelling which may be tender, associated with the above signs
* Intussusception – Usually; healthy looking infants, with episodic inconsolable crying associated with vomiting, bloody mucoid stools (red currant jelly stools) and abdominal distension. A mass may be felt in the abdomen on examination.

**NB\* This is a paediatric surgical emergency and should be referred immediately to the next level of care where there is surgical capacity**.

**Management**:

* NPO, Set large bore (IV) cannula and give Normal Saline(Sodium Chloride 0.9%), pass NG Tube and urethral catheter, start IV antibiotics (stat dose Ampicillin 500mg, Metronidazole 500mg and Gentamycin 80mg)Do plain abdominal X-rays (Erect and supine) if available, and REFER.
* In children pass NGT in continuous drainage, give IV fluids 20mls/kg bolus and antibiotic according to the body weight. (eg Ampicillin 50mg/kg, Metronidazole 7.5mg/kg and Gentamycin 2.5mg/kg.
* Abdominal USS if available and REFER

**Upper Gastrointestinal Bleeding** – Vomiting blood (frank blood or coffee grounds and black, tarry stools)

Common causes include: Bleeding Peptic ulcer disease, gastritis, bleeding oesophageal varices and gastric tumours.

If bleeding is severe, patient may present with signs of shock:

* weak thready pulse,
* low or unreadable BP,
* cold clammy extremities.
* Sweating

History of dyspepsia or recent ingestion of Non-steroidal Anti-inflammatory drugs **(NSAIDs**) may point to peptic ulcer disease or gastritis.

History of liver disease may point to Oesophageal varices.

History of dyspepsia, weight loss and early satiety may point to gastric tumour.

**Management:**

* Such a patient would need to be REFERRED urgently, BUT prior to that, resuscitation should be started.
* Resuscitation with IV fluids: Normal Saline(Sodium Chloride 0.9%), via a large bore cannula, and allow 1 litre to run over 30 min, then re-asses the vital signs.
* Pass urethral catheter to monitor the urine output,(Aim for 0.5-1ml/kg/hr)
* Give stat doses of IV Omeprazole 40-80mg, (where not available IV Ranitidine 50mg).
* IV tranexamic acid 1g stat in 100mls normal saline (if available).
* If available, do Hb, grouping and transfuse the patient without delaying transfer of patient.
* If no history or stigmata of liver disease, an NG tube can be passed
* If vital signs are stable, REFER immediately.
* Resuscitation should be ongoing during transfer of patient.

1. **LARGE INTESTINAL PATHOLOGIES**
2. **Intestinal Obstructions can present with**:

Abdominal pain

Abdominal distention

Constipation

Vomiting (late sign)

It may be due to:

* Sigmoid Volvulus – is the most common benign cause of large bowel obstruction. May present with sudden onset of abdominal discomfort/pain, with the above symptoms. May or may not have vomiting.

**Management**:

* NPO, set large bore (IV)cannula and give Normal Saline (Sodium Chloride 0.9%), pass NG Tube and urethral catheter, start IV antibiotics (stat dose Ampicillin 500mg, Metronidazole 500mg and Gentamycin 80mg).

Do a plain erect abdominal X-Ray if available and REFER to centre with surgical capacity immediately Hirsprung’s **disease** (a ganglionic megacolon):

* Presentation may be late passage of meconium in the new-born, or a long-standing history of constipation from birth with abdominal distension in the older child.

**Management:**

* Ensure adequate hydration of child
* Send for Barium enema where available and REFER as soon as possible.

1. **Colorectal Tumours/ cancer** –

May present with a history of change in bowel habits, constipation, may or may not have had bleeding per rectum which may lead to anaemia, ‘piles’, abdominal pain or distension. Mass may be felt on rectal examination. Weight loss in late presentation.

**Management**:

Request Barium enema if available and **REFER** as soon as possible.

**3. Lower Gastro-intestinal Bleeding** – Bleeding per rectum (Frank blood or altered blood) distal to the ligament of Treitz.

Common causes include, Haemorrhoids, Rectal tumours, fissure-in-ano and diverticular disease.

**Haemorrhoids:** History of painless bright red bleeding that sprays the toilet bowl, or seen on the toilet paper when cleaning up.

**Colorectal tumour**: History of change in bowel habits, constipation, tenesmus, abdominal pain or distension.

Fissure-in-ano: Sudden onset of severe anal pain following passage of hard stool on defecation, which persists for a while. .

Diverticular disease: Painless passage of large amount of bright red blood per rectum in an elderly patient. May present with signs of shock if massive bleeding occurs.

**Management**:

* If severe - NPO, Start IV Normal Saline (Sodium Chloride 0.9%), Check the Hb and grouping, start transfusion if necessary and REFER immediately.
* If mild request Barium enema and REFER as soon as possible.

**4. Appendix Mass**– Usually more than 3 days history of abdominal pain which started around the umbilicus and localized in the right side of lower abdomen, may be associated with nausea or vomiting, poor appetite and fever. On examination, a mass is felt in the right lower abdomen.

**Management**:

* Usually conservative, which includes –
* Admit, monitor vitals closely and the size of mass (skin marking or abdominal ultrasound scan measurements).
* NPO, IV fluids (maintenance 2 litres 5% Dextrose and 1 litre Ringers Lactate or Normal Saline (Sodium Chloride 0.9%) and IV antibiotics (Ampicillin 500mg 6 hourly, Gentamycin 80mg8 hourly and Metronidazole 500mg 8 hourly for 48 hours).

**NB: No analgesia if patient is to be referred to a higher center for management**. (To avoid masking of the disease)

* If mass resolving, start on light diet, analgesics and continue oral antibiotics: Ciprofloxacin 500mg 12 hourly and Metronidazole 400/500mg 8 hourly for 5 days and eventually send home.
* If mass increasing in size, becoming more tender, persistent fever and tachycardia, or patient starts to vomit with abdominal distension. Pass NG tube and urethral catheter and REFER immediately.

**J. ABDOMEN/PELVIS**

**Blunt abdominal injuries –** There may be no obvious external injury on the abdominal wall, but the abdomen might be very tender on palpation (probable hollow viscus injury – bowel, gall bladder, urinary bladder), or the patient might have symptoms and signs of shock (probable solid viscus injury – liver, spleen, ruptured mesentery). These are injuries that may occur after an RTA (Road Traffic Accident), a fall from height or industrial injury.

**Management:**

1. NPO, Start IV **Normal Saline (Sodium Chloride 0.9%)**, Pass NG tube and urethral catheter.
2. Give stat doses of IV **Ampicillin** 500mg, **Gentamycin** 80mg, and **Metronidazole** 500mg.

**REFER IMMEDIATELY Penetrating abdominal injuries -** There is usually an injury on the abdominal wall and might involve omentum or bowel protruding from the wound. The abdomen may or may not be tender. These are injuries that can occur from gunshots or sharp objects such as knives, pieces of glass, etc.

**Management:**

1. Put clean or sterile dry dressing over the wound (no disinfectant should be used).
2. NPO, Start IV Normal Saline (Sodium Chloride 0.9%), Pass NG tube and urethral catheter.
3. Give stat doses of IV Ampicillin 500mg, Gentamycin 80mg, and Metronidazole 500mg.

**REFER IMMEDIATELY**

**K. HAEMORRHOIDS**

Commonly called ‘piles’, they are enlarged, displaced anal cushions derived from engorged veins. Patient may present with painless bright red bleeding per rectum, protrusion of ‘piles’ on defecation which spontaneously reduces or has to be manually pushed back. They present with complications such as thrombosis or ulceration which cause a lot of pain in the perianal region.

**NB: Always do a digital rectal examination to exclude carcinoma, which can cause haemorrhoid-like symptoms.**

**Management:** Aim to relieve symptoms and prevent complications.

* Correct anaemia if present (Iron supplement),
* If uncomplicated; advice intake of high fibre diet, liberal amounts of fluid and refer to next level of care with surgical capacity.
* If complicated, cold compress to the anal region (if not ulcerated) or if ulcerated, sitz bath with concentrated warm salt water 2 or 3 times a day in addition to the above advice.
* If associated constipation, give oral Lactulose 10mls 3 times a day until constipation is relieved.
* If associated with itching and discomfort, give Anal ointments or suppositories (with or without steroids), to be applied or inserted (adults- one suppository 12 hourly for 7-10 days).
* If infected give oral Amoxicillin 500mg 8 hourly and Metronidazole 400/500mg 8 hourly with NSAIDs if persistent pain.

**COMPLICATED HAEMORRHOIDS**

If persistent severe pains (thrombosis), recurrent bleeding or prolapse develops,

**REFER for surgical management**

**L. ANAL FISSURE (Fissure-in-ano)**

Patient presents with **sudden onset of severe anal pain following passage of hard stool** on defecation which persists for a while after defecation. There may be associated bleeding per rectum with the blood characteristically as a streak on the side of the stool.

**Management**:

* Advice on high fibre diet and enough fluid intake, as well as regular bowel emptying.
* Use of Lactulose OR Liquid paraffin 10mls 8 hourly to allow free bowel movement. Anal ointment containing a local anaesthetic can be applied topically twice daily for a week.
* Oral analgesic may be used in addition to the ointment
* If no improvement after about a week, REFER for further management.

**M. RECTAL PROLAPSE**

**Signs & Symptoms**: Rectum protruding through the anus

**Common in children due to Trichuris infestation**

**MANAGEMENT:**

* Push prolapsed rectum back inside when the patient is sleeping, (teach mother to do this). Advice parent to maintain hygiene
* See treatment under helminthic infections above
* Treat constipation if present or associated.
* NB: Some forms of intussusception can also prolapse, if in doubt patient should be referred.

**REFER for surgical management, if prolapse persists**

**N. HERNIA AND RELATED CONDITIONS**

|  |  |
| --- | --- |
| **TYPES** | **MANAGEMENT** |
| Inguinal (Uncomplicated) | Refer for elective surgery |
| Umbilical (uncomplicated) | Refer for surgical surveillance in children and elective surgery in adults |
| Hydrocele (scrotum) | Refer for elective surgery / surveillance (Not in infancy) |
| Obstructed hernia | Set IV line give fluids if vomiting, and refer |
| Other Reducible hernias | Refer for elective surgery |
| Non-Reducible hernias | Refer immediately |

**Abdominal Wall Hernias/Defects**

* Epigastric swelling in the midline of the abdominal wall between the umbilicus and xiphisternum with or without a positive cough impulse.
* Umbilical/Paraumbilical –swelling on or around the umbilicus, with a positive cough impulse if reducible.
* Gastroschisis – Large congenital defect in the anterior abdominal wall with sometimes associated deformity of the bladder
* Omphalocoele – Congenital defect in the umbilical region which is not covered completely by skin
* Inguinal swelling in the inguinal region which may extend into the scrotum, with a positive cough impulse if reducible
* Femoral – Swelling in the femoral region. May not have a positive cough impulse.

**Management**:

* Uncomplicated hernias – REFER to centre with surgical capacity for elective surgery
* Complicated hernias (Irreducible) - NPO, IV Normal Saline (Sodium Chloride 0.9%), pass NG tube and urethral catheter. Should REFER immediately.

## 1.4 LIVER DISORDERS

**A. ACUTE VIRAL HEPATITIS**

Hepatitis A and E causes acute hepatitis and are mostly self-limiting. Hepatitis B and C causes both acute and chronic disease. For prevention refer to the chapter on immunisation.

### Signs and Symptoms

* These include the usual manifestations of an acute infectious disease, and include chills, headache, and weakness.
* Gastrointestinal symptoms may include anorexia, nausea, vomiting and diarrhoea.
* An upper abdominal pain over the liver may occur as the organ enlarges.
* The liver may be tender and dark urine and yellow sclera mark the onset of the disease.

**Investigation**

* Liver function test shows elevated liver enzymes and an almost normal or slightly raised alkaline phosphatase.
* The prothrombin time is usually prolonged and returns to normal as the disease abates.
* Hepatitis screening: Hepatitis B surface antigen (HBs Ag) and hepatitis C virus.
* Full hepatitis B profile
* Abdominal scan
* Blood glucose test
* FBC

**Treatment**

There is no specific therapy. Avoid alcohol, herbal medications, fatty food and drugs that may affect the liver. Bed rest is advised when symptoms are marked, and a high calorie diet is recommended. Allow the patient to eat what they enjoy and encourage liberal fruit and glucose drinks. Administer symptomatic treatment

Refer to specialist clinic for further management.

**B. CHRONIC LIVER DISEASE**

There are two main forms of chronic liver disease:

* 1. Chronic hepatitis (B and C)
  2. Cirrhosis- is the destruction of the normal liver tissue which is replaced by scar tissue. The scar tissue blocks the flow of blood through the liver and slows the processing of nutrients, hormones, drugs and toxins.

In The Gambia, both types are mainly due to the Type B hepatitis virus. Drugs, alcohol and other causes are rare.

**Signs and Symptoms**

* In chronic hepatitis, there are signs of other systemic involvement such as fever, joint pains, nosebleed and amenorrhoea.
* With the development of cirrhosis, ascites, encephalopathy (confusion) gynaecomastia, loss of libido and enlargement of the spleen occur.

**Investigation**

* Liver function test shows elevated liver enzymes and an almost normal or slightly raised alkaline phosphatase.
* The prothrombin time is usually prolonged and returns to normal as the disease abates.
* Hepatitis screening: Hepatitis B surface antigen (HBs Ag) and hepatitis C virus.
* Full hepatitis B profile
* Alpha-feto protein
* Abdominal scan
* Blood glucose test
* FBC

**Treatment**

* Avoid alcohol, cigarettes, smoking, herbal medication, fatty foods and moulded nuts

**REFER patients to a specialist**

**C. HEPATOCELLUAR CARCINOMA (Primary Liver Cancer)**

This is by far the commonest cancer in The Gambia and in most cases patients are carriers of the hepatitis B virus.

### Signs and Symptoms

* Patients present with upper abdominal pain,
* Weakness, Loss of appetite, Fever
* Firm rock-hard nodular right upper abdominal mass with or without ascites.
* There may be an audible bruit over the liver on auscultation.

**Investigations**

A positive α-fetoprotein in the presence of the above symptoms and signs is diagnostic. Ultrasound and liver biopsy are useful diagnostic tools.

**Treatment**

Symptomatic pain relief and diuretic therapy when indicated is the cornerstone of management for these patients.

## 1.5: HEPATIC ENCEPHALOPATHY

This describes a syndrome with neuropsychiatric features reflecting a state of disordered central nervous system function, due to inability of the liver to detoxify ammonia and other chemicals as a result of severe liver disease and failure. It may be a complication of either acute or chronic liver disease.

**CAUSES**

* Viral hepatitis
* Cirrhosis of the liver
* Fatty liver of pregnancy
* Drugs e.g. Halothane, Isoniazid, Paracetamol overdose, some herbal concoctions
* Longstanding cholestasis
* Precipitating factors including: hypotension, infection, fluid and electrolyte imbalance (excessive use of loop diuretics), sedatives, increased gastrointestinal tract (GIT) protein load e.g. heavy GIT bleeding, alcoholic binge

**Signs and Symptoms**

* Jaundice
* Fever
* Disturbed consciousness which progresses as follows: disorder of sleep, hypersomnia and inversion of sleep rhythm, apathy and eventually coma
* Personality changes
* Intellectual deterioration
* Cyanosis
* Speech impairment
* Features of chronic liver disease
* Neurological abnormalities

**Encephalopathy Grading:**

**Grade 1:** Mild confusion, irritable, tremor, restless

**Grade 2:** Lethargic responses, decreased inhibitions, disorientation, agitation, and asterixis

**Grade 3:** Stuporous but arousable, aggressive bursts, inarticulate speech and marked confusion

**Grade 4:** Coma

**Investigations**

* FBC
* Blood glucose
* Liver function tests
* Blood urea and electrolytes
* Hepatitis BsAg, Hepatitis C
* Full hepatitis B profile
* Alpha feto protein
* Prothrombin time, INR
* Abdominal scan

**TREATMENT**

**Non-pharmacological treatment**

* Place in the coma position if unconscious
* Daily tap water enemas may be used to further reduce enteric bacteria
* Avoid protein feeds, sedatives and **drugs metabolized by the liver.**
* Increase protein intake slowly on recovery.
* Encourage intake of high carbohydrate diet by mouth or NG tube
* Maintain fluid and electrolyte balance.
* Monitor temperature, pulse and respiratory rate, blood pressure, pupils, urine output and blood glucose regularly
* Avoid **Paracetamol** and other hepatotoxic drugs and agents
* **Pharmacological treatment**
* **Lactulose** 30ml-50ml three times daily.
* Give I.V fluids (**Dextrose 5%**)

**REFER to specialist**

## 1.6: LIVER ABSCESS

* **Amoebic** - A complication of intestinal infection with *Entamoeba histolytica.* Patient may present with right upper quadrant pain, abdominal distension, fever and cough. The patient may also be jaundiced.

Abdominal ultrasound scan may reveal a solitary cystic mass in the liver.

**Treatment:**

* Adults: Oral **Metronidazole** 800 mg, 8 hourly for 10 days
* Diloxanide furoate 500mg 8 hourly for 10 days
* Children: Oral **Metronidazole and Diloxanide furoate 20mg/kg 8hrly for 10 days**
* 1-3 years; 100-200 mg 8 hourly for 10 days
* 4-6 years; 200mg 8 hourly for 10 days
* 7-12 years; 200-400 mg 8 hourly for 10 days
* If no improvement within 3 to 5 days **REFER**.

**Pyogenic –** Bacterial infection of the liver with pus collection. The patient may present with a high fever, chills, right upper abdominal pain and nausea. Patient may also be jaundiced.

**Management**:

* Involves surgical drainage.
* Start IV antibiotics (Ampicillin 500mg 6 hourly, Gentamycin 80mg 8 hourly, Metronidazole 500mg 8 hourly).Refer to centre with surgical capacity immediately.

## 1.7: ACUTE CHOLECYSTITIS AND ACUTE CHOLANGITIS

* Acute cholecystitis – Presents as a sudden onset of pain and tenderness in the right upper quadrant of the abdomen, pain worsens on deep breathing. May have nausea and vomiting with a low-grade fever (38°-39°C). May or may not be jaundiced.
* Acute cholangitis – Presents with a high grade fever, chills, right upper abdominal pain, and may be jaundiced.

**Treatment**: (for both Acute Cholecystitis and cholangitis)

**Ampicillin** IV: 1 g 6 hourly with **Gentamicin** IV:80mg 8 hourly and **Metronidazole** IV: 500 mg 8 hourly.

Give analgesics/antipyretic

**Refer as soon as possible.**

## 1.8: CHOLELITHIASIS

It may present with recurrent right upper abdominal pain which is worse on eating fatty foods. It can also be asymptomatic. Diagnosis is by abdominal ultrasound.

**Management:**

**REFER to centre with surgical capacity**

**Obstructive Jaundice** – Presents with deep jaundice, dark urine, generalised itch and pale (whitish) stool. There may also be abdominal pain and distension, depending on the cause.

**Commonest causes include: carcinoma of the head of the pancreas and gall stones**

**Management**:

**REFER to centre with surgical capacity as soon as possible**

**H. Ascites**

Is an abnormal accumulation of fluid in the peritoneal cavity. May arise as a complication or sequelae of chronic liver disease, kidney or heart failure, abdominal tuberculosis, intra-abdominal or pelvic malignancies.

**Presentation**

* Abdominal enlargement/distention
* Difficulty breathing

**Treatment**

**REFER to centre with surgical Capacity as soon as possible**

# CHAPTER TWO

CARDIOVACULAR DISEASES

Common Cardiovascular diseases include Hypertension, Heart failure, Valvular Heart Diseases, Cardiomyopathies, Congenital Heart Diseases, Ischaemic Heart Diseases, Infective Endocarditis, Pericarditis, Myocarditis, Arrhythmia, Aortic Diseases, Pulmonary embolism, Peripheral Artery Diseases, Venous diseases,

General Clinical Features of Cardiovascular Diseases:

People presenting with any or a combination of the following features should be suspected to have cardiovascular disease:

* Dyspnoea
* Palpitation
* Chest pain (Especially left sided)
* Pedal Oedema
* Productive cough
* Cyanosis
* Syncope
* Intermittent claudication
* Low oxygen saturation
* Hypotension/ Hypertension
* Irregular pulse

In general, steps to take prior to referral:

* Oxygen therapy, especially if deranged saturation
* Ensure immediate IV access
* If in pain, Give adequate pain relief, example IV Morphine in acute severe chest pain
* Do ECG, if available
* Do Chest X-ray, if available
* Do Full Blood Count, Renal Function Tests and Cardiac enzymes, if available
* Ensure continuous oxygen therapy during transfer

## 2.1 HYPERTENSION IN ADULTS

This is a condition in which the blood pressure of an adult is persistently equal to or higher than 140/90 mmHg based on the average of two or more properly measured blood pressure readings on different visits more than 24hrs apart.

NB: Two or three readings should be taken on separate occasion on both arms to conclude that the patient is hypertensive

For proper blood pressure reading, the following conditions must be present:

1. The patient must be in a relaxed state for 10-15 minutes
2. The cuff around the arm should be at the level of the heart
3. The cuff should be of appropriate size and the bladder applied on the medial aspect of the arm

**Types**

* Primary hypertension - In the majority of patients no specific underlying cause is identified.
* Secondary hypertension - In a minority of cases (5-10%), hypertension may be secondary to a kidney disease, endocrine disorders, coarctation of the aorta etc.

**SIGNS AND SYMPTOMS**

Hypertension can be present with no symptoms. Most patients with hypertension are discovered by chance during medical examinations. Occasionally, patients may present with:

* Headache
* Palpitation
* Dizziness
* Easy fatigability
* Blurring of vision
* Blood pressure of >140/90 mmHg
* Signs specific for the various kidney, endocrine and blood vessel disorders that cause secondary hypertension.

**INVESTIGATIONS**

* FBC
* Urinalysis
* Blood urea, electrolytes and creatinine
* Blood glucose
* Lipid profile
* Chest x-ray
* Ultrasound scan of kidneys and adrenals (in suspected secondary hypertension)
* Echocardiogram (ECG)

**TREATMENT**

Non-pharmacological treatment

* Reduce salt intake
* Reduce animal fat intake
* Ensure regular fruit and vegetable intake
* Weight reduction in obese and overweight individuals
* Regular exercise e.g., brisk walking for 30 minutes 3 times a week
* Reduction in alcohol consumption
* Cessation of smoking

Pharmacological Treatment

* BP >140/90mmHg, but <160/100mmHg; Start treatment with monotherapy preferably thiazide diuretics as first line treatment,
* BP is >160/100mmHg; Initiate treatment with combination therapy – thiazide and Calcium channel blockers
* Patients with comorbidities (eg Diabetes, Kidney disease, Heart diseases), pregnant women, children, adolescents and non-responders should be referred for Specialist care.

Thiazide diuretics

**Bendroflumethiazide** (bendrofluazide), oral, 2.5 mg daily

OR

**Hydrochlorothiazide** 12.5mg daily (max. 50mg daily)

**Amlodipine**, oral, 5-10 mg daily

Centrally acting agents

Methyldopa tablets - (USE ONLY IN PREGNANCY) refer to O&G section

**Labetolol** IV 50-80 mg stat during hypertensive emergency

**NB:** Adults aged 35 and above should be advised to regularly check their blood pressure every three months

When to REFER

* Those not achieving the target blood pressure (BP) level after 3 months of treatment
* Those on three or more anti-hypertensive drugs, yet have poor BP control
* Those with worsening of BP over a few weeks or months
* Those with plasma creatinine levels above the upper limit of normal
* Those with associated diabetes mellitus
* Those with multiple risk factors (diabetes, dyslipidaemia, obesity, family history of heart disease)
* Those not on diuretics but have persistently low potassium on repeated blood tests
* All children, young adults and pregnant women with elevated BP

Patients with emergencies; target organ or end organ damage MUST be referred IMMEDIATELY to hospital for specialist management.

Hypertensive emergency is usually BP>180/120 mmHg in adults and associated with the following conditions:

* Encephalopathy
* Acute left ventricular failure
* Acute myocardial infarction
* Acute kidney injury
* Eclampsia
* Aortic dissection (Rare)

Rapid correction of blood pressure with careful monitoring to avoid a precipitous drop (aim for 25% reduction of presenting systolic BP) is indicated in these circumstances and then refer for specialist care

**TREATMENT**

Strict bed rest

|  |
| --- |
| **Labetalol, IV,**  **Adults**  **50 mg over 1 minute repeated after 5 minutes if necessary to a maximum of 200 mg**  **Children**  **12-18 years; 50 mg over at least 1 minute repeated after 5 minutes if necessary**  **1 month -12 years; 250-500 microgram/kg as a single dose (maximum 20 mg)**  **OR**  **Hydralazine, IV,**  **Adults**  **5-10 mg slowly over 20 minutes. This dose may be repeated after 20-30 minutes, until the patient is conscious and can take oral medications**  **Children**  **12-18 years; 5-10 mg 12 hourly repeated every 4-6 hours as necessary**  **1 month - 12 years; 100-500 microgram/kg repeated every 4-6 hours as necessary; maximum 3 mg/kg daily (not exceeding 60 mg)**  **< 1 month; 100-500 microgram/kg repeated every 4-6 hours as; necessary maximum 3 mg/kg daily** |

NB:

Nifedipine, sublingual, is not recommended for emergency treatment of hypertension due to the erratic and unpredictable drop in BP which may be associated with dire consequences.

## 2.2 HYPERTENSION IN CHILDREN AND ADOLESCENTS

Hypertension in children is defined as an average systolic and/or diastolic blood pressure that is≥ 95th percentile for gender, age, and height(see Nomogram) on 3 or more separate occasions taken in the right arm (in view of possibility of coarctation of aorta) with an appropriate cuff size that covers 2/3 of the length of the arm (between shoulder and elbow) and encircling the whole arm.

## 2.3 HEART FAILURE

It is a clinical syndrome that results from any structural or functional abnormality that cause failure of cardiac output to meet the metabolic needs of the body.

Signs and Symptoms

* Dyspnoea (on exertion or at rest)
* Pedal oedema
* Ascites (in right heart failure)
* Orthopnoea, Paroxysmal Nocturnal Dyspnoea (PND)
* Easy Fatiguability
* Palpitation
* Cough (mostly productive)
* Raised JVP
* Cyanosis
* Hepatomegaly

NB: In younger children heart failure symptoms may not be specific and include:

* Poor feeding
* Failure to thrive

**INVESTIGATION**

* FBC
* Blood urea, electrolytes and creatinine
* Fasting blood sugar
* Thyroid function tests
* Liver function test
* Cardiac enzymes, if myocardial infarction is suspected
* ECG
* Chest X-ray
* Echocardiography

Table 6: New York Heart Association functional Classification for Heart Failure

|  |  |
| --- | --- |
| Table 1: New York Heart Association functional Classification for Heart Failure | |
| CLASS I | No limitation of physical activity. Ordinary physical activity does not cause fatigue, palpitation, or dyspnoea. |
| CLASS II | Slight limitation of physical activity.  Comfortable at rest but ordinary physical activity results in fatigue, palpitation or dyspnoea |
| CLASS III | Marked limitation of physical activity. Comfortable at rest but slight activity causes fatigue, palpitation, or dyspnoea |
| CLASS IV | Unable to carry out any physical activity without discomfort.  Symptoms of cardiac insufficiency are present at rest. If any physical activity is undertaken, discomfort is increased |

Physical Examination findings

* S3: gallop rhythm
* Cool, pale, cyanotic extremities
* Crackles or decreased breath sounds at bases (effusions) on lung exam
* Elevated jugular venous pressure
* Lower extremity oedema
* Ascites
* Splenomegaly
* Displaced apex beat

**INITIAL MANAGEMENT:**

**Non-pharmacological**

* Lifestyle modification- Low salt intake, alcohol reduction, cessation of smoking, reduction of fat/oil consumption

|  |
| --- |
| Pharmacological  Initial therapy of symptomatic heart failure  Furosemide (Frusemide), oral,  Adults: 40-80 mg daily  Children: 1-2 mg/kg daily  WITH  Enalapril (used only if serum creatinine level is normal)  Adults: Start with 2.5mg twice daily  OR  **Losartan**, oral, (for patients who cannot tolerate ACE inhibitors)  Adults 25-50 mg daily  PLUS  Spironolactone, oral,  Adults 25-50 mg daily  NOTE: antihypertensive use for children should be under specialist supervision |

REFER

All patients should be referred to a specialist for further evaluation and continuous management.

## 3.4 ACUTE LEFT VENTRICULAR FAILURE

It presents as sudden onset of dyspnoea on exertion or paroxysmal nocturnal dyspnoea (PND) and or orthopnoea, productive cough and chest pain (sometimes). This condition is an emergency and must be REFERRED IMMEDIATELY after initial stabilization as below.

**INITIAL TREATMENT**

* BED REST- Fowlers' or sitting position
* Quick vital signs measurement + Oxygen saturation
* IV access
* Indwelling vesical catheter

|  |
| --- |
| IV FRUSEMIDE 60 –120mg, depending on the blood pressure (push in 2-3mins)  I.V MORPHINE 10 - 20mg (push in 2-3mins)  OXYGEN:5 – 8L/min using nasal prongs/ face mask if oxygen saturation is < 90%  ACE Inhibitor – Enalapril 2.5 – 5.0mg twice daily tablets. Give Glyceryl trinitrate sublingual tabs if patient have chest pain and BP is normal or high  Refer after immediate stabilization for continuous management |

NB: Morphine is likely to cause nausea and vomiting, so IV Metoclopramide 10mg stat, could be given concurrently or immediately after morphine has been given

**PERIPHERAL VASCULAR DISEASE (PVD**)

Occurs as a complication of reduced or absent blood supply to the distal part of the limbs resulting from narrowing or occlusion of arteries either from atherosclerosis or minor thrombi thrown from atrial fibrillation.

**Signs and Symptoms**

Patient may present with discomfort or pain on the calf muscle (leg) as he walks a distance, and this is relieved by rest. It can progress to pain even at rest (inactivity) to skin darkening and later gangrene.

**Management:**

* Advice patient to stop smoking
* Treat co-morbidities.

**Refer** to a hospital for specialist management.

## 2.5 ISCHAEMIC HEART DISEASE

Comprising of acute and chronic coronary syndromes

A. CHRONIC CORONARY SYNDROME

It is characterised by recurrent chest pain of varying degrees typically induced by exertion or emotional stress and sometimes even at rest. Some individuals with chronic coronary syndrome are at a high risk of developing acute coronary syndromes (STEMI, Non-STEMI, UA).

**CAUSES**

* Atherosclerosis with narrowing of the coronary blood vessels or spasm of the vessels leading to reduction in blood supply to the heart without destruction of the heart muscle.

**SIGNS AND SYMPTOMS**

* Central or precordial chest pain which may radiate into the left arm, neck or jaw. It is relieved by resting and last less than 15mins

**INVESTIGATIONS**

* FBC
* Erythrocyte Sedimentation Rate
* ECG
* Cardiac enzymes
* Blood glucose
* Blood lipid profile

**Initial Treatment**

* Encourage cessation of smoking
* Weight reduction if overweight
* Reduce alcohol consumption
* Reduce oil/fat consumption

Immediate Treatment

**Symptomatic relief of chest pain with Glyceryl trinitrate**, sublingual tablet/ spray, 500 micrograms PRN

REFER

Refer all patients to a hospital for a specialist care as soon as possible.

B. ACUTE CORONARY SYNDROME (ACS)

ACS is a term that describes symptoms resulting from severe acute myocardial ischaemia. The ischaemia may, or may not, lead to myocardial infarction (heart attack). ACS comprises an acute elevation of the ST-segment on an electrocardiogram (ST-segment elevation myocardial infarction or STEMI), a non-ST segment elevation myocardial infarction (NSTEMI) and unstable angina (UA).

**CAUSES**

* Commonest cause is disruption of an Atherosclerotic plaqueleding to partial or total occlusion of the coronary arteries.

**SYMPTOMS**

* Chest pain of sudden onset that may be severe and described as tightness, heaviness or constrictive in nature. Usually lasts for more than 30 minutes, typically radiates to the left arm, neck or jaw and is NOT usually relieved by rest or Glyceryl Trinitrate alone.

Associated clinical features include sudden onset of

* Nausea and/or vomiting
* Diaphoresis
* Severe anxiety
* Palpitation
* Dyspnoea
* Cyanosis
* Tachycardia
* Arrhythmia (Usually fast and irregular, may also be very slow)
* Tachypnoea
* Hypotension
* Lung crepitation and/or rhonchi (Pulmonary oedema)
* Syncope

**INVESTIGATIONS**

* FBC
* ESR
* ECG - should be done and interpreted immediately or sent for interpretation immediately.
* Cardiac enzymes: CK-MB and troponins
* Serum lipid profile
* Random blood glucose
* Blood urea, electrolytes, and creatinine
* Chest X-ray
* Echocardiography

**TREATMENT**

Initial treatment

Quick vital signs measurement + Oxygen saturation

IV access

Indwelling vesical catheter

**OXYGEN**:5 – 8L/min using nasal prongs/ face mask, if oxygen saturation is < 90%

Aspirin, oral (dispersible or chewable), 300mg stat (loading dose) Give Glyceryl trinitrate sublingual tabs if patient have chest pain and BP is normal or high

**Morphine**, IV, 5-10 mg stat

**Metoclopramide**, IV, 10 mg stat (to prevent vomiting induced by morphine)

REFER

Refer all patients IMMEDIATELY who have suffered an acute coronary syndrome for specialist care after the initial management above

## 2.6 STROKE

A stroke/cerebrovascular accident is a sudden onset of focal neurologic deficit of vascular origin. It occurs when the blood supply to part of the brain is interrupted by a thrombus, an embolus or rupture of a cerebral artery depriving brain tissue of oxygen and nutrients. The site of the brain lesion causing the stroke usually determines the neurological presentation.

Stroke is associated with significant morbidity and mortality, and as such prompt diagnosis and management crucial for better prognosis.

**CLINICAL FEATURES**

* Focal neurologic deficit (Weakness /paralysis of a limb or two, facial deviation and loss or alteration of speech etc,)
* Loss of consciousness or seizures in some patients
* Neck stiffness (in subarachnoid haemorrhage)
* Severe headache and/or neck pain (subarachnoid haemorrhage)

**INVESTIGATIONS**

* FBC, ESR
* Blood glucose
* Serum lipid profile
* Blood urea, electrolytes and creatinine
* Uric acid
* ECG
* CT scan/MRI of the head
* Chest X-ray

**INITIAL TREATMENT**

* Quick vital signs measurement + Oxygen saturation
* IV access
* OXYGEN:5 – 8L/min using nasal prongs/ face mask, if oxygen saturation is < 90%
* Admit and monitor patient’s vital signs and neurological signs frequently
* Ensue patent airway in unconscious patients.
* Nurse in the lateral position with suctioning where necessary
* Maintain adequate hydration
* In unconscious patients or those with swallowing difficulties insert nasogastric tube as early as possible for feeding and medications
* Insert urethral/condom catheter to keep patient clean and dry.

|  |
| --- |
| NOTE: DO NOT GIVE sublingual Nifedipine or other antihypertensive agent to reduce the blood pressure rapidly in patients with stroke. It may result in deterioration in their clinical state and death. BP management, refer to *hypertensive emergency management*  Aspirin can only be given when ischaemic stroke is confirmed by brain CT scan |

REFER all patients for specialist care as soon as possible

## 2.7 DEEP VENOUS THROMBOSIS (DVT)

DVT is a condition in which a blood clot forms in a deep vein usually in the lower limbs. DVT can be complicated by pulmonary embolism, sometimes with fatal consequences. It must therefore be prevented in all hospitalized patients, particularly those at high risk of developing it.

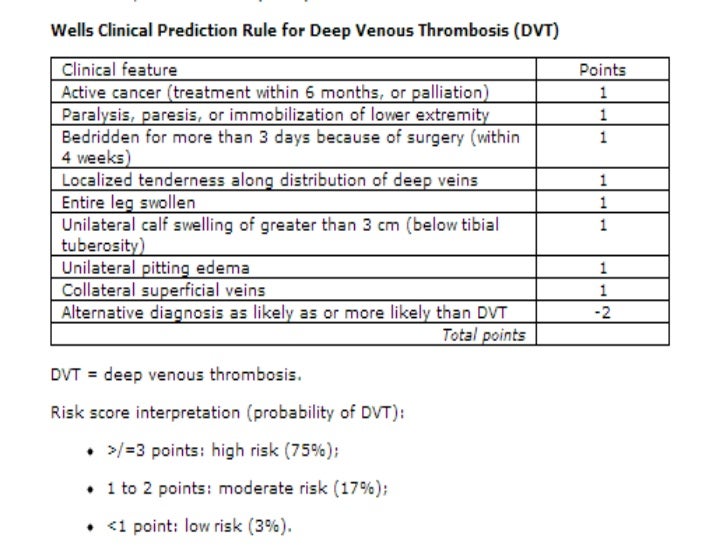
It is important to differentiate DVT from cellulitis which may present with similar local clinical features.

Risk factors include:

* Age >50 yrs
* Immobilization for > 3days (after major surgery in previous 4 weeks, application of lower limb cast, prolonged hospital admission)
* Recent long-distance travel for >4hrs
* Cancer
* Previous DVT
* Multiple trauma/ Spinal cord injuries

Oral contraceptive use

Risk can be categorized based on the Well’s score



**Signs and Symptoms:**

* Swelling or firmness in the calf or thigh (usually unilateral).
* Pain in the affected limb (more prominent in cellulitis)
* Mild or no fever.
* The affected limb may be warm, swollen and occasionally tender.

**Investigations**

* D-dimer
* Lower limb venous Doppler ultrasound scan.
* APTT, INR and prothrombin time as baseline and for monitoring therapy

**Management:**

* Thrombo Embolic Deterrent (TED) stockings (More important for Prophylaxis)
* Ensure adequate hydration with oral fluids

**Pharmacological**

* Start patient on Heparin (75 units/kg) if DVT highly suspected
* Refer for specialist care

**PULMONARY EMBOLISM (PE)**

Pulmonary embolism (PE) occurs when a blood clot in the venous circulation breaks off and obstructs the pulmonary artery or its branches. It often occurs without previous warning features. It is therefore good practice to give prophylactic treatment to all patients at high risk.

**CLINICAL FEATURES**

* Breathlessness may be intermittent
* Dizziness or syncope
* Sharp chest pain
* Blood-stained sputum
* Tachypnoea
* Tachycardia
* Hypotension
* Pleural effusion often haemorrhagic
* Low oxygen saturation on pulse oximetry <90%

**INVESTIGATIONS**

* Chest X-ray (wedge shaped infarct, focal oligaemia etc.)
* ECG sinus tachycardia (commonest ECG finding)
* Doppler ultrasound scan of leg and pelvic veins
* Echocardiography if available
* APTT, INR and prothrombin time (useful for monitoring therapy)

**INITIAL TREATMENT**

* Oxygen therapy
* IV access for fluid therapy
* Start Anticoagulant therapy (Heparin) and refer as soon as possible

|  |
| --- |
| Heparin (unfractionated), SC, IV  Adults  Initial bolus dose 10,000 units, IV stat then 15,000 units, SC, 12 hourly  OR 24,000 units in 24 hours as a continuous IV infusion (1000 units per hour).  Monitor with APTT blood test daily target should be twice normal value  OR  Enoxaparin (Low molecular weight heparin), SC,  Adults  1.0mg/kg (100 units/kg) daily  Children  Heparin, IV, 5,000 units bolus, then 15-25 units/kg per hour by continuous infusion, or 250 units/kg 12 hourly or Heparin, SC,250 units/kg 12 hourly  Daily laboratory monitoring as above, with appropriate dose adjustment as indicated. |

**RHEUMATIC HEART DISEASES**

A condition in which the heart valves are damaged permanently due to rheumatic fever, a condition which occurs after untreated or under-treated streptococcal infection (see section on rheumatic fever)

**CLINICAL FEATURES**

* Cough
* Breathlessness
* Body swelling
* Auscultatory features specific for valve involvement

**INVESTIGATIONS**

* ECG
* Echocardiography
* CXR

**INITIAL MANAGEMENT**

* IV Frusemide 80mg stat

Refer as soon as possible for specialist management

## 

# CHAPTER THREE

RESPIRATORY TRACT INFECTIONS

The following flowchart gives the basis for the management of Acute Respiratory Tract Infections (ARI) in children:

Cough, fever

YES

OUTPATIENT: NO ANTIBIOTICS

Advice care giver to give warm water with honey & lime

Rapid breathing: (>40min)

NO

YES

Chest wall indrawing

NO

OUTPATIENT

**Co-trimoxazole** oral

Under 1 year: 120mg 12 hourly for 5 days

1-5 year: 240mg 12 hourly for 5 days

YES

ADMIT OR REFER AFTER GIVING STAT DOSE

Cyanosis or heart failure and too sick to feed

INPATIENT:

**Benzyl Penicillin**

(50000/kg 6 hourly)

NO

YES

**INPATIENT:**

**Oxygen, Chloramphenicol** inj. 25mg/kg 6 hourly

**OR**

**Ceftriaxone** IM or IV over 2-4 minutes

Neonate: 20-50mg/kg once daily

Child 1 month -12 years: 50mg/kg once daily, up to 80mg/kg once daily in severe infection

## 3.1 LOWER RESPIRATORY TRACT INFECTION IN CHILDREN

**ACUTE RESPIRATORY TRACT INFECTION**

Acute Respiratory Tract Infections (ARIs) are very important cause of morbidity and mortality in The Gambia, especially amongst children. The Gambia has adopted the Integrated Management of Neonatal and Childhood Illnesses (IMNCI), which aims at improving case management at Primary Health Care (PHC) level. If in doubt refer to the IMNCI document.

* + - * 1. **PNEUMONIA:**

Pneumonia has various causes which includes bacterial, viral, fungal and parasitic.

**Signs and Symptoms**

* Fever
* Fast breathing
* Fast pulse rate
* Severe respiratory distress: grunting or chest in-drawing, flaring nostrils, not feeding or drinking well, central cyanosis or oxygen saturation < 90% on pulse oximetry
* Older children may also present with:
* Cough: may be productive or non-productive
* Sputum production rusty or blood stained, yellowish green
* Pleuritic chest pain - worse on deep breathing or coughing

**Investigations**

* FBC
* Blood culture
* Chest X- ray
* Sputum gram stain and culture
* Early morning gastric aspirate / Sputum for acid fast bacilli if TB suspected

**Classification of the severity of Pneumonia**

| **SIGNS AND SYMPTOM** | **CLASSIFICATION** | **TREATMENT** |
| --- | --- | --- |
| ■ No particular signs of pneumonia or severe pneumonia | No pneumonia: Probably a  cough or cold | Home care  - Soothe the throat and relieve cough with safe remedy.  - Advise the mother when to return.  - Follow up after 5 days if not improving  - If cough persists for >14 days refer |
| ■ Fast breathing:  - ≥50 breaths/min in an infant aged 2–11 months  - ≥40 breaths/min in a child aged 1–5 years  - Chest in-drawing | Pneumonia | Home care  - Give appropriate antibiotic.  - Advise the mother when to return immediately if symptoms of severe pneumonia.  - Follow up after 3 days. |
| ■Cough or difficulty in breathing with:  -Oxygen saturation < 90%  or central cyanosis  -Severe respiratory distress (e.g., grunting, very severe chest in-drawing)  -Signs of pneumonia with a general danger sign (inability to breastfeed or  drink, lethargy or reduced level of consciousness, convulsions) | Severe  Pneumonia | Admit to hospital.  - Give oxygen if saturation < 90%.  - Manage airway as appropriate.  - Give recommended antibiotic.  - Treat high fever if Present. |

**TREATMENT ACCORDING TO SEVERITY:**

NON-SEVERE PNEUMONIA

TREATMENT: OUTPATIENT

**Amoxicillin suspension**

Neonate: 62.5mg 8 hourly

Child 1 month-1 year: 125mg 8 hourly

Child 1-5 years: 250mg 8 hourly

Child 5-18 years: 500mg 8 hourly

(Dispersible **Amoxicillin** can be used and is well tolerated)

**If allergic to penicillin: Erythromycin oral as follows**

Neonate: 12.5mg/kg 6 hourly

1 month-2yrs: 125mg 6 hourly

2-8 years: 250mg 6 hourly

8-18 years: 250-500mg 6 hourly

**Treatment should be for 7 days**

**SEVERE PNEUMONIA**

|  |
| --- |
| Admit  Oxygen therapy  ***Antibiotic therapy***  **Ampicillin** 50 mg/kg **OR Benzyl penicillin** 50 000 IU/kg IM or IV every 6 hours for at least 5 days  **PLUS**  **Gentamicin** 7.5 mg/kg IM or IV once a day for at least 5 days.  If the child does not show signs of improvement within 48 hours and staphylococcal pneumonia is suspected, switch to  **Gentamicin** 7.5 mg/kg IM or IV once a day and **Cloxacillin** 50 mg/kg IM or IV every 6 hours for at least 5 days |

Refer

Refer if not improving on first line treatment.

* + 1. **CONDITIONS PRESENTING WITH WHEEZE**

Wheeze is a high-pitched whistling sound on expiration. It is caused by narrowing of the airway. In the first 2 years of life, wheezing is most commonly caused by acute viral respiratory infections such as bronchiolitis or coughs and colds. After 2 years of age, most wheezing is due to asthma.

***Differential diagnosis in a child presenting with wheeze***

| Diagnosis | In favour |
| --- | --- |
| Asthma | – History of recurrent wheeze, chest tightness (in older children), some  unrelated to coughs and colds or induced by exercise  – Hyperinflation of the chest  – Prolonged expiration  – Reduced air entry (if very severe, airway obstruction)  – Good response to bronchodilators, unless very severe |
| Bronchiolitis | – First episode of wheeze in a child aged < 2 years  – Wheeze episode at time of seasonal bronchiolitis  – Hyperinflation of the chest  – Prolonged expiration  – Reduced air entry (if very severe, airway obstruction)  – Poor or no response to bronchodilators  – Apnoea in young infants, especially if born preterm |
| Wheeze associated with  cough or cold | \_Wheeze always related to coughs and colds  – No family or personal history of asthma, eczema,  hay-fever  – Prolonged expiration  – Reduced air entry (if very severe, airway obstruction)  – Good response to bronchodilators  – Tends to be less severe than wheeze associated with  Asthma |
| Foreign body | \_History of sudden onset of choking or wheezing  – Wheeze may be unilateral  – Air trapping with hyper-resonance and mediastinal shift  – Signs of lung collapse: reduced air entry and impaired  breathing  – No response to bronchodilators |
| Pneumonia | – Fever  – Crepitations/Coarse crackles  – Grunting |

**Bronchiolitis**

**Treatment**

***Non-pharmacological***

***It can be managed at home.***

Admit for oxygen therapy for those with the following signs:

* Oxygen saturation < 90% or central cyanosis.
* Apnoea or history of apnoea
* Inability to breastfeed or drink, or persistent vomiting.
* Convulsions, lethargy or unconsciousness
* Gasping and grunting (especially in young infants).
* Give **Paracetamol** for fever of 39.0oC and above.
* Ensure oral feeding, if not possible give NGT feeding or IV fluids at 2/3rd maintenance dose.
* Gentle nasal suction if need arises.

|  |
| --- |
| ***Antibiotic treatment***  If high fever, fast breathing and lower chest wall in-drawing are present give:   * **Amoxicillin** (40 mg/kg twice a day) orally for 5 days * If signs of severe pneumonia are present give: * **Ampicillin** at 50 mg/kg or benzyl penicillin at 50 000 U/kg IM or IV every 6 h for at least 5 days   **AND**   * **Gentamicin** 7.5 mg/kg IM or IV once a day for at least 5 days |

**ASTHMA**

It can be divided into acute severe asthma and life threatening Asthma.

**NB:** Life threatening asthma should only be managed at hospital level with intensive care facilities.

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| **Treatment**  **Acute severe asthma**   * **Salbutamol by metered-dose inhaler** and **spacer device** or by **nebulizer** (2.5 mg salbutamol), after 15 minutes if child is better then send home on salbutamol inhaler.   If symptoms persist:   * Admit, give oxygen * Give **Nebulized Salbutamol (2.5mg 4-6 hourly)** or **Salbutamol by metered-dose inhaler** with a spacer device and if not available **Subcutaneous Adrenaline** can be used at **0.01 ml/kg** of **1: 1000 solution**. * Give **Prednisolone** at 1mg/kg daily for 3 to 5 days.   Intravenous **Magnesium Sulphate** may provide additional benefit for **those who do not respond to above** measures, give 50% **Magnesium Sulphate as** a bolus of 0.1 ml/kg (50 mg/kg) IV over 20 min. |

**SEVERE LIFE-THREATENING ASTHMA**

**Signs and Symptoms**

* Severe respiratory distress with central cyanosis or reduced oxygen saturation < 90%
* Poor air entry (silent chest)
* Unable to drink or speak
* Exhausted
* Confused

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| **Treatment**  If the above signs and symptoms are present, diagnose severe life-threatening asthma and manage as below:   * Admit (preferably in an Intensive care unit) and give oxygen. * Manage as in acute severe asthma but **in addition if the child does not get better, Aminophylline** can be administered. * IV **Aminophylline** loading dose of 5–6 mg/kg (up to a maximum of 300 mg) over at least 20 min but preferably over 1 hour, maintenance dose of 5 mg/kg every 6 hours. |

**NOTE**

**Omit loading dose if the child had Aminophylline or Caffeine in the previous 24 hours.**

**Suspend Aminophylline if vomiting, headache or convulsion occurs or tachycardia (> 180/ min) develops.**

## 3.2 UPPER RESPIRATORY TRACT

**UPPER RESPIRATORY TRACT INFECTION (URTI or COMMON COLD)**

**SIGNS AND SYMPTOMS:**

* Fever
* Cough
* Runny nose
* Sneezing

**No fast breathing**

**TREATMENT**

**ADULTS**: **Paracetamol** 500mg tabs**,** 2 tabs 6 hourly as required (max 4g daily)

**Chlorpheniramine** 4mg tabs, 8 hourly as required or Loratadine 10mg daily/ 5 mg twice a day as required

**CHILDREN**: **Paracetamol** 10-20mg/kg/dose 6-8 hourly as required

**\***NB: Not more than 4 doses per day.

Home Care: give extra fluids to drink, inform parent to come back if condition worsens or fast breathing occurs.

## 3.3 LOWER RESPIRATORY TRACT INFECTION IN ADULTS

1. **PNEUMONIA**

It is an infection of the lung tissue caused by various bacterial species, viruses, fungi or parasites. Identification of the causative organism is the key to correct treatment. However, because of the serious nature of the infection, antibiotic treatment should be started immediately based on local epidemiology before subsequent laboratory confirmation of the causative agent.

A decision on the severity of illness which would indicate the need for hospital management may be based on the following:

* Patients at the extremes of age
* Severe shortness of breath (see signs below)
* Rapid pulse rate (120 per minute or more)
* Low BP<90/60 mmHg
* Restlessness, confusion, or excessive drowsiness
* Coexisting diseases such as heart failure, liver or renal diseases

**CAUSES**

*Community acquired pneumonia*

* Streptococcus pneumoniae
* Streptococcus pyogenes
* Mycoplasma pneumonia -tends to occur in epidemics
* Haemophilus influenza
* Staphylococcus aureus in children during whooping cough, measles, or other viral epidemics
* Staphylococcus aureus in the elderly during flu epidemics
* Where aspiration may occur, as in stroke, drunken stupor or seizures, anaerobic organisms and Staph. aureus should be suspected

***Hospital acquired pneumonia***

* Gram-negative bacteria (including Pseudomonas aeruginosa)
* Staphylococcus aureus - tends to be more drug resistant

**Signs and Symptoms**

* Fever
* Cough productive or non-productive
* Sputum production- rusty or blood stained, yellowish-green
* Pleuritic chest pain - worse on deep breathing or coughing
* Breathlessness
* Fast breathing (in adults 20 or more breaths per minute)
* Nasal flaring
* Fast pulse rate

**Investigations**

* FBC
* Chest X-ray
* Sputum gram stain and culture
* Staining for acid-fast bacilli (if TB suspected)
* Blood culture and sensitivity
* Blood urea and electrolytes

**Non-pharmacological treatment**

* Nurse in comfortable position, usually on pillows or with head raised
* Tepid sponging to control fever
* Adequate oral hydration if it can be tolerated

**Pharmacological treatment**

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| **Outpatient:**  **Adults**   * **Amoxicillin**, oral, 500 mg 8 hourly for 7 days   If patient is allergic to penicillin give:   * **Erythromycin**, oral, 500 mg 6 hourly for 7 days   If the patient has received the treatment above previously:   * **Co-amoxiclav (augmentin)**, oral, 1g 12 hourly for 7 days or 625 mg 8 hourly for 7 days   **OR**  If allergic to penicillin or atypical organism suspected:   * **Azithromycin**, oral, 500 mg daily for 7 days |
| **In-patient**   * + Oxygen * **Ampicillin IV**, 500mg 6hourly AND **Gentamicin IV**, 80mg 8 hourly for 48 hours   If the patient is not improving, **REFER**.   * **Co-amoxiclav**, **IV**, 1.2 g 8 hourly, change to oral **Co-amoxiclav** as in (treatment for outpatient patient) above when clinically improved.   **OR**   * **Gentamicin**, **IV**,80 mg 8 hourly added to IV **Co-amoxiclav** as above   **OR**   * **Ceftriaxone**, IV, 1g daily for 7 days |

**Note**

**Fluoroquinolones such as Levofloxacin should generally be avoided in managing community acquired pneumonia (CAP) as it used as a second line drug for multi-drug resistant (MDR) tuberculosis.**

1. **ACUTE BRONCHITIS**

This refers to an acute infection of the bronchial mucosa. It is often found in association with upper respiratory tract infection. Most of the cases are viral and do not require antibiotics for treatment.

Antibiotics should however be prescribed if the patient is very ill or breathless or has an underlying illness like malnutrition, measles, rickets, anaemia, diabetes mellitus, chronic bronchitis, HIV/AIDS.

**CAUSES**

* Bacteria e.g., Streptococci, Staph. aureus, H. influenza
* Viruses e.g., Influenza virus

**Signs and Symptoms**

* Initial dry cough, later productive
* Anterior chest pain aggravated by coughing
* Low grade fever
* Rhinorrhoea
* Crepitations
* Rhonchi

**Investigations**

* FBC
* Sputum AFB and culture
* Chest x-ray

**Treatment**

**Non-pharmacological treatment**

* Bed rest
* Keep well hydrated
* Give humidified air if possible

|  |
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| **Pharmacological treatment**  **Amoxicillin, oral,**500 mg 8 hourly daily  If patient is allergic to Penicillins: **Erythromycin** oral**:** 250-500mg 6 hourly daily for 5-7 days.  **Paracetamol**, oral, Adults 500 mg-1g 6-8 hourly (max 4g daily) |

1. **CHRONIC BRONCHITIS**

This is chronic inflammation of the bronchial mucosa due to irritants such as tobacco smoke. There is progressive worsening with age and eventually resulting in chronic respiratory failure. It is part of the syndrome of chronic obstructive pulmonary disease (COPD). It is aggravated by recurrent viral and bacterial infections.

**CAUSES**

* Smoking
* Industrial dust
* Chemical irritants
* Recurrent bronchitis.

**Symptoms and Signs**

* Fever
* Cough with production of clear sputum
* Fever and Production of thick offensive purulent and copious sputum when there is secondary bacterial infection
* Shortness of breath, with or without wheeze
* Wheeze or rhonchi
* Reduced Peak Expiratory Flow Rate (PEFR) which does not increase with treatment

**NOTE:** Absence of signs does not exclude the disease

**INVESTIGATIONS**

* FBC
* Sputum AFB and culture
* Spirometry
* Chest X-ray

**TREATMENT**

**Non-pharmacological treatment**

* Smoking cessation if patient is a smoker

**Pharmacological treatment**

**Amoxicillin, oral,** 250-500mg 8 hourly daily for 5 to 7 days

**If allergic to Penicillins give:**

**Erythromycin, oral,** 250-500mg 6 hourly daily for 5 to 7 days

If the patient does not improve **refer**

Bronchodilators and steroids may be indicated

**Note: In uncomplicated community acquired pneumonia if viral cause is suspected give supportive care (fluid, pain relieve and cough remedies) and if condition didn’t improve after 10 days refer for further investigations**

**ASTHMA**

This is a chronic inﬂammation disorder of the airways, characterised by reversible air ﬂow obstruction. There is also inﬂammation of the bronchial wall.

**Signs and Symptoms:**

* Cough
* Wheeze
* Chest tightness
* Shortness of breath
* History of previous attacks.

**Asthma Score**

**NOTE**

* Scoring system can help to assess the severity of asthma.
* Peak flow meters when available should be used to assess the progress

|  |  |
| --- | --- |
| Symptoms (Frequency of Attacks of wheezing) | Score A |
| Waking at night, more than twice weekly | 4 |
| Daily, but not at night | 3 |
| Not daily, but more than once weekly | 2 |
| Less than once weekly or on exercise | 1 |
| None for 3 months | 0 |
| Frequency of use of bronchodilator | Score B |
| >4 times daily | 4 |
| 1 to 4 times daily | 3 |
| < Once daily | 2 |
| 1< Once weekly | 1 |
| None for months | 0 |

**Asthma Score**

* Add symptoms score (A) to the frequency of use of bronchodilator score (B). The maximum score is 8 (A+B)
* Mild asthma 0-3
* Moderate asthma 4-6
* Severe asthma 7-8

**MILD ASTHMA**

**Management**

**ADULTS**:

**Salbutamol** inhaler100-200mcg (2-3 puffs) PRN (as required)

**OR**

**Salbutamol** 4mg tabs 8 hourly daily for 7 days as outpatient

**Advice patient to return for follow up**

Treat any infection with

**Amoxicillin** 500mg 8 hourly daily for 5 days

**OR (if allergic to Penicillins)**

**Erythromycin** 250**-** 500mg 6 hourly for 5 days

Give **Salbutamol** inhaler for home use PRN (as required)

**ACUTE SEVERE ASTHMA**

**Signs & Symptoms:**

* Shortness of breath
* Severe respiratory distress
* Tachycardia
* Wheezes
* Reduced breath sounds
* Inability to speak, cannot count up to five.

**MANAGEMENT**

* At minor health facilities: initiate management and REFER,
* Treatment should be at major health centres or hospitals

**HOSPITAL MANAGEMENT**

|  |
| --- |
| 1. **Salbutamol Nebuliser**: 2.5-5mg/3ml water for injection up to max 40mg daily   **OR**   1. **Salbutamol** and **Ipratropium** nebuliser solution (2.5mg/0.5mg)/3ml water for injection 2. Give **Oxygen** 6-8L/min if cyanosed   **IF NOT BETTER:**   1. **Aminophylline:** Check whether the patient is on oral **Aminophylline**   If yes: give **Aminophylline**250mg in 500ml **Dextrose** slowly over 12 hours  If no: give loading dose of **Aminophylline**250mg I.V, SLOWLY over 20 minutes and continue with **Aminophylline** in 500 ml **Dextrose**.  **PLUS**  **Hydrocortisone:** 200mg I.V. 6 hourly  ◼Treatment on discharge  1. **Salbutamol** inhaler to take home and use PRN (as required)  2. **Salbutamol** tabs 4mg 8 hourly  3. **Aminophylline** tabs 100mg 8 hourly  4. **Prednisolone** oral in severe cases: 10mg three times daily for 7 days, then taper off gradually (Reduce by 5mg weekly until stopped).  **NOTE: Prednisolone should be preferably taken in the morning before breakfast**  Where available, **Beclomethasone** inhaler can be used twice daily as maintenance instead of systemic prednisolone.  Treat any infection with **Amoxicillin or Erythromycin** oral. |

## 3.4 ACUTE OTITIS MEDIA

It is common in children

**Signs and Symptoms**

* Early clinical signs: fever and crying, later pus discharging from the ear.
* In infants, the only sign might be a constantly crying baby with fever and refusing feeds.

Take an ear swab if possible.

**TREATMENT**:

**Amoxicillin** 40mg/kg tabs 12 hourly for 5 days

Antibiotics can be changed depending on sensitivity pattern.

Ear wicking three times a day if discharging pus until dry.

## 3.5 CHRONIC OTITIS MEDIA

It is pus discharging from the ear for more than 2 weeks.

**INVESTIGATIONS**

Ear swab for culture and sensitivity if possible

Treatment:

**Ciprofloxacin** ear drops 12 hourly for two weeks.

Ear wicking three times a day until dry

**REFER to ENT specialist**

## 3.6 TONSILLITIS

**INVESTIGATIONS**

* FBC
* Throat swab if possible.

**ANTIBIOTIC MANAGEMENT: *Do not give co-trimoxazole (not effective in the eradication of group A beta-haemolytic streptococci)***

ADULTS**: Amoxicillin** 500mg 8 hourly daily for 5-7 days

ALTERNATIVE: if allergic to penicillin

**Erythromycin**500mg 8 hourly for 5-7 days

CHILDREN: **Amoxicillin** 40mg/kg 12 hourly for 7-10 days

ALTERNATIVE: if allergic to penicillin

**Erythromycin** 40mg/kg/day 6 hourly for 7-10 days

Give analgesics for pain and fever

**Refer to ENT:** All severe cases, like retropharyngeal and peritonsillar abscesses and recurring ones

## 3.7 PERITONSILLAR ABSCESS

|  |
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| **ANTIBIOTIC MANAGEMENT**:  Adult:   * **Procaine Penicillin** IM, 2 MU daily for 5-7 days   **PLUS**   * **Cloxacillin** oral 500mg 6 hourly for 7 days   Child:   * **Procaine Penicillin 25,000 – 50,000 U/kg/day**   **PLUS**   * **Metronidazole oral (30mg/kg/day 8 hourly)**   **REFER FOR SURGICAL DRAINAGE** |

## 3.8 DENTAL ABSCESS

1. **Focal (Periodontal or Gum) abscess with no visible external swelling**

MANAGEMENT

**Amoxicillin** 250mg - 500mg 8 hourly daily for 3 days

**Paracetamol** 500mg 8 hourly daily as required (Max 4g daily)

Offending tooth for extraction or root canal treatment

1. **Extensive Periodontal abscess with visible external swelling**

MANAGEMENT

**Procaine Penicillin** 2 MU daily for 5 days

**Metronidazole** oral200/250mg 8 hourly daily for 5 days

**Paracetamol** 500mg- 1g 8 hourly as required (max 4g daily)

Extraction of offending tooth

1. **Suppurative Osteomyelitis of the jaws with Cervico-facial spread**

MANAGEMENT –

**ADMIT FOR TREATMENT AND DECOMPRESSION OF THE ABSCESS THROUGH SURGICAL DRAINAGE TO BE DONE QUICKLY**

**Benzylpenicillin** 2 MU 6 hourly for 3 days

**Gentamicin** I.V.80mg 8 hourly for 5 days

**Metronidazole** I.V. 500mg 8 hourly for 5 days

After 3 days of **Benzylpenicillin**, replace with oral **Ampicillin** + **Cloxacillin** (250mg + 250mg) 6 hourly (four times daily) for 5 days

**Offending tooth must be extracted as soon as possible**

NB. Children’s doses of these drugs are as below:

**Ampicillin** I.V.50mg/kg, 4-6 hourly

**Benzylpenicillin slow I.V:**

*Preterm and neonate under 7 days:* 25mg/kg every 12 hours

*Neonate 7-28 days:* 25mg/kg every 8 hours

Child 1 month-18 years: 25mg/kg every 6 hours, increased to 50mg/kg every 4-6 hours in severe infection (max 2.4mg every 4 hours)

**Gentamicin** I.V. 2.5mg/kg/dose, 8 hourly

**Metronidazole** I.V infusion over 20-30 minutes

*Neonate*: 15mg/kg as a single loading dose, followed after 24 hours by 7.5mg/kg every 8 hours thereafter.

*Child 1 month-18 years*: 7.5mg/kg (max 500mg) every 8 hours

**THE FOLLOWING CONDITIONS REQUIRE SURGICAL INTERVENTION**

1. **Pleural Effusion**

This is the collection of fluid in the pleural space. It could be secondary to a severe pneumonia, TB or malignancy. Patient may have a history of productive cough, fever, difficulty in breathing or associated night sweats.

1. **Empyema thoracis**

This is the collection of pus in the pleural cavity. It could be secondary to bacterial pneumonia, or as a complication of a drainage procedure of the pleural space. Patients may present with cough, high fever, chills and difficulty in breathing.

1. **Pneumothorax**

**Spontaneous** – Collection of air in the pleural space, secondary to an underlying lung condition. They may have a history of chronic cough, then sudden difficulty in breathing, following a bout of coughing.

**Traumatic** – Collection of air in the pleural space secondary to trauma. Patient presents with chest pain and difficulty in breathing following trauma. There may be associated rib fractures. Here, emergency surgical intervention may be necessary.

1. **Hemopneumothorax**

This is the collection of blood and air in the pleural space secondary to trauma. Patient presents with chest pain and difficulty in breathing following trauma. Emergency surgical intervention may be necessary.

**Management (of all above conditions)**:

* Do CXR and refer to centre where a chest drain can be inserted, immediately.
* If you suspect tension pneumothorax convert (decompress) to simple pneumothorax (by inserting a large bore cannula/needle at 2nd intercostal space midclavicular line) and REFER.
* In Empyema thoracis, if the pus is too thick to be drained by a chest tube, or pus is loculated, refer to centre with surgical capacity for possible thoracotomy.

# CHAPTER FOUR

NEUROLOGICAL / PSYCHIATRIC CONDITION

## 4.1 EPILEPSY

Epilepsy is a disorder of the central nervous system (CNS) which is characterised by spontaneous recurrent seizures.

**CLASSIFICATION OF EPILEPTIC SEIZURES**

|  |  |  |
| --- | --- | --- |
| FOCAL | GENERALISED | UNKNOWN |
| Aware / impaired awareness | Motor – tonic clonic or other  tonic-clonic  clonic  tonic  myoclonic  myoclonic tonic-clonic  atonic  epileptic spasm | Motor- Tonic Clonic or other  tonic-clonic  epileptic spasm |
| Motor onset / non motor onset  automatism  atonic  clonic  epileptic spasm  hyperkinetic  myoclonic  tonic | Non motor - (ABSENCE)  Typical  Atypical  Myoclonic  Eyelid myoclonia | Non-Motor  Behaviour arrest |
| Non motor onset  autonomic  behavioural onrest  cognitive  emotional  sensory |  | unclassified |
| Focal to bilateral tonic clonic |  |  |

A. **GENERALIZED SEIZURES** (underlying causes most of the time unknown)

**Absence seizures (Petit mal)**

* Typical abrupt onset and cessation of impairment of consciousness with or without Myoclonic jerk, tonic or autonomic component.

**Atypical absence: Less abrupt onset and cessation.**

* Myoclonic seizures
* Myoclonic Jerks
* Clonic Seizures
* Tonic / Clonic seizures: Grand-Mal or major convulsion
* Tonic seizures
* Atonic or Akinetic seizures

**B. PARTIAL FOCAL SEIZURES**

Seizures which start by actuation of group of neurones limited to one part of one hemisphere.

1. Simple without impairment of consciousness. Synonym: Jacksonian
2. Complex partial - with impairment of consciousness. Synonym: Temporal lobe or psychomotor seizure
3. Partial Seizures evolving to generalize. Synonym: Secondary Generalized Seizures

**TREATMENT**

**Phenobarbitone, Phenytoin** and **Carbamazepine** are the commonly used drugs for the treatment of epilepsy in The Gambia and provide control for a vast majority of the cases. Sodium valproate, Levetiracetam, and Lamotrigine are recently added new drugs for the management of epilepsy. The other drugs mentioned here are available only to specialists in tertiary institutions.

**ABSENCE SEIZURES (Petit-Mal)**

**Sodium valproate**:

Child 1 month **-** 11 years: Initially 10-15mg / kg daily in 1-2 divided doses (Maximum per dose 600mg); maintenance dose 25-30mg / kg in 2 divided doses

Child 12 and above: initially 600mg daily in 1-2 divided doses; maintenance dose 1-2g daily in 2 divided doses (maximum daily dose of 2.5g)To be taken after food

**OR**

**Ethosuximide:**

Child 1 month - 5 years: I initially 5mg / kg twice daily (maximum per dose 125mg). maintenance dose 10 - 20mg / kg twice daily (maximum per dose 500mg

Child 6- 17 years; initially 250mg twice daily (maximum daily dose of 1g in divided twice a day)

Adult: 500mg daily in 2 divided doses (maximum daily dose of 1.5- 2g)

**Clonazepam:** 1mg at night.

Maximum dose: 4-8mg daily in 3-4 divided doses if necessary, but the it is usually taken at night

**NOTE:**

Sodium valproate is contraindicated in women and girls of childbearing potential unless conditions of pregnancy prevention programme are met (MHRA/CHM 2018)

**Check for LFT, FBC**

**LEVETIRACETAM**

Child 16 years and above: Initially 250 mg once daily for 1 week, then increased to 250 mg twice daily, then increased in steps of 250 mg twice daily (max. per dose 1.5 g twice daily), adjusted according to response, dose to be increased every 2 weeks

**LAMOTRIGINE**

Child 12 years and above: Initially 25 mg once daily for 14 days, then increased to 50 mg once daily for further 14 days, then increased in steps of up to 100 mg every

7–14 days; maintenance 100–200 mg daily in 1–2 divided doses; increased if necessary up to 500 mg daily, dose titration should be repeated if restarting

after interval of more than 5 days

**NOTE:**

Levetiracetam (Keppra) and Lamotrigine (Lamictal) have been found to be safer than other antiepileptic drugs in pregnancy

**MYOCLONIC & AKINETIC SEIZURES**

**Sodium valproate**: Dosage as in absence seizures

**Clonazepam**: Dosage as above

**TONIC / CLONIC SEIZURES: Grand-Mal**

**If associated with partial seizures OR partial seizures alon**

**START WITH ONE DRUG FIRST**

**Carbamazepine** tabs 100 - 200mg

Adults: Maximum daily dose 1.6g – 2g

**OR**

**Phenytoin**

Child 1 month – 11 years: Initially 1.5 – 2.5mg / kg twice daily (maximum per dose 300mg per day)

Child 12 – 17 years 75 – 150mg twice daily (Maximum per dose 300mg twice daily)

**OR**

**Phenobarbitone:** 30 or 100mg tabs

Dose:

Adults: 60 - 180mg at night

Children: 15mg/kg at night

Maintenance dose: 4-5mg /kg/day

**STATUS EPILEPTICUS (SE)**

SE as a seizure “≥5 minutes or two or more discreet seizures between which there is incomplete recovery of consciousness”

**MANAGEMENT**

* Place the patient on the left lateral side
* Avoid introducing objects into the mouth.
* Keep the airways open
* Put up IV-line, catheter & NG tube

TREATMENT – ADMIT (Abutting the seizure)

**I.V. LORAZEPAM**

Adults: 1-4mg in divided doses

If seizure persist after 5-10 min administer 4mg IV again

Elderly: 0.5mg - 2mg daily in divided doses

Infants and Children: 0.05-0.1mg/kg IV over 2-5 minutes not to exceed 4mg/dose

If seizure persist after 5-10 min

OR

**I.V. Diazepam**

Adults: 10mg **slowly** given over 5-minute Children: 0.2mg/kg IV or 0.2 - 0.5mg/kg rectally.

Repeat as necessary.

**NB:** The above can be repeated twice otherwise start one of the drugs below.

**Phenobarbital** I. V

Adult: 10mg / kg (Maximum per dose 1g

Child 1 month - 11 years initially 20mg / kg, then maintenance dose 2.5-5mg / kg 1-2 times a day

**OR**

**Phenytoin** I.V.

**I.V Phenytoin**

Child 1 month - 11 years: Loading dose 20mg / kg; maintenance dose 2.5 - 5mg /kg

Child 12- 17 years: Loading dose 20mg / kg; maintenance dose 100mg 6-8hourly

Adult: Loading dose 20mg / kg (maximum per dose 2g) maintenance dose 100mg 6-8 hours

**NB:** To prevent recurrence, use **Phenytoin** slow IV injection 15mg /kg at 50mg per minute

**OR**

IV **Diazepam** 100mg in **Dextrose 5%** and titrate according to need.

RESISTANT STATUS EPILEPTICUS (RSE): A patient resistant to the above treatment will need referral to specialist care

**DRUG and SUBSTANCE ABUSE**

A state arising from the repeated administration of a drug or other substance of abuse on a periodic or continuous basis leading to physical, social or occupational problems.

**Cause**

* Social factors:
* Peer pressure
* Idleness/unemployment
* Social pressures
* Poverty
* Cultural use
* Increased availability
* Stress
* Adolescent development changes

Examples of Commonly abused drugs

* Alcohol
* Tobacco
* Cannabis (njaga, bhangi, marijuana)
* Khat (mairungi)
* Heroin
* Cocaine
* Petrol fumes
* Organic solvents (eg. thinners)
* Pethidine
* Amphetamines (eg. speed)
* Mandrax® (methaqualone)

Presenting features

* Change in behaviour, e.g. excessive irritability
* Change in function, e.g. decline in school/work performance
* Loss of interest
* Episodes of intoxication e.g. slurred speech, staggering gait

Neurological/Psychiatric conditions

* Involvement in illegal activities, eg. rape, theft
* Change in appearance e.g. weight loss, red eyes, puffy face, unkempt, untidy
* Financial difficulties, e.g. stealing, unpaid debts
* Relationship problems, e.g. increased conflicts, communication breakdown

**Management**

* treat associated mental disorder such as psychosis- refer to psychosis management
* Psychosocial therapy (counselling)
* Treat presenting symptoms, e.g. Delirium.

**REHABILITATION CENTRE**

**REFER TO HIGHER LEVEL FOR DETOXIFICATION**

**Prevention**

* Health education on dangers of drug abuse
* Employment/recreational opportunities
* Encourage social and cultural values
* Attempt to reduce availability of drugs of abuse in the community

**ANXIETY**

Anxiety is described as normal physiological response which enables a person to take steps to deal with a threat. When anxiety is prolonged or interferes with normal functions of the individual, it constitutes the clinical condition of an anxiety state.

**Causes**

* Predominantly psychological

**Types and clinical features**

* Generalized anxiety: unrealistic and excessive worry about two or more life events
* Panic attacks: sudden onset of intense apprehension or terror usually lasts a few minutes to one hour
* Phobia: persistent fear of a known stimulus (object or situation), eg. animals, water, confined spaces
* Obsessive-compulsive disorder: repeated disturbing thoughts associated with time

**Consuming actions**

Post-traumatic stress disorder: where a person who experienced a major threatening life event, later in life begins to experience the same either in dreams or in clear consciousness.

Each of the above clinical types will have one or more of the following peripheral manifestations:

**Palpitations**

* Tremors
* Urinary frequency, hesitancy or urgency
* Dizziness
* Diarrhoea

**Management**

* Non-pharmacological
* Psychotherapy (counselling) is of primary importance

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| **Pharmacological**  Benzodiazepines, e.g. diazepam 5mg 1-2 times daily  Increase if necessary to 15-30mg daily in divided doses  Elderly patients: give half the above dose  Caution  Benzodiazepines, e.g. diazepam: are addictive   * avoid prolonged use, i.e. not more than 7days * give the lowest possible dose for the shortest period and * avoid alcohol   If poor response:  Give an antidepressant at night, e.g. imipramine or amitriptyline 25-50mg |

**DEPRESSION**

A common disorder of both adults and children, mainly characterised by low mood and loss of energy and loss of interest in previous pleasure (anhedonia).

**Causes**

* Biological, genetic predisposition
* Psychological - such as low self esteem
* Social – stressors of life such as loss of partners, financial loss etc

**Clinical features**

* Low mood and loss of interest or pleasure are key symptoms; apathy
* Associated lack of energy, body weakness
* Difficulty in concentrating
* Poor sleep
* Poor appetite
* Feeling of guilt
* worthlessness
* Reduced libido
* Multiple body pains
* Suicidal thoughts – occur in up to 65% of patients – a key symptoms irrespective of other symptoms - (regard as major Depression)
* Children and adolescents and some males presents with atypical symptoms such as irritability, hypersomnia present with school phobia, truancy, poor academic performance, alcohol and drug abuse

**Investigations**

* Obtain thorough social and personal history
* Blood sugar, daily weighing, ECG

**Consider other endocrine disease such as hypothyroidism, TFT, Cushing Syndrome**

**Management**

* Non-pharmacological
* Psychological support is key / non – pharmacological

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| **Pharmacological**  **SSRIs are quite effective and non-addictive, always start low and go slow**   * Fluoxetine 20mg as a single or divided doses (maximum daily dose 60mg per day) * delayed onset of action 4 to 6 weeks noted * can induce Manic episode in those with Bipolar Affective Disorder * can cause bleeding abnormalities in those with regular use of aspirin or NSAIDs * TCAs (such as Amitriptyline) * Dosing amitriptyline in healthy adults » * Initiate treatment with 50 mg in 2 divided doses or a single dose at bedtime.   **» Increase by 25 to 50mg every 1 – 2 weeks, aiming for 100 – 150 mg by 4 – 6 weeks depending on response and tolerability.**  **» If no response in 4 – 6 weeks or partial response in 6 weeks, increase dose gradually (maximum dose 150mg) in divided doses (or a single dose at night).**  **ADRs**   * Cardiac Arrythmias * Orthostatic hypotension   **note- it can also cause manic phase in bipolar disorder.**  **NON-PHARMACOLOGICAL**   * Psychoeducation * Address current psychosocial stressors * Reactivate social networks * Structured physical activity * Basic supportive Psychotherapy   In severe cases:  Refer |

## 4.2 POSTNATAL DEPRESSION

This is depression immediately and within first year of giving birth. The patient presence with depressive symptoms mentioned above with impairment in her socio-occupational functioning. It is different from maternity blues which affects almost all women after delivery, but it does not go beyond 2 weeks

**Causes**

* biological -rapid drop of hormones of pregnancy, previous mental illness
* -psychological -such low self-esteem, negative cognition to pregnancy
* social - life stressors before or during pregnancy -such as economic issues, death of husband, responsibility of caring new-born especially primagravida, poor social support

**Clinical features**

As for depression above plus

* Starts soon after delivery and may continue for a year or more
* Feelings of sadness with episodes of crying,
* poor concentration,
* marked irritability,
* poor care to the new-born
* Guilty feeling of not loving baby enough
* Loss of positive feeling towards loved ones

**Management similar to depression**

**Predisposing factors include:**

* Previous psychiatric history
* Recent stressful events
* Young age

First baby (primigravida) and associated fear of the responsibility for the new baby

* Poor marital relationship
* Poor social support

**Clinical features**

As for depression above plus

* Starts soon after delivery and may continue for a year or more
* Feelings of sadness with episodes of crying, anxiety, marked irritability, tension, confusion
* Guilty feeling of not loving baby enough
* Loss of positive feeling towards loved one’s apathy

## 4.3 DELIRIUM (ACUTE CONFUSIONAL STATE)

Disturbances in consciousness and cognition over a short period of time mostly secondary to physical health illness (Acute Confusional State A condition of impaired brain function resulting from

diffuse physiological change.

**Causes**

* Infections, e.g., malaria, trypanosomiasis, syphilis, meningitis, rabies, typhoid fever, pneumonia, HIV/AIDS
* Intoxication with or addiction to alcohol or other substances
* Cerebral pathology, e.g., Head trauma, tumour
* Heart diseases, e.g., Cardiac failure
* Severe anaemia
* Epilepsy
* Electrolyte imbalance

**Sign and symptoms**

Acute onset of mental confusion with associated disorientation

Reduced ability to think coherently, reasoning and problem solving are difficult or impossible. Illusions and hallucinations are common especially in visual form. Symptoms tend to fluctuate; patients feel better in the day and worse at night

**Investigations**

Guided by history and physical examination, blood: baseline hemogram can be helpful.

**Management**

**Non-pharmacological**

* Identify and treat the cause, withhold any unnecessary drugs
* Restore fluids and monitor electrolytes
* Prevent convulsions

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| Pharmacological  When features of psychosis appear:  **Haloperidol**  Adult: 1- 10mg daily in 1-3 divided doses, treatment should be started at the lowest possible dose (maximum 10mg per day)  Provide reassurance  For severe agitation and tremulousness of delirium tremens:  **Diazepam** 5-10mg slow IV every 10-15 minutes until patient calm but not asleep- doses required may exceed 100mg daily  **Note**  Good nursing care is of prime importance and can give good results   * **Nurse in room with bright lights** * **Nurse with familiar faces** |

## 4.4 DEMENTIA

A chronic organic mental disorder characterised by failing memory.

Dementia is a syndrome due to illness of the brain, which is usually chronic and progressive in nature. The conditions that cause dementia produce changes in a person’s mental ability, personality and behaviour. People with dementia commonly experience problems with memory and the skills needed to carry out everyday activities. Dementia is not part of normal ageing. Although it can occur at any age, it’s more common in older people. People with dementia often present with complaints of forgetfulness or feeling depressed. Other common symptoms include deterioration in emotional control, social behaviour or motivation. People with dementia may be totally unaware of these changes and may not seek help. Sometimes it is thus the family who seeks care. Family members may notice memory problems, change in personality or behaviour, confusion, wandering or incontinence. However some people with dementia and their carers may deny or minimize the severity of memory loss and associated problems. Dementia results in decline in intellectual functioning and usually interferes with activities of daily living, such as washing, dressing, eating, personal hygiene etc

**Causes**

* Primary degeneration of the brain
* Vascular disorders causing intracranial bleeding
* Infections, e.g., syphilis, TB, HIV/AIDS, meningitis
* Metabolic disorders, e.g., hypothyroidism
* Brain trauma
* Toxic agents, e.g., carbon monoxide, alcohol

**Clinical features**

* Impairment of the short- and long-term memory
* Impaired judgment, poor abstract thinking
* Language disturbance (aphasia)
* Personality change - may become apathetic or withdrawn, may have associated anxiety or depression because of failing memory.

**Investigations**

Guided by history and clinical picture to establish cause

**Management**

**Pharmacological**

**Non-pharmacological**

* Where possible, identify and treat the cause
* Avoid quiet, dark, private rooms

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| **Pharmacological Treatment**  Only if restless and agitated:  Adult: Haloperidol 0.5 - 5mg orally daily in 1-2 divided doses. dose adjusted according to response at intervals of 1-3 days  Elderly: 500mcg daily, reassess treatment after no more than 6 weeks  OR  Thioridazine 25-400mg daily for 4 weeks give as a single dose at night or in 2 divided doses every 12 hours  Thioridazine Initial: 25mg 8 hourly per day: maintenance dose 20-200mg / day  Do not consider acetylcholinesterase inhibitors (like donepezil, galantamine and rivastigmine) or memantine routinely for all cases of dementia. Consider them only in settings where specific diagnosis of Alzheimer Disease can be made AND where adequate support and supervision by specialists and monitoring (for side-effects) from carers is available.  Psychosocial intervention  Give adequate psychological care and nutrition  Promote independence, functioning and mobility |

## 4.5 BIPOLAR AFFECTIVE DISORDER

Is a cyclical mood disorder in which a patient swings between two poles namely mania and depression, It can be bipolar I and Bipolar II

Bipolar I -there is a presence of one manic episode

Bipolar II- there is a presence of one depressive episode and hypomania disorder of mood control usually in the excited form with associated behavioural problems.

**Causes**

Biological- genetic such as first degree relative (siblings or parents)

psychological - high stress period

social - drug abuse,

**Clinical features**

* Elevated, expansive, or irritable moods are the key symptoms
* Speech is increased with flight of ideas
* Talkativeness
* Less need for sleep
* Increased self-image, restlessness and over-activity are common
* Delusions of grandeur may occur
* Increased libido
* Increased appetite - but weight loss occurs due to over-activity
* Auditory and visual hallucinations may be present

**Investigations**

* Good social and personal history
* History including physical and mental state examination
* Renal Functions Test (RFT), Liver Functions Test (LFT) Blood sugar, ECG, Thyroid Functions Test (TFT)

**Management**

Nonpharmacological

Pharmacological

Effective psychological care

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| **Pharmacological**  **Manic Phase**  Oral Quetiapine 100mg once daily  Adult: 50 mg twice daily for day 1, then 100 mg twice daily for day 2, then 150 mg twice daily for day 3, then 200 mg twice daily for day 4, then adjusted in steps of up to 200 mg daily, adjusted according to response, usual dose 400–800 mg daily in 2 divided doses, the rate of dose titration may need to be slower and the daily dose lower in elderly patients; maximum 800 mg per day  Oral Sodium Valproate 500mg per day  Oral carbamazepine 200mg at bedtime increase to 600-1000mg /day  Depressive phase add oral Fluoxetine 20 - 50mg daily  **Chlorpromazine** initially 100-200mg every  8 hours then adjust according to response daily doses up to 300mg may be given as a single dose at night  **OR**  **Trifluoperazine** initially 5-10mg every 12hrs then adjust according to response up to 40mg or more daily may be required in severe or resistant cases  **OR**  **Haloperido**l initially 5-10mg every 12hrsthen adjust according to response up to 30-40mg daily may be required in severe or resistant cases  If extrapyramidal side-effects appear:  Add an anticholinergic: **Benzhexol** initially 2mg every 12 hours then reduce gradually to once daily and eventually give 2mg only when required. **On-pharmacological**   * + Psychosocial   + Psychoeducation   + Reactivate social network   + Rehabilitation   + Supportive psychotherapy |

## 4.6 PSYCHOSIS

Psychosis is characterized by distortions of thinking and perception, as well as inappropriate or narrowed range of emotions. Incoherent or irrelevant speech may be present. Hallucinations (hearing voices or seeing things that are not there), delusions (fixed, false idiosyncratic beliefs) or excessive and unwarranted suspicions may also occur. Severe abnormalities of behaviour, such as disorganized behaviour, agitation, excitement and inactivity or overactivity, may be seen. Disturbance of emotions, such as marked apathy or disconnect between reported emotion and observed affect (such as facial expressions and body language), may also be detected. People with psychosis are at high risk of exposure to human rights violations.

**Predisposing factors**

* Biological - such as genetic
* Cannabis use
* Psychological - e.g. high expressed emotions
* Social - adverse life events such as child abuse, social isolation and discrimination

**Management**

* Pharmacological
* Non-pharmacological

**Pharmacological**

* Haloperidol 5- 10mg orally and increase up to 20mg /day depending on response

OR

* Chlorpromazine
* Adult: Initially 25mg 8 hourly orally and adjust according to response or alternatively 75mg once daily to be taken at night. Maintenance dose 75 - 300mg /day depending on response

OR

* IM Fluphenazine 12.5mg stat dose increase to 100mg 2 to 5 weeks depending on response

OR

* Olanzapine 5-20mg daily orally

OR

* Risperidone 2mg initial dose increase up to 16 mg/day depending on response
* Benzhexol 2.5-10mg /day - used in Extrapyramidal side effects

**Non-pharmacological**

* Ensure safety of patients
* Ensure personnel hygiene
* Social interventions -linked to social institutions for support
* Supportive psychotherapy
* Treat or refer for their physical health issues

## 4.7. MIGRAINE

Periodic severe headache usually unilateral and associated with visual disturbance and vomiting.

**Causes**

The cause is unknown but thought to be linked to:

* Familial factors
* Craniovascular disorders which can be precipitated by:
* Stress
* Anxiety
* Menstruation
* flashing lights
* Tyramine-containing foods, eg. red wine, cheese, chocolate

**Clinical features**

Severe episodic unilateral headache not responding to common painkillers

Nausea and vomiting May resolve without treatment

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| **Management**  Pharmacological  Ergotamine tartrate initially 2mg sublingually then  1-2mg hourly to a maximum of 6mg in 24 hours or 10mg in a week plus propranolol 10-20mg every 8-12 hours prn for as long as there is migraine  **Caution**  Ergotamine: contraindicated in pregnancy and ischaemic heart disease |

## 4.8 PARKINSONISM (PARKINSON’S DISEASE)

A movement disorder resulting from degeneration and malfunction of the CNS common in old age.

**Causes**

* Primary Parkinsonism:
* Cause is unknown
* Secondary Parkinsonism:
* Infections, e.g., sleeping sickness, syphilis
* Poisoning, e.g., manganese, carbon monoxide
* Drugs, e.g., chlorpromazine, haloperidol
* Hormone disorders, e.g., phaeochromocytoma
* Vascular disorders
* Degeneration of basal ganglia
* Intracranial tumour
* Trauma

**Clinical features**

* Mainly in males
* Intentional tremor
* Excessive salivation
* Vacant facial expression (mask face)
* Muscle rigidity
* Walking with short quick steps (shuffling gait)
* Urinary incontinence (sometimes occurs)

**Investigations**

* Good history and clinical examination

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| Management (adults)  Pharmacological  **Benzhexol** 2-15mg daily in 1-3 divided doses  **OR**  **Benzatropine** 1-2mg IM or IV - repeat if symptoms reappear  Caution  **Benzhexol**, **Benztropine**: use lower doses in the elderly as they may otherwise cause confusion as a side-effect |

## 4.9 SCHIZOPHRENIA

A chronic disorder with disturbance of:

Form and content of thought; perception Sense of self, relationship to external world Mood, behaviour

**Causes**

Not known but there are associated biological, genetic and environmental factors.

**Clinical features**

* Any one or more of these may be diagnostic:
* Delusions (abnormal beliefs) - may be multiple, fragmented or bizarre
* Disconnected ideas with speech which is vague and inadequate in content
* Hallucinations (especially auditory forms)
* Mood is usually inappropriate
* Difficulty in forming and sustaining relationships apathy with self-neglect

**Investigations**

* Good social, personal and family history

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| **Management**  As for Mania  If no response:  Refer to next level for further management  **Note**  Give concurrent psychotherapy and drug therapy  Gradually adjust doses depending on response |

**Prevention**

* Genetic counselling
* Good psychosocial support
* Early detection and treatment

## 4.10 COMMON NEUROLOGICAL CONGENITAL DEFECTS

If any of the following is noted, **refer to a centre with neonatal and surgical capacity as soon as possible:**

**A. Meningocoele / Meningomyelocoele**

It is a congenital defect in the spinal cord involving only the meninges (Meningocoele) or both the meninges and neural tissue (Meningomyelocoele).

It is noticed at birth, with a swelling at the back along the spinal column, usually lower back. Neonates with meningomyelocoeles may present with neurological deficit.

**B. Spinal Bifida**

Congenital defect in the formation of the spinal column

**C. Sacrococcygeal teratoma**

It is a congenital malformation with a mass protruding from the sacral end of the neonate.

**D. Hydrocephalus**

It is a result of abnormal increase in the amount of cerebrospinal fluid within the ventricles of the brain, usually resulting in an increase in size of the head of an infant.

# CHAPTER 5

INFECTIOUS DISEASES

Infectious diseases are caused by pathogenic microorganisms, such as bacteria, viruses, parasites or fungi; the diseases can be spread, directly or indirectly, from one person to another. Zoonotic diseases are infectious diseases of animals that can cause disease when transmitted to humans.

## 5.1 MALARIA

Malaria is caused by Plasmodium parasites. The parasites are spread to people through the bites of infected Anopheles mosquitoes, called "malaria vectors", which bite mainly between dusk and dawn.

There are four parasite species that cause malaria in humans:

* Plasmodium falciparum
* Plasmodium vivax
* Plasmodium malariae
* Plasmodium oval.
* Plasmodium knowlesi
* Plasmodium falciparum and Plasmodium vivax are the most common. Plasmodium falciparum is the most deadly.

**Transmission**

Malaria is transmitted exclusively through the bites of Anopheles mosquitoes. The intensity of transmission depends on factors related to the parasite, the vector, the human host, and the environment.

WHO recommends that all cases of suspected malaria be confirmed using parasite-based diagnostic testing (either microscopy or rapid diagnostic test) before administering treatment Results of parasitological confirmation can be available in 15 minutes or less. Treatment solely on the basis of symptoms should only be considered when a parasitological diagnosis is not possible.

In The Gambia, malaria is endemic and is one of the leading causes of morbidity and mortality, especially among children and pregnant women. The adequate management of this condition at all levels of the health care delivery system is vital. Laboratory diagnosis of malaria is of utmost importance.

The following recommendations give a guide to appropriate management, especially in the light of increasing drug resistance.

To prevent complications through prompt and adequate case management.

To reduce the transfer of resistant parasites from treated patients, and therefore limit the spread of drug resistance.

**A. MANAGEMENT OF MALARIA IN CHILDREN**

## I. UNCOMPLICATED MALARIA

**Signs and symptoms**

* Fever, vomiting and diarrhoea
* Weakness
* Reduced activity
* Cough
* Poor feeding
* Temperature of 37.5 Celsius or above;

**Investigations**

* Blood film for malaria parasites or rapid diagnostic test if microscopy is not available.
* Check haemoglobin (Hb) or packed cell volume (PCV).

Treatment (FOR DETAIL REFER TO MALARIA TREATMENT GUIDELINES)

After confirmation: outpatient care with Arthemether- Lumefrantrine

OR

Dihydroartemisinic- Piperaquine.

NB

Re-check blood film for malaria parasites after completion of therapy especially if fever and other symptoms persist.

RDT can remain positive after up to one month of successful therapy.

DOSAGE SCHEDULE OF ARTEMETHER 20MG+LUMEFANTRINE 120MG

| Weight | Age | Day 1 | Day 2 | Day 3 |
| --- | --- | --- | --- | --- |
| Less than 5kg | Birth up to 3 months | Not recommended | Not recommended | Not recommended |
| 5kg - 14kg | 3 months-3 years | 1 tablet stat dose and repeat after 8 hours | 1 tablet 12 hourly (twice daily) | 1 tablet 12 hourly (twice daily) |
| 15kg- 24kg | Above 3 years- 8 years | 2 tablets stat dose and repeat after 8 hours | 2 tablets 12 hourly (twice daily) | 2 tablets 12 hourly (twice daily) |
| 25kg-34kg | Above 8 years- 12 years | 3 tablets stat dose and repeat after 8 hours | 3 tablets 12 hourly (twice daily) | 3 tablets 12 hourly (twice daily) |
| 35kg and above | 12 years and above | 4 tablets stat dose and repeat after 8 hours | 4 tablets 12 hourly (twice daily) | 4 tablets 12 hourly (twice daily) |

NB: It is preferable to use weight to decide on dosage rather than age.

**Dosing schedule for Primaquine tablet**

|  |  |
| --- | --- |
| **Weight (kg)** | **Single dose of Primaquine (7.5mg base)** |
| 10 to <25 | 3.75 |
| 25 to <50 | 7.5 |
| 50 to 100 | 15 |

Primaquine tablet is ONLY given as a single dose with the last dose of AL or DHA-PPQ.

Glucose-6-Phosphate Dehydrogenase (G6PD) testing is NOT required before giving Primaquine tablet)

**Primaquine contraindications**

Primaquine should **NOT** be given to the following people: -

* Pregnant women,
* Infants less than 6 month of age
* Breastfeeding/lactating women breastfeeding infants less than 6 months

**NOTE**

If vomiting occurs, repeat stat dose after 30 minutes and observe.

If oral medication is not tolerated, treat as severe malaria.

Additional fluids are needed.

Give Paracetamol 15mg/kg - as antipyretic/analgesic

Advice mother to return immediately if the child shows any of the signs below

* Not able to drink or breastfeed
* Fast or difficult breathing
* Persistent vomiting
* Convulsions

**Dosing schedule for Dihydroartemisinin Piperaquine (DHA-PPQ).**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Body Weight**  **(Kg)** | **Tablet strength** | **Dihydroartemisinin-Piperaquine**  **40 mg/320mg base tablets** | | |
| Day 1 | Day 2 | Day 3 |
| 5 to <7 | 20/160 | ½ | 1/2 | 1/2 |
| 7 to <13 | 20/160 | 1 | 1 | 1 |
| 13 to <24 | 40/320 | 1 | 1 | 1 |
| 24 to <36 | 40/320 | 2 | 2 | 2 |
| 36 to <75 | 40/320 | 3 | 3 | 3 |

**Note: Please note contraindications to giving primaquine**

Primaquine tablet is ONLY given as a single dose with the last dose of AL or DHA-PPQ.

Glucose-6-Phosphate Dehydrogenase (G6PD) testing NOT required before giving Primaquine tablet)

**II. SEVERE MALARIA**

Severe malaria, which is usually due to Plasmodium falciparum, is a life-threatening condition.

Signs and Symptoms

* Generalized multiple convulsions: more than two episodes in 24 hours
* Persistent vomiting
* Impaired consciousness, including unrousable coma
* Generalized weakness (prostration) or lethargy, i.e. the child is unable to walk or sit up without assistance
* Deep laboured breathing and respiratory distress (acidotic breathing)
* Pulmonary oedema (or radiological evidence)
* Abnormal bleeding
* Clinical jaundice plus evidence of other vital organ dysfunction
* Severe pallor
* Circulatory collapse or shock with systolic blood pressure < 50 mm Hg
* Haemoglobinuria (dark urine)

**Investigations**

* Blood film or RDT for malaria parasites
* Blood glucose (sugar)
* Haemoglobin or Haematocrit (PCV) to exclude anaemia
* Full Blood Count
* Blood culture

Other tests maybe requested depending on presentations. E.g liver function test, renal function test, lumbar puncture

**Treatment**

Emergency measures, to be taken within the first hour

If the child is unconscious, minimize the risk for aspiration pneumonia by inserting a nasogastric tube and removing the gastric contents by suction.

Keep the airway open, and place in recovery position.

Check for hypoglycaemia and correct if present. If blood glucose cannot be measured and hypoglycaemia is suspected, give glucose.

Treat convulsions with rectal or IV Diazepam (0.5 mg/kg rectal or 0.3mg/kg IV).

Do not give prophylactic anticonvulsants.

Start treatment with an effective antimalarial agent.

If hyperpyrexia is present, give Paracetamol or Ibuprofen to reduce temperature below 39 °C.

Check for associated dehydration and treat appropriately if present.

Treat severe anaemia if present.

Institute regular observation of vital and neurological signs.

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| **Antimalarial treatment**  Parenteral Artesunate is the drug of choice for the treatment of confirmed severe P. falciparum malaria. If it is not available, parenteral Artemether or Quinine should be used.  Artesunate: Give Artesunate (from 3.0kg and above) at 2.4 mg/kg IV or IM on admission, then at 12 hrs and 24 hrs, then daily until the child can take oral medication but for a minimum of 24 hrs even if the child can tolerate oral medication earlier.  If the Artesunate cannot be administered IV/IM then it can be administered via the rectal route using suppository Artesunate as a pre-referral treatment.  OR |
| Quinine: Give a loading dose of Quinine dihydrochloride salt at 20 mg/kg by infusion in 10 ml/kg of IV fluid (5-10% dextrose) over 2–4 hours. Always given under close nursing supervision.  Then, 8 hours after the start of the loading dose, give 10 mg/kg quinine salt in IV fluid over 2 h, and repeat every 8 hours until the child can take oral medication (Artemether+ Lumefantrine).  Give the loading dose split into two as 10 mg/kg of Quinine salt into the anterior aspect of each thigh. Then, continue with 10 mg/kg every 8 hours until oral medication (Artemether +Lumefantrine) is tolerated. |

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| --- | --- | --- | --- |
| Rectal Artesunate (Pre-referral Treatment in Children) | | | |
| **Weight** | **Age** | **Artesunate dose** | **Regimen** |
| 5-8 kg | <12 months | 50mg | One 50 mg suppository |
| 9-19 kg | 12 to 18 months | 100mg | Two 50 mg suppositories |
| 20-29 kg | 18 months to 5 years | 200mg | One 200mg suppository |
| 30-39 Kg | 6 years to 13 years | 300mg | Two 50 mg and one 200mg suppositories |
| >40 kg | >14 years | 400mg | Two 200 mg suppositories |

NB: If meningitis is likely, start meningitis management.

**Supportive care**

Ensure meticulous nursing care, especially for unconscious patients.

Ensure that they receive daily fluid requirements and monitor fluid status carefully by keeping a careful record of fluid intake and output.

Feed children unable to feed for more than 1–2 days by nasogastric tube, which is preferable to prolonged IV fluids.

Refer all cases after stabilization to a major health center, or hospital if no improvement within 24 hours, or if signs of complications are imminent, or if investigations / management modalities are not optimal.

**III. Cerebral malaria in children**

This is defined as unrousable coma not attributable to any other cause in a patient with plasmodium falciparum malaria.

**Diagnosis**

The diagnosis should be considered in an unconscious child with a Blantyre coma score (CS) of 3 or less at least 30 minutes after a convulsion has stopped and hypoglycaemia has been treated effectively.

A positive blood film (BF) for malaria may confirm the diagnosis but is sometimes not seen due to cerebral sequestration. The clinical features for severe malaria listed above may also be present.

A child with malaria and loss of consciousness after a febrile convulsion should not be diagnosed as cerebral malaria unless coma persists more than half an hour after the convulsion.

**Blantyre Coma Score**

This is the sum of verbal, visual and physical responses to standardised painful stimuli.

Blantyre coma scale for children under 5

|  |  |
| --- | --- |
| Best Motor Response:  Localizes painful stimulus  Withdraws limb from pain  Nonspecific or absent response | Score  2  1  0 |
| Verbal Response:  Appropriate cry  Moan or inappropriate cry  None | 2  1  0 |
| Eyes directed to object:  Directed (follows mothers face or objects)  Not directed  TOTAL SCORE 0-5 | 1  0 |

To have a total score, get the score for each section, and then add up.

A state of unrousable coma is reached at score of less than 3

This scale should be used repeatedly to assess improvement or deterioration

Painful stimulus: Rub knuckles on patient’s sternum

Painful stimulus: Firm pressure on thumbnail bed with horizontal pencil

Neurological sequelae occur in up to 10% of children who survived. This may take various forms such as: cerebellar ataxia, hemiparesis, speech disorders, cortical blindness, behavioural disorder, hypotonia or generalised spasticity.

**Management**

These patients need to be managed at MAJOR HEALTH CENTRES OR HOSPITALS ONLY.

However BEFORE being referred children should RECEIVE STAT DOSES OF IM ARTESUNATE 2.4 mg/mg OR IV QUININE INFUSION 20 mg/kg in 5% DEXTROSE and BENZYL PENICILLIN IV/IM AND GENTAMYCIN 2.5mg/kg IV.

Correct hypoglycaemia if present with 5mls/kg of 10% Dextrose (glucose) IV. (Mix 1 part of 50% Dextrose and 9 parts of 5% Dextrose to make 10% Dextrose)

Manage convulsions with rectal Diazepam 0.1ml/kg (0.5mg/kg of Body Weight) or IV Diazepam 0.05ml/kg (0.3mg/Kg) SLOWLY OVER 2 MINUTES.

Treatment

Artesunate IM/IV 2.4mg/kg at 0, 12 and 24 hours, then once daily until patient can tolerate oral fluids. Then change to full course of Artemether Lumefantrine

OR

Quinine IM 20mg/kg body weight loading dose (omit loading dose if Quinine injection has been given in the preceding 24 hours). Then Quinine IM 10mg/kg every 12 hours until the child is able to take tablets, quinine should be stopped and a full course of oral Artemether Lumefantrine given.

**MANAGEMENT OF MALARIA IN PREGNANCY (MIP) (ASK OBGYNS)**

Malaria in pregnancy is frequently more severe, with a higher parasitaemia and may lead to abortion, intra-uterine foetal death, premature labour, low birth weight, intra-uterine growth retardation, low birth weight, still birth and anaemia.

Therefore, prevention is of utmost importance, and it is recommended that all pregnant women should sleep under insecticide treated nets (ITNs) and be covered by intermittent presumptive treatment (IPT).

Treat for malaria if Blood Film/RDT positive:

Fever above 37.5 degree Celsius in the absence of other reasons

Headache, abdominal pain, vomiting

Hb drop over 1g/dl in 2 successive antenatal visits up to 14 weeks.

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| TREATMENT  FIRST TRIMESTER  Uncomplicated malaria: Quinine tablets 600mg three times daily for 7 days  Severe malaria: Quinine injection – 600mg IM every 12 hours (change to 8 hourly oral doses as soon as tolerated) for 7 days  SECOND & THIRD TRIMESTERS (16-34 WEEKS)  Uncomplicated Malaria – ACTs tabs (as above)  Severe Malaria – Quinine injection – as above  Treat hypoglycaemia and anaemia accordingly |

**MANAGEMENT OF MALARIA IN ADULTS**

**UNCOMPLICATED MALARIA**

|  |  |
| --- | --- |
| **Low and Moderate to High Transmission Areas** | **Very Low Transmission Areas** |
| Artemether 20mg-Lumefantrine 120mg according to weight. | Artemether 20mg-Lumefantrine 120mg  **AND**  Single dose of Primaquine 7.5mg according to the weight except where Primaquine is contraindicated. |

## SEVERE MALARIA

Artesunate: Give at 2.4 mg/kg IV or IM on admission, then at 12 h and 24 h, then once daily until the adult can take oral medication but for a minimum of 24 h even if the adult can tolerate oral medication earlier

OR

Quinine loading dose of 20mg/kg (max 1.2 g = 2 amps) over 4 hours in 5% Dextrose 500 mls (omit loading dose if Quinine injection has been given in the preceding 24 hours)

Continue Quinine 10mg/kg in 5% Dextrose 500 mls over 4 hours every 8 hours until condition improves.

Change to full 3-day course of oral ACT

If no improvement in clinical condition or acute renal failure develops after 48 hours, continue to give 2.4mg IV/IM artesunate for 7-10 days (monitor with blood slides). For patients on Quinine, reduce to 7mg/kg Quinine I.V every 12 hours.

**MALARIA PROPHYLAXIS**

Malaria prophylaxis can never give full protection and should always be combined with other protective measures such as impregnated bed nets; insect repellents & protective clothing. Encourage keeping the environment clean.

**Indications for prophylaxis**

* Children with sickle cell disease
* Children or Adults from non-endemic areas
* Children or Adults under immune suppressive therapy
* Children after splenectomy
* Post-recovery from cerebral malaria
* All Pregnant Women (IPT)
* HIV positive people (WHO class 3 and 4)

**PROPHYLAXIS FOR PREGNANT WOMEN (IPT) (see manual on IPT)**

Intermittent Preventive Treatment (IPTp) is a malaria prevention strategy that involves administration of two doses of Sulphadoxine + Pyrimethamine (SP). All pregnant women should receive at least three (3) doses during the second and third trimesters using the directly observed treatment (DOT) strategy.

**SULPHADOXINE-PYRIMETHAMINE (500MG +25MG)**

* First dose should be given as early as possible in the second trimester (13 weeks) 3 tablets
* Subsequent doses should be given at each antenatal clinic visit with a minimum of 4 weeks (one month) interval between SP doses
* Pregnant women who are HIV positive and are on daily cotrimoxazole should not receive SP for IPTp.

There should be at least one month interval between SP doses.

## 5.2 TUBERCULOSIS

Tuberculosis (TB) is a communicable disease caused by a type of bacteria known as Mycobacterium tuberculosis (commonly referred to as TB bacilli). The bacilli usually attack the lungs, causing pulmonary TB (PTB). TB bacteria can also attack other parts of the body such as the spine, lymph nodes, brain, and kidneys; this is known as extra-pulmonary TB (EPTB).

When individuals with infectious tuberculosis cough, sneeze, talk or spit, they propel TB bacilli into the air. Transmission is more intense in crowded, poorly ventilated spaces with little ambient sunlight as it increases the likelihood of inhalation of infectious TB bacilli present in the air. If not treated, a person with active pulmonary TB disease will infect, on average, between 10 and 20 people every year. Persons infected by M. tuberculosis but who have no symptoms of TB disease have what is known as latent TB infection. After infection, TB bacilli can lie dormant in the body for many years. If the immune system is somehow compromised as in the case of HIV infection, malnutrition, or other conditions the TB bacilli can cause active disease. Many factors influence the progression from infection to disease. The most important is HIV infection. Other factors include age, diabetes, and cancer.

**Signs and Symptoms**

* General Pulmonary
* Coughing
* Coughing up sputum or blood
* Pain in the chest when breathing or coughing
* General pulmonary and extra-pulmonary
* Chills, Fever and Night sweats
* Loss of appetite
* Weight loss and weakness or easy fatigability
* Malaise (a feeling of general discomfort or illness).

**Extra-pulmonary**

The symptoms depend on part of body affected by tuberculosis (TB) disease:

* TB of the spine may cause pain in the back.
* TB of the kidney may cause blood in the urine.
* Meningeal TB may cause headaches or psychiatric symptoms.
* Lymphatic TB may cause swollen and tender lymph nodes, often at the base of the neck.

**Diagnosis**

* Sputum Acid Fast Bacilli (AFB) or GeneXpert
* Chest X-ray
* Tuberculin test (Mantoux)
* Lumbar puncture-CSF

**REFER TO THE TB TREATMENT GUIDELINES FOR TREATMENT, IF POSITIVE**

## 5.3 HIV/AIDS

The Human Immunodeficiency Virus (HIV) targets the immune system and weakens people's defense systems against infections and some types of cancer. As the virus destroys and impairs the function of immune cells, infected individuals gradually become immune-deficient. Immune function is typically measured by CD4 cell count. Immunodeficiency results in increased susceptibility to a wide range of infections and diseases that people with healthy immune systems can fight off.

The most advanced stage of HIV infection is Acquired Immunodeficiency Syndrome (AIDS), which can take from 2 to 15 years to develop depending on the individual. AIDS is defined by the development of certain cancers, infections, or other severe clinical manifestations.

HIV can be transmitted via the exchange of a variety of body fluids from infected individuals, such as blood, breast milk, semen and vaginal secretions.

Individuals cannot become infected through ordinary day-to-day contact such as kissing, hugging, shaking hands, or sharing personal objects, food or water.

Signs and Symptoms

The symptoms of HIV vary depending on the stage of infection. Though people living with HIV tend to be most infectious in the first few months, many are unaware of their status until later stages. The first few weeks after initial infection, individuals may experience no symptoms or an influenza-like illness including fever, headache, rash or sore throat.

As the infection progressively weakens the immune system, an individual can develop other signs and symptoms, such as:

* Swollen lymph nodes
* Weight loss
* Fever
* Persistent diarrhoea
* Cough
* Anaemia

Without treatment, they could also develop severe illnesses such as

* Tuberculosis
* Cryptococcal meningitis
* Cancers such as lymphomas and Kaposi's sarcoma, among others.

**Diagnosis**

* Serological tests, such as
* RDTs for HIV
* Enzyme linked immunosorbent assays (ELISA)
* Polymerase Chain Reaction (PCR)

**Antiretroviral (ART) use for prevention**

**Post-exposure prophylaxis for HIV (PEP)**

Post-exposure prophylaxis (PEP) is the use of ARV drugs within 72 hours of exposure to HIV in order to prevent infection. PEP includes counselling, first aid care, HIV testing, and administering of a 28-day course of ARV drugs with follow-up care.

WHO guidelines recommend PEP use for both occupational and non-occupational exposures and for adults and children. The recommendations provide simpler regimens using ARVs already being used in treatment. The implementation of the new guidelines will enable easier prescribing, better adherence and increased completion rates of PEP to prevent HIV in people who have been accidentally exposed to HIV such as health workers or through unprotected sexual exposures or sexual assault.

**Elimination of mother-to-child transmission of HIV (eMTCT)**

The transmission of HIV from an HIV-positive mother to her child during pregnancy, labour, delivery or breastfeeding is called vertical or mother-to-child transmission (MTCT). In the absence of any interventions during these stages, rates of HIV transmission from mother-to-child can be between 15-45%. MTCT can be nearly fully prevented if both the mother and the child are provided with ARV drugs throughout the stages when infection could occur.

WHO recommends options for prevention of MTCT (PMTCT), which includes providing ARVs to mothers and infants during pregnancy, labour and the post-natal period, and offering life-long treatment to HIV-positive pregnant women regardless of their CD4 count.

**Treatment**

HIV can be suppressed by combination ART consisting of 3 or more ARV drugs. ART does not cure HIV infection but controls viral replication within a person's body and allows an individual's immune system to strengthen and regain the capacity to fight off infections.

WHO recommends immediately initiating ART once diagnosis is established. ART regardless of CD4 count is also recommended for all people living with HIV in sero-discordant couples, pregnant and breastfeeding women living with HIV, people with TB and HIV, and people co-infected with HIV and hepatitis B infection with severe chronic liver disease. Likewise, ART is recommended for all children living with HIV who are younger than 5 years old.

**FOR DETAILS ON TREATMENT REFER TO THE NATIONAL HIV TREATMENT GUIDELINES**

## 5.4 MENINGITIS

It is the inflammation of the meninges due to infection.

Early presentation greatly increases chances of survival.

**Predisposing Factors:**

Causative bacteria are usually acquired from the nasopharyngeal carriage, also associated with otitis media. Uncommonly, compound skull fracture, orbital/facial cellulitis, neural tube defects, cyanotic heart disease, infected VP (ventricular peritoneal) shunts, immune deficiency.

**SIGNS AND SYMPTOMS**

* Neonate - No Specific signs but may have fever, pallor, vomiting, lethargy, apnoea, poor feeding, bulging fontanels and convulsions.
* Infants – headache, neck stiffness, photophobia, pallor, malaise, fever, lethargic, convulsions
* Older children & Adults - variable signs – headache, neck stiffness, photophobia, fever, irritability, lethargy, purpuric rash (invariably meningococus), convulsions

**Examination Signs to look out for:**

* Neck stiffness
* In children, Brudzinski and Kernig’s sign, bulging fontanel

**DIAGNOSIS**

* Lumbar Puncture: Cerebro Spinal Fluid (CSF) characteristics (usually hazy to turbid)

Bacterial meningitis CSF features

* White cells: increase
* Lymphocytes: Increase +
* Neutrophils: Increase +++
* Protein: Increase
* Glucose: Decrease
* Chloride: Normal (Reduced TB)
* Gram stain: positive

CSF Culture to confirm diagnosis

* Viral meningitis CSF features
* White cell: Lymphocytes 2 + to 3 +
* Neutrophils normal to +
* Protein: normal
* Glucose: normal
* Chloride: normal
* Gram stain: negative
* Culture: negative

ALWAYS SUSPECT MENINGITIS IN AN UNWELL CHILD, ESPECIALLY IN NEONATES AND INFANTS. DON'T ALWAYS RELY ON CSF COLOUR AND TURBIDITY.

Do Full Blood Count and Blood Culture.

Monitor Blood Glucose

**NB**

Lumbar puncture (LP) is the only method to diagnose Meningitis. Latex agglutination analysis is useful for those already on antibiotics where culture can be negative.

**DIFFERENTIAL DIAGNOSIS**

* Cerebral Malaria
* Encephalitis
* Septicaemia
* Hypoglycaemia
* Febrile convulsions
* Intracranial haemorrhage in neonates.

**TREATMENT**

Supportive care in children

Securing the airway by keeping the child on left lateral position

Monitor Vital signs including blood glucose levels

IV fluid therapy or NG tube feeding

Urinary catheterization.

**Case management**

Treat all meningitis cases as quickly as possible, using appropriate antibiotics according to the current national treatment protocol. If possible, perform the lumbar puncture before antibiotic treatment. Start presumptive treatment without waiting for laboratory results.

Recommended treatment for suspected cases of bacterial meningitis during meningococcal meningitis epidemics:

In children aged 0 to 2 months, ceftriaxone 100mg/kg/day IM or IV once daily for 7 days.

In children older than 2 months, ceftriaxone 100mg/kg/day, once daily (maximum 2g) IM or IV for 5 days.

In children over 14 years and adults: ceftriaxone 2g/day once daily IM or IV for 5 days.

Patients admitted to health centres with no improvement within 48 hours or with convulsions or in quasi-coma should be transferred to the hospital.

To deal with large-scale meningococcal epidemics in remote areas with little viable infrastructure, single-dose ceftriaxone treatment protocols may be implemented. However, it is essential to ensure community follow-up of cases after 24 hours and refer to a hospital if more appropriate care is needed.

Outside epidemics, the recommended duration of treatment for bacterial meningitis in children of all ages and adults is 7–10 days. For suspected bacterial meningitis during outbreaks of pneumococcal meningitis, and for confirmed pneumococcal meningitis during or outside outbreaks, extending the duration of treatment up to 14 days should be considered.[[1]](#footnote-2)

## Contact management

Prophylaxis for family contacts of a case is not advised during epidemics, for logistical reasons and uncertainty as to the additional benefits. Outside epidemics, it is recommended that family contacts of probable or confirmed cases of meningococcal meningitis receive chemoprophylaxis with a single dose of: either ciprofloxacin (single dose of 500 mg orally in adolescents and adults; 15 mg/kg orally in children <12 years) or ceftriaxone (single dose of 250 mg IM in adults; 125 mg IM in children <12 years). Rifampicin is not recommended in the meningitis belt because of the risk of antibiotic resistance. Prophylaxis should be administered as soon as possible (ideally within 1 to 2 days) after diagnosis to reduce the risk of new cases in the household.

Note: Ciprofloxacin is available in the form of tablets (250 mg) or as 50 mg/ml syrup (WHO model formulary for children 2010).

**STEROID TREATMENT**

Steroids offer some benefit in certain cases of bacterial meningitis (H. influenza, tuberculous and pneumococcal) by reducing the degree of inflammation and improving outcomes.

The recommended Dexamethasone dose in bacterial meningitis in adults: 0.15 mg/kg every 6 hours for 2-4 days; - child, 150 micrograms/kg every 6 hours for four days IM or slow I.V.

Steroids should be given within 10–20 min before, or during administration of antibiotics.

**CAUTION!**

Attention must be paid to fluid balance!!!

I.V fluids are essential, but fluid overload must be avoided.

IV fluids should be regarded as a dangerous drug in Meningitis because of the risk of cerebral oedema and SIADH (Syndrome of Inappropriate Antidiuretic Hormone Secretion)

Note: Give - 30ml/kg/day whenever the child is unable to drink.

**ACUTE COMPLICATIONS**

**CONVULSIONS**

* Treat aggressively with Diazepam 0.3mg - 0.4mg/kg (10mg Maximum) slow IV injection over 2 mins, then Phenobarbitone IV loading dose 10-15mg/kg, then maintenance dose of 4 - 5mg/kg daily.

**SYNDROME OF INAPPROPRIATE ANTIDIURETIC HORMONE SECRETION (SIADH)**

Presumptive evidence, low serum sodium (Less than 135 mmol/L,), weight gain, oliguria.

Treatment: discontinue all fluid input. Once urine flow is established, restrict urine strictly to Urine output

**RAISED INTRACRANIAL PRESSURE**

Restrict fluid intake to maintain cerebral perfusion and elevate head of bed to 20 degrees.

Mannitol IV 0.25 g/kg initially, maintenance dose of 0.25 -0.5 g/kg 6 hourly. Strict control of seizures. Keep head in midline.

**SUB-DURAL EFFUSIONS**

Frequently seen with Haemophilus influenzae meningitis.

Tense bulging anterior fontanelle after 2-3 days treatment with other evidence of improvement but onset of focal seizures and hemiparesis.

Treatment:

Large collection – Subdural tap

b) Small / or asymptomatic: Require no treatment.

**REFER** ALL ACUTE COMPLICATIONS AFTER INITIAL MANAGEMENT TO HOSPITAL

## 5.5 MEASLES

Measles in an acute highly transmissible viral infection which is particularly severe in West Africa. It is transmitted by droplets and the clinical features of the disease results from infection of the skin, mucous membranes and the respiratory tract.

There are many reasons for the increase in severity of measles in West Africa. They include young age of infection, severe malnutrition and overcrowding. Coverage of measles immunization has increased to 80% or more in The Gambia but epidemics of the disease still occur at 3 - 4 year intervals. Vaccinated children sometimes get measles but in these cases the disease is mild and the mortality is low.

**Clinical Features**

After an incubation period of about 10 days there is fever with a runny nose, red eyes and red mucosa of the mouth. At this stage the child is highly infectious.

**Child is highly infectious**

About two weeks after exposure the rash appears. Small red sports appear on the forehead and neck and then spreads over a period of 3 - 4 days to involve the trunk and then the limbs. In severe cases the rash is often red, confluent, raised and extensive. Later the rash blackens and peeling of the skin occurs. There is cough, difficulty in breathing and signs of pneumonia. Conjunctivitis, especially in the vitamin A deficient child, can be severe and there may be much diarrhoea, which causes dehydration and malabsorption. The child has a very sore mouth, loses appetite and may refuse to feed.

In the next week the child may develop secondary infections because measles causes damage to the immune system. At this time bacterial pneumonia is common but there may be infection of the mouth, eye, skin or gut.

**Management and Treatment**

The following signs indicate that measles is severe and that the child should be admitted to hospital or health centre: a widespread dark deep red rash, signs of laryngitis, marked dehydration, blood in the stool or more than 5 stools per day, convulsion or loss of consciousness, severe secondary pneumonia, corneal ulceration or severe ulceration of the mouth and skin.

* Hydrate the child with ORS or if necessary with intravenous fluids (see section on fluid rehydration). If the child has pneumonia or bronchopneumonia use:
* Amoxicillin: 10-20 mg/kg, 8 hourly for 5 days
* For Rashes: use Calamine or other soothing lotion
* All children should be given Vitamin A: 100,000 IU for children less than 1 year of age. 200,000 IU for older children.
* If eye signs of Vitamin A deficiency are present the initial dose should be repeated next day and again 1 - 4 weeks later.

**Prevention and Control**

Live measles vaccine should be given at 9 months of age and the coverage kept as high as possible.

## 5.6 Hepatitis B

Hepatitis B is a potentially life-threatening liver infection caused by the hepatitis B virus. It is a major global health problem. It can cause chronic infection and puts people at high risk of death from cirrhosis and liver cancer.

A vaccine against hepatitis B has been available since 1982. The vaccine is 95% effective in preventing infection and the development of chronic disease and liver cancer due to hepatitis B.

**Signs and Symptoms**

* Yellowing of the skin and eyes (jaundice)
* Dark urine
* Extreme fatigue
* Nausea and vomiting
* Abdominal pain.
* Investigations
* Serum Hepatitis B surface antigen (HBsAg)
* Liver function tests (LFTs)

**Treatment**

There is no specific treatment for acute hepatitis B.

**Non-pharmacological**

* Adequate nutritional balance
* Fluid replacement

**Pharmacological treatment**

* WHO recommends the use of oral treatments - Tenofovir or Entecavir.

## 5.7 YELLOW FEVER

Yellow fever is an acute viral haemorrhagic disease transmitted by infected mosquitoes. The "yellow" in the name refers to the jaundice that affects some patients. The virus is endemic in tropical areas of Africa and Latin America. There is no specific treatment for yellow fever.

Treatment is symptomatic, aimed at reducing the symptoms for the comfort of the patient. Vaccination is the most important preventive measure against yellow fever.

The vaccine is safe, affordable, and highly effective, and a single dose of yellow fever vaccine is sufficient to confer sustained immunity and life-long protection against yellow fever disease and a booster dose of yellow fever vaccine is not needed. The vaccine provides effective immunity within 30 days for 99% of persons vaccinated.

Yellow fever is difficult to diagnose, especially during the early stages. It can be confused with severe malaria, dengue haemorrhagic fever, leptospirosis, viral hepatitis (especially the fulminating forms of hepatitis B and D), and other diseases, as well as poisoning.

**Signs and Symptoms**

* Jaundice
* Fever and chills
* Headache
* Nausea and vomiting
* Muscle pain with prominent backache
* Loss of appetite

**Treatment**

There is no specific treatment for yellow fever, only supportive care to treat dehydration, respiratory failure and fever.

Associated bacterial infections can be treated with antibiotics.

Supportive care may improve outcomes for seriously ill patients, but it is rarely available in poorer areas.

## 5.8 EBOLA VIRUS DISEASE (EVD)

The Ebola virus causes an acute, serious illness which is often fatal if untreated.

The virus family Filoviridae includes three genera: Cuevavirus, Marburgvirus, and Ebolavirus. There are five species that have been identified: Zaire, Bundibugyo, Sudan, Reston and Taï Forest. Bundibugyo ebolavirus, Zaire ebolavirus, and Sudan ebolavirus have been associated with large outbreaks in Africa. The virus causing the 2014 West African outbreak belongs to the Zaire species. It can be difficult to distinguish EVD from other infectious diseases such as malaria, typhoid fever and meningitis.

**Transmission**

Ebola is introduced into the human population through close contact with the blood, secretions, organs, or other bodily fluids of infected animals such as chimpanzees, gorillas, fruit bats, monkeys, forest antelope and porcupines found ill or dead or in the rainforest.

Ebola then spreads through human-to-human transmission via direct contact (through broken skin or mucous membranes) with the blood, secretions, organs or other bodily fluids of infected people, and with surfaces and materials (e.g. bedding, clothing) contaminated with these fluids.

Health-care workers have frequently been infected while treating patients with suspected or confirmed EVD. This has occurred through close contact with patients when infection control precautions are not strictly practiced.

Burial ceremonies in which mourners have direct contact with the body of the deceased person can also play a role in the transmission of Ebola.

People remain infectious as long as their blood contains the virus.

**Sexual transmission**

More surveillance data and research are needed on the risks of sexual transmission and particularly on the prevalence of viable and transmissible virus in semen over time. In the interim, and based on present evidence, WHO recommends that:

All Ebola survivors and their sexual partners should receive counselling to ensure safe sexual practices until their semen has twice tested negative. Survivors should be provided with condoms.

Male Ebola survivors should be offered semen testing at 3 months after onset of disease, and then, for those who test positive, every month thereafter until their semen tests negative for virus twice by RT-PCR, with an interval of one week between tests.

Ebola survivors and their sexual partners should either:

Abstain from all types of sex, or observe safe sex through correct and consistent condom use until their semen has twice tested negative.

Having tested negative, survivors can safely resume normal sexual practices without fear of Ebola virus transmission.

If an Ebola survivor’s semen has not been tested, he should continue to practice safe sex for at least 9 months after the onset of symptoms; this interval may be adjusted as additional information becomes available on the prevalence of Ebola virus in the semen of survivors over time.

Until such time as their semen has twice tested negative for Ebola, survivors should practice good hand and personal hygiene by immediately and thoroughly washing with soap and water after any physical contact with semen. During this period used condoms should be handled safely, and safely disposed of, so as to prevent contact with seminal fluids.

All survivors, their partners and families should be shown respect, dignity, and compassion.

**Signs and Symptoms**

* Fever
* Vomiting, diarrhoea, and abdominal pain
* Conjunctivitis
* Rash
* Headache
* Fatigue and muscle pain
* Sore throat
* Internal and external bleeding (e.g. oozing from the gums, blood in the stools)

**Investigations**

Confirmation that symptoms are caused by Ebola virus infection are made using the following investigations:

* Antibody-capture enzyme-linked immunosorbent assay (ELISA)
* Antigen-capture detection tests
* Serum neutralization test
* Reverse transcriptase polymerase chain reaction (RT-PCR) assay
* Electron microscopy
* Virus isolation by cell culture.

Samples from patients are an extreme biohazard risk; laboratory testing on non-inactivated samples should be conducted under maximum biological containment conditions.

**Treatment and vaccines**

The mainstay of treatment for Ebola virus disease involves supportive care to maintain adequate organ function, while the immune system mobilizes to eliminate the infection.

Such patients should be managed, whenever possible, in designated treatment centres, by clinicians trained in the care of such patients.

Ebola-specific therapies: In recent years two antibody-based therapies have been found to be effected in the treatment of Ebola virus disease and have been used by the WHO in outbreaks of Ebola in the DRC in 2021.

**PLEASE REFER TO THE CURRENT WHO GUIDELINES FOR MANAGEMENT OF EBOLA VIRUS DISEASE**

## 5.9 SEPSIS IN CHILDREN (ask PAEDS)

SUSPECT SEPSIS in any severely ill child, with signs of shock. Fever is usually present but may not be present in a malnourished child.

Malaria should always be excluded.

Common bacteria found in blood cultures:

**Strep. Pneumonia:**

* especially with severe Lower Respiratory Infections or Meningitis in older SCD, nephrotic syndrome

**Salmonella:**

* Especially in SCD (may have accompanying bone lesions), children with severe anaemia after Malaria, Pyrexia of Undetermined Origin (PUO) with drowsiness & abdominal symptoms

**Staphylococcus:**

* Skin lesions, Bone lesions in non SCD, Pneumonia, Pyomyositis, other abscesses
* Haemophilus:
* Infants with pneumonia, meningitis, or septic arthritis
* Gram negative sepsis:
* Very often Pyrexia of undetermined origin only, check urine!
* Meningococcal: Epidemics and often fatal.

**Epidemic meningitis, urgent notification required.**

Suspect in particular if purpura seen. In the absence of a blood culture result the management will depend on the clinical picture:

**Initial treatment should be:**

* Ampicillin 100mg/kg/24 hours in 4 divided doses I.V./I.M.

PLUS

* Gentamicin 2.5 mg/kg once daily in Gram negative sepsis, urosepsis

If Staphylococci suspected, add

* Flucloxacillin 100mg/kg in 4 doses I.V/I.M.

**In endemic meningitis**

* Benzyl Penicillin 100, 000 IU/kg 6hrly I.V./I.M.

**Recognition of IDs**

* Use antibiotics e.g., ampicillin with beta-lactamase inhibitors
* SEPSIS IN ADULTS (ask Critical Care docs)
* COVID-19 DISEASE
* TB pericarditis
* Strep throat
* rheumatic fever (d/w cardiologists)

## 5.10 SEXUALLY TRANSMITTED INFECTIONS AND OTHER RELATED INFECTIONS

It is not always possible to make laboratory diagnosis of Sexually Transmitted Infections (STI). Therefore, the treatment recommended in this section is based on the syndromic approach to management. Conditions that do not fall within these syndromes are discussed at the end under separate headings. Also refer to the STI Manual.

The following messages must be emphasised to all patients and their contacts:

* Complete all medications as advised
* Come back for follow up as directed
* Stress the need for examination and treatment of all contacts
* No sexual intercourse during infections
* Use condoms for all sex

All pregnant women to have test for syphilis during the first three months of pregnancy routinely.

**I. URETHRAL DISCHARGE IN MEN**

Cause: The commonest cause is Gonorrhoea. Other causes include Chlamydia and Trichomonas.

**Signs and Symptoms**

* Urethral discharge
* Pain when passing urine (dysuria)

**Treatment**

If discharge seen, treat with any of the following drugs for gonorrhoea and chlamydia

Ceftriaxone, IM, 250mg as a single dose

PLUS

Azithromycin 1g orally as a single dose OR Doxycycline 100mg 12 hourly for 7days

PLUS

Metronidazole, oral, 2g as a single dose OR 400/500mg 12 hourly for 7 days

NOTE: use Azithromycin in pregnancy instead of Doxycycline

FOLLOW UP 7 DAYS LATER AND IF NO IMPROVEMENT, REFER TO REGIONAL STI CLINIC

**II. VAGINAL DISCHARGE**

Signs and Symptoms

* Vaginal discharge

**PURULENT DISCHARGE**

Treat for Gonorrhoea, Chlamydia, Trichomoniasis and Bacterial Vaginosis

**CHEESE LIKE DISCHARGE**

Treat for Gonorrhoea, Chlamydia and Candidiasis

**YELLOW/GREEN VAGINAL DISCHARGE**

Treat for Trichomoniasis

**FLAKY WHITE VAGINAL DISCHARGE**

Treat for Candidiasis (Thrush)

TREATMENT

**Gonorrhoea and Chlamydia:**

Ceftriaxone, IM, 250mg single dose

PLUS

Azithromycin 1g orally as a single dose OR Doxycycline, oral, 100mg 12 hourly for 7 days

**During pregnancy:**

Azithromycin, oral, 1g as a single dose

OR

Erythromycin oral 500 mg 6 hourly for 10 days

**Candidiasis:**

Clotrimazole 500 mg inserted in the vagina stat

OR

Clotrimazole 200 mg inserted in the vagina for 3 days

OR

Miconazole 200 mg inserted in the vagina daily for 3 days

OR

Nystatin 100,000 U inserted in the vagina once daily for 14 days

OR

Fluconazole PO 150 mg STAT

REVIEW AFTER 7 DAYS

**Trichomoniasis and Bacterial Vaginosis:**

Metronidazole oral - 2g (8 tablets) orally as a single dose

OR

Metronidazole oral 400/500mg orally 12 hourly for 7 days

OR

Metronidazole gel apply nightly for 5 days –

(Metronidazole is not recommended for use in pregnancy)

REVIEW AFTER 7 DAYS

**III. GENITAL ULCERS IN MEN AND WOMEN**

Signs and Symptoms

* Genital ulcer with or without lymphadenopathy, with or without pain.
* Genital ulcer (open sore) - painful or painless with or without swollen lymph nodes in groin.

For all genital ulcers treat for Syphilis and Chancroid

Multiple, small, painful blisters (Herpes)

* Treat to relieve symptoms of Genital Herpes
* Saline bath
* Paracetamol tablets

SYPHILIS

|  |
| --- |
| **TREATMENT**  Benzathine Penicillin I.M 2.4 million Unit: 1.2 million into each buttock stat.  OR  Procaine Penicillin, I.M 1.2 million Units daily for 10 days  OR  Doxycycline oral: 100 mg 12 hourly for 14 days  For pregnant women or those patients allergic to penicillin:  Erythromycin oral: 500 mg 6 hourly daily for 14 days  NB! Babies of such women should be screened for syphilis, preferably during first 7 days of life. |

**CHANCROID**

Signs and Symptoms

* Single or multiple painful genital ulcers.
* Painful inguinal adenopathy

TREATMENT

Azithromycin 1 g orally in a single dose  
OR

Ciprofloxacin 500 mg orally 12 hourly for 3 days  
OR

Erythromycin 500 mg orally 8 hourly for 7 days

**GENITAL HERPES**

Signs and Symptoms

* Pain
* Dysuria
* Discharge and flu like symptoms.
* Painful inguinal adenopathy, multiple vesicles ---> ulcers ---> crust.

**TREATMENT**

* Saline baths, analgesics (pain killers)
* Acyclovir oral 200 mg 5 times daily for 7 days for first attack
* Acyclovir 200 mg 5 times daily for 5 days for recurrent episodes

NB: Remember to inform patient that attacks can be recurrent

**IV. SEXUALLY ACQUIRED ACUTE INGUINAL LYMPHADENITIS**

(Lymphogranuloma venereum) -

Signs and Symptoms:

* Very painful inguinal lymph nodes (bubo)
* Valley in the groin (groove sign)

There may be transient genital ulcers and the characteristic saxophone penis

**TREATMENT:**

Erythromycin oral 500 mg 6 hourly for 21 days (for pregnant women)

OR

Doxycycline oral 100 mg 12 hourly for 21 days

NB! REVIEW ALL PATIENTS AFTER 7 DAYS AND REFER TO A HIGHER CENTRE IF THERE IS NO DEFINITE SIGN OF IMPROVEMENT

**V. ACUTE EPIDIDYMITIS**

Signs and Symptoms

* Moderate to severe pain, and associated tenderness of one testicle. Remember torsion and refer to surgeons if in doubt.

TREATMENT

Ceftriaxone IM: 250mg as a single dose

PLUS

Doxycycline tabs 100 mg 12 hourly for 10 days

Bed rest and analgesics.

**VI. PUBIC LICE (PEDICULOSIS PUBIS)**

Symptoms: Itching in pubic and perianal areas

TREATMENT

Shave off pubic hair

Apply Permethrin 1% cream to affected area and wash after 10 minutes

OR

Benzyl benzoate 25% over affected area and wash off after 24 hours

Repeat after 3 DAYS if indicated.

OR

Ivermectin 250 micrograms/kg orally, repeated in 2 weeks

Treat all sexual contacts.

Follow up and Review after 7 days

Advice patient to maintain personal hygiene

**VII. SCABIES**

See chapter on Skin conditions: NB! Treat all sexual contacts.

**VIII. SECONDARY SYPHILIS**

Signs and Symptoms

* Skin: Non-itchy, generalised, macular or papular rash, may involve palms and soles.
* Pink or copper coloured Condylomata lata in moist areas. Pustular or psoriatic lesions. Patchy alopecia (hair loss)
* Mucous membrane lesions: Painless erosions on genitalia, mouth.
* Generalised lymphadenopathy
* Constitutional symptoms: fever, malaise, and arthralgia
* Others: Nephrotic syndrome, iritis, meningitis, chorioretinitis, periostitis, hepatitis

Where syphilis is diagnosed, treat appropriately.

TREATMENT

Benzathine Penicillin 2.4 million Unit: 1.2 million into each buttock stat

SYPHILIS IN PREGNANCY

Treat with Penicillin or Erythromycin if allergic to Penicillin

**CONGENITAL SYPHILIS**

Treat with Procaine Penicillin 50,000 Units/Kg body weight

If CNS is excluded, use Benzathine Penicillin 50,000 Units/kg stat

OR

Erythromycin syrup 125 mg/ml depending on age.

IX. GENITAL (VENEREAL) WARTS

Apply 10-25% Podophyllin in tincture very carefully to external genital, perianal, vaginal, and rectal warts whilst avoiding normal tissue. Wash thoroughly four hours after application

Allow surfaces to dry before removal of speculum for vaginal and anal warts

Protect normal skin with Vaseline (paraffin) while applying Podophyllin.

Surgical treatment only for cervical and urethral warts

Repeat treatment at weekly intervals

**X. MOLLUSCUM CONTAGIOSUM**

Prick lesions with sterile needle, squeeze and apply Iodine / Trichloroacetic acid once a week to the base

# CHAPTER SIX

ENDOCRINE DISORDERS

## 6.1 DIABETES MELLITUS

Diabetes mellitus is a chronic disease that occurs either when the pancreas does not produce enough insulin or when the body cannot effectively use the insulin it produces. It is characterised by persistently high blood glucose levels. Many adults with diabetes are asymptomatic. It is therefore necessary to exclude diabetes in all persons attending health facilities for routine medical examinations, out-patient review, elective and emergency admissions, surgical procedures and ante-natal care.

A diagnosis of diabetes is suggested when the fasting whole blood glucose level is 6,7 mmol/L (120mg/dl) or more and/or random blood glucose, taken 2 hours after a meal of 11.1 mmol/L (200mg/dl) or more.

Three common forms of diabetes are encountered in practice:

* Type 1 diabetes - formerly called insulin-dependent diabetes mellitus or juvenile onset diabetes.
* Type 2 diabetes - formerly called non-insulin - dependent diabetes mellitus or adult-onset diabetes.
* Gestational diabetes- diabetes that develops during pregnancy in previously non-diabetic individuals. (See section on Diabetes in Pregnancy)

**CAUSES**

It is generally an inherited disease,

Associated Problems

* Obesity
* Hypertension
* Dyslipidaemia

Clinical Features

There may be no recognisable symptoms in some individuals.

However, some individuals may present with the following.

* Passage of frequent large amounts of urine (polyuria)
* Thirst and excessive drinking of water (polydipsia)
* Excessive eating (polyphagia)
* Unexplained weight loss and fatigue
* Poor wound healing

**Investigations**

Newly diagnosed patient

* Fasting blood glucose
* Glycated haemoglobin (HbA1c) if available
* Urine ketones
* Urine protein
* Blood urea, electrolytes and creatinine
* Blood lipid profile
* FBC
* ECG

Subsequent monitoring

* Fasting blood glucose
* Recorded results of regular self-monitoring of fasting and random blood sugar tests at home by the patient using a glucose meter
* Periodic fasting or random blood sugar tests during clinic reviews
* Glycated haemoglobin (HbA1c), at least three times a year, if available
* Blood lipid tests annually, but more frequently if levels abnormal or on lipid lowering medication (Refer for specialist review, if test results are abnormal)
* Blood urea, electrolytes, and creatinine, annually, but more frequently if levels abnormal (Refer for specialist review, if test results are abnormal)
* Urine protein annually (Refer for specialist review, if test results are abnormal)

Treatment

Non-pharmacological treatment

Diet:

* Eat regularly to satiety but not to bellyful. Encourage the intake of complex carbohydrates, fruits, and vegetables
* Avoid free sugar completely in food and drink.
* Reduce fat intake: butter, cheese, mayonnaise, animal fat.
* Eat millet (coos) products such as coos pap/Cherreh, and Find on alternate days
* Maintain correct Weight for Height (Body Mass Index)

Exercise

* Regular, simple exercise e.g. 30 minutes brisk walking at least 3 days a week in ambulant patients, if regular occupation is sedentary
* All advice on exercise must give consideration to the patient's age and the presence of complications and other medical conditions

### Pharmacological Treatment

Type 1 Diabetes

INSULIN:

Users:

Type I diabetics

Diabetes in pregnancy

Type II with the following conditions.

* Hyperglycaemic hyperosmolar State (HHS) and Diabetic Ketoacidosis (DKA)
* Acute clinical conditions like acute infection, MI, CVA, etc
* Failed oral hypoglycaemic therapy due to disease progression

Types:

Short acting Regular / Soluble insulin (Actrapid)

Intermediate acting **Human mixtard (30/70)** also called **Mixtard 30**

**Long acting Insulatard/Lente insulin**

Type 2 Diabetes

Requires strict dietary control and exercise

Oral Hypoglycaemic treatment

Biguanides

* Metformin, oral 500 mg-1000mg 12 hourly with, or soon after meals
* Risk of lactic acidosis is not common.
* Use with caution in kidney diseases

Sulphounylureas

* Glibenclamide oral, 2.5-10 mg as a single dose in the morning or twice a day

(If required, not more than 5 mg of **Glibenclamide** could additionally be given in the evening maximum total dose 15 mg per day)

These are taken 15-30 minutes before meals.

In general, **should be avoided** in all patients with liver disease and used with caution in kidney disease.

Gliclazide 80mg – 240mg (multiple doses – BD or rarely TDS)

Glimepiride 1mg – 6mg daily

NB: Combinations of sulphonylurea and metformin exist

Acute Complications

a) Hypoglycaemia

b) Diabetic ketoacidosis (DKA)

c) Hyperglycaemic hyperosmolar State (HHS) formerly Hyperosmolar non ketotic coma (HONK)

d) Lactic acidosis (Rarely)

NB. WHEN IN DOUBT AS TO THE CAUSE OF COMA, ALWAYS ASSUME ITS DUE TO HYPOGLYCEMIA, AND GIVE GLUCOSE AND NEVER INSULIN BEFORE YOU CHECK THE BLOOD SUGAR.

## 6.2 COMPLICATIONS OF DIABETES

1. **HYPOGLYCEMIA**

Hypoglycaemia refers to a blood glucose level below the lower limit of the normal range (3.5mmol/L) and may present with mild, moderate or severe clinical features.

It is more common in the elderly, those with kidney function impairment as well as those on long-acting oral anti-diabetic medications or insulin. Severe hypoglycaemia (blood glucose < 2.2 mmol/L) may result in coma, fits, self-injury and various degrees of irreversible brain damage.

Following successful treatment of hypoglycaemia, its cause must be determined and measures, including patient education and revision of anti-diabetic drug doses, should be taken to prevent its recurrence.

Hypoglycaemia should be treated as soon as it is suspected, especially if there is no means of quick confirmation of the blood glucose level. It is dangerous to await a laboratory test result. An immediate response to treatment is in itself diagnostic. A blood glucose test with a glucometer is adequate. Successful treatment results in a prompt response and full recovery within 10-15 minutes.

**CAUSES**

* Overdose of any anti-diabetic medication i.e. Insulin or oral antidiabetics (especially sulphonyl urea)
* Omitted or inadequate amount of food intake especially after medication
* Unaccustomed physical over-activity
* Excessive alcohol intake

**Signs and Symptoms**

* Dizziness
* Blurred vision
* Headaches
* Palpitation
* Sweating
* Irritability and abnormal behaviour
* Tremors
* Tachycardia and bounding pulse
* Confusion
* Unconsciousness
* Convulsions

**Investigations**

* Random blood glucose check (urgently done using a glucometer)

**Treatment**

Mild hypoglycaemia (3.0 – 3.5mmol/l)

* 2-3 teaspoons of granulated sugar or 3 cubes of sugar or ½ a bottle of soft drink to individuals who are conscious.
* A glass of milk or fruit drink and a tablespoonful of honey are also useful.
* The above measures should be followed immediately by a meal or snack.

Moderate hypoglycaemia (2.5 – 3.0mmol/l)

* Same as above but repeat after 10 minutes.
* If no improvement is observed, treat as for severe hypoglycaemia.

|  |
| --- |
| Severe hypoglycaemia (< 2.5mmol/l)  **Glucose 50%**, IV, 50 ml over 1 to 3 minutes through a large vein, followed by 5% or 10% Glucose, IV infusion, 500 ml, 4 hourly until the patient is able to eat normally. |

1. **DIABETIC KETOACIDOSIS (DKA)**

**Signs and symptoms**

Patient may be comatose, confused, or stuporous presenting with:

* Dehydration
* Vomiting
* Air hunger with increased depth and rate of breathing
* Ketosis - a sickly sweet smell in the breath
* Hyperglycaemia
* Ketones in urine
* Glucose in urine

**Treatment**

Comatose patient

* Nurse in Semi prone position to avoid aspiration
* Pass NG tube for feeding
* Pass urethral catheter to monitor urine output
* IV line for fluids
* Record ECG if possible
* REFER for specialist care s soon as possible
* NB: Avoid surgery in ketoacidosis with concomitant Intra peritoneal infection: manage conservatively until ketoacidosis is controlled.

**1) IV FLUIDS**

NB! FLUID AND ELECTROLYTE REPLACEMENT ARE THE MOST IMPORTANT ASPECTS OF TREATMENT.

Give 500ml Normal Saline(Sodium Chloride 0.9%)in first 15 minutes

Aim for a total of 8-12 L of **Normal Saline (Sodium Chloride 0.9%)** in 24hrs in non-heart failure patients

Introduce **5% Dextrose** if blood glucose drops to < 12mmol/L.

The blood glucose should be kept between 12-16 mmol/l using 5% **Dextrose and Normal Saline** alternately.

INSULIN

Low dose of short-acting **Insulin** 5IU IV stat, then 5IU IM hrly thereafter, and REFER Immediately

1. **Hyperglycaemic hyperosmolar State (HHS)**

Occurs usually in the elderly, and dehydration is the main feature. No hyperventilation, No ketosis.

* Treat as DKA as indicated above, except that fluid replacement takes precedence over insulin administration, and half strength normal saline (0.45%) is preferable over full strength normal saline (0.9%)

1. **DIABETIC FOOT ULCERS**

Neuropathic or ischaemic ulcers in the foot of a diabetic patient with poor sugar control.

This could be superficial or deep.

Management:

* Optimal blood glucose control.
* Relieve pressure: non-weight bearing is essential.
* Smoking cessation is essential.
* Treat any intercurrent illnesses.

For Superficial small ulcers

Antiseptic dressing with **Savlon** and **Povidone iodine**

* Give oral Co-amoxiclav 625MG oral, twice a day for 10 days.
* If no improvement refer for specialist care

**Note:** Polymicrobial topical antibiotics are not indicated.

For severe infection

* Cloxacillin IV: 1g stat, Metronidazole IV: 500 mg stat, Gentamicin, IV, 80mg stat

Refer immediately.

## 6.3 THYROID DISORDERS

1. **HYPERTHYROIDISM**

This is a condition in which the thyroid gland (located in front of the neck) is producing excessive amounts of thyroid hormones. This is a common endocrine condition, second only to diabetes mellitus. It is 8-9 times commoner in females compared to males, especially in the third and fourth decade of life.

Excessive thyroid hormones, also called thyrotoxicosis, results in changes in metabolism, growth and reproductive function, leading to a characteristic clinical syndrome.

The commonest reason for an overactive thyroid is Grave’s Disease (autoimmune primary hyperthyroidism), followed by toxic nodular goitre ( solitary or multinodular).

Clinical features

* Weight loss in spite of a good or excessive appetite
* Excessive sweating and heat intolerance
* Anxiety and emotional irritability
* Resting fast heartbeat (tachycardia) or irregularly irregular heart beat (atrial fibrillation)

The following additional features are seen in Grave’s Disease:

* Ophthalmopathy: variable degrees of eye changes, including, protrusion, inflammation with swelling, redness and irritation of the eyelids and cornea, lid retraction, visual impairment and loss resulting from pressure on the optic nerve head.
* Pretibial myxoedema: typical skin changes over the shins
* Menstrual irregularities
* Sleep disorders

**Diagnosis**

This is best done by laboratory measurement of thyroid hormones (if available). The most cost-effective strategy is to first measure TSH by a sensitive test and then follow this up with a measurement of free serum T3 and T4.

Diagnosis based on clinical signs and symptoms alone should be done in consultation with an experienced physician.

**Treatment**

The mainstay of treatment of thyrotoxicosis is medical.

Refer for specialist care as soon as diagnosis is confirmed

1. **HYPOTHYROIDISM**

This condition refers to an underactive thyroid gland, with the lack or deficiency of thyroid hormones causing typical changes in metabolism, growth and reproductive function.

The common causes of hypothyroidism include:

* Iodine deficiency with endemic goitre
* Primary (autoimmune) hypothyroidism or Hashimoto’s disease
* Congenital hypothyroidism (cretinism)
* Over treatment of hyperthyroidism
* Post Total thyroidectomy
* Post RadioIodine therapy for hyperthyroidism

Clinical features

* Mental slowing,
* Depression
* Physical sluggishness
* Weight gain
* Cold intolerance
* Changes in the voice with hoarseness
* Dry skin, brittle hair, or hair loss
* Goitre may or may not be obvious

**Investigation:**

This is best done by laboratory measurement of thyroid hormones (if available). The most cost-effective strategy is to first measure TSH by a sensitive test and then follow this up with a measurement of free serum T3 and T4.

Diagnosis based on clinical signs and symptoms alone should be done in consultation with an experienced physician.

Refer for specialist care as soon as diagnosis is confirmed

1. **GOITRE**

Goitre is a swelling of the neck due to enlargement of the thyroid gland.

* They are usually benign but may occasionally be malignant.
* They could be associated with normal function of the thyroid gland as well as with abnormalities of thyroid hormone production.
* A reduction in production of thyroid hormones results in hypothyroidism while an excess results in hyperthyroidism or thyrotoxicosis.
* May present with breathing and swallowing difficulties

NB

* Abnormalities of thyroid hormone production may also occur in the absence of goitre.

Management:

* Refer for specialist care as soon as diagnosis is confirmed.

# CHAPTER SEVEN

OBSTETRIC AND GYNAECOLOGY

* 1. **OBSTETRICS**

## 7.1 DRUGS IN PREGNANCY

The administration of drugs in pregnancy should be avoided as much as possible, especially in the first three months of pregnancy. Where a drug needs to be given, extreme caution is needed.

**SOME DRUGS CONTRAINDICATED IN PREGNANCY:**

* Tetracyclines e.g., Doxycycline
* Aminoglycoside antibiotics e.g., Gentamycin
* Sulphadoxine/Pyrimethamine: Before 16 weeks (can be used from 16 weeks up to delivery)
* Co-trimoxazole before 12 weeks of gestation
* Ergometrine
* Sulphonylureas e.g., Tolbutamide, (Glibenclamide can be used in the second and third trimesters)
* Diuretics - long term use
* Iodides
* Propylthiouracil
* Sex hormones e.g., hormonal contraceptives
* Cytotoxics

## 7.2 DISORDERS OF PREGNANCY

1. **VOMITING (MORNING SICKNESS)**

Very common, therefore it is accepted as normal in early pregnancy. Do not take lightly if the woman persists in complaining.

**TREATMENT**

**Non-pharmacological**

* Avoid spicy, acidic, or oily foods
* Chew dry food, e.g. bread and /or biscuits, in the morning to help prevent vomiting in the morning.
* Chew ginger
* Avoid brushing your teeth in the morning and use a chewing stick instead

NB: different methods work for different people

**Pharmacological**

1. Reassurance is enough in most cases
2. **I.M Promethazine** 25mg or **Chlorpromazine** 25mg stat, then oral tablets as needed.
3. **OR no significant evidence to support use Metoclopramide** 10 mg tabs 2-3 times daily
4. With heartburn, **Magnesium Trisilicate** or **Aluminium Hydroxide** tabs to be chewed up to four times a day, or as required.
5. **HYPEREMESIS GRAVIDARUM**

This is severe and persistent vomiting resulting in severe dehydration, ketosis and electrolyte imbalance.

**TREATMENT**

ADMIT

1. Rehydration -**Normal Saline(Sodium Chloride 0.9%)** or **Sodium lactate**.
2. Electrolyte estimations and correction of imbalances is required. If not available **refer**.
3. I.M **Promethazine** 25mg stat or **Metoclopramide** 10mg twice or three times daily **OR I.M Chlorpromazine** 25mg stat if severe vomiting
4. 2ml ampoule of **Vitamin B complex** injection into the I.V fluid
5. Exclude other causes of vomiting, such as Urinary Tract Infections, Malaria, Appendicitis and Molar Pregnancy

## 7.3 MEDICAL DISORDERS IN PREGNANCY

**A. HYPERTENSIVE DISORDERS IN PREGNANCY**

Hypertensive disorders in pregnancy are some of the commonest medical disorders in pregnancy and one of the four major causes of maternal death in The Gambia.

**Definition**: BP of 140/90 mm Hg or above

**CLASSIFICATION**

1. Pregnancy induced hypertension
   * 1. Gestational hypertension (no proteinuria)
     2. Pre-eclampsia (hypertension with proteinuria or symptoms) **OBSTETRIC CAREAND DISORDERS**
2. Eclampsia (hypertension with proteinuria and convulsions)
3. Chronic hypertension (existing before pregnancy)

* Essential hypertension
* Secondary hypertension

1. Chronic hypertension with super-imposed pre-eclampsia or eclampsia

**CLASSIFICATIONS OF PRE-ECLAMPSIA**

1. Pre-eclampsia

* Diastolic BP 90-110mmHg and <2+ protein in urine

**Treatment**

1. Admit patient and repeat BP after 6 hours of rest.
2. If diastolic BP is still between 90-100mmHg allow the patient to go home and monitor more frequently.
3. If diastolic BP is between 100-110mmHg give **Methyldopa** 250mg 8 hourly **OR Nifedipine** 20mg 12 hourly and monitor weekly.
4. **Deliver when foetal maturity is attained**
5. **SEVERE PRE-ECLAMPSIA**

* Diastolic BP of ≥110 or systolic of ≥160 and ≥ 2+ protein in urine.

**SYMPTOMS**

* Headache(frontal)
* Vomiting
* Epigastric pain or right hypochondriac region
* Visual disturbances
* Hyper-excitability
* Hyper-reflexia
* Oliguria – urine output < 400mls in 24 hours

All the above indicate **impending eclampsia** which is the end stage manifestation of this disease process. This is characterised by tonic-clonic convulsions.

**Treatment**

Admit patient

Give **Magnesium Sulphate**. (See below for administration).

If BP is more than 160/110 give Labetalol IV 20mg and check BP after 30 minutes,

If still high (above 160/110mmHg give 40mg. Check BP after 30 minutes and give 80mg if BP is above 160/110mmHg.

OR

**Hydralazine** 5-10mg **SLOWLY** over 20mins with close BP monitoring. If BP is still more than 160/110 give another 5mg of **Hydralazine** over 20mins until BP is less than 160/110 NB: Diastolic BP **SHOULD NOT** go below 100mmHg.

Maintain BP with oral **Labetalol** 200mg **OR Nifedipine preferably nifedipine retard** 20mg with **OR without Methyldopa** 500mg.

**Refer all severe pre-eclampsia to Tertiary or district hospitals and deliver as soon as possible**

**MAGNESIUM SULPHATE FOR SEVERE PRE-ECLAMPSIA AND ECLAMPSIA**

|  |
| --- |
| Loading Dose:   * **Magnesium sulphate** 20% solution, 4g in 20ml I.V slowly (over 20minutes) * Follow promptly with 10g of 50% **Magnesium sulphate** solution (i.e. 5g in each buttock as deep **IM** injection) * If convulsions recur after 30 minutes, give 2g**Magnesium sulphate** (50% solution) IV over 5 minutes   Maintenance Dose:   * Give 5g **Magnesium sulphate** (50% solution) IM every 4 hours into **alternate buttocks** * Continue treatment with **Magnesium sulphate** for 24 hours after delivery or the last convulsion, whichever occurs last.   **NOTE: best practice is to give IM Magnesium sulphate with 1ml of 2% Lignocaine in the same syringe. However, do not withhold the magnesium sulphate due to unavailability of lignocaine**.  **Do not give maintenance dose if urine output is less than 30ml/h (100mls in 4 hours)**  **Refer if there are further convulsions during maintenance dosage of magnesium sulphate** |

***Before repeat*** administration, ensure that:

* Respiratory rate is at least 16 cycles per minute
* Patellar reflexes are present
* Urinary output is at least 30ml per hour

***Withhold or Delay Drug if*:**

* Respiratory rate falls below 16 cycles per minute
* Patellar reflexes are absent
* Urinary output falls below 30ml per hour over preceding 4 hours

Keep Antidote Ready:

* In case of respiratory arrest:
* Assist ventilation (mask and bag, anaesthesia apparatus, intubation)
* Give Calcium gluconate 1g (10ml of 10% solution) I.V slowly to antagonize the effects of Magnesium sulphate toxicity, until respiration returns

**REMEMBER**:

* To ensure that aseptic technique is practiced when giving Magnesium sulphate deep IM injection
* Warn the woman that a feeling of warmth will be felt when magnesium sulphate is given
* In eclampsia, delivery should occur within 12 hours of onset of convulsions
* In severe pre-eclampsia, manage actively – delivery should occur within 24 hours of the onset of symptoms

**OTHER MANAGEMENT FOR ECLAMPSIA**

* Put in recovery (Left lateral) position.
* Actively resuscitate (ensure airway patency, breathing and circulation)
* IV line &
* Magnesium sulphate injection stat dose
* Indwelling catheter
* Vigilant examination
* IV Diazepam 10mg bolus if indicated
* Transfer to district or tertiary hospital – As Soon As Possible

**DO NOT RUSH TO PERFORM CAESAREAN SECTION**

**COMPLICATIONS OF PRE-ECLAMPSIA**

* Eclampsia
* Cerebrovascular accidents
* Cardiac failure (Pulmumary oedema)
* Renal failure
* Placental abruption
* Disseminated intravascular coagulation (D.I.C)
* Intra-uterine growth retardation and intra-uterine foetal death

**NB**

* Ergometrine is contraindicated in hypertensive disorders of pregnancy.
* Dextrose fluids should be avoided in hypertensive disorders of pregnancy.

**FOR MANAGEMENT OF ESSENTIAL / RENAL HYPERTENSION, REFER TO CHAPTER ON HYPERTENSION.**

**B. DIABETES IN PREGNANCY**

**DEFINITION AND DIAGNOSIS** - See section on Gestational Diabetes

* Requirements of hypoglycaemic agents increase with advancing gestational age.
* Maternal and foetal complications - See section on Diabetes

**SCREENING FOR DIABETES**

Refer for Oral Glucose Tolerance Test or Fasting Blood Sugar:

* History of macrosomia (big baby > 4kg)
* Significant glycosuria
* Family history of diabetes
* History of previous unexplained still-birth and/or neonatal death.
* Maternal weight more than 90kg
* Recurrent abortion

**FOETAL COMPLICATIONS**

1. Foetal macrosomia
2. Intra - uterine growth retardation leading to intra-uterine foetal death
3. Foetal anomalies
4. Neonatal hypoglycaemia - in both small and big babies.

**MANAGEMENT**

* Ideally to be managed by obstetrician and physician experienced in management of diabetes.
* Refer to tertiary hospital.

**Pre-Pregnancy Counselling for pregestational diabetes**

* Change Sulphanyurea to Biquanide (Metformin)
* If blood sugar is not controlled change to or add Insulin, at least six weeks before pregnancy is planned. Aim to obtain as near as possible to normal blood glucose levels (4 to 6.5 mmol/L) for at least six weeks before pregnancy.
* Do HB A1C and refer if greater than 6.5%

**Non-pharmacological treatment**

Diet

* This is very important as some patients may improve on diet alone
* The diet must comprise 3 meals and a snack in between meals
* Heavy meals must be avoided (eat to satiety and not belly full)
* The diet is best taken care of by a dietician or diet nurse
* Encourage daily exercise

**Treatment during pregnancy**

* Assess the risk factors.
* Test fasting blood sugar (at booking and 28-30 weeks)
* Do monthly glucose series and adjust antidiabetic drug accordingly

**Treatment during labour**

**Diabetic women should be advice to deliver at the hospital.**

**HEART DISEASES IN PREGNANCY**

May be diagnosed before pregnancy or may present for the first-time during pregnancy. The main aim is the early detection and treatment of heart failure. All pregnant women with heart diseases require specialist care and risk assessment.

**Signs and Symptoms**

* Dyspnoea - on exertion
* Paroxysmal nocturnal dyspnoea
* Cough
* Acute pulmonary oedema - severe dyspnoea, generalised crepitations on listening to the lungs.
* Peripheral oedema

**Treatment**

* Transfer all known cases of heart disease to Antenatal clinic in a tertiary hospital.

**MANAGEMENT DURING LABOUR**

**REFER To hospital for management of labour and delivery.**

1. Give **Oxygen** during transfer
2. **NO I.V. FLUIDS**
3. **Nurse in semi-fowler's position (45 degrees position)**

**ANAEMIA IN PREGNANCY**

Definition: Hb less than **10g/dl.**

**REFER TO MATERNITY GUIDELINES**

**Signs and Symptoms**

* Dizziness
* Lethargy and easy fatigability
* Pallor
* Cardiac failure if severe.
* Increased susceptibility to infection
* Jaundice (suspect haemolytic anaemia)
* Palpitations

**Investigations**

* PCV, HB or FBC where available
* Blood film for malaria parasites
* Sickling test if positive then Hb electrophoresis
* Serum iron, total iron binding capacity, ferritin (where available)
* Stool analysis for hookworm ova
* Urinalysis for Schistosome ova and urobilinogen

**Prophylaxis**

* Iron supplements: Ferrous sulphate 200mg and folic acid 0.5mg (Fefol), one tablet daily after food.
* Multivitamin, oral, one tablet 8 hourly
* Antimalarial prophylaxis (Se section on malaria)
* Mebendazole 500mg stat after first trimester.

**Treatment**

**Non-pharmacological**

The patient's diet is very important during pregnancy especially in the presence of anaemia. Patient should be advice to take iron rich food e.g. green leafy vegetables, fish, meat, beans etc.

**Pharmacological treatment**

HB of 8-9.9g/dl:

* Fe/fol (Ferrous sulphate (200mg) and folic acid (05mg)) – one tablet three times daily
* Give for at least one month then monitor Hb level.
* Consider parenteral iron, if compliance with oral iron is a problem / poor intake.
* Malaria prophylaxis (see IPT guidelines)
* Mebendazole 500mg as a single dose after first trimester

**NB!**

* Find out the cause of the anaemia if possible.
* Sickle-cell anaemia in pregnancy should be managed only in a tertiary hospital.

1. **MALARIA IN PREGNANCY**

See section on Malaria (To be verified from malaria section)

Symptoms of malaria in pregnancy can be non-specific. Laboratory confirmation is necessary.

1. **HIV IN PREGNANCY**

* For comprehensive information on the care of HIV-infected pregnant women, REFER TO THE CURRENT NATIONAL Comprehensive HIV treatment Manual.
* All pregnant women should receive routine counselling and voluntary HIV testing at their very first antenatal visit.
* Women who test negative should be offered repeat HIV testing if at high risk of infection from 28- 32 weeks’ gestation onwards.
* HIV positive pregnant women upon diagnosis, should be clinically staged, and have a blood sample taken for CD4 cell count on the same day. The result must be obtained within a week and they should be started on ART .
* Decisions about postpartum contraceptive use and method of infant feeding must be made in the antenatal period.
* Those with symptoms of tuberculosis (TB) should be investigated and started on TB treatment.
* All women with HIV infection should be counselled about the benefits of PMTCT.

**REFER TO PMTCT FOR TREATMENT**

**URINARY TRACT INFECTION IN PREGNANCY**

There is increased susceptibility because of ureteric dilation and relative urinary stasis.

**Signs and Symptoms**

* Lower abdominal pain
* Fever
* Rigors
* Renal angle (Flank) pain / tenderness (in pyelonephritis)
* Dysuria
* Frequency of micturition
* Urinalysis must be done
* Urine MCS should be done

**NB: Remember to rule out malaria**

**TREATMENT**

**Amoxicillin-Clavulanic Acid** oral 500 mg every 8 hours for 5-7 days

**OR**

**Nitrofurantoin** 100mg every 12 hours for 7 days

**Erythromycin** 500mg ever**y** 6hours for 5 days

**OR**

**Azithromycin** 500mg daily for 3days (or 500mg stat followed by 250mg daily for 4 days)

In the case of suspected acute pyelonephritis **REFER.**

***Change antibiotics as per results of culture and sensitivity of midstream specimen of urine***

## 7.4 DRUGS USED IN LABOUR

* + - 1. **PETHIDINE**

Pain relief in first stage of labour is compulsory unless opted out but ensure there is no sign of obstruction. Obstructed and prolonged labour cases need to be referred immediately.

**ADMINISTRATION**

* I.M Pethidine 50 - 100mg stat
* IM Pentazocine 30 -60mg stats
* IM Tramadol 50-100mg stat

use with either

* IV Promethazine 25mg
* IV Metoclopramide 10mg

Repeated dose should be given only at hospital level/ major health centre. Do not give when cervical dilatation is 7cm or more or if there are signs of foetal distress.

**NB: For Pethidine and Pentazocine overdose, refer to section on Poisoning.**

**Ensure proper recording of DDA drugs**.

**UTEROTONICS**

1. **OXYTOCIN**

**INDICATIONS FOR USE:**

* 2nd trimester inevitable abortion when expediting expulsion is required
* Induction of labour
* Augmentation of labour
* 3rd stage of labour
* Postpartum haemorrhage

**RECOMMENDED REGIMES**

1. **I**nduction of labour: STARTING

LOW DOSE REGIMEN – begin 2.5mIU/min: (meaning 10 units Oxytocin / 500ml 5% Dextrose to run at 2.5 drops per minute) increasing by 2.5mU (2.5drops) every 30 minutes until 3-4 contractions per minute or up to Maximum of 60drops/min is achieved

HIGH DOSE REGIMEN: begin with 5mU/min (meaning 10 units Oxytocin / 500ml 5% Dextrose to run at 5 drops per minute) increasing by 5mU (5 drops) every 30 minutes if contraction is not optimum to a maximum of 60 drops per minute.

In both Regimens if contraction are is not optimum to a maximum of 60 drops per minute consider as failed induction

For the above protocol Standard Giving set was used to Calculate the number of drops

Always Use Micro drip Giving set when administering Medicated infusion

Augmentation of labour use The Low dose Regimen -

Always Use Micro drip giving set when administering Medicated infusions

Note: Induction of labour should be done at a CEmONC facility

**CAUTION**: Rule out malposition

1. Do not use in breech presentation
2. Do not use in patients with previous caesarean section.
3. Careful with grand multiparous

**Third stage** -10 units intramuscular (IM)

**2nd Trimester inevitable abortion** - 20 units / 500ml **5% Dextrose** to run at 30-40 drops per minute.

**IUFD** (Intra-uterine foetal death) - as in induction of labour. Rule out ruptured uterus.

**Post-partum haemorrhage** - 20 units /500ml 5% dextrose 30-40 drops per minute.

1. **ERGOMETRINE MALEATE**

**Only In Postpartum Haemorrhage if require.**

**Dose:** 0.2- 0.5mg intramuscularly.

**Avoid intravenous administration causes increased blood pressure**

**Do not use in the presence of hypertension or cardiac failure. Use Oxytocin instead**

## 7.5 PRETERM LABOUR

* Preterm: <37 weeks gestation and after the age of viability.

**TREATMENT**

|  |
| --- |
| If gestation <34 weeks:  Pre-hydrate before administration of tocolytic (e.g. Nifedipine)  Sodium chloride 0.9%, IV, 200 ml.  PLUS  Nifedipine, oral, 40 mg stat  PLUS  Betamethasone, IM, 12mg stat  OR  Dexamethasone, IM 6 mg stat then  **REFER TO HOSPITAL OR MAJOR HEALTH CENTRE WITH NEONATAL CARE CAPACITY** |

## 7.6 PRELABOUR RUPTURE OF MEMBRANE (PROM)

This is the rupture of the membranes before the onset of labour and after the age of viability.

**KEY: Points to Note**

* Gush or leakage of fluid from the vagina.
* Sterile speculum examination reveals a clear fluid draining from the cervical Os or pool of fluid in the posterior vaginal fornix, also identify cord prolapse, as well as cervical dilatation
* Prolonged PROM for more than 12 hours is a risk for ascending infection which can lead to chorioamnionitis
* Chorioamnionitis-: Fever, Maternal tachycardia, Uterine tenderness, there may be Purulent vaginal discharge.

**TREATMENT**

**To prevent infection**

* PROM at term: stimulationof labour if it doesn’t begindelivery within 24 hours with oxytocin as per Regimens above.
* PPROM (less than 34 weeks) manage as premature labour above and refer

## 7.7 BLEEDING IN PREGNANCY AND LABOUR

1. **ANTEPARTUM HAEMORRHAGE (APH)**

**DEFINITION**

This is any vaginal bleeding after the age of viability and before delivery of the baby. Any bleeding during pregnancy should be referred to a CEmONC Facility. **No vaginal examination should be done if previa is suspected**. A Large bored cannulas should be inserted before referral.

**B. BLEEDING IN EARLY PREGNANCY (FIRST TRIMESTER)**

**1. MISCARRIAGE**

**CLASSIFICATION**

1. Threatened miscarriage
2. Inevitable miscarriage
3. Incomplete miscarriage
4. Missed miscarriage
5. Septic abortion

NOTE: All women with Rhesus D negative should receive anti-D IM 5000IU (300mcg)

* 1. **THREATENED MISCARRIAGE**

**Signs and Symptoms**

* Mild vaginal bleeding
* Cervical Os closed

**MANAGEMENT**

* Identify and treat the Cause of miscarriage if possible.
* Reassurance and counselling. However, if bleeding persists, REFER to Major health centre with a blood transfusion unit or hospital.
  1. **INEVITABLE MISCARRIAGE**

**Signs and Symptoms**

There is severe lower abdominal pain associated with heavy bleeding. There may also be painless loss of liquor per vaginum.

* The cervix is open and membranes maybe bulging.
* There may be loss of liquor.
* The uterine size is compatible with the gestational age.
* There may be signs of shock such as, pallor, rising pulse with reducing volume, low BP, and cold clammy skin.

**INVESTIGATIONS**

* FBC (if not available Hb)
* Blood grouping and cross matching

**TREATMENT**

**Non-pharmacological**

* Keep the patient nil by mouth.
* Evacuation of the uterus should be done by Manual Vacuum Aspiration (MVA) with or without para-cervical block anaesthesia

**Pharmacological treatment**

|  |
| --- |
| IV fluids and blood transfusion as necessary.  **Pethidine 50-100mg stat**, IM,  **Oxytocin**, IV,(at least 20mIU/min) 20 units/500mlof **Normal saline (Sodium Chloride 0.9%) regulate at 20 drops per minute over 5hours**  **Or**  **Misoprostol**, oral, 400-600 micrograms stat  After evacuation put the patient on:  **Amoxicillin/Clavulanic Acid**, oral, 625 mg 12 hourly for 5days  **PLUS**  **Metronidazole**, oral 400/500 mg 8 hourly for 5 days |

* 1. **INCOMPLETE MISCARRIAGE**

**Signs and Symptoms**

* Moderate to severe lower abdominal pain
* Moderate to heavy bleeding with clots
* Passage of products of conception
* On examination, uterine size less than gestational age
* Cervical Os open and products of conception may be seen or felt in vagina or through Cervical Os.

**Treatment**

|  |
| --- |
| **Misoprostol 600 microgram stat** (rectal, sublingual, or oral) **OR**  **IV Oxytocin** 20 IU in 500ml at 20-30drops/min over 5hrs IV **Normal Saline (Sodium Chloride 0.9%)** to run at rate determined by clinical condition.  Remove products of conception from cervical Os.  **Amoxicillin-Clavulanic Acid,** oral,625mg 128 hourly daily  **OR**  **Ciprofloxacin,** oral,250-500mg 12 hourly daily  **PLUS**  **Metronidazole**oral:400/500mg 8 hourly daily for five days  **REFER** to centre with capacity for evacuation.   1. FBC/Hb, Group, cross match blood and transfuse depending on clinical condition. 2. Surgical evacuation of the uterus with MVA . |

* 1. **COMPLETE MISCARRIAGE**

**Signs and Symptoms**

* Cessation or reduction of vaginal bleeding following heavy bleeding with passage of clots and/or the foetus and placenta.
* Absence of pain
* The uterus is smaller than the gestational age.
* The cervix is closed and firm.

**Investigations**

* FBC
* Blood grouping and cross matching
* Ultrasound scan: To confirm empty uterine cavity

**TREATMENT**

**Non-pharmacological treatment**

* Identify and treat cause
* Counselling and psychological support

**Pharmacological treatment**

* Resuscitate patient if necessary
* Treat anaemia if present
* Follow up review in two weeks.
  1. **SEPTIC ABORTION**

It is a life-threatening condition mostly due to induced abortion**. It should be referred to a hospital**

**Signs and Symptoms**

* Mild to severe lower abdominal pain
* Pyrexia: Temperature 37.5 degree Celsius or above.
* Tender lower abdomen,
* Pelvic abscess (USS)
* Foul smelling bloody discharge from the vagina

**Treatment**

Nil per Oral

* Correct Anaemia Properly hydrate
* Give antipyretic

**Antibiotics:**

**Ampicillin** IV 500mg-1g 6 hourly

**PLUS**

**Gentamicin** IV80mg 8 hourly

**PLUS**

**Metronidazole** IV 500mg 8 hourly

IV Paracetamol 1g 4-6hourly

Give **tetanus toxoid 0.5m**l stat

Surgical evacuation at hospital after initiation of antibiotic therapy.

Initiate other components of Post Abortion Care

**Anticipate COMPLICATIONS**

* Septicaemia and septic shock
* Peritonitis
* Endometritis
* Tubo ovarian abscess
* Renal failure

## 7.8 BLEEDING DURING LABOUR AND IN 2nd AND 3rd TRIMESTER

**Major CAUSES**

* Placenta praevia
* Abruptio placentae

**Signs and symptoms**

* Placenta praevia: painless vaginal bleeding (bright red), abdomen usually not tender
* Abruption placentae: abdomen is tender and hard, reduced or loss of foetal movements or intra uterine foetal death
* Features of anaemia such as dizziness, weakness, collapse etc

**Management at Health Centre and community health post:**

Check BP

* Start I.V. line large bore cannula (Normal Saline (Sodium Chloride 0.9%) OR Sodium Lactate at least 1 litre in the first 30 minutes)
* Pass urinary catheter
* Where possible check Hb
* Abdominal examination only

**DO NOT DO A VAGINAL EXAMINATION**

**REFER IMMEDIATELY to CEmONC facility or hospital** where there is a blood transfusion unit and theatre **for further management**.

## 7.9 POST PARTUM HAEMORRHAGE (PPH)

**DEFINITION**

Post-partum haemorrhage may be primary or secondary. Primary postpartum haemorrhage refers to bleeding of more than 500 mls from the genital tract within the first twenty-four hours of vaginal delivery or any amount of blood loss that result in haemodynamic compromise of the patient. It usually occurs during or immediately after the third stage of labour.

Secondary post-partum haemorrhage is defined as excessive vaginal bleeding occurring from twenty-four hours to six weeks after delivery. The bleeding may occur with the placenta retained or after its expulsion from the uterus. Postpartum haemorrhage becomes life threatening if the mother is already anaemic. Blood loss of more than 500 mls may lead to shock

**Signs and Symptoms**

* Excessive or prolonged vaginal bleeding
* Lower abdominal pains
* Conjunctival pallor
* Rapid pulse
* BP may be low or normal
* Suprapubic tenderness.
* Atonic uterus (uterus is soft, and usually above the umbilicus)

**Investigations**

* Hb
* Blood grouping and cross-matching
* Clotting time

**Treatment**

Secure IV line (two large bore cannulae, Green/ Grey) immediately. Give **Normal Saline (Sodium Chloride 0.9%)** or **Compound Sodium Lactate** fast at least 1 litre in the first 30 mins

Pass urinary catheter

Give 600-1000 micrograms of **Misoprostol** /rectally (or sublingually or orally) **AND** give **Oxytocin, IM** 10 IU stat plus 40IU in 500mls of Normal Saline

**OR**

If BP is ≤ 140/90: **Ergometrine maleate** 0.5 mg IV stat

**AND Oxytocin (40Miu/min)** 20 IU in 500ml N/S

Rub uterus until firm and expel clots

Remove blood clots from vagina and check for vaginal tears

Repair vaginal / perineal tears as indicated

**Give blood transfusion where necessary**

**REFER to CEmONC or hospital when there is severe and uncontrolled bleeding.**

## 7.10 HYDATIDIFORM MOLE (MOLAR PREGNANCY)

**Signs and Symptoms**

* Amenorrhoea
* Irregular vaginal bleeding - mild to heavy
* Vesicles (like fish eggs) may be passed
* Exaggerated symptoms and signs of pregnancy, e.g., Hyperemesis gravidarum, Pre-eclampsia.
* Uterine fundus higher than that period of amenorrhoea.
* Ultrasonic scan- snowstorm appearance with no foetus.

**NB: It is required to do a pregnancy Test**

**IF SUSPECTED, REFER TO a CEmONC /HOSPITAL**

**Warning/Danger signs – weight loss, persistent bleeding, cough and haemoptysis and positive HCG test.**

**NOTE: All women with Rhesus D negative should receive anti-D**

## 7.11 ECTOPIC PREGNANCY

Commonly presents after 6 - 8 weeks of amenorrhoea. Lower Abdominal pain can occur acutely or protracted.

**Signs and Symptoms**

* Irregular vaginal bleeding
* Intermittent or constant abdominal pain. The pain can be localised and misleading (if ruptured the pain is very severe).
* If ruptured:
  + Pallor
  + Hypotension and rapid pulse
  + Sudden collapse
  + Adnominal distension

**Treatment**

IV line (2 large bore cannula) **Normal Saline (Sodium Chloride 0.9%)** 500mls or **Compound Sodium Lactate** solution fast

**Transfer to hospital/ CEmONC AS SOON AS POSSIBLE for a Laparotomy**

**Blood transfusion usually needed**

**7.12 CARE OF MOTHER AND BABY IMMEDIATELY AFTER DELIVERY**

Provide the following care for the first hour after complete delivery of the placenta:

Constant attention:

* Never leave the mother and baby alone
* Record any findings, treatment and procedures in the postpartum record
* Initiate breastfeeding as soon as possible

**Monitor every 15 minutes for the first hour then hourly for the next 4 hours**:

***Mother****:*

* Monitor BP, pulse and respiratory rate
* Encourage mother to massage the uterus
* feel uterus if contracted
* inspect the vulva for any active bleeding

***Baby:***

* Assess the APGAR score
* Clean, dry and keep warm

***If any complication in pregnancy or delivery****:*

**Refer**

**Care of mother:**

* Encourage mother to pass urine, eat and drink
* Ask the companion to stay with her
* Assess amount of vaginal bleeding

**Care of baby:**

* Apply an eye antimicrobial, e.g., Tetracycline eye ointment - leave in place and do not wash it away
* Wipe off blood or meconium with wet cloth
* Keep baby warm with skin-to-skin contact

***If feet are cold or mother and baby are separated:***

* Ensure room is warm
* Cover baby (and mother) with blanket
* Reassess after 1 hour

***Before discharge*:**

* Brief examination of the baby
* Make sure baby has passed urine and stool

***If breathing difficulty:***

* Examine the baby according to first new-born examination requirements, classify the condition and treat accordingly

***If baby is stillborn/dead:***

* Give supportive care
* Respect local customs
* Advise mother on breast care
* Counsel on appropriate family planning
* Advise on postpartum care & hygiene
* Provide death certificate & complete required reporting formalities
* Check identity & give wrapped body to family for burial according to local customs

***Breastfeeding*:**

* Check for suckling reflex

Initiate exclusive breastfeeding within an hour

* Offer mother help to position/attach the baby if ready

**DO NOT** breastfeed babies with cleft lips, respiratory distress, or premature babies.

***If unable to start breastfeeding****:*

* Do not give artificial feeds before baby has initiated natural breastfeeding
* Plan for alternative feeding method s
* Do not give sugar water or local feeds to the baby

## 7.13 POST-PARTUM PYREXIA

This refers to a temperature of 38°C or more on 2 or more occasions during the first 10 days of the puerperium excluding the first day.

**Major CAUSES**

* Malaria
* Puerperal sepsis
* Breast problems (engorgement, mastitis, abscess formation)
* Urinary tract infection
* Respiratory tract infection

**Signs and Symptoms**

* Related to cause

**INVESTIGATIONS**

* FBC
* Blood film for malaria parasites
* Blood for culture and sensitivity
* Urine for culture and sensitivity
* High vaginal swab
* Fasting or Random Blood Glucose
* Pelvic scan to exclude retained products of conception or pelvic abscess

**TREATMENT**

**Pharmacological treatment**

Treat underlying cause. Most of the cases will need to be referred.

**REFER**

**REFER ALL CASES OF PUEPERAL SEPSIS (infection of the genital tract after delivery) TO HOSPITAL FOR MANAGEMENT.**

## 7.14 POST-PARTUM DEPRESSION/PSYCHOSIS

It is a term that covers a group of mental illnesses with the sudden onset of psychotic symptoms following childbirth.

**Signs and Symptoms**

* Extreme mood swings
* Irritability
* Hallucinations
* Over activity
* Insomnia
* Not caring for the baby

**Refer to hospital (may require psychiatric specialist)**

**B GYNAECOLOGY**

## 7.15 PELVIC INFLAMMATORY DISEASE (PID)(Refer.to STI Manual)

This is an ascending infection of the female reproductive organs. The common causative organisms are Neisseria gonorrhoea, Chlamydia trachomatis and Mycoplasma hominis.

The conditions can be either acute or chronic

**CLINICAL FEATURES**:

Degree of symptoms and signs reflect severity

**Signs and Symptoms**

* Lower abdominal pain
* Lower abdominal tenderness
* Vaginal examination - tenderness over uterus, both fornices and on moving the cervix
* Fever
* Purulent Vaginal discharge - may be seen.

**INVESTIGATIONS**

* High vaginal and endo-cervical swab culture and sensitivity

**TREATMENT**

**Non-pharmacological treatment**

* Remove IUD, if present, 3 days after initiation of drug therapy

**ACUTE**

**IM Ceftriaxone 500mg stat OR**

**Ciprofloxacin** 500mg 12 hourly for 5 days

**PLUS**

**Metronidazole** 200-400mg *or*250-500 mg 8 hourly for 14 days

**PLUS**

**Doxycycline** 100mg 12 hourly for 14 days

**NB:** suspected PID in a patient who has never been pregnant should be managed as an in-patient

**REFER TO CEmONC Facility OR HOSPITAL If patient is not responding to treatment within 48 hours.**

## 7.16 ENDOMETRIOSIS

It is the presence and proliferation of endometrial tissue outside the uterine cavity, usually within the pelvis.

**Signs and Symptoms**

* Dysmenorrhoea
* Dyspareunia
* Chronic pelvic pain.

**Management**

* Give Potent Analgesia and Refer to the Hospital

## 7.17 GENITAL PROLAPSE AND URINARY INCONTINENCE

It is characterised by a portion of the vaginal canal protruding from the opening of the vagina.

**All patients should be referred to a specialist for initial evaluation**.

Baseline investigations

* Urinalysis
* Urine microscopy culture and sensitivity
* FBC
* Pelvic scan

## 7.18 CHORIOCARCINOMA

Most common following Hydatidiform mole

* Intermittent vaginal bleeding
* Cough and haemoptysis
* Weight loss
* Pelvic examination may show an enlarged uterus or no abnormal findings.
* Positive Pregnancy test (Beta HCG)
* Chest X-ray - Cannonball metastases

**Treatment**

**Transfer to hospital for specialist management**. **Check Hb, WBC count and platelets.**

**Folinic acid**:

**Actinomycin**

**Cyclophosphamide**

* Twice weekly HB, WC count and HCG (Beta HCG).
* Contraception and HCG measurements for 1-2 years.

## 7.19 CARCINOMA OF THE CERVIX

Carcinoma of the cervix is the commonest form of female genital cancer seen in most developing countries. Even though it is common, it is thought to be preventable. Its treatment poses a major challenge, demanding the services of a gynaecological oncologist and the surgical procedure, Wertheim's hysterectomy, for operable cases. In developed countries, the incidence of this disease has fallen considerably owing to regular screening procedures using the Pap smear.

Screening can be done by trained medical personnel

**Signs and Symptoms**

* Asymptomatic (diagnosed on routine screening or assessment during antenatal care, family planning etc.)
* Symptomatic
* Post-coital bleeding
* Excessive prolonged vaginal bleeding
* Post-menopausal bleeding
* Foul smelling vaginal discharge
* Lower abdominal pain
* Weight loss
* Urinary symptoms e.g., dysuria, frequency, incontinence
* Rectal pain

**PREVENTION**

* HPV Vaccination
* Regular pap smear
* Visual inspection of cervix with acetic acid

**Give Potent Analgesia if in pain then**

**REFER to a hospital for specialist management**

## 7.20 ABNORMAL VAGINAL BLEEDING

This refers to bleeding which deviates from the normal menstrual pattern (in terms of the amount, duration, or interval). Abnormal menstrual patterns and bleeding are common in young adolescents and women within the ages of 45-50 years. No cause may be found on investigation as it is mostly due to immaturity of the ovaries and its pituitary controls. Bleeding may be mild or severe and life threatening. The causes are multiple and may be related to age of the patient. Postmenopausal bleeding is said to occur when a woman who has stopped having menstruation for 12 or more months begins to bleed per vaginum.

**NB: The causes are multiple; therefore, the patient should be referred for specialist care**

1. **AMENORRHOEA**

**DESCRIPTION**

Primary amenorrhoea: no menstruation by 14 years of age in the absence of secondary sexual characteristics; or failure to menstruate by 16 years of age.

Secondary amenorrhoea: amenorrhoea for at least 3 months in women with previous normal menses.

**Always rule out PREGNANCY.**

**REFER** to specialist once pregnancy has been ruled out

1. **DYSMENORRHOEA**

Dysmenorrhoea refers to cyclical lower abdominal pain associated with menstruation. The pain is thought to result from uterine contractions. It may be primary or secondary indicating the absence or presence, respectively, of an identifiable underlying cause. If secondary **REFER** to a specialist.

**Signs and Symptoms**

* Lower abdominal pain that is cramping or colicky in nature but may be dull and constant
* Pain may radiate to the lower back or legs
* Nausea, vomiting, headache, and dizziness may sometimes be associated with the pain
* No typical physical signs

**Treatment**

**Non-pharmacological treatment**

* Warm water bottle or towel on the abdomen

**Pharmacological treatment**

Mild cases

* **Paracetamol**, oral,1g 6 to 8 hourly 3-5 days OR
* **Ibuprofen 200- 400mg 8 hourly 3-5 days**

Moderate- Severe cases

* **Ibuprofen**, oral,400- 800 mg 8 hourly 3-5 days OR
* **Mefenamic acid 500mg 8 hourly 3-5 days**
* **plus**
* **Hyoscine N-butyl bromide**, oral,10-20 mg 8 hourly 3-5 days

**Note: If NO RESPONSE TO TREATMENT PATIENT SHOULD BE REFERRED TO THE HOSPITAL**

## 7.21 OTHER GYNAELOGICAL PROBLEMS

* 1. **M.ENOPAUSE**

Menopause refers to the point in time when permanent cessation of menstruation occurs usually due to loss of ovarian function. The age at onset is usually between 45 and 55 years. It may however occur earlier. A woman is menopausal if there is no menstruation for a period of at least 6-12 months in the absence of pregnancy. It is associated with physical, emotional, and psychological upheaval of varying intensity in the affected individual. Sixty percent of menopausal women may be asymptomatic.

**Signs and Symptoms**

* Stoppage of menses
* Hot flushes (heat or burning in the face, neck and chest with resultant sweating).

**The flushes may be associated with**

* Palpitations
* Faintness
* Dizziness
* Fatigue
* Weakness

**Emotional and psychological problems include:**

* Mood changes
* Depression
* Anxiety
* Nervousness
* Irritability
* Loss of libido
* Atrophic changes in the genital tract may give rise to the following:
* Increased frequency of micturition and dysuria.
* Stress incontinence (urinary incontinence with coughing or straining).
* Vaginal dryness and dyspareunia

**Diagnosis**

* Tests to exclude pregnancy

**Treatment**

**Non-Pharmacological treatment**

* Counselling and reassurance.
* Encourage active lifestyles, exercise, and regular physical check-ups for common medical problems.

**Pharmacological treatment**

**REFER to specialist**

**b) INFERTILITY**

This is failure to conceive after one year of regular coitus without contraception.

**Primary infertility**: There has never been a history of pregnancy

**Secondary infertility**: There is a prior history of conception and then failed to conceive.

**REFER to specialist.**

**c) SEXUAL ASSAULT**

It is any involuntary sexual act in which the person is coerced or physically forced to engage against their will or any non-consensual touching of a person. Sexual assault is a form of sexual violence and includes rape. Victims should be seen by a **registered medical doctor**. Involve social workers and police officers.

**INVESTIGATIONS**

Urine pregnancy test

**Blood for:**

* VDRL
* HIV
* Hepatitis B

**GENERAL MEASURES**

* Detailed history
* Trauma counselling
* Detailed examination
* Sample collection, or repair of genital tract trauma.

**Pharmacological Treatment**

Emergency contraception:

**Levonorgestrel** 1.5 mg, oral, preferably within 24 hours of event.

**OR**

**Ethinyl estradio**l 100 mcg plus **Norgestrel** 1 mg, oral, 12 hourly for 2 doses

**Note**:

Emergency contraception can be given up to 5 days following an episode of unprotected intercourse.

Intrauterine Contraceptive Device can be inserted up to 5 days post-coital.

**STI prophylaxis**

**Ciprofloxacin** oral 500mg, 12 hourly (twice daily) for 7 days

**PLUS**

**Metronidazole** oral: 2 g, immediately as a single dose **OR** 400/500mg 8 hourly (three times daily) for 7 days.

**PLUS**

**Doxycycline** oral: 100 mg 12 hourly for 7 days.

**In pregnancy**

**Amoxicillin**, oral, 500 mg 8 hourly for 7 days

**PLUS**

**Metronidazole**, oral, 2 g, immediately as a single dose **OR** 400-500mg three times daily for 7 days.

**HIV post-exposure prophylaxis (PEP) - refer to National guidelines**

## 7.21 CONTRACEPTIVES

Access to safe, effective, affordable and acceptable methods of contraceptives for men and women are a critical means for the articulation and attainment of reproductive rights and reproductive health and a central component in the reproductive health programme. Contraceptive use reduces maternal and infant mortality and improves health through the prevention of unplanned and high risk pregnancies, reducing the need for unsafe abortion and protecting against certain reproductive cancers and health conditions:

**ORAL CONTRACEPTIVE PILLS**

1. COMBINED ORAL CONTRACEPTIVES (COCS) **– has oestrogen and progestin.** Also called Combined Pills, Oral Contraceptives (OCs), the Pill and Birth Control Pills.

**Types of COCs**:

**Microgynon ED Fe** (*each beige coloured tablet contains* ***Levonorgestrel*** *0.15mg with*

***Ethinylestradiol*** *0.03mg and each brown tablet contains 75mg F****errous fumarate***)

**Lo-Feminal** (*each white tablet contains 0.3mg* ***Norgestrel*** *with 0.03mg* ***Ethinylestradiol*** *and each brown tablet contains 75mg* ***Ferrous fumarate***)

There are **2 types of pill packets**. Some packets have **28 pills in which 21** of the pills are the “**active**” pills which **contain hormones**, followed by **7** “**reminder**” pills or ferrous fumarate of a different colour which **does not** contain hormones.

Other pill packets have **only** the 21 “**active**” pills. In general, most women, from adolescence to menopause can use low-dose combined oral contraceptives safely and effectively.

**Dosage**:

To be most effective the client TAKES ONE PILL EVERY DAY for 21 **consecutive** days **followed** by the **brown pill** (beginning at the “**start arrow**” on the packet) until the pill packet is empty.

When she finishes one packet of 28 pills, she should take the **first pill** from the **next** packet **the very next day.**

In case of a 21-pill packet, she should wait 5 days before starting another new packet of 21 pills.

The client starts the pill at onset of menstruation and or not exceeding the first 5 days of menstruation.

Taking the pill irregularly increases the risk of pregnancy

Most common mistakes are, *starting new packets late and running out of pills.*

**Side Effects**

* Nausea (most common in first 3 months).
* Spotting or bleeding between menstrual periods especially if a woman forgets to take her pills or takes them late (most common in first 3 months).
* Mild headaches
* Breast tenderness
* Slight weight gain
* Amenorrhoea

May cause mood changes including depression, less interest in sex (in a few women)

Very rarely can cause stroke, blood clots in deep veins of the legs, or heart attack (not recommended for women with high blood pressure, women age 35 years and above and at the same time smoke 15 or more cigarettes per day)

**Remember** to tell client about return visits.

1. **COMMONLY USED PROGESTIN – ONLY PILL**

**Progestin-Only Pills (known as POPs, Mini Pills**)

Contain only progesterone – like hormone

**Types of POPs**:

i) **Overette**

***Progestin****-Only Oral Contraceptives (pills) is a good and effective family planning method for breastfeeding women who want oral contraceptives*.

There are **2 types of pill packets**:

* Packets of 28 pills of the same colour (all are “active” progestin-only pills)
* Packets of 35 pills of the same colour (all are “active” progestin-only pills)

**Dosage**:

* The client TAKES ONE PILL EVERY DAY beginning at the **start arrow** on the packet until the packet is finished. If **not breastfeeding**, it is **best to take the pill** at the **same time each day** if possible.
* Taking a pill more than a few hours late increases the risk of pregnancy and missing 2 or more pills in a row greatly increases the risk
* When she finishes one packet of 28 pills, she should take the first pill from the next packet on **the very next day**. There is no wait between packets.

**Side Effects**

* Menstrual spotting or missed periods
* Nausea
* Mild headaches
* Breast tenderness
* Slight weight gain or loss
* Mood changes

1. **EMERGENCY CONTRACEPTION (EC)**

This requires that a woman take Emergency Contraceptive Pills (ECPs) within 72 hours following an unprotected sexual act. Taking ECPs as late as 120 hours after unprotected sex can help prevent pregnancy.

**Remember**, that EC should **not** be promoted as a method of family planning but rather, for instances of unprotected sex act.

**Dosage:**

**Newly recommended regimen for ECPs:**

1. A single-dose of 1.5mg of **Levonogestrel** (LNG). (***Please note that this is the best choice because people tend to prefer and comply with single-dose regimens and because the LNG-only option has fewer side effects than the other 2 options of combined estrogen-LNG).***
2. Two (2) doses of **Levonogestrel**(LNG) i.e. (one dose of 0.75mg of LNG, followed by a second dose of 0.75mg of LNG 12 hours later; or
3. Two (2) doses of combined **Estrogen-Levonogestrel** (LNG) Emergency Contraceptive Pills – ECPs of one dose of 100ug. Of **Ethinyl estradiol** plus 0.5mg of LNG, followed by the same dose 12 hours later.

**Remember,** if option one above is not available, please use option 2 or 3

**Instructions if a woman forgets to take a pill or pills:**

A. *Missed an “active” pill or pills (days 1 to 21) including late start of the packet*

**Explain to the client to always do the following (3 always rules):**

* 1. Take a pill as soon as you remember.
  2. Take the next pill at the usual time. This may mean taking 2 pills on the same day or even at the same time.
  3. Continue taking “active” pills as usual, one each day.

**Also** follow these steps when a client **has missed more than one** pill or **started late:**

**Pills missed first 7 days**:

* Follow the 3 “always” rules above and avoid sex or use additional contraception for the next 7 days

**Pills missed 8 – 14 days**:

* Follow the 3 “always” rules above
* In addition, take an emergency contraceptive (if client have sex during missed pills)
* Abstain or use protection (condom)

**Pills missed 15 – 21 days**:

* Go straight to the next packet of pills
* Throw away inactive pills from a 28 days pill packet (i.e., 22 – 28 days pills)
* Do not wait 7 days to start a 21-pill packet
* In addition, take an emergency contraceptive (if client have sex during missed pills)
* Abstain or use protection (condom)

**Pills missed first 3 weeks (1 – 21 days)**:

* Follow the 3 “always” rules above and
* Avoid sex or use additional contraception for the next 7 days
* Go straight to the next packet
* Throw away inactive pills from a 28-day pill packet
* Do not wait for the usual 7 days before starting a 21-day pill packet

1. ***Missed any “inactive” pill (last 7 pills) in a 28-pill packet***

(The 7 inactive pills usually have a different colour from the 21 “active” pills on the same packet):

* Throw away **missed** (inactive) pills
* Keep taking one inactive pill each day
* Start a new pills packet as usual

**INJECTABLES**

**Depo Provera®**

A 3-monthly contraceptive injection (containing **Medroxyprogesterone acetate** sterile aqueous suspension)

(Also known as **Depo, Megestron and Depo-Medroxyprogesterone acetate – DMPA**)

**Dosage**

Give 150mg/ml intramuscularly to prevent pregnancy. It can be used by all women at any age.

**Side Effects**

* Changes in menstrual bleeding are likely including:
* Light spotting or bleeding. Most common at first use
* Heavy bleeding. Can occur at first use but rare
* Amenorrhoea (cessation of menstrual period) is normal especially after first year of use
* May cause weight gain (average 1 – 2 kilo or 2 – 4 lbs)
* May cause headaches, breast tenderness, moodiness, nausea, hair loss, or less sex drive
* Delayed return to fertility (until Depo levels in the body drop). About 4 months longer wait before pregnancy than for women who had been using combined oral contraceptives, IUDs, condoms, or a vaginal method

**Remember**, Depo does not protect against STIs/HIV/AIDS.

1. **INTRAUTERINE DEVICE (IUD)** - sometimes called Intrauterine Contraceptive Device (IUCD)

IUD is usually a small, flexible plastic frame often has copper wire or copper sleeves on it and is inserted into a woman’s uterus through her vagina.

**Insertion**:

Please follow strict aseptic technique as well as the manufacturers’ procedural advice “enclosed leaflet” for insertion.

**Note**: after postpartum insertion, string does not always come down through the cervix so allay the clients’ anxiety.

**Side Effects:**

* Menstrual changes in the first 3 months (but usually lessens after 3 months):
* Longer and leaner menstrual periods
* Bleeding or spotting between periods
* More cramps or pain during periods

**Note:**

* IUD does not protect against STIs including HIV infection
* Not a good method for women with STIs, multiple sex partners (or partners with multiple sex partners)
* The woman should be taught to feel for the UID strings from time to time by inserting her finger (cleaned before and after)

**CONDOMS**

* 1. **Male Condom**:

Is a sheath or covering, made of thin latex rubber *to fit over a man’s erect penis*. (Commonly called rubbers, sheaths, skins and prophylactics and known by many different brand names).

Some condoms are coated with a dry lubricant or with spermicide. Different sizes, shapes, colours, and textures (thickness) may be available.

In general, anyone can use condoms safely and effectively if not allergic to latex rubber. *Severe allergy to latex rubber* (i.e. severe redness, itching, and swelling after condom use) *is the only medical condition that prevents use of* condoms. If the client is at risk of STIs including HIV/AIDS, he/she *may want to keep using* condoms despite the allergy.

**Side Effects**

* Latex condoms may cause itching for a few people who are allergic to latex
* Some people may be allergic to the lubricant on some brand of condoms
* May decrease sensation, making sex less enjoyable for either partner
  1. **Female Condom**
* A sheath made of thin, transparent, soft plastic
* A woman-controlled method to protect against STIs including HIV/AIDS and against pregnancy
* Before sex a woman places the sheath in her vagina. **During**, sex the **man’s penis goes inside the female condom**

**Remember** to follow manufacturers’ instruction for use which **must** be thoroughly explained to the client, and where possible encourage practical demonstration by the client.

**SURGICAL CONTRACEPTIVE**

* 1. **Vasectom**y (also called male sterilization or male surgical contraception)
* Provides permanent contraception for men who decide not to have more children
* A safe, simple and quick surgical procedure. Done by a Doctor in a clinic, hospital, with proper infection-prevention procedures
* It does not affect the testes and it **does not affect sexual ability** (erection, ejaculation of semen)
* Condoms must be used for at least 3 months or for the first 20 ejaculations after surgery

**Side Effects**

* Usually uncomfortable for 2 – 3 days
* Pain in the scrotum, swelling and bruising
* Brief feeling of faintness after the procedure

Remember to advice the man after surgery to see a doctor or nurse at once if there is: temperature >38oc in the first week

* Bleeding or pus from the wound
* Pain, heat, swelling or redness at an incision that becomes worse or does not stop (signs of infection)
* Remember: Sterilization does not prevent STIs/HIV infection and is not reversible (very limited chance)
  1. **Female Sterilization** [also known as Voluntary Surgical Contraception (VSC); Tubal Ligation (TL), and Minilap]
* Provides permanent contraception for women who decide not to have children
* Safe and simple surgical procedure
* Can usually be done with just local anaesthesia and light sedation by a doctor
* Proper infection-prevention procedures required
* The 2 most common approaches are mini-laparotomy and Laparoscopy ( all done by a doctor)

\* **The woman continues to have a menstrual period**.

**Side Effects**

* Initially painful but pain subsides after a day or two
* Infection or bleeding at the incision
* Internal infection or bleeding
* Injury to internal organs
* Not reversible (very limited chance)

**Remember**: sterilization does not prevent STIs/HIV infection

1. **VAGINAL METHODS**

Contraceptives that a woman places in her vagina shortly before sex for example:

* 1. **Spermicides:**
* Foaming tablets or suppositories
* Melting suppositories
* Foam
* Jelly
* Cream

**Side Effects**

* No known adverse effects
* Allergic reaction may occur in a few women

1. **PROGESTIN CONTAINING IMPLANTS**

* Progestin impregnated capsules inserted under the skin that slowly releases the progestin hormone thereby preventing ovulation and pregnancy.
* Once inserted, it can be felt, but not easily seen.
* Can last from 3 to 5 years depending on the type of implant.
* If inserted during the first five days of a normal period, the contraceptive effect starts immediately. It can be inserted at other times in your menstrual cycle if pregnancy is ruled out. In this case, it takes seven days to become effective
* Examples are, Jadelle and Implanon.

**Note**: Insertion and removal procedure to be done by a doctor or highly trained and skilful nurses and midwives

**Side Effects**

**Changes in menstrual bleeding are normal such as:**

* Light spotting or bleeding between monthly periods
* Prolong bleeding (uncommon and often decreases after first few months, or
* Amenorrhoea (preferred by some women) – this is not harmful
* Bleeding problems usually settle within the first 3 or 4 months of use.
* Other possible side effects are acne, breast tenderness, a lower sex drive, increased appetite, and headaches

**Some women may have:**

* Headaches
* Dizziness
* Nausea
* Nervousness
* Change in appetite
* Breast tenderness and/or discharge
* Weight gain (a few women lose weight)
* Acne or skin rashes

Most women **do not** have many of these side effects and most side effects go away without treatment within the first year.

* Women who have had breast cancer within the last five years and women taking certain medications should not use implants for contraception
* Women who have had blood clots, heart disease, stroke, liver disease or certain types of migraine will need to consult their doctor but can usually use contraceptive implants safely.

**Implants do not protect against HIV infection (the virus that causes AIDS) or other sexually transmitted diseases.**

# CHAPTER EIGHT

THE NEW-BORN

The term new-born (neonate) refers to a baby in the first 28 days of life.

Neonatal mortality accounts for over a third of under-five mortality.

The three main causes are;

A) Prematurity

B) Birth Asphyxia

C) Neonatal Sepsis

## 8.1 ESSENTIAL NEW-BORN CARE AT DELIVERY

Before the birth of a baby an assessment should be made for any possible need for resuscitation. If a need is identified, skilled personnel and resuscitation kits should be available to offer resuscitation. Even in cases where need is not identified this should still be easily accessible when needed. In most infants resuscitation cannot be anticipated before delivery.

1. **Supportive Care**

Most new-borns require only simple supportive care at and after delivery.

* Dry the infant whilst observing it closely and carry out resuscitation as detailed below if need arises.
* Term and low-birth-weight neonates weighing > (1.2 Kg) who do not have complications and are clinically stable should be put in skin-to-skin contact with the mother soon after birth after they have been dried thoroughly to prevent hypothermia. Breastfeeding should be initiated within the first hour if not preterm or low birth weight (<2.0 kg) or vomiting or features of oesophageal atresia or respiratory distress
* Give IM **vitamin K (Phytomethadione)** to all new-borns 0.4 mg/kg IM (maximum dose, 1 mg).
* Keep umbilical cord clean and dry and clean with **Chlorhexidine** (7.1 %).
* Apply antiseptic eye drops or ointment (e.g. **Tetracycline** ointment) to both eyes once.
* Advise mother to desist from common unhygienic practices such as use of cow dung, unsterilized Shea butter, herbs etc.
* **Thorough examination of the new-born is a must. If there is an abnormality, baby should be immediately referred.**
* ­­**Premature or low birth weight babies should be referred immediately to a neonatal unit.**

**B. Neonatal Resuscitation**

**RISK FACTORS**

**Risk factors are those born to:**

A. Mothers with chronic illness

B. Mothers who had a previous foetal or neonatal death

C. Mothers with pre-eclampsia

D. Multiple pregnancies

E. Preterm delivery

F. Abnormal presentation of the foetus

G. Infants with a prolapsed cord

H. Prolonged labour

I. Rupture of membranes or meconium-stained liquor

J. Maternal sedation or analgesia used during labour

**Neonatal resuscitation:**

**Steps and Processes**

There is no need to slap the infant; rubbing the back two or three times in addition to thorough drying is enough.

**A. Airway**

* Keep the infant’s head in a slightly extended position.
* Do not suction routinely.
* ONLY Suction the airway if there is meconium-stained fluid and the infant is NOT crying and moving the limbs. If the amniotic fluid is clear, suction only if the nose or mouth is full of secretions.
* Suck the mouth, nose and oropharynx by direct vision; DO NOT suck right down the throat, as this can cause apnoea or bradycardia.

1. **Breathing**

* Choose a mask size that fits over the nose and mouth: size 1 for normal-weight infant, size 0 for small (< 2.5 kg) infants.
* Ventilate with bag and mask at 40–60 breaths/min.
* Make sure the chest moves up with each press on the bag. In a very small infant, make sure the chest does not move too much as this can cause pneumothorax.

1. **Circulation**

* Give chest compressions if the heart rate is < 60 breaths/min after 30–60s of ventilation with adequate chest movements: 90 compressions coordinated with 30 breaths/min(three compressions: one breath every 2 seconds).
* Place thumbs just below the line connecting the nipples on the sternum .
* Compress one third the anterior–posterior diameter of the chest.
* Consider giving high oxygen concentration.
* Suction, if necessary.
* Reassess every 1–2 min.

## 8.2 THE SICK NEW-BORN

At birth all well new-borns are active with a strong cry.

Any baby born ill will show signs of poor activity or may be described as “being flat” or floppy in severe cases.

**Causes**

* Birth asphyxia
* Prematurity
* Neonatal Infections
* Congenital malformations e.g., of heart and central nervous system
* Birth injury
* Maternal sedation/analgesia during labour
* Metabolic e.g., hypoglycaemia, hypocalcaemia

**Symptoms**

* Weak cry or inability to cry
* Difficulty in breathing or recurrent cessation of breathing (apnoea)
* Movement only when stimulated or no movement at all
* Lethargic/ Drowsiness/unconsciousness
* Not feeding well/ inability to feed
* Vomiting
* Abdominal distension
* Convulsions
* Failure to pass meconium within 48 hours

**Signs**

* Raised body temperature (>37.5 °C axillary)
* Low body temperature (<35.5 °C axillary)
* Pallor
* Central cyanosis
* Jaundice
* Bradycardia (<100 beats/minute)
* Tachycardia (>160 beats/minute)
* Heart murmurs
* Respiratory distress (>60 cycles/minute, chest in-drawing, grunting, <20 cycles/ minute)
* Abdominal distension
* Bulging anterior fontanelle
* Skin pustules
* Umbilical redness extending to the peri-umbilical skin
* Umbilicus draining pus
* Painful joints, joint swelling, reduced movement, and irritability if these parts are handled

**Investigations**

* FBC
* Blood cultures
* Random blood glucose
* Chest X-ray
* Urine culture
* Cerebrospinal fluid biochemistry and culture and sensitivity
* Take umbilical swab if umbilicus is draining pus
* Liver function tests

**Emergency management of danger signs**

* Open and maintain airway. Give oxygen (2 L/minute) by nasal prongs if the young infant is cyanosed or in severe respiratory distress or hypoxaemia (oxygen saturation < 90%).
* If drowsy, unconscious, or convulsing, check blood glucose. If glucose < 2.2 mmol/l (< 40 mg/100 ml), give 10% glucose at 4 ml/kg IV. Then give a sustained IV infusion of 60 ml/kg/day of 10% glucose for the next few days while oral feeds are built up. If not hypoglycaemic maintain on 10 % dextrose at 40-60 mls/kg /day for the first day of life.
* Monitor blood sugar frequently until stable once a baby is treated for hypoglycaemia.
* If you cannot check blood glucose quickly, assume hypoglycaemia and give glucose IV.
* If convulsing and convulsions not due to hypoglycaemia give Phenobarbitone (loading dose 20mg/Kg IV). If convulsions persist give further 10mg/kg up to a maximum of 40 mg/kg. Watch for apnoea. Always have a bag and mask available and continue maintenance Phenobarbitone at a maintenance dose of 5mg/kg per day in two divided doses.
* Check serum calcium as soon as possible.

**Give**

**Ampicillin** and **Cloxacillin** (Ampiclox), IM/IV, 50 mg/kg 12 hourly for 7 days

**Plus**

**Gentamicin**, IM/IV, 2.5 mg/kg 12 hourly for 7 days

**If child is premature and has apnoea of prematurity use of caffeine is preferable to Aminophylline if the care giver has experience in its use.**

**REFER**

Refer the patient urgently to the hospital for further investigations or continue treatment if no improvement after 48 hours. Refer also if there is no oxygen in the facility and baby needs oxygen.

## 8.3 NEONATAL JAUNDICE

Neonatal jaundice is yellowish discolouration of eyes and may involve skin, palms and soles. Jaundice is visible when serum bilirubin level exceeds 100 micromol/L. Neonatal jaundice is important because of the consequences of excess hyperbilirubinemia on the brain of the new-born infant. This condition is called **kernicterus** and may cause death. Infants who survive may be handicapped with cerebral palsy, and associated deafness, mental retardation, and motor incoordination.

About 80% of babies will have jaundice in the first week of life and most of these occur within 3-9 days of life and is physiological.

**Causes:**

* Physiological
* Hemolysis: Rhesus, ABO incompatibility, G 6PD deficiency
* Blood extravasation: Cephalohematoma, Subgaleal haematoma
* Sepsis/Infections
* Liver disease
* Metabolic disorders: galactosaemia, hypothyroidism
* Enhanced extrahepatic circulation: GIT obstruction, inadequate
* Congenital defects e.g., in bilirubin metabolism, anti-trypsin deficiency
* Breast milk related jaundice

**Signs/Symptoms**

* Yellow eyes
* Yellow skin/hands and feet
* Pale stools likely in biliary atresia

**Investigations**

* Total and Direct Serum bilirubin concentration
* G6PD (Glucose-6-Phosphate Dehydrogenase deficiency)
* Hepatitis profile
* Coomb’s test
* Test for reducing sugars
* Liver function tests
* Urinalysis
* Renal function tests

**Treatment**

In mild cases of neonatal jaundice appearing after the 2nd day i.e., physiologic jaundice, phototherapy can be used. For brief periods in the mid-morning, the baby could be exposed and placed in the sun outside in its cot with eyes covered in the early morning for brief periods (20 mins). Phototherapy preferred than sunlight.

**REFER**

**Refer all babies who develop jaundice within 48 hours of life to a paediatrician, and babies who have severe jaundice (involving hands and feet) for further investigations.**

**If jaundice persists for two weeks.**

**BIRTH INJURIES**

Birth injuries include extensive caput succedaneum, cephalohematoma, subgaleal haemorrhage, nerve palsies and fractures.

**CAUSES**

* Difficult delivery including instrumental delivery

**Signs**

**Extensive Caput Succedaneum**

* Diffuse swelling of the presenting part of the scalp that may extend beyond suture lines

**Cephalohematoma**

* Diffuse swelling of the scalp that is restricted to one half of the scalp and does not extend beyond the midline

**Subgaleal haemorrhage**

* Large swelling of the scalp which may result in a distorted shape of the head and face
* Severe pallor
* Jaundice

**Nerve injuries**

**Excessive traction resulting in injury to the brachial plexus causing the following:**

* Erbs Palsy - Whole upper limb does not move. There's movement only in the fingers
* Klumpke's Palsy - Fingers of the arm affected do not move but there is spontaneous movement in arm and fore arm

**Treatment**

**Treatment objectives**

* To arrest further bleeding
* To treat complications of anaemia and jaundice
* To re-establish near normal movement in affected area if possible

**EXTENSIVE CAPUT SUCCEDANEUM**

**Non-pharmacological treatment**

* Reassure parents. It resolves spontaneously over 3-4 days

**CEPHALHAEMATOMA**

**Non-pharmacological treatment**

* Leave swelling alone. Do not perform incision and drainage. It resolves with time
* Reassure parents

**Pharmacological treatment**

|  |
| --- |
| **Phytomenadione (vitamin K**), IM, 1mg stat if not already given. |

**SUBGALEAL HAEMORRHAGE**

**Non-pharmacological treatment**

* Give phototherapy if jaundice is severe

**Pharmacological treatment**

* **Phytomenadione (vitamin K**), IM, 1 mg stat if not already given.
* Correct anaemia if Hb <12 g/L
* Blood transfusion 15-20ml/kg

**NERVE INJURIES**

**Non-pharmacological treatment**

* Patient needs early and regular physiotherapy after conducting x-ray to rule out possible fracture.

**REFER**

Refer cases to hospital if severe or facilities for physiotherapy, and x-ray if unavailable.

**ABDOMINAL WALL DEFECT**

## 8.4 EXOMPHALOS MAJOR AND MINOR

DEINATION: This is and abdominal wall defect. It happens when a baby’s abdominal wall does not develop fully while in the womb. Early in all pregnancy, (and sometimes other organs like the liver) stay inside the umbilical cord and do not move inside the abdomen as they should. the baby’s the baby’s intestine develops inside the umblical cord. It usually move inside the abdomen a few weeks Later. For babies with exomphalos, the intestines

**CAUSES**

Often link to other medical condition like those affecting the baby’s chromosomes (genetic information) or the heart.

**INVESTIGATION**

Abdominal scan at 18-20 gestation

Chrionic villus sampling (CVS) or amniocentesis (to be conducted by specialist)

**TREATMENT**

**Refer immediately to paediatric surgeon**

## 8.5 BLADDER EXSTROPHY

**DEFINITION**

This is complex rare disorder that occurs early on while the fetus is developing in the womb. As the bladder is developing the abdominal wall does not fully form, leaving the pubic bones separated and the bladder exposed to the outside skin through an opening in the lower abdominal wall. Urine produced by the kidneys drains into this open area.

**Signs and Symptoms**

Abnormal development of the bladder

**INVESTIGATION AND MANAGEMENT**

**Refer to paediatric surgeon for management**

## 8.6 BILIOUS AND NONBILIOUS VOMITING

**Causes**

* Malrotation
* Intestinal atresias
* Hypertrophic pyrolic stenosis
* Hirschsprung’s disease

**Investigations**

* Abdominal x ray
* Bue and Cr
* FBC

**Treatment**

* Pass N/G and place in continuous drainage
* Bolus Normal saline 20 mls/kg
* Give Ampicillin, Gentamicin and Metronidazole
* Refer to a centre where there is a Paediatric Surgeon

## 8.7 OMPHALITIS

Omphalitis is infection of the umbilical stump in the new-born. The combination of the umbilical stump with decrease in immunity presents the opportunity for infections. It is rare outside the neonatal period.

It is more common in three to five days after birth in preterm and 5-9 days in term babies.

**Risk Factors**

* Inappropriate cord handling
* Premature rupture of membranes
* Low birth weight
* Nonsterile delivery

**Signs/ Symptoms**

* Purulent and foul-smelling discharge form the umbilical stump
* Periumbilical erythema/oedema/tenderness
* Fever
* Tachycardia

**Treatment**

* Clean the stump with antiseptic solution
* IV Cloxacillin 50mg/kg 6 hourly for 7 days

**Complications**

* Abscess formation
* Necrotising fasciitis
* Portal vein thrombosis
* Umbilical hernia
* 8.9 Persistent Omphalomesenteric duct
* This is the failure of the obliteration of the vitelline duct.

**Signs/Symptoms**

* Discharge of meconium through the umbilicus.

**Treatment**

* Refer to a centre where there is a paediatric surgeon.

**CONGENITAL MALFORMATION/ANOMALIES (UROLOGICAL)**

## 8.8. PATENT URACHUS

This is the failure of obliteration of the urachus. Maybe associated with some urinary anomalies e.g., posterior urethral valves.

**Signs/Symptoms**

* Passage of clear fluid through the umbilicus in a new-born

**Treatment**

Refer to a centre where there is a paediatric surgeon.

## 8.9 HYPOSPADIASIS:

This is a birth defect in boys in which the opening of the urethra is not located at the tip of the penis. Abnormalities occurs during week 8-14 of pregnancy. The abnormal opening can form anywhere from just below the end of the penis to the scrotum.

CAUSES

* Genetic
* Terogens
* Environmental

RISK FACTORS

* Age or pregnancy occurring at 35 years or older
* Obese
* Fertility treatment
* Hormonal treatment

DIAGNISIS

* Physical examination of the baby immediately after birth

MANAGEMENT

Refer to paediatric surgeon for management

## 8.9 EPISPADIASIS

This is a rare congenital (present at birth) anormalities involving the development of the urethra (the tubes that empties urine from the bladder). The urethra which is the hallow tube that drains urine from the bladder to the outside of the body, is not form completely. In mail the urethra is open on top of the penis and not

the tip. In girls, the urethral opening may be positioned further up between the divided clitoris and labia mainora.

CAUSES

* Unknown

INVESTIGATION

* Physical examination at birth

MANAGEMENT

Refer to a urologist and an orthopaedic surgeon for correction

**CONGENITAL MALFORMATION/ANOMALIES (OPTHALMOLOGICAL)**

## 8.10 RETINOBLASTOMA

This is congenital malignant tumour originating from the retina of the eyes. This could be hereditary which is about 30%. Early detection and treatment result to about 95% excellent outcome.

CAUSES

* Genetic 40%
* Sporadic 60%

SYMPTOMS

* White shiny spot (leukocoria) in the pupil
* Redness of the eye
* Protruding eyeball
* Squint (strabismus)
* Visual loss

SIGNS

* Absent red reflex
* Tumour in the retina on fundoscopy
* Vireous haemorrhage and retinal detachment on fundoscopy
* Increased intraocular pressure (glaucoma)
* Orbital cellulitis

INVESTIGATIONS (TO BE REQUESTED BY SPECIALIST)

* Ultrasound scan of orbit
* Head CT or MRI
* Lumbar puncture for cerebrospinal fluid cytology
* Bone marrow aspirate

TREATMENT (All patients should be referred to a tertiary centre that can effectively treat retinoblastoma)

## 8.11 WILMS TUMOUR

Wilms tumour (nephroblastoma)

This is a malignant embryonal tumour of the renal tissue. Its common in less than five years of age.

It has 80% of excellent prognosis.

**CAUSES**

* Sporadic
* Gene mutation

**SIGNS**

* Abdominal mass (palpate with care to prevent rupture or dissemination)
* Fever
* Haematuria (macroscopic or microscopic)
* Hypertension
* Associated congenital anomalies

**INVESTIGATIONS**

* Full blood count
* Blood Urea, electrolytes, and creatinine
* Abdominal ultrasound scan
* Chest X-ray
* Abdominal CT scan (to be requested by a specialist)

**TREATMENT (for specialist supervision)**

* Chemotherapy
* Radiotherapy
* Surgery

## 8.12 ESOPHAGEAL ATRESSIA

This is a congenital anomalies that result from the failure of the oesophagus connecting to the stomach to develop properly.

**SIGNS/ SYMPTOMS**

In utro-features

* History of polydramnious
* Small/Absent stomach
* Proximal cystic pouch in the neck region

Neonatal features

* Excessive salvation
* When breastfeed, baby may chock, cynosed, reguitate or develop respiratory distress.
* NG tube arrest when passed

**TREATMENT**

* Avoid breastfeeding
* Continuous suctioning/ suction every 10 minutes and PRN
* To do kangaroo mother care when transporting baby to tertiary centre
* Intra-nasal oxygen
* Give intravenous fluids (10% dextrose)
* Give antibiotic such as IV cloxacillin and gentamycin

REFER TO CENTRE WHERE THERE IS PAEDRIATRIC SURGEON

## 8.13 GASTROCHESIS

This is a congenital anomaly which is characterized by anterior abdominal wall defect and evisceration of the intestine and other visceral organs, and not covered by any membrane.

**Signs and Symptoms**

* Expose bowel
* Futures of Hypothermia
* Sign of sepsis

**Treatment**

* Dry the baby
* Cover the expose bowel with non-adhesive transparent plastic bag such as urine bag up to axilla
* Cut the umbilical cord 8cm from the stump
* Apply Kangaroo Mother Care (KMC) when transporting the baby
* Breast feed the baby for 5 minutes every 8 hours
* Give 20ml/kg of sodium chloride 0.9% intravenous
* Refer the baby to specialist (Paediatric Surgeon)

**OMPHALOCELE**

This is a congenital anomaly which is characterized by anterior abdominal wall defect with a transparent covering on the bowel comprise of the peritoneum and an amniotic sac.

**Signs and Symptoms**

* Anterior abdominal wall defect
* May have features of hypoglycaemia
* Bowel and liver may be seen through the transparent membrane

**Treatment**

* Check the blood sugar and if low correct with 10% dextrose
* Dry the patient
* Apply 70% of ethanol to dry the membrane
* Refer to a paediatric surgeon

**HYDROCEPHALUS**

**DEFINITION**

An abnormal build-up of fluids in the ventricles (cavities) deep within the brain. This cause active dilatation and widening of the ventricles, putting pressure on the brain’s tissues.

**TYPES:**

1. Congenital: which is present at birth.

2. Acquired: which may develop at the time of birth or later

3. Normal Pressure Hydrocephalus:

**CAUSES:**

**Congenital**: problems with how CSF flows or is made or absorbed, by infection or trauma during fetal development, or by teratogens. It may be linked with other birth defects that affects the spine, especially open ***Neural Tube Defects.***

**Acquired:** This can be caused by infections such as meningitis, bleeding injury or tumour.

**CLINICAL FETURES**

1. Macro crania (head circumference more than 97 percentile)
2. Headache
3. Vomiting
4. Sunset eyes
5. Prominent scalp veins
6. Full and bulging fontanels
7. Neurologic deficit

**INVESTIGATION**

* 1. Trans-fontanelle Ultrasound Scan
  2. Brain CT Scan
  3. MRI

**MANAGEMENT**

**PO: ACETAZOLAMIDE 30mg/kg start and refer higher level.**

NEURAL TUBE DEFECTS (NTDS)

Definition: NTDs occur when the neural tube does not close properly. The neural tube forms the early brain and spine. These types of birth defects develop very early during pregnancy, often before a woman knows she is pregnant. NTDs are one of the most common [birth defects](https://en.wikipedia.org/wiki/Birth_defects), affecting over 300,000 births each year worldwide

All women of reproductive age are strongly advice to get 400 micrograms (mcg) of [folic acid](https://www.cdc.gov/ncbddd/folicacid/index.html) every day at least 1 month before pregnancy and continue until 3 months after pregnancy, in addition, they should be encourage to consuming food with folate from a varied diet, to help prevent neural tube defects (NTDs)

**TYPES**: The common types of neural tube defect include the following:

1. Spinal Bifida
2. Anencephaly
3. SPINA BIFIDA: Result from failure of closure of the spine thus giving rise to:
   1. Meningocele – congenital swelling along the spine without neural involvement
      1. Usually, no neurologic deficit
      2. Usually, no sphincter disorder
      3. Usually, no orthopaedic anomalies
   2. Myelomeningocele: Results from failure or closure of the spine with neural involvement
      1. Usually has neurologic deficit
      2. Usually has sphincter ( urinary, faecal) disorders
      3. Usually have orthopaedic disorders
      4. Mostly associated with hydrocephalus
      5. Encephalocele: Result from failure of closure of the skull with protrusion of the brain
      6. Swelling along the midline of the head
      7. +/- Neurologic deficit
4. ANENCEPHALY: Absence of major portions of the brain and skull

**MANAGEMENT:**

Prevent rupture of the swelling by covering it especially when its is not fully covered by skin with sterile gauze and refer to Neurosurgeon; do not wet the gauze

When ruptured, cover with sterile gauze, start IV Ceftriaxone and refer Urgently to the Neurosurgeon.

When diagnosed intrauterine should be referred to Specialist Hospital with Neurosurgery activity for delivery.

ADVICE MOTHER TO START FOLLIC ACID RIGHT AWAY

NEURAL TUBE DEFECTS - REFER ALL SUCH CASES TO THE NEUROSURGEON

Club foot (Musculoskeletal disorder)

## 8.14 NEONATAL CONJUNCTIVITIS

Neonatal conjunctivitis or ophthalmia neonatorum is an acute purulent conjunctivitis of the new-born in the first month of life.

**Causes**

* *Neisseria gonorrhoea*
* *Chlamydia trachomatis*
* Other bacteria - staphylococci, streptococci
* Viral - herpes simplex virus
* Chemical e.g. silver nitrate

**Signs and Symptoms**

* Eye discharge, which may be purulent
* Redness and swelling of the conjunctivae
* Oedema and redness of the eyelids

**Investigations**

* Conjunctival swabs for Gram staining and cultures

**Treatment**

**Non-pharmacological treatment**

* Clean the eyelids frequently (every 2 hours) with cotton wool dipped in sterile saline solution or boiled (cooled) water

**Pharmacological treatment**

|  |
| --- |
| **Ceftriaxone**, IM or IV, 50 mg/kg (maximum 125mg) stat  **Plus**  **Erythromycin,** oral (syrup), 12.5 mg/kg 6 hourly for 14 days  **Plus**  **Chloramphenicol** eye drops, 0.5%  Apply to each **eye every 2 hours for 48 hours** (after cleaning away discharge-saline irrigation)  **Followed by**  **Chloramphenicol** eye drops, 0.5% Apply to each eye 6 hourly  **OR**  **Chloramphenicol** eye ointment, 1% Apply to each eye 6 hourly |

**REFER**

Refer parents for further investigation and management. Refer all neonates with corneal involvement and those who appear distressed or unwell or who present or develop systemic signs (e.g., fever) to a paediatrician and/or ophthalmologist.

Neonatal mortality accounts for over a third of under-five mortality.

The three main causes;

A) Neonatal sepsis

B) Birth Asphyxia

C) Prematurity

## 8.15 ESSENTIAL NEWBORN CARE AT DELIVERY

Before the birth of a baby an assessment should be made for any possible need for resuscitation. If a need is identified, skilled personnel and resuscitation kits should be available to offer resuscitation. Even in cases where need is not identified this should still be easily accessible when needed. In most infants’ resuscitation cannot be anticipated before delivery.

1. **Supportive Care**

Most new-borns require only simple supportive care at and after delivery.

* Dry the infant whilst observing it closely and carry out resuscitation as detailed below if need arises.
* Term and low-birth-weight neonates weighing > (1.2 Kg) who do not have complications and are clinically stable should be put in skin-to-skin contact with the mother soon after birth after they have been dried thoroughly to prevent hypothermia. Breastfeeding should be initiated within the first hour if not preterm or low birth weight (<2.0 kg).
* Give IM **vitamin K (phytomethadione)** to all new-borns 0.4 mg/kg IM (maximum dose, 1 mg).
* Keep umbilical cord clean and dry and clean with **Chlorhexidine** (7.1 %).
* Apply antiseptic eye drops or ointment (e.g. **Tetracycline** ointment) to both eyes once.
* Advise mother to desist from common unhygienic practices such as use of cow dung, unsterilized Shea butter, herbs etc.
* **Thorough examination of the new born is a must. If there is an abnormality, baby should be immediately referred.**
* ­­**Premature or low birth weight babies should be referred immediately to a neonatal unit.**

**B. Neonatal Resuscitation**

**RISK FACTORS**

**Risk factors are those born to:**

A. Mothers with chronic illness

B. Mothers who had a previous foetal or neonatal death

C. Mothers with pre-eclampsia

D. Multiple pregnancies

E. Preterm delivery

F. Abnormal presentation of the foetus

G. Infants with a prolapsed cord

H. Prolonged labour

I. Rupture of membranes or meconium-stained liquor.

**Neonatal resuscitation:**

**Steps and Processes**

There is no need to slap the infant; rubbing the back two or three times in addition to thorough drying is enough.

**A. Airway**

* Keep the infant’s head in a slightly extended position.
* Do not suction routinely.

ONLY Suction the airway if there is meconium-stained fluid **and** the infant is **NOT crying** and moving the limbs. If the amniotic fluid is clear, suction only if the nose or mouth is full of secretions.

* Suck the mouth, nose and oropharynx by direct vision; **DO NOT** suck right down the throat, as this can cause apnoea or bradycardia.

1. **Breathing**

* Choose a mask size that fits over the nose and mouth: size 1 for normal-weight infant, size 0 for small (< 2.5 kg) infants.
* Ventilate with bag and mask at 40–60 breaths/min.
* Make sure the chest moves up with each press on the bag. In a very small infant, make sure the chest does not move too **much as this can cause pneumothorax.**

1. **Circulation**

* Give chest compressions if the heart rate is < 60 breaths/min after 30–60s of ventilation with adequate chest movements: 90 compressions coordinated with 30 breaths/min(three compressions: one breath every 2 seconds).
* Place thumbs just below the line connecting the nipples on the sternum (see below).
* Compress one third the anterior–posterior diameter of the chest.
* Consider higher oxygen concentration.
* Suction, if necessary.
* Reassess every 1–2 min.

## 8.16 THE SICK NEWBORN

At birth all well new-borns are active with a strong cry. Any baby born ill will show signs of poor activity or may be described as “being flat” or floppy in severe cases.

**Causes**

* Birth asphyxia
* Prematurity
* Neonatal Infections
* Congenital malformations e.g. of heart and central nervous system
* Birth injury
* Maternal sedation/analgesia during labour
* Metabolic e.g. hypoglycaemia, hypocalcaemia

**Symptoms**

* Weak cry or inability to cry
* Difficulty in breathing or recurrent cessation of breathing (apnoea)
* Movement only when stimulated or no movement at all
* Drowsiness/unconsciousness
* Not feeding well/ inability to feed
* Vomiting
* Abdominal distension
* Convulsions

**Signs**

* Raised body temperature (>37.5 °C axillary)
* Low body temperature (<35.5 °C axillary)
* Pallor
* Central cyanosis
* Jaundice
* Bradycardia (<100 beats/minute)
* Tachycardia (>160 beats/minute)
* Heart murmurs
* Respiratory distress (>60 beats/minute, chest in-drawing, grunting)
* Abdominal distension
* Bulging anterior fontanelle
* Skin pustules
* Umbilical redness extending to the peri-umbilical skin
* Umbilicus draining pus
* Painful joints, joint swelling, reduced movement, and irritability if these parts are handled

**Investigations**

* FBC
* Blood cultures
* Random blood glucose
* Chest X-ray
* Urine culture
* Cerebrospinal fluid biochemistry and culture and sensitivity
* Take umbilical swab if umbilicus is draining pus.

**Emergency management of danger signs**

* Open and maintain airway. Give oxygen (2 L/minute) by nasal prongs if the young infant is cyanosed or in severe respiratory distress or hypoxaemic (oxygen saturation < 90%).
* If drowsy, unconscious or convulsing, check blood glucose. If glucose < 2.2 mmol/l (< 40 mg/100 ml), give 10% glucose at 2 ml/kg IV. Then give a sustained IV infusion of 60 ml/kg/day of 10% glucose for the next few days while oral feeds are built up. If not hypoglycaemic maintain on 10 % dextrose at 40-60 mls/kg /day for the first day of life.
* If you cannot check blood glucose quickly, assume hypoglycaemia and give glucose IV.
* If convulsing and convulsions not due to hypoglycaemia give **Phenobarbitone** (loading dose 20mg/Kg IV). If convulsions persist give further 10mg/kg up to a maximum of 40 mg/kg. Watch for apnoea. Always have a bag and mask available and continue maintenance **Phenobarbitone** at a maintenance dose of 5mg/kg per day.
* Check serum calcium as soon as possible.

**Give**

**Ampicillin** and **Cloxacillin** (Ampiclox), IM/IV, 50 mg/kg 12 hourly for 7 days

**Plus**

**Gentamicin**, IM/IV, 2.5 mg/kg 12 hourly for 7 days

**If child is premature and has apnoea of prematurity use of caffeine is preferable to Aminophylline if the care giver has experience in its use.**

**REFER**

Refer the patient urgently to the hospital for further investigations or continue treatment if no improvement after 48 hours. Refer also if there is no oxygen in the facility and baby needs oxygen.

## 8.17 NEONATAL JAUNDICE

Neonatal jaundice is important because of the consequences of excess hyperbilirubinemia on the brain of the new-born infant. This condition is called kernicterus and may cause death. Infants who survive may be handicapped with cerebral palsy, and associated deafness, mental retardation, and motor incoordination.

**Treatment**

In mild cases of neonatal jaundice appearing after the 2nd day i.e. physiologic jaundice, phototherapy can be used. For brief periods in the mid-morning, the baby could be exposed and placed in the sun outside in its cot with eyes covered.

**REFER**

Refer all babies who develop jaundice within 48 hours of life to a paediatrician, and babies who have severe jaundice (involving hands and feet) for further investigations.

## 8.18 BIRTH INJURIES

Birth injuries include extensive caput succedaneum, cephalohematoma, subgaleal haemorrhage, nerve palsies and fractures.

**CAUSES**

* Difficult delivery including instrumental delivery

**Signs**

**Extensive Caput Succedaneum**

* Diffuse swelling of the presenting part of the scalp that may extend beyond suture lines

**Cephalohematoma**

* Diffuse swelling of the scalp that is restricted to one half of the scalp and does not extend beyond the midline

**Subgaleal haemorrhage**

* Large swelling of the scalp which may result in a distorted shape of the head and face
* Severe pallor
* Jaundice

**Nerve injuries**

**Excessive traction resulting in injury to the brachial plexus causing the following:**

* Erbs Palsy - Whole upper limb does not move. There's movement only in the fingers
* Klumpke's Palsy - Fingers of the arm affected do not move but there is spontaneous movement in arm and fore arm

**Treatment**

**Treatment objectives**

* To arrest further bleeding
* To treat complications of anaemia and jaundice
* To re-establish near normal movement in affected area if possible

**EXTENSIVE CAPUT SUCCEDANEUM**

**Non-pharmacological treatment**

* Reassure parents. It resolves spontaneously over 3-4 days

**CEPHALHAEMATOMA**

**Non-pharmacological treatment**

* Leave swelling alone. Do not perform incision and drainage. It resolves with time
* Reassure parents

**Pharmacological treatment**

* **Phytomenadione (vitamin K**), IM, 1mg stat if not already given

**SUBGALEAL HAEMORRHAGE**

**Non-pharmacological treatment**

* Give phototherapy if jaundice is severe

**Pharmacological treatment**

* Transfuse with blood if Hb <12 g/L
* **Phytomenadione (vitamin K**), IM, 1 mg stat if not already given.

**NERVE INJURIES**

**Non-pharmacological treatment**

* Patient needs early and regular physiotherapy after conducting x-ray to rule out possible fracture.

**REFER**

Refer cases to hospital if severe or facilities for physiotherapy, and x-ray if unavailable.

## 8.19 NEONATAL CONJUNCTIVITIS

Neonatal conjunctivitis or ophthalmia neonatorum is an acute purulent conjunctivitis of the new-born in the first month of life.

**Causes**

* Neisseria gonorrhoea
* Chlamydia trachomatis
* Other bacteria - staphylococci, streptococci
* Viral - herpes simplex virus
* Chemical e.g. silver nitrate

**Signs and Symptoms**

* Eye discharge, which may be purulent
* Redness and swelling of the conjunctivae
* Oedema and redness of the eyelids

**Investigations**

* Conjunctival swabs for Gram staining and cultures

**Treatment**

**Non-pharmacological treatment**

* Clean the eyelids frequently (every 2 hours) with cotton wool dipped in sterile saline solution or boiled (cooled) water

**Pharmacological treatment**

|  |
| --- |
| **Ceftriaxone**, IM or IV, 50 mg/kg (maximum 125mg) stat  **Plus**  **Erythromycin,** oral (syrup), 12.5 mg/kg 6 hourly for 14 days  **Plus**  **Chloramphenicol** eye drops, 0.5%  Apply to each **eye every 2 hours for 48 hours** (after cleaning away discharge-saline irrigation)  **Followed by**  **Chloramphenicol** eye drops, 0.5% Apply to each eye 6 hourly  **OR**  **Chloramphenicol** eye ointment, 1% Apply to each eye 6 hourly |

**REFER**

Refer parents for further investigation and management. Refer all neonates with corneal involvement and those who appear distressed or unwell or who present or develop systemic signs (e.g. fever) to a paediatrician and/or ophthalmologist.

# CHAPTER NINE

RENAL DISORDERS

## 9.1 ACUTE KIDNEY INJURY

The term acute renal failure has been changed to acute kidney injury (AKI). The proposed classification or staging system for AKI is now based on the KDOQI (Kidney Disease Outcomes Quality Initiative).

Acute Kidney Injury (AKI):

* A rapid (hours to days) deterioration of kidney function resulting in azotaemia (retention of nitrogenous waste products such as urea) and failure of the kidney to maintain fluid, electrolyte and acid base homeostasis.
* A reduced urine output is frequently seen: oliguria (urine output ˂400mL/day), anuria (urine output of ˂100mL/day);
* Objective definition: increase in serum creatinine of 0.5mg/dL over a 24-hour period when baseline creatinine is less than 3.0mg/dL, or an increase of 1.0mg/dL when baseline creatinine is greater than 3.0mg/dL.
* Characterized by 3 phases: **oliguria phase** (period of days to weeks when reduction in urine output may be observed), **diuretic phase** (period of days during which repair of renal insult occurs and urine production increases), and **recovery phase** (period of weeks to months when kidney function returns).

These criteria should be applied in the context of the clinical presentation and following adequate fluid resuscitation where applicable. Studies have shown that preventive therapy or medical interventions performed during the early stages of AKI provide the greatest chance for minimising the extent of injury. Hence early preventive treatment and early diagnosis of AKI are imperative for patients with AKI regardless of the cause.

Types and Classifications \* to be put in a chart

AKI is classified according to precipitating factors.

1. Prerenal

* Characterized by a decrease in renal perfusion with or without systemic arterial hypotension and is often times reversible.
* **Functional AKI** describes conditions that decrease glomerular ultrafiltrate production without damage to the kidneys.

1. Intrinsic acute renal failure(intrarenal)

* Results from structural damage to the parenchymal tissue of the kidney; divided into vascular, glomerular, interstitial and tubular disorders (most common)

1. Postrenal

* Obstruction of urine flow occurring at any level of the urinary outflow tract.

Causes

1. Prerenal

* Excessive diuresis, vomiting, diarrhoea, (excessive GI fluid loss), bleeding
* Severe hypotension
* CHF, cirrhosis, nephrotic syndrome, hepatorenal syndrome
* Sepsis, liver failure, anaphylaxis
* Renal artery stenosis, renal artery thrombosis or embolism
* Medications: ACEIs, ARBs, COX-2 inhibitors, diuretics, NSAIDS, radio contrast dyes, aminoglycosides, chemotherapeutic agents

1. Intrinsic acute renal failure

* Systemic lupus erythematosus
* Ischemia of the tubules (intratubular obstruction)
* Allergic interstitial nephritis
* Infections
* Toxins
* Drug-induced as above

1. Postrenal Acute Kidney Disease

* Crystal deposition In renal pelvis or calyces
* Ureteral: tumor, stricture or stones
* Bladder neck obstruction: prostatic hypertrophy, bladder carcinoma
* Drug-induced as above

Clinical Features

* Nausea, Vomiting and diarrhoea
* Dehydration
* Nocturia, decreased appetite, metallic taste in mouth, Hiccups
* Change in mood,
* lank pain
* Epigastric pain
* Joint pain
* Skin rashes
* Fatigue.
* Oliguria, Anuria, dark coloured urine
* Facial puffiness
* Acidotic breathing
* Urea breath
* Uraemic frost
* Bladder distention with prostate enlargement
* Increase in blood pressure
* Increase in weight

Assessment

* Physical findings: assess for signs and symptoms listed above
* Medication history: identify potentially nephrotoxic agents
* Blood tests:
  + - Elevated: blood urea nitrogen, serum creatinine, electrolytes (K, Na and Ca
    - Decreased: calcium (consider albumin concentration), bicarbonate
* Urinalysis
  + - Specific gravity, osmolality: high values indicate prerenal causes
    - Proteinuria: microalbuminuria (˃30mg/dl), overt proteinuria (˃300mg/dl)
    - Haematuria: red blood cells
    - Glucose and ketones
    - Urine sediment: hyaline casts normal, granular casts and cellular debris suggest structural damage
    - White blood cells: suggest inflammation
    - eosinophils: associated with acute allergic interstitial nephritis
    - Myoglobinuria
    - Haemoglobinuria
* Abdominal/Renal ultrasound scan to exclude urinary tract obstruction
* Plain X-ray of abdomen (KUB)
* Initial Treatment
* Rehydration
* Relief obstruction (catheterization)
* Withdraw nephrotoxic agents
* Refer for specialist care as soon as diagnosis is confirmed

## 9.2 CHRONIC KIDNEY DISEASE (CKD)

* Chronic kidney disease is Kidney damage with or without a decrease in GFR or a GFR ˂60ml/min per 1.73m2 FOR ≥3 months
* Other components include proteinuria > 3 months, presence of multiple cysts in the kidney, ultrasound finding of bilateral echogenic small kidneys CKD is classified into five stages, based on kidney damage and GFR, according to Kidney Disease Outcomes Quality Initiative (KDOQI). End-stage kidney disease (ESKD) occurs when patients require renal replacement therapy (either dialysis or transplantation) to sustain life.

Causes

* Hypertensive renal disease
* Diabetes mellitus Sickle cell disease
* Glomerulonephritis
* Chronic Pyelonephritis
* Obstructive uropathy
* Renal calculi
* Polycystic kidney disease
* Drug toxicity/ Herbal remedies
* Autoimmune disease

Symptoms

* Symptoms are generally absent or minimal in the early stages.
* classic clinical features are observed in late stage CKD, and include the following:
  + - * Facial puffiness and leg oedema
      * Anorexia, nausea, vomiting
      * Hiccups
      * Breathlessness on exertion
      * Oliguria and Anuria (common), Nocturia and polyuria (rare)
      * Muscle Cramps
      * Paraesthesia
      * Pruritus
      * Insomnia
      * Fatigue
* Bleeding tendency
* Pallor
* Persistent or poorly controlled Hypertension

Investigations

* FBC, Blood film comment
* Urea, Creatinine, Electrolytes
* Calcium, Phosphate, PTH
* Lipids
* Urinalysis
* Abdominal pelvic ultrasound
* Fasting blood glucose

TREATMENT

Non-pharmacological treatment

* General health advice e.g. smoking cessation
* Avoid nephrotoxins e.g. NSAIDs, Herbal medication
* Fluid restriction
* protein restriction
* Restrict salt intake
* Restrict high potassium diet - avoid potassium containing foods e.g., banana, tomatoes, coconut water etc.

Refer all patients for specialist care for further definitive management

## 9.3 ACUTE GLOMERULAR DISEASE

These are acute injury to the Kidney that affect mainly the glomeruli but may involve the interstitium and tubules. They may present as acute kidney injury or a chronic indolent condition.

They can be primary or secondary and they can be nephrotic or nephritic.

Common causes:

* Post streptococcal infections (Throat and skin)
* Other bacterial Infections e.g., Salmonella, Brucella
* Hepatitis B virus, Hepatitis C virus, Yellow Fever, HIV
* Parasitic e.g., Malaria, Toxoplasma, Trypanosoma, Schistosoma.
* Systemic lupus erythematosus
* Vasculitides

**Signs and Symptoms**

* A history of preceding infection
* Breathlessness
* Anorexia, sometimes associated with vomiting and abdominal pain
* Fever
* Seizures
* Urinary abnormalities: oliguria <400 ml/24hours, haematuria
* Pedal Oedema and facial puffiness
* Presence of cellular and granular casts
* Elevated blood pressure
* Haematuria (with presence of red cell casts in urine)
* proteinuria
* Dark coloured urine
* Coma

**Investigations**

* Urinalysis
  + - Proteinuria (usually ˃3g/day
    - Haematuria
    - Pyuria
    - Cellular and granular casts
    - Circulating anti-GBM antibodies (glomeruli basement membrane)
    - Antisteptolysin antibodies
    - Serum compliment concentration
* Lipiduria
* Urine m/c/s
* BUE and Creatinine
* Chest X-ray (may show pulmonary oedema)
* ECG
* Urine Albumin creatinine ratio
* 24hr urine Albumin/ Protein
* ANA
* FBC, ESR and film comment
* Abdominopelvic ultrasound

**Treatment**

Non-pharmacological treatment

* Bed rest
* Suppotive stockings
* Diet: Protein intake of 0.8 to 1g/day and sodium intake of 50 to 100mEq/day, and low-lipid diet of 200mg cholesterol
* Control Fluid and acid- base balance:

Adults

* Control fluid retention by restricting daily fluid intake to 800mls plus volume of previous day's urine output.

Children

* Restrict fluids to 400mls/m2 of body surface area and volume of previous day's urine output.

Pharmacological treatment

Post Infectious Glomerulonephritis

* **Furosemide (Frusemide),** oral/IV, 40 mg daily, increasing to 2g daily in adults
* **ACEIs OR ARBs are** used especially in patients with diabetes for nephro protection and proteinuria
* **Steroids** use especially **prednisone** 1 -2mg/kg per day with subsequent tapering
* If available, C**yclosporine 5mg/kg in adults and 100mg to 150mg/m2 in** children to help reduce proteinuria and lymphokine production
* Treat all active infections

REFER

All patients with such should be sent to tertiary centre for care.

## 9.4 URINARY TRACT INFECTION (UTI)

**A UTI** is an inflammatory response to the urinary tract to bacterial invasion

Can be classified into upper (pyelonephritis) and lower (Cystitis, urethritis) UTIs

Classification of UTI

1. **Uncomplicated UTI:** Refers to an infection in an otherwise healthy female who lacks structural or functional abnormalities of the urinary tract that interferes with normal flow of urine or voiding mechanism. This is often seen in females of childbearing age (15 to 45 years).
2. **Complicated UTI:** This is associated with a predisposing lesion of the urinary tract; however, such as congenital abnormality, distortion of the urinary tract, a stone, indwelling catheter, prostatic hypertrophy, obstruction, or neurologic deficit that interferes with the normal flow of urine and urinary tract defences. Complicated infections occur in both genders and frequently involve the upper and lower urinary tract.
3. **Recurrent UTI:** This is characterized by multiple symptomatic infections with asymptomatic periods occurring between each episode. Either reinfection, bacterial persistence and inadequately treated infection. . Reinfections are caused by a different organism than originally isolated and account for the majority of recurrent UTIs.

**CAUSES**

* Commonly from ascending infection

Predisposing factors:

* Female sex – on account of their short urethra and proximity to perineum
* Urinary obstruction e.g. bladder outlet obstruction, upper tract obstruction
* Urinary tract stones
* Urinary tract malignancies

PYELONEPHRITIS

Infection of the kidney and collecting system

Clinical features:

* Fever
* Nausea and vomiting
* Flank/loin pain
* Flank(renal angle) tenderness
* Sepsis
* Foul smelling urine
* Hematuria (uncommon)

Investigations:

* Urinalysis and microscopy
* Blood and urine culture
* FBC, RFT
* Ultrasound scan

Management:

* IV fluid resuscitation with normal saline
* IV PCM 1g 8hrly
* IV antibiotics with Ciprofloxacin 400mg 12hrly 48 -72hrs or till fever subsides
* If no improvement after 48hrs REFER for specialist care

## 9.5 ACUTE CYSTITIS

Acute cystitis is an acute inflammation of the bladder. Women are affected 10 times more than men due to the shortness of their urethra compared to that of men. 40%-50% of all women will develop cystitis in their lifetime.

Causes

* E coli (about 80%)
* Staphylococcus saprophyticus
* Klebsiella
* Proteus
* Gonococcus
* Enterococci

Clinical features:

* Low grade fever
* Frequency, Nocturia, Urgency, Dysuria and Haematuria
* Cloudy, foul-smelling urine
* Low back and suprapubic pain
* Suprapubic tenderness

Investigations

* Urinalysis
* Mid-stream urine for culture and sensitivity
* Imaging of urinary tract in recurrent or persistent cases to exclude anatomical abnormalities, lower urinary tract obstruction etc.
* Fasting Blood glucose
* Uretherocystoscopy in selected cases

Treatment

Non-pharmacological treatment

* Liberal oral fluids to encourage good urinary output
* Pre-coital and post-coital emptying of the bladder
* Good personal hygiene and proper cleaning after defecation.

|  |
| --- |
| **Ciprofloxacin**, oral 500mg 12 hourly for 3-5 days  OR  **Nitrofurantoin**, oral, 50-100 mg 6 hourly for 3-5 days. Three-day therapy is sufficient in uncomplicated cystitis in women.  For symptomatic cystitis and UTI in pregnancy give Cefuroxime, oral, 500mg 12 hourly for 3-5 days.  **Potassium citrate mixture**, oral, 10 ml 8 hourly if urine is acidic (pH of 6 or below) to reduce bladder pain and dysuria.  **Paracetamol**, oral, 500 mg-1g 6 to 8 hourly as needed  OR  **Diclofenac sodium**, oral, 50 mg 8 hourly as needed |

Pharmacological treatment

**REFER**

Refer all cases which require cystoscopy and all cases of persistent haematuria, recurrent cystitis, or bacterial resistance to the specialist.

## 9.6 URINARY SCHISTOSOMIASIS

It is caused by *Schistosoma haematobium,* a water-borne disease commonly acquired from bathing or playing in infested stagnant water, ponds, streams or lakes.

Patient usually presents with terminal haematuria and may have painful urination (dysuria) with or without Lower abdominal pain (bladder pain).

Chronic infestation may lead to severe anaemia, ureteric stricture, hydronephrosis as well as carcinoma of the bladder.

Treatment

* Eliminate the causative organism with Oral **Praziquantel**-, **Adults and Children:** 40 mg/kg as a single dose
* Treat anaemia if present
* Where haematuria or symptoms of urinary infection persist, or a complication arises, refer for specialist care.

**COMMON UROLOGICAL CONDITIONS AND UROLOGICAL EMERGENCIES**

**BENIGN PROSTATIC HYPERPLASIA (BPH)**

A condition associated with enlargement of the prostate gland which occurs in middle aged and older men and can result in restriction of flow of urine.

**Clinical features:**

* Frequency, urgency, nocturia (storage or irritative symptoms)
* Slow stream of urine, intermittency, hesitancy, feeling of incomplete void and retention (voiding or obstructive symptoms)

BPH may be present with no symptoms, in which case no treatment is needed.

Symptomatic BPH needs treatment when there is significant bother or complications eg Renal impairment or bladder stones

**Management:**

For patients bothered by their symptoms, the first treatment of choice is an alpha blocker (Tamsulosin 400 mcg daily)

If this resolves the symptoms, the patient needs to be on it indefinitely, otherwise he needs to be referred for specialist treatment

Patients with symptoms may need investigations including Urinalysis, RFT, Ultrasound scan of the abdomen and pelvis to rule out infection, renal impairment or upper tract obstruction (hydronephrosis)

If rectal examination is suspicious, the patient will need serum PSA in addition

Those with serum PSA >4ng/ml, in the absence of infection, will need referral for further assessment.

## 9.7 BACTERIAL PROSTATITIS

Prostatitis is inflammation of the prostate gland and surrounding tissue which can be due to bacterial infection, or non-infective inflammation.

Clinical features

Acute

* Fever
* Chills
* Pelvic pain
* Urinary urgency and frequency, Nocturia, Dysuria, Difficulty in urination and Haematuria
* Swollen and tender prostate on Digital Rectal Examination (DRE).

Chronic

* Pelvic pain
* Urinary urgency and frequency
* Nocturia, difficulty in urination and haematuria.
* Swollen and tender prostate on Digital Rectal Examination (DRE).

Investigations

* Urinalysis and culture
* FBC, ESR
* Blood culture (especially for Acute cases)

Treatment

Initial treatment

Refer for specialist care after initial stabilization

|  |
| --- |
| **Rehydration with** IV fluids (normal saline or ringers lactate), as required in severe systemic infections.  **Ibuprofen**, oral, 400 mg 8 hourly (max 2.4g daily)  **OR**  **Diclofenac**, oral, 50 mg 8 hourly (max 150mg daily)  **Paracetamol can be added for effective pain relief 1g 8 hourly**  **NB: Parental analgesics may be necessary in severe cases**   * **Ciprofloxacin**, oral, 500 mg 12 hourly for 14 - 28 days (only if infection is confirmed) |

**URETHRAL STRICTURE**

This is a condition caused by narrowing of the urethral lumen due to fibrosis of the surrounding tissues. It is mostly caused by infections (usually gonorrhoea several years previously) or urethral or pelvic trauma (months previously)

Common clinical features

* Same as in BPH above , except that in urethral stricture, the stream may improve with straining, while in BPH it doesn’t.
* Strictures also usually occur in a younger age group
* Failure of catheterisation heightens the suspicion of a stricture

**Management:**

Patients with suspected strictures should be referred for specialist care, except in retention, where a suprapubic catheter can be inserted.

## 9.8 POSTERIOR URETHRAL VALVES

This is a congenital condition affecting boys due to obstruction of the posterior urethra, as a result of congenital valves. It is the commonest cause of congenital bladder outlet obstruction in boys. They obstruct urinary outflow from the bladder but permit easy urethral catheterisation.

Severe forms can be detected in utero or soon after birth, but milder forms can present in infants or older children

Clinical features:

* Poor urinary stream,
* Crying while voiding,
* Straining to void with dribbling of urine,
* Failure to thrive,
* Fever,
* Poor feeding,
* Abdominal distension.
* There may be palpable bladder and kidneys
* Poor physical growth/growth retardation

Management:

* Prompt bladder decompression by urethral catheterisation and continuous drainage to protect the upper urinary tract from back pressure damage

**Refer** for specialist care as soon as possible.

**HAEMATURIA**

## 9.9 HAEMATURIA

* This is the passage of blood in the urine (could be on initiation, mixed with the urine, or at the end of urination).
* There could be Pain/discomfort on passing urine, lower urinary tract symptoms (like urgency, hesitancy, frequency and nocturia etc.) or loin pain.
* The causes are varied, including medical and surgical abnormalities involving any part of the urinary tract, from the kidney to the ureter, or systemic conditions predisposing to bleeding.

Management

* Assess for severity and systemic effects of blood loss (eg, severe anaemia, heart failure, hypovolemic shock), and treat any haemodynamic instability
* Insert a large size (18 -24Fr) 3-way catheter and start irrigation, especially in severe bleeding with clots

Refer for specialist care as soon as possible.

**NON-ACUTE SCROTAL SWELLINGS**

Scrotal swellings are common causes can be medical or surgical due to abnormality in the scrotal skin, subcutaneous tissues, testes, potential spaces and appendages

Common causes:

Medical:

* Scrotal oedema
* Orchitis (chronic)

Surgical:

* Hydrocoele
* Inguinoscrotal hernia
* Scrotal abscess
* Testicular tumours
* Varicocoeles
* Sabaceous cyst on scrotal skin

Initial Management:

Depends on the cause.

Scrotal oedema – elevate scrotum and treat medical cause.

Chronic orchitis – Refer for specialist care

Surgical causes – Refer for specialist care

**UROLOGICAL MALIGNANCIES**

## 9.10 CARCINOMA OF PROSTATE

Prostate cancer is the commonest male cancer and the incidence increases with age Prostate cancer may be asymptomatic even in locally advanced cases.

PSA can be used as a screening tool, but diagnosis is best done by a specialist with combination of DRE, PSA, prostate biopsy and Imaging studies (MRI)

**Clinical features**

Patient may present with lower urinary tract obstructive symptoms like in BPH and may also have the following:

* General debility
* Anorexia
* Weight loss
* Listlessness
* Bone pain (commonly in the waist or limbs)
* Paralysis in the lower limbs or inability to walk

DRE may reveal:

* Hard prostate gland with an irregular surface and edges
* Obliterated median sulcus
* Adherent rectal mucosa

Management:

* Patient should be stabilized, depending on presenting symptoms or complications, and referred for specialist care as soon as possible.

## 9.11 BLADDER CANCER

Bladder cancer is the second commonest urological cancer after prostate cancer. May be asymptomatic in early disease

Clinical features:

* Haematuria (usually painless),
* Frequency
* Urgency,
* Dysuria,
* Flank pain
* Pelvic pain.
* Pallor
* Wasting,
* Palpable bladder mass
* Lymphoedema of lower limb/limbs.
* UTI
* History suggestive of exposure to schistosomiasis (see section on Schistosomiasis)

Management:

* Stabilize as per symptoms and complication, then refer for specialist care as soon as possible

**TESTICULAR CANCER**

Usually occurs in young adults. Early diagnosis as in all cancers, is important, as testicular cancer is highly curable.

Clinical features:

* Young adult (usually <34yrs)
* Painless testicular lump (involving the testicular body)
* History of undescended testes
* Signs and symptoms of advanced cancers

Investigations:

* Testicular tumour markers (AFP, serum beta HCG,LDH)
* Ultrasound testes
* Testicular biopsy is not routinely done

Initial Management

* Stabilize as per symptoms and complication, then refer for specialist care as soon as possible

**MALIGNANCIES OF THE KIDNEY**

They are mostly diagnosed incidentally, except in advanced cases. Diagnosis is usually with the finding of solid kidney tumours (or cysts with solid component) on ultrasound scan, which enhances on contrast CT scan.

Clinical features:

* Usually asymptomatic until advanced stages
* Painless haematuria (visible or non-visible)
* Para-neoplastic symptoms eg polycythaemia
* Symptoms and signs of advanced cancers

Initial Management:

* Stabilize as per symptoms and complication, then refer for specialist care as soon as possible

**NEPHROBLASTOMA:**

This is a form of kidney cancer that occurs in children (usually < 5yrs).

The most common presenting feature is abdominal mass noticed by the parent.

Confirmation of the diagnosis is by ultrasound scan or CT scan showing solid kidney tumour with destruction of the kidney parenchyma and calyceal systems (in contrast to neuroblastoma, where the parenchyma and calyceal systems are intact)

Management: as above

**EMERGENCIES:**

**URINE RETENTION**

This is one of the commonest urological emergencies characterized by painful inability to pass urine (acute), or inability to completely empty the bladder with relatively painless distension of the bladder (chronic)

**Common Causes:**

* BPH
* Urethral stricture
* Bladder or urethral stones
* Neurogenic bladder
* Pelvic trauma
* Posterior urethral valve

Initial Management

* Relieve obstruction (urethral and if not possible, supra pubic catheterization)
* Remember to record the residual urine, after catheterization (important in management)
* Monitor urine hourly output thereafter to detect diuresis and treat with intravenous replacement if more than 150 -200 mls/hr (especially for chronic retention)
* Refer for specialist care

**ACUTE SCROTAL SWELLINGS**

These should be treated with urgency because, one of the causes is testicular torsion, which can lead to loss of the testis within hours.

Causes:

* Testicular torsion
* Acute epididymoorchitis
* Testicular abscess
* Torsion of the appendix of the testis
* Testicular trauma
* Obstructed inguinoscrotal hernia

**Investigations:**

* FBC
* Urinalysis/urine culture
* Ultrasound scan scrotum (this should not delay exploration, if torsion is suspected)

Initial management

* Analgesia (PCM and NSAIDs)
* Antibiotics (Ciprofloxacin 500mg bd ) if orchitis suspected
* Explore, if torsion is suspected, and facilities and expertise available, otherwise IMMEDIATELY refer for specialist care
* RENAL COLICS

## 9.12 URINARY TRACT CALCULI

Urinary stones can form in the renal tract and cause symptoms and complications depending on their position and size.

Urinary stones can predispose to recurrent urinary tract infections

* + - 1. Bladder/Urethral stone

May present with suprapubic pain, frequency, urgency, haematuria, strangury (an uncontrollable and often painful desire to pass urine which results in little or no urine may be blood-stained being voided) and retention of urine. Suprapubic tenderness, palpable bladder (from retention or a large stone).

Hard urethral lump (impacted stone), Haematuria.

1. Kidney/Ureteral stone

Patient may present with loin pain and/or ureteric colic(sudden acute agonizing paroxysmal pain which begins in the loin then radiates around the flank towards the bladder and scrotum/testis in the male and labium majus in the female). May be associated with nausea, vomiting, sweating and haematuria.

Kidney stones may however be asymptomatic and be discovered incidentally

Management

* If **uncomplicated** encourage oral fluid intake (2-3 L daily in an adult) and avoid dehydration, also avoid low calcium diet (it encourages increased oxalate excretion).
* If urinary tract infection is present give oral **Ciprofloxacin** 500mg 12 hourly for 5 days.
* If **complicated**(urine retention or impacted stone):
  + - Relieve retention ( see section on Urine retention)
    - Give **Diclofenac,** IM 75 mg stat **OR** suppository 100 mg stat(care to be taken in established renal impairment)
    - Hyoscine butylbromide, IV 20 mg stat
* If urinary tract infection is present, give IV Gentamycin 240 - 480mg stat (5mg/kg). Infected obstructed kidney is a urological emergency and should be treated aggressively
* Manage acute urinary retention due to bladder stones by urethral catheterisation if possible, or pass a supra pubic catheter However with impacted urethral, ureteric and kidney stone give above analgesic and anti-spasmodic, pass a supra pubic catheter

Refer as soon as possible for specialist care

PRIAPISM

* It is a persistent, often painful, prolonged purposeless penile erection
* Most cases of priapism need to be treated as an emergency
* There are two types of priapism: low flow (venous / ischaemic) and high flow (arterial/ non ischaemic)
* The more common type is low flow, which can lead to ischaemia and subsequent fibrosis of the erectile tissues leading to complete erectile dysfunction

Causes:

- Sickle cell disease

- Haematological malignancies

- Use and abuse of phosphodiesterase inhibitors (eg Sildenafil-Viagra)

- Trauma/Arterio-venous fistula (high flow)

Initial Management

- Pain relief – Paracetamol or NSAIDs

- Rehydration with IV fluids (especially for Sickle Cell Disease)

- Cold compress

- Refer for specialist care IMMEDIATELY

## 9.13 FOURNIERS GANGRENE

It is an acute fulminant polymicrobial necrotising fascitis or gangrene affecting the scrotum and sometimes extending to the perineum, penis and lower abdomen. It is also called idiopathic gangrene of the scrotum. The synergistic infections of anaerobic and aerobic bacteria coupled with obliterative arteritis results in the extensive gangrene.

The risk factors include:

* Diabetes mellitus,
* HIV/Immunosuppression,
* Anal/ Rectal malignancies
* Perineal abscess/infection of scrotum and contents,
* Trauma,
* Extravasation of urine,
* Periurethral abscess and urethral stricture/calculi.

Presents with acute onset of painful scrotal/ perineal swelling. It is usually a rapid progressing gangrene with foul smelling odour. The external gangrenous lesion may be small or obscured. There may be crepitus on palpation of affected tissues with urinary extravasation. Testis is usually spared.

Initial Management:

* Set IV line and give Normal saline (Sodium Chloride 0.9%)
* Give IV **Gentamicin** 240 -480 mg stat(5mg/kg) + IV **Ampicillin** 500mg stat + IV **Metronidazole** 500 mg stat

Refer for specialist care IMMEDIATELY

## 9.14 ACUTE COMPLICATIONS OF MALE CIRCUMCISION

Circumcision is the excision of the fore- skin of the penis (the prepuce).

Can be associated with complications as follows:

**Post Circumcision Bleeding -** This can occur as a result of arterial bleeding due to inadequate haemostasis or slipped ligature, however it could also be due to inherited bleeding abnormalities like **Haemophilia A.**

**Amputation of part of or total glans penis - This occurs during careless clamping of the prepuce for excision.**

**Management:**

**Review the wound and secure haemostasis by ligation**

**If above not possible, pack wound, set iv line and give Normal saline(Sodium Chloride 0.9%)**

**Refer immediately for specialist care.**

**Caution: Take history of bleeding tendencies e.g. Easy bruising, prolonged bleeding from trivial cuts, knee pains and swelling when patient was a toddler.**

**Procedure (Circumcision) should be done with care by trained personnel to avert unwarranted complications.**

# CHAPTER TEN

HAEMATOLOGY AND BLOOD TRANSFUSION

## 10.1 ANAEMIA IN CHILDREN

This is a reduction of haemoglobin in the blood (Hb < 11.0 g/dl).

**CAUSES**:

1. Blood loss

2. Increased destruction of red blood cells (haemolysis)

3. Failure of production

a. Nutritional deficiencies - **Iron, Vitamin B12, Folic acid**.

b. Reduction in erythroid precursors - aplasia, leukaemia, marrow infiltration, lymphoma

c. Ineffective erythropoiesis.

i. Anaemia of chronic disease e.g. Chronic renal failure.

ii. Congenital causes: SCD, Thalassaemia (Rare)

**Signs and Symptoms**

* Fatigue,
* Dyspnoea and shortness of breath on exertion
* Faint
* Palpitations
* Dizziness,
* Headache
* Oedema
* Blood in urine/stools
* Pallor
* Angular stomatitis
* Spoon shaped and rigged finger and toe nails
* Hepatosplenomegaly
* Jaundice
* Petechiae and purpura

**Investigations (depending on the suspected cause you may want to do some or all of the following)**

* Hb
* FBC
* Blood film
* Reticulocyte Count
* Stool and urine analysis
* Sickling test and Hb electrophoresis for Hb genotype (rapid diagnostic available)
* Further investigations such as bone marrow aspiration based on initial findings.

**Treatment**

Elucidate cause and treat appropriately.

**Non-severe anaemia**

* Young children (aged < 6 years) are anemic if their Hb is < 9.3 g/dl and neonates – below 13.5 g/dl.
* If anemia is present, begin treatment, **unless the child has severe acute malnutrition.**
* Give (home) treatment with iron (daily **Iron–Folate** tablet or **Iron** syrup) for 3 months.

Be cautious of how much iron you give. The dosage is 3-6mg/kg daily or divided doses and calculate the amount of give based on this. Note that eg. Tab Ferrous fumarate contains 65 mg of elemental iron. Read the labels on iron supplements available at your facilities to determine content of elemental iron. Monitor HB/FBC level monthly.

* If the child is ≥ 2 year and has not received **Mebendazole** in the previous 6 months, give one dose of **Mebendazole** (500 mg) for possible hookworm or whipworm infestation.
* Advise the mother about good feeding practice.

NB: All low birth weight and premature babies should be started on **Folic acid** by 4 weeks and **Iron** supplementation by 6 weeks.

**Folic acid** dose- 2.5 to 5 mg daily

**Elemental Iron**- 6 mg/kg daily

**Severe anaemia**

|  |
| --- |
| Give a blood transfusion as soon as possible (see below) to: |
| All children with Hb of ≤ 4 g/dl |
| * Less severely anaemic children (Hb, 4–6 g/dl) with any of the following clinical features:   – Clinically detectable dehydration  – Shock  – Impaired consciousness  – Heart failure  – Deep, laboured breathing  – Very high malaria parasitaemia (> 10% of red cells with parasites (BF:3+/4+))  – Continuing blood loss such as in bleeding disorders etc.  **Neonates with a haemoglobin level of less than 10g/dl should be considered for transfusion.** |

**Blood transfusion**

* If packed cells are available, give 10 ml/kg over 3–4 hours in preference to whole blood.
* If using whole blood give 20 mls/kg over 3-4 hours.
* Monitor vitals closely and any signs of transfusion reaction during the transfusion. If transfusion reaction is suspected stop the transfusion, give IV hydrocortisone 4mg/kg stat and run IV Normal Saline 20 mls/kg bolus. Send the blood bag back to the blood bank.
* If there is evidence/risk of fluid overload or heart failure give IV **Furosemide slowly over 5-10 mins** (at 1–2 mg/kg, up to a maximum total of 20 mg). Give 0.5-1mg/kg (max.4mg/minute) repeated every 8 hours as necessary.

Re-check Hb 24hrs after transfusion.

**REFER**

**ALL CHILDREN WHOSECAUSE OF ANEMIA IS UNCONFIRMED AFTER STABILISATION**

**IF THERE IS NEED TO TRANSFUSE AND TRANSFUSION FACILITY IS NOT AVAILABLE.**

**WARNING:** AVOID BLOOD TRANSFUSION IN MEGALOBLASTIC ANAEMIA

## 10.2 IRON DEFICIENCY ANAEMIA

This is the most common type of anaemia.

**Causes**: Poor nutrition, hookworm infestation, menorrhagia, peptic ulcer etc.

**Treatment**

Treat the underlying cause.

**Before starting treatment, it is important to exclude any serious underlying cause of the anaemia (e.g. gastro-intestinal erosion, )**

ORAL IRON (Route of Choice):

Children: Oral dose of **elemental iron** is 3 – 6mg/kg (max 200mg) DAILY given in 2-3 DIVIDED DOSES.

**Formulations available:**

**Ferrous Sulphate, dried:** One tablet (200mg) = 65mg elemental iron.

**Ferrous Sulphate** 200 mg = 40 mg elemental iron

**Ferrous Gluconate** BP 300 mg= 35 mg elemental iron

**Ferrous Fumarate** BP 200 mg = 65 mg elemental iron

**PROPHYLACTIC ORAL IRON**

It is recommended in low-birth-weight infants who are solely breast-fed.

Dose: 5mg of **elemental Iron** daily: started at 4-6wks and continued until complementary/mixed feeding is established.

Adults: Up to 100mg of elemental iron daily (e.g. **Ferrous Sulphate** 200mg once or twice daily).

**Optimal Response: rise in Hb of 1 g/week.**

**NB! Continue treatment for 3 months after normal Hb to replenish iron stores.**

* **PARENTERAL IRON (Imferon)**

Restrict to Hospital use only

**INDICATION**: Genuine intolerance of oral iron, failure of oral iron in malabsorption status, or continuous blood loss, children receiving haemodialysis or peritoneal dialysis.

**INTRAVENOUS IRON**

Restrict to Hospital and specialist use only

**NB!** Avoid as much as possible particularly in patients with a history of allergy (including asthma and eczema), previous drug reactions and active rheumatoid arthritis.

Dose of parenteral Iron is calculated according to body weight and iron deficit, consult the product literature.

Anaphylactic reactions can occur so a test dose is required before each dose of iron, and the patient should be observed closely for 1 hour after the first test dose, 15mins after subsequent doses. Facilities for cardiopulmonary resuscitation should be at hand.

## 10.3 MEGALOBLASTIC ANAEMIA

**DEFINITION**

Reduced haemoglobin (Hb <11g/dl) in blood due to deficiency of **Vitamin B12** or **Folate** causing a fault in DNA synthesis. **Vitamin B12** is obtained mainly from animal food products (kidney, liver and heart are the richest sources) and **Folate** primarily from plant products (green leafy vegetables).

**Common causes**

1. **VITAMIN B12 DEFICIENCY**

* Low dietary intake (poverty or veganism)
* Malabsorption:

1. **Gastric:**

Pernicious anaemia: Congenital or Acquired (type A. immune gastritis).

Partial or total gastrectomy, gastric cancer

1. **Intestinal:**
2. Stagnant - loop syndrome
3. TB of the ileum
4. Chronic tropical sprue
5. Congenital specific malabsorption with proteinuria
6. (Imerslund - Grabeck syndrome)
7. Drugs e.g., metformin.
8. **FOLATE DEFICIENCY**

a) Low dietary intake

b) Alcohol abuse and liver disease

c) Malabsorption

- Cealiac disease (gluten-induced enteropathy)

- Dermatitis herpetiformis

- Tropical sprue

- Congenital specific

d) Increased utilization

- Pregnancy and lactation

- Prematurity

- Malignancies

- Excessive marrow turnover

- Chronic inflammatory disease

**Clinical features (see Anaemia 10.1)**

Neurological symptoms may also occur.

**Investigations**

1. Full blood count and thin film
2. Bone marrow aspiration - megaloblastic dyserythropoiesis
3. Serum B12 and Folate levels

**Treatment (Only in Hospitals)**

Before administering treatment, it is essential to establish in every case which deficiency is present, and the underlying cause. **In emergencies**, when delay might be dangerous, it is sometimes necessary to administer both drugs while awaiting results.

1. B12 deficiency

**Hydroxocobalamin** injection – I.M. 1mg 3 times a week for 2 weeks then 1mg every 3 months. If there is neurological involvement then 1mg on alternate days until no further improvement, then 1mg every 2 months.

1. Folate deficiency

**Folic acid** tablets 5mg daily for about 4 months

**NB: Folic acid should never be given alone for Vitamin B12 deficiency as may precipitate subacute combined degeneration of the spinal cord.**

## 10.4 SICKLE CELL ANAEMIA

It is a hereditary condition characterised by two abnormal haemoglobins.,

Parents and guardians of patients should receive counselling on the condition upon confirmation of diagnosis. They can have crisis such as pain/vaso-occlusive crisis, sequestration crisis, aplastic crisis, and haemolytic crisis.

**Signs and Symptoms**

* Pallor
* Hand and foot syndrome (painful swelling of the hand and foot)
* Chest pain
* Abdominal pain with/without abdominal distension
* Joint and bone pain esp. during cold wet seasons, after exercise
* Jaundice
* Hepatomegaly and/or splenomegaly
* Bossing of frontal bone
* Gastropathy
* Priapism
* Venous ulcers
* Recurrent infections
* Impaired growth and development (stunted)
* Symptoms of stroke eg. weakness of one side of the body

**Investigations**

* FBC
* Blood culture if indicated
* Urinalysis
* Chest X-ray if respiratory signs/symptoms are present
* Sickling test (rapid diagnostics available)
* Confirm Hb genotype by Hb electrophoresis
* Other tests as indicated e.g., Liver function and renal function tests
* Transcranial doppler for suspected strokes
* Check serum iron if child has received several blood transfusions if facilities available.

1. **PAINFUL CRISIS**

The most common type of crisis presents as agonizing and relentless pain. Pain may be localised in a single long bone, symmetrically in several joints or involve the lumbar spine, ribs or pelvis.

**MANAGEMENT**

**Supportive**

Bed rest

Increase fluid intake orally/ IV fluids **(Glucose 4.3% 3 in Sodium chloride 0.18%** OR 0.9% Normal Saline in 5% Dextrose at 1.5 X maintenance fluids)

**Pain management**

Use **Paracetamol** oral (15-20 mg per kg 6 hourly) initially and if not able to control pain, then

**Ibuprofen** (10mg/kg 8 hourly)

If the above are unable to control pain then

Adults: Give IM diclofenac 75-150 mg daily in divided doses

Tramadol Oral/IM 50-100 mg 8 hourly

**Nb: You may use Morphine but with under careful specialist supervision.**

If infection is likely then start IV **Ampicillin** 25mg/kg 6 hourly OR IV Ceftriaxone 80mg/kg daily and Refer as may be necessary.

**SPLENIC SEQUESTRATION**

Children may suffer a rapid fall in haemoglobin. The spleen enlarges rapidly and death can occur from hypovolaemia and anaemia. **Early transfusion and close monitoring is vital. May need splenectomy if recurrent and/or requires frequent transfusion.**

**CEREBRAL SICKLING**

Patients may present with strokes, fits, coma, bizarre behaviour or acute psychosis**. Give IV fluids and early exchange blood transfusion may help. Exchange blood transfusion only recommended in tertiary hospitals as it is an invasive procedure and needs close monitoring.**

1. **GIRDLE SYNDROME** (Easily mistaken for an acute abdomen)

Sickling in the splanchnic bed may cause abdominal pain with rigidity, loss of bowel sounds and increasing jaundice. Give IV fluids, consult surgeon to exclude other surgical abdominal causes but with-hold surgery unless unavoidable.

NB: Consider use of

**REFER**

**If there are complications or child is not better within 48 hours refer to the appropriate higher-level hospital for specialist care.**

**Complications that warrant referral**: bleeding into the eye, aseptic necrosis of the hip, priapism, haematuria, stroke, osteomyelitis, persistent proteinuria and persistent jaundice.

**BLOOD TRANSFUSION**

Avoid as much as possible BUT useful in sequestration and haemolytic crisis. If possible, do exchange blood transfusion to reduce HB S level and decrease viscosity.

Hydroxyurea oral 15-22mg/kg daily can be give as a single and increases by 5mg 12 weekly to a maximum of 35 mg/kg. Increases fetal haemoglobin and reduces crisis frequency. It should be given at hospital level under specialist supervision.

**PROPHYLACTIC Treatment**

1. **Folic acid** tabs 5 mg daily.
2. **PenicillinV** tabs 250 mg twice daily for children who did not get pneumococcal vaccines.

**SICKLE CELL TRAIT**

**Some can have mild crisis.**

**No treatment is required except counselling on the possibility of transmitting to their offspring.**

## 10.5 BLEEDING DISORDERS

Inappropriate and excessive bleeding either spontaneous or in response to injury.

**ACQUIRED BLEEDING DISORDERS**

1. Haemorrhagic disease of the newborn.

Usually presents in breast fed infants 2-3 days after delivery, particularly in premature infants.

Prevention: **Vitamin K** (**Phytomenadione**) 1 mg (as a single intramuscular injection at birth) IV. **Refer if persistent.**

Treatment: **Vitamin K** 1mg daily, ORAL.

Fresh frozen plasma(FFP): 10-15/Kg of body weight.. Use fresh blood if FFP unavailable.

**B) Liver Disease**

Hepatomegaly and prolonged jaundice are usual hallmarks.

**C) Disseminated Intravascular Coagulation (DIC)**

**Causes**:

Acute severe infections in retained placenta, retained dead foetus and incompatible blood transfusion.

Severe trauma or burns.

**Treatment**:

1. Vigorous treatment of the underlying condition.

2. If bleeding is prominent, give fresh frozen plasma or fresh blood.

3. Cryoprecipitate may be used.

4. **Heparin** is not of proven use.

**Refer all persistent or recurrent bleeds to physician/paediatrician/haematologist.**

Haemophilia A (Factor VIII Deficiency), Haemophilia B (Factor IX Deficiency) are uncommon in The Gambia.

**Refer all suspected cases to physician/haematologist.**

## 10.6 ANAEMIA IN ADULTS

Anaemia is defined as decreased concentration of haemoglobin (i.e. below 13 g/dL in adult males, 12 g/dL in adult females,).

**Causes**:

1. Blood loss.

2. Increased destruction of red blood cells (haemolysis).

3. Failure of production.

a. Nutritional deficiencies - iron, Vitamin B12, folic acid, ascorbic acid.

b. Reduction in erythroid precursors - aplasia, leukaemia, marrow infiltration, lymphoma.

c. Ineffective erythropoiesis.

i. Anaemia of chronic disease.

ii. Renal failure.

iii. Thalassaemia (Rare)

**Signs and Symptoms**

This depends on the severity of anaemia, speed of onset, age and cardiovascular status of patient.

* Fatigue, dyspnoea, faintness, palpitations, dizziness, headache, blackouts
* Angina and oedema.
* Pallor of mucus membranes
* Rapid pulse and heart failure.

**Investigations**

* FBC
* Reticulocyte count and blood film comment
* Sickling test and Hb electrophoresis if indicated
* Blood film for malaria parasites
* Stool for hookworm ova
* Urine for schistosome ova
* Bone marrow aspiration

**Treatment**

**Non-pharmacological treatment**

* Advise on a balanced diet. Regular intake of leafy foods, e.g. ‘Moringa’, as well as fresh fruits and vegetables, beans, liver, meat, eggs, fish, etc.

**Pharmacological treatment**

Elucidate cause and treat appropriately.

**For Hb of 6g/dl: Refer to Major Health Center/ Hospital**

For HB 5g/dl or less - Blood transfusion

Symptomatic blood transfusion may be required in acute blood loss.

a) Packed cell volume (PCV) less than or equal to 15

b) PCV of 15 with heart failure. Transfuse and treat heart failure appropriately with diuretics

**AVOID BLOOD TRANSFUSION IN MEGALOBLASTIC ANAEMIA**

## 10.7 IRON DEFICIENCY ANAEMIA

This is the most common type of anaemia.

Causes: Ulcers, poor nutrition, hookworms etc.

**Treatment**

Treat the underlying cause.

ORAL IRON (Route of Choice):

**Ferrous sulphate** 200 mg 3-4 times daily (200 mg = 40 mg elemental iron)

**OR**

**Ferrous gluconate** BP 300 mg 5-6 times daily. (300 mg = 35mg elemental iron

**OR**

**Ferrous fumarate** BP 200 mg 2-3 tiimes daily (200 mg = 65 elemental iron).

**OR**

**Ferrous Suplhate, dried:** One tablet (200mg) 2-3 times daily: (200mg = 65mg elemental iron)

Optimal Response: rise in Hb of 1 g/week.

**NB! Continue treatment for 3 months after normal Hb to replenish iron stores.**

**PROPHYLACTIC ORAL IRON**

Recommended in: partial or total gastrectomy, pregnancy & female blood donors.

Dose

Up to 100mg of elemental iron daily (e.g. **Ferrous Sulphate** 200mg once or twice daily)

**1. PARENTERAL IRON (Imferon**)

Restrict to Hospital use only.

**INDICATION**: Genuine intolerance of oral iron, failure of oral iron in malabsorption status.

1. **INTRAMUSCULAR IRON**

Deep I.M injection in the upper outer quadrant of gluteus.

1. **INTRAVENOUS IRON**

NB! Avoid as much as possible particularly in patients with a history of allergy and previous drug reactions.

**Dose of parenteral Iron is calculated according to body weight and iron deficit, consult the product literature.**

**FOLATE DEFICIENCY**

Give **folic acid**

* 5 mg daily by mouth for at least 4 months.
* 15 mg daily for severe malabsorption.
* 5 mg weekly as prophylaxis in pregnancy.

**B. MEGALOBLASTIC ANAEMIA**

**DEFINITION**

Reduced haemoglobin (Hb <11g/dl) in blood due to deficiency of Vitamin B12 or Folate causing a fault in DNA synthesis. Vitamin B12 is obtained mainly from animal food products (kidney, liver and heart are the richest source) and Folate primarily from plant products (green leafy vegetables).

**COMMON CAUSES**

**VITAMIN B12 DEFICIENCY**

* Low dietary intake (poverty or veganism)
* Malabsorption:

1. Gastric:

* Pernicious anaemia: Congenital or Aquired (type A. immune gastritis).
* Partial or total gastrectomy.

1. Intestinal:

* Stagnant - loop syndrome.
* TB of the ileum
* Chronic tropical sprue.
* Congenital specific malabsorption with proteinuria
* (Imerslund - Grabeck syndrome)
* Drugs e.g., metformin.

**FOLATE DEFICIENCY**

a) Low dietary intake

b) Alcohol abuse and liver disease

**c) Malabsorption**

- Cealiac disease (gluten-induced enteropathy

- Dermatitis herpetiformis

- Tropical sprue

- Congenital specific

**d) Increased utilization**

- Pregnancy and lactation

- Prematurity

- Malignancies

- Excessive marrow turnover

- Chronic inflammatory disease

**Signs and Symptoms (see Anaemia)**

**INVESTIGATIONS**

1. Full blood count and thin film
2. Bone marrow aspiration - megaloblastic dyserythropoiesis
3. Serum B12 and Folate levels

**TREATMENT (Only in Hospitals)**

**Before administering treatment, it is essential to establish in every case which deficiency is present, and the underlying cause. In emergencies, when delay might be dangerous, it is sometimes necessary to administer both substances while awaiting results.**

1. B12 deficiency

**Hydroxycobalamin** injection – I.M. 1mg 3 times a week for 2 weeks then 1mg every 3 months. If there is neurological involvement then 1mg on alternate days until no further improvement, then 1mg every 2 months.

1. Folate deficiency
2. **Folic acid** tablets 5mg daily for about 4 months

**NB: Folic acid should never be given alone for Vitamin B12 deficiency as may precipitate subacute combined degeneration of the spinal cord.**

**NB: Folic acid should not be used in undiagnosed megaloblastic anaemia unless Vitamin B12 is administered concurrently otherwise neuropathy may be precipitated.**

**C. SICKLE CELL ANAEMIA**

The crises are commonly Vaso-occlusive (precipitated by cold weather, dehydration, infection, ischaemia, or physical exertion), which often cause pain in the bones. Other types of crises may also occur. These include haemolytic, aplastic and sequestration crises. In aplastic crises there is anaemia with a low reticulocyte count. In sequestration crises, the spleen and liver enlarge rapidly due to trapping of red blood cells. Anaemia is very severe in this case.

Patients with sickle cell disease should be encouraged to have periodic check-ups at a Sickle Cell Clinic.

**Signs and Symptoms**

* Joint and bone pain, especially during cold wet seasons
* Periodic jaundice
* Abdominal pain, especially in the splenic area
* Spontaneous sustained erection without sexual arousal in male patients (see section on Priapism)
* Jaundice
* Pallor
* Hepatomegaly
* Splenomegaly (may be absent in older patients)
* There may be old or recent scarification marks particularly over the abdominal wall
* Venous ulcers

**Investigation**

* FBC
* Sickling test
* Haemoglobin electrophoresis

**Treatment**

**PROPHYLAXIS (of crisis)**

* **Folic acid** tabs 5 mg daily.
* > 1 year;
* < 1 year;
* 5 mg daily
* 2.5 mg daily
* **BenzathinePenicillin** I.M. monthly
* **Pyrimethamine**12.5 - 25 mg weekly.

**A) PAIN CRISIS**

The most common type of crisis presents as agonizing and relentless pain. Pain may be localised in a single long bone, symmetrically in several joints or involve the lumbar spine, ribs or pelvis.

**MANAGEMENT**

**Analgesia**: **Diclofenac IM, 75mg** 12 hourly PRN

If the above are unable to control pain then

**Pethidine** (0.5 - 2.0 mg/kg / every 4 hours- oral/IV /IM) can be used for both children and adults

**NB: Injection solution can be used orally**

* **Fluids**: Start IV **Normal saline (Sodium Chloride 0.9%)** 60 - 100 mls/Kg in 24 hours
* **Oxygen**: Give oxygen.

**Investigations**: Take blood for FBC, U+Es and blood cultures, group and save X-ray where possible.

**NB! Avoid iron therapy**

**B). SPLENIC SEQUESTRATION**

Children may suffer a rapid fall in haemoglobin. The spleen enlarges rapidly and death can occur from hypovolaemia and anaemia. **Early transfusion is vital.**

**C). CEREBRAL SICKLING**

Patients may present with strokes, fits, coma, bizarre behaviour or acute psychosis. Give IV fluids and early exchange blood transfusion may help.

**D). GIRDLE SYNDROME** (Easily mistaken for an acute abdomen)

Sickling in the splanchnic bed may cause abdominal pain with rigidity, loss of bowel sounds and increasing jaundice. Give IV fluids, consult surgeon to exclude other surgical abdominal causes but with-hold surgery unless unavoidable

**BLOODTRANSFUSION**

Avoid as much as possible but useful in sequestration. If possible, do exchange blood transfusion to reduce HB S level and decrease viscosity.

**SICKLECELLTRAIT**

**No treatment is required.**

**10.8 BLEEDING DISORDERS**

**Definition**: Inappropriate and excessive bleeding either spontaneous or in response to injury.

**ACQUIRED BLEEDING DISORDERS**

a**. Liver Disease**

Hepatomegaly and prolonged jaundice are usual hallmarks.

**Treatment**: **Vitamin K**- 10 mg IV daily for 3 days.

Fresh frozen plasma or fresh blood 450 mls/10 Kg/day.

**b. Disseminated Intravascular Coagulation (DIC)**

**Causes**: Acute severe infections.

Obstetric emergencies e.g. abruption placenta, retained dead foetus.

Incompatible blood transfusion.

Severe trauma or burns.

**Treatment**:

1. Vigorous treatment of the underlying condition.

2. If bleeding is prominent, give fresh frozen plasma or fresh blood.

3. Cryoprecipitate may be used.

4. Heparin is not of proven use.

**Refer all persistent or recurrent bleeds to physician/haematologist.**

Haemophilia A (Factor VIII Deficiency), Haemophilia B (Factor IX Deficiency) are uncommon in The Gambia. Refer all suspected cases to physician/haematologist.

## 10.8 HAEMATOLOGICAL MALIGNANCIES

These include Leukaemia (acute and chronic), multiple myeloma, Hodgkin’s disease and non-Hodgkin’s lymphomas.

**Refer all suspected cases to consultant physician/haematologist for confirmation and management**.

## 10.9 ATRIAL FIBRILLATION HEART VALVE PROSTHESES

Lifelong **Warfarin** treatment is required.

**WARFARIN**

Dose: Load with 10 mg daily (at 6pm) for 3 days, then control dose using prothrombin time measurements expressed as International Normalised Ratio (INR).

Therapeutic range is 2.0 - 4.0.

The following may affect **Warfarin** therapy: **Barbiturates, Oral Contraceptives, Griseofulvin, Rifampicin, Carbamazepine, Vitamin K, Chloramphenicol, Cimetidine, Cotrimoxazole, Acetylsalicylic Acid, Erythromycin** and **Alcohol.**

***Use Vitamin K for Warfarin over dose (See section on poisoning).***

**HEPARIN**: To be given by physicians/haematologists only.

**BLOOD TRANSFUSION GUIDELINES**

* Use in anaemic heart failure.
* HB less than 4 g/dl in malaria anaemia.
* Use in shock 2o severe haemorrhage and as listed above

**Screen all blood for HIV, Hepatitis etc**.

# CHAPTER ELEVEN

**MANAGEMENT OF MALNUTRITION**

**MALNUTRITION**

Malnutrition is a state of imbalance arising when the supply of one or more nutrients is less or in excess of the body requirements. In The Gambia, malnutrition has long been recognized and still continues to be a major public health problem. It is one of the most common causes of childhood morbidity and mortality. The majority of malnourished children are aged between 6 to 59 months.

## 11.1 SEVERE MALNUTRITION

Severe acute malnutrition is defined as the:

* Presence of oedema of both feet or
* Severe wasting (weight-for-height/length (Z Score) <-3SD)
* Mid upper arm circumference (< 11.5 cm)

Children with severe acute malnutrition should first be assessed with a full clinical history and examination to confirm whether they have any general danger sign, medical complications, and an appetite.

**Appetite test:** children who are able to finish 75% of the recommended amount of RUTF per feed have passed the appetite test.

**Signs and symptoms**

* Diarrhoea and Vomiting
* Loss of appetite
* Hypoglycaemia
* Cough
* Shock: lethargic or unconscious; with cold hands/feet, slow capillary refill (> 3 s), or weak (low volume) rapid pulse and low blood pressure
* Dehydration (consider once there is history of diarrhoea and/or vomiting or low urine output)
* Severe palmar/plantar pallor
* Bilateral pitting pedal oedema,
* Eye signs of vitamin A deficiency: dry conjunctiva or cornea, bigot spots corneal ulceration, keratomalacia, photophobic
* Localizing signs of infection, including ear and throat infections, skin infection or pneumonia
* Signs of HIV infection eg. oral candidiasis/thrush, extensive dermatitis, recurrent infections
* Fever (temperature ≥ 37.5 °C or ≥ 99.5 °F) or hypothermia (rectal temperature < 35.5 °C or < 95.9 °F)
* Mouth/oral ulcers
* Skin changes of kwashiorkor: hypo- or hyperpigmentation, desquamation, ulceration (spreading over limbs, thighs, genitalia, groin and behind the ears)
* Exudative lesions (resembling severe burns) often with secondary infection (including *Candida*).
* Electrolyte imbalance e.g., hyponatraemia
* Fluid overload

**Investigation**

* Full blood count
* Blood film for malaria parasites
* Urine for urinalysis, microscopy and culture and sensitivity
* Stool microscopy
* CSF if meningitis is suspected
* Provider initiated HIV counselling and testing
* If pneumonia is suspected do chest X ray
* If TB is strongly suspected do chest X ray, early morning gastric aspirates for acid fast bacilli and Mantoux test (esp. if they are not getting better on the recommended management

**Management**

The management is divided into initial stabilization phase followed by the transition and rehabilitation phases.

**STABILISATION PHASE**

**I. Hypoglycaemia**

If there is any suspicion of hypoglycaemia check blood glucose immediately. Hypoglycaemia is present when the blood glucose is < 3 mmol/litre (< 54 mg/ dl). If blood glucose cannot be measured, it should be assumed that all children with severe acute malnutrition are hypoglycaemic and given treatment.

**Treatment**

* Give 50 ml of 10% **Glucose**, or sucrose solution (one rounded teaspoon of sugar in three tablespoons of water) orally or by nasogastric tube, followed by the first feed as soon as possible and continue feeds.
* If the child is unconscious, treat with IV/nasogastric 10% **Glucose** at 5 ml/kg or, give one teaspoon of sugar moistened with one or two drops of water sublingually. Recheck blood glucose every 15 minutes(because of risk of rebound hypoglycemia) until stable and **regular feeds** started.
* Start on appropriate IV or IM antibiotics.

**II. Hypothermia**

Hypothermia is very common in malnourished children and often indicates coexisting hypoglycaemia or serious infection. All children with hypothermia should be treated routinely for hypoglycaemia and infection.

If the axillary temperature is < 35 °C (< 95°F) or does not register on a normal thermometer, assume hypothermia, and treat until temperature normalizes.

* Feed the child immediately and then every 2 h unless they have abdominal distension; if dehydrated, rehydrate first.
* Re-warm the child using warm blanket, kangaroo mother care etc.
* Keep the child away from draughts.
* Give appropriate IV or IM antibiotics.
* Avoid exposing the child to cold (e.g., after bathing or during medical examinations).
* Change wet nappies, clothes, and bedding to keep the child and the bed dry.

**III. Dehydration**

Dehydration tends to be over diagnosed and its severity overestimated in children with severe acute malnutrition. Assume that all children with watery diarrhoea or reduced urine output have some dehydration. It is important to note that poor circulatory volume or perfusion can co-exist with oedema.

**Treatment**

Do not use the IV route for rehydration, except in cases of shock.

* Give the ***RESOMAL orally*** or by nasogastric tube.
* Give 5 ml/kg every 30 min for the first 2 hours.
* Then give 5–10 ml/kg per hour for the next 4–10 hours.
* The exact amount depends on how much the child wants, the volume of stool loss and whether the child is vomiting.

If in **shock or severe dehydration** but cannot be rehydrated orally or by nasogastric tube, Give IV fluid at 15 ml/kg over 1 hour. Use **ONE** of the following solutions:

* **Ringer’s lactate** with **5% Glucose (dextrose**);
* Half-strength **Darrow’s solution** with **5% Glucose (dextrose**);
* **0.45% Sodium Chloride** plus **5% Glucose (dextrose**).

Measure the pulse rate and volume and breathing rate at the start and every 5–10 min ***to determine improvement.***

***If the child fails to improve after two IV boluses of 15 ml/kg,***

* + Give maintenance IV fluid (4 ml/kg per h) while waiting for blood;
  + Transfuse fresh whole blood at 10 ml/kg slowly over 3 h (use packed cells if the child is in cardiac failure); then
  + Initiate re-feeding with starter F-75.

**AFTER THE ABOVE STABILIZATION MEASURES, THE OTHER MEDICAL CONDITIONS/COMPLICATIONS CAN BE ADDRESSED.**

**Patient should be referred if experience personnel are not present at health facility to manage malnutrition cases.**

**Cases should be receiving stabilisation assessment and treatment whilst being transported to referral centres.**

**IV. Infection**

In severe acute malnutrition, the usual signs of bacterial infection, such as fever, are often absent, yet multiple infections are common.

**Treatment**

Give all severely malnourished children:

* A broad-spectrum antibiotic
* Measles vaccine if the child is ≥ 6 months and not vaccinated or was vaccinated before 9 months age. Delay vaccination if the child is in shock.

***Choice of broad-spectrum antibiotics***

* If the child has no complications; give oral **Amoxicillin** for 5 days.
* If there are complications give parenteral antibiotics:

**Benzylpenicillin** (50 000 U/kg IM or IV every 6 hours) or **Ampicillin** (50 mg/ kg IM or IV every 6 hours) for 2 days, then oral **Amoxicillin** (25–40 mg/kg every 8 hours for 5 days)

Plus **Gentamicin** (7.5 mg/kg IM or IV) in three divided doses for 7 days.

* + If you identify other specific infections (such as pneumonia, meningitis, dysentery, skin or soft-tissue infections), give antibiotics as appropriate.
  + Add antimalarial treatment if the child has a positive blood film for malaria parasites or a positive malaria rapid diagnostic test**.**
  + TB is common, but anti-TB treatment should be given only if TB is diagnosed or strongly suspected.

1. **Electrolyte imbalance**

All severely malnourished children have deficiencies of potassium and magnesium, which may take about 2 weeks to correct. Oedema is partly a result of potassium deficiency and sodium retention. Do not treat oedema with a diuretic. Excess body sodium exists even though the plasma sodium may be low. Giving high sodium loads could kill the child.

**Treatment**

Give extra **Potassium** (3–4 mmol/kg per day)

Give extra **Magnesium** (0.4–0.6 mmol/kg per day)

The extra potassium and magnesium should be added to the feed during its preparation if not pre-mixed. Alternatively, use commercially available pre-mixed sachets.

**VI. Micronutrient deficiencies**

Although anaemia is common, do not give **Iron** initially, but wait until the child has a good appetite and starts gaining weight (usually in the second week), because iron can make infections worse.

**Multivitamins** including **Vitamin A** and **Folic acid**, **Zinc** and **Copper** are already present in F-75, F-100 and ready-to-use therapeutic food packets. When premixed packets are used, there is no need for additional doses.

In addition, if there are no eye signs or history of measles, then do not give a high dose of **Vitamin A** because the amounts already present in therapeutic foods are enough.

**Treatment**

**(**Only if child has any signs of **Vitamin A** deficiency like corneal ulceration or a history of measles**)**

* Give **Vitamin A** on day 1 and repeat on days 2 and 14**.**

< 6 months, 50 000 IU

6–12 months, 100 000 IU

> 12 months, 200 000 IU

1. **INITIAL RE-FEEDING (TRANSITION )**

**F75** is used during the initial re-feeding period at 100kcal/day

An oedematous child will require a smaller amount of feed.

The required amount is available in the malnutrition charts provided by WHO Management of malnutrition.

If F75 is not tolerated, it should be replaced with cereal based F75.

1. **CATCH-UP GROWTH FEEDING (REHABILITATION)**

Children in the catch-up phase should in most cases be managed as outpatients.

Signs that a child has reached rehabilitation phase for catch-up growth are:

* Return of appetite
* No episodes of hypoglycaemia (metabolically stable)
* Reduced or disappearance of all oedema

Make a gradual transition from starter F-75 to catch-up formula F-100 or ready-to-use therapeutic food over 2–3 days, as tolerated.

* Replace starter F-75 with an equal amount of catch-up F-100 for 2 days.
* Give a milk-based formula, such as catch-up F-100 containing 100 kcal/100 ml and 2.9 g of protein per 100 ml or ready-to-use therapeutic food.
* On the third day if on F-100, increase each successive feed by 10 ml until some feed remains uneaten. The point at which some feed remains unconsumed is likely to be when intake reaches about 200 ml/kg per day.

**Sensory stimulation**

**Provide**:

* Tender loving care
* A cheerful, stimulating environment
* Structured play therapy for 15–30 min/day
* Physical activity as soon as the child is well enough
* Support as much maternal involvement as possible (e.g., comforting, feeding, bathing, playing).
* Provide suitable toys and play activities for the child.

## 11.2 SEVERE ACUTE MALNUTRITION IN INFANTS AGED < 6 MONTHS

An organic cause for the malnutrition or failure to thrive should be considered, and, when appropriate, treated. Infants less than 6 months of age with severe acute malnutrition with any of the following complicating factors should be admitted for inpatient care:

* General danger signs or serious clinical condition as outlined for infants 6 months or older.
* Recent weight loss or failure to gain weight.
* Ineffective breastfeeding (attachment, positioning, or suckling) directly observed for 15–20 min, ideally in a supervised separated area.
* Any pitting bilateral oedema of the feet.
* Any medical problem needing more detailed assessment
* Any social issue requiring detailed assessment or intensive support (e.g., disability or depression of caretaker or other adverse social circumstances).

**Treatment**

* Admit infants with any of the above complicating factors.
* Give parenteral antibiotics to treat possible sepsis, and appropriate treatment for other medical complications.
* Re-establish effective exclusive breastfeeding by the mother or other caregiver. If not possible, give replacement commercial infant formula with advice on safe preparation and use.
* For infants with severe acute malnutrition and oedema, give infant formula or F-75 or diluted F-100 supplement breastfeeding.
* For infants with severe acute malnutrition with no oedema, give expressed breast milk; and when not possible, commercial infant formula or F-75 or diluted F-100, in this order of preference.
* During nutritional rehabilitation, the basic principles for older children apply;
* Assessment of the physical and mental health of mothers or caretakers should be promoted and relevant treatment or support provided.

**Discharge**

Infants less than 6 months of age admitted to inpatient care can be transferred to outpatient care if:

* All clinical conditions or medical complications including oedema are
* resolved or the child is clinically well and alert,
* The child is breastfeeding effectively or feeding well,
* Weight gain is satisfactory e.g. above the median of the WHO growth velocity
* Standards or more than 5gm/kg per day for at least 3 successive days.

## 11.3 TREATMENT OF ASSOCIATED CONDITIONS OF MALNUTRITION

**a) Eye problems**

If the child has any eye signs of **Vitamin A** deficiency (see p. 185):

* Give **Vitamin A** orally on days 1, 2 and 14 (age < 6 months, 50 000 IU; age 6–12 months, 100 000 IU; older children, 200 000 IU). If the first dose was given in the referring centre, treat on days 1 and 14 only.
* If the eyes show signs of corneal clouding or ulceration, give the following additional care to prevent corneal rupture and extrusion of the lens:
* Instil **Chloramphenicol** or **Tetracycline** eye drops four times a day, as required, for 7–10 days.
* Instil **Atropine** eye drops, one drop three times a day, for 3–5 days.
* Cover with **Saline**-soaked eye pads.
* Bandage the eye(s).

**b) Severe anaemia**

Blood transfusion should be given in the first 24 h only if:

* Hb is < 4 g/dl
* Hb is 4–6 g/dl and the child have respiratory distress.

In severe acute malnutrition, the transfusion must be slower and of smaller volume than for a well-nourished child. Give:

* Whole blood, 10 ml/kg, slowly over 3 hours
* Furosemide, 1 mg/kg IV at the start of the transfusion.

If the child has signs of heart failure, give 10 ml/kg of packed cells, because whole blood is likely to worsen this condition

***Note:*** *Do not repeat transfusion even if the Hb is still low or within 4 days of the last transfusion.*

**C) Skin lesions in kwashiorkor**

* Bathe or soak the affected areas for 10 min/day in 0.01% Potassium permanganate solution.
* Apply barrier cream (Zinc and Castor oil ointment, Petroleum jelly or Tulle gras) to the raw areas, and gentian Violet or Nystatin cream to skin sores.
* Avoid using nappies so that the perineum can stay dry.

**D) Continuing diarrhoea**

***Giardiasis***

* If cysts or trophozoites of Giardia lamblia are found, give Metronidazole (7.5 mg/kg every 8 h for 7 days). Treat with metronidazole if stool microscopy cannot be undertaken or if there is only clinical suspicion of giardiasis.

***Lactose intolerance***

Diarrhoea is only rarely due to lactose intolerance. Intolerance should be diagnosed only if copious watery diarrhoea occurs promptly after milk-based feeds are begun and if the diarrhoea clearly improves when milk intake is reduced or stopped. Starter F-75 is a low-lactose feed. In exceptional cases:

* Replace milk feeds with yoghurt or a lactose-free infant formula
* Reintroduce milk feeds gradually in the rehabilitation phase.

***Osmotic diarrhoea***

Osmotic diarrhoea may be suspected if the diarrhoea worsens substantially\ with hyperosmolar F-75 and ceases when the sugar content and osmolarity are reduced. In these cases:

* Use cereal-based starter F-75 or, if necessary, a commercially available isotonic starter F-75.
* Introduce catch-up F-100 or ready-to-use therapeutic food gradually.

## 11.4 DISCHARGE AND FOLLOW-UP CARE

**Discharge from nutritional treatment**

**Children can be discharged from programme when:**

* Weight-for-height/length is at least ≥ -2 z score
* MUAC ≥ 125 mm
* No oedema for ≥2 weeks

**The mother should be counselled on appropriate feeding:**

* Give appropriate meals (and the correct quantity of food) at least five times daily.
* Give high-energy snacks between meals (e.g. milk, banana, bread, biscuits).
* Assist and encourage the child to complete each meal.
* Give food separately to the child so that the child’s intake can be checked.
* Breastfeed as often as the child wants.

**Referral**

**Refer to a higher level of care if the progress in weight gain / improvement expected is not being attained.**

**Refer cases if the care giver is not well trained / the facility is not well equipped to manage severe malnutrition.**

# CHAPTER TWELVE

DISORDERS OF THE MUSCULOSKELETAL SYSTEM

## 12.1 RHEUMATOID ARTHRITIS

This is a chronic systemic autoimmune inflammatory disease characterised mainly by symmetrical inflammation of the synovial tissue of joints resulting in destruction of the joints and peri-articular tissues. It occurs more commonly in young and middle-aged women. The symptoms fluctuate widely with periods of remission and exacerbation. Other organs such as the lungs, kidneys, eyes and the haematopoietic system may occasionally be affected. Rheumatoid Arthritis should be treated as early as possible with disease modifying anti-rheumatic drugs (DMARDs) to control symptoms and delay disease progression.

**Signs and Symptoms**

* Pain and swelling in small joints of the hands and wrists for several weeks
* Morning joint stiffness
* Fever
* Weight loss, lethargy, depression
* Polymyalgia - systemic illness with muscle pain, minimal joint involvement and explosive overnight joint pain
* Spindle-shaped fingers, often symmetrical
* Limitation of small joint movement
* Joint deformities e.g. ulnar deviation at wrists, finger deformities
* Carpal tunnel syndrome
* Synovitis swelling and tenderness over joints
* Anaemia - normocytic normochromic in character
* Rheumatoid nodules
* Muscle wasting around affected joints if long standing
* Dry eyes
* Peripheral sensory neuropathy
* Cardiac and pulmonary involvement

**Diagnostic Criteria (Per 2010 ACR/EULAR CRITERIA)**

1. **Number and sites of joints involved**
2. **Serological abnormalities**
3. **Elevated acute phase response (ESR/CRP)**

**Investigations**

* Rheumatoid Factor, Anti CCP antibodies
* Antinuclear antibodies (ANA)
* FBC
* ESR /CRP
* X-ray of affected joints – bony erosions and decalcification

**Treatment**

**Non-pharmacological**

* Rest of affected joints
* Physiotherapy

**Pharmacological**

**Ibuprofen**, 200-400 mg 3 times daily

**OR**

**Diclofenac**, 50-150mg in 2-3 divided doses daily

**REFER**

**Refer all suspected cases to a physician specialist for definitive management.**

## 12.2 SPONDYLOARTHRITIS.

This constitutes a group of arthritis in which primarily affect the spinal and sacro –iliac joints and in a minority of people affects the limbs. The most is Ankylosing spondylitis. These should be referred to the specialist.

**Ankylosing spondylitis**

**Signs and Symptoms**:

* Low back pain and stiffness radiating to the buttocks & thighs, and worse in the morning and following activity.

**Treatment**:

* Use **NSAID** as for rheumatoid arthritis.
* Postural and breathing exercises
* Hip disease may require surgery and hip replacement
* Gold and other drugs as a recommended by specialist for severe cases
* Hip disease may require surgery and hip replacement.
* Gold and other drugs as recommended by specialists for severe cases.
* Coal tar for Psoriasis if present.

## 12.3 SYSTEMIC LUPUS ERYTHEMATOSUS

Systemic lupus erythematosus (SLE) is a multisystem autoimmune disease of unknown aetiology. It is commoner in women and occurs at a peak age of 15-25 years. This is a complex disease with variable presentations, progression of disease and prognosis. It is characterized by remissions and flares. Due to the systemic nature of the disease, there is a need for the involvement of multiple medical specialists in the care of these patients.

**Sign and Symptoms**

* Malaise, weight loss
* Fever
* Hair loss
* Joint pain
* Arthritis
* Anaemia
* Lymphadenopathy
* Photosensitive skin eruptions (butterfly rash on the Nose Bridge and cheeks)
* Oedema from renal involvement
* Psychiatric manifestations

**Investigations**

* FBC
* ESR
* LE cells
* Anti-DNA antibodies
* Antinuclear antibodies (ANA)
* BUN, Creatinine
* Urinalysis

**Treatment**

**Non-pharmacological treatment**

* Adequate rest
* Avoidance of exposure to sunlight in photosensitive patients

**Pharmacological treatment**

* **Diclofenac,** oral, 50-100mg, 8 - 12 hourly**.**

**OR**

* **Ibuprofen**, oral, 400 mg 8 hourly

**REFER**

**Refer all patients for physician specialist care**

## 12.4 ACUTE SEPTIC ARTHRITIS

This is acute inflammation of joints, usually big joints, following bacterial infection. The majority are due to non-gonococcal bacteria whereas the remaining cases may follow gonorrhoeal infection. Causative agents are *Staphylococcus,* Streptococcus, Haemophilus influenzae in infants and Salmonella in sickle cell disease.

Good prognosis depends on early initiation of appropriate antibiotic treatment which should begin immediately diagnosis is suspected while ensuring that samples are taken for appropriate investigations. Antibiotic treatment, **including initial parenteral and subsequent oral preparations**, must be continued for a total of **6 weeks**.

**NON-GONOCOCCAL ARTHRITIS**

**Signs and Symptoms**

* Sudden onset, large joints usually affected
* Pain
* Fever
* Restriction of movement of limbs
* Joint abnormalities
* Joints warm to touch and tender
* Swollen with effusion

**Investigations**

* FBC
* Sickling /Hb Electrophoresis
* ESR /CRP
* Aspiration of joint effusion (fluid is turbid with polymorphs) for Gram stain and culture
* Blood culture and sensitivity
* Urethral swab

**Non-pharmacological treatment**

* Rest affected joint e.g. splinting or traction during acute phase
* Joint aspiration.

**Pharmacological treatment**

|  |
| --- |
| **Empirical treatment (until cultures and sensitivity results are back)**  **I.V. Ciprofloxacin 500mg 12 hourly**  **I.V. Cloxacillin 1-2g 6 hourly**    Followed by:  **Cloxacillin**, oral, Adults 1-2g 6 hourly for four weeks  *Children:* 5-12 years; 500mg 6 hourly  1-5 years; 250mg 6 hourly  <1 year; 125mg 6 hourly  **Alternative treatment**  **Clindamycin**, IV/oral, Adults 300 -400 mg 6-8 hourly  *Children:* 3-6 mg/kg 6 hourly (8 hourly in neonates less than 14 days old)  **NB: Discontinue Clindamycin immediately if diarrhoea or colitis develops**  In children with sickle cell disease and suspected Salmonella infection,  **Add**  **Paracetamol**, oral, Adults 1g 4-6 hourly  Children 10mg/kg 6-8 hourly  **OR**  **Ibuprofen**, oral, Adults 400 mg 8 hourly  Children 10 mg/kg 8 hourly |

**REFER**

**Refer all suspected or confirmed patients for urgent orthopaedic specialist treatment**

## 12.5 GOUTY ARTHRITIS

This is a disease with a number of disorders in which high urate salts from body fluids give rise to arthritis, bursitis, tenosynovitis, cellulitis, tophaceous deposits, kidney stones and renal disease.

**Signs and symptoms**

The big toe is the site of the first attack in over 70% of cases, but all other joints could be the first site. Onset may be insidious or sudden. The affected joint is hot, red and swollen and is excruciatingly painful and tender.

**Investigations:**

The serum uric acid is usually raised.

**Treatment** (Acute)

Colchicine 0.5mg 2- 4 times daily until symptoms relief. (Maximum 6mg per course)

**In Remission**

* **Allopurinol** 100-300 mg once a day **only to be used after** the acute phase.

## 12.6 OSTEOARTHRITIS

This is a degenerative joint disease that damages the articular cartilage leading to reactive new bone formation. Weight bearing joints (hips, knees), cervical and lumbar spine and the metacarpo-phalangeal and distal-interphalangeal joints of the hands are commonly affected. It is more common in females than males.

**Causes**

* Ageing
* Trauma
* Obesity

**Signs and Symptoms**

* Pain at initiation of exercise (walking)
* Morning stiffness which improves with exercise
* Diminution of joint movement
* Crepitus on moving affected joint(s)
* Heberden's nodes and deformed joints in the hands
* Joint swelling, warmth and effusions (knee especially)
* Osteoarthritis of cervical and lumbar spine may lead to muscle weakness in hands and legs respectively (myelopathy)

**Investigations**

* FBC
* ESR - mildly elevated
* X-ray of affected joints - narrowing and irregularity of the joint space

**Treatment**

**Non-pharmacological treatment**

* Encourage weight reduction if obese or over weight
* Increase physical activity, specific exercise, physiotherapy
* Weight supports (crutches, walking sticks or frames)

**Pharmacological treatment**

|  |
| --- |
| **Ibuprofen**, oral, 200-400 mg 8 hourly  **OR**  **Diclofenac** sustained release/retard, oral, 75 mg 12 hourly  **OR**  **Diclofenac, oral,**50mg 8hourly **or** 100mg 12 hourly  Paracetamol 1g 6 hourly  Co-codamol 500 /8mg, or 500/30mg 1-2 tablets 6 hourly or (Co- dydramol 10/500mg)  Tramadol 50 – 100mg 8 hourly |

**Note**

Topical NSAID therapy e.g., **Diclofenac** gel gives relief when used in the short term. It is best used for short periods (2-3 weeks) during flare-ups in the disease. Long term use of oral NSAIDs e.g., **Ibuprofen** and **Diclofenac** increases the risk of peptic ulcer disease. A proton pump inhibitor e.g., **Omeprazole** or H2-blocker e.g., **Ranitidine**, may be given if treatment is going to exceed 2 weeks.

* **Omeprazole**, oral, 20 mg in the morning 30 – 45 minutes before breakfast

**OR**

* **Ranitidine**, oral, 150 - 300 mg at night

**Patients with heart failure and chronic kidney disease should not be given NSAID's.**

Instead, they should have alternatives such as **Paracetamol** 1g 8 hourly or **Tramadol** 50 mg 8 hourly.

**Refer** moderate to severe cases or case non responding to treatment to an orthopaedic specialist for long term management. Also refer other complications such as lumbar spinal stenosis, cervical spondylosis, and nerve compression for specialist management.

## 12.7 SCIATICA

**Definition: low back pain Associated with radiating leg pain. The radiating leg pain known as Radiculopathy could either be unilateral or bilateral.**

**Risk Factors for Sciatica**

**PERSONAL FACTORS**

* Age (peak 45-64 years)
* Increasing risk with height
* Smoking
* Mental stress

**OCCUPATIONAL FACTORS**

* Strenuous physical activity—for example, frequent lifting, especially while bending and twisting
* Driving, including vibration of whole body

**CAUSES INCLUDE**

* Disc herniation
* Lumber canal Stenosis
* metastasis etc

**CLINICAL FEATURES**

* Low back pain
* bilateral or unilateral radiating pain to foot or toes
* Numbness or paraesthesia (burning or prickling sensation ) in the same distribution
* leg pain usually more that the back pain
* tender spinous process
* Leg raising test is positive

**INVESTIGATIONS**

* Plain lumbosacral X Ray
* Lumber CT scan
* Lumber MRI

**MANAGEMENT**

**NON-PHARMACOLOGICAL**

* Some bed rest advised,
* avoid lifting heavy objects
* avoid long hours of sitting, standing

**PHARMACOLOGICAL**

Combined all the following below

1. Analgesic + NSAID + Vitamin Bico + Muscle Relaxant
   1. Co codamol 1 tab 8 hourly
   2. Diclofenac 50mg - 100mg 8 hourly
   3. Vitamin Bico 1 tab bd
   4. Methocarbamol 380mg + Paracetamol 300mg 1-2 tablets 8 hourly (Distem)
   5. Mexazolam (Melex) 1 tab nightly
   6. Gabapentin or Pregabalin (to be prescribed by specialist)

**NOTE:** SIMILAR PRESENTATIONS CAN BE SEEN IN CERVICAL SPONYLOSIS AND OR CERVICAL DISC HERNIATIONS WITH PRESENTATIONS OF NECK PAIN AND HAND RADICULOPATHY- MANAGE AS ABOVE AND ADD SOFT CERVICAL COLLAR

**RED FLAGS FOR EMERGENCY REFERRAL TO THE NEUROSURGEON**

1. Focal neurologic deficit

2. Urinary incontinence / retention

3. Faecal incontinence or constipation

4. Cauda Equina syndrome

**IF SYMPTOMS PERSIST REFER FOR SPECIALIST MANAGEMENT**

## 12.8 TUBERCULOUS SPONDYLODISCITIS - SPINAL TUBERCULOSIS ( POTT’S DISEASE)

**Definition:** Granulomatous inflammation of the disc of tuberculous origin with resultant destruction of the endplates and collapse of the vertebral body leading to neurologic deficit. Thoracic spine is the most common localisation

**RISK FACTORS**

* Past Medical History of PTB
* Positive TB Contact History
* Immunosuppression (HIV)

**CLINICAL FEATURES**

* Back pain
* paraparesis / paraplegia
* radiculopathy
* spine deformity (GIBBUS) or swelling
* weight loss
* Fever
* Night sweats

**INVESTIGATION**

* FBC
* ESR & CRP
* Manteaux
* Gene X pert
* AFB
* Spine X ray of affected region
* Spine CT Scan of Affected region
* Spine MRI of affected region

**Diagnostic Criteria**

* Positive Contact +++
* any of (Fever, night sweats, weight loss) ++
* imaging suggestive ++++
* Manteaux +++
* ESR / CRP +
* GIBBUS +++

**TREATMENT**

Where possible refer all suspected Pott’s disease patients to the Neurosurgery Unit

**Otherwise**

**Refer to the TB unit for commencement of Treatment and NOTE that treatment MUST LAST for at least one (1) year**

**In case of Neurologic deficit refer to Neurosurgery Unit for expert management**

**Physiotherapy where necessary**

## 12.9. CELLULITIS

**Signs and Symptoms**

* Diffuse, tender swelling of soft tissue, not fluctuating, fever very common. May follow an infected wound or prick by a pin, nail, thorn, insect bite or cracks between the toes. The usual causative agent is *Staphylococcus*.

**Treatment**

Adults & Children: Elevate and rest the limb

**ADULTS**

**Flucloxacillin** oral, 500mg – 1g 6 (before food) hourly for 7 days

And **Metronidazole** oral: *either*- 400 - 500mg *or* 500mg I.V 8 hourly for 7 days

**OR**

**Ciprofloxacin** oral, 500mg OR 500mg IV 12 hourly 7 days

And Metronidazole oral: *either* 400 – 500mg *or* 500mg IV 8 hourly for 7 days

**OR**

**Erythromycin** oral, -500mg 6 hourly for 7 days

And **Metronidazole** oral, *either*200-400mg*or*250-500mg 8 hourly for 14 days

**CHILDREN**

**Flucloxacillin** oral**:** Less than 2 years **–** 250mg 6 hourly (before food) for 7 days

from 2-12 years – 500mg 6 hourly (before food) for 7 days

and **Metronidazole** oral:7.5mg/kg 8 hourly

**OR**

**Erythromycin** oral, 25mg/kg dose 6 hourly for 14 days

and **Metronidazole** oral:7.5mg/kg 8 hourly

**If severe, admit and administer I.V Ceftriaxone 1-2g, or IV Augmentin 1.2g 8 hourly and I.V Metronidazole**

NOTE: Severely ill patients and those with complications such as sepsis, large abscess and gangrene, or if the cellulitis persists despite above treatment, patient should be referred to centre with surgical capability immediately.

## 12.10 SOFT TISSUE ABSCESS

**CONSIDER SURGICAL DRAINAGE, AS REQUIRED**

**Antibiotics needed if:**

* hands, feet, face, or other parts of the body that are involved
* multiple abscesses
* fever and malaise

**MANAGEMENT IN ADULTS:**

**Flucloxacillin** oral, 500mg 6 hourly (before food) for 7 days

**OR**

**Erythromycin** oral: 500mg 6 hourly(four times daily) for 7 days

**IF** Perineal

**Metronidazole** oral: *either*  400 - 500mg *or* -500mg IV, 8 hourly (three times daily) for 7 days

**Plus**

**Metronidazole**

**NOTE: FOR RE-OCCURRING ABSCESSES CHECK FOR DIABETES, IMMUNOSUPPRESION OR HIV AND REFER FOR SPECIALIST INTERVENTION**

**MANAGEMENT IN CHILDREN:**

**Flucloxacillin** oral**: 1 month – 1 year 62.5 – 125mg 6 hourly (before food) for 5-7 days**

From 2- 9 years 125 – 250mg 6 hourly (before food) for 5- 7days

In severe cases –

**Flucloxacillin IV**50-100mg/kg/day **in 4 divided doses** for 7 days

**PLUS**

**Metronidazole IV** 7.5mg/kg **in 3 divided doses** for 7 days

**Management**:

* Surgical drainage, leave wound open and dress daily.
* If abscess is large or complicated by gangrene, or involves an adjacent joint, refer to centre with surgical capability immediately.

## 12.11 ULCERS

* Non-Specific – a breach in the continuity of the skin and the underlying tissue. May be caused by trauma, or a complication of cellulitis, diabetes or sickle cell disease. Edges are usually slopping.
* Specific – caused by specific infections/infestations like tuberculous ulcers, Syphilitic ulcers etc.

**Malignant** – presents with raised or rolled edges, like squamous cell carcinoma, basal cell carcinoma, melanoma, and Kaposi's sarcoma.

**Treatment:**

Elevate affected area if possible

Regular dressing of ulcer with topical antiseptics like **Chlorhexidine/ Povidone iodine**

Treat underlying condition for specific ulcers

**REFER** to centre with surgical capacity:

* If ulcer fails to show signs of healing with above treatment
* If surgery is required e.g. skin grafting, excision or amputation
* Malignant ulcers
* foot and hand ulcers in patients with diabetes

## 12.12 ACUTE OSTEOMYELITIS

Osteomyelitis is infection of the bone characterised by progressive inflammatory destruction and apposition of new bone. If untreated, it leads to chronic osteomyeltitis which is a major cause of disability and morbidity. Treatment is with surgical decom

**Signs and Symptoms**

Fever, malaise, tender swollen limb

Causative Agent: Staph. Aureus, Haem. Infl. B, (esp. in children), Enterobacterias, Salmonella

**Investigation**

* X-ray if available (changes take 7-14 days to appear)
* CRP and/or ESR

**Treatment**: Antibiotics and refer as surgical drainage (corticotomy) is often required

ANTIBIOTICS best according to sensitivity pattern

**Adults:**

**Cloxacillin** oral**:**  250-500mg 6 hourly daily for at least 3 weeks

**OR**

**Chloramphenicol** oral**:** 250-500mg 6 hourly daily for at least 3 weeks especially if Sickle cell disease (SS) present

**OR**

**Erythromycin**oral:500mg 6 hourly daily at least 3 weeks

**Children:** Treatment using drugs as above in the appropriate child dose

## 12.13 ACUTE OSTEOMYELITIS IN SICKLE CELL DISEASE

Causative agent: often Salmonella, but also Staphylococcus

**Acute** - Infection of the bone and is most common in children under 12 yrs. Common symptoms are fever, malaise and severe pain at the site of affected bone.

**NB**: X-rays will not show any changes in the bone till after 10-14 days.

**Chronic** – Complication of acute osteomyelitis. Presents with discharging sinuses over affected bone, with swelling and tenderness at times. X-ray of the affected bone shows sequestrum and involucrum.

**Management**

* Dress wound and refer to centre with surgical capacity as soon as possible.
* Antibiotic treatment can be delayed until after surgical intervention and deep samples collected for mcs, unless the patient is septic clinically

**Treatment**

**Chloramphenicol IV** 100mg/kg/day 6 hourly for 2 weeks

**OR**

**Cloxacillin IV** as above if Salmonella is ruled out

## 12.14 SPINAL INJURIES

**Definition: Symptoms and signs of lesions of the vertebrae, ligaments, nerve, spinal cord or disc due to trauma on the spine.**

It usually follows trauma. Patient presents pain, and depending on the severity and site of injury, inability to move lower limbs or both lower and upper limbs, with incontinence and loss of sensation.

Classification:

1. Complete Spinal Cord injury: refer to complete loss of sensory and motor below the level of injury.
2. Incomplete Spinal Cord Injury: refer to incomplete loss of sensory and or motor function below the level of injury

For Cervical Spine Injury

Neck pain

upper limb weakness / paralysis + lower limb weakness / paralysis

sphincter disorders

loss of sensation

For Thoracic and lumber injuries

thoracic or lumber pain

paraparesis or paraplegia

sphincter disorders

loss of sensation

**Management**

* Nurse on a flat hard bed / board for not more that 30 mins
* Ensure ABC are acceptable
* secure a hard cervical collar for cervical injuries,
* secure a corset or thoracic and lumber belts for their respective injuries
* Give parenteral analgesia ( IM Diclofenac 75mg stat)
* Give IV Paracetamol 1g 6 hourly
* IV Normal saline 500mls

**Refer to a centre with surgical capacity**.

**NB**: ***When moving the patient use the ‘log roll’ technique.***

## 12.15 LIMB FRACTURES AND DISLOCATIONS

It usually follows trauma. Patient presents with pain at the affected limb and swelling with lack or reduced movement of the affected limb. There may be an overlying injury.

**Management**

* The limb should be reduced and splinted,
* Put clean or sterile dressing over any overlying wound,
* **DO NOT SUTURE WOUND**
* Open fractures should receive co-amoxiclav 1.2g IV stat, within 4 hours and consider tetanus status
* Oral or Parenteral analgesia given (IM **Diclofenac** 75mg stat)
* X-rays of affected part taken

**Refer to or discuss with a centre with orthopaedic capacity as soon as possible**.

## 12.16 ABRASIONS AND LACERATIONS

It usually follows trauma. Patient presents with pain at site, and may have swelling and bleeding from the site

**Management**

Site is cleaned and dressed,

Oral analgesia given (**Paracetamol** 1gm 6 hourly daily when required (max 4g daily)).

If patient has a laceration (with no underlying bone, nerve, vascular or tendon injury), can then be referred to a centre where suturing can be done under local anaesthesia (**Lignocaine 1% or 2%)**

If Laceration is very deep, with suspected tendon, nerve or arterial injury, arrest bleeding (with a tourniquet proximal to the site of bleeding), **do not** suture overlying skin, pack with saline/iodine soaked gauze and pressure dressings, elevate and refer to centre with surgical capacity.

## 2.17 HEAD INJURY

DEFINITION: Injuries to the scalp, skull, brain and underlying tissues and blood vessels in the head.

CAUSES: RTA, Falls, Assaults, Sports etc

CLINICAL FEATURES

* Headache
* Vomiting
* Scalp bleeding
* Loss of consciousness
* Motor deficit
* Pupillary changes

CLASSIFICATION:

Based on the Glasgow Coma Score which assesses the level of consciousness head injury is classified into three main types namely:

* Mild Head Injury
* Moderate Head Injury
* Severe head injury



MANAGEMENT RECOMMENDATIONS FOR HEAD INJURY ARE BASED ON THREE TIERS OF RISKS

1. LOW RISK

2. MODERATE RISK

3. HIGH RISK

1. LOW RISK (GCS 15 & 14)

Patient presented with the following clinical features following head injury.

* Asymptomatic
* Headache
* Dizziness
* Scalp hematoma, laceration, contusion or abrasion
* No history of loss of consciousness

Management plan

* No X Ray
* No CT scans
* No admission
* Symptomatic management for headache with Paracetamol / codeine / NSAIDS
* Reassure patient and discharge

Note: ALWAYS ADVICE PATIENTS TO WATCH OUT FOR THE RED FLAGS AND REPORT BACK TO THE HEALTH FACILITY

THESE INCLUDE:

* Persistent headache
* Vomiting
* Alteration of the level of consciousness
* Hemiparesis or hemiplegia
* Convulsion

2. MODERATE RISK (GCS 8-13)

* Patient presented with the following clinical features following head injury.
* Loss of Consciousness
* Progressive headache
* Drug intoxication
* Posttraumatic amnesia
* Posttraumatic seizures
* Multiple trauma
* Severe facial injuries
* Possible skull penetration or depressed skull fracture
* Less than 2 years
* Significant subgalea swelling

**Management plan**

Needs in-hospital observation to rule out any neurologic deficit

In case post traumatic seizures start on Carbamazepine / Phenytoin / Levetiracetam

Pain management with Paracetamol/Codeine/NSAIDS/Tramadol

Clean and debride and suture any laceration.

In case of any deterioration, CT San, refer to Neurosurgeon

**1. HIGH RISK (GCS 3-8)**

Patient presented with the following clinical features following head injury.

* Depressed level of consciousness
* Focal neurologic findings
* Penetrating skull injury or depressed skull fracture
* Decreasing level of consciousness

**NOTE:**

SIGNS OF RAISED ICP

HEADACHE, NAUSEA, VOMITING, VISUAL DISORDERS (PAPILLOEDEMA), ANISOCORIA, NEUROLOGIC DEFICIT.

**Management Plan:**

Urgent brain CT scan and refer to neurosurgeon

**TREATMENT PLAN FOR SEVERE HEAD INJURY**

First ensure Airway Breathing and Circulation are okay

Check Pulse, BP, RR, and OSAT and correct as appropriate

* Secure a C-Spine Collar
* Secure an NG Tube in a patient with loss of consciousness
* Elevate head of bed

Give Oxygen if OSAT is less than 94%

IV PARACETAMOL 1G QDS

IM DICLOFENAC 75MG TDS

IV RANITIDINE 40MG TDS

IV METOCLOPRAMIDE 10MG TDS

IV phenytoin 10-15mg/kg Loading dose then Maintenance 100mg

**or**

IV Levetiracetam 500mg every 12 hours

IV mannitol 20% 0.25-1g/kg i.e., 350 mls (adult) stat over 20 mins and maintain with 250mls every 6 hours

IV Normal Saline 80mls per hour for adults and peds calculate using (4-2-1) rule

Do not give 5% dextrose

Do not give Steroids

## 12.18 PYOMYOSITIS

It is a bacterial infection involving the muscles. Presents with diffuse, at times fluctuant swelling over a muscle or group of muscles. It may be associated with fever and chills.

**Treatment**:

* Admit, elevate affected area if possible.
* Surgical drainage if pus localized, leave wound open and dress daily.
* **Flucloxacillin** IV or IM,
* **Adults: 1**g every 6 hours for 48 hours then change to Oral **Flucloxacillin** 500mg 6 hourly, before food (for a total of 14 days including the IV)

**Children***:* ***Flucloxacillin*** IV or IM*,* 12.5-25mg/kg per dose every 6 hours for 48 hours then change to oral

*Child up to 2yrs:* 125mg per dose, every 6 hours (before food), to complete 14 days including the IV

*Child 2-10 yrs:* 250mg per dose every 6 hours (before food) to complete 14 days including the IV

* NOTE: If area involved is large or complicated by gangrene or sepsis, or no improvement after 48 hours of IV medication, refer to centre with surgical capacity immediately.

## 12.19 ULCERS

**Non-Specific** – a breach in the continuity of the skin and the underlying tissue. May be caused by trauma, or a complication of cellulitis, diabetes, or sickle cell disease. Edges are usually slopping.

**Specific** – caused by specific infections/infestations like tuberculous ulcers, Syphilitic ulcers etc.

**Malignant** – presents with raised or rolled edges, like squamous cell carcinoma, basal cell carcinoma, melanoma, and Kaposi's sarcoma.

**Treatment:**

* Elevate affected area if possible
* Regular dressing of ulcer with topical antiseptics like **Chlorhexidine/ Povidone iodine**
* Treat underlying condition for specific ulcers

**REFER** to centre with surgical capacity:

* If ulcer fails to show signs of healing with above treatment
* If surgery is required e.g., skin grafting, excision, or amputation
* Malignant ulcers

## 12.20 SEPTIC ARTHRITIS:

An inflammatory lesion affecting a joint, mainly affects children. Usually haematogenous spread from a primary focus following bacteraemia e.g. septic skin lesions, Sinusitis, throat infections, Abrasions, wounds, pressure sores and Osteomyelitis. Patient may present with a high fever, swollen affected joint, general malaise and reduced or abolished movement of the affected limb. Causative agents are *Staphylococcus, Streptococcus, Gonococcus* and in children: *Staphylococcus, Strep. Enterococcus*, *Salmonella, H. Influenza*

**Signs and Symptoms**

Swollen and tender joint, limited range of motion, usually single large joints.

**Management**

* Immobilize affected limb
* Start IV Antibiotics- Gentamycin 2.5mg/kg stat
* Refer to centre with surgical capacity immediately for drainage of the joint, and further management

**Refer to Major Health Centre or Hospital**

**Diagnosis**: Needle aspiration, Gram and Zinc stain and Culture of joint aspirate, in children blood culture

**If Possible: X-RAY**

**Treatment:**  Needle Aspirate, preferably by specialist: SURGERY

**Avoid Surgical Drainage If TB Suspected**

**Adults: Flucloxacillin** oral, 250-500mg 6 hourly (before food) for at least 3 weeks

**OR**

**Erythromycin** 500mg 6 hourly daily for at least 3 weeks

**OR**

**Chloramphenicol oral**, 250-500mg 6 hourly daily for over 3 weeks especially if Sickle cell disease (SS) present

**Children: Flucloxacillin** oral**:**

Less than 2 years **–** 125mg 6 hourly (before food) for at least 3 weeks

From 2-12 years – 250mg 6 hourly (before food) for at least 3 weeks

**OR**

**Erythromycin** oral, 25mg/kg dose 6 hourly for at least 3 weeks

**OR**

**Chloramphenicol oral**, 12.5mg/kg, 6 hourlyfor over 3 weeks especially if Sickle cell disease (SS) present

(12.5mg/kg 12 hourly in neonates less than 14 days old)

Start treatment and **REFER**.

## 12.21 ACUTE OSTEOMYELITIS

**Signs and Symptoms**

Fever, malaise, tender swollen limb

Causative Agent: Staph. Aureus, Haem. Infl. B, (esp. in children), Enterobacterias, Salmonella

**Investigation**

* X-ray if available

**Treatment**: Antibiotics and refer

ANTIBIOTICS best according to sensitivity pattern

**Adults:**

**Cloxacillin** oral**:**  250-500mg 6 hourly daily for at least 3 weeks

**OR**

**Chloramphenicol** oral**:** 250-500mg 6 hourly daily for at least 3 weeks especially if Sickle cell disease (SS) present

**OR**

**Erythromycin**oral:500mg 6 hourly daily at least 3 weeks

**Children:** Treatment using drugs as above in the appropriate child doses

## 12.22 ACUTE OSTEOMYELITIS IN SICKLE CELL DISEASE

Causative agent: often Salmonella, but also Staphylococcus

**Acute** - Infection of the bone and is most common in children under 12 yrs. Common symptoms are fever, malaise and severe pain at the site of affected bone.

**NB**: X-rays will not show any changes in the bone till after 10-14 days.

**Chronic** – Complication of acute osteomyelitis. Presents with discharging sinuses over affected bone, with swelling and tenderness at times. X-ray of the affected bone shows sequestrum and involucrum.

**Management**

* Dress wound and refer to centre with surgical capacity as soon as possible.

**Treatment**

**Chloramphenicol IV** 100mg/kg/day 6 hourly for 2 weeks

**OR**

**Cloxacillin IV** as above if Salmonella is ruled out

## 12.23 SPINAL FRACTURES AND DISLOCATIONS

It usually follows trauma. Patient presents with back pain, and depending on the severity and site of injury, inability to move lower limbs or both lower and upper limbs, with incontinence and loss of sensation.

**Management**

* Nurse on a flat hard bed/ board,
* Give parenteral analgesia ( IM **Diclofenac** 75mg stat)
* **Refer to a centre with surgical capacity**.

**NB**: ***When moving the patient, should be moved like a ‘log’, meaning patient is moved as a unit, not allowing the spine to bend.***

## 12.24 LIMB FRACTURES AND DISLOCATIONS

It usually follows trauma. Patient presents with pain at the affected limb and swelling with lack or reduced movement of the affected limb. There may be an overlying injury.

**Management**

* The limb should be splinted,
* Put clean or sterile dressing over any overlying wound
* Parenteral analgesia given (IM **Diclofenac** 75mg stat)
* **Refer to centre with surgical capacity immediately**.

## 12.25 ABRASIONS AND LACERATIONS

It usually follows trauma. Patient presents with pain at site, and may have swelling and bleeding from the site.

**Management**

* Site is cleaned and dressed,
* Oral analgesia given (**Paracetamol** 1gm 6 hourly daily when required (max 4g daily)).
* If patient has a laceration, can then be referred to a centre where suturing can be done under local anaesthesia (**Lignocaine 1% or 2%)**
* If Laceration is very deep, with suspected tendon injury, arrest bleeding, suture overlying skin, and refer to centre with surgical capacity.

# CHAPTER THIRTEEN

COMMON EYE CONDITIONS

INTRODUCTION

Common eye conditions in The Gambia range from red eyes due to dry eyes and allergies to acute infections such as viral conjunctivitis, bacterial conjunctivitis, to vision-threatening infections such as corneal ulcers and life-threatening orbital cellulitis. Usually, mild or moderate infections can be managed through regular personal hygiene and prevention of cross infections within households and from health facilities. Many unproven (or even harmful) eye traditional remedies can cause severe visual impairment and the use of such measures must be warned against. Wherever there is doubt over a diagnosis or poor therapeutic response, prompt referral to the next level of care must take precedence.

**RED EYE**

Infections, allergies, and injuries inflame the eye and cause a red eye. Acute red eye may have a history of injury to the eye or there may be no history of injury. History of injury is straight forward. There may be a foreign body on the Cornea or on the conjunctiva, under the eyelid. A blunt injury may cause a Sub conjunctival haemorrhage or bleeding into the anterior chamber Hyphaema).

**CAUSES**

* Conjunctivitis of the new-born (ophthalmia neonatorum)
* Vernal Conjunctivitis
* Episcleritis
* Blepharitis
* Trichiasis
* Hordeolum and Stye
* Thyroid eye disease
* Molluscum contagiosum
* Medicamentosa/Contact Dermatitis
* Exposure Keratopathy
* Ocular Cicatricial Pemphigoid
* Pterygium/ pingueculum
* Dry eyes
* Uveitis
* Trachoma

**ACUTE RED EYE WITH NO HISTORY OF INJURY**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Table 1.1: Characterizing Acute red Eye with no history of injury | | | | |
|  | Conjunctivitis of the neonates | Conjuctivitis (bacterial) | Conjuctivitis (viral) | Allergic conjunctivitis |
| Onset | Sudden | Sudden | Sudden | Sudden |
| Pain | Discomfort | + | ++ | Discomfort/ itching |
| Discharge | Purulent or muco-Purulent | Watery/purulent | Watery. No purulent discharge | no discharge |
| Vision | Normal | Reduced/blurry | Reduced | clear |
| Eye Lid | Swollen or Sticky | Swollen | not swollen | no swelling |
| Redness | Away from the cornea | Around the cornea | redness around the cornea | brownish pigmentation |
| Cornea | Clear | clear | Clear | Cloudy/ hazy |

## 13.1 CONJUNCTIVITIS OF THE NEW-BORN (OPHTHALMIA NEONATORUM)

Any conjunctivitis with discharge occurring in **the first 28 days of life**.

* Day 1**-**3 (bacterial) severe usually due to *N. gonorrhoea*
* Day 4-28 (chlamydial) mild
* Mixed infection is very common

**Causes**: Untreated Sexually Transmitted Infection (S.T.I) in Pregnancy which is transmitted to the child during birth.

**Signs and Symptoms**

* Serous or straw-coloured watery discharge
* Very purulent discharge, frequent occurring within the first 48 hours of life
* Swelling of the lids due to purulent discharge
* Redness or conjunctival oedema (chemosis)
* There is fever
* As a result of Neisseria gonorrhoea
* Ill child, febrile, irritable, may also have upper respiratory tract infection

**Basic Eye Examination**

* The aim is to rule out any corneal involvement.
* Get help to steady the baby and do a good eye examination with a torchlight and magnifying loupe.
* When in doubt about your examination findings, refer immediately after initiating treatment

**Treatment**

* A very serious eye infection that requires prompt and effective treatment.
* The treatment entails both topical and systemic.
* Delayed action can lead to bilateral corneal perforations within 12 to 24 hours.

**Gentamycin** eye drop 0.3% every 15 minutes for the first 48 hours then 6 hourly for 7-14 days (health centre). Must be fortified: to a 5mL bottle of Gentamicin 0.3%, add 0.8mL of 40mg/mL

**Tetracycline** Eye ointment 1% nocte (community)

**Topical: Ofloxacin 0.3% eye drops every 10 minutes for 2 hours.**

**Thereafter, eye 30 minutes**

**Important note:**

* Frequent swabbing with gauze soaked in saline
* STI management for both parents and their partner/s ( health centre)

**Refer** all cases not responded to treatment within 24 hours to the specialist eye unit immediately.

**Signs & Symptoms**

* Redness
* Irritation/ Foreign body Sensation
* Discharge
* Swollen eyelid

**Treatment**

**Non-pharmacological**

* - Frequent hand washing
* - frequent face washing
* - Limit sharing of towels and linens
* - Avoid hand shaking with others
* - Possibly confine yourself

**Pharmacological**

**Tetracycline** eye Ointment nocte for 5 days (community)

Ciprofloxacin eye drop 6 hourly for 5 days

OR

Ofloxacin eye drop 8 hourly for 5 days

**OR**

**Gentamycin** eye drop 6 hourly for 5 – 7 days (health center)

**OR**

**Chloramphenicol** eye drop 6 hourly for 5-7 days (health center)

**OR**

**Ciprofloxacin** eye drop 6 hourly for 5-7 days (hospital)

**Refer**

Severe pain or headache, photophobia, decreased vision acuity, trauma or contact lens use

Mid-dilated fixed pupil, hazy cornea

No improvement after 7 days of antibiotic treatment

Follow-up is recommended for patients who develop reduced vision, pain, light sensitivity or if symptoms persist beyond 7 days.

**Ophthalmia Neonatorum:** Conjunctivitis in the first 28 days of life.

* Day 1-3 (bacterial) severe
* Day 4-28 (chlamydial) mild

**Causes**: untreated Sexually Transmitted Infection (S.T.I) in Pregnancy which is transmitted to the child during birth.

**Signs and Symptoms**

* Mucopurulent discharge
* Swelling of the lids
* Redness

**Treatment**

**Gentamycin** eye drop 0.3% every 15 minutes for the first 48 hrs then 6hrly for 7-14 days (health centre)

**Tetracycline** Eye ointment 1% nocte (community)

**Important note:**

* Frequent swabbing with cotton soaked in saline and a stat dose of Tetracycline eye ointment 1% (health centre).
* STI management for both parents and their partner/s (health centre)

**REFER** to eye specialist if there is no improvement for **48 hours**

## 13.2: BACTERIAL OR VIRAL CONJUNCTIVITIS:

Inflammation of the conjunctiva due to bacteria virus and/or other causes.

## 13.3 TRACHOMA:

is a chronic follicular kerato-conjunctivitis which primarily affects the superior and inferior tarsal conjunctiva and cornea. It is a disease of poor hygiene and poverty. If not treated, it can lead to blindness.

**W.H.O. GRADING FOR TRACHOMA**

* TF- at least 5 or more follicles on the tarsal plate, indicates active disease and need for treatment.
* TI- intense inflammation obscured tarsal blood vessels. Needs urgent treatment.
* TS- Scarring stage indicates old infection, this is the inactive stage. There is no need for treatment.
* TT – trachoma Trichiasis. There is need for surgical correction of eye lid lashes.
* CO – corneal opacities. Visual loss from previous infection.

**Signs and Symptoms**

* Recurrent conjunctivitis
* Watery discharge and foreign body sensation
* Reduced vision
* Follicles in upper tarsal plate
* Scarring
* In turning of lids, rubbing of lashes on cornea
* Corneal scars in older children and adults

**Treatment**

For adults **above 50 kg**

**Azithromycin, oral, 1 gram** as a single dose (community)

For children above 6 months

**Azithromycin, oral, 20mg/ Kg** (body weight) as a single dose (community)

**NB: Azithromycin is not recommended for children below 6 months and pregnant women.**

For children less than six (6) months old child

**Tetracycline** eye Ointment 5 times daily for 6 weeks(community)

For Pregnant Women

**Tetracycline** eye Ointment 5 times daily for 6 weeks (community)

**NB**: Advise patients on WHO preventive measures of trachoma known as the SAFE strategy, i.e. good environmental sanitation, frequent face washing with clean water. The antibiotic and surgical component should be carried out by the eye specialist.

## 13.4 TRICHIASIS:

Rubbing of 2 or more eyelashes on the cornea due to trachoma scarring and entropion (inward turning of eyelashes).

**TREATMENT:**

**REFER** to eye specialist for surgery (community)

## 13.5 VERNAL/ ALLERGIC CONJUNCTIVITIS

It is a long term (chronic) swelling of the outer lining of the eye due to an allergic reaction. Often occurs in people with a strong family history of allergies; this may include rhinitis, asthma and eczema. It is most common in young males and most often occurs during the early and late parts of the rainy season.

**Signs and Symptoms**

* Conjunctival (brownish) pigmentation
* Itching
* Redness
* Tearing
* Photophobia

**Treatment**

Mast cell stabilizer e.g. **Sodium Cromoglycate** 2% or 4% 6 hourly for one month (health center).

**Tetracycline** ointment 1% nocte (community)

Tabs **Chlorpheniramine** 4mg three times daily for adult (health centre) 2mg three times daily for children above 2yrs.

OR

Cetirizine 10mg 24 hourly or 12 hourly for 10 days

Ketrolac eye drop (mild anti-inflammatory) 8 hourly for 10 days

In severe vernal conjunctivitis **Steroid** eye drops or sub-conjunctival injections are recommended. Combined **steroid** and **antibiotic** eye drops like **Betamethasone+ Neomycin** 6 hourly for 2-3 weeks (health Centre).

**Refer:**

**If condition persists to an eye specialist**

## 13.6 XEROPHTHALMIA:

This condition is common in children. It is associated with inadequate intake of foods that contain vitamin A. It is a common cause of blindness in children. It is important to prevent this condition by examining the eyes of all sick children and administration of vitamin A supplements.

**Causes**

* Vitamin A deficiency
* Malnutrition
* Measles
* Malabsorption

**Signs & Symptoms**

* Night blindness
* Dry conjunctiva
* Grey sclera
* Conjunctival folding (wrinkling)
* Keratomalacia (cloudy cornea)

**Treatment**:

Improve diet

**Vitamin A** capsules

* 200,000iu day 1, day 2 & day 14 (adult) (health Centre)
* 100,000iu day 1, day 2 & day 14 (children) (health Centre)

**Important note:** Refer all established cases of Xerophthalmia to an eye specialist if the condition is severe with an uneven or bulging cornea.

## 13.7 BLEPHARITIS:

Inflammation of the eyelids

**Signs & Symptoms**

* Scaling
* Itching
* Loss of lashes

**Treatment**

* **Tetracycline** eye Ointment 1% 8 hourly for 1 week (community)
* Lid Hygiene with mild shampoo (community)

## 13.8 STYE or STIE:

Bacterial infection of the eye lash root follicle (the sebaceous gland of the eyelid)

**Signs and Symptoms**

* Swelling
* Tenderness
* Pain

**Treatment**

Topical antibiotics with mild anti-inflammatory eye drops

**Amoxicillin**

500mg 8 hourly for 5 days adult,

250mg, 8 hourly for 5 days 5-12years,

125mg, 8 hourly for 5 days children 1-5 years (health Centre)

Oral **Diclofenac**

50mg 8 hourly for 5 days (adult),

0.3-1 mg/kg 8 hourly for 3 days (children) (health Centre)

OR

Paracetamol 1g, 8 hourly for 3 days

Warm compress twice a day (community)

## 13.9 CHALAZION:

Painless nodular swelling of the eyelid caused by blockage of the lid glands. It can be single (Chalazion) or multiple (Chalazia).

**TREATMENT**

Warm compress (community)

**Amoxicillin**

500mg 8 hourly for 5 days adult,

250mg, 8 hourly for 5 days 5-12years,

125mg, 8 hourly for 5 days children 1-5 years (health centre)

**REFER to eye specialist.**

## 13.10 GLAUCOMA:

A group of eye conditions that damage the optic nerves and result in gradual loss of vision and blindness. However, with early detection and treatment blindness can be prevented. It is called the SILENT THIEF OF SIGHT. Glaucoma is the leading cause of irreversible visual loss globally.

**Signs and Symptoms**

* High intraocular pressure
* Cupped disc ratio of over 0.5
* Reduced peripheral vision due to visual field loss.

**Treatment**

**Timolol** 0.25- 0.5% eye drop, one drop twice daily (health centre)

**NOTE: Timolol is contraindicated in patients with asthma & chronic heart failure.**

**Prolong use of Timolol causes dry eyes**

**Acetazolamide** oral **(diamox)** 250mg 8 hourly for 10 days for adult.

* + Children 5mg/kg 2-4 times daily, max. Dose 750mg (hospital).

**Refer** to Eye specialist or ophthalmologist

## 13.11 UVEITIS:

Inflammation of the uveal tissue

**Iris, Ciliary body and Choroid**

**Treatment**

* **Anterior (Iritis)**
* **Prednisolone** eye drop 6 hourly for 1 week (health centre)
* **Tropicamide** eye drop 1% 8 hourly for 1 week (health centre)
* Posterior (Choroiditis) and Pan Uveitis (Vitritis)
* Refer to eye specialist or ophthalmologist

## 13.12 CORNEAL ABRASION

Bruises or breaks on the corneal epithelium

**Signs and Symptoms**

* Mild to Severe pain
* Photophobia
* Redness
* Tearing

**Treatment**

* **Tetracycline** eye ointment 1% (stat) (community)
* Eye pad for 24hrs (promote corneal epithelial healing) (community)
* **Gentamycin** eye drop 0.3% 6hrly for 7 days (health center)
* **Note: DO NOT APPLY ANY STEROID EYE DROP**
* If no improvement for 48 hrs, refer to an eye specialist

## 13.13 CORNEAL FOREIGN BODY:

Any foreign material that gets into the eye (organic or chemical)

**Treatment**

* Remove under local anesthesia (community)
* Irrigation with clean tap water or normal saline(community)

**Refer: If pain persists**

## 13.14 CORNEAL ULCER:

A break in the continuity of the corneal epithelium, stroma or endothelium usually detected by corneal staining with fluorescence.

**Signs and Symptoms**

* Severe Pain
* Redness
* Discharge
* Swollen eye lids
* Photophobia
* Hypopyon (Pus in the anterior chamber)
* Reduced Vision
* Headache
* Fever
* Tearing
* Photophobia

**Treatment**

Fortified **Gentamycin** eye drop every 15 minutes for 48hrs (health centre)

OR

Ciprofloxacin eye drop 6 hourly for 5 days

**Tetracycline** 1% Eye ointment at night (community)

**Refer to Eye specialist or Ophthalmologist as soon as possible**

## 13.15 CHEMICAL EYE INJURIES:

Any chemical getting into the eye

* Acid
* Alkali

**Signs and Symptoms**

* Mild to severe pain
* Burning sensation
* Redness
* Reduced vision

**First Aid measure**- Copious irrigation with clean tap water or Saline for 30 mins or use 3 litres of water to irrigate the affected eye (community) slowly and carefully.

**Tetracycline** eye ointment 1% stat (community)

**REFER TO EYE SPECIALIST AS AN EMERGENCY**

**Treatment**

* **Gentamycin** eye Drop 6hrly for 5-7 days (health centre)
* **Tetracycline** 1% eye ointment at night for 1 week(community)
* Daily Staining to monitor healing (health centre)

**URGENT/EMERGENCY EYE CONDITIONS**

1. Hyperacute Conjunctivitis
2. Corneal Ulcer
3. Orbital Cellulitis
4. Endophthalmitis
5. Bilateral Cataracts
6. Diabetic Retinopathy
7. Congenital/Childhood Glaucoma (Buphthalmos)
8. Painful Blind Eye
9. Retinal Break/Retinal Detachment
10. Orbital Mucormycosis
11. Herpes Zoster Ophthalmicus
12. Sudden Loss of Vision

## 13.16 COMMON EYE INJURIES (TRAUMA)

1. Lid Laceration
2. Conjunctival Laceration
3. Corneal Laceration
4. Hyphaema
5. Traumatic Cataract
6. Black Eye (Ecchymosis)
7. Corneal Foreign Body
8. Chemical Burns
9. Facial Fracture/Head Injury/Coma

|  |  |
| --- | --- |
| **EYE CONDITION** | **TREATMENT** |
| Intracorneal foreign Bodies | * Shield eye * Refer to eye specialist |
| Corneal laceration | * Oral antibiotics * Eye shield * Refer to ophthalmologist |
| Penetrating injury | * Eye shield * Oral antibiotic * Refer to ophthalmologist |
| Corneal perforation | * Eye shield * Oral antibiotics * Refer |
| Ruptured globe | * Eye shield * Oral antibiotics * Refer to ophthalmologist |
| Lid laceration | * Simple- repair * Involving margin- refer |

## 13.17 ENDOPHTHALMITIS.

Is an inflammatory condition of the intraocular cavities (i.e., the aqueous and/or vitreous humour), usually caused by an infection. Panophthalmitis is the inflammation of all coats of the eye including the intraocular structures.

**Signs & Symptoms**

* Severe pain and reduced Vision and photophobia
* Discharge
* Hypopyon (Pus in the anterior chamber)
* Redness
* Chemosis (conjunctival oedema)
* Fever
* Ecchymosis (swelling of lids)

**Treatment**

**Paracetamol**

1 gram 8 hourly for 3 days (adult) ,

10 – 15 mg/kg every 4-6 hours for 3 days (children) (community)

**Gentamycin** eye drop 1/2hrly for 48 hours, then 1hourly until inflammation subsides (health centre).

STERIOD THERAPY SHOULD BE INITIATED BY AN OPHTHALMOLOGIST

**REFER TO OPHTHALMOLOGIST AS SOON AS POSSILE.**

## 13.18 PRESEPTAL CELLULITIS:

Inflammation of the periorbital tissues without restriction of eye movements. The eyeball is not affected

**Signs and Symptoms**

* Swelling of the lids
* Pain
* Tenderness

**Treatment**

Caps **Amoxicillin**

* 500mg 8 hourly for 5 days(adult),
* 250mg 8 hourly for 5 days (children above 6 years) (health centre)
* 125mg 8 hourly for 5 days (children below 6 years) (health centre)

## 13.19 ORBITAL CELLULITIS:

Inflammation of the periorbital tissues with restriction of the eye movements.

**Signs and Symptoms**

* Swelling of the Lids (Ecchymosis)
* Swelling of the Conjunctiva (Chemosis)
* Redness
* High intraocular pressure
* Headache
* Fever
* Central Nervous System involvement

**Treatment**

**Ceftriaxone** 1g daily for one week thereafter change to oral to complete a 21-day or 28-day regime

**Amoxicillin** oral, 500mg 8 hourly for adult ,

125-250 mg 8 hourly for children for 5 days (health centre)

Metronidazole 500mg is added to persons older than 10 years

**Paracetamol** oral, 1 gram 8 hourly for 3 days adult,

10-15 mg /kg for children (community)

**Orbital cellulitis is a life-threatening emergency and therefore needs an urgent referral to an ophthalmologist**.

## 13.20 CATARACT:

Opacification of the Crystalline lens

**Signs and Symptoms**

* Gradual painless loss of vision
* White pupil
* Double vision
* Haloes (multiple reflections when looking at light)
* Cloudy vision

**Treatment**

**Refer** to Senior Ophthalmic Medical Assistant (SOMA) for Surgery

## 13.21 PTERYGIUM:

Conjunctival growth over the cornea.

**Signs and Symptoms**

* Redness
* Foreign body sensation
* Visible growth
* Dryness and occasional pain
* Cosmetically disfiguring

**Treatment**

Early inflamed pterygium Use lubricants frequently such as Hypromellose.

Encourage use of dark glasses and blue light filtered lenses to minimize irritation and photophobia

Advance pterygium; **REFER TO EYE SPECIALIST FOR EXCISION**.

## 13.22 SQUINT:

(Strabismus) is a disorder in which both eyes do not line up in the same direction, so they do not look at the same object at the same time

**Signs and Symptoms**

* Diplopia (Double vision)
* Reduced visual acquity
* Reduced depth perception

**Treatment**

* Acute onset squint must be referred urgently for evaluation.
* Squint in children must be investigated to rule out life threatening retinoblastoma.
* Frequent cause of squint is due to a refractive error: appropriate corrective glasses can correct the misaligned eyes.

**REFER TO Eye Specialist OR OPHTHALMOLOGIST**

## 13.23 HYPHAEMA:

Blood in the Anterior Chamber mostly due to trauma

**Causes**

* Without Previous Trauma: uncontrolled diabetic retinopathy, secondary glaucoma
* Traumatic
* Surgical

**Signs and Symptoms**

* Blurry vision
* Raised intraocular pressure
* Photophobia
* Pain
* Blood in the anterior chamber

**Treatment**

* **Complete bed rest** (health centre)
* Gentamycin eye drops 0.3 % 6 hourly (prophylaxis)(health centre)
* Monitor Intra Ocular Pressure (health centre)
* Timolol 0.5% 12 hourly
* If hyphaema does not resolve and intraocular pressure is still elevated after 24 hours

**REFER TO Eye Specialist/OPHTHALOLOGIST**.

## 13.24 REFRACTIVE ERRORS (HYPEROPIA, MYOPIA AND ASTIGMATISM).

Is the inability to see clearly near and/or distant object without any apparent ocular injury or disease.

**Signs and Symptoms**

* Poor/near reading vision
* Poor distance vision
* headache
* Irritation
* Drowsiness
* Lack of interest in near work especially reading.

**Treatment:**

* Refer to the eye unit for management.
* Corrected with spectacles, contact lenses and surgery.

# CHAPTER FOURTEEN

EAR NOSE AND THROAT (ENT) DISORDERS

## 14.1 STRIDOR

Stridor is a characteristic noise in the inspiratory phase of breathing. This occurs when there is an obstruction of the upper airway from the nasopharynx down to the trachea and main bronchi.

**Causes**

* Inflammatory obstruction
* Viral or bacterial infection (infectious croup)
* Inhalation of hot fumes (as in fire outbreaks)
* Angioneurotic oedema
* Retropharyngeal abscess
* Inhalation of a foreign body
* Congenital malformation of the larynx e.g., laryngomalacia

The most common cause of stridor is infectious croup which is a very common ailment in infants and preschool child (3 months-5 years). The two main types of stridor are subglottitis (viral croup or laryngotracheobronchitis (LTB)) and acute epiglottitis.

1. SUBGLOTTITIS (VIRAL CROUP OR LARYNGOTRACHEOBRONCHITIS)

The obstruction is usually in the subglottic area but may involve the trachea and the bronchi. This is a viral illness, and the preceding illness is like common cold. Measles may be complicated by LTB.

**Signs and Symptoms**

* Low grade fever
* Hoarse voice
* Barking cough
* Breathing difficulty
* Restlessness
* Stridor
* Restless apprehensive child when obstruction is severe
* Tachypnoea
* Cyanosis in severe obstruction
* Reddened throat

**OAT DISORDERS**

**Investigations**

* Sputum culture-to confirm organism
* Lateral soft tissue X-ray of neck to exclude foreign body in the air way.
* Chest X-ray

**Treatment**

**Non-pharmacological treatment**

* The mildest cases need to be REFERRED IMMEDIATELY for close monitoring of respiratory rate, pulse and temperature
* Nurse in humidified environment
* Offer oral fluids liberally
* Reduce procedures to the essential minimum to ensure maximum rest for the child

**Pharmacological treatment**

* Give **IV fluids** to very sick patients who cannot drink
* Give humidified oxygen to restless and distressed children

**Cloxacillin IV,**

* 5-12 years; 250 mg 6 hourly for 7 days
* 1-5 years; 125 mg 6 hourly for 7 days
* < 1 year; 62.5 mg 6 hourly for 7 days

**PLUS**

**Gentamicin IV,**

* 1-12 years; 2.5 mg/kg 8 hourly for 7 days
* < 1 year; 2.5 mg/kg 12 hourly for 7 days EAR NOSE AND THROAT DISORDERS

**PLUS**

**Metronidazole, IV,**

* 7.5 mg/kg 8 hourly for 7 days

**Alternative treatment**

* Cefuroxime, IV, 20 mg/kg 8 hourly

**PLUS**

**Metronidazole, IV,**

* 7.5 mg/kg 8 hourly for 7 days

Antibiotics should be given in suspected secondary bacterial infection. Cough syrups containing opiates and atropine are contraindicated in superimposed bacterial infection.

**REFER**

Refer cases with severe obstruction and complications to a hospital for specialist management

1. **ACUTE EPIGLOTTITIS**

This is an acute and life-threatening infection in which the epiglottis and surrounding tissue become acutely inflamed and oedematous causing severe obstruction of the upper airways. The disease tends to run an extremely rapid course (4-6 hours) to respiratory failure and death. It is more common in children.

**Signs and Symptoms**

* Sudden onset of high fever
* No preceding common cold
* Drooling of saliva due to severe sore throat and dysphagia (Difficulty in swallowing)
* Breathing difficulty
* Extremely ill and toxic child
* Head is held forward to extend the neck
* Breathing difficulty with suprasternal, supraclavicular, substernal retractions
* Weak voice (not hoarse)
* Reduced air entry on auscultation
* Stridor
* Cyanosis in very sick children

NB: Examination of the throat (must ONLY be done only in the presence of a doctor capable and ready to intubate) would show markedly swollen and reddened epiglottis.

**Investigations**

* FBC
* Blood culture
* Lateral soft tissue X-ray of the neck

**Treatment**

**REFER** all suspected cases

**Cloxacillin IV**

5-12 years; 250 mg 6 hourly

1-5 years; 125 mg 6 hourly

< 1 year; 62.5 mg 6 hourly

**PLUS**

**Gentamicin IV**

1-12 years; 2.5 mg/kg 8 hourly

< 1 year; 2.5 mg/kg 12 hourly

**PLUS**

**Metronidazole IV stat**

7.5 mg/kg 8 hourly

## 14.2 RETROPHARYNGEAL ABSCESS

This refers to collection of pus in the retropharyngeal space.

**Causes**

* Suppuration of retropharyngeal lymph nodes following severe bacterial infection of nasopharynx
* Rarely osteomyelitis of cervical vertebrae from **tuberculosis**

**Signs and Symptoms**

* High fever
* Sore throat
* Difficulty in swallowing
* Hyperextension of neck
* Laboured and noisy breathing
* Stridor
* Bulge in the posterior pharyngeal wall
* Reddened throat, large and inflamed tonsils

**Investigations**

* Lateral soft tissue X-ray of neck
* Chest X-ray to exclude tuberculosis

**REFER**

**Refer all patients immediately to a hospital for specialist management**

## 14.3 PHARYNGITIS AND TONSILLITIS

This is an infection of the throat and tonsils. Most sore throats are due to viral infections and should NOT be treated with antibiotics as they subside within 3 to 5 days. However, it is important to diagnose streptococcal pharyngitis since it may give rise to abscesses in the throat (retropharyngeal and peritonsillar abscess) as well as complications that involve organs like the kidneys and the heart. Streptococcal throat infections require treatment with antibiotics in order to reduce the complications noted above.

**Signs and Symptoms**

* Fever
* Difficulty in swallowing, sore throat
* Running nose or cough
* Reddened throat
* Enlarged and reddened tonsils
* Palpable tonsillar lymph glands (at the angle of the mandible)

**EYE EAR NOSE AND THROAT DISORDERS**

**Investigations**

* FBC to exclude leukaemia
* Throat swab for culture and sensitivity

**Treatment**

**Non-pharmacological treatment**

* Use warm, salty water gargles

**Pharmacological treatment**

**Paracetamol**, oral,

Adults

500 mg-1 g 6-8 hourly

Children

6-12 years; 250-500 mg 6-8 hourly

1-5 years; 120-250 mg 6-8 hourly

3 months-1 year; 60-120 mg 6-8 hourly

**OR**

**Ibuprofen**, oral,

Adults: 200-400 mg 8 hourly

Children: 100-200 mg 8 hourly

**Signs specific to streptococcal pharyngitis are:**

* Painful enlarged tonsillar lymph glands
* Absence of signs suggesting viral nasopharyngitis (running nose, cough, red eyes)
* Whitish exudate at the back of the throat as well as whitish tonsillar exudate
* Sustained high grade fever
* Occasionally, the rash of scarlet fever

**In patients with streptococcal pharyngitis and tonsillitis,**

**Amoxicillin,** oral,

**Adults:** 500 mg 6 hourly for 10 days

**Children:**

6-12 years; 250 mg 6 hourly for 10 days

1-5 years; 125 mg 6 hourly for 10 days

< 1 year; 62.5 mg 6 hourly for 10 days

**OR**

**Crystalline Penicillin**, IV,

**Adults and children above 12 years**

2 MU 6 hourly

If patient is allergic to penicillin, use

**Erythromycin**, oral,

**Adults:** 500 mg 6 hourly for 10 days

**Children:**

2-8 years; 250 mg 6 hourly for 10 days

<2 years; 125 mg 6 hourly for 10 days

**OR**

**Azithromycin**, oral,

**Adults:** 500 mg daily for 3 days

**Children:** 10 mg/kg daily for 3 days

**REFER**

Refer patients with recurrent tonsillitis, retropharyngeal and peritonsillar abscess to an ENT specialist.

**ERS**

## 14.4 ACUTE SINUSITIS

This is an infection of the air spaces in the bones of the head which are connected to the nose, so that infections in the nose e.g. colds, catarrh can spread to these spaces. This infection does not occur in children less than 6 years because their air spaces are not well developed.

**Causes**

* Acute infective rhinitis (common cold)
* Swimming in dirty waters
* Dental infection or dental extraction
* Fractures involving the sinuses
* Nasal obstruction from polyps
* Allergic rhinitis

**Signs and Symptoms**

* Cough
* Nasal congestion
* Pressure in the face and head
* Frontal headaches
* Postnasal drip
* Yellow or green thick nasal discharge, which may be foul smelling
* Pain and tenderness over the sinuses
* Halitosis (bad breath)
* Persistent fever
* Pain above and below the eyes, when patient bends over or when these areas are tapped lightly.

**Investigations**

* FBC
* X-ray of paranasal sinuses (will reveal opacification or air fluid level in the affected paranasal sinuses)

**Treatment**

**Non-pharmacological treatment**

* Drink a lot of water
* Steam inhalation may be effective in promoting drainage of the blocked sinus

If dental focus of infection is present, refer to dentist for tooth extraction under antibiotic cover

**Pharmacological treatment**

**Amoxicillin**, oral,

Adults: 500 mg 8 hourly for 5 days

Children

6-12 years; 250 mg 8 hourly for 10 days

OR

Adults: Amoxicillin + Clavulanate 625mg 8 hourly for 5 days

**For patients with penicillin allergy:**

**Erythromycin**, oral,

Adults: 500 mg 6 hourly for 10 days

Children: 20-50 mg/kg 6 hourly for 10 days

**OR**

**Azithromycin**, oral,

Adults: 500 mg daily for 3 days

Children: 10 mg/kg daily for 3 days

**Paracetamol**, oral, (to relieve pain if present)

Adults: 500 mg-1 g 6-8 hourly

Children: 6-12 years; 250-500 mg 6-8 hourly

**REFER**

Refer all complicated cases of sinusitis such as chronic sinusitis to the ENT specialist.

## 14.5 ACUTE OTITIS MEDIA

This is an infection of the middle ear, which communicates with the throat. Therefore it may, especially in children, follow a common cold or a sore-throat or measles infection. It is important in a febrile child to look for it and treat it. Untreated or poorly managed cases may lead to complications such as mastoiditis, chronic otitis media, deafness, meningitis and brain abscess.

Viral infections resulting in common cold (Rhinitis), sinusitis, pharyngitis and tonsillitis, influenza infections and nasopharyngitis are precursors to bacterial infections.

**Signs and Symptoms**

* Fever
* Sudden and persistent ear ache
* Purulent discharge from the ear
* Vomiting
* Crying and agitation
* Impaired hearing
* Red eardrum
* Pain on touching the ear
* Occasionally inflamed throat
* Perforated eardrum

**Investigations**

* FBC
* Ear swab for culture and sensitivity

**Treatment**

**Non-pharmacological treatment**

* Drink lots of fluid
* Continue to feed the child
* Wicking the ear to prevent re-infection

**Pharmacological treatment**

**Paracetamol,** oral,

Adults

1 g 6-8 hourly

Children

6-12 years; 500 mg 6-8 hourly

1-5 years; 120-250 mg 6-8 hourly

3 months-1 year; 60-125 mg 6-8 hourly

**Amoxicillin**, oral,

Adults

500 mg 8 hourly for 5 days

Children

6-12 years; 500 mg 8 hourly for 5 days

1-5 years; 125 mg – 250 mg 8 hourly for 5 days

< 1 year; 62.5 mg –b 125 mg 8hourly for 5 days

If allergic to Penicillin,

**Erythromycin**, oral,

Adults

250 mg 6 hourly for 5-7 days

Children

2-8 years; 250 mg 6 hourly for 5-7 days

Up to 2 years; 125 mg 6 hourly for 5-7 days

Re-assess after 5 days. If pain is still severe or pus discharge still present,

**REFER** for specialist attention

## 14.6 CHRONIC OTITIS MEDIA

This is a chronic infection of the middle ear with perforation of the tympanic membrane and pus discharging from the ear for more than 2 weeks. There is usually no fever and pain. Acute re-infection associated with fever and pain is usually related to an obstruction to drainage through the perforated drum with secondary infection by streptococci, pneumococci or gram negative organisms.

A chronically draining ear can only heal if it is dry. Drying the ear is time consuming for both the health worker and the mother but it is the only effective measure.

**Causes**

* Complication of acute otitis media
* Secondary Bacterial infections

**Symptoms**

* Chronic ear discharge (otorrhoea)
* Hearing loss

**Investigations**

* Ear swab for culture and sensitivity

**Treatment**

Do not prescribe antibiotics if the eardrum has been ruptured for more than 2 weeks, as secondary infection with multiple organisms, usually occurs. This makes oral antibiotic therapy much less effective

**Non-pharmacological treatment**

* Frequent wicking to keep ear dry at least 4 times a day
* Roll a piece of clean absorbent gauze into a wick and insert carefully into the child's ear. Leave for one minute then remove and replace with a clean wick.
* If bleeding occurs, drying the ear should be stopped temporarily.
* Nothing should be left in the ear between wicking.
* Avoid swimming or getting the inside of the ear wet.
* Re-assess weekly to ensure that the mother is drying the ear correctly
* Check for mastoiditis.

**Pharmacological treatment**

* If acute re-infection occurs give treatment as for acute otitis media

**REFER**

Refer all chronically discharging ears to the ENT Specialist.

## 14.7 EPISTAXIS

This is a symptom which refers to bleeding from the nose.

**Causes**

* Picking of the nose, especially when there is an upper respiratory tract infection
* Trauma
* Nasopharyngeal neoplasms
* Hypertension
* Bleeding disorders
* Atrophic rhinitis

**Investigations**

* FBC
* Sickling test
* Coagulation screen

**Note**

If the epistaxis is due to nose-picking or nasal infection then investigations are not necessary.

**EYE EAR NOSE AND THROAT DISORDERS**

**Treatment**

**Non-pharmacological treatment**

* Sit patient up and flex head to prevent blood running down throat
* Pinch soft side of nose for 10 minutes (patient must breathe through mouth)
* Apply icepack to nose

**Pharmacological treatment**

* **Adrenaline** 1:1000 solutions on a cotton wool as a nose pack, (topical)
* If bleeding persists, the anterior nares should be packed with; sterile **liquid paraffin** on ribbon gauze, (as nose pack)

**REFER**

**Refer the following to ENT specialist:**

* Patients with recurrent or severe epistaxis
* Epistaxis which cannot be arrested
* Epistaxis suspected to be due to causes other than nose picking or nasal infection

# CHAPTER FIFTEEN (15)

**TREATMENT OF COMMON SKIN CONDITIONS**

## 15.1 BACTERIAL SKIN INFECTIONS

These are highly contagious skin infections and include Impetigo, Furunculosis, Carbuncles.

**Signs and Symptoms**:

* Impetigo - isolated pustules, crusted or ruptured
* Furunculosis - boils
* Carbuncles - inflammation of skin and deeper tissues, development of painful nodes and discharge of pus.

**Management**

* Instruct parent to cut fingernails and to wash child daily with soap.
* Clean lesion with disinfectant, Hydrogen Peroxide solution (20 vol)
* For furunculosis and carbuncles: consider incision and drainage.

**ANTIBIOTIC TREATMENT**

Should only be initiated if there are signs of regional or systemic spread, or are on the hand, feet, or face. SINGLE ABSCESS DOES NOT NECESSARILY REQUIRE ANTIBIOTICS

**Treatment**

ADULTS:

**Cloxacillin**oral, 250mg 6 hourly for 5- 7 days

**OR**

**Erythromycin**oral, 250mg-500mg6 hourly for 5-7 days

**OR**

**Doxycycline** oral, 100mg12 hourly for 5-7 days

CHILDREN:

**Cloxacillin** 125mg/5ml suspension or 250mg caps: 50 - 100mg/kg/day in 6 hourly doses (**in 4 divided doses**) for 5-7 days

**OR**

**Erythromycin** 125mg/5ml suspension or 250mg tabs: 30-50mg/kg/day in 6 hourly doses **(in 4 divided doses)** for 5-7 days

## 15.2 ECZEMA (DERMATITIS)

**Itchy and Recurrent**

**Symptoms: Erythema with crusting, scaling, itching.**

Try to establish whether it is acute, subacute or chronic eczema:

**Acute**: sudden eruption with erythema, vesicles and sometimes bullae, often with serious exudates (wet appearance)

**Subacute**: lesions take several days to erupt, are red but not wet, no vesicles or bullae

**Chronic**: develops after months/years, thickened dry and scaly skin, lichenification, deep cracks (can bleed), scratch marks, sometimes infected.

**NB!** As most eczema may recur, patient should be informed not to expect total recovery.

Remove any obvious precipitating factors in a topic, allergic or contact eczema. Ask about soaps, detergents, cosmetics etc. It is important to avoid scratching which makes the condition worse. Cover itchy areas with dressing and cut nails short in children.

**Treatment**

**Acute oozing:** apply wet dressings soaked in boiled, cooled water and change every 4 hours. Improvement usually occurs after 2-3 days. Then treat with

**Calamine lotion** twice daily.

**Subacute + redness + swelling but dry**: apply **Zinc ointment** 12 hourly daily.

**Subacute oozing**: apply **Gentian violet** (GV) paint 12 hourly daily.

**Subacute crusted with pus**: remove crusts and apply **GV paint**. Give systemic antibiotic treatment.

**Subacute dry**: apply **Emulsifying ointment** 12 hourly daily.

**Chronic dry crusted**: apply **Neomycin** and **Bacitracin cream** or ointment 12 hourly daily.

Oral **antihistamine** may be used to relieve severe itching:

Adults: **Chlorpheniramine** 4 mg tablets: one tablet every 4-6 hours after food as required until symptoms stop

Children: **Chlorpheniramine** 0.4 mg/kg/day in 3-4 divided doses after food

**OR**

**Promethazine** tabs:

Adults: 25 mg every evening

Children: 1 mg/kg as single evening dose.

## 15.3 FUNGAL SKIN INFECTION

**TINEA OR RINGWORM**

* For wet lesions (in skin folds or toe webs): wash and dry, apply **Miconazole** cream or **Clotrimazole** cream twice daily and make sure it dries.
* For dry lesions (i.e. when wet lesions dried up or if initially dry) and Body ringworm:

**Benzoic acid 6% + salicylic acid 3%** (**Whitfield’s**) ointment or **Miconazole** cream or **Clotrimazole** cream - apply sparingly twice daily.

**UNTIL ONE WEEK AFTER THE LESIONS HAVE CLEARED.**

* In chronic or extensive cases of scalp ringworm and nail bed infection:

Adults: **Griseofulvin** 250 - 500mg once daily or in divided doses daily for 4-8 weeks, depending on the affected area. Take with food.

**AVOID IN PREGNANCY, Men should also avoid fathering a child during treatment and for six months after treatment with Griseofulvin.**

**OR**

**Ketaconazole** 200mg daily 2-4 weeks

**AVOID IN PREGNANCY, unless potential benefit outweighs risk. HEPATOTOXIC**

Children: **Griseofulvin** 125mg - 10 mg/kg, as a once daily or in divided doses.

**OR**

**Ketaconazole** 3.3 -6.6 mg/ daily 1-4 weeks

**NB! TREATMENT SHOULD CONTINUE FOR SIX WEEKS. REPEAT IF NECESSARY.**

**INSTRUCT PATIENTS ON THE IMPORTANCE OF TREATMENT COMPLIANCE AND PERSONAL HYGIENE IN ORDER TO ERADICATE THE INFECTION.**

## 15.4 HERPES SIMPLEX

Localized, itchy, and slightly painful vesicles. More severe in HIV (+) patients.

**TREATMENT**:

Adults (symptomatic): **Acyclovir** 200- 400 mg 4 hourly for 5 days

Apply **Acyclovi**r cream 4 hourly a day

**TREAT SECONDARY INFECTION WITH ANTIBIOTICS**

## 15.5 HERPES ZOSTER (SHINGLES)

A common presentation in HIV (+) patients.

**TREATMENT**

* Clean the lesions with **Hydrogen peroxide** solution (20 vol) or wash them gently with soap and water.
* Paint the lesions twice daily with **Gentian Violet** paint or Calamine lotion.
* For pain relief give: **Acetylsalicylic acid** 300 mg tabs or **Paracetamol 500mg** tabs: two tablets every 6 hours as needed
* Alternative: **Xylocaine** gel
* **Adults** (symptomatic): **Acyclovir** 800 mg 5 hourly daily for 7 days
* Apply **Acyclovir** cream 4 hourly a day

## 15.6 PRURIGO

**TREATMENT**: Symptomatic

**Calamine** lotion: Apply 2-3 times daily (Adult & Children)

**Chlorpheniramine** 4 mg tablets:

Adults: one tablet every 4-6 hours after food

Children: 0.4 mg/kg/day in 3-4 divided doses after food.

**TO BE TAKEN UNTIL SYMPTOMS STOP**

## 15.7 SCABIES

Treat the whole family and any other close contacts at the same time and repeating treatment in the time frame. After treatment, boil or use hot iron on all contaminated clothes, bedding and towels

**Treatment**

* Wash the whole body with mild soap and water, preferably at night, and dry.
* **Benzyl benzoate** 25%: Apply to the whole body from the neck down. Ensure all parts of the skin are covered and allow the medication to dry and to remain on the skin for at least 10 hours.

**NB**: In children over 3 years, it is often necessary to treat the face also (except the eye surroundings).

**For children below 1 year, use 12.5% application, by diluting one part of the 25% with an equal part of water**.

* Next morning wash off the application with soap and water.
* Repeat treatment after 5 days.

Secondary infection is common and may mask the condition. In cases of severe or extensive infection, especially with secondary bacterial infection, give a systemic antibiotic as indicated under Bacterial Infection.

If itching is problematic, reassure patient as itching may persist for up to 2-3 weeks. If severe, treat with **Chlorpheniramine** tabs.

Moreover, both ivermectin and permethrin are now included in WHO Model List of Essential Medicines for the treatment of scabies. Oral ivermectin is showen to be highly effective and it is in use in several countries for intensified individual case management and MDA for high-prevalence settings and during outbreaks. But the safety of ivermectin in pregnant women or children has not been established and hence ivermectin should not be used in these groups until more safety data are available.

## 15.8 TROPICAL ULCER

**Adults and Children:**

* Clean ulcer with **Hydrogen peroxide** solution (20% vol) or **Eusol** daily.
* Remove dead or damaged tissues, if wound is necrotic, and dress wound (Papaya paste, sugar or honey can be used. **Magnesium sulphate solution** can also be used.
* Rest with leg elevated.
* Improve on nutrition and diet.

**If there is local infection, treat with:**

**Amoxicillin** oral:

Adult: 1250mg-500mg 8 hourly (three times daily) for 5-7 days

Children: 12.5 mg/kg 8 hourly (three times daily) for 5-7 days.

## 15.9 URTICARIA

Symptoms: Eruption of papulas or wheals with intense itching

Allergic reactions: Look for a possible cause, e.g. allergy, insect bite / sting, drug induced reaction etc.

### Treatment

**Chlorpheniramine** 4 mg tabs:

**Adults**: One tablet every 6-12 hours as required

**Children**: 0.1mg/kg/dose injection

Alternative: **Adrenaline** inj - 0.01ml/kg of 1:1000 dilution gradually.

RESERVE FOR ONLY CASES OF ANAPHYLAXIS

## 15.10 VARICELLA (CHICKENPOX)

Vesicular pustules - croups - on face, hands, or trunk, with extreme itching, which may lead to widespread infection and disfigurement. Hands should be kept clean and nails clipped short to reduce problems caused by scratching.

**TREATMENT (symptomatic)**

**Children**:

To relieve itching: **Calamine** lotion: apply 2-3 times daily.

Treat pain and fever with **Paracetamol**10 mg/kg every 6 hours as required.

**Adults**:

Apply **Calamine** 2% lotion 2-3 times daily

**Paracetamol** 2 tablets every 6 hours as required; max 4g daily.

**Or**

**Ibuprofen 200mg 8 hourly as required**, preferably after food.

## 15.11 BURNS

Tissue injury caused by extremes of temperature, chemical, electrical or radiation energy.

Presentation depends on the depth, extent, and site of the burn.

Patient may have difficulty in breathing if he has inhaled hot fumes or may have arrhythmias if cause of burn was electrical.

Depth can be classified into: Superficial, Superficial dermal, Deep dermal and Full thickness

* *Superficial* (Partial loss of skin) - Dry, minor blisters, erythema. Painful
* *Superficial dermal* – Blisters. Painful
* *Deep dermal* - Moist white slough, red mottled. Painful
* *Full thickness* (Deep/complete loss of skin) - Dry, charred, whitish. Painless.

**Management**:

* Pour water on the affected area (especially in the first hour after the burn) -this may reduce the depth of injury if started immediately.
* At minor health centre level
* Clean the wound with **Normal saline** solution **(Sodium Chloride 0.9%)**or dilute **antiseptic solution (Savlon or Dettol).**
* Cover the wound with a clean dry cloth and keep the patient warm
* Give analgesia ( Oral, if superficial and not extensive **– Paracetamol** 1gm 8 hourly)

Refer to MHC

* At Major health centre level
* Get IV access and start Crystalloids like Normal saline(Sodium Chloride 0.9%), if extensive
* Give Tetanus Toxoid (TT) 0.5mls IM stat

Refer to centre with surgical capacity if any of following present:

* Extensive burns and deep burns
* Burns of the face, eyes, ears, hand, feet, perineum
* Chemical burns – tend to be deep
* High voltage – may be associated with arrythmias
* Inhalation burns – May be associated with difficulty in breathing
* Any burn with associated major trauma

# CHAPTER SIXTEEN (16)

**ORAL AND DENTAL CONDITIONS**

* Dental caries
* Pulpitis
* Acute periapical abscess or Dental abscess due to dental caries
* Gingivitis
* Periodontitis
* Pericoronitis
* Dental abscess due to periodontal diseases
* Severe odontogenic infections
* Stomatitis
* Trauma
* Fluorosis
* Malocclusion
* HIV/AIDS ASSOCIATED ORAL LESIONS
* Noma

## 16.1 DENTAL CARIES

Localized destruction of dental hard tissue (enamel or dentine) by acid-producing plaque bacteria in the presence of dietary sugar, which can lead to the formation

of cavities. (i.e. small holes in the tooth)

**Causes**

Poor oral hygiene results in accumulation of bacteria in a plaque on the tooth surface. Acid is produced as a by-product of the metabolism of dietary carbohydrate by the plaque bacteria causing demineralization of the tooth surface. The weakened tooth structure disintegrates resulting in a cavity in the tooth. Dental caries frequently results in the loss of teeth.

**Signs and symptoms**

* Localized toothache
* Tooth discoloration
* Cavitation in the affected tooth
* Tooth sensitivity to hot and cold stimuli
* Susceptible sites are those areas where plaque accumulation can occur unhindered e.g., pits and fissures of the posterior teeth, interproximal surfaces, and teeth in malocclusion.
* Associated infection
* Abcess/fistula
* Fever

**Investigations**

* Transillumination to show discoloration of carious cavitation
* Tapping the tooth to evaluate response to percussion:
* Tenderness indicates that the pain originates in the bone and may be due to pulpal necrosis or to an abscess
* Use of hot dental instrument or cold ice pellet to see if there is any sensitivity
* Pulp vitality test if available also causes sensitivity if vitalometer is available
* Periapical x-ray shows discoloration of the tooth image on the x ray film shows radiolucency of the demineralized tooth surface

**If any the above is present, then Rule out:**

* Referred pain from ENT infections, commonly sinusitis

**Prevention**

Dietary advice:

* Advise the patient to avoid sugary foods and soft drinks and have adequate fresh fruit and vegetables in their diet.
* Fluoride application:
* Reduction in the availability of a microbial substrate by regular brushing teeth with fluoride toothpaste, preferably after every meal.
* Tooth strengthening and protection of teeth through use of fluoride such as fluoride varnish. Rinse and apply fissure sealants to susceptible sites.

**Treatment**

**Non-Pharmacological**

* Give analgesic and antibiotics if history is consistent with pulpitis
* Arrest dental caries by fluoride varnish and silver diamine fluoride (SDF)
* Restoration: Minimum intervention approach: Treating cavitated carious lesions while preserving as much of the natural tooth structure as possible. The resultant cavity is restored with glass ionomer cement or composite resin.

**EARLY CHILDHOOD CARIES**

Caries characterized by the presence of one or more teeth affected by carious lesions or with white spot lesions in primary teeth, loss of teeth due to caries, or filled tooth surfaces in affected teeth of a child aged under six years.

**Causes**

A high-frequent consumption of sugared drinks or food, lack of breastfeeding, and/or poor oral hygiene. Additionally, the disease often manifests in children from poor families or living in poor environmental settings.

**Signs and Symptoms**

* Lower incisors are rarely affected as they are protected during suckling by the tongue and directly cleansed by secretions from sublingual and submandibular salivary glands.
* Rapid progression of decay commencing labially and quickly encircling the teeth.
* Teeth are affected in order of eruption

**Prevention**

**Dietary advice:**

* Promote, protect, and support exclusive breastfeeding up to age six months and introduction of nutritionally adequate and safe complementary (solid) foods at age six months together with continued breastfeeding up to two years of age or beyond.
* Limit consumption of liquids containing free sugars, including natural unsweetened juices, and complementary foods containing free sugars.
* Encourage a combination of different foods that is high in fruits, vegetables and low in free sugars for young children.

**Fluoride application:**

* Brushing teeth with fluoride toothpaste twice a day

**Other:**

* Regular oral health check-ups during regular health visits such as vaccination

**Treatment**

**Non-Pharmacological**

* Application of sealant on pits and fissures of primary molars that are deep or with initial caries
* Application of fluoride varnish to primary teeth in children with ECC or teeth with signs of early caries.
* Application of SDF to carious lesions that have extended into dentine
* Use of flowable fluoride-releasing glass-ionomer cement to cover surface of carious dentine lesions
* If restoration of decayed primary teeth is required, use minimum intervention approach: Treating cavitated carious lesions while preserving as much of the natural tooth structure as possible. The resultant cavity is restored with glass ionomer cement or composite resin.

**RAMPANT CARIES (Adult)**

Rapid carious attack involving several teeth surfaces that are usually caries-free (e.g. the smooth surface of a tooth).

**Causes**

* Frequent ingestion of sugary foods and drinks in individuals with reduced saliva flow.
* Prolonged frequent intake of sugar-based syrup medications
* Un-treated nursing caries

**Treatment**

**Non-Pharmacological**

* Advise the patient to stop or reduce dietary sugar intake
* Education on professional fluoride application, tooth restoration, endodontic therapy treatment, extractions.

**RADIATION CARIES**

Radiation for head and neck cancer may result in fibrosis of salivary glands and subsequent reduction in saliva flow. Patients often resort to sucking sweets to alleviate their dry mouth, which further exacerbates the problem.

**Treatment**

**Non-Pharmacological**

* Removal of aetiological factors.
* Education, fluoride treatment, tooth restoration, endodontic therapy treatment, extractions.

## 16.2 PULPITIS

This is Inflammation of the pulp of a tooth.

Causes

* Commonly presents as a complication of dental caries.
* Thermal, chemical, or traumatic insult to the pulp.

Pulpitis can be reversible or irreversible.

Reversible Pulpitis

Signs and Symptoms

* Transient pain to drinking cold or hot water or impaction of food in cavity
* Pain OR sensitivity last for seconds
* Cavity OR fracture causing exposure of the dentine.
* Tooth is not tender on percussion

Irreversible Pulpitis

Signs and Symptoms

* Pulsatile pain that lasts for several hours and worsens at night
* Thermal sensitivity
* Tooth is very tender to percussion

Investigations

* Vitality OR thermal testing on affected tooth to assess duration of pain when hot/cold stimulus is applied
* Periapical Xray to confirm communication of cavity with the pulp with widening of the periodontal space.

Differential Diagnosis

* Referred pain of ENT origin when presence of cavity on tooth or periodontal involvement has been ruled out e.g. Sinusitis
* Pain due to Temporomandibular joint dysfunction syndrome or erupting mandibular wisdom teeth
* Dentine sensitivity due to thermal, tactile, or osmotic stimulus

Treatment for reversible pulpitis

Non- Pharmacological

* Dietary advice: Advise the patient to avoid sugary foods and soft drinks and have adequate fresh fruit and vegetables in their diet to prevent future recurrence.
* Oral hygiene instructions: The patient should brush their teeth with fluoride toothpaste twice a day.

Refer to dentist for a simple filling.

Pharmacological

Treatment for Irreversible pulpitis

Non- Pharmacological

* Dietary advice: Advise the patient to avoid sugary foods and soft drinks and have adequate fresh fruit and vegetables in their diet to prevent future recurrence
* Oral hygiene instructions: The patient should regularly brush their teeth in the morning and evening.

Refer to a dentist for pulpectomy, root canal therapy or extraction

Pharmacological

Antibiotics

* Amoxicillin 500mg 8 hourly for 5 days for adults
* Amoxicillin 250mg 8 hourly for 5 days for children 6 – 12 years
* Amoxicillin 125mg 8 hourly for 5 days for children < 6 years
* Metronidazole 500mg 8 hourly for 5 days for adults
* Metronidazole 250mg 8 hourly for 5 days for children 6 – 12 years
* Metronidazole 125mg 8 hourly for 5 days for children < 6 years
* Paracetamol 1g 8 hourly for 5 days for adults
* Paracetamol 500mg 8 hourly for 5 days for children 6-12years
* Paracetamol 250mg 8hourly for 5 days for children <6 years

## 16.3 ACUTE PERIAPICAL ABSCESS OR DENTAL ABSCESS

It is an infection with pus formation at the root of a tooth as a sequel to pulpitis caused by dental caries or trauma etc.

**Causes**

Mixed bacterial flora but mainly *Staphylococcus spp*

**Signs and Symptoms**

* Severe, throbbing, spontaneous pain that disturbs sleep.
* Facial swelling may be localized or extending to adjacent tissues of oral, face and neck
* Abscesses of the mandibular incisors or molars may discharge extra orally
* Affected tooth may be mobile and tender to percussion
* Fever and headache may be present.

**Investigations**

* Use of periapical X ray of the tooth; to see
* Cavity relationship with pulp chamber,
* widening of periodontal membrane, and
* apical darkening coloration of pus collection on x ray film.

If present, then rule out:

* Gingivitis
* Swelling due to trauma
* Pain due to sinusitis, Temporo mandibular joint pain dysfunction syndrome or erupting wisdom teeth
* Dentine sensitivity due to thermal, tactile or osmotic stimulus

**Treatment**

***Non-pharmacological***

* Incision and drainage and relief of the tooth out of occlusion
* Endodontic treatment (root canal treatment) of the affected tooth to remove all the necrotic pulp tissues and do canal cleaning.
* Consider extraction of the infected tooth

***Pharmacological Treatment***

* **Amoxicillin** 500mg every 8 hours for adult*,* ***child****:* 25mg/kg per dose

**OR**

* ***Fortified Procaine Penicillin*** *(***PPF)** 1MU IM daily ***child****:* 50,000 IU/kg per dose
* **Analgesic: Paracetamol 1g 8 hourly for adult, 125mg for 2 – 5 year, 250 mg for >5 years.**

**OR**

**NSAID such as Diclofenac, Ibuprofen if the patient does not have any health condition that is contraindicates the use of NSAID such as Peptic ulcer, gastritis, patient managed ~~on~~ for cancer of the GIT**

**Add metronidazole 30-50mg/kg/day given in three divided doses to the broad-spectrum antibiotics**

## 16.4 GINGIVITIS

1. **Chronic Gingivitis**

**Inflammatory infiltrate in response to the accumulation of undisturbed dental plaque next to the gingival margin.**

**Causes**

* Mixed anaerobic and aerobic oral flora, e.g. Streptococcus viridans, facultative streptococci; fusiform bacteria, spirochaetes (these result in acute necrotising ulcerative gingivitis [ANUG or Vincent’s infection]); viruses, fungi
* Chemicals
* Poor oral hygiene with increase in plaque accumulation

**Signs and Symptoms**

* Swelling and reddening of the gingival margins which bleeds on brushing and slight periodontal probing
* Plaque and calculus (tartar) deposits adjacent to the gingival margins

**Treatment**

**Non-Pharmacological**

* Give instructions on oral hygiene: regularly cleaning of teeth to remove plaque (at least twice daily and preferably after every meal)
* Avoid sugary foods and soft drinks
* Regular visits to the dentist for check-ups and calculus removal biannually.
* Good nutrition with increased intake of vitamin C

**Pharmacological**

**In the absence of systemic signs and symptoms, antimicrobial therapy is not usually indicated.**

Refer to a dentist for scaling, root planning and polishing to remove plaque and calculus deposits.

Mouthwash consisting of warm **salt solution**

Dissolve a 5mL spoonful of salt in 200mL warm water

**OR**

add 15mL of **Hydrogen peroxide solution 6%,** to a cup (200mL) of warm water

**OR**

**Chlorhexidine solution 0.2%**. Repeat mouthwash 3 times daily.

Give an **analgesic** as required

*If systemic signs and symptoms present:*

Give a 5-day course of antibiotics:

**Metronidazole** 400mg/500mg every 8 hours (metronidazole is not recommended for use pregnancy)

***child:***10-12.5mg/kg (max: 250mg) per dose

**Amoxycillin** 500mg every 8 hours ***child****:* 10-20mg/kg per dose ***OR***

**PPF** 1MU IM daily ***child****:* 50,000 IU/kg per dose ***OR***

**Erythromycin** 250mg every 6 hours ***child****:* 7.5mg/kg per dose.

**Refer to a dentist for scaling and polishing or/with root planning to remove plaque and calculus deposits**.

1. **Acute Necrotizing Ulcerative Gingivitis (ANUG)**

Also known as Vincent’s gingivitis, Vincent’s gingivostomatitis OR Vincent’s angina. Inadequately treated ANUG will lapse into a less symptomatic form known as chronic ulcerative gingivitis.

**Causes**

Fusospirochaetal complex together with gram negative anaerobic organisms.

**Signs and Symptoms**

* Swelling and erythema of the gingival margins which bleed easily when touched, causing difficulty drinking and eating.
* Painful papillary yellowish-white ulcers.
* Patient complains of metallic taste and the sensation of their teeth being wedged apart
* Fever, malaise, and regional lymphadenitis may be present
* Associated with poor oral hygiene, but stress and smoking act as co-factors
* ANUG and periodontitis is often associated with uncontrolled Diabetes Mellitus and debilitated patients with poor oral hygiene.
* ANUG may be a presenting sign of HIV infection in an otherwise apparently healthy individual.
* Rarely, in patients who are malnourished or immunocompromised, ANUG presents with extensive destruction of the face and jaws in the severe form of Cancrum Oris or noma.

**Investigations**

* Full blood count
* HIV screening

If the above investigations indicate abnormal, then Rule out:

* Dental abscess
* Swelling due to trauma
* Acute stomatitis
* Oral thrush
* Chemical oral ulcers

**Treatment**

## 16.5 PERIODONTITIS

1. **Chronic Periodontitis**

Progression of the combination of infection and inflammation of gingivitis into the deep tissues of the periodontal membrane.

**Causes**

Mixed microbial flora commonly *B. gingivalis, B. forsythus, B. intermedius, Wolinella* sp, and *Fusobacter* sp.

**Signs and Symptoms**

* Bleeding of gums on probing and brushing
* Presence of periodontal pockets due to apical migration of the junctional epithelium beyond the enamel-cemental junction of the tooth.
* Presence of sub-gingival calculus with increased tooth mobility

**Investigations**

**Treatment**

1. **Juvenile Periodontitis**

This condition occurs in the presence of good plaque control and may be related to an immune defect.

**Causes**

* *Actinobacillus (Haemophilus)*
* *Actinomycetemcomitans* is the main pathogen together with *Capnocytophaga* sp*, Eikenella*
* *Corrodens* and *Bacteroides intermedius* organisms.

**Signs and Symptoms**

* *Progressive periodontal destruction classically in the permanent incisor and first molar regions in the presence of good oral hygiene*
* *The gingival around affected tooth may appear entirely normal but deep pockets are detected on probing.*
* *Increased tooth mobilty*
* *Early tooth loss*

**Treatment**

**Non- Pharmacological**

* *Give instructions on oral hygiene*
* *Refer to a dentist for scaling, root planning and polishing to remove plaque and calculus deposits.*

**Pharmacological**

* *Oral rinses with mouthwash consisting of chlorhexidine solution 0.2% 3 times daily*

## 16.6 PERICORONITIS

Inflammation of the operculum covering an erupting tooth and occurs more commonly in association with the mandibular third molars or wisdom teeth.

**Causes**

* *Usually associated with partially erupted and/or impacted third molars*
* *Associated trauma from a tooth in the opposing arch is usually present.*

**Signs and Symptoms**

* *Pain, trismus, swelling and halitosis*
* *operculum is swollen, red and often ulcerated*
* *Fever and regional lymphadenitis may be present*
* *Associated with earache and headache*

**Treatment**

**Non-Pharmacological**

* *Curattage under the operculum under local anaesthesia*
* *When inflammation is resolved, refer to dentist for operculectomy to be done under local anaesthesia*
* *When pericoronitis is recurrent then plan for extraction of the third molar associated with the condition*
* *Grinding or extraction of the opposing tooth*
* *Application of caustic agents (trichloroacetic acid and glycerine)*

**Pharmacological**

*Antibiotics*

* *Amoxicillin 500mg 8 hourly for 5 days*
* *Metronidazole 500mg 8 hourly for 5 days*
* *Vitamin C 500mg OD for 15 days*

NOTE: Pericoronitis does not usually affect children

## 16.7 PERIODONTAL ABCESS

**It is the localized collection of pus within a periodontal pocket.**

**Causes**

* *Introduction of virulent organisms into an existing pocket.*
* *Impaction of a foreign body e.g., a fishbone, toothpick, toothbrush bristle into healthy periodontal membrane*

**Investigation**

* *Periapical x-ray which may reveal foreign body impaction*
* *Periodontal probing to measure the depth of the periodontal pocket.*

**Needs to differentiate it from a dental abscess:**

**Dental Abscess:**

* *Associated tooth is non-vital*
* *Tooth is tender to vertical percussion*
* *Radiologically radiolucency in at the apex of the tooth*

**Periodontal Abscess:**

* *Associated tooth is vital*
* *Tooth is tender to lateral movements*
* *Radiologically radiolucency is lateral to the tooth*

**Treatment:**

**NON-pharmacological**

* *Incision and drainage under a local anaesthetic*
* *Debridement of the pocket curettage and antiseptic irrigation with a scaler*

**Pharmacological**

* *Metronidazole 400mg/500mg, 8 hourlychild:10-12.5mg/kg (max: 250mg) per dose, 8 hourly*

**AND**

* *Amoxicillin 500mg 8 hourly child: 20-30mg/kg per dose, 8 hourly*
* *Paracetamol 1g 8 hourly for adults*

**For at least Five days**

## 16. 8 SEVERE ODONTOGENIC INFECTION

**These are infections which originate from the tooth or its supporting structures and spread through fascial planes to cause inflammation of soft tissues and accumulation of pus in spaces of the cervicofacial regions. These conditions can be potentially life threatening and should be managed with care. They are mostly associated with immunocompromised individuals either due to malnutrition, uncontrolled diabetes, AIDS, & etc**

**Examples: Ludwig’s angina, canine fossa abscess, submandibular abscess.**

**Causes**

* Dental caries
* Periodontal abscess
* Pericoronitis
* Impacted wisdom teeth.

**Signs and symptoms**

* Swelling of the face and/or neck, which is tender, shiny, warm to touch
* Difficulty swallowing
* Difficulty breathing
* Fever
* Discharge of pus into the mouth or sometimes on the face
* Presence of carious teeth or periodontal disease

**It is also important to rule out**

* Suppurative tonsillitis
* Osteomyelitis of jaws
* Inflammation of the salivary glands due bacterial or viral infections
* Infected soft tissue injury of the face

**Investigation**

* FBC
* RFT/LFT
* Glycated haemoglobin OR Fasting blood sugar
* HIV screening
* PA of skull
* Oblique lateral of mandible right and left to identify focus of infection
* Chest Xray in severe cases to r/o pleural empyema
* Culture and sensitivity

**Treatment**

**Nonpharmacological**

* Requires hospital admission
* Incision and drainage
* Incision and decompression in cellulitis phases is useful expel gases and exudates
* Extraction of the offending tooth

**Pharmacological**

* Amoxiclav 1.2g 12 hourly
* Metronidazole 500mg 8 hourly

**OR**

* Ceftriaxone 1g 12 hourly
* Metronidazole 500mg 8 hourly
* Gentamycin 80mg 12 hourly
* PCM 1g 8 hourly
* Fluid resuscitation

**These cases should be referred to an oral and maxillofacial surgeon with urgency.**

## 16.9 STOMATITIS

This is the Inflammation of the lining of the mouth.

**Causes**

* Nutritional deficiency, e.g. vitamin C, iron deficiency
* Infections:
* Spirochetes
* Bacilli
* Candida
* Measles virus
* Herpes simplex virus

**Signs and Symptoms**

* Inflammation of the tongue and lining of mouth
* Tongue is red, raw and painful
* Ulcers on the gum, palate, lips
* Thrush (in babies and HIV/debilitated patients)
* Swelling and bleeding of gums

**Differential diagnosis**

* Allergic reactions
* Lead poisoning
* Lichen planus
* Pemphigus
* Erythema multiforme
* Thermal injury e.g., hot water
* Chemical injury e.g., acid burn

**Investigations**

* Blood: Full blood count, Rapid Plasma Reagent (RPR) test, HIV Serology
* Swab the mouth for microscopy and culture and sensitivity of bacteria and fungi, though normal oral flora may give false positives

**Treatment**

* Wash mouth with **Salt solution.** Dissolve 5mL spoonful of salt in a cup of warm water **OR Hydrogen peroxide solution 6%.** Add 15mL to a cup (200mL) of warm water
* Topical Anaesthesia (lidocaine gel)
* Vitamin C 500mg once daily for 15 days
* Repeat this mouthwash 3 times daily
* Continue treatment until healing takes place

Refer to dentist if culture or blood test are positive for HIV, candida or other microorganisms

## 16.10 DENTURE STOMATITIS

Redness of the palate under a denture with reddened and whitish areas

**Causes**

* 90% cases due to Candida albicans, 9% other candida species and 1% Klebsiella
* Poor denture hygiene
* Night-time wear of dentures
* Trauma
* Increased intake of sugary foods

**Differential Diagnosis**

* Acrylic allergy
* Thermal injury e.g., hot water
* Chemical burn e.g., acid

**Treatment**

**Non-Pharmacological**

* Remove dentures at night
* Improve denture hygiene by soaking in hypochlorite cleanser and brushing fitting surface or use ultrasonic scaler to remove attached calculus and debris
* Replace ill-fitting dentures
* Reduce sugar intake

**Pharmacological**

**Antifungal treatment:**

* **Nystatin** suspension 100,000 units/ml6 hourly (One ml to be gargled in mouth for 1 minute before swallowing)
* **OR**
* **Amphotericin** suspension 100mg/ml 6 hourly
* **Topical Anaesthesia (lidocaine gel)**
* **Vitamin C 500mg once daily for 15 days**

## 16.11 TRAUMA

It is the injury to the oral or dental tissues as a result of trauma.

* + - * 1. **Traumatic Lesions I**

1. **Traumatic Polyp/Fibroma:** Over vigorous response to low grade recurrent trauma e.g., cheek or lip biting resulting in overgrowth of the oral soft tissues

**Signs and Symptoms**

* Well localized sessile or pedunculated lump usually located on the palate, lateral surface of the tongue, cheek, or lip. May or not be tender

**Treatment**

* Refer to oral and maxillofacial surgeon for excisional biopsy and histological confirmation

1. **Mucocele**

Saliva extravasation into the tissues from damage to minor salivary gland ducts. They are commonly seen in the lower labial and ventral lingual mucosa.

**Signs and Symptoms**

* History of trauma and characteristic appearance
* Soft bluish lump on the mucosa

**Treatment**

* Refer to oral and maxillofacial surgeon for surgical removal (recurrence may occur if there is regular trauma)

**c) Ranula**

This is a mucocele that occurs from the sublingual gland.

**Signs and symptoms**

* Blue transparent sublingual swelling.
* painless

**Treatment**

* Refer to oral and maxillofacial surgeon for marsupialisialisation or excision of the sublingual gland.
  + 1. **Traumatic Lesions II**

These simple lesions are often confused for more severe conditions like lichen planus, oral candidiasis, Pemphigus, Erythema multiform.

**a) Burns**

Most common after ingestion of hot foods and are particularly seen on the palate or tongue. Chemical burns are usually due to analgesics positioned next to a painful tooth or chemicals used in restorative dentistry.

**Signs and Symptoms**

* Reddening of the oral mucosa with or without ulceration characteristic sites related to eating, restored or painful tooth.

**Treatment**

* Reassurance that healing will occur without scarring.
* Warm water and salt or saline rinses 6 times daily 1 week
* Topical anaesthetic such as lidocaine gel may help.

**b) Sharp teeth and restorations**

Sharp teeth or restorations can cause repeated injury to soft tisses in the mouth.

**Signs and Symptoms**

* Lesion which can be a lump or an ulcer is site specific and is related to a sharp edge.

**Treatment**

* Warm water and salt rinses 3 times daily for 1 week
* Refer to dentist for smoothening of the edge and/or apply a restorative material to the tooth

**c) Local Anaesthetic**

Ulceration of mucosa at the point of penetration of the needle at the site of anaesthesia deposition.

**Signs and Symptoms**

* Ulcer confined to the area of anaesthetized mucosa

**Treatment**

* Reassurance.
* Warm water and salt rinses 3 x daily for 1 week
* May require antibiotic therapy if the area becomes secondarily infected.

**III. Traumatic Lesions III**

Trauma due to physical injury e.g. a fall, sports, road traffic accident etc

**Treatment**

* Ensure patient’s airway, breathing and circulation is secured
* If evidence of head Injury (amnesia, loss of consciousness, neurological signs) transfer patient to hospital immediately
* Give tetanus booster if needed.
* Check for facial fractures &/or soft tissue injuries eg lacerations
* Intra-oral look for soft-tissue lacerations, dentoalveolar fractures and damage to teeth.
* Check for whereabouts of tooth fragments which are commonly embedded in the lip.
* Examine traumatized teeth for mobility
* Check occlusion especially if any teeth have been displaced.
* Take radiographs of affected teeth to check for root fracture.
* Avulsed permanent teeth should be re-planted immediately or kept in the buccal mucosa of a conscious patient. Prognosis is good with immediate treatment therefore refer the patient to a dentist as soon as possible.
* Suture intraoral soft tissue lacerations with 3/0 absorbable suture. Deep laceration of the facial should be sutured with 3/0 absorbable suture for deeper layers and 3/0 non absorbable for skin.
* Refer to an oral and maxillofacial surgeon for reduction, and immobilization of mobile teeth and alveolar fragments.
* Wash mouth with warm salt solution (dissolve a 5ml spoonful of salt in 200ml of warm water) or hydrogen peroxide solution 6% (add 15ml to a cup 200ml of warm water). Repeat mouth wash 3 times daily.
* For elimination of pain, give an analgesic.
* Give prophylactic antibiotics if indicated.
* Refer to a dentist for orthodontics, endodontic (root canal) treatment, protection of pulp or extraction.

**Investigations**

* Periapical
* PA of the skull
* Oblique laterals of the mandible
* Orthopantomogram
* Ct scan of the head and neck

**NOTE: these radiological investigations are based on intensity of injury and region of suspected trauma**

**Prevention**

* Early orthodontic treatment in children with large over jets that are susceptible to trauma. Provision of a mouth guard for sports made of vacuum formed thermoplastic vinyl.
* Be alert for evidence of child abuse.
* Wearing of seat belt or helmet when travelling by a vehicle or motorbike.

## 16.12 FLUOROSIS

This is an intrinsic discolouration of the teeth due excess fluoride deposition into the tooth matrix during development. It is also known as Mottling.

**Causes**

* Occurs due to long term excess of fluoride.
* Enamel fluorosis can develop only in children, as it results from intake of high levels of fluoride during the period of tooth development
* Endemic in areas of high fluoride water content occurring naturally in the water

**Signs and Symptoms**

* It varies from mild opacities to severe pitting and discoloration due to incorporation of the excess fluoride in the enamel structure.

Investigation

* Diagnosis is clinical

**Treatment**

* Refer to dentist for tooth coloured (composite) fillings, veneer or crown

**Prevention**

* Monitoring of fluoride levels in drinking water. Seeking alternative water sources in areas with fluoride-rich groundwater, particularly where water consumption is high due to elevated temperatures.
* Encourage mothers to breastfeed, even in areas with high fluoride intake, as breast milk is optimal for infant health and usually low in fluoride.
* For children under 3 years old, a smear or rice-sized amount of fluoride toothpaste (1000–1500 ppm) should be used over the width of the brush, while for children aged 3–6 years old, a pea-sized amount should be used.

## 16.13 MALOCCLUSION

Malocclusion has been described as any deviation from the normal relation of the teeth in the same arch to each other and to the teeth in the opposite arch. Although the etiology is multifactorial, malocclusion may occur as a result of discrepancies in either the craniofacial skeleton or dentition or both. The need for treatment is determined by the severity of malocclusion. The main indications for orthodontic treatment are aesthetics and function.

**Reasons for treatment:**

Cross bites (as associated occlusal interferences may predispose to Temporomandibular Pain Dysfunction Syndrome). Deep traumatic overbite with palatal impingement of the mandibular incisors large oversets (increased risk of trauma), Severe crowding (as this reduces periodontal support of the teeth and may lead to periodontal disease) While severe malocclusion can affect the facial profile and this may havea psychologically debilitating effect; it is often influenced by social and cultural factors.

**Treatment**

* Removable appliance orthodontic therapy for mild cases in the mixed dentition by a dentist/orthodontist.
* Fixed appliance orthodontic therapy for moderate to severe case in adolescents and adults by an Orthodontist.
* Severe orthodontic cases with discrepancies in the craniofacial skeleton may require orthognathic surgery by an oral and maxillofacial surgeon prior to intervention by an orthodontist

## 16.14 HIV/AIDS ASSOCIATED ORAL LESIONS

1. **Oral Candidiasis**

This is caused primarily by *Candida albicans*. Intractable oral and esophageal candidiasis, and present as pseudomembranous, hyperplastic or erythematous. Angular cheilitisis is also common.

**Causes**

* Uncontrolled diabetes
* Immunocompromised patient eg HIV, malnutrition

**Investigation**

* Full blood count
* Fasting blood sugar or glycated haemoglobin
* HIV screening

**Treatment**

* Nystatin oral 100,000 units. Swirl in mouth for 1 minute then swallow. To be done 4 times daily (after food) for 7- 14 days.

**Reduce sugar diet**

**Refer to a dentist**

1. **Herpes Infections**

Both simplex and zoster infections can affect the face and oral cavity. The clinical

Presentation of herpes simplex includes multiple small vesicles (2-3mm) that ulcerate and coalesce to form larger ulcers on the oral mucosa commonly on the vermillion border, gingiva, dorsal tongue, and hard palate.

Herpes zoster oral and facial lesions are as a result of a reactivated infection which may arise in the areas supplied by the branches of the trigeminal nerve. They always present as a unilateral painful lesion and never cross the midline.

**Signs and symptoms**

Pre-eruption pain preceded by fever and malaise followed by the development of painful vesicles on the skin or oral mucosa that rupture to give rise to ulcers or encrusting skin wounds in the distribution outlined above. Post herpetic neuralgia may continue for years.

**Treatment**

* Acyclovir oral, 200-400mg 5 times daily for 7-10 days.
* Prednisolone 100mg 12 hourly for 3 days
* PCM 1g 8 hourly for 5 days
* Topical anaesthetics e.g., lidocaine gel
* Warm saline rinses

**c): Acute Necrotizing Ulcerative Gingivitis**

**NOTE: as discussed above**

**d): Kaposi’s sarcoma**

This is a malignancy of vascular endothelium which until the advent of AIDS, was seen only occasionally in Jews and immune suppressed patients. It presents as a painless purplish swelling on the skin. In the mouth, the palate is the most frequent site.

Investigation

* Full blood count
* HIV screening
* Histopathologic definition

**Management:**

Refer to oral and maxillofacial surgeon for biopsy and referral for chemotherapy.

**e) Persistent Submandibular and/or Cervical Lymphadenopathy**

It is otherwise inexplicable lymphadenopathy larger than 1cm in diameter and persisting for more than three months. May be prodromal or a manifestation of AIDS.

Causes

* Tuberculosis
* AIDS
* Primary Lymphoid tumour e.g., lymphoma
* Secondary lymphoid tumour e.g., metastases

Investigation

* Full Blood count
* Mantoux OR Gene Expert
* HIV screening
* CT scan head and neck

**f) Hairy leukoplakia**

Clinically hairy leukoplakia may present *as* an adherent white, corrugated plaque, usually found bilaterally on the borders of the tongue.

**Treatment**

**Podophyllin** rosin 25%, apply to lesion once weekly if necessary.

**Refer to oral and maxillofacial surgeon for histologic diagnosis and managment.**

## 16.15 BURKITT'S LYMPHOMA

It is a rapidly progressive tumour that affects mostly children and is rare in adults. It is associated with dental anarchy of mandibular teeth. Teeth are mobile. Extractions do not relieve the swelling associated with poor social economic status. **Burkitt lymphoma** (or "Burkitt's tumor", or "Malignant lymphoma, Burkitt's type") is a cancer of the lymphatic system (in particular, B lymphocytes). It is named after Denis Parsons Burkitt, a surgeon who first described the disease in 1956 while working in equatorial Africa.

**Classification**

Currently Burkitt's lymphoma can be divided into three main clinical variants:

* The endemic,
* The sporadic and
* The immunodeficiency-associated variants.

The **endemic variant** occurs in equatorial Africa. It’s the most common malignancy of children in this area. Children affected with the disease often also had chronic malaria which is believed to have reduced resistance to Epstein-Barr virus (EBV) allowing it to take hold. The disease characteristically involves the jaw or other facial bone, distal ileum, cecum, ovaries, kidney or the breast.

The **sporadic type** of Burkitt lymphoma (also known as "non-African") is another form of non-Hodgkin lymphoma found outside of Africa. The tumor cells have a similar appearance to the cancer cells of classical African or endemic Burkitt lymphoma. Again it is believed that impaired immunity provides an opening for development of the Epstein-Barr virus. Non-Hodgkin’s, which includes Burkitt's, accounts for 30-50% of childhood lymphoma. Jaw is less commonly involved, comparing with the endemic variant. Ileo-cecal region is the common site of involvement.

**Immunodeficiency-associated** Burkitt lymphoma is usually associated with HIV infection or occurs in the setting of post-transplant patients who are taking immunosuppressive drugs. Actually, Burkitt lymphoma can be the initial manifestation of AIDS.

**Investigations**

* Full blood count
* Incisional Biopsy to confirm diagnosis
* HIV Screening
* Abdominal Ultrasound

**Treatment**

Effect of chemotherapy, as with all cancers, depends on the time of diagnosis. With faster growing cancers, such as this one, the cancer actually responds faster than with slower growing cancers. This rapid response to chemotherapy can be hazardous to patient as a phenomenon called "tumor lysis syndrome" could occur. Close monitoring of patient and adequate hydration is essential during the process.

# CHAPTER SEVENTEEN

**OTHER HEALTH CONDITIONS**

## 17.1 MANAGEMENT OF PAIN

Pain can be acute or chronic. Acute pain lasts less than three months and is often felt in response to an easily identifiable cause such as surgery, trauma, or an acute illness. Chronic pain may begin as acute pain, but lasts or recurs over a period longer than would normally be expected for the underlying condition. Management of pain must be individualized to each patient and must take into consideration both the relief of the pain as well as treatment of the underlying cause of the pain. Treating only the underlying cause may take a long time for pain relief to be achieved. Special attention must be given and precautions taken in providing pain relief in children, pregnant women and the elderly as well as those with concurrent hepatic or renal disease, cognitive or behavioural disorders and those who are opiate-tolerant or have a history of substance abuse.

**Non-pharmacological treatment**

* Placing affected part in the most comfortable posture
* Splinting
* Reassurance and positive attitude of the health care worker

**Pharmacological treatment**

**A. MILD TO MODERATE PAIN**

**Non- Narcotic**

* Paracetamol: oral
* Adults: 1g 6 to 8 hourly oral
* Children 10-15 mg/kg dose, 4-6 hourly, oral/suppository

**NSAID**

* Diclofenac, oral, 50 mg 8 hourly OR 75 mg I.M 8 hourly (three times daily)
* Ibuprofen, oral: Adults: 400 mg 6 to 8 hourly
* Children: 10 mg/kg, 8 hourly (max. of 30 mg/kg daily in 3-4 divided doses)

**OPIOID/NARCOTIC**

* Dihydrocodeine, oral, 30 -60 mg, 3-4 times daily
* Tramadol (especially for postoperative pain) 50-100 mg orally 8 hourly. Tramadol 50 - 100 mg IM/ IV stat then every 10-20 mins to max of 250mg in the first hour, then use when necessary. (max. 600 mg in 24 hours)

**B. SEVERE PAIN**

**NARCOTIC ANALGESICS: CONTROLLED DRUGS**

Morphine if opioid-naive, 2.5 mg -15 mg 4-6 hourly, IM/IV. Start low

and titrate upwards to effect. Consider co-administration with anti-emetics

to prevent nausea/vomiting, and, if regularly given, laxatives for constipation

Morphine Sulphate Oral 10 mg - 20 mg twice daily

Pethidine, 50 -100mg 4-6 hourly, I.M/ Oral

In combination with Hyoscine, they are particularly useful in renal and biliary colic. Also in patients with respiratory depression and those who have severe pruritus after morphine alone. Avoid narcotic analgesics in epileptics and patients on MAOIs

**C. PAIN IN TERMINAL ILLNESS**

Use combination tablets but do not hesitate to use opiates as often as required. The goal is to keep the patient comfortable and improve quality of life.

## 17.2 OPIOID OVERDOSE

Occurs when dosage is excessive. Patient is usually drowsy with pinpoint pupils. Respiratory depression with low respiratory rate is often present.

**Treatment:**

Stop opiates

Give Naloxone IV 0.4 mg slowly. Can go up to 10 mg IV.

Give oxygen by mask

Observe patients as Naloxone’s duration of action is shorter than opiates. Repeat doses are often required.

## 17.3 TETANUS

**Clinical Features:**

It is an acute, often fatal disease caused by an exotoxin. In the case of neonates, infection is through the umbilical stump, it results in tetanus neonatorum. The main clinical features are generalized increased rigidity and convulsive spasm of skeletal muscles.

**Treatment**

* Human tetanus immunoglobulin
* Adult/Children: Give 1000 – 3000 IU if available.

Then

* Adult: Benzyl Penicillin- give 1.2 MU. IV every 6 hours for 24 hours and thereafter
* Procaine Penicillin 1.2 MU I.M once daily for 7 days.
* Children: Benzyl Penicillin- 250,000 IU IV. Every 6 hours for 24 hours and thereafter
* Procaine Penicillin 0.4 – 0.8 MU I.M every 24 hours for 7 days
* Surgical toilet must be done at least 1 hour after the injection of immunoglobulin.

Control of spasms:

**Adult**

* Diazepam 10-30 mg IV every 6 hours

**Children**

* Diazepam give 0.5 mg/kg body weight IV every 6 hours

**General measures**

* Provide nutrition
* Fluids
* Intensive nursing care

**Prevention**

On admission to hospital give tetanus (toxoid) vaccine 0.5 ml IM. Repeat dose after 4 weeks and after 6-12 months.

## 17.4 ANAPHYLAXIS (ACUTE HYPERSENSITIVITY)

Anaphylaxis is a life-threatening clinical response that appears within minutes after administration of substance(s) to which the subject has been sensitized. Common offenders are drugs (e.g., penicillin), vaccines, insect stings, blood products and food like seafood, nuts, etc.

Clinical features:

* Respiratory distress due to oedema of the hypopharynx and larynx or bronchospasm.
* Vascular collapse (shock with hypotension).
* Pruritus
* Urticaria.

**Treatment**

* Laying of patient flat and elevating feet.
* Adrenaline 0.5 -1 mg (1:1000) IM repeated every 15 minutes until improvement occurs
* Oxygen may be required if in respiratory distress (6 L/min and above, and titrate as needed)
* Restoration of blood pressure – with boluses of IV fluids (Sodium chloride 0.9%)
* Chlorpheniramine 10 - 20 mg IV stat

OR

* Promethazine 25 mg IM stat
* Hydrocortisone 100 mg IV stat then every 6 hours for 24 hours would prevent further deterioration
* OR nebulise with Salbutamol

Prevention can be achieved by taking relevant history before administering materials known to produce a high rate of anaphylaxis.

Write the name of the drug or substance that caused the reaction and educate the patient and relatives on future avoidance. Patients should be asked to always mention allergies for drugs when visiting a clinic/prescriber.

## 17.5 MANAGEMENT OF ANTHRAX

Anthrax is an acute infectious disease caused by the bacterium Bacillus anthracis. Anthrax most commonly occurs in wild and domestic animals such as cattle, sheep, gouts, camels, antelopes, and other herbivores, but it can also occur in humans when they are exposed to infected animals or tissue from infected animals. The incubation period is usually 1-3 days.

Anthrax, especially cutaneous anthrax is a common condition in some parts of the Gambia, especially in the Foni's. It occurs mainly in the late dry season, but also at other times of the year.

CAUSE: Bacillus anthracis. Spores live in contaminated sand for a long time. Infection often occured after slaughtering of infected animals. (cows)

**TRANSMISSION**

Transmission is by inhalation, cutaneous (when bacteria enter cuts or abrasion on skin when handling contaminated animal products) and gastrointestinal (consumption of contaminated meat).

**Signs:**

* Cutaneous anthrax: Develops 2-5 after exposure
* Features: eschar with a central black necrosis and oedema of the affected site on the skin. (Oedema can be very severe).
* Inhalation anthrax: develops 1-3 after exposure.
* Features: fever, non-productive cough, myalgia, fatigue and retrosternal chest pain
* Systemic Anthrax: very rare but very severe.

**Signs:**

* Shock
* Disseminated Intravascular Coagulation (DIC)
* Small skin lesion with very little swelling,
* Excessive vomiting.

**Treatment:**

**Non-Pharmacological**

The following public measures are key for quick prevention and control of anthrax infection

* Health education and Information
* Proper disposal by burying of carcasses; burning is the alternative but not recommended as this could spread spores when carcasses bursts,
* No skinning of dead animals as this allows spore formation, which can stay in Soil for years and decades.
* No eating of dead carcasses.
* Restrict movement of animals and animal by-products from infected to non-infected areas.
* Hides and skins from infected animals should be destroyed (bury, burn),
* Mass vaccination of animals is recommended in endemic areas using Animal Anthrax vaccine.

**Pharmacological**

For naturally acquired infection eg from animals with anthrax, hides of animals with anthrax (cutaneous or inhalational)

* Ciprofloxacin 500 mg 12 hourly (twice daily) for 7 - 10 days

OR

* Doxycycline 100 mg 12 hourly for 7 - 10 days
* Systemic anthrax:
* Adults:
* IV Ciprofloxacin - Adults 400mg three times daily; in children: 30 mg/kg per day divided three times daily PLUS
* IV Clindamycin - Adults 900 mg three times daily; children 40 mg/kg per day divided every 8 hours

**Children:**

* IV Benzyl Penicillin 100 000 U/kg every 6 hours

OR

* Ciprofloxacin 15 mg/kg I.V twice daily with caution where benefit exceeds risk
* Fresh blood transfusion if necessary
* Intensive care

## 17.6 DOG BITE

**Clinical Recognition**

The patient presents with a bite wound, or history of exposure to dog saliva on broken skin or intact mucosa. Exposure is considered major if it involves licks of mucosa or multiple bites or bites on the face, head, neck or fingers. Minor exposure involves licks of skin, scratches or abrasions and bites of covered areas of arms, trunk and legs.

The circumstances of the bite (whether provoked or not), recent behaviour of the dog and its well-being over the ten days following the bite are other key aspects to note in the evaluation and management of dog bites.

**Wound management**

* Correct cleaning of the bite wound
* This is effective in killing rabies virus and is therefore of great importance.
* Scrub with soap and plenty of water (preferably under a running tap) for at least five minutes.
* Remove foreign material, damaged tissue and scabs.
* Rinse with plenty plain water/running tap.
* Liberally apply alcohol, iodine or quaternary ammonium antiseptics (e.g. Chlorhexidine).
* Major bites should be further explored, debrided and irrigated with 0.9% Sodium Chloride in hospital, if necessary under a local or general anaesthetic.

**In all cases, wound suturing should be avoided or at least delayed.**

Prevention of secondary bacterial infection and tetanus

Antibiotics are given to cover potential pathogens.

* Amoxicillin/Clavulanate PO 625 mg 3 times daily for 5 days is the drug of choice for animal bites including humans.

OR

* Ampicillin/Cloxacillin (AmpiClox) 500 mg 4 times daily for 5 days PLUS Metronidazole 250 mg 3 times daily for 5 days.

In the previously immunized person, a booster dose of tetanus toxoid (0.5ml IM) is given at the time of injury. Unimmunised persons should be given tetanus toxoid in three doses by intramuscular injection, six weeks apart.

Specific post-exposure anti-rabies immunization (refer to chapter on immunization)

The lyophilized vaccine is reconstituted immediately before use and 1ml given by intramuscular injection. There are 5 doses: for each, 1ml is given on days 0, 3, 7, 14 and 28.

Hypersensitivity reactions to rabies vaccine are uncommon and are often mild and transient.

However, Adrenaline and Hydrocortisone should be available to combat the rare case of serious reaction.

**REFER ANY COMPLICATIONS TO THE HOSPITAL**

**Signs and Symptoms**

* Prodromal symptoms include itching, pain or paraesthesia at the site of the healed bite wound, followed by a variety of non-specific symptoms such as fever, lethargy, general body pains, irritability, photophobia and chills.
* Most cases subsequently develop brainstem encephalitis (furious rabies) with hydrophobia, cardio-respiratory and autonomic instability.
* A third of cases will die during a hydrophobic spasm within the first few days and the rest lapse into coma and generalized flaccid paralysis and rarely survive more than one week.
* Less than one fifth of cases develop dumb rabies, with a flaccid ascending paralysis. Worldwide, there are only four known rabies survivors, all requiring protracted intensive care management with mechanical ventilation.

**MANAGEMENT**

**Patients with rabies should be:**

* Kept in a quiet, semi-dark room and barrier-nursed
* Given heavy sedation such as with intravenous or per-rectal Diazepam or Phenobarbitone to control and minimize hydrophobic spasms
* Given analgesia for pain

## 17.7 SNAKE BITE

**Clinical Recognition**

Initial diagnosis often rests on history alone as fang bites are often invisible. The culprit snake is often not available and the distinction between venomous and non-venomous species uncertain. Therefore, all patients with snakebite must be assessed carefully.

**Initial management**

* Reassure patient and give Paracetamol or Pethidine for pain/anxiety.
* Immobilise bitten limb with a splint or sling
* Do not allow the pt to walk because exertion, with bite wounds on the lower limb, may increase snake venom absorption through local muscle contraction.
* Give 0.1% Adrenaline (0.5ml for adults, 0.01ml/kg for children) subcutaneous for shock, respiratory distress, or angioedema.
* Transport patient to the nearest hospital or health centre comfortably and passively (no movement).

**DO NOT**

Apply tourniquets. They may cut off arterial blood flow and cause significant ischemic damage, especially when left on for a prolonged period of time.

Make cuts at the site of the bite

Attempt to suck venom out of the wound

Apply ice or potassium permanganate to the bitten parts. This can exacerbate ischemic damage.

**REFER IMMEDIATELY AFTER INITIAL MANAGEMENT**

**Hospital Management**

For convenience, this is outlined under the following headings:

* Clinical assessment
* Antivenom administration
* Prevention of secondary infection
* Supportive therapy
* Surgical intervention

**Clinical Assessment**

Since the species of snake is often unknown and symptoms and signs of envenomation take a while to develop, all patients with snakebite should ideally be admitted for 24 hours for observation. In particular, they should be observed for local pain, swelling, blisters, gangrene or tender lymph nodes, bleeding in the tooth sockets, swings in the blood pressure, respiratory distress, ptosis (which is the earliest sign of neurotoxicity) and general neurological state.

Supportive tests include the simple whole blood clotting test, urea and electrolytes, urinary dipstick and microscopy, FBC and the ECG. In the clotting test, whole blood is put in a clean dry glass tube and kept for 20 minutes. Failure to clot after this time is an indication of venom-induced defibrination (DIC)

**IT IS NEVER TOO LATE TO START ANTIVENOM THERAPY IN ALL CASES OF SNAKEBITE!**

**Antivenom Administration**

**Indications:**

* Local swelling involving more than half of the bitten limb or extensive blistering or bruising.
* Impaired consciousness
* Neurotoxic signs with impaired ventilation
* Systemic bleeding/blood which does not clot
* Hypotension/shock
* Evidence of intravacular haemolysis
* Renal failure
* Rhabdomyolysis

**Preparation for acute anaphylactic reaction**

Always have Epinephrine (Adrenaline) drawn up in a syringe before giving antivenom.

* Adults: 0.5 mg of 1:1000
* Children: 0.01 mg/kg by IM route

In case of anaphylactic reactions (intense itch, urticaria, cough, asthma, angioedema, tachycardia, fever, vomiting, low blood pressure and collapse) give the adrenaline immediately by intramuscular injection IM. Epinephrine is repeated every 10 minutes if there is no initial response.

* Antihistamines such as Chlorpheniramine maleate 10 mg IV and Hydrocortisone 100 mg IV are also indicated.

Antivenom: type, dose and administration

The available anti-snake venom serum is the purified polyvalent equine antivenom and comes in 10 ml ampoules. The antiserum is appropriate for patients bitten by Bitis (adder), Echis (carpet viper), Naja (cobra) and Dendroaspis (mambas), types of snakes, which are most frequently encountered in sub-Saharan Africa, including The Gambia.

A test dose is applied thus: 0.1ml of antivenom is injected subcutaneously. If no anaphylactic reactions after 15 minutes, apply 0.25 ml antivenom subcutaneous and, if no adverse reactions after another 15 minutes, administer the rest of the dose as described below.

The initial dose is 50 ml (5 ampoules) irrespective of age (i.e. children should receive the same dose as adults). This is diluted in 5ml/kg body weight of isotonic saline/5% dextrose and given by intravenous infusion (drip) over 1 hour.

If there are reactions during administration, the antivenom infusion should be temporarily stopped and the above measures for anaphylaxis instituted. Clinical response is usually evident within 15-30 minutes. The full dose of antivenom can be repeated as necessary if the initial response is poor.

**Prevention of secondary infection**

* Tetanus prophylaxis should be given. With local bruising, blistering and swelling, and in those with systemic envenoming broad spectrum antibiotic cover e.g. Ampicillin/Cloxacillin 500 mg be 4 times daily for 5 days OR amoxicillin/clavulanate should be given as in case of dog bites.

**Other Supportive Therapy**

This will depend on the attendant complications. Thus transfusion with fresh whole blood, intravenous fluids, by hydrocortisone diuretics, manual ventilation, neostigmine etc may be needed and appropriately deployed by the specialist physician.

**Surgical Intervention**

Early surgical consultation is particularly warranted in cases with extensive tissue destruction, intense limb pain or loss of sensation. Early surgical intervention may include debridement, fasciotomy, or even amputation. Continuing care of the severely damaged limb, including plastic reconstruction all require expert surgical care, which must always be sought early.

## 17.8 THE UNCONSCIOUS PATIENT

Unconsciousness is a common clinical problem and may be associated with diseases of several organs in the body. The cause of unconsciousness is often not immediately evident, and a systematic approach to its diagnosis and management is therefore important. Obtain a history from accompanying relatives, friends, the police etc.

**Common Causes**

**Adults**

* Infections e.g. meningitis, cerebral malaria
* Hypoglycaemia (diabetes-related or alcohol induced)
* Diabetic ketoacidosis
* Severe hypertension with encephalopathy
* Cerebrovascular Accident (CVA) or stroke
* Drug overdose e.g. alcohol, salicylates, barbiturates
* Electrolyte imbalance
* Epilepsy status epilepticus
* Head injury

Major organ failure e.g. hepatic failure, renal failure and myocardial infarction

**Children**

* Infections e.g. meningitis, cerebral malaria
* Hypoxia from severe anaemia
* Epilepsy
* Hypoglycaemia
* Drug ingestion
* Poisoning e.g. Kerosene

**Signs and Symptoms**

* Depends on the underlying cause (see appropriate section)

**Investigations**

* Depends on the underlying cause (see appropriate section)

**Treatment**

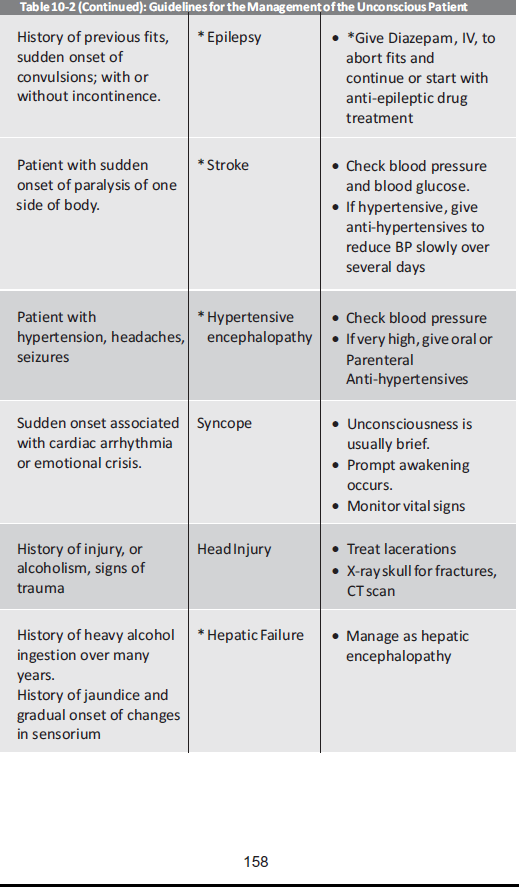
**Non-pharmacological treatment**

* Examine the airway and ensure that it is clear
* Check for the presence, rate and rhythm of the pulses and monitor blood pressure
* Observe the respiratory rate and pattern
* Perform cardiopulmonary resuscitation if required
* Assess neurological status
* Place the patient in a left lateral position that would prevent aspiration in case of vomiting or pass an NG tube if no contraindications exist
* Pupils (size, symmetry, reaction to light)
* Limb movements, reflexes, and facial asymmetry
* Check neck for stiffness
* Fundoscopy
* Smell breath
* Catheterise and monitor urine output if necessary
* Assess using the Glasgow Coma Scale (adults) or Blantyre Coma Scale (children)

**Pharmacological treatment**

Depends on the underlying cause (see appropriate section)

For specific management of likely causes refer to the table on guidelines for the management of the unconscious patient



Refer to hospital for further definitive management if not responding to standard measures.

## 17.9 POISONING

This is the entry into the body of toxic substances in amounts which cause dysfunction of body systems.

Causes

* Microorganisms (food poisoning)
* Fluids and gases (organic), eg. Agricultural chemicals, petrol, paraffin, carbon monoxide
* Metal poisoning (inorganic), eg. lead, mercury, copper
* Alcohol and medicines (in excessive amounts)

If possible, refer/admit all patients showing signs of poisoning to hospital. Send a note of what is known and what treatment has been given. Also refer/admit patients who have taken slow acting poisons even if they appear well. These include:

* Aspirin
* Iron
* Paracetamol
* Tricyclic antidepressants, eg. Amitriptyline, Imipramine
* Paraquat
* Modified-release products

Even though it may not be possible to identify the poison and the amount taken, it is usually not important as: Only a few poisons have specific antidotes. Few patients need active removal of the poison. Most patients must be treated symptomatically. However, knowledge of the poison will help you anticipate the likely effects on the patient.

## 17.10 GENERAL MEASURES

**a) Respiration**

Often impaired in unconscious patients

Ensure the airway is cleared and maintained

Insert an airway if available

Position patient semi-prone to minimise risk of inhalation of vomit

Assist ventilation if necessary

**b) Blood Pressure**

Hypotension is common in severe poisoning with CNS depressants. A systolic BP <70mmHg may cause irreversible brain or renal damage.

Carry the patient head down on the stretcher and nurse in this position in the ambulance

Give oxygen to correct hypoxia

Set up an IV infusion Fluid depletion without hypotension is common after prolonged coma and after aspirin poisoning due to vomiting, sweating and hyperpnoea.

Hypertension is less common but may be associated with sympathomimetic poisoning, e.g. Amphetamines, Cocaine.

**c) Heart**

Cardiac conduction defects and arrhythmias may occur in acute poisoning, especially with tricyclic antidepressants but these often respond to correction of any hypoxia or acidosis. Perform ECG or place on telemetry monitor to monitor the heart.

**d) Body temperature**

Hypothermia: may develop in patients with prolonged unconsciousness, especially after overdose of Barbiturates or Phenothiazines, e.g., Chlorpromazine, Trifluoperazine. It may be missed unless temperature is monitored. Treat by covering the patient with a blanket.

**e) Convulsions**

Do not treat single brief convulsions If convulsions are prolonged or recur frequently:

Diazepam 10mg rectally repeated if necessary

children: 400 micrograms (0.4mg)/kg per dose

OR

Diazepam 10mg slow IV repeated if necessary. (max: 30mg)

children: 200 micrograms (0.2mg)/kg

Do not give IM if IV route is not possible

Remove the needle from the syringe, and use the syringe to give the dose rectally

## 17.11 REMOVAL AND ELIMINATION OF THE POISON

**a) Removal from the stomach**

Balance the dangers of attempting to empty the stomach with the likely toxicity of any swallowed poison as determined by the type of poison and amount swallowed.

**Gastric lavage:**

* Only useful if done within 2 hours of poisoning (except with salicylates when it may be of use within 4 hours)
* Seldom practicable or necessary before the patient reaches hospital
* Do not attempt in drowsy or comatose patients because of the risk of inhaling stomach contents. (unless there is a good cough reflex or the airway can be protected with a cuffed endotracheal tube)

**DO NOT ATTEMPT WITH CORROSIVE OR PETROLEUM PRODUCTS**

Use of emetics (eg ipecac):

* No longer used due to risk of further complications such as aspiration

**b) Prevention of absorption of the poison**

* Oral activated charcoal can bind many poisons in the stomach and so reduce their absorption.
* It is more effective the sooner it is given but may still work up to 2 hours after poisoning (longer with modified-release products and anticholinergics).
* It is safe and especially useful for poisons toxic in small amounts, eg. antidepressants
* If patient unable to swallow the charcoal/water mixture (slurry), give by gastric lavage tube
* Give activated charcoal 50g (child: 25 g (50 g if severe))
* The dose-form of this medicine is 250 mg tablets. 50 g = 200 tablets of 250 mg. Grind these into a fine powder before mixing with 100-200 ml of water

**c) Active elimination of the poison**

* Repeated doses of activated charcoal increase elimination of some medicines after they have been absorbed, e.g., Aspirin, Carbamazepine, Phenobarbitone, Quinine, Theophylline
* Give Activated charcoal 50g repeated every 4 hours
* Treat any vomiting as this may reduce the effectiveness of the charcoal In case of intolerance:
* Reduce dose and increase frequency, e.g., 25g every 2 hours or 10g every hour

## 17.12 ACUTE ORGANOPHOSPHATE POISONING

Organophosphates are ingredients of some pesticides and insecticides intended for agricultural and household use. Poisoning occurs by ingestion, inhalation or absorption through the skin

**Causes**

* May be accidental, e.g., rat poison
* Intended poisoning, i.e., suicidal, or homicidal
* Occupational hazard, e.g., agricultural workers

**Clinical features**

* Patient may smell of the chemicals
* Constricted pupils
* Cold sweat, anxiety, restlessness
* Abdominal pain, diarrhoea and vomiting
* Twitching, convulsions
* Bradycardia
* Excessive salivation, difficulty in breathing

Differential diagnosis

Other causes of poisoning

Other causes of convulsions

Acute infection

**TREATMENT**

**NON-PHARMACOLOGICAL**

Remove contaminated clothing

Wash contaminated skin with lots of cold water and soap.

Establish and maintain the airway artificial respiration with air or oxygen may be required during the first 24 hours after poisoning.

Perform gastric lavage if the poison was ingested

**PHARMACOLOGICAL**

* Atropine 2 mg IM or IV (according to the severity of the poisoning)
* children: 20 micrograms/kg per dose.
* If no effects double the dose every 3 to 5 minutes until signs of atropinization occur (pupil dilatation, hot dry skin, dry mouth, fast pulse). In moderate to severe poisoning only and if not responding to Atropine:
* Add Pralidoxime mesylate 30mg/kg IM. Follow with 1-2 more doses at 4-6 hour intervals depending on the severity of the poisoning and response to treatment.
* In very severe poisoning:
* The initial dose may be doubled usual maximum dose: 12 g/24 hours.
* The dose can also be given by slow IV (over a 5 minute period) by diluting 1g in 10-15 mL of water for injection or by IV infusion (up to 500 mg/hour may be required).
* Give IV fluids prn for dehydration, hypovolaemia, and shock

**Note: Pralidoxime: only effective if given within 24hours of poisoning**

**Prevention**

* Label agricultural and domestic pesticides properly
* Store such products away from children
* Wear protective clothing when using the products

## 17.13 PARAFFIN & PETROLEUM PRODUCTS POISONING

Includes paraffin, petrol, paint thinners, organic solvents

**Cause**

* Accidental or intentional ingestion

**Clinical features**

* Patient may smell of paraffin/other petroleum product
* Burning sensation in mouth and throat
* Patient looks pale (transient cyanosis)
* Vomiting, diarrhoea
* Cough, dyspnoea

Differential diagnosis

Other causes of poisoning

Acute infections

**TREATMENT**

**NON-PHARMACOLOGICAL**

* Treatment is supportive and symptomatic the main danger is damage to lung tissue.
* Avoid gastric lavage or use of an emetic, as this may lead to inhalation of the gastric contents causing pneumonitis
* Give plenty of oral fluids (preferably milk).

**PHARMACOLOGICAL**

* Activated charcoal may be used:
* 50 g: repeated every 4 hours when required OR 25 g: repeated every 2 hours when required

**REFER I**f complications occur, e.g. pulmonary oedema, pneumonia.

Prevention

* Store paraffin, etc. safely (eg. in a locked cupboard)

## 17.14 ASPIRIN POISONING

**Clinical features**

* Hyperventilation
* Tinnitus, deafness
* Vasodilation
* Sweating
* Coma (if very severe poisoning)
* Complex acid-base disturbances

**TREATMENT**

* Gastric lavage - worthwhile up to 4 hours after poisoning as stomach emptying is delayed
* Activated charcoal 50 g repeated as needed every 4 hours OR 25 g repeated every 2 hours if required to delay absorption of any remaining salicylate
* Fluid and electrolyte monitoring and management to correct acidosis, hyperpyrexia, hypokalaemia and dehydration
* Look out for and treat hypoglycaemia:
* Glucose 50% as IV bolus adult: 20 mL child:1 mL/kg
* Anticipate and treat convulsions

## 17.15 PARACETAMOL POISONING

**Clinical features**

* As little as 10-15 g (20-30 tablets of 500 mg) may cause severe hepatic and renal failure, nausea and vomiting (usually settle within 24 hours)

**TREATMENT**

**NON-PHARMACOLOGICAL**

* If poisoning took place <2 hours before:
* Empty the stomach to remove any remaining medicine using gastric lavage or an emetic
* Despite few significant early symptoms, transfer patients to hospital urgently as maximal liver damage occurs 3-4 days after poisoning.

**PHARMACOLOGICAL**

* Discuss with larger group as antidote is N-acetylcysteine)
* And various protocols exist. Which one to adopt? Also need serum PCM level capabilities, liver function tests for optimal management.

## 17.16 IRON POISONING

Clinical features

* Commonest in children
* Nausea, vomiting, abdominal pain, diarrhoea
* Haematemesis
* Rectal bleeding
* Later: hypotension, coma, hepatic necrosis

**TREATMENT**

**PHARMACOLOGICAL**

* Deferoxamine 15mg/kg/hour by continuous IV infusion in sodium chloride 0.9% OR
* Dextrose 5% infusion max dose: 80mg/kg/24hrs.
* Dissolve initially in water for injections (500mg in 5mL) then dilute with infusion fluid

## 17.17 CARBON MONOXIDE POISONING

Usually due to inhalation in confined spaces of smoke, car exhaust or fumes caused by incomplete combustion of fuel gases, e.g. use of charcoal stoves in unventilated rooms.

**Clinical features**

* All due to hypoxia
* Headache, nausea, vomiting
* Weakness, collapse, coma, death

**TREATMENT**

**NON-PHARMACOLOGICAL**

* Remove person to fresh air
* Clear the airway
* Give oxygen 100% via non-rebreathing face mask (10 -15 L/min) as soon as possible
* Give artificial respiration as required
* Continue until adequate spontaneous breathing starts
* Admit to hospital due to possibility of delayed complications

**PHARMACOLOGICAL**

In severe poisoning:

* Anticipate cerebral oedema and treat with Mannitol 20% 1g/kg by rapid IV infusion

## 17.18. BARBITURATE POISONING

**TREATMENT**

* Monitor vital signs
* Gastric lavage
* Activated charcoal may be used to absorb the poison

## 17.19 NARCOTIC ANALGESIC POISONING

**Clinical features**

* Respiratory depression with low respiratory rate
* Pinpoint pupils
* Coma

**TREATMENT**

**PHARMACOLOGICAL**

* Naloxone 0.8-2 mg IV
* Child: 10 micrograms/kg IV
* If respiratory function does not improve:
* Adult: repeat dose every 5 minutes to a maximum of 10 mg total dose
* Child: give one subsequent dose of 100 micrograms/kg

**If respiratory function still does not improve:**

* Question the diagnosis

**NOTE**

Use IM or SC route if IV not possible, however onset of action will be slower

Naloxone: doses used in acute poisoning may not be suitable for treating opioid-induced respiratory depression and sedation in palliative care and in chronic opioid use

## 17.20 WARFARIN POISONING

Warfarin is an ingredient in some rodenticides (rat poison).

**TREATMENT**

**PHARMACOLOGICAL**

**Empty the stomach**

* Give Activated Charcoal (AC) orally if the following conditions are met:
* Normal mental status and no aspiration risk
* Ingestion of an estimated dose that is > 1 mg of anticoagulant rodenticide
* AC can be administered within one hour of ingestion

**In an otherwise healthy patient with no bleeding after ingestion of a rodenticide, treatment should center on the measurement of prothrombin time (PT) and international normalized ratio (INR), where available.**

**IF these are not readily available refer the patient to the nearest hospital**

* IF INR < 4 in a patient with no bleeding, this warrants only observation and serial monitoring. These patients should modify activities to avoid the risk of falls or head trauma.
* In otherwise healthy patients with an INR 4 -10 and no bleeding, give oral vitamin K 1 to 2.5 mg PO once.
* If INR > 10 in a patient with no bleeding, give 2.5 to 5 mg vitamin K PO, and repeat INR in 24 hrs to determine need for an additional dose.

**Patients with bleeding**

* In a patient with minor bleeding, and any elevated INR, give 2.5-5 mg PO once, and repeat INR IN 24 hrs.
* In a patient with life-threatening bleeding, give IV vitamin K 5- 10 mg
* intravenously (dilute in 50 ml IV fluid and infuse over 20 mins). Give Fresh Frozen Plasma (FFP) if available. These patients should be hospitalized and put on bed rest until the coagulopathy is controlled.

## 17.21 METHYL ALCOHOL (METHANOL) POISONING

Methanol is used as an industrial solvent and is an ingredient of methylated spirits.

**Clinical features**

* Similar to alcohol intoxication/poisoning but milder
* Symptoms do not usually appear until 12-24 hours after ingestion and may include headache, dizziness, nausea, vomiting, vasomotor, disturbances, CNS depression and respiratory failure.
* Toxic metabolites may cause severe acidosis and retinal/optic nerve damage

TREATMENT

* Gastric aspiration and lavage
* only of use if done within 2 hours of ingestion
* Correct metabolic acidosis with oral sodium bicarbonate solution 5%
* leave the solution in the stomach
* Give Fomepizole if available. Loading dose 15 mg/kg IV infusion over 30, mins, THEN 15 mg/kg 12 hourly

**In severe cases:**

* Give sodium bicarbonate 8.4% 50mL by slow IV, monitor plasma pH
* Give 30-35 mL of alcohol 40% (eg. waragi, whisky, brandy) in 100mL of water every 3 hours until the acidosis has been corrected. Delays oxidation of methanol to toxic metabolites
* Keep the patient warm
* Protect the eyes from strong light
* Refer to hospital for further management

## 17.22 ALCOHOL (ETHANOL) POISONING

Alcohol poisoning may be acute or chronic.

**a) Acute alcohol poisoning**

Symptoms of alcoholic poisoning following ingestion of large amount of alcohol over a short period.

**Cause**

* Deliberate consumption of excessive alcohol in a short period of time
* Accidental ingestion (may occur in children)

**Clinical features**

* Smell of alcohol on the breath
* Excessive sweating
* Dilated pupils

In later stages stupor and coma develop. As coma deepens the following appear:

* Thready pulse and falling BP
* Fall in body temperature
* Noisy breathing

**Differential diagnosis**

**Other causes of coma:**

* Malaria and other intracranial infections
* Diabetes mellitus
* Head injury
* Stroke (cerebrovascular accidents)
* Low blood sugar (hypoglycaemia) due to other causes
* Poisoning by other medicines, eg. narcotics
* Mental illness

**Investigations**

* Blood: alcohol content, glucose level
* Urine: for glucose and protein
* Lumbar puncture

**TREATMENT**

* Maintain a clear airway
* Take measures to reduce the special hazard of aspiration of stomach contents
* Check blood glucose level
* If indicated, treat hypoglycaemia: Glucose 50% 20-50 mL IV bolus child: 1 mL/kg
* Assess clinical and biochemical response over the next 15 minutes and repeat Glucose 50% IV when required.
* Monitor hourly blood glucose levels
* Repeat Glucose 50% IV as required until the patient wakes up

If IV glucose is not available:

Give glucose 50% OR sugar solution 50% rectally or by NGT

Once patient wakes up:

* Continue with oral glucose or sugar solution as required, until the patient can eat a meal

**b) Chronic alcohol poisoning**

**Cause**

Heavy habitual drinking combined with poor nutrition

**Clinical features**

**Features of malnutrition**

* Weight loss
* Dry scaly skin
* Brittle discoloured hair
* Pale mucous membranes
* Cerebral damage
* Memory loss
* Hallucinations
* Tremors
* Liver disease
* Poor appetite
* Fluid in the abdomen (ascites) as a result of
* Cirrhosis
* Change in behaviour, see Alcohol Dependence Syndrome

**TREATMENT**

**For delirium:**

* Diazepam 10-30 mg rectally every 12 hours when required
* Anticipate and treat hypoglycaemia
* Refer to hospital for further management including:
* bed rest
* proper diet
* treatment of thiamine deficiency
* psychiatric assistance and counselling on alcohol, withdrawal, abstinence and lifestyle adjustment

## 17.23 OTHER CHEMICAL/MEDICINE POISONING

**CAUSTIC CHEMICAL INJECTION (e.g., CAUSTIC SODA)**

TREATMENT

For ingested poisons:

* Carry out nasogastric suction and gastric lavage
* Give activated charcoal
* Provide symptomatic treatment as necessary, eg. For pain, dehydration

**REFER** patient to hospital level for further management if the condition deteriorates

## 17.24 FOOD POISONING

Illness caused by consumption of food or water contaminated by certain pathogenic microorganism. It usually affects large numbers of people, after ingestion of communal food in homes, hospitals, hotels and parties.

Causes

Can be infective or toxic

Infective: by bacteria, eg. Salmonella typhimurium, Campylobacter jejuni, Bacillus cereus

Toxic: by toxins from Staphylococcus aureus, and Clostridium botulinum.

Clinical features

* Nausea, vomiting
* Intermittent abdominal pain (colic) with associated diarrhoea.
* Botulism: paralysis of skeletal, ocular, pharyngeal and respiratory muscles
* Fever (especially if poisoning is the infective type)
* May be self-limiting. Features disappear without specific treatment

Differential diagnosis

* Cholera
* Dysentery
* Other causes of stomach and intestinal infections

Investigations

* Good history and examination is important for diagnosis
* Stool: examination for C&S

**TREATMENT**

Establish the cause and treat accordingly

* Give oral or IV fluids for rehydration as required
* For pain, give Paracetamol 1 g every 4-6 hours, max daily dose: 4 g children: 10 mg/kg per dose , max 4 doses per day

If the poisoning is bacterial in origin and diarrhoea persists or is severe (ie. >5 stools/day, bloody and/or fever):

* Give an antibiotic for 3-7 days, depending on response:
* Ciprofloxacin 500 mg every 12 hours (contraindicated in pregnancy), children: 10 mg/kg per dose.

OR

* Azithromycin 500 mg once daily for 3 days, children: 10 mg/kg per OD for 3 days.

Follow up patients and manage accordingly

**Prevention**

* Heat cooked foods thoroughly before eating and avoid eating cold left-over cooked foods
* Ensure adequate personal and domestic hygiene

Acetylsalicylicacid, 224

Allopurinol, 238

Ampicillin, 143, 243, 244

Benzathinepenicillin, 222

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Carbamazepine, 84, 224

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Chlorpromazine, 136

Clonazepam, 83, 84, 85

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