MINISTRY OF HEALTH

NATIONAL DRUG AUTHORITY

Pharmaceutical Society of Uganda

msh Management Sciences for Health

Accredited Drug Shops Training

Uganda

EADSI East African Drug Seller Initiative

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MODULE 1: LAWS, REGULATIONS AND ETHICS

1: Introduction to ADS Model

Background to the ADS training program

The Pharmaceutical Sector

Uganda is divided into more 84 districts and the public health care system is divided into the administrative structure described below:

Administrative structure	Council Level	Health Structure
Village	I	Health Centre I
Parish	II	Health Centre II
Sub county	III	Health Centre III
County as sub-district or constituency	IV	Health Centre IV
District	V	District/General hospital
Region		Regional referral
National		National Referral

In the public health care system, there are two national referral hospitals; Mulago and Butabika, 11 regional referral hospitals which also act as District Hospitals in the areas where they are located and several health centre II, III and IV. Mulago and Mbarara Hospitals also act as University Teaching Hospitals.

The public pharmaceutical sector follows the same format. According to World Bank, geographical access to pharmaceutical services is limited to 49 percent of the population, i.e., population living within 5 kilometres (about one hour's walking distance). Rural communities are particularly affected because health facilities are mostly located in towns and along main roads. As a result, it is inevitable that the public pharmaceutical sector is supported by several privately owned pharmacies and drug shops.

The government recognizes the importance of the private sector and is now encouraging public-private partnership. The ADS project is one such attempt. The ADS project seeks to build capacity of the private for-profit medicine dispensing outlets to appropriately manage diseases that are most prevalent in areas where these outlets are located. The project also seeks to increase collaboration between public and private health care providers in order to encourage cross referral between the two sectors.

Medicines play a major role in health care by saving lives, improving health, promoting trust and participation in health services. The availability of medicines, the way they are handled and they way they are used all influence they health of a community. The pharmaceutical sector aims to contribute to the standard of health for the population of Uganda, by ensuring that medicines are available, accessible and affordable at all times. In addition, it is interested in whether medicines are appropriately handled so as to maintain their quality and ultimately whether they are used appropriately.

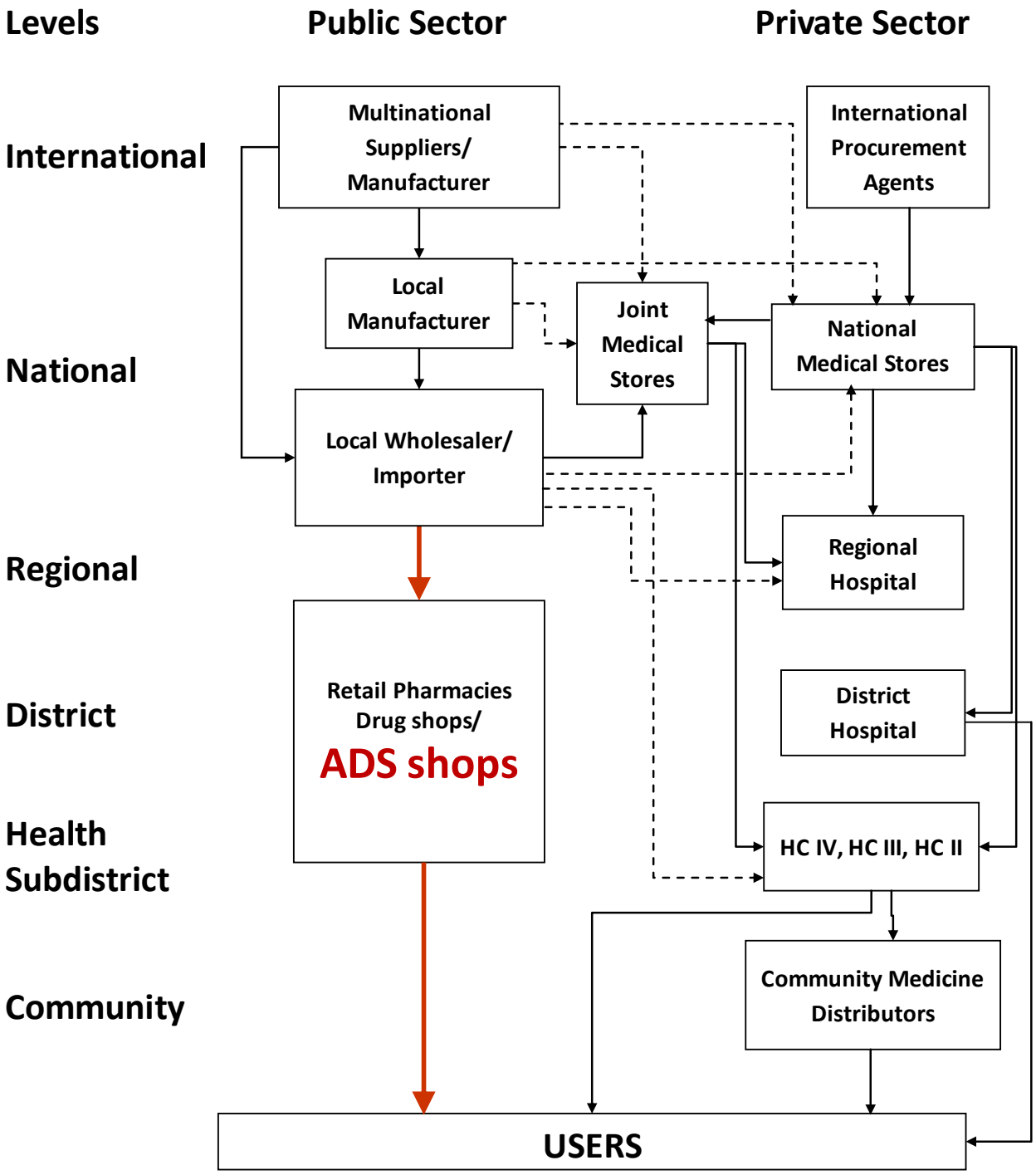
The Medicine supply system in Uganda

A significant percentage of the national health budget is used for procurement and distribution of medicines. In Uganda the medicine supply system is run by both private and public sector players. The majority of the medicines and equipment for the public sector are obtained from National Medical Stores (NMS), an autonomous government agency charged with the procurement, storage and distribution of essential medicines and supplies to the public sector. Joint Medical Stores (JMS) is the major source medicines and health supplies for NGO and religious-based health facilities.

Currently there are 5 large-scale pharmaceutical manufacturers and 5 small-scale pharmaceutical manufacturers. There are 2939 public sector health facilities from which drugs may be dispensed, 300 private pharmacies and 2600 drug shops. Of the private pharmacies, nearly 80% are in the three major towns of Kampala, Jinja and Mbarara.

Limited or lack of access to pharmaceutical services through registered pharmacies has led to proliferation of drug shops in rural areas to cover the gap. Most of the drug shops are not registered and therefore not easily regulated or supervised. With the inadequate numbers of qualified personnel in the area of pharmacy, most of the personnel manning these drug shops are either inadequately trained. This manual and the accompanying training curriculum is designed to equip drug shop sellers and owners to better appreciate their roles in pharmaceutical care delivery and to provide them with knowledge skills and attitudes regarding appropriate medicines management.

Figure 1. A Typical Medicine Distribution System in Uganda



The ADS Project

What is ADS?
ADS in full is an Accredited Drug Shop. An ADS is a medicine dispensing outlet dealing in **human medicine** that is accredited by the National Drug Authority after satisfying specific accreditation requirement (to be discussed in chapter two). The specific accreditation requirements for the ADS focus on premises, personnel and all aspects of operations of medicine dispensing outlet. These requirements make the ADS distinct from other drug shops and thus, ADS will be allowed to stock medicines and other health related commodities beyond what is generally allowed by the laws governing the sale of medicines in Uganda. This expanded medicines list was drafted to cover most of the diseases most prevalent in the communities.

An ADS is a special category of class C drug shop that has is accredited by the NDA and allowed to stock medicines that are generally not allowed to be stocked in an ordinary class C drug shop.

What are the steps of the ADS project?

1. The Pharmaceutical Society of Uganda (PSU) is coordinating the ADS project with technical and financial support from the National Drug Authority (NDA) and Management Sciences for Health (MSH).
2. Drug shops in Kibale were surveyed to identify common challenges in providing good patient care. From this survey, a specific training program has been developed.
3. Drug shops in Kibale will be invited to join the ADS project.
4. Drug sellers and owners will be trained in business management, medicines management and patient care.
5. There will be inspection and support supervision of drug shops.
6. There will a public awareness campaign to ensure that the public knows that ADS are high quality places to seek medicines in Kibale.
7. If the ADS project leads to better care in Kibale, the government may decide to expand this program to other areas of Uganda.

2: Legal Requirements and Standards for ADS

Definitions

Laws

Laws are rules that govern human conduct and are binding to all persons within a given state or nation. Laws command what is right and prohibit what is wrong. Laws are often called Acts or Statutes. They are enacted in writing by a law making body of state or nation such as the Parliament of Uganda. The Acts or Statutes are usually stated in general terms and their implementation may require development of Regulations, Guidelines and Policies.

Regulations

Regulations are more specific rules controlling or restricting a specific activity. They are made by the authority responsible for the matters in question, for example the Minister for Health who is responsible for matters of health and medical services. The Minister makes these regulations after consultation with the technical authoritative body or agency or group of individuals who are experts on the area or matter in question, e.g., the National Drug Authority of Uganda. These regulations come into force on the date of their being published in the government gazette. The examples of such regulations are the NDA regulations of 1993.

Guidelines

These are instructions on how to implement or to enforce the laws. They are normally drawn up or laid down or issued by government or an authority or policy making body like the NDA Boards.

The difference between Guidelines and Laws is based on how they are enforced. While violations of law are punishable by Courts of Law, violations of guidelines are punishable by withdrawal of certain rights and privileges one enjoys when he adheres to the guidelines, e.g., withdrawal of the ADS accreditation certificate.

Policy

A policy is a point of reference or general understanding to guide or influence decision making regarding long-term actions. E.g. policy on establishment of ADS outlets

Drug policy

A drug policy is a statement indicating the objectives and strategies to be undertaken to improve the national pharmaceutical sector to ensure availability, accessibility and affordability of drugs while emphasizing their quality and rational use.

Regulation of medicines

Regulation of medicines and medicinal devices is a system of laws, regulations, guidelines and policies that provide a basis of legal and administrative control over the manufacture, distribution, marketing and post marketing surveillance of these products. They prescribe and impose duties and responsibilities of the different parties/intermediaries involved in the process medicines and medicinal devices go through from research & design to post marketing surveillance of these products. Breach of such duties is enforceable by regulatory authorities, through sanctions applied by administrative authorities or ultimately by the criminal courts.

What products are regulated?
Any product that is presented for diagnosing, treating, preventing or alleviating disease or compensating for an injury or handicap including control of contraception both in humans and animals is by law regulated

Grounds for regulating medicines

1. The increased number of individuals involved in the manufacture and sale of medicines.
   The increase in people involved in the manufacture and sale of medicines at different levels created the need to regulate and control activities at the different levels in order to protect the public
2. Patients dependence on health workers for medicines advice
   Patients generally do not select their own medicines; they depend on the expert opinions of the health workers. The health workers also depend on the distributors who depend also on the manufacturers. The quality of information that is generated by the manufacturer should be verifiable as it influences what will happen at the proceeding stages in the lifecycle of a medicine. This interdependence necessitates regulating activities that may affect the use medicine to the final consumer.
3. Conflict of Interest
   Health workers also act as sellers of medicines. They are potential conflict of interest between financial gains and their professional obligations. Health workers may be motivated to sell more rather than taking the welfare of the patient as primary, e.g. giving an injectable medicine for a condition where tablets could suffice.
4. Possibility of the medicines causing harm
   Medicines are not like any others commodity of commerce; they are a social commodity that is potentially harmful to the individual using it or the community if not used properly. The consequence of misuse of medicines may be fatal hence the need to put in place system that will moderate the design, manufacture, distribution and use of medicines

Reasons for regulating Medicine

- To ensure that quality medicines are available to retailers and consumers.
- To safe guard the welfare of the patient and the community.
- To ensure that qualified personnel are involved in the handling of medicines.
- To ensure that medicines are supplies and sold in suitable premises, using suitable equipment

BODIES RESPONSIBLE FOR THE CONTROL OF ADS AND CLASS C DRUG SHOPS

There are several bodies involved in the regulation of the Accredited Drug Shops in Uganda. These include:

1. National Drug Authority (NDA)
2. Pharmaceutical Society of Uganda (PSU)
3. The Office of the District Health Officer (DHO)
4. The Association of Accredited Drug Shops

The NDA takes the central role in the regulation while the others bodies provide support supervision.

THE NATIONAL DRUG AUTHORITY

The NDA was established by Section 4 of the National Drug Policy and Authority Statute 1993 to implement the policy.

FUNCTIONS OF THE NDA

1. Deal with development and regulation of pharmacies and drug shops in the country.
2. Approve the national list of essential drugs and revise it from time to time.
3. Estimate drug needs and to ensure the needs are met as economically as possible.
4. Control imports, exportation and sale of pharmaceuticals
5. Quality control of drugs
6. Promote local production of drugs.
7. Encourage research and development of herbal medicines
8. Promote the rational use of drugs through training.
9. Establish and revise professional guidelines and disseminate information to health professionals and the public.

How does NDA execute its functions?

NDA executes its functions by

- Inspecting and licensing manufacturers, importers and distributors of medicines
- Monitoring the quality of medicines at the point of manufacture and importation
- Registering all medicines on the Ugandan market of drugs.
- Controlling the marketing of medicine in Uganda
- Establishing an independent drug information system.
- Post marketing surveillance to ensure safety, efficacy and quality.

Classification of Medicines

For purposes of effective management of medicines in the country, medicines are classified into three classes A, B and C

Medicines are classified to avoid misuse such as irrational dispensing, abuse, potential toxicity, emergence of resistance, etc.

Several criteria are followed when classifying medicines. The following criteria is used when classifying medicines as prescription only medicines

- If the medicines is likely to present danger either directly or indirectly even when used correctly, e.g., diclofenac
- If a medicine is frequently abused or misused, e.g., narcotics
- Compounds that are still under research
- Medicines administered parenterally, e.g., medicines meant for injection

All Class A medicines and many Class B medicines are prescription only medicines.

By law, Class C drug shops are only allowed to sell Class C medicines, those that are available without a prescription.

Licensing of Class C Drug Shops
Section 16 allows a licensed person to carry out business or supply by retail, drugs other than class A or class B. It also provides that license will be given for business to be carried out in an area which is not sufficiently served by existing retail pharmacies.

Conditions of licensing Class C drug shops

- The person should have a medical background, e.g., nurses, midwives or any other person authorized by the Minister.
- The applicant must receive certification from the local authorities.
- The premises where business is supposed to be carried out should satisfy the requirements for suitability of premises as per the statue:
    - Must be of permanent nature
    - Shall not be shared with any other business
    - Shall be located within one and one-half kilometres of an existing pharmacy.
- Should be such that drugs will be protected from the environment against adverse environmental conditions, e.g., sunlight, rain
- A class C drug shop shall be required to keep proper records of all the transactions taking place in the shop, and will allow inspection by NDA or a police officer.

Regulation of the ADS

The ADSs will be regulated through the current regulatory frame work of Class C drug shops that involves the district assistant drug inspector (DADI) and the NDA regional inspectors. The inspection process will be re-enforced by the EADSI coordinator based at the NDA.

Before an ADS is licensed, it must undergo an accreditation process that will include inspection of the premises and training of drug sellers. The accreditation and issuance of an accreditation certificate will be the responsibility of the Inspectorate department at the NDA head office.

Conditions for accreditation of the ADS
For an ADS to be accredited, the inspectors must verify the following conditions are met:

- The owner and the person who will be operating the ADS, i.e., the seller, are qualified for the task. That is to say, the person must have attained UCE certificate, a minimum of six months training of nursing assistant course and must have undergone and passed the ADS accreditation training program.
- The applicant must satisfy all the condition indicated for licensing a Class C drug shop.

- The applicant will not supply by retail medicines outside or Class C + the expanded medicines list approved for ADS.

Why is it necessary to accredit the ADS?

- Surveys have shown that some Class C shops are currently selling prescription medicines. In addition to being illegal, this practice has resulted in detrimental effect such as the emergence of drug resistance.
- Appropriate storage is not assured as most of the drug shop operators hide the illegally-sold medicines.

APPLICATION, INSPECTION AND ACCREDITATION PROCESS

1. **Issuance of application forms for accreditation**
   In the accreditation process the DADI shall be the contact person to issue the application forms for the class C drug shops applying for accreditation.

   However, to further simplify the process, the Private Drug Sellers' Association shall be utilised in the distribution of application forms to Class C drug shops intending to be accredited. The association has representation at the sub county level and as such this will ease the process of obtaining the forms.

2. **Submission of forms**
   Duly filled out forms shall be submitted back to the association contact person at the sub-county who shall then forward them to the DADI.

3. **Inspection of premises**
   The current NDA inspection system, in which the DADI inspects the shops that have applied for accreditation, shall be employed. In addition, the EADSI coordinator will be involved in the inspection.

   There shall be a pre-inspection of the premises during which inspectors will identify deficiencies as per expected standards of the accredited drug shops and will advise accordingly. Class C shops with noted deficiencies shall be re-inspected, to ascertain whether corrective action was done, prior to accreditation.

4. **Accreditation**
   The accreditation process involves authorizing Class C drug shops and new premises which have met standards to operate as accredited drug shops. Following a final inspection of premises, the inspection report shall be submitted to the regional drug Inspector who shall then forward it to the NDA headquarters.

   The successful applicant will be issued with the Accreditation Certificate upon fulfilment of NDA requirements to operate the accredited drug shop among which includes attending training for both the owner and the drug seller.
   The certificates shall be distributed by the DADI and the EADSI coordinator at the sub-county headquarters.

REGULAR INSPECTION AND ENFORCEMENT OF STANDARDS

Inspection is an essential activity in monitoring the performance of ADS to ensure that they comply with set standards and regulations. The activity should begin three months after inception of the program.

Inspections should be carried out at least four times a year and one of the inspections should be conducted at the end of the year for re-accreditation purpose. The inspections shall be carried out by a team comprised of the DADI and the EADSI coordinator. The LC1 chairperson shall be involved in the initial inspections for community acceptance but for subsequent inspections, he/she shall just be informed about the activity.

Steps to be followed:

(a) The inspection team will inform the local authorities about the impending inspection exercise before commencing

(b) They will then proceed to visit each outlet for inspection using the standard inspection checklist

(c) Inspection findings will be shared with the drug seller and/or owner at the end of the exercise.

(d) The inspection team will write a report and submit this to the regional inspector.

REGULAR MONITORING AND SUPPORT SUPERVISION

Supervision is an essential element of the program. It includes routine monitoring of records and dispensing practices. Its objective is to support drug sellers and owners in order to strengthen/maintain the quality of services provided.

Regular monitoring and support supervision is intended to ensure that the ADS sellers and owners perform conform to the regulations guidelines and also to provide onsite support and mentoring.

Support supervision will be carried out by a team comprising of:

- In-charge HC 3
- Pharmaceutical Society of Uganda
- A member of the District Health team

This team shall make quarterly supervisions and will be equipped with skills of supervision and report writing through training. A standard supervision checklist has been developed.

Procedure for routine support supervision

- The supervision team will inform owners and drug sellers about the activity
- The supervision team will inform the local authorities about the impending inspection exercise before commencing
- The supervision team will visit each outlet and assess the premises, the stock management procedures and the dispensing practices using the standard supervision checklist
- The supervision team will share findings with drug sellers and owners.

- The supervision team will provide on-site practical training, orientation and mentoring.

SELF REGULATION/ SELF-POLICING

The ADS Association will provide the frame work for self monitoring. The association with the assistance from PSU will develop a supervision program that will help the association to monitor its members. The purpose of this form of supervision will to allow members of the association manage their own affairs including monitoring their own performance.

For each sub county, there shall be a team comprising of the sub-county health assistants, county health inspector and representatives from the drug seller association. This team shall regularly visit the outlets at least every two months using the checklist developed.

The representatives from the drug sellers association shall be qualified persons belonging to the cadre of the pharmacy technician, clinical officer or nurse. This team has no powers to close any drug shop but can recommend to the DADI and the DADI forwards the recommendations to the NDA regional inspector for action.

The ADS Expanded Medicines List

The ADS can dispense medicine medicines from Class C as well as from the expanded medicines list below. The expanded list takes into consideration the prescribing levels in line with the national Standard Treatment Guidelines (STG). A consideration has also been made to ensure that the public has reasonable access to the most essential (key) drugs needed to treat the common diseases found in the community. The medicines on this list are identical to those available at Health Centres II except for injectable medicines. **ADS are not allowed to stock, dispense or administer injectable medicines.**

DRUG AND FORM	**Intended ailments**
Anti-asthmatics& Cough preparations	
Aminophylline tablet 100mg	Wheezing &bronchitis
Salbutamol tablet 4mg	Wheezing &bronchitis
Non-narcotic cough preparations (e.g. cough linctus, s, expectorants and herbal)	Symptomatic relief of Dry and chesty cough
Anti-Bacterials/Antibiotics	
Amoxicillin capsules/ tablets 250mg & 500mg	URTIs, UTIs,
Amoxicillin oral suspension 125mg/5ml &250mg/5ml	URTIs, UTIs, Skin infections
Co-trimoxazole suspension 240mg/5ml	URTIs
Co-trimoxazole tablets 480mg and 960mg	URTIs
Doxycycline capsules/tablets 100mg	UTIs
Erythromycin oral suspension 125mg/5ml	URTIs, UTIs,
Erythromycin tablets250mg	URTIs, UTIs,
Metronidazole tablets 200mg	Amoebiasis, trichomoniasis

Metronidazole suspension 200mg/5ml &125mg/5ml	Amoebiasis,
Nitrofurantoin tablets 100mg	UTIs
Phenoxymethyl Penicillin suspension 125mg/5ml	URTIs
Phenoxymethyl Penicillin tablets 250mg	URTIs
Ciprofloxacin 250mg & 500mg tablet	Gonorrhoea and other UTIs
Dermatological products	
Silver sulfadiazine cream 1%w/w	Wounds and burns
Iodine tincture 2%	Wounds
Calamine lotion 15%	Anti-inflammatory and Pruritus
Benzyl benzoate lotion 25%	Scabies
Malathion lotion aqueous 0.5%	Pediculosis
Hydrocortisone cream 1%	
Anti-helminthics	
Mebendazole tablet 100mg	Intestinal worms
Mebendazole suspension 100mg/5ml	Intestinal worms
Albendazole tablet 200mg& 400mg	Intestinal worms
Albendazole suspension 100mg/5ml and 200mg/5ml	Intestinal worms
Anti-Inflammatory/Analgesics	
Diclofenac sod. Tablets 50mg & 100mg	Musculo-skeletal pain and fever
Ibuprofen tablet 200mg & 400mg	Musculo-skeletal pain and fever
Ibuprofen syrup 100mg/5ml	Musculo-skeletal pain and fever
Acetylsalicylic acid tablet 300mg	Musculo-skeletal pain and fever
Paracetamol tablet 500mg	Musculo-skeletal pain and fever
Paracetamol suspenson 120mg/5ml	Musculo-skeletal pain and fever
Anti – Allergic	
Chlorpheniramine tablet 4mg	Pruritus and allergy
Chlorpheniramine syrup 2mg/5ml	Pruritus and allergy
Promethazine tablet 25mg	Pruritus and vomiting
Promethazine syrup 5mg/5ml	Pruritus and vomiting
Cetrizine tablet 10mg	Pruritus and allergy
Cetrizine syrup 5mg/5ml	Pruritus and allergy
Anti-Fungal	
Nystatin oral suspension 100,000 IU/5ml & 100,000IU/ml	Oral candidiasis
Nystatin tablets 100,000IU &500,000IU	Oral candidiasis
Nystatin lozenges 100,000 IU	Oral candidiasis
Nystatin pessaries 100,000 IU	Vaginal candidiasis
Clotrimazole pessaries 100mg	Vaginal candidiasis
Clotrimazole cream 1%	Skin infections e.g. ringworms
Sulphur ointment 10%	Skin infections e.g. ringworms

Benzoic acid + salicylic acid ointment 6% + 3%	Skin infections e.g. ringworms
Anti Malarial medicines	
Artemether /Lumefantrine Tablet 20/120 mg and 40/240mg	Uncomplicated malaria
Artesunate/Amodiaquine tablet 50/200 mgand other ACTs	Uncomplicated malaria
Quinine tablet 300mg	
Quinine suspension 100mg/5ml	
Disinfectants and antiseptics	
Cetrimide + chlorhexidine solution 0.5% + 0.05%	Skin wounds and antiseptic
Chlorhexidine gluconate solution 20%	Skin wounds
Hydrogen peroxide solution 6%	Skin wounds and mouth gargle
Calcium or sodium hypochlorite solution 5%	Disinfectant
Oral Contraceptives	
Ethinylestradiol + Norethisterone	Combined contraceptive
Ethinylestradiol + Levonorgestrel	Combined contraceptive
Anti Diarrhoea	
Zinc Sulphate tablets	Diarrhoea in children
ORS	Diarrhoea in children
Anti-convulsant	
Diazepam rectal tube 2mg/mL	Convulsions in children
Antidotes	
Charcoal activated tablet 250mg	Food poisoning
Eye/Ear/ Nasal preparations	
Chloramphenicol eye ointment 1%	Eye infections
Chloramphenicol eye/ear drops 0.5%	Eye infections
Tetracycline eye ointment 1%	Eye infections
Combined antibiotic plus steroid eye/ear/nasal drops	Eye infections
Antianaemia medicines,Vitamins&Minerals	
Ferrous salt tablet 60mg	Anaemia
Folic acid tablet 5mg	Anaemia
Ferrous/Folic acid 200mg/0.5mg &100mg/0.5mg	Anaemia
Multivitamin tablets and suspensions	Appetite
Vitamin A capsules	
Vitamin C tablets 100mg	

STANDARDS FOR OPERATING ADS

The standards for operating ADS have been developed to provide a basis for which services will be measured.

A **standard** refers to a level of quality or a specified level of quality that will be measured. Services will be considered to be of poor quality if they are perceived to fall below the stipulated standard.

Standards for operation are relevant to the running of an ADS shop since it will help judge the impact ADS practice has on the quality of care rendered to the patient. This information will used to determine if the ADS program should be adopted in other regions of Uganda.

1. Standards for personnel

1.1 Every ADS shall have a licensed person or in-charge with the following minimum qualification

a) pharmacy technician
b) nurse/midwife (enrolled or registered)
c) medical clinical officer and other cadres of the allied health professional with basic training in pharmacology

1.2 Every seller in an ADS shall:

(a) have a minimum qualification of:

I. pharmacy technician
II. nurse/ midwife (enrolled or registered)
III. medical clinical officer and other cadres of the allied health professional with basic training in pharmacology
IV. nursing assistant. The nursing assistant shall work as an auxiliary staff under supervision of the above cadres in 1.1. He/she should have at least O-level certificate, 1 year work experience in a hospital setting, have undergone a minimum training period of 6 months and acquired a certificate as a nursing assistant.

(b) be required to successfully complete an ADS seller training course approved by the Pharmaceutical Society of Uganda.

(c) shall observe and maintain the following:

I. high standard of personal hygiene;
II. dress in a professional manner, for example, wear a clean white coat;
III. not work under the influence of alcohol or illicit drugs;
IV. prominently display his/her ADS certificate in the accredited drug shop;
V. wear a photo identification badge which identifies him/her as an accredited drug seller;
VI. observe all regulations pertained to operating the Accredited Drug Shop.
VII. observe laws contained in the NDP/A Act
VIII. be of sound mind and in sound medical condition
IX. conduct him/her self in a manner that does not cause professional disrepute

1.2 Every Accredited Drug Shop owner shall:

(a) ensure that operating procedures comply with the Accredited Drug Shop minimum standards and the existing laws in the NDP/A act;

(b) ensure that there is a trained accredited drug seller in the Accredited Drug Shop at all times when the accredited drug shop is open.
(c) if he/she works in the capacity of a drug seller, ensure that he/she has a valid Accredited drug seller certificate;
(d) display Accreditation certificate prominently in the premises of which the certificate is issued;
(e) notify the NDA in writing within 7 days, when the Accredited Drug Shop is permanently closed. In so doing, the NDA shall inspect the inventory and provide advice for proper disposal of any inventory or medication.
(f) notify the NDA in writing within 7 days, when an Accredited Drug Shop is temporarily closed and the anticipated date of re-opening. In case the Accredited Drug shop is closed for one year it shall be considered as a new applicant.
(g) report immediately to the nearest police station and NDA office if there is theft or unexplained loss of drugs and records

1.3 Commitment letters shall be written and signed by the drug sellers committing to work with an Accredited Drug Shop for a specific period of time. The letters will be endorsed by the Accredited Drug Shop owner. A three month's notice shall be required if a drug seller is to resign from a particular accredited drug shop.

1.4 All Accredited drug sellers shall be required to attend and complete continuing education to be recognised by the PSU. The continuing education shall be mandatory and shall constitute a pre-requisite for annual licence or permit and their renewal.

2. Standards for Premises

2.1 Every Accredited Drug Shop premises shall be required to meet minimum requirements as follows, namely –

a) be of a permanent nature
b) be roofed with materials which shall make it free from leakages and with a leak-proof ceiling;
c) be well protected from entry of rodents, birds, vermin and pests;
d) have adequate space to carry out primary functions of storage, dispensing and sales;
e) have a design which includes:
    I. doors and windows which are well secured to prevent theft and unauthorised entry;
    II. one room that shall be at least of $16m^2$ (sixteen square meters) and height of 2.5m;
    III. a separate lockable dispensing area with no access to the public. Approved prescription medicines shall be kept in the dispensing area in secure fixed lockable cupboards.
f) have surfaces/floors with smooth finish that can be washed with disinfectants;
g) painted with washable white or any bright colour;
h) have adequate supply of clean and safe water, soap and clean and safe drinking water;
i) have facilities to wash hands which are clearly marked with a ' wash hands ' sign;
j) have adequate toilet facilities in clean and good working order
k) observe general hygiene in and outside the premises
l) shall not be shared with any medical clinic, veterinary surgery or any other business of a similar nature

2.2 The premises shall have the following necessary signage:

a) an officially approved identification logo, to differentiate it from the non Accredited Class C Drug shops;
b) the name of the accredited Drug Shop and any other authorised branding conspicuously displayed on the wall or shop boards; and
c) a "NO SMOKING" sign conspicuously placed to prohibit smoking in the shop.

2.3 Accredited drug shops shall have a minimum separation distance of 500m from any existing retail pharmacy and a distance of 100m from another accredited drug shop.

If a new pharmacy is opened within 500m from the accredited drug shop, the accredited drug shop shall be given an opportunity to upgrade to a pharmacy, relocate as per the equitable distribution guidelines or wind up operation within one calendar year or from the time a new retail pharmacy starts operation in the location.

3. Standards for dispensing

3.1 Dispensing procedure

a) Every Accredited drug seller shall bear legal liability and professional responsibility for the pharmaceutical products and services provided under his/ her care
b) Every Accredited Drug Shop shall only dispense pharmaceutical products registered by the National Drug Authority in accordance with the National Drug Policy and Authority Act, 1993
c) The drug seller shall not dispense damaged, counterfeit, substandard or expired medicines
d) The drug seller shall not dispense or sell medicines to children.
e) Dispensing procedures must ensure that dispensing takes place with reasonable promptness.
f) Patients whose conditions cannot be handled should be referred to the nearest health facility.
g) Every drug seller shall ensure that –
    I. prescription drugs are only dispensed against a prescription;
    II. a full dose is dispensed
    III. tablets and capsules are dispensed using an appropriate device for counting the tablets or capsules, such as a counting tray
    IV. a record of all medicines dispensed by him/her is maintained in a register approved by the National Drug Authority;
    V. no drug is dispensed unless in accordance with the Accredited Drug shop dispensing and training guidelines and in accordance with the existing National Drug Authority laws.
    VI. For each prescription dispensed, the date of issue, the quantity of drug supplied and the signature of the one who dispenses the prescription must be indicated in red

3.2 Counselling of patients

a) An accredited drug seller must ensure that the patient or their agent understands the information and advice given (including directions on the labels of dispensed products) well enough to ensure safe and effective use of the medicine.
b) Information for drugs requiring particular instructions for use must be clearly pointed out to the patient before he/she or their agent leaves the Accredited Drug shop.
c) Patients or their representatives must be warned to keep medicines well out of reach of children.

3.3 Dispensing containers

a) All oral liquid preparations must be dispensed in their original re-closable containers
b) All containers for medicinal products must be protected from and free of contamination
c) The containers must be appropriate for both the product dispensed and the user

3.4 Labels

a) Labelling of dispensed products must be clear and legible
b) Dispensed medicines must bear the necessary cautionary and advisory labels
c) The label on the container must indicate the name, strength, dosage and total quantity of the product sold.

3.5 Sources of supply

a) There shall be an approved extended list of medicines to be sold by the Accredited Drug shop
b) Drugs shall be procured from wholesale pharmacies registered in Uganda.
c) Wholesale pharmacies may sell products on the extended medicines list to the Accredited Drug shop.
    I. It shall be the responsibility of the wholesale pharmacy to verify the credentials of an accredited drug shop prior to the sale of drugs provided in the extended list of medicines. The wholesale pharmacy shall honour orders from the accredited drug shop only when the orders are on standard medicines order forms designed for the accredited drug shops.
    II. Wholesale pharmacies selling prescription drugs to accredited drug shops shall be required to keep easily retrievable documents related to sales and shall also provide to the accredited drug shop an invoice/sales receipt in respect of all drugs sold to them
    III. It shall be an offence for a wholesaler to sell any medicine on the extended list to Class C drug shops

3.6 Storage

a) All pharmaceutical products held in inventory shall be stored in the manufacturer's original packaging and properly labelled with the manufacturer's original label.
d) Removal of labels from containers is prohibited and it renders the product unfit for dispensing
e) Repackaging and re-labelling of pharmaceutical products not for the purpose of immediate dispensing to the patients is prohibited.
f) Measures shall be taken to protect pharmaceutical products from heat, sunlight, moisture, adverse temperatures, insects, rodents and contamination.

g) Damaged and/or expired drugs shall be recorded, sealed, quarantined and labelled with red ink with the statement "Expired/damaged Drugs – Not for sale" by the accredited drug seller.

3.7 Hygiene

a) Accredited drug shop personnel should not be allowed to work if they are suffering from contagious diseases such as scabies, tuberculosis, etc.
b) Dispensing must always be carried out under conditions which meet acceptable standards of hygiene including high standards of personal cleanliness
c) Use of bare hands for counting tablets and capsules must be avoided.

4. Standards for record keeping and documentation

4.1 All invoices and receipts for non-prescription drugs and permitted prescription drugs shall be stored in the premises in an easily retrievable file for not less than two years.

4.2 A purchases record book shall be kept, which shall minimally include –

a. name of supplier;
b. date of purchase;
c. name and quantity of the drugs,
d. manufacturer, batch number and expiry date.

4.3 All accredited drug shops shall maintain for each permitted prescription drug a prescription book, which shall minimally include:

a. name of the patient and condition/disease for which the prescription was written;
b. name of drug and quantity dispensed;
c. date on which the drug was dispensed; and
d. origin of the prescription and the prescribing doctor.

4.4 The records relating to prescription drugs shall be kept and maintained within the premises for not less than two years.

4.5 There shall be a record for expired products which shall be kept and maintained by the accredited drug seller.

a. The owner of an accredited drug shop shall, quarterly, provide the list of all expired products to the NDA Drug Inspector and meet the costs of their destruction.

4.6 There shall be NDA adverse drug reactions forms maintained in each accredited drug shop for the purpose of recording patient drug related adverse reactions

4.7 Every accredited drug shop shall keep and maintain –

a. a special file for keeping all correspondences related to drugs, guidelines from the NDA and other regulatory authorities; and
b. an Inspector's record Book for the purposes of recording all inspections undertaken therein.

4.8 Reference Materials

Each accredited drug shop shall have and maintain for easy reference, the recent editions of the following reference materials:

a) Accredited drug shop extended medicines list;
b) Accredited drug shop Standards and Code of Ethics;
c) Accredited drug seller training manual;
d) National Standard Clinical guidelines

e) Other recommended references include;
    a. Essential Medicines List for Uganda
    b. The British National Formulary
    c. Relevant legislations, including:
        1. The National Drug Policy and Authority Statute 1993
        2. The Allied Health Professionals Statute 1996
        3. The Nurses and Midwives Statute 1996

5. OFFENCES AND PENALTIES

Any person who contravenes any provisions of these standards commits an offence and shall be liable upon conviction to a fine and/or to imprisonment specified under the National Drug Authority Act, 1993. Under this, the violator may be subjected to appear before a court of law and upon conviction; he may be punished by either paying a prescribed amount of fee or serve an imprisonment sentence or both.

Example 1: If you are found selling expired medicines or medicines outside the extended medicines list for the ADS, you will be required to pay a fine, may be imprisoned, your accreditation cancelled and the shop closed.

Example 2: A person who illegally opens an ADS shop or drug shop.

Example 3: Like any other business, ADS shall be liable for taxation. Tax evasion may lead to closure of the premises by law enforcing bodies and bring about inconveniences to accredited drug shop owner, drug seller and the community served by the shop.

Example 4: Purchase of medicines from non-licensed dealers. Medicines from unauthorized dealers are often counterfeit so this practice should be avoided.

Example 5: Dispensing to patients medicines purchased from unauthorized dealers may cause harm to the patient. Such violations of law are punishable on conviction by Courts of Law. It is therefore important for the ADS shop owners and drug sellers to adhere strictly to the provisions of the law, guidelines and standards of operations.

3: ADS Code of Ethics and Conduct

Ethics in Pharmaceutical Services Delivery

Professionalism
Professionalism is what one exhibits in terms of attitudes, behaviour and skills while performing duties and responsibilities expected of him or her by the community by virtual of having privileged knowledge and skills acquired through a unique and formal education. By exhibiting professionalism a professional is distinguished from an amateur

As health workers, professionalism obligates us to:

- Attend to the best interest of the patient rather than self interest
- Be accountable to the patient and society
- Committed to regularly updating knowledge
- Be available and respond when called upon
- Be fair, truthful and straight forward when interacting with the patient
- Be respectful to the patients and their families

In order to act professionally we must:

- Be trained and continue to seek for more knowledge through continued professional development
- Acknowledge that we have duties and responsibilities to our patients and the community
- Agree to conduct our self in an appropriate manner
- Ensure safe and effective use of medicines

	ACCREDITED DRUG SHOP PERSONNEL CODE OF ETHICS AND CONDUCT	
1	Honesty and integrity	All accredited drug sellers shall in the course of discharging their duties, act with honesty and integrity. Example: Telling a patient that "I am not going to issue you this because it has already expired. I shall soon get a new stock of the drug" Example 1: Giving an expired drug to a patient and telling him/her that the drug is from a new stock. Example 2: Changing the label of an expired drug
2	Patient care	All accredited drug sellers shall provide their services in a caring and compassionate manner. The well being of a patient shall be the centre of accredited drug shop business practice and therefore they shall make sure that the needs of the patient are always the first priority.
3	Special relation with patients	The accredited drug sellers shall – (a) maintain a special relationship with each patient based on ethical agreement; (b) uphold their moral obligations in return for the trust given to them by the community; (c) respect the autonomy, individuality and dignity of each patient; (d) acknowledge the right of the patient to self-determination and individual self worth by encouraging patients to participate in decisions related to their health; (e) respect personal, cultural and religious differences and shall not in any way practice any form of discrimination.
4	Confidentiality	Every accredited drug seller shall observe the confidentiality of patients' information acquired in the course of practice and shall not in any way disclose the information given except where authorised by the patient or required by the law. For example: When you know that this patient is suffering from HIV/AIDS, gonorrhoea, TB, etc. never tell any person but you can remind him his/her social obligation of not spreading the diseases and however you take any reasonable measures to prevent that happening especially when the affected person does seem to be responsible others or the community
5	Accredited drug sellers not to condone medical service of low quality	The accredited drug sellers shall not either condone the dispensing, promotion or distribution of drugs or medical services which are not of good quality or participate in any promotional methods or campaigns which encourage the irrational use of medicines or undermine the role played by other health care providers.
6	Collaboration with other health providers	The accredited drug sellers shall be required to collaborate with other health care providers to achieve the best possible outcomes for the patient and to understand the role of other health care providers and refer patients to them when it is appropriate to do so. In the current practice some Drug shop operators will not refer patients or seek advice from others for fear of losing customers and eventually it is the patient who suffers. It is important to understand that each health care provider has a role to play.

7	Responsibility for assuring and improving competence	(1) Each accredited drug seller shall assume responsibility for assuring and improving his competence and shall strive for continuous improvement of the quality of service and care he/she provides. For example Chloroquine &SP combination was the drug of choice for malaria, today – Artemether-Lumenfantrine (AL) is the first line anti malarial drug. It is important to update your knowledge on drugs by attending continuing education programs wherever possible. (2) Accredited drug sellers may offer limited patient advisory activities but they shall not, in any way, make diagnosis and or prescribe any prescription products.
8	Owners not to make illegal conditions	It shall be the duty of accredited drug shop owners to make sure that there are no conditions or terms which prohibit the accredited drug sellers to practice in accordance with the provisions of these guidelines and existing NDA laws. For example: • telling them to dispense prescription drugs without a prescription • Instructing him to sell drugs that have expired or • replacing expired drugs into another container The drug sellers should be independent and this will lead to quality service.
9	Health promotion	Each accredited drug seller shall advocate for the health promotion at the individual, community and society level and shall promote the use of cost effective therapies and rational drug use.
10	No commercial relation to be allowed	No commercial relationship shall be permitted between accredited drug sellers and health care practitioners in public or private facilities For example: • the drug shop owner shall not buy medicines stolen from the public facilities • If the owner has a clinic and an accredited drug shop, the likelihood of irrational prescribing increases. When some antibiotics are nearing expiry they might be prescribed and pushed to the patient even if their conditions do not call for such drugs.

MODULE 2: MEDICINES MANAGEMENT

4: Basic principles of medicines management (handling)

Definitions

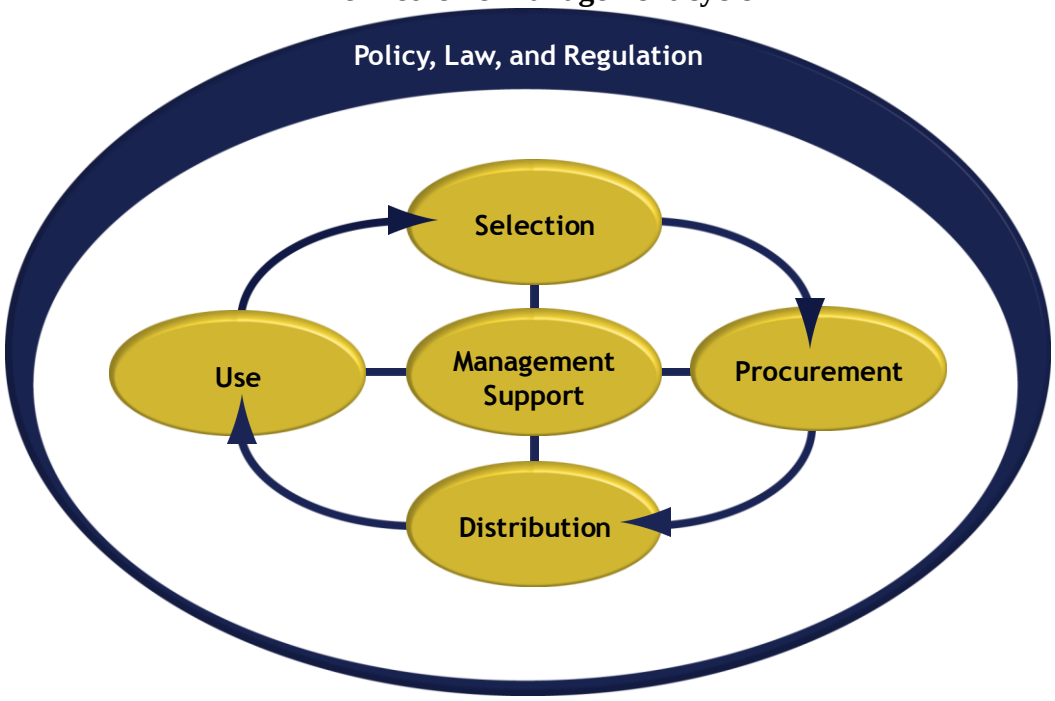
Medicine Management

A system of processes and behaviours for coordinating or supervising medicine handling, those delivering services to patient and usage of medicines by patients and those delivering health care services to patients in order to optimize the contribution that medicines make in producing the desired patient outcomes

Medicines Management Cycle

The medicines management cycle includes **selection**, **procurement**, **distribution**, and **use**. These activities are interlinked and reinforced by appropriate management support systems (i.e., tools), and are regulated by a **legal and policy framework**.

The Medicine Management cycle



Source: Managing Drug Supply. MSH/WHO, Kumanian 1997

Selection

Selection of medicines ensures that the medicines that are stocked meet the health needs of the community the outlet is to serve. Selection has been made easier by coming up with an extended medicine list for the ADS outlets. It is expected that items that will be procured by the outlet will be those on the extended medicine list.

Medicines on the extended medicines list were selected following the baseline survey that was conducted. The following was the basis of the selection;

- The medicines cover the most prevalent diseases, ailments and sicknesses in communities around the country
- The medicines can be adequately managed by the available cadre of staff if well trained
- Medicines are available at Health Centre II in the public sector which provide same level of healthcare and have cadres with the same level of training
- Medicines are widely available in the country and at relatively low prices

On top of the extended medicine list, ADS will be allowed to stock all the Class C medicines according to the National Medicines Policy of Uganda.

Procurement of Medicines

Medicines procured will include those in the Class C schedule plus those on the ADS extended list.

Procedures adopted in procuring medicines should be as follows:

1. Estimate the quantity of each medicine you are to buy. The estimate should be based on the rate of consumption of the product in question.

   Example: You procured (bought) 12 bottles of paracetamol syrup 60 ml on 6th May 2009 and on 5th June 2009 you have 2 bottles remaining. If you want to restock the paracetamol syrup 60 ml to have enough for two months, you go through the following calculation:

   Consumption for 1 month (from 6th May to 5th June): 12 – 2 = 10 bottles. This means that in a month you sell 10 bottles of paracetamol syrup 60 ml.

   Therefore for 2 months you need buy 20 bottles because -
   10 bottle/month x 2 months = ***20 bottles***
2. Make precise determination of the dosage form, strength and pack size of the product required.
3. Find out the prices of the different dosage forms and pack size required.

4. Allocate funds for each medicine item depending on:
    - Priority nature of the medicine and dosage form,
    - Available finances.

It is important to estimate the quantity of medicine to be procured in order to avoid

- Overstocking which may lead to expiry of medicines and wastage
- Stock out of medicines which may lead to loss of trust, credibility and confidence by the community

Estimation of quantity of medicine to be procured is based on:

- Population which the outlet serves,
- Disease pattern,
- Seasonal variation in disease pattern, e.g., during rainy season there is increase in diarrhoeal diseases
- Rate consumption of the medicine
- Frequency of procurement
- The available space for storage of medicine
- Distance to the pharmacy where the medicines are to be procured
- Amount of money available

Receiving and Storing of Medicines

Basing on the results from the baseline survey, orders for procurement are done by the drug shop owners or his agent going physically to the pharmacy where the medicine is procured. The drug shop owner or agent will receive the supplies at the pharmacy and will be responsible for the transportation of the consignment.

Receiving Medicine

When receiving medicines take note that the medicines received match with the order you made:

- Cross check to find out is the dosage form, strength, pack size and quantity ordered match with what is required
- Check the prices
- Check the expiry dates,
- Check for quality; colour changes, damages

This exercise should take place at the point medicines are received from the supplier. Any discrepancies noted to immediately be communicated to the supplier and who should correct them.

- If the receiving is done at the supplier's premises, the drug shop owner or his agent takes responsibility of choosing the transport of the consignment to his or her premises. The transport chosen should be appropriate transport to ensure that medicines do not deteriorate during transportation
- It may happen that you receive a drug without a label or with an incorrect label. Never guess what it is! Do not use it; return it to the supplier.

- On reaching the drug shop cross check again for any damages that may have occurred. Remove any damaged items from the stock. Keep damages separately from the medicines available for sale. Notify the DADI to request assistance with disposing of these medicines.
- Determine/ set the price at which the medicines will be sold. The following factors should be considered in determining price;
    - Purchase price,
    - Transportation charges,
    - Mark up to cover administrative and other costs

Storage of Medicines

Medicines and related supplies are expensive and valuable. They need care otherwise they may deteriorate. If they deteriorate, they may lose their potency or may have the wrong effects on patients.

- Heat affects all medicines, especially liquids, ointments and suppositories.
- Some medicines which are light sensitive, such as injectables, spoil very quickly when exposed to light.
- Humidity can spoil tablets and capsules as they can easily absorb water from the air making them sticky and causing them to deteriorate.

Medicines require specially designed, secure and clean premises in order to:

- Avoid contamination or deterioration,
- Avoid disfiguration of labels,
- Maintain integrity of packaging and so guarantee quality and potency of drugs during shelf life,
- Prevent or reduce pilferage, theft or losses,
- Prevent infestation of pests and vermin.

Condition of the premises

Premises that are to house the medicine outlet must be in good condition and all openings secured with grills or bars to prevent theft. The space should be large enough to fit all of the supplies and the make easy the flow of activities.

Premises should be lockable. Ideally, put two locks (each with a different key) on the exit door. Only make a limited the number of keys and store these in a safe place. If the medicine outlet has a store separate to the dispensing area, access to it should be limited only to staff members. Position the counter such that the public cannot access the medicines on the shelves.

The premises should protect the medicine from extreme conditions of light, heat and humidity that may affect the medicines and cause them to deteriorate.

The standard for operating an ADS outlet stipulate requirements for the premises under which medicines should be sold.

Maintaining the premises

- Regularly inspect the physical structure of the premises and repair any damage to the roof, walls, door, windows and floor. Control the temperature in the store by ensuring that
  - The premises has a well maintained ceiling. If there is no ceiling, build one. Ceilings should be as strong as possible but cardboard from discarded boxes can be used temporarily.
  - There is adequate circulation of air by opening door and windows while the premises are open to the public
  - If possible, use a fan and keep it in good working condition
- Control the light in the store by regulating the light that enters through the windows.
  - Block the direct light using tinted glass windows or
  - By hanging curtains in the window.
- Control humidity by
  - preventing leakages through
    - ✓ the roof
    - ✓ seepage through the door, windows or the walls
  - allowing good air circulation.
  - Repairing leaks and water seepages as soon as they occur.
  - Including sachets of desiccant in containers of tablets and capsules
    Note: desiccants are non-edible drying crystals that keep the inside of the container dry. Do NOT open the sachet of the desiccant. Keep the sachet in the container but do not dispense it. Desiccants are toxic if ingested. Keep the container closed except when dispensing the medicines.
- Keep the store free of pests and vermin. Food and sweet juice spills in the premises can attract rats, cockroaches, ants and wasps. Dark spots within the premises may be hiding spots for pests. Pests can be avoided by:
  - Eating only in a designated place on the premises and cleaning all food and juice residue immediately
  - Cleaning spills and removing broken containers immediately
  - Clearing all bushes around the premises
  - Improving lighting and arrange the items neatly on the shelves
  - Avoiding putting boxes directly on the floor
  - Regularly mop the floor, and remove all unwanted objects from the premises.

Storage Environment

The storage environment should possess the following:

- Adequate temperature to avoid deterioration
- Sufficient lighting for easy visibility but avoid direct light to the medicines as this may also cause deterioration
- Clean conditions, e.g., dusting the floor & shelves to avoid contamination
- Humidity control to avoid contamination and deterioration
- Cold storage facilities for medicines that require cold storage
- Adequate shelving to ensure integrity of the stored drugs

What to Consider when Arranging Medicines

The premises of a medicine outlet must be clean and organized. In a clean and organized medicine outlet, it is easy to locate medicines and to avoid contamination. Medicines are also

likely to be in good condition and ready to be used. Shelves provide an opportunity to neatly arrange medicines and allow easy circulation of air.

The following guidelines should be followed when arranging medicines on the shelves in the medicine outlet.

- Clean or dust the shelves before placing medicines on them. For easy cleaning, shelves should preferably be made of steel or treated wood. This also provides a strong and robust platform.
    - **Top Shelves**: Store dry medicines (tablets, capsules, oral rehydration packets) Use airtight containers. If the top shelf is near the ceiling or out of your reach, use that shelf to store items that are NOT sensitive to heat and are NOT used regularly.
    - **Middle shelves**: Store liquids, including syrups and ointments. Do NOT put dry medicines below them. If liquids leak, the medicines below may spoil.
    - **Bottom shelves**: Store other supplies, such as surgical items and condoms. ***Remember; do NOT store anything directly on the floor.***
- Medicines should be arranged in a systematic way following the format below
    - Alphabetical order using generic names of the medicine
    - Pharmacological order
    - Dosage form
    - Or a combination of formats
- Each dosage form of drug is arranged in separate and distinct areas.
- Sufficient empty space should demarcate one medicine item or dosage form from another.
- Most recently received medicines should be placed behind old stock on the shelf except where new drugs have shorter expiration dates.
- The medicine package should be placed such the name of the medicine is well displayed
- Heavy medicine packages should be placed on the lower shelves and lighter ones on top.

Regularly dust the medicine containers and shelves. Dust contaminates supplies and makes labels difficult to read.

For increased safety and convenience, shelves should be labelled.
The position where you store a specific drug should carry that label in a proper and clear manner so that you cannot be confused when taking medicines from the shelves. It helps you in storing your drugs always in the same place.

All drugs must have an expiry date.
Always check your new supplies for expiry date. The new supplies may have a shorter expiry date than the old stock. Those that expire first should always be used first. This is called FEFO (first-expiry, first-out) stocking meaning that the first medicines to expire should be the first to be dispensed.

You should not use any medicine after its expiry date because:

- The drug is no longer as effective:

This is very important, especially with the use of antibiotics. You may not be giving the patient enough dose/strength; this may cause resistance to the antibiotic.

- The drug may become toxic

  As some drugs breakdown, they form toxic substances, which gradually build up, and become harmful to the body.

Recommended storage conditions relating to temperature, light and moisture should be followed as closely as possible to maintain product quality. Stock bottles must be kept closed except when actually in use. A limited range of preparations will be used with the greatest frequency, and these "fast movers" can be placed in the most accessible areas for the convenience of dispensing.

Distribution

At the medicine dispensing outlet, medicine distribution is mainly by dispensing medicines to patients. This is mostly in response to a prescription written by a clinician who has examined the patient, identified the patient problem and present the necessary medicines and measures sufficient to heal or improve the state of the patient. Dispensing requires an understanding of the patients (who may not speak or understand the language of the dispenser) and practical skills in dispensing and record-keeping. This will be tackled in detail in the courses that will follow.

Use

Appropriate (or rational) use of medicines requires that the medicine is prescribed for a particular patient after proper diagnosis of a health problem. Rational use of medicines requires that a particular patient with a specific health problem receives medicines according to the following:

- Appropriate dose is given,
- In an appropriate dosage form,
- Through an appropriate route of administration,
- In the appropriate frequency of administration,
- Appropriate duration of treatment,
- Appropriate information is given to the patient to ensure that he or she uses the medicine appropriately,
- Adequate follow up to monitor adherence or compliance to treatment and to monitor patient outcomes

What information should be given to the patient to ensure rational use of medicines?

The dispenser should verbally give the patient additional information to reinforce the instructions written on the label. This should be in language in which the patient is familiar. The information should including the following:

- How often to take the drug
- When to take the drug (e.g., before or after the meals)
- How long the treatment is to last (e.g., why the entire course of an antibiotic treatment must be taken)
- How to take the drug (e.g., with water, chewing or swallowing)
- How to store the drug (e.g., avoid heat, light and dampness)
- Not to share drugs with other persons
- Keep drugs out of the reach of children

- Consult in case the medicine causes undesirable effects or if there is no registered improvement or the patient gets worse

Management Support
Efficient medicine management requires commitment of financial and human resources to ensure that systems run smoothly. Adequate funds should be available and committed to ensuring that medicines are procured in adequate quantities and to ensure quality systems are put in place and maintained. Adequately trained personnel should be recruited and be well motivated to manage the system and to effectively perform their tasks. Documentation of activities, collection of relevant data and generation of reports helps to monitor performance of the system. Personnel should be provided with job aids or standard operating procedures for performing critical activities of medicine management.

Regulation and policy framework
The regulatory framework under which medicines are sold has been discussed in previous modules. It is however important to emphasize that for efficiency; regulations and guidelines must be adhered to as tasks in the medicine management system are being performed. There are specific regulations regarding;

- What medicines can be procured
- Where to procure medicines
- Who should handle medicines
- What documentation must be kept

5: Quality of Medicines

Introduction

The supply of medicines of quality is a prerequisite for effective delivery of health care. Without assurance that medicines meet acceptable standards of quality, safety and efficacy, health services will be compromised. It is critical that reliable systems are put in place to ensure that patients receive quality medicines.

Drugs of poor quality not only have health consequences but also economic consequences as money is wasted in purchasing such products. At the same time patients using poor quality medicines will remain ill for a longer period, delaying their engagement in productive economic activities, such as work.It is everybody's role, including the user, to ensure that medicines maintain their quality throughout their shelf life or until when they are used.

The quality of medicines must be monitored throughout the life cycle of the medicine - from product development and manufacture through transportation, distribution and storage to dispensing and use of the medicine. A considerable degree of care should be observed at each stage as medicines move along their life cycle such that medicines made available to the public meet all quality requirements. In Uganda the National Drug Policy and Authority statute clearly stipulates regulations regarding the quality of medicines.

Manufacturing

As part of quality assurance, NDA must grant permission to whoever intends to manufacture medicines in Uganda. This is referred to as manufacturing authorisation. This ensures that the medicines are manufactured;

- In appropriate premises; the premises must meet standards stipulated by NDA
- By personnel competent for the task of manufacturing medicines.
- Using appropriate machinery required for manufacturing the specific medicine
- Following Good Manufacturing Practices (GMP)

The NDA regularly inspects premises used for manufacturing of medicines to ensure compliance to the set standards.

Distribution and Sale of Medicines

Quality assurance during distribution and sale of medicines ensures that medicines do not lose their quality and efficacy before they reach their final consumer. This ensures that quality medicines are distributed or sold, appropriately transported, stored, dispensed and used. To ensure this NDA performs the following tasks:

1. **Registration of drugs:**
   Drug registration ensures all medicines sold on the Ugandan market meet the required standards of quality, safety and efficacy. Registration starts with a thorough inspection of the manufacturing company by the NDA. This process assures the NDA about the conditions under which drugs are manufactured. Once NDA is satisfied that the company meets all GMP requirements for the manufacture of the particular medicine and after testing the product in its laboratories, NDA will then add the medicine to its register.

ADS should do the following:

- Sell only medicines registered by NDA
- Buy medicines only from authorized sources (i.e., registered pharmacy wholesalers)

From time to time NDA inspects medicine outlet to ascertain that all the medicines sold there are registered. It is an offence if you are found with unregistered Medicines.

2. **Issuing of import permits for medicines;**
   Before one imports any medicines in the country he or she must get an import permit from NDA. The permit is issued only when the medicines being imported are on the NDA register of medicines.

3. **Inspection of medicines at entry points**
   On arrival at any of Ugandan entry points (e.g., at Malaba or Entebbe), NDA inspects the medicines and tests them to ascertain their quality. All medicines entering Uganda undergo this process.

4. **Inspection of premises**
   NDA regularly inspect premises where medicines are manufactured, stored or sold to ensure that medicines do not deteriorate during storage or sale. The inspection is to ascertain that all laws and regulations governing drug production and services are strictly adhered to by every provider. They have the authority to enter any premise where drugs are either stored or distributed to the public. For this reason drug inspectors form NDA should be granted access to ADS whenever they present for routine inspection.

5. **Routine quality control of medicines (Pharmacovigilance)**
   NDA routinely conducts quality control on products already on the market. NDA randomly picks medicines from the medicines outlets and carries out quality control checks on them. Medicines that fail such tests may be recalled from the market. At the same time NDA continues to follow medicines on the market to monitor their continued safety and efficacy by monitoring side effects users experience with the medicines. Medicines that give users a lot of side effects can be recalled. This process is called pharmacovigilance.

6. **Training of personnel responsible to handle drugs**
   Medicines are manufactured, dispensed and used by people. For adherence to requirements regulating medicines, the people handling drugs at any point in the process should be well trained.

Possible causes of poor drug quality:

1. **Poor manufacturing conditions:**
   Medicines manufactured not following good manufacturing practices procedures are most likely to be of poor quality. Manufacturers that have not been inspected or not approved by the NDA are likely not meeting all GMP requirements. Many counterfeit medicines are manufactured under poor manufacturing conditions. **Counterfeits** are medicines that look like the registered medicines but do not contain the right

ingredients. ADS should avoid buying medicines from unauthorized dealers to minimize the risk of buying counterfeit medicines.

2. Poor packing:

Packing of drugs is important at all levels. Although medicines are may be correctly packed at the factory, at medicine outlets like drug shops, medicines may be incorrectly packed when being sold to the patients. Medicines inappropriately packed may easily be spoiled and lose their potency. To avoid this from happening medicines should whenever possible be supplied in their original pack but if this is not possible, good quality plastic bags should be used. Paper bags may be used but are not preferred.

Ideally, ADS should try to buy medicines that are packed in strips or blisters. Large containers with loose tablets are better suited for hospital use.

3. Poor transportation and storage conditions:

Appropriate storage and transport facilities must be available to reduce the risk of degradation of the product. If not, medicines may be subjected to excessive moisture, heat or light during transportation or storage. ADS owners and sellers and owners should be aware that medicines are sensitive and easily destroyed by moisture, high temperatures and excessive light. To avoid medicine deterioration medicine outlet owners and sellers should ensure that medicines are appropriately transported and that the medicine outlet does not expose medicines to adverse conditions mentioned earlier

4. Poor knowledge of personnel on drugs:

A basic knowledge and understanding of the nature and basic requirements on handling medicines is very important. Owners and sellers of medicine outlets should be appropriately trained to acquire the basic knowledge of handling medicines This program is intended to provide that basic knowledge and understanding to all owners and sellers of the accredited medicine outlets and set a continuing education system for them to continually improve quality of both quality of medicines and services.

How to prevent poor quality drugs

The responsibility of preventing poor quality drugs from being on the market is a responsibility of the NDA and everyone engaged in manufacture, distribution and provision of pharmaceutical services. Players at different stages of the medicine life cycle prevent poor quality medicines in varying ways.

How can a medicine outlet prevent poor quality medicines?

Adhering to laws, regulations, policies, and guidelines is the most important way to prevent poor quality medicines on our market. It is important as medicine sellers that we comply to the regulatory framework discussed previously. The following guidelines should be followed:

1. Make sure the building where medicines are sold does not allow exposure to moisture, excessive heat and light and vermin
2. Cross check all new consignments of medicines for any physical changes on the medicines this are critical indicators of poor quality
3. Routinely cross check medicines for quality
4. Regularly clean the medicine outlet
5. Maintain the outlet tidily on the shelves. Do not keep medicines on the floor

6. Take record of all transactions to help track source of poor quality medicine
7. Make sure medicines are adequately packed when they are dispensed to patients
8. Give patients information on how to keep medicines at home
9. Remove all expired and damaged medicines from stock and contact NDA for their proper disposal

Some signs of poor drug quality:

Medicines have particular properties or characteristics such as colour, smell, viscosity, clearness or shape. These are important indicators of quality of the medicines that can be noted through physical and visual examination. Changes in these characteristics may be indicators of poor quality. Some of the attributes to look for on physical/ visual examination of the product include:

- Packaging:
  - broken
  - ripped
- Labels:
  - missing
  - incomplete
  - unreadable
- Tablets or capsules:
  - discoloration
  - stickiness
  - crushed capsules or crumbled tablets
  - unusual smell
- Liquids:
  - discoloration
  - sedimentation
  - cloudiness
  - unusual smell
  - broken seal on bottle
  - cracks on bottles
  - dampness insides packages
  - torn packages
- Expiry ***date must be indicated on the container. This should not be altered. None of the medicines on the shelves should have reached expiry date.*** *Sometimes the physical characteristics of the product may change before reaching the expiry date. Such medicines are not fit for human consumption and should be removed from stock.*

Keep all expired and damaged medicines separate from medicines for sale, preferably in a sealed box. Inform the NDA inspector nearest to you for information about proper disposal.

Keep a record of all expired medicines. The following should be recorded:

- Name of the medicine
- Dosage form and strength
- Quantity
- Batch number
- Expiry date

6: Dispensing Process

Definition of Terms

Brand/Trade name

The name of a pharmaceutical product given by the manufacturer. Medicine with same active ingredient may have different brand/trade names, such as Panadol,® Kamadol, ® and Cetamol® are brand/trade names of medicines which contains paracetamol as an active substance.

Generic name/Non-proprietary Names

Name given to a medicine, which will be recognized all over the world. It remains the same regardless of which company manufactured the medicine. Paracetamol is a generic name.

Manufacturing date

This is the date on which the medicine was manufactured. This date may be expressed in month and year of manufacturing.

Expiry date

The date found on all medicines after which they are believed to have lost potency (effectiveness). Some medicines may become toxic due to deterioration and presence of toxic products. Never use medicines beyond their expiry date. You can avoid having expired medicines at your facility by maintaining an effective stock control system and practicing "first expiry, first out" (FEFO) to avoid stock expiring on your shelf.

Dose

Amount of the medicine to be administered at one time.

Dosage

How often a medicine has to be taken, e.g., every 8 hours, every day, every week or every month.

Course of treatment

How long a medicine has to be taken for complete treatment or management of the health problem.

Dosage form

Medicines are available in different forms—tablets, capsules, injections, powders, syrups, solutions, ointments, creams.. These forms are called dosage forms. Always read the label of a drug container carefully to understand the right dosage form.

Dispensing

Process issuing medicines to the patient. The process covers all the activities involved from receiving the prescription to issuing the prescribed medicine to the patient.

Weight

How heavy (or the mass) of a certain material. In pharmacy practice, the base unit is the kilogram (kg). In addition, there are other common units for weight:

Name	Abbreviation	equivalent to
1 kilogram	Kg	1, 000 g
1 gram	G	1000 mg
1 milligram	Mg	1,000,mcg
1 microgram	Mcg	0.001,mg

Volume

Volume informs you about capacity. That is what space does a material occupy? for example the content of a bottle. The base unit for volume is the litre (L). In pharmacy practice you will come across the following commonly used units for volume:

Name	Abbreviation	equivalent to
1 litre	L	1000 mL
1 millilitre	mL	0.001L

Potable water

Drinking water, freshly drawn from the public main water supply. If its quality is assured, it is suitable for the preparation of pharmaceutical products for oral or external use. If the quality is not assured, you have to boil and cool it before use.

NOTE: Most of the domestic potable water available in Uganda is not suitable for direct preparation of pharmaceutical products.

Purified water

Is made out of potable water by different processes including deionization, distillation, or reverse osmosis to make it purer. If it is not freshly prepared, it needs to be boiled and cooled before using in pharmaceutical products.

Water for preparation

May be either fresh potable water or purified water freshly boiled and cooled.

NOTE: Potable water, purified water and water for preparations cannot be used for preparation of reconstituting injections.

Dilution

This is the process whereby a concentrated solution is made weaker. This is usually done before use. Diluting medicines is mostly done with purified water but other liquids are also used some times. Disinfectants and antiseptic solutions such as hydrogen peroxide very often require dilution. (***Refer to section on dispensing process for details on dilution of hydrogen peroxide***)

Reconstitution

This is a process where a specified amount of water is added to a powder form of a drug. This method is used when drugs are not stable in water/ solution. This means that the drug breaks down if left in water/solution for a longer period of time. For this reason, you must only reconstitute just before use. Such examples of powder form of drugs include amoxycillin (syrup) and Pen-V syrup.

Contamination
In pharmacy practice the raw materials or finished products should not contain unwanted materials. If material used contains any amount of unwanted foreign bodies, it is said to be contaminated. Contamination may be caused by the manufacturer or transporter, dispenser, or the user. Careful handling of materials and finished products with clean hands or equipment prevents contamination.

Cross-contamination
When one medicine in the pharmacy is contaminated with another one during the dispensing process. The most common cause is forgetting to thoroughly clean equipment every time it has been in contact with a different drug. Use of single spoon when dispensing different drugs is a major source of cross-contamination. It may also happen if you use your bare hands when counting tablets and/or capsules.

Prescription
This is a written and signed order from an authorized/qualified prescriber to a dispenser. It contains instructions to supply /dispense specified medicines to a specified patient. It should be clearly written for easy reading and to prevent unnecessary mistakes in interpretation. If a prescription is not written clearly, check with the prescriber—never guess! **All class B drugs require prescription for dispensation**.

Adherence or compliance
Adherence or patient compliance is a measure of the extent to which a patient follows instructions on the use of a drug. These instructions should be given by the prescriber and the dispenser. The better a patient follows the instructions, the higher the compliance. The results of the use of a medicine will be better when compliance is high.

Dispensing Environment
Dispensing environment must be clean, hygienic, tidy and conducive for interaction between the patient and the medicine seller.

- A clean and hygienic environment will reduce chances of contamination
- Tidy environment will reduce mistakes to occur during dispensing
- And the environment conducive for interaction will promote patients understanding of instructions on how to use medicines and sellers understanding of the patient's problem.

The environment in totality will promote the patient confidence in the medicine outlet.

Attributes for a good dispensing environment:

- The surrounding ideal for dispensing should be
  - Quiet
  - With adequate lighting
  - Good circulation
  - Clean
  - Secure with no idlers
- The dispensing area should be
  - Spacious to allow smooth flow of work
  - With sitting facilities for patient
  - With enough furniture for staff

- With work surfaces that are easy to clean and spills of liquid medicines and powders wiped off immediately
- With adequate equipment for measuring liquids and counting tablets and packaging material

- Storage area should have
  - Adequate to hold enough stock
  - Shelves that are regularly cleaned
  - Medicines neatly arranged and routinely dusted
- The area should be neatly arranged to facilitate dispensing work by;
  - Retaining a daily drug use record in the dispensary.
  - Providing a table for dispensing drugs.
    Do not overcrowd the dispensing table.
  - Arrange documents in an orderly manner on the table, away from the dispensing area.
  - Clean after each use tablet counters and place within easy reach on the table.
  - Avoid dispensing wrong drugs by arranging drugs on the table in alphabetical order so that the drug being dispensed is not confused with another.
  - Always close drug containers from which drugs are not being dispensed to prevent spillage or dispensing the wrong drug.

Dispensing Person

The dispensing environment and the dispensing personnel provide the first impression customers get when they come to the medicine outlet. The dispensing person must

- Be knowledgeable about the medicines dispensed
  - Common use
  - common dose
  - precautions to be taken while using the drug
  - common side effects
  - common interactions with other drugs or food
  - storage needs
- Good calculation and arithmetic skills
- Skills for assessing the quality of preparations
- Attributes of cleanliness, accuracy, and honesty
- Able to communicate effectively with patients
- Exhibit professionalism all the time whether serving customers/patients or not
- Should be dressed in a way that depicts that he or she is a health worker
- Organized
- Have communication and leadership skills to be able to provide leadership to the community and to effectively communicate with patient

Prescription

A prescription is a set of instructions written by a qualified prescriber to a dispenser for supply of medicines after counselling the patient on how to use the medicines. It is very important that prescriptions are clearly written. The prescription is clear as it states:

- The dosage form of the paracetamol—tablets
- The strength of the paracetamol tablets—500 mg per tablet
- The number of days for which the paracetamol tablets have been prescribed,
- The number of times the tablets should be taken each day
- The number of paracetamol tablets to be taken each time

A prescription should have the following:

- Name of the unit from where the prescription is coming from
- Name of the patient and age (especially if a child)
- Date
- Prescriber's signature and name
- Instructions about the prescribed drugs, including—
  - Generic name and dosage form,
  - Dose,
  - Frequency of administration
  - Duration of treatment
  - any other instructions considered important for the patient to know e.g. how to take the medicine in relation to food

Examples:

- One capsule every 8 hours
- Take with or without meals
- Do not use alcohol as long as you are on medication
- Finish all drugs as directed for success of treatment
- Do not drive a vehicle when using this drug

Example of a properly written prescription

Kakumiro Health Centre IV OPD NO. 340/09
P.O. BOX 68 Kakumiro
Name: M/S Kibuuka John Date: 04.05.2009
Address: Kukumiro
Age: Adult Weight: 70 kg
Rx

1. Co-trimoxazole tablets ii b.i.d. x 5/7
2. Paracetamol tablets ii tds x 3/7

Name of Prescriber/qualifications Dr. Mwesigwa Emanuel MBChB (MUK)
Signature_____

Frequently Used Abbreviations in Prescriptions

In the table below, there are some of the regularly used abbreviations together with their meaning. Nevertheless in some case prescribers use local abbreviations which are not standard and that may not be known to you, in such cases ask for an advice from the prescribers about the meaning of the different abbreviations used in the prescription. Do not dispense whenever you are not sure of the meaning of the abbreviation written.

Abbreviation	Meaning
a.c.	Take medicine before meals/food
b.d. or b.i.d	Twice a day
gt or gtts	Drop (one) or drops (more than one)
noct. or nocte	At night
oint.	Ointment
p.c.	Take medicine after meals/food
p.o	Take medicine by mouth
p.r.n	Take medicine when required
q.i.d	Four time a day
Stat.	Take immediately
t.i.d. or t.d.s.	Three time a day
t.s.p	Teaspoonful
Occul or occulent	Eye ointment
p.a.a.	Apply medicine to affected parts of the body
Rx	Take
h.s.	At bed time
i.m.	Intramuscular
i.v.	Intravenous
Inj.	Injection
Tab.	Tablet
Cap.	Capsule

Basic Dispensing Procedure

If drugs are not dispensed properly to patients, all attempts to correctly prescribe and select the best treatment can be useless.

It is very important to concentrate while dispensing. Remember not to carry out more than one activity at the same time, because if you do that you are likely to confuse yourself or the patient. If you pick up a prescription complete the whole procedure in filling that prescription before you start anything else.

Keep your dispensing area and yourself clean, tidy and organized. An untidy, dirty and unorganized dispensing area is the major cause of confusion and possible dispensing errors.

Dispensing Steps

The consistent and repeated use of good dispensing procedure is very important in ensuring that errors are noticed and corrected at all stages of the dispensing process. The term dispensing process covers all the activities involved, from receiving the prescription to issuing the prescribed medicine to the patient. There are five major areas of activity.

1. Receive and validate the prescription
2. Understand and interpret the prescription
3. Prepare items for issue

4. Record the action taken
5. Issue medicines to the patient with clear instructions and advice.

Step 1: Receive and validate Prescription

Upon receiving a prescription, the staff member responsible should confirm the name of the patient. This is particularly important because there is a possible risk that staff or patients may mix up prescriptions. Cross-checking the name and identity of the patient must also be done when issuing the drugs.

Step 2 Understand and Interpret Prescription

Interpreting a prescription must be done by a staff member who can;

- Read the prescription
- Correctly interpret any abbreviation used by the prescriber
- Confirm that the doses prescribed are in normal range for the patient (noting sex, weight and age)
- Correctly perform any calculations of doses and issue the right quantity
- Identify any common drug-drug interaction

It is assumed that the prescription will be in written form. If you have any doubt what is required by the prescriber, you must check with the prescriber. Checking a prescription may save a life.

Step 3 Preparing items for issue:

Preparation of items for issue is the central part of dispensing process, and it must include procedures for self-checking or counter-checking to ensure quality. This part of the process begins once the prescription is clearly understood and quantity has been calculated.

(1) Select Stock Container and Pre-pack:

You must read the container label at least twice during the dispensing process. When looking for the correct drug read the label; never pick a drug by looking for

- A particular colour label
- A particular size of bottle/container
- A particular shape or colour of the drug

This could be very dangerous because many drugs and containers look alike. Secondly the appearance of drugs and containers may change depending on the pharmaceutical company which manufactured them. For example Doxycycline capsule can be yellow or white but all contain the same drug. Read the generic name of the drug. This name always stays the same, whereas the trade/brand name changes depending on the company which made it. You should remember this rule when picking up a container for dispensing: As you pick up a container of any drug, read the label, take out the required quantity, label the patient package and pack the drugs. Before you return the container to its place/shelf, read the label again and refer to the package you labelled. Before handing out the drug to the patient read it again to ascertain yourself. Do these every time you pick up a container, never assume that you know it all by heart? This procedure ensures you that the drug you have taken and labelled is the same.

(2) Checking the expiry date and quality of the drug

Once you have found the drug you need, check the expiry date and the quality of the drug.

- When checking the expiry date, make sure that you do not confuse the expiry date with the date of manufacture, which may also be on the label.
  Never dispense expired drugs.
- When checking the quality of the drug, you should look for the following:
  - Injections must have no particles or cloudy areas (growth of bacteria or fungi), check that the glass is not cracked; there are no holes in the Intravenous (I.V). Infusion bottle and the seal is not broken.
  - Tablets and capsules must not be chipped, cracked, broken or sticky. Check that the smell and colour have not changed.
  - If you are dispensing a liquid, check that the bottle is not cracked or chipped. Check the colour and smell, and look for any unusual cloudiness, or crystal in the liquid or foreign particles.
  - When dispensing creams and ointments, check that the tubes are not cracked, and that any large open tins do not contain any growth, have not change in colour and smell and the tube has not hardened.

NOTE: Counting Quantities of Solid Dosage forms from Stock Containers

(1) Counting of solid dosage forms; (mainly tablets and capsules).

You may have noticed during your daily dispensing work that a high proportion of medicine you dispense consists of tablets and capsules. You spend much of your time counting such medicines. Try to organize this counting activity in a systematic way. This makes your job easier, more efficient and above all ensures accuracy. Remember that re-packaging of large quantities of drugs out from their original containers may lead to deterioration of drug quality due to exposure to moisture and other environmental conditions. Re-pack drugs only when you have to dispense them to patients at that moment.

(2) Equipment Used in Dispensing Solid Dosage Forms (mainly Tablets and Capsules)

- The simplest or (easiest) way is to use a clean spoon. You should never use your hands for counting!

Using hands is a bad dispensing practice that is very unhygienic and it carries a high risk of multiple cross-contaminations and even transfer of communicable diseases like cholera, worms to patients etc. Do you remember how many articles have you touched or hands have you shaken with various fiends up to this time?. Can your hands still be that clean to touch oral products?

By using a spoon, you simply take medicine with the spoon out of the original container and count on the spoon without touching the medicine. Empty the spoon into the container/bag for the patient.

Make sure that the spoon is cleaned after every count to avoid cross-contamination. You can have several spoons in you dispensing area for that purpose. When you have counted the tablets or capsules, put the remainder back into the container, if any. Check the label once more to see that you have taken the correct drug. Close your container well and put it back on its correct place.

(3) Equipment Used in Dispensing liquid and semisolid Dosage Forms

Liquids and semisolid dosage forms should be dispensing in the original packs.

NOTE: You should not measure off any syrups, ointments and any other forms of liquid and semisolid medicines into any container to be dispensed to the patient. The process of transferring liquids or semisolids from one container to another may

***lead to cross contamination. Such medicines should be sold in their original/ primary packs*.**

It is however important that when dispensing liquid dosage forms, ensure that they have the pack has clearly graduated measures that patients or their care takers will use to measure of the doses to be administered. If graduated measures are not present, give clear instruction on what can be substituted for the purpose

Step 4 Packaging and Labelling of Medicine:

(1) Labelling of Medicine

Before packing the drug you should write the label. It is better to write the label before, counting or measuring the drug. If you are dispensing more than one drug you are less likely to mix up the drugs and write the wrong label. It will also be easier to write clearly without damaging or spilling the medicine.
It is not enough just to tell the patient how to take the drugs(s). By the time he reaches home, he may have either forgotten the instructions or have them mixed up.
It is very important that you attach written labels to the drugs as well as giving verbal instructions. Even if the patient cannot read, it is likely that another member of the family will be able to help.

- What information should be found on the label?
  - Name of the patient
  - Name of the drug
  - Strength of the drug
  - Quantity of the drug supplied
  - The instructions on how the drug is to be used.
    - How much each time
    - How often per day
    - With or without meals
    - With plenty of fluids etc
  - Date supplied
  - Name and address of the health care facility Medicine outlet

Written labels must be neat and easy to read. The instructions must be clear so that the patient understands them. Always write instruction in full, avoid abbreviations such as t.d.s. or 1 x 3 only, instead write also every 8 hours etc. on you label.

(2) Packaging of Medicine

After writing the label, and measuring or counting the correct quantity of medicine, the medicine should be packed into an appropriate container. It is very important that the correct container is chosen for each drug, as this will ensure that the medicine is kept clean, dry, and free from contamination so that it remains effective.

- Packing of solid dosage forms (tablets/capsules):

  Packing material for these includes:
  - Plastic dispensing bags
  - Paper envelopes
  - Small sterilized bags (avoid this if possible as they are expensive)

- Packing of liquids/semisolid dosage forms: (Mixtures/Syrups, Ointments/creams etc)

Liquids and semisolids should be dispensed in their original/primary pack.

Step 5: Record Action Taken

Records of issues to patients are essential in an efficiently run medicine outlet. Such records can be used to verify the stocks used in dispensing, and they will be required if there is need to trace any problems with medicines issued to patients.

- When the prescription is retained, the dispenser should sign it, file it and enter the details in to a record book (prescription book).
- When the prescription is returned to the patient, details of the medicines dispensed must be entered into a record book (prescription /poisons book) before the items are issued to the patient. Enter the date, patients name and age, the medicine name and strength, the amount issued the prescriber and your name as the dispenser.

Step 6: Issue medicine to patient with clear Instructions and Advice:

The medicine must be given to the named patient, or the patient's representative, with clear instructions and any appropriate advice about the medicine. The amount of detailed advice that should be given about possible side effects varies from patient to patient. Verbal advice is important because both illiteracy and poor labeling may be the cause of problems.

Apart from emphasizing the dose, frequency, length of treatment and route of administration, the priority is to give the patient information that will maximize the effect of the treatment. Advice should therefore concentrate on:

- When to take the medicine (particularly in relation to food and other medicines)
- How to take the medicine (chewed, swallowed whole, taken with plenty of water)
- How to store and care for the medicine.

Warnings about possible side effects should be given with care. Common but harmless side effects (nausea, mild diarrhoea, urine changing colour) should be mentioned to prevent a frightened patient from stopping the treatment.

Every effort should be made to confirm that patient understands the instructions. Every patient must be treated with respect. The need for confidentiality and privacy when explaining the use of some types of medicine (e.g. suppositories, Pessaries etc) must be recognized. It must be emphasized that the success of the treatment rests on the accuracy of the dispenser's communication with the patient.
You should understand that dispensing out the drug and counselling are some of the most important aspects of drug dispensing process. Your task is not only to ensure that a patient receives medication, but also to ensure that the patient knows how to use it properly to achieve adequate results from treatment.

All the efforts that have been invested into pharmaceutical preparations, from the time of production through all the stages of buying and distribution until the point that you dispense the product will be wasted if your patient does not use the prescribed medication in the correct way.

You have to ensure that the use of the medicine is explained to the patient in such a way that he or she fully understands how to use it in the most effective and prescribed manner.

Go through the following steps to ensure that the right patient is dispensed to and the patient follows instructions while using the medicine;

- Call the patient by reading loudly the name written on the prescription. This confirms that the right prescription is dispensed to the right patient.
- For each drug dispensed repeat the instruction on the label verbally you may add any additional information specific for each drug.

  NOTE: Always try to ask a female patient if she is pregnant or lactating and check for proper instructions to be given to pregnant women.
- Before you hand the medicines over the patient, you should confirm that your instructions are well understood. You may ask the patient to repeat the essential part of your explanations. If they repeat your instructions correctly you will know that they have understood. This exercise may take some time, but it will considerably increase compliance by the patient.
- Do not forget to give all the necessary information on how to store the drugs safely for them to remain effective. E.g. some drugs have to be stored in cool places just like you do with vaccine and insulin preparations.
- Provide warning to store drugs away from reach of children

Useful Drug Information for Patients

1. How much is to be taken (dose)?

   Some people think that if they take more tablets together, they will get better more quickly. This could be very dangerous. You must clearly explain exactly the amount that the patient should take.

2. How often should it be taken (frequency)?

   It is important to explain how many times a day the dose should be taken and how many hours apart they should be taken. The dose taken should be spread evenly throughout the day. For example, two capsules to be taken every six hours instead of simply two capsules four times a day (or 2 x 4).

3. For how long should it be take (duration)?

   Some patients only take their medicines until they feel better. It might not be serious if the treatment was for a minor problem such as headache. However, if the drug was for treatment of high blood pressure or an infection such as blood diarrhoea and the patient stops taking the drugs he/she could become seriously ill or the microorganism might become resistant to the drug. Always tell the patient for how many days or weeks he/she should take the medicines, and stress the importance of completing the full course of treatment.

4. Why are they taking the drug (indication)?

   If the patient is told the condition for which the medicine has been given, they will be more motivated to take the medicine as they have been instructed. If a patient doesn't know why he/she has been told to take a particular medicine, they are unlikely to take it correctly or to finish the whole course of treatment. While informing the patient why she/he should take the medicines, bear in mind the need for privacy. It will be

embarrassing if a very private problem would be announced openly to the rest of the patients in the counselling room.

5. What other information does the patient need to know?
   - Some medicines work best if they are taken on empty stomach, for example, Amoxycillin taken at least half an hour before meals is better absorbed.
   - Antacids, e.g., Magnesium trisilicate work best if taken one or two hour before meals.
   - Iron and Aspirin tablets may cause gastric irritation and should be taken with food.
   - Doxycycline should not be taken together with antacids and iron tablets because they decrease their effectiveness. They should also be taken after meal or during meals.

6. Drugs with alcohol

   Alcohol interacts with a number of drugs, so patients must be advised accordingly. For example, alcohol should not be taken with Metronidazole, Paracetamol, Antihistamines, etc.

7. Side effects of drugs

   The patient must be told or warned about the side effects of the drugs given. Example, antihistamines (e.g., chlorpheniramine) may cause drowsiness and if affected they should not drive or operate machinery.

8. Oral contraceptives

   Some drugs such as Antibiotics e.g Ampicillin when taken together with oral contraceptives, renders the oral contraceptives less effective and the patient may get pregnant. Always ask your female patients if they are on oral contraceptives and advise them accordingly.

9. Drug storage by patient:

   Advise your patient to keep their drugs out of the reach of children. Some drugs which are very brightly colored are very attractive to children.

Reconstitution / Dissolving of Dry Powders

How to re-constitute dry powders?

Most of antibiotics/antibacterials preparations like amoxycillin syrup are supplied in bottles as dry powders because they are not stable in liquid form. You need to add a specified amount of purified water immediately before you dispense it to the patient. The amount to be added is usually indicated on the bottle or label.
Some manufacturers have their bottles marked showing the final level of the reconstituted volume. The following is the procedure for correct reconstitution of powders:

- Disperse the dry powder by first shaking the powders. This disperses any powder lamps in the bottle that would be difficult to disperse if water was added without this step.
- If the volume to be added is given on the label, measure that amount; if only a mark is given on the bottle, you need not measure any volume of liquid
- Now add the water in small volumes, shaking the bottle each time you add a portion of water. Do so until the liquid is homogeneously dispersed in the water.

- Finally add the remaining water to make up to the marked point or to finish the given volume of liquid you had measured.

The reasons why you should add the water in small portions are:

- Dispersion of powder becomes not ease as a lot of gas is trapped in the bottle. If there is a lot of gas in the closed bottle, it may even blow up during the shaking process
- Where only the mark point is given, adding water up to that level will result into adding access water thus diluting the syrup.

How to dissolve powders?

In the treatment of diarrhoea Oral Rehydration Salt (ORS) are frequently used. ORS are usually supplied in pre-packed sachets which contain a mixture of salts and sugar, sufficient to make half or 1 litre of ORS.

When you dispense such sachets to patients for use at home, give the following instructions to ensure proper preparation:

- Measure half or one litre of clean boiled and cooled potable water in a clean container or pot. Tell your patients that the volume of one tumpeco mug or one Nile special beer bottle equals half a litre or 500ml.
- Add the contents of one sachet into the water, stir until the liquid is clear and without visible powder particles. The powder is now dissolved.
- Please note that ORS solutions should be used within 24hours. If any of it remains it should be discarded because older solutions may have bacterial growth due to presence of sugar. Prepare larger amounts of ORS only if you are sure that it will be used within 24 hours.

Dilution of Liquids

How to make a dilution?

There are some concentrated liquid preparations which you may have to dilute before dispensing (common for antiseptics and disinfectants). Example: Hydrogen peroxide is often diluted with purified water before use for disinfection or antiseptic purposes. The following are the dilution instructions for Hydrogen peroxide

1. First aid
   To arrest bleeding and disinfect wounds; dilute 1 part of Hydrogen peroxide with 3 parts of purified water then apply using a piece of cotton wool on the affected area
2. To remove dirty dressing
   Dilute 1 part of hydrogen peroxide with 3 parts of purified water then soak the dressing in with the diluted solution and leave it for some minutes before removing the dressing
3. Mouth wash and deodorant
   Dilute one tablespoonful to one glass of water and gargle

Record Keeping and Documentation

Medicine outlets should be required to keep the following records/documentations: All invoices and receipts for non-prescription and permitted prescription drugs.
This is important because once they are required for a certain purpose, they can be easily retrieved. These should be kept for at least 2 years

The shop should maintain for each permitted prescription drug a ledger of receipt and issues/dispensation. The ledger should include the following information:

- date received and dispensed
- name of patient, drug and quantities dispensed
- balance remaining

This important record will enable the Medicine outlet to;

- Monitor and establish prescription record of every permitted prescription drug and thereby avoiding stock-outs.
- Identify adverse drug reactions if at all it occurs to patients through the records.
- Assist the NDA Inspectors when conducting their supervision duties.

This record should be maintained at the premises for at least two (2) years.
Furthermore the Medicine outlet shop is required to keep and maintain
(b) A special file for keeping all correspondences related to medicine directives and services from the regulatory authorities.

Storage Conditions and Stability of Drugs

Medicine and medical supplies should always be stored in a proper storage space because they are expensive and valuable. If drugs are not properly stored they may deteriorate, lose their potency or develop toxic degradation products that might be damaging to the health of the patients.

Locate a secure room at your facility as a store. This should be a secure storage space where all drugs and supplies can be kept. Windows should have burglar bars and double lock on the door. The store must be separate from the area where drugs are dispensed.

Factors affecting storage of drugs

- Temperature
- Moisture
- Light
- Bacteria and fungi
- Pests/animals

(1) Temperature

All drugs are sensitive (affected) to heat, therefore your dispensing area and storeroom must be cool. The following measures are necessary to protect your drugs from extreme temperatures:

- Make sure there is a ceiling in the store and dispensing area
- Install a ceiling fun or air vents in the store
- If you have a metal roof, this can be thatched, insulated, or painted with white paint to reflect the heat.

- You can open windows during the day to allow air to move freely and ventilate the room
- Use the refrigerator for storage of drugs which require a storage temperature of between 2^{o} and 8^{o}C but do not allow the drugs to freeze, because this may affect drug potency as it is in case of high temperatures. However most of the drugs you are allowed to keep can be stored under normal temperatures.
  Never store food or water in the refrigerator together with drugs. They may contaminate each other and it will be more difficult to control the temperature of the refrigerator.

(2) Moisture:

There is a lot of moisture in the air, even when it is not raining. If there is moisture drugs may absorb it leading to deterioration.

You should do the following to protect drugs from absorbing moisture easily:

- Store your drugs in dry place
- Keeps drugs in the original packs all the time
- Always put the lid back on the container even if you are going to use the same container later in the day.
- Containers of tablets and capsules often have sachets of desiccant (non-edible drying crystals) packed in them. The desiccant keeps the inside of the container free of moisture. Keep the sachets of the desiccant in the container after you have opened it.
- Get all leaks repaired as soon as possible to reduce moisture and water damage.
- Make sure there is good drainage. There should be drainage channels around the outside of your shop/store and gutters with pipes that run down from the roof. Ventilate your store with windows, secure all ventilation and drainage areas will grills or bars to prevent theft.
- Do not store supplies directly on the cement floor, as cartons might absorb humidity from the floor. Store boxes on planks of wood or crates.

(3) Light

Many drugs are affected by light (sunlight). You should always protect you drugs from light by:

- Drugs packed in amber (brown) bottles or vials are light sensitive and should be kept in dark or in the original containers.
- Keep drugs, especially ampoules in closed containers unless you are dispensing them.
- Store sensitive drugs in a dark cupboard e.g. chlorpromazine injection
- Windows in your drug store room should have curtains
- Paint window panes white.

(4) Bacteria and fungi

Drugs can be contaminated by bacteria or fungi therefore there is a need to exercise high hygienic standards. To prevent this happening you should:

- Keep containers closed to prevent drugs from becoming contaminated by bacteria, fungi, and dust.
- Keep your dispensing area clean and free of dust
- Wipe your dispensing spoon after dispensing each drug.
- Always wash your hands regularly during dispensing.

(5) Pests/animals

Keep your store free of pests. Common pests which may damage the supplies in your store are rodents, ants, and wasps. Spilled items like sugary liquids attract ants and rats. They can be eliminated or prevented through:

- Removing any broken or spoiled product in your store, especially the one containing sugar or food components.
- Keeping all bottles and containers closed when not in immediate use
- Cleaning the store regularly by wiping the shelves to clear dust and sweeping and mopping the floor regularly.
- Removing empty cardboard boxes and waste
- Contacting your environmental health officer to obtain pesticide if other measures do not help.

7: Course Name: Job Aids

Definitions

A **job aids** are devices or tools such as standard operating procedures (SOPs), instruction cards, wall charts, etc. that allow an individual to quickly access information needed to perform a particular task.

A **Standard Operating Procedure (SOP)** is a set of written instructions that document a routine or repetitive activity followed by an organization. SOPs give a step-by-step procedure on how to perform a particular task.

Why SOPs

- Medicine outlet need to ensure that quality medicines and services are delivered to patients. This requires that process of service delivery is of consistent and predictable quality.

  For consistent quality; it requires that all processes undertaken during the provision of pharmaceutical services should be conducted in a uniform manner irrespective of when and who is performing them.

  For predictable quality; it requires that whenever the processes undertaken during the provision of pharmaceutical services are carried out, the outcome are of the expected ones and of quality.

- SOPs facilitate activities required to maintain the quality of medicines and pharmaceutical services
- SOPs facilitate compliance with regulations
- Facilitation of on job training and orientation for new employees

Benefit of SOP

The following benefits will accrue if SOPs are consistently and accurately used

- Minimization of variation and errors
- Promotion of quality of services and medicines
- Promotion of compliance to regulations
- Reduction of work effort
- Help achieve maximum efficiency and effectiveness from the employees
- Makes it easy to delegate work and shift tasks

List of SOPs

- For receiving medicines
- Storing medicines
- Dispensing medicines
- Patient counselling
- Physical count
- Clean and outlet maintenance

Module 3: Basic principles of patient management

8: Introduction to Patient Management

Definitions

Dose:
The amount of medicine administered (swallowed, injected, applied on the skin etc) to the patient at a time

Dosage:
The total amount of medicine given to the patient over a period of time to treat a particular condition

Minimum dose:
The smallest amount of a given medicine that can give the desired effect.

Maximum dose:
The largest amount of a given that can be used without causing toxic side effects.

Therapeutic dose:
A dose between the minimum and the maximum doses which produces the desired effect without toxic effects.

Toxic dose:
An amount of a given medicine that causes serious unwanted effects.

Formulation:
Refers to how the medicine is presented by the manufacturer for use, e.g., tablet, capsule, ointment, syrup, etc.

Side effects:
These are the effects of a medicine other than those the medicine is intended for in that patient. No drug is entirely free from undesirable side effect. That is why it is important make sure that the patient is taking the right dose and to request the patient to report immediately whenever he/she experiences undesirable side effects. Undesirable side effects may influence how the patients take their medicines and therefore affect the treatment outcome.

Common Side Effects of Medicines

Drug Allergic reactions:
Allergy is an undesirable reaction specific for some drugs and to some individuals**.** For example, penicillin formulations (amoxicillin, benzyl penicillin, Pen V) and sulphonamide formulation (cotrimoxazole/septrin, SP/Fansidar) commonly cause very serious allergic reactions to some individuals. However there are some individuals who do not get such

reactions after taking these medicines. The first signs of such a reaction include; itching, skin rash/eruption and if the medicine was taken orally swelling around the mouth.

It is very important for you to ask the patient before you dispense to him/her penicillin or sulphonamide formulations, if he/she has ever had any reaction after using the medicine mentioned above.

Anaphylaxis (acute hypersensitivity):

Is a life threatening clinical response that appears within minutes after administration of a medicine which the patient has ever used. Common examples of medicines that cause anaphylaxis are penicillins sulphonamides, vaccines and blood products. Anaphylaxis, is one form of very severe allergic reaction that may by medicine however there may be other causes such as insect stings

Abdominal discomfort

Medicines that are taken orally usually cause stomach problems that may be characterises by abdominal pain, feeling of a full stomach, diarrhoea, nausea, vomiting among others. Medicines such as pain killers (Diclofenac, brufen aspirin), erythromycin are commonly implicated to cause abdominal discomfort.

Drowsiness

Certain antihistamine may make patients to feel sleepy and unable to remain alert. Example of such medicine include; chlorpheniramine and promethazine. Many of the medicines used for treatment of colds, allergy contain these antihistamines and therefore may cause drowsiness. However sometimes such medicines may be used to induce sleep. In such a case drowsiness is not a side effect but the intended therapeutic effect.

Other common side effects

Other common side effects include, headache, photosensitivity

Administration of Medicine

For medicine to produce the desired effects, medicines must be delivered to the site where the action is taken. It is important to know what must happen to medicines for them to produce the desired effects.

The medicine must be administered to the patient through the appropriate route from where it will be absorbed into the body, distributed throughout the body to reach the site of action, metabolized by the body and finally eliminated from the body.

Factors to when administering medicines

Before administering medicine to the patient, take note of the following:

- Age
- Weight
- Time of administration
- Formulation the medicine is presented(pharmaceutical factors)
- Route of administration
- Special conditions of administration e.g. Presence or absence of food in the stomach

Other factors that need to be considered include

- Genetics of patient, e.g., family history of allergy
- Biological factors, e.g., sex

Routes of Administration

There are several routes by which the drugs reach the site of action. Below is an example of some of these routes:

(a) **Oral route:**

The safest and most convenient, where the drugs are taken through the mouth.

Advantages of this route are:

- Convenience
- Acceptability
- If the GIT is being treated, the drug is placed at the site of action
- Quick e.g. sublingual,buccal.
- Uncomplicated, does not need technical supervision

Disadvantages of this route are:

- Gastric irritation
- Erratic absorption, depends the status of the GIT (with or without food, age etc)
- Destruction of drug in the GIT before absorption
- Not all drugs can be taking by mouth.

(b) Parenteral route:

This refers to administering medicine by injection. Medicines given by this route, needles and syringes used should be sterile. Also the environment should be appropriate.

Advantages of this route are:

- This gives a rapid absorption
- Useful in emergencies, when patient is vomiting or unconscious or
- Preferred when the condition is severe and there is a need to get a fast therapeutic effect to save life.

The medicine can be injected sub-continuously (s.c) (under the skin) intramuscular (I. M) (into the muscle), intravenous (I.V)) (in the vein) and other routes.

Disadvantages of Parenteral route (I.M & I.V)

- Route is not easy, needs technical expert to administer
- It is painful
- If not properly done may cause serious damage to tissues or even paralysis
- Not acceptable by children and some adults
- High risk of infection

(c) Rectal route:

Some drugs are inserted into the rectum to either get systemic or local effect. Drugs usually used for rectum insertion are in the form of suppository or special solutions.

Advantages:

- Useful for drugs that are irritant to the stomach, for example diclofenac, Indomethacin.
- Suitable in vomiting, motion sickness (travel sickness)
- For patient with difficulty in swallowing or unconscious status or convulsing e.g. use of rectal diazepam in a convulsing patient
- Lack of cooperation (e.g. the mentally sick).

Disadvantages:

- It may be embarrassing to the patient
- Rectal inflammation may occur if the patient uses the route very often
- Absorption can be unreliable especially if rectum is full of faeces.
- Incorrect insertion may lead to poor absorption

(d) Topical application:

Medicines are applied directly to the skin, eyes or ear to get either topical or systemic effect. You should always take care that medicines which are meant for topical treatment are not applied on open wounds because it may be absorbed internally and cause serious problem. Medicines containing steroid products for topical application may be absorbed especially when used to children.

Advantages:

- Provision of high local concentration
- Easy to apply, self treatment

Disadvantages:

- -Skin irritation
- -Drugs for topical use only may be absorbed
- Uncertainty of absorption for drugs meant to produce systemic effect

(e) Inhalation:

Inhalation is taking a drug through the respiratory system by breathing in. This route is very effective and fast. It is mostly used to effectively control asthmatic attacks or other serious problems that need immediate effect. Drugs mostly administered through this method are bronchodilators such as Salbutamol although some drugs may be administered this way as well.

Background to patient management

What is health?

World Health Organization defines health as a state of complete physical, mental, social wellbeing not merely the absence of infirmity or disease.

Factors the impact on Patient Assessment

Health beliefs and practices

Patients usually come for health care with predetermined beliefs and preferences. These are influenced by their culture. It is a pattern of shared meanings, beliefs, and behaviours that are learned and acquired by a group of people during the course of history. Culture reflects the

whole human behaviour including values, attitudes, and ways of relating to and communicating with each other. It also encompasses an individual's concepts of self, universe, time and space as well as health, disease, and illness.

Medicine sellers must keep in mind that patients will have various views of health, illness, disease, and cure that are shaped by their particular cultural and beliefs. One of the important aspect that medicine sellers must keep in mind is what the patient believes causes disease and illness.

Family relationships
A family remains the basic social unit for most people. Because the family is an integral part of most people's lives, it affects how they view and, ultimately how they utilize health care services.

While attending to patients to understand how the family can help him or he to make recovery quick. For example, in many cases, patients may require bed rest or special diet which the family must provide.

Communication
Medicine sellers need to be aware of the way people in a particular locality express their feelings, both verbally and in body language . This important as it will make both the medicine seller and the patient understand each other better.

Patient assessment
It is very important that when patients come to the medicine outlet, that the medicine seller assesses their health, past drug history and social issues and beliefs about that condition. This provides an opportunity for the medicine seller to understand patient's problem adequately.

Patient assessment is the process through which the health worker obtains information related to the patient either from the patient themselves, family members, care givers or from other sources, and evaluates the information for the purpose of deciding how to manage the patient's problem
The following information may be needed during patient assessment;

- Complaints/symptoms from the patient in his or her own words
- Recent history that pertains to those symptoms
- Past medical history
- Medication history, including compliance and adverse effects
- Allergies
- Social and family history, etc...

Steps to be followed during Patient Assessment

Step 1
Receive the patient courteously and respectfully. This creates foundation for an honest and open interaction between medicine seller and patient.

Step 2
Take history about the patient's condition. Find out the following in that order;

- Ask the patient for the main complaint/illness
- How long it has been there

- Any treatment received for this condition; if medicines had been given ask how they were taken/swallowed
- Ask about any history of drug allergy
- Depending on the condition, establish the family and social history
- Other useful information related to specific conditions; use of mosquito nets for malaria patients, general sanitation and hygiene for diarrheal diseases etc.

The information obtained from the patient should be kept confidential to maintain trust and a good relationship.

Step 3
Evaluate the acquired information and decide what to do for the patient; treat the patient, give initial treatment and refer or refer the patient right away

Step 4
Explain to the patient about their condition and the action taken. If you are treating the patient, educate the patient about the treatment given.

Skills needed during Patient Assessment

- Active listening
- Empathy
- Non judgmental
- Kind
- Language of communication

9: Course Name: First Aid

INTRODUCTION

Objectives of first aid:

1. To preserve life
2. To prevent the illness or injury from becoming worse
3. To promote recovery

Definition:

First aid
is the emergency help given to an injured or a suddenly ill person using readily available materials.

First aider
Anyone who takes charge of an emergency situation and gives first aid. A first aider also comfort (reassure) the casualty, family and friends and ensures that the emergency scene is cleaned up and unsafe conditions that may have caused the injury are corrected

Emergency situation
A serious health situation or occurrence that happens unexpectedly and demands immediate medical action.

Casualty
The person who is injured or ill.

Good Samaritan
A Good Samaritan is a person who helps a person in need when they have no legal duty to do so.

First aid and the law:

There are two legal situations under which one can give first aid:

1. Giving first aid as part of your job e.g. health workers, a person trained as a first aider, police, fire brigade, Red Cross workers etc.
    - You have a legal duty to respond to an emergency situation at your work place
    - You have a duty to use reasonable skill and care based on your level of training
    - If you are a designated first aider at work, make sure your certification is always up to date

2. Giving first aid as a passerby who sees an emergency situation and wishes to help an injured or ill person. You should use reasonable skill and care based on your level of training

Safety and First Aid

1. Giving first aid safely is the number one rule. The first aider must ensure that his/her actions don't put him/her or anyone else in danger. This necessitates that u take time to look for any danger and assess the risks of the actions you take.

2. Preventing infection: - the first aider and casualty are always in close contact thus infection can pass from one person to the other. The first aider should be cautious of diseases caused by viruses and bacteria. These can be spread through the blood or in the air through coughing or sneezing. E.g. tuberculosis, HIV/AIDS, Hepatitis B

Always use universal precautions applied to first aid to minimise the risk of transmission of infection

These include:

- Gloves: use gloves to prevent direct hand contact between the first aider and the casualty especially if you might touch blood, body fluids, open wounds or sores.
- Face masks or shields: use face mask or shield when doing cardio Pulmonary Resuscitation (CPR). Follow manufacturer's instructions on their use, care and disposal. Face masks should be readily available if you suspect the patient has an airborne condition such as tuberculosis, common cold etc
- Hand washing: wash hands with soap and running water immediately after any contact with a casualty

Steps of incident management

1. Look for dangers to yourself then to casualty
2. Assess the situation
3. Find out what happened, and precautions taken to avoid a similar occurrence.
4. If you are at the incident scene, make the situation safe by removing or reducing the cause. If the casualty has been brought to the medicines outlet, advise the caretakers on how to remove of reduce danger.
5. Assess the casualties and decide on what action to take as soon as possible.
6. Give initial treatment; if the patient requires further attention, refer to other health facility or call in more specialised assistance if the patient can't be moved.
7. After the incident: - tidy up the treatment site, restock your first aid kit.

Casualty management and initial assessment

1. **Actions**:
   - Don't forget to check for dangers to yourself and the casualty
   - Remove the dangers safely or move the casualty if you can't remove the danger

2. **Response:**
   - Check to see if casualty is conscious
   - Ask questions such as; are you alright?
   - Give a command like open your eyes
   - Give a gentle shake

3. **Airway:**
   - Quickly check for any obvious obstruction – the tongue may slip back and block the airway
   - Open the airway by lifting the chin while carefully tilting the head back

4. **Breathing:**
   - Check for breathing by opening the airway and placing your cheek just above the casualty's mouth and nose
   - Look at the chest and watch for movement
   - Listen for breathing
   - Feel for breath against your cheek
   - Check for ten seconds

5. **Decide what action you must take:**
   - Send for help if there is somebody with you
   - If casualty is unconscious and is breathing, put them in recovery position immediately (requires demonstration)
   - If casualty is unconscious and is not breathing start resuscitation immediately (requires demonstration)

6. **Circulation:** There are two ways in which circulation affects the way oxygen moves around the body:

a) The heart may stop

- Check for the heartbeat by taking the pulse in the neck (carotid pulse) for ten seconds
- To find the pulse, place two fingers in the groove between the voice box and the large muscle in the neck and press down gently

b) There may be bleeding

- The initial assessment and priorities can be remembered by the letters **DRABC**

Danger

Response

Airway

Breathing

Consider your action immediately

Circulation

First aid for some common conditions

1. **Choking**

Signs: - Difficulty in breathing or speaking
- grasping at the neck
- Pointing in the mouth and throat
- Purple/red colour around the face and neck
- Blueness to lips

Aim: To remove obstruction and allow the casualty to breathe normally

Actions:

- First step – Backslaps
  - Reassure the casualty
  - Bend casualty forward with head lower than the chest
  - Encourage him/her to cough
  - Slap up to five times between the shoulder blades(the force of slap should moderate not to cause further injury)
  - See if you can remove the obstruction

- Second step – Abdominal thrusts: if backslaps are unsuccessful, try up to five abdominal thrusts
  - Stand behind casualty
  - Link your hands below the their rib cage
  - Pull sharply, inwards and upwards
  - If not successful, call for help
  - Keep repeating the cycle of backslaps and abdominal thrusts until airway is clear or help arrives

2. **Fainting**

Signs: - Collapse and loss of consciousness
- Pale or grey, cold clammy skin
- Slow pulse – increases as casualty recovers

Aim: Improve the blood supply to the brain and reassure the casualty

Actions:

- Assess DRABC and treat any priority conditions
- Lay the casualty down and gently raise and support the legs
- Provide a source of fresh air if possible
- Reassure the casualty and keep onlookers away
- When casualty recovers, sit him/her up slowly, if they feel faint again lay them down again
- If casualty does not regain consciousness quickly, reassess DRABC, place in recovery position and call for medical help

3. **Shock**

Signs: - Pale or grey, cold, clammy skin
- Rapid pulse, becoming weaker

- Fast, shallow breathing
- Feeling weak and dizzy
- Feeling sick, may vomit
- Feeling thirsty
- Restless and anxious, may be aggressive
- Yawning or gasping for air
- Level of consciousness will get lower and may become unconscious
- Breathing may fail and the heart may stop

Aims:

- To treat any obvious cause
- Increase blood supply to the brain, heart and lungs
- Get urgent medical help

Actions:

- Assess DRABC and treat priorities
- Lay casualty down, raise the legs gently
- Keep casualty still and quiet, reassure
- Loosen tight clothing around the neck, chest and waist
- Keep warm
- Call for medical help
- Keep checking breathing, pulse and level of consciousness, may have to resuscitate and put recovery position
- Make notes for ambulance crew on your findings and actions
- DO NOT THE FOLLOWING
  - move casualty unless it is to escape from danger
  - apply direct heat
  - leave casualty alone
  - allow casualty to eat, drink or smoke

4. Wounds and Bleeding

Aims: - Control blood loss
- Treat for shock
- Prevent infection eg tetanus
- Arrange for transport to nearest health facility

a) Minor bleeding (small cut):
- encourage the wound to bleed for a few minutes
- apply direct pressure for ten minutes
- if dirty, clean it with antiseptic e.g. surgical spirit, hydrogen peroxide etc and gently dry area
- cover with sterile dressing (plaster or clean dressing)
- refer for further medical attention

b) Major bleeding: - Carefully expose wound
- Apply direct pressure to the wound
- If there is an embedded object, apply pressure around sides of the wound
- Raise the limb
- Lay casualty down

- Use a clean pad or sterile dressing
- Treat for shock
- Keep pressure on the wound for ten minutes
- When bleeding is controlled, apply a sterile dressing and bandage on top of original pad
- If blood sips through the dressing, add on more dressing
- ***Make a report and refer to the nearest health centre more specialised facilities and health workers***

5. Nose Bleeds:

- Sit casualty down and ensure that their head is tipped forward
- Instruct casualty to breathe through their mouth and to pinch the nose just below the bridge for ten minutes
- Instruct casualty not to blow their nose or sniff
- Release nose after ten minutes, if still bleeding pinch again for ten minutes
- If nose bleed lasts over 30 minutes, then refer the casualty to a health centre for more specialised care
- Clean area with warm water once bleeding has stopped
- Advise casualty to rest for a few hours, avoid blowing the nose or picking any clots

6. Burns and Scalds:

Signs:

a) Superficial: - Redness
- Tenderness
- Swelling

b) Medium - Redness
- Tenderness
- Swelling
- Blistering

c) Deep - pale and waxy
- charred tissue

Aims: - Stop the burning
- relieve pain and swelling
- Minimize risk of infection

Actions: - DRABC
- Flood injured area with cold running water or any cold harmless fluid (do not over cool casualty)
- Gently remove any rings, watches that is around the affected area
- Lay casualty down and treat for shock
- Apply the burn site with antiseptic cream e.g. silver sulfadiazine and where appropriate cover area with a sterile dressing
- Refer to a health centre for further management for moderate and severe burns

7. Fractures

For fractures other than fore and hind limb fractures, please refer the casualty for specialised care immediately. Only offer advice to immobilize possible fracture site and give some pain killers.

Signs: - History of recent fall or blow
- Sound of snapping from injury site
- Difficulty moving the limb
- Severe pain and tenderness over the site of the injury
- Deformity or swelling or bruising
- Signs of shock if severe injury

Aims: - Prevent movement at the site of injury
- Arrange transfer to medical aid while keeping casualty comfortable

Actions: - Do initial assessment
- Advise casualty to keep still
- Treat any priorities from initial assessment
- If injury is in upper limb, probably casualty is supporting the injured limb in comfortable position
- If injury is in lower limb, apply support with your hands above and below the injury
- Refer immediately for further management

8. Poisoning:

Aims: - To maintain an open airway, breathing and circulation
- Maintain or make safe an environment for the casualty and yourself
- Obtain urgent medical aid
- Identify the poison if possible

a) Inhaled Poisons

Actions: - Remove casualty to open air or open windows
- If possible, cut off source of poison
- Make initial assessment
- If casualty is breathing but unconscious, place in recovery position and monitor RABC
- If casualty has stopped breathing, commence artificial ventilation and chest compressions if required
- Refer for further management in a health centre.

b) Swallowed poisons:

Actions: - Make initial assessment
- If casualty is unconscious, put in recovery position, monitor RABC and be prepared to resuscitate
- if casualty is conscious, place in recovery position and try to find out what has been taken

Do not induce vomiting

- If casualty has taken a corrosive poison, give frequent sips of

water or milk
- use barrier to protect yourself if resuscitation is required
- Refer to more specialised health centre for further management
- If casualty vomits, save sample for the medical team
- Identify containers that held poison if possible and give to medical team

c) Skin contact:

Actions: - Make initial assessment
- Do not touch affected area with bare hands
- Wash away the poison with large amounts of water, avoid splashing onto yourself or into casualty's eyes, mouth or nose
- If chemical is causing burns, keep splashing with water for at least 20 minutes
- Do not re-use same water
- Remove any clothing contaminated by the poison where possible and if it is safe
- Try to preserve casualty's privacy if possible
- If casualty is unconscious, place into recovery position and monitor RABC.
- Be prepared to resuscitate, use barrier if face is contaminated
- If no improvement, refer to more specialised health facility for further management

d) Injected poisons:

Actions: - Make initial assessment
- If casualty is unconscious, put in recovery position and monitor
- RABC and be prepared to resuscitate
- Place in recovery position even if casualty is conscious, keep him/her calm and quiet and monitor RABC
- If possible, identify injected syringes, needles, samples or the substance
- Refer to more specialised health facility for further management

9. Bites and Stings:

a) Animal bites:

Aims: - To control bleeding
- To minimize the risk of infection to yourself and casualty
- To obtain medical attention

Actions: - Make initial assessment
- Flush superficial wounds with running water for at least five minutes
- Wash the wound with soap and water
- When dry, cover with a sterile dressing
- Advise casualty to seek further medical attention and to check whether anti-tetanus and rabies injections are required
- For more serious wounds, control bleeding with direct pressure
- Cover with sterile dressing and refer for further medical attention

b) Insect Stings:

Aims: - To relieve pain

- To obtain medical aid if required

Actions: - make initial assessment
- carefully remove sting if visible – be careful not to squeeze any poison sac attached
- Apply cold compress to relieve pain and antihistamine creams to relive itching and swelling
- Advise casualty to seek further medical attention if the pain and swelling don't reduce in a day or so
- If sting occurs in the mouth, refer for further medical attention urgently, monitor RABC and reassure casualty while waiting
- If it is a swarm attack causing multiple stings, do not approach until it is Safe
- Place casualty in the most comfortable position
- Keep casualty quiet and reassure him/her
- Monitor RABC and be prepared to resuscitate
- Arrange urgent transfer to a specialized medical facility

10. Snake Bites:

Aims: - To reassure the casualty
- To prevent spread of the venom
- To get urgent medical aid

Actions:

a) Little or localized swelling:- wash the wound with soap and water if available
- Reassure casualty to reduce anxiety
- keep the casualty at rest, lying down with affected part level to his/her heart
- get further medical attention as soon as possible
- if limb, apply a pressure bandage to immobilize the area, apply a splint if necessary

b) Severe localized swelling:
Refer immediately further medical attention

Do not consider the following:
- cut the wound
- apply suction to the wound
- use a tourniquet or constricting bandage
- apply or inject chemicals or medicines into the wound
- use ice on the wound

c) Non-poisonous snake bites: treat the bite as any other wound, however, casualty should be seen by medical aid.

If the casualty presented has any of the following condition refer immediately for more specialized care; Heart Attacks and Angina, Non-breathing adult , The adult with no heartbeat that cardio-pulmonary resuscitation e.g. in heart attack

10: Course Name: Reference resources

1. What is a credible reference resource?

2. Why should we make reference to credible resources?

3. What are the possible reference resources available in our settings?

MODULE 4: CASE MANAGEMENT

11: Course Name: Introduction to Management of Fever, Pain and inflammation

What is fever?
Fever is a rise in our body's normal temperature. Our average normal body temperature is 37 degrees Celsius. Fever is part of our body's defense mechanism. When our bodies are fighting infections, our body temperature rises. Fever is our body's natural response to fighting germs

How to determine body temperature
Body temperature is usually measured in the mouth by a thermometer being held under the tongue for 5 to 8 minutes.

Causes of fever
Causes of fever include the following:

- Bacterial infections; tonsillitis, otitis media, bronchitis, pneumonia, tetani, UTI, wounds, gastro intestinal infections
- Viral infections; colds, flu, measles, mumps, chicken pox, AIDS
- Medications,
- Illicit drugs, and
- Heat illnesses.

Signs and Symptoms of fever
Signs and symptoms of fever may be obvious or subtle; the younger the child, the less obvious the symptoms.

Infants

- Irritable
- Hard to please
- Tired
- Quiet
- Feel warm or hot
- Not feed normally
- Cry
- Breathe rapidly
- Exhibit changes in sleeping or eating habits
- Elevated body temperature on the thermometer

Adults and older children may verbally complain of

- Feeling hotter or colder than others in the room who feel comfortable
- Body aches
- Headache
- Having difficulty sleeping or sleeping more
- Poor appetite

- The body basically shivers and has chills when the fever is rising, especially rapidly and sweats when the fever is dropping, or breaking.

When to refer for further Medical Care

You should refer if any of the following are present with fever.

- Child is younger than 6 months of age since birth (regardless of prematurity).
- You are unable to control the fever.
- You suspect child may become dehydrated from vomiting, diarrhoea or not drinking (sunken eyes, dry diapers, tented skin, unarousable, etc.).
- Child is getting worse or new symptoms have developed despite the treatment given.
- You suspect the child is dehydrated.
- If patient has convulsions.
- Your child has a purple or red rash.
- A change in consciousness occurs or patient is hallucinating.
- Your child's breathing is shallow, rapid, or difficult.
- Patient has complex medical problems or takes prescription medications on a chronic basis (medications ordered for more than two weeks' duration).

Management

The three goals of care for a patient with fever are

- to control the temperature,
- prevent dehydration, particularly if patient is a child and
- monitor for serious or life-threatening illness

The first goal is to control the temperature

Paracetamol Aspirin, diclofenac and ibuprofen are used to reduce temperature

- Follow the dosage and frequency instructions printed on the label or refer to some credible reference resources
- Remember to continue to give the medication over at least 24 hours or the fever will usually return. If fever persists, refer for further management
- Do not use aspirin to treat fever in children, especially for fever in chicken pox Aspirin has been linked to liver failure in some children. Ibuprofen use has also been questioned in patients with chickenpox. Use paracetamol in this case

Dosing regimen for commonly used medicines in management of fever

Aspirin

Presentation

- 300mg tablets

Indication

- Light to moderate pain
- Light to moderate fever
- Alternative to Paracetamol

Dosages (for children and adults

- 5 years not recommended
- 6 – 12 years 150 – 300mg every 6 hours
- Adult 300 – 1200 mg every 6hours max. 4g/24hours

Precautions

- Not to be given to:
  - Patients with epigastric pain
  - Peptic ulcer
  - Asthmatic
  - Children under 6 years

Side effects

- Stomach pain
- Occult blood loss
- Nausea
- Vomiting and allergic

Vital information to the patient

- Take the drug with food and water
- If it smells strongly like vinegar, do not take them
- Store in a dry place and away from reach of children

Paracetamol

Presentation:

- 500mg tablets
- 120mg/5mL syrup

Indication:

- Light to moderate pain
- Light to moderate fever
- Alternative to Aspirin

Dosages (for children and adults)

- Children 2.5 – 10 ml every 8 hours
- Adult 500mg – 1000mg every 6-8 hours max. 3g/24 hours

Precautions

- Avoid giving patients with liver-kidney diseases
- Avoid giving to alcohol addicts

Side effects

- Rare

Vital information to the patient

- Store the drug away from reach of children
- If pain persists go for medical advice

Ibuprofen

Presentation:
Tablets 200mg and syrup 100mg/5mL

Indication:
Pain and inflammation in rheumatic disease, dysmenorrhoea, fever and pain in children

Dosage (for adult and children)

Adult: 200 to 400mg every 6 to 8 hours per day.

Children: 1-2 years 2.5 mL every 6 to 8 hours per day
3-7 years 5mL every 6 to 8 hours per day
8-12 years 10mL every 6 to 8 hours per day

Precautions/ contraindications
History of gastro-intestinal diseases, hepatic and renal impairment, gastro-intastinal ulceration or bleeding, history of hypersensitivity to aspirin

Side effects:
Gastro-intestinal discomfort, nausea, diarrhoea occasionally bleeding and ulceration

Vital information to the patient:
Do not use any other NSAID while taking this drug; keep away from children

Diclofenac

Presentation:
Tablets 25 mg; 50mg; 100mg

Indication:
Severe pain and inflammation in rheumatic disease, other musculoskeletal disorders, acute gout and postoperative pain.

Dosage (for adult and children)

Adult:
50 to 150 in 2-3 divided doses per day. Total daily dose by any route should not exceed 150mg

Precautions
See under previous NSAIDs above.

Side effects
As for other NSAIDs

Vital information to the patient:
As for Ibuprofen, take with food or after meal with plenty of water

People older than 75 years are at more risk of significant stomach problems, such as ulcers, from NSAIDs, especially if they have had previous ulcers. Elderly individuals also typically have higher risk factors for heart attack and stroke.

Supportive Management

Advise parent or guardian not to overdress children indoors, .

- Overdressing prevents the body from cooling
- The most practical solution is to dress the child in a single layer of clothing, then cover the child with a sheet or light blanket.

Advise the parent to sponge bath the child in warm water as this helps reduce the fever.

- Such a bath is usually not needed but may more quickly reduce the fever.
- Put the child in a few inches of warm water, and use a sponge or washcloth to wet the skin of the body and arms and legs.
- The water itself does not cool the child. The evaporation of the water off the skin does, so do not cover the child with wet towels (which would prevent evaporation).

The second goal is to keep the child from becoming dehydrated. Humans lose extra water from the skin and lungs during a fever.

- Encourage the child to drink clear fluids such as non-carbonated drinks without caffeine or juice (not water). Water does not contain the necessary electrolytes and glucose. Other clear fluids such as ORS are available in medicine outlets
- Tea should not be given because it, like any caffeine-containing product, causes you to lose water through urination and may contribute to dehydration.
- The child should urinate light-coloured urine at least every four hours if well hydrated.

The third goal is to monitor the child for signs of serious or life-threatening illness.

- If both these conditions are met and the patient is still ill-appearing, a more serious problem may exist, please refer for more specialized care

VERY IMPORTANT

Fever may occur due to several causes highlighted above. If cause of fever is established, the patient should be appropriately managed to eradicate the cause. Sometimes the cause of fever may not clearly manifest making difficult in the medicine outlet to establish the cause, in such a case the patient must be referred for further management.

Prevention

Prevention of illnesses that cause fever revolves around personal and household hygiene. Advise Patients and their care takers to use these strategies to prevent the spread of viruses and bacteria:

- Wash your hands with soap and water.
- Cover your mouth and nose when sneezing and coughing.
- Handle food with clean hands.
- Properly immunize your child.
- Eat a healthy diet including fruits and vegetables.
- Get enough sleep

What is inflammation?
Inflammation is a basic way in which the body reacts to infection, irritation or other injury. The key features of inflammation are redness, warmth, swelling and pain.

What Is Pain?
Pain is an unpleasant sensation. Pain can be sharp or dull, burning or numbing, minor or major, acute or chronic. It can be a minor inconvenience or completely disabling.

How is Pain Diagnosed?

There is no way to tell how much pain a person has. No test, devise or instrument can measure the intensity of pain. In most cases, care providers find that the best aid to diagnose pain is the patient's own description of the type, duration, and location of pain e.g. headache, backache etc. Defining pain as sharp or dull, constant or intermittent, burning or aching may give the best clues to the cause of pain. These descriptions are part of what is called the pain history, taken by the health worker during the assessment of a patient with pain.

Causes of pain

- Arthritic conditions characterized by joint pain in the legs and arms
- Back pain caused by nerve damage, degeneration and rupture of discs of the backbone
- Sports injuries and other trauma such as sprains, strains, bruises, dislocation and fractures are always accompanied by pain.
- Burn pain is usually agonizing. Sometimes healed patients have chronic pain at the burn site
- Headaches that may be acute or chronic. Chronic headaches include migraines, cluster and tension headaches arising from stress or an underlying disease
- Muscle pain can range from an aching muscle, spasm, or strain to severe spasticity that accompanies paralysis
- Neuropathic pain results from injury to nerves in any part of the body. It is normaly described as a hot, burning sensation.

How is Pain and Inflammation Treated?
The goal of pain and inflammation management is to improve function, enabling individuals to work, attend school, or participate in other day-to-day activities. And because in most cases the major concern of patients with pain and inflammation is the pain associated with the inflammation, management focuses more on the pain.

Patients and their care providers have a number of options for the treatment of pain and inflammation; some are more effective than others. Sometimes, relaxation and not thinking about the pain or inflammation may provide relief.

All pain medications relieve inflammation. The effects of pain medication are different for different people. Also, the tolerance of pain varies greatly from one person to another. For this reason, one medication will not be right for everyone with the same injury. The right pain medication depends on the person experiencing the pain, not on the condition that is causing the pain. The following medicines can be used in the management of pain:

- Paracetamol
- Aspirin
- Ibuprofen
- Diclofenac

Dosing regimens for commonly used pain relieving medicines
Medicines used in relieving pain are similar to those used in management of fever. Refer section on "**Dosing regimen for commonly used medicines in management of fever**" above.

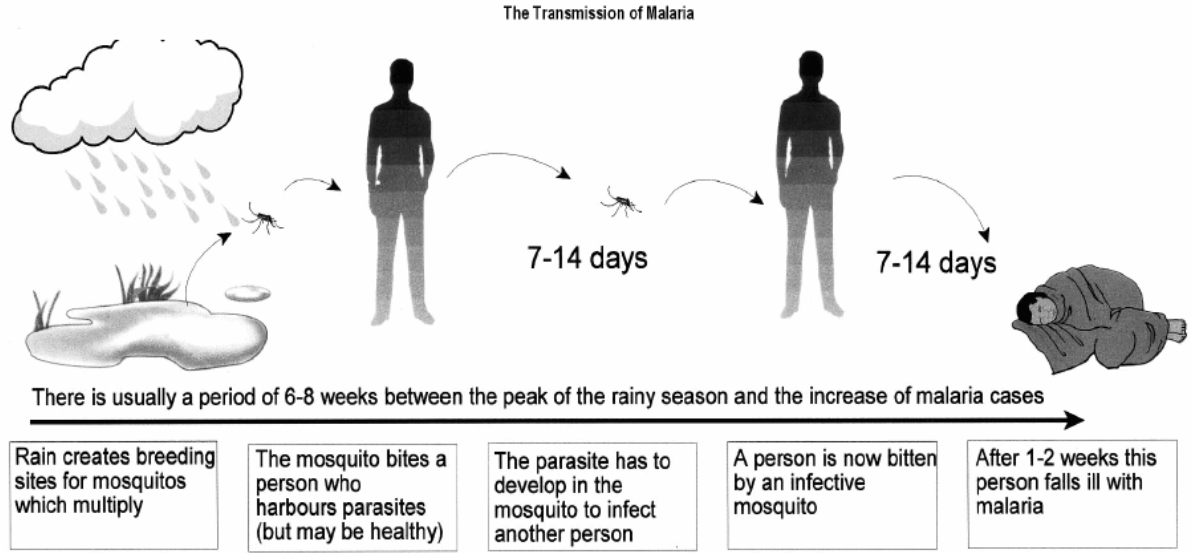
Supportive Management

- Resting /sleeping is an adjunct to pain medication
- Exercise reduces stress which usually contributes to pain.
- Counselling

12: Course Name: Malaria Management

Life cycle of Malaria
Malaria is an acute febrile illness caused by infection with malaria parasites of the genus P*lasmodium,* the species being: *P.falciparum, P.vivax, P.ovale* and *P.malariae.* Of these *P.falciparum* is responsible for over 95% of malaria episodes in Uganda and is the sole cause of severe malaria.

Transmission:



How is malaria diagnosed?

Malaria presents with fever which is intermittent- it comes and goes many times. The body temperature may be normal during a clinical visit. A typical malaria attack has three phases:

- The cold stage is when the patient feels cold and shivers.
- The hot stage is when the patient feels hot.
- The sweating stage is associated with profuse sweating and relief of symptoms.

For proper treatment of malaria, it is important to take a good history. Only then will you be able to manage your patient adequately. Also check for danger signs which require immediate action. Checking for danger signs is particularly important in those most at risk of severe malaria: that is children aged less than 5 years, non-immune adults and pregnant women.

Ask the patient or caretaker and observe for the signs and symptoms of malaria:

- What is the presenting complaint?
- Have there been or are there any danger signs now?
- Look for signs and symptoms of other diseases
- Also establish when the illness began, how it began and inquire if medicines have been taken, especially anti malaria medicines. If medicines have been taken establish type, dose, and duration of treatment. Establish whether the medicines were not vomited.

Symptoms of uncomplicated malaria

Children under 5 years

- Fever (raised temperature detected by thermometer or touch) or a history of fever
- Loss of appetite
- Weakness
- Lethargy
- Vomiting

Older children and adults

- Fever (raised temperature detected by thermometer or touch) or a history of fever
- Loss of appetite
- Nausea
- Vomiting
- Headache
- Joint pains
- Muscle aches
- Weakness
- Lethargy

Signs of uncomplicated malaria

Physical examination of patient should include taking the temperature and weighing the patient.

Look out for any of the following signs

- Raised Temperature (above 37.5^{o}C par axilla)
- Mild anaemia (mild pallor of palms and mucous membranes); occurs commonly in children
- Dehydration (dry mouth, coated tongue and sunken eyes). In adults, sunken eyes are usually a sign of severe dehydration.
- Enlarged spleen (in acute malaria it may be minimally enlarged, soft and mildly tender). An enlarged spleen due to malaria calls for no additional treatment.

When is it necessary to refer patient for further care?

The following are recognised as danger signs of severe illness and patient should be referred immediately for further care if identified:

- Convulsions or fits within the last two days or at present
- Not able to drink or breast-feed
- Vomiting everything
- Altered mental state (lethargy, drowsiness, unconsciousness or confusion)
- Prostration or extreme weakness (unable to stand or sit without support)
- Severe respiratory distress or difficult breathing
- Severe anaemia (severe pallor of palms and mucous membranes)
- Severe dehydration (sunken eyes, coated tongue, lethargy, inability to drink)

Look carefully at the patient and answer the following questions:

a) Level of consciousness:

- Is the patient awake and attentive?
- Is the patient oriented and interested in, or aware of the surroundings?

In young children:

- Does the child look at the mother or caretaker?
- Does the child follow an object moved in front of his/her eyes?
- Does the child react to loud noises?

One or more negative answers indicate reduced consciousness!

b) Respiration:

- Is the patient breathing faster than normal for his age?

If the child is	The child has fast breathing if you count
2 months up to 12 months	50 breaths per minute or more
12 months up to 5 years	40 breaths per minute or more

In young children:

- Is there chest in-drawing?
- Is there nose flaring?
- Is the child grunting?

If one or more of the above is present, there is respiratory distress!

c) Severe anaemia:

- Look at the tongue, the conjunctivae and the palms.
- Are these parts very pale?

If so, there is severe anaemia!

d) Dehydration:

- Is the mouth dry?
- Are the eyes sunken?
- Pinch the skin (of the abdomen in children or forehead in adults) between your thumb and index finger and then suddenly let go. Does the skin go back very slowly?

If the answer to one or more of the above questions is yes, then there is dehydration!

Remember to use the weight and/or age to determine the right dose of antimalarial treatment especially in young children!

Management of uncomplicated malaria

General principles of treatment

- Any patient with fever or a history of fever within the last 24 hours without evidence of other diseases should be treated for malaria even with a negative blood smear for malaria parasites.
- Always give a full course of treatment: the right number of tablets over the right number of days.
- Give the medicine orally unless the patient vomits repeatedly.
- If symptoms persist but there are no danger signs, wait at least 48 hours before you change the treatment.

- Malaria parasites may develop resistance against anti malarial medicines. This means that the medicine is not able to cure the patient or, after initial improvement the symptoms come back within 14 days.

Note: If a patient does not respond to the first line medicine after 2 days and no laboratory facility is available, give the second line medicine if there is no evidence of any other cause of the fever.

Table showing dosing regimen for Artemether 20mg /Lumefantrine 120mg

Weight (Kg)	Age	Day 1	Day 2	Day 3
5-14	From 4 months up to 3 years	1 tablet twice a day/ 12 hourly	1 tablet twice a day/ 12 hourly	1 tablet twice a day/ 12 hourly
15-24	From 3 years up to 7 years	2 tables twice a day/ 12 hourly	2 tables twice a day/ 12 hourly	2 tables twice a day/ 12 hourly
25-34	From 7 years up to 12 years	3 tablets twice a day/ 12 hourly	3 tablets twice a day/ 12 hourly	3 tablets twice a day/ 12 hourly
> 35	From 12 and above	4 tablets twice a day/ 12 hourly	4 tablets twice a day/ 12 hourly	4 tablets twice a day/ 12 hourly

Vital patient Information

Patients with malaria frequently lose appetite to food. Patients should be encouraged to drink preferably milk and advised to start feeding preferably fatty food as soon as possible. This improves absorption of artemether and lumefatrine

Side effects

Sometimes it is hard to tell the side effects of antimalaria medicines as they tend to be similar the symptoms of malaria. The most common side effects include sleeping disorders, headache, dizziness, abdominal pain, anorexia, diarrhoea, vomiting nausea and skin rash.

Alternative first line treatment with Artesunate 50mg + Amodiaquine 153mg
Artesunate 50mg + Amodiaquine 153mg combination treatment can be used as first line treatment for uncomplicated malaria in situations when Artemether/ Lumefantrine is not available.
Separate scored tablets contain 50mg of Artesunate and 153mg base of Amodiaquine, respectively. Co-formulated tablets are not available at present.

Tablets may need to be divided for children below 1 year of age.

Table showing the WHO recommended dosage for Artesunate 50mg and Amodiaquine 153mg

	Artesunate			Amodiaquine		
	Day 1	Day 2	Day 3	Day 1	Day 2	Day 3
5 -11 months	25 mg (=1/2 tab)	25 mg (=1/2 tab)	25 mg (=1/2 tab)	76 mg (=1/2 tab)	76 mg (=1/2 tab)	76 mg (=1/2 tab)
1-6 years	50 mg (=1 tab)	50 mg (=1 tab)	50 mg (=1 tab)	153 mg (=1 tab)	153 mg (=1 tab)	153 mg (=1 tab)
7-13 years	100 mg (=2tabs)	100 mg (=2tabs)	100 mg (=2tabs)	306 mg (=2tabs)	306 mg (=2tabs)	306 mg (=2tabs)
>13 yrs	200 mg (=4tabs)	200 mg (=4tabs)	200 mg (=4tabs)	612 mg (=4tabs)	612 mg (=4tabs)	612 mg (=4tabs)

Vital patient Information
This medicine should not be used in patient with history of reactions due to amodiaquine (commonly known as camoquine). Just like with all antimalaria medicines, patients should be advices to always complete the dose even when they feel better.

Side effects
Most of the side effects of this medicine are due to the amodiaquine component. The most common being visual disturbance, pigmentation of the finger nails and skin, nausea, vomiting abdominal discomfort and general body weakness.

Duo-Cotecxin (Dihydroartemisinin 40mg and piperaquine 320mg)

Available in packs of 8 tablets

Recommended dosage is shown in the table below

	Above 16 years	**11years -16 years**	**11 years -6 years**
Day 1	3 tabs	2tabs	1 1/2 tab
Day 2	3 tabs	2 tabs	1 1/2 tab
Day 3	2 tabs	2 tabs	1
Total	8 tabs	6 tabs	4 tabs

Vital patient information
Duo-cotecxin is not recommended during the first trimester of pregnancy unless recommended by a doctor. And a new course of duocotecxin treatment should not be taken with four weeks after the first one.

Side effects
Few cases of side effects have been reported and most of them were related abdominal disorders such as nausea, diarrhoea, loss of appetite and skin reactions such as rash and itching

Other available combination treatments for uncomplicated malaria are: Artesunate + Sulfadoxine/Pyrimethamine, Artesunate + Mefloquine

NOTE: ***It is important for medicine sellers to always read medicine insert and label get more detailed regarding the medicine***.

Treatment of uncomplicated malaria with quinine tablets (second-line medicine)
Quinine tablets are the second line medicine for the treatment of uncomplicated malaria. This means it should only be given when the first line medicine (Artemether/Lumefantrine) has failed or when it is contra-indicated.
Quinine tablets (300 mg salt) are given as a dose of 10 mg/kg (up to a maximum of 600mg) every 8 hours for 7 days.

Table showing Dosage for Quinine 300mg tablets or quinine syrup 100mg/5ml

Age group	**Weight**	**Dose (to be given every 8 hours for 7 days)**
From 3months up to 1 yrs	5 kg up to 10 kg	75 mg ($^1/_4$ tab) or 5 ml syrup
From 1 yrs up to 5 yrs	10 kg up to 18 kg	150mg ($^1/_2$ tab) or 7.5ml syrup
From 5 yrs up to 7 yrs	18 kg up to 24 kg	225 mg ($^3/_4$ tab) or 10 ml syrup
From 7 yrs up to 10 yrs	24 kg up to 30 kg	300mg (1 tab)
From 10 yrs up to 13 yrs	30 kg up to 40 kg	3750mg ($1^1/_4$ tab)
From 13 yrs up to 15 yrs	40 kg up to 50 kg	450mg ($1^1/_2$ tab)
15 yrs and above	Over 50 kg	600mg (2 tabs)

Supportive treatment and counselling for uncomplicated malaria

Good management of uncomplicated malaria does not consist of antimalarial treatment alone. It also should include the following supportive treatment:

- antipyretic treatment
- fluids and food
- counseling

Antipyretic treatment
If the fever is high (axillary temperature 38.5 C and above) an antipyretic should be given. Children below 8 years of age should only receive Paracetamol while older children and adults can be given either Paracetamol or Aspirin. The dosage of Paracetamol is 10mg per Kg body weight up to maximum of 1000mg eight hourly.

Table showing dosage of paracetamol 500mg tablet or paracetamol syrup 120mg/5ml

Age group	**Dose (to be given every 8 hours)**
From 2months up to 3 yrs	125mg($^1/_4$ tab) or 5ml syrup
From 3 yrs up to 7 yrs	250mg ($^1/_2$ tab) 0r 10ml syrup
From 7 yrs up to 10 yrs	500mg (1 tab)
From 10 yrs up to 15 yrs	750mg ($1^1/_2$ tab)
15 yrs and above	1000mg (2 tabs)

In addition to the anti-pyretic, undressing and tepid sponging with luke-warm (tepid) water can be used to lower the temperature.

Fluid and food
Patients with fever lose a lot of fluid through sweating and respiration. They should be encouraged to drink plenty of fluids to avoid dehydration! Although a sick person should not be forced to eat, care must be taken that the energy supply is sufficient. Light foods or fruit juices should be offered frequently. Babies should continue to be breast-fed.

Counselling
A patient can comply with the treatment a lot better if he/she fully understands why and how to take the treatment and what to expect during its course. Therefore, you should explain to the patient or the caretaker the following:

- That the cause of the illness is malaria. The disease is characterized by fever and is transmitted by mosquitoes.
- The correct way to take the medicines. In order to be totally cured, the patient must take the full course of treatment.
- Symptoms may not disappear immediately after taking the first dose. Improvement may take up to two days.
- The patient should consult a health worker immediately if symptoms worsen or if they persist beyond two days.
- The patient should take another dose if he/she vomits the medicine within 30 minutes.
- The patient should not change treatment by himself/herself.
- Before you give any medication, always ask about a history of reactions and avoid medicines which caused serious reactions in the same patient

Make sure that the patient understands the illness and its treatment while at home. Talk to the patient about the prevention and control of malaria, emphasizing the importance of sleeping under insecticide treated nets.

Prevention and Control

Malaria can be controlled by preventing mosquitoes from reaching and biting humans, reducing the population of mosquitoes and reducing the malaria parasite load in the human population.

a. Prevention of contact between mosquitoes and humans

I. Use of insecticide treated mosquito nets. The best way to prevent bites is to sleep under insecticide treated mosquito nets. Such nets create a physical barrier which prevents man-mosquito contact. They also repel and kill mosquitoes.

II. Screening of houses of houses by putting mesh in windows, doors, and ventilators reduces the entry of mosquitoes into the houses. Doors and windows should also be closed early in the evening.

III. Site selection Residential houses should be built far away from marshes and other collections of stagnant water where mosquitoes breed.

b. Reduction of the mosquito population

I. Destruction of adult mosquitoes
- Spraying of the internal walls of human dwellings with residual insecticides
- Use of insecticide treated mosquito nets (ITN)

II. Destruction of mosquito larvae
- Intermittent cleaning and drying of water containers and intermittent crop irrigation at least once every 7 days ensures that mosquitoes do not have sufficient time to complete their breeding cycle.
- Putting chemicals, fish or bacteria that kill larvae into stagnant water bodies (larviciding) interrupts the mosquito breeding cycle.

III. Reduction of mosquito breeding sites
- Peri-domestic sanitation e. g. reducing breeding places around the home by proper disposal of broken utensils and plastic bags, old tyres and filling in holes in the ground.
- Environmental management e. g. constructing drainage channels for storm water and rivers and drainage of stagnant water bodies.
- Water management e. g. protection of sources of water for domestic, agricultural or industrial use

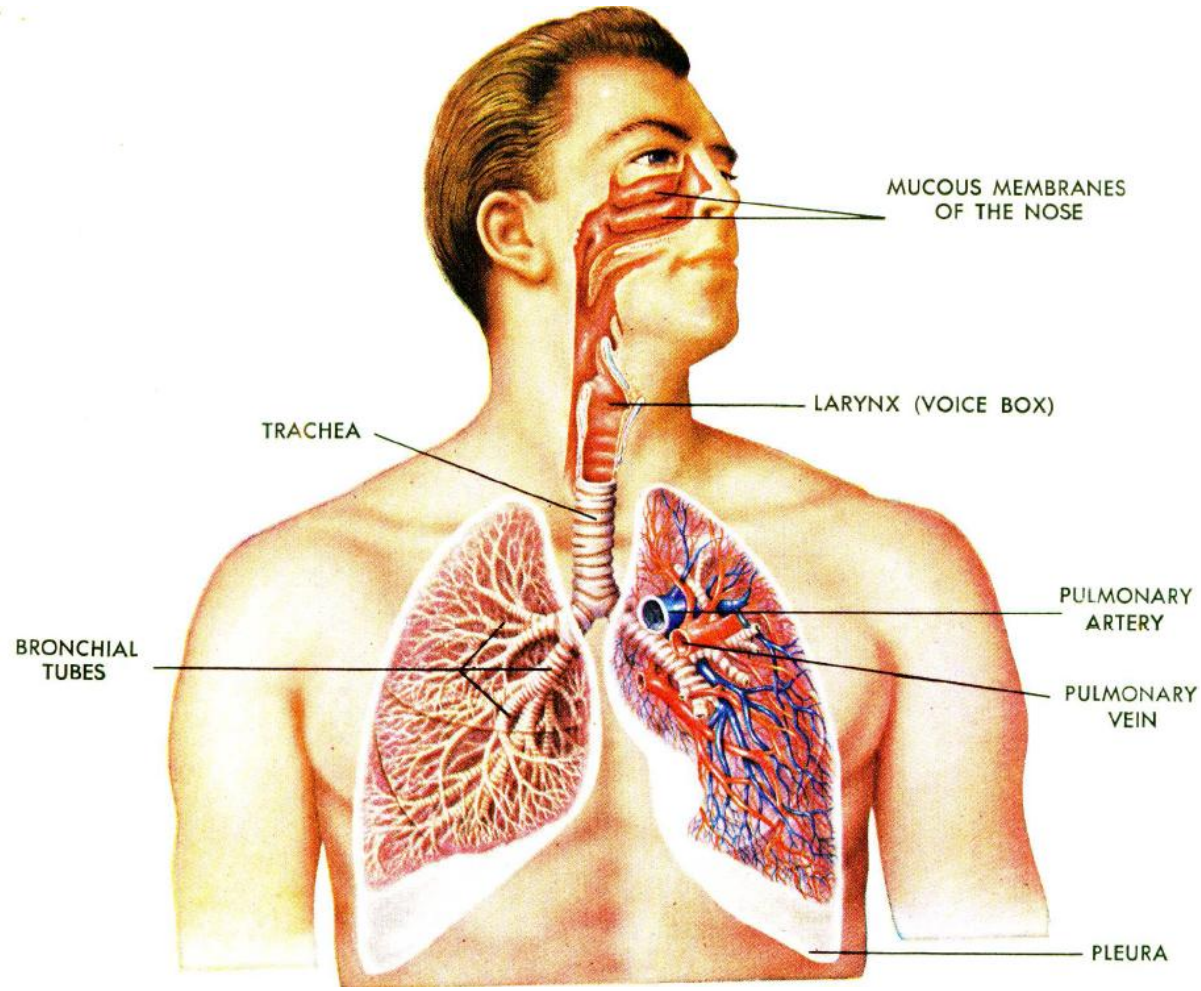
c. Destruction of malaria parasites

I. Early diagnosis and prompt treatment of malaria cases (Case management)
- Effective treatment reduces the length of morbidity and the risk of mortality. Those who are successfully treated also cease to serve as sources of malaria parasites.

II. Preventive treatment.
- Intermittent preventive treatment of pregnant women reduces the risk of poor pregnancy outcomes e. g. maternal anaemia, maternal death, abortion and low birth weight babies
- Chemoprophylaxis for special risk groups (e.g. sicklers, non-immune visitors, children prone to very frequent febrile convulsions) reduces the risk of morbidity and mortality.

13: Course Name: Upper Respiratory Tract Infections

Human respiratory tract



Definition of Upper Respiratory Infection

It is an infection by bacteria or viruses of the upper part of the respiratory system which is above the lungs. These infections may affect the throat (pharyngitis), nasopharynx (nasopharyngitis), sinuses (sinusitis), larynx (laryngitis), trachea (tracheitis) or bronchi (bronchitis). These infections usually present as cold, sore throat, flu and coughs.

Common Cold

A common cold is an illness that may cure without any specific treatment except supportive management (symptomatic management). Common cold is caused by any 1 of more than 200 viruses. It produces mild symptoms lasting only 5 – 10 days. It is different from 'flu' influenza which can have severe symptoms.

Mode of transmission of common cold

The primary means of spreading a cold is hand to hand contact or from contaminated objects such as hand knobs, telephones touched by an infected person. The typical transmission occurs when a cold sufferer rubs his or her nose and then, shortly thereafter, shakes hands with someone who, in turn, touches his or her own nose or eyes.

Symptoms of common cold
The most common complaints associated with the cold, usually are mild.

- Runny nose
- Sneezing
- Nasal and sinus blockage
- Headache
- Sore throat
- Cough

When to refer for Medical Care
If symptoms become severe or the patient develops the following symptoms, it may "the flu" virus, bacterial pneumonia, or another illness that needs to be managed at a more specialized health facility.

- Shaking chills
- Profuse sweating
- Muscle aches
- Nausea
- Vomiting
- High fever (greater than 39°C)

Management of common cold
Since common cold is viral, **ANTIBIOTICS SHOULD NOT BE USED**; antibiotics kill bacteria, not viruses. There is no cure (antiviral medication) that targets the 200 different causative viruses of common cold.
Therefore, management of common cold involves several steps that alleviate the cold symptoms;

Pharmacological management

- **Pain and fever** are treated as outlined in section of management of pain, fever and inflammation.
- **Nasal congestion and cough** are managed by antihistamines and cough preparations. Preparations containing pseudoephedrine can be used to alleviate nasal congestion.

    - Cough Suppressants: These act by blocking your cough reflex. As a general rule, use a suppressant (contains dextromethorphan) for a dry, hacking cough.
    - Expectorants: A cough associated with excessive mucus production, or phlegm, warrants use of an expectorant (contains guaifenesin).

- **Sore throat** - Lozenges and topical sprays can provide relief from sore throat pain. A warm saltwater gargle can relieve a scratchy throat.

There are many mixtures, syrups, tablets and capsules that combine pain killers, antihistamines and cough medicines available over the counter. Medicine outlet sellers are encouraged to familiarize themselves with products available on the market by reading medicine packages and inserts.

Avoid giving so many medicines where one formulation would suffice.

Supportive management

- Drink plenty of fluids to help break up your congestion. Drinking water or juice will prevent dehydration and keep your throat moist. You should drink at least 8-10 glasses of fluids daily. Cola, tea and coffee are not recommended because they increase urine output and hence decrease fluids in body system.

- Inhaled steam may ease your congestion and drippy nose. Hold your head over a pot of boiling water and breathe through your nose. Be careful. If the steam burns your nose, breathe in more slowly.

Prevention

- Wash your hands frequently.
- Avoid touching your nose and eyes.
- Do not share utensils or towels at home.

Sore throat

Sore throats are usually defined by the anatomical site affected.

- Pharyngitis: pain and inflammation of the pharynx. The pharynx the area of the throat directly behind the mouth and soft palate.
- Tonsillitis: involves inflammation of the tonsils (tonsils are located on either side of the base of the tongue).
- Laryngitis: The larynx, the top portion of your windpipe (trachea). Laryngitis is pain and inflammation of the larynx (often associated with a hoarse voice). Croup is a form of laryngitis in children (it tends to be associated with a seal bark cough and difficulty inhaling air).

Causes of Sore throat

- Infection by viruses (often the same viruses that cause colds other upper respiratory illnesses) or bacteria
- Chemicals (cigarette smoke), injury (swallowing a fish bone), allergy or postnasal drip, or, rarely, cancer (early cancer often presents with painless symptoms).

Signs and symptoms of sore throat

- Symptoms of sore throat throughout the body include fever, headache, nausea and malaise. These may be present with either a viral or bacterial infection.
- Symptoms specific to the throat include pain with swallowing for pharyngitis and a hoarse voice when laryngitis is present. Cold viruses tend to cause more coughing and runny nose than bacteria.
- Other signs and symptoms include;
  - Pus on the surface of the tonsils (can happen with bacteria or viruses)
  - Redness of the oropharynx (the pharynx viewed though the mouth)
  - Tender neck glands (inflamed lymph nodes)
  - Drooling or spitting (swallowing becomes too painful)
- Difficulty breathing (inhaling can be especially difficult when the passage through the pharynx or larynx becomes too narrow for a normal stream of air)

Diagnosis
History and physical examination based on above signs and symptoms is usually adequate.

When to refer patient for further care
When the patient has the following symptoms that point to the possibility of a bacterial infection, seek more advanced medical care.

- Severe sore throat without much of a cough, swallowing hurts enough that salivating occurs
- Persistent fever over 38°C
- Associated headache, abdominal pain, or vomiting
- Difficulty in breathing may be a symptom of more serious illness
- If patient is dehydrated (dry mouth, sunken eyes, severe weakness, or decreased urine output). Symptoms of dehydration in adults may be different from symptoms of dehydration in children.

Pharmacological management of sore throat

- Throat lozenges often prove inadequate for all but the most minor cases.
- Gargling with salt water is sometimes helpful. (You may try mixing table salt with warm water and gargling.)
- Although they may be rough on the stomach, NSAIDs (non steroidal anti-inflammatory drugs, such as aspirin, ibuprofen) are often more effective pain relievers than paracetamol.

Supportive management
Drinking enough fluids is very important.

- A fever can increase fluid requirements, and painful swallowing can decrease fluid intake.
- When it is hard for you to drink, it is important to decrease your body's requirements for fluid through rest and lowering any fever.
- Pain treatment can help increase fluid intake.

Antibiotics

- Antibiotics are **not** helpful when a virus causes a sore throat.
- Sometimes it is difficult to determine whether the cause is viral or bacterial, so antibiotics may be given as a precaution.
- Antibiotics are helpful in preventing rheumatic fever (an uncommon but severe complication of a streptococcal infection)

Prevention

- Avoiding close contact with ill people.
- Children should stay home from school and day care during infectious periods.

Cough

A cough is an action your body takes to get rid of substances that are irritating to your air passages, which carry the air you breathe in from the nose and mouth to the lungs. A cough occurs when special cells along the air passages get irritated and trigger a chain of events. One can choose to cough (a voluntary process), or one’s body may cough on its own (an involuntary process).

Causes of coughs
Cough may be classified as acute or chronic.
Acute cough may be caused by infectious and non infectious agents

- Infectious causes of acute cough include viral upper respiratory infections (the common cold), sinus infections, pneumonia, and whooping cough.
- Non infectious causes of cough include flares-up of the following chronic conditions: chronic bronchitis, emphysema, asthma, and environmental allergies.

Chronic cough may be caused by the following;

- Environmental substances e.g. cigarette smoke, dusts, pollen, particulate matter, industrial chemicals, pollution, and low environmental humidity.
- Common causes include asthma, emphysema, and chronic bronchitis.
- An often-overlooked cause of the chronic cough is gastroesophageal reflux disease (GERD). GERD commonly manifests as heartburn. occurs when acid from the stomach travels up the esophagus. This abnormal condition can cause irritation of the esophagus and larynx resulting in the reflex production of a cough.

Signs and symptoms of Cough

Although the signs of a cough are self-explanatory, what differentiates the cause of a cough are the associated signs and symptoms and whether it is acute or chronic.

- Acute coughs have been divided into infectious and non infectious causes.
    - If the cough is due to an infection, patient will have fever, chills, body aches, sore throat, nausea, vomiting, headache, sinus pressure, runny nose, night sweats, and postnasal drip. Sputum, or phlegm, sometimes indicates an infection is present, but it is also seen in non infectious causes.
    - If the cough is of a non infectious cause, signs and symptoms include coughs that occur when you are exposed to certain chemicals or irritants in the environment, coughs with wheezing, coughs that routinely worsen when you go to certain locations or do certain activities, or coughs that improve with inhalers or allergy medications.

Conditions that necessitate referral

- Cough fails to get better after other symptoms go away or lessen
- Cough that changes in character
- Trial therapy shows no signs of reducing the cough
- Coughing up blood
- Cough interferes with the activities of daily living or sleep cycles
- Shortness of breath or difficulty breathing could imply more serious medical problems.
- Cough that is caused by a chronic condition, discuss what signs and symptoms warrant seeking specialized care.
- Elderly people or people with weakened immune systems who develop a cough and high fever.

Management of cough

The treatment of a cough will depend largely on its severity and underlying cause. It is directed at treating its underlying cause.

- The treatment of an acute cough is directed primarily at decreasing the cough and related symptoms in addition to treating the underlying cause.

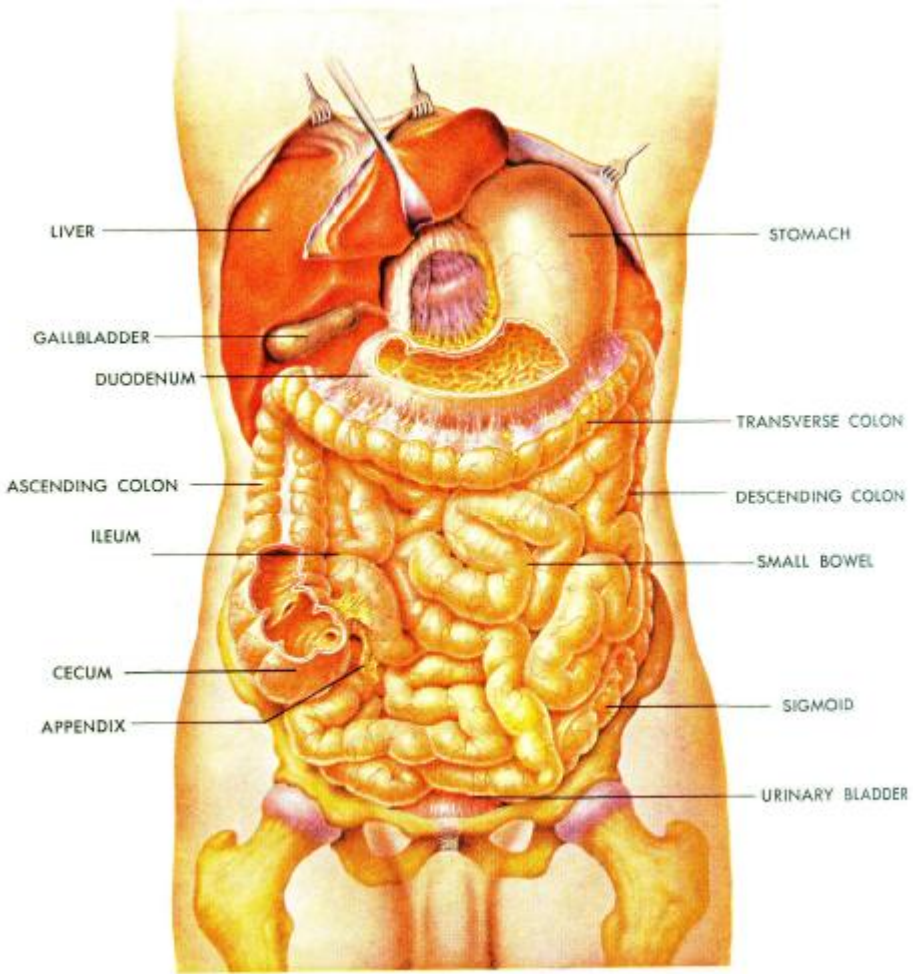
    - Symptomatic relief of cough can be provided by over-the-counter or prescription cough remedies cough mixtures and syrups.
    - Antibiotics are often given if you suspect a bacterial cause for the cough. It is important that antibiotics are given in appropriate doses for age, enough quantity for appropriate duration of treatment.

Prevention

- Measures used in preventing cough are similar to those used in preventing common cold
- Patient must be encouraged to complete the medicines given particularly if antibiotics are given. The medicine outlet seller should always give a full dose of antibiotics..

14: Course Name: Gastrointestinal Conditions

Diagram showing the Gastro intestinal tract



Diarrhoea

Diarrhoea is the frequent passage (4 or more times in 24 hours) of loose, watery, soft stools plus bloating, pressure, and cramps commonly referred to as gas. The most significant cause of severe illness is loss of water from the diarrhoea, which is often accompanied by vomiting. Fluids pass through the body before they can be absorbed in the intestine, which leads to dehydration. Most deaths from diarrhoea occur in the very young and the elderly, whose health may be put at risk from a moderate amount of dehydration.

More specific forms of diarrhoeal diseases include;

- Chronic diarrhoea is seen in people who have had loose or liquid stool for over 2 weeks.
- Acute enteritis means inflammation the intestine.
- Gastroenteritis is diarrhoea associated with nausea and vomiting.
- Dysentery is diarrhoea that contains blood, pus, or mucus.

Causes of diarrhoea

- **Viral infections**, cause most cases of diarrhoea, usually mild-to-moderate symptoms with frequent, watery bowel movements, abdominal cramps, and low-grade fevers. Diarrhoea generally lasts from 3-7 days. Viral infections are the common cause of epidemics of diarrhoea among adults and school age children

- **Bacterial infections** cause the more serious cases of diarrhoea. Most common cause of food poisoning. Bacterial infections cause severe symptoms with vomiting, fever, and severe abdominal cramps or abdominal pain. In more serious cases, the stool may contain mucus, pus, or bright red blood.
- Protozoa infections e.g. Amoebiasis, giadiasis
- Malnutrition e.g. kwashiorkor

Symptoms of diarrhoea
- Watery, liquid stool: The stool may be any colour. The passage of red stool suggests intestinal bleeding and could mean a more severe infection. The passage of thick, tarry black stool suggests significant bleeding in the stomach or upper portions of the intestine and is not usually caused by acute infections.
- Abdominal cramps: Occasionally you may have mild-to-moderate abdominal pain. Severe abdominal pain is not usually common but if present, it is suggests more severe disease.
- Fever: A high fever is usually not common but if present, it is suggestive of a more severe disease.
- Dehydration: diarrhoea if not well managed may leads to dehydration. Dehydration is a sign of potentially serious disease.
    - Dehydrated adults may be very thirsty or appear to have dry mouths.
    - The skin of older people may appear to be loose. Elderly may also become very sleepy or have behaviour changes and confusion when dehydrated.
    - Dehydrated infants and children may have sunken eyes and dry mouths. They may appear very sleepy or may refuse to eat or drink from a bottle.

Investigation
Investigation is mostly clinical examination however, specific diagnosis is based on stool examination.

When to refer patient
- Unable to tolerate any food or drink
- Signs of dehydration; in cases of dehydration IV fluids may be required but these can only be administered at a health centre
- High fever, significant abdominal pain, very frequent loose bowel movements,
- If patient is elderly or have serious underlying medical problems, particularly diabetes, heart, kidney, or liver disease, or HIV/AIDS
- If patient is newborns and infants
- If symptoms do not improve in 2-3 days or appear to become worse
- If the diarrhoea appears to contain blood (may be bright red or may look like black, thick tar)
- If patient appears very sleepy or is acting unusual

Supportive Management of diarrhoea
In most cases support treatment is sufficient in diarrhoeal management since in most cases diarrhoea is always self limiting. However, depending on the cause, specifically if the cause is bacteria or protozoa infection antibiotic can be used.

Adults:
- Make sure patient does not become dehydrated. Advice patient to drink plenty of fluids. Avoid milk because it will make the diarrhoea worse.

- Greasy and fatty foods should be avoided. Infants and children should be encouraged to eat bananas, rice. After the diarrhoea stops, alcoholic beverages and spicy foods should be avoided for at least 2 days.
- Advice patient to continue his or her usual activities if mildly ill with diarrhoea but to avoid strenuous exercise until they feel better because strenuous exercises increase the risk of dehydration.

Children:
- Dehydration is a major concern. It poses significant problems in very young infants special problems due to the increased risk. Children should be offered to drink solutions such as ORS frequently. These fluids also contain necessary salts lost with diarrhoea. Give Zinc sulphate dispersible tablets to replace Zinc lost in stool.
- Children with frequent stools, fever, or vomiting should stay home until these symptoms go away. In addition to allowing the child to rest and recover, this also helps prevent other children from becoming ill.
- Because viruses cause most cases of diarrhoea, antibiotics will not work. Even the more severe diarrhoea caused by bacteria will usually go away in a few days even without antibiotics.

Oral Rehydration Salt (ORS)

Presentation:
ORS sachets with powder for preparation of or 1 litre of ORS solution (always read the label to find out the right quantity of water to be added).

Dosages (for children and adults)
- Give orally as often as the patient can take. It depends on the degree of dehydration

Precautions:
- Severe dehydration would need IV infusion
- Do not stop normal feeding including breast feeding

Vital information to the patient:
- Contents to be dissolved in or 1 litre (half a litre equals one bear bottle)
- The solution should be used within 24 hours
- Store solution in a cool place and well covered

Zink Sulphate Dispersible tablet (ZINKID)

Presentation
Each tablet contains 20mg of elementary Zinc

Dosage
2-6 months ½ tablet per day for 10 days
6 months-5 years 1 tablet per day for 1o days

Precaution
No particular precaution

Vital Information
Continue zinc supplement after diarrhoea stops

Prevention

- Adults and children be advised to wash their hands after visiting the toilet
- Practice safe food-handling. Advise to always wash your hands before and after handling food.
- Advise to always eat food ready when still hot
- Utensils coming in contact with raw food should be cleaned in soap and hot water.
- Fruits and vegetables consumed raw should be thoroughly rinsed in clean water.
- Advise to avoid eating foods from street vendors.
- Boil all water for drinking
- In case of cholera report to health authorities such that the victim is isolated

Conditions that are Associated with Diarrhoea

Gastroenteritis

Gastroenteritis is a condition that causes irritation and inflammation of the stomach and intestines. The severity of infectious gastroenteritis depends on the immune system's ability to resist the infection. Most people recover easily from a short bout with vomiting and diarrhoea by drinking fluids and easing back into a normal diet. But for others, such as infants and the elderly, loss of bodily fluid with gastroenteritis can cause dehydration, which is a life-threatening illness unless the condition is treated and fluids restored.

Symptoms of Gastroenteritis

Common symptoms may include:

- Low grade fever to 37.7°C
- Nausea with or without vomiting
- Mild-to-moderate diarrhoea:
- Painful abdominal cramps with bloating

More serious symptoms

- Blood in vomit or stool
- Vomiting more than 48 hours
- Fever higher than 40°C
- Swollen abdomen or abdominal pain
- Dehydration - weakness, light headedness urination, dry skin, dry mouth and lack of sweat and tears are characteristic findings.

Treatment

- Give oral rehydration salts
- Vomiting can be treated using antiemetic medicines such as promethazine
- Antibiotics are used if bacterial causative organisms are used. Example of antibiotics to be used are ciprofloxacin or co-Trimoxazole if ciprofloxacin is contraindicated see the dosage below

Dysentery:

Dysentery is a serious form of diarrhoea accompanied by passage of blood and mucous. It is due to infection and inflammation of the colonic mucous membranes, resulting in ulceration. It is commonly caused by amoebiasis (amoebic dysentery) or shigellosis (bacillary dysentery).

Amoebic Dysentery:

This is a protozoal intestinal infection caused by *Entamoeba histolytica* The source of the infection is faecal matter containing the encysted form of the parasite and transmission occurs by ingestion of contaminated food or water.

Symptoms:

Symptoms of amoebiasis may be observed at any time from a few days to several years after infection, although they may occur most commonly during the first four months. Onset may be sudden and symptoms may vary in severity from mild diarrhoea to dysentery. The problem may spread to other organs such as liver causing liver lung or brain abscesses. The infection may resolve spontaneously in some individuals while for others experience relapses over several years.

Treatment:

On top of giving supportive treatment, medicines such as Metronidazole can be given. Dosage is indicated below

Giardiasis:

Giardiasis is a protozoal intestinal infection caused by *Giardia lamblia* The source of the infection is human faeces containing the encysted form (the infective form) of the parasite. Transmission usually occurs by ingestion of food or water contaminated with faecal matter, although direct transmission from person to person may take place.

Symptoms:

The incubation period is from a few days to several weeks. Giardiasis may be acute or chronic and the severity of symptoms may vary, from asymptomatic to severe diarrhoea with malabsorption and weight lose. Abdominal pain, and distension, flatulence, nausea may be experienced. Stools are usually yellow, frothy and stinking.

Treatment:

On top of giving supportive treatment, medicines such as Metronidazole can be given. Dosage is indicated below

Bacillary dysentery (Shigellosis)

It is an acute disease involving the large and small intestines characterised with bloody mucoid diarrhoea. It is caused by shigella bacteria

Symptoms

Mucoid bloody diarrhoea, Fever, Nausea, vomiting and abdominal cramps and Sensation to defecate without production of significant amount of faeces

Treatment
On top of giving supportive treatment, medicines such as ciprofloxacin can be given. Dosage is indicated below

Cholera

It is an acute infection involving the entire small bowels. It usually occurs as an epidemic. It is caused by bacteria Vibrio cholera

Symptoms
Mild to severe painless watery diarrhoea (rice water stool), in some cases vomiting, muscular cramps, dehydration and collapse

Treatment
On top of giving supportive treatment, antibiotics such as doxycycline or ciprofloxacilin can be given in adults and cannot be used in children below 8 years. Use cotrimoxazole or erythromycin instead. Dosage is indicated below.

Metronidazole

Presentation:
Tablets 200mg or 250mg; Suspension 200mg/5mL

Dosage (Adult and Child)

Amoebiasis:
Adult:
Over 12 years : 750 – 800mg every 8 hours for 5 to 10 days or 10mg/kg body weight every 8 hours for the same period
Child:
0 – 1 year: 62.5 – 125 mg every 8 hours for 5 – 10 days
1– 5 years: 125 – 250 mg every 8 hours for the same period
5 – 12 years: 200 – 400mg every 8 hours for the same period

Gardiasis
Adult: For 2g orally once daily after food for 3 days
Child: 30mg/kg body weight (max: 1.2g) once daily for 3 days

Precaution/Contra Indication:

- Do not give to chronic alcohol dependence patients
- Avoid use in pregnancy during the first 3 months
- Do not use the drug during breast feeding
- Do not use the drug for more than 10 continuous days

Side Effects:

- Headache, diarrhoea, nausea, vomiting and stomatitis
- It may darken urine and sometimes gives a metallic taste in the mouth
- Intolerance for alcohol

Vital Information to Patient:

- Not to take any alcohol or alcoholic drink during all the period of treatment or immediately after the treatment
- Take the whole dose, or the treatment may fail.
- Should be taken with food

Ciprofloxacin

Presentation:
Tablets 500mg or 250mg

Bacillary Dysentery and Bacterial bacteria gatroenteritis
Adults: 1 gram single dose. Avoid in children and pregnancy use Cotrimoxazole instead

Co-Trimoxazole

Presentation:
Sulphamethoxazole 400mg and Trimethoprim 80mg tablets; Sulphamethoxazole 200mg/5mL and Trimethoprim 40mg/5ml suspension.

Dosage (Adult and child)

Cholera: 48mg/kg body weight/24 hrs in two divided doses for 3 days.
Other Infections: depends on the type of infection. Usual doses are:
Adult: 960mg every 12 hours for 5 to 7 days
Child: ½ to 5 years 240mg/5mL every 12 hours
6-10 years 480mg/10mL every 12 hours
Over 12 years as for adult.

Precautions/Contra Indications:

- Do not use in patients with known allergy to sulphonamide or trimethoprim
- Do not use in patients under the age of 6 months
- Do not use in patients with serious liver/kidney diseases
- Do not use during pregnancy
- Use with caution during breast-feeding
- Use with caution in AIDS-patients – they experience high incidences of serious reactions particularly with higher dosages
- Monitor blood count if treatment exceeds 14 days continuously

Vital Information to Patient:

- -Take a complete dose, otherwise treatment may fail
- Suspensions to be shaken well immediately before use
- -Drink a lot of water/fluid during treatment

Other Gastro Intestinal diseases

Salmonella Infections

Salmonella infections are caused by bacteria of the genus Salmonella which are Gram-Negative. They are responsible for typhoid and paratyphoid fever or collectively enteric fever.

Typhoid Fever

Typhoid fever is caused by Salmonella typhi, which is endemic in many parts of Tanzania, where poor standards of sewage disposal exist. S. typhi bacilli are excreted in faeces and, to a lesser extent, urine, and transmitted via contaminated drinking water and food. They can withstand freezing and drying and even remain viable for long periods on soiled clothing or bedding. The only reservoir of infection is man.

Symptoms

Typhoid fever is marked by phases of about one week's duration. The initial phase starts with headache, fluctuating fever and abdominal pain. Constipation occurs more frequently than diarrhoea in the early stages, although later diarrhoea becomes frequent. Other symptoms may include loss of appetite, non-productive cough, epistaxis, furred tongue and muscular rash on the abdomen. In later stages the fever may become persistent, toxaemia may develop and there could be signs of mental deterioration and eventually comma. Final symptoms include greenish diarrhoea and malaena and even perforation of the intestine may result. The infection may resolve, however there can be relapses and in few cases complications may be fatal.

Paratyphoid Fever

It is caused by Salmonella paratyphi A, B, or C. It is transmitted in a similar way to typhoid fever.

Symptoms

Paratyphoid fever resembles typhoid fever, but with a more abrupt onset, milder symptoms and shorter course. Complications, relapses and fatalities occur less frequently

Treatment:

If you suspect Typhoid fever or paratyphoid fever refer patient for further management

Gastritis:

This inflammation of the gastric mucosa, which may be acute or chronic.

Acute gastritis:

Acute gastritis may result from irritation due to drugs, alcohol. Corrosive agents, irritation irradiation, bacterial toxins (e.g. staphylococcal) or can be associated with bacterial infection (e.g Salmonellal infection) trauma or surgery may precipitate symptoms.

Symptoms:

Acute gastritis is usually asymptomatic, but anorexia (loss of appetite for food), epigastric pain, nausea and vomiting may fallow. Acute gastritis due to the ingestion of corrosive materials is characterized by severe chest pain, epigastric pain, haemorrhage, vomiting, shock and perforation may occur.

Chronic Gastritis:

The cause of chronic gastritis are not clear, but are said to be due to auto-immune diseases (e.g., thyroid disease, and diabetes mellitus and prolonged gastric irritation. It is commonly associated with peptic ulceration, cancer of the stomach and gastric surgery.

Symptoms:
Uncomplicated forms are usually asymptomatic although anorexia, epigastric pain, nausea and vomiting may occur.

Treatment:
Gastritis is managed mainly by removal of the causative agent (in case of acute gastritis e.g avoidance of alcohol and non-steroidal anti-inflammatory drugs. In case of chronic gastritis the resulting anaemia can be treated with replacement therapy. If it is due to bacterial infection, appropriate antibacterial or antibiotic may be used.

Magnesium trisilicate (OTC)

Presentation:
Mostly tablets of 500mg or Mixture

Indications:
It neutralizes stomach acid and it is used in gastric and duodenal ulcers, gastritis and heartburn

Dosage:
One to two tablets to be chewed or 10-15mL of mixture to be taken every 4-6 hours, on or after meals and at bed time.

Precautions:
Avoid usage when patient is vomiting or has kidney problems.

Side effects:
May cause mild diarrhoea

Vital information to the patient:
More effective if the tablets are chewed not swallowed
For the mixture – Shake the bottle well each time before you take a dose

Irritable Bowel Syndrome:

The irritable bowel syndrome (IBS) is a chronic motility disorder of the colon with no demonstrable cause.

Symptoms:
It is characterized by recurrent episodes (attacks) of abdominal discomfort, pain, and altered bowel habit. The pain may be colicky or continuous dull ache is commonly related to food intake. It may be relieved by defecation or on the passage of flatus. There may be a alternating diarrhoea and constipation; the faeces may be described as “marbles”, “pellets” or rabbit dropping and mucus may be present or other lesions are also present. Other symptoms include abdominal distension and flatulence (presence of access gas in the stomach).

Treatment:
Reassure the patient by explaining the nature of the problem. Treatment may consist of advising the patient to take foods with high fibre content like vegetable.

Constipation:

Constipation is an increased difficulty and reduced frequency of bowel evacuation, and may be acute or chronic. Normal frequency of defecation varies from three times per day to once every three days. Simple chronic constipation can be due to dietary fibre or poor bowel training. Acute constipation implies a sudden change in bowel habit. There are several other causes of constipation. Constipation may be a side effect of drug administration and laxative abuse. This means before you advice your patient to use any unnatural laxatives, you should enquire the history of the problem, duration and advice the patient to use natural fibre or bulk forming foods solve the problem.

Treatment:

Most cases of constipation can be successfully be treated by diatary measures alone. Long term constipation should be treated by intake of bulk forming products such as foods with a lot of roughages and the intake of plenty of water If symptoms persist refer for further management

Peptic ulcers

In the digestive system, an ulcer is an area where tissue has been destroyed by gastric juices and stomach acid. Peptic ulcer disease is a general term for ulcers that occur in the stomach or duodenum (upper part of the small intestines). This breakdown causes a gnawing or burning pain in the upper middle part of the belly (abdomen).

Cause of peptic ulcers

- Peptic ulcers occur when the hydrochloric acid and pepsin enzyme overcome the defence mechanisms of the gastrointestinal tract and cause an erosion in the mucosal wall.
- Lifestyle factors play a role in the development of Peptic ulcers. They weaken the protective mucosal barrier of the stomach. This increases the chances of getting an ulcer and slows healing of existing ulcers.

  Some of the lifestyle factors include:
  - Aspirin, non steroidal anti-inflammatory drugs (such as ibuprofen and naproxen), and newer anti-inflammatory medications (such as diclofenac)
  - Alcohol
  - Stress - Physical (severe injuries or burns, major surgery) or emotional
  - Caffeine
  - Cigarette smoking
  - Radiation therapy - Used for diseases such as cancer
  - Some people are more prone to develop peptic ulcers than others.

Symptoms of Peptic ulcer disease

The most common symptom of peptic ulcers by far is abdominal pain.

- The pain is usually in the upper middle part of the abdomen, above the belly button (navel) and below the breastbone.
- The pain can feel like burning or gnawing, and it may go through to the back.
- Pain often comes several hours after a meal when the stomach is empty.
- The pain is often worse at night and early morning.
- It can last anywhere from a few minutes to several hours.
- The pain may be relieved by food, antacids, or vomiting.

Other symptoms of peptic ulcers include the following:

- Nausea
- Vomiting
- Loss of appetite
- Loss of weight

Treatment of Peptic Ulcers

Always refer patients you suspect to be suffering from peptic ulcers. However you may give anti-acid medicines available on the market such as Magnesium Trisilicate, Relcer gel, Alcid as first treatment.

Supportive measures in Management centre on neutralizing the stomach acid.

- Don't smoke, and avoid coffee and alcohol. These habits increase gastric acid production and weaken the mucosal barrier of the GI tract, thus promoting ulcer formation and slowing ulcer healing.
- Don't take aspirin or nonsteroidal anti-inflammatory medications. Paracetamol is a good substitute for some conditions.
- If your symptoms are mild, try an antacid. No particular diet is helpful for people with peptic ulcers.

15: Course Name: Introductions to Common Worm Infestations

Introduction to Worm Infestation:

Worm Infestation is sometimes referred to as Helminthic infestations. Most of the worms are hosted in the gastro intestinal tract, though few may invade specific organs outside the GIT. Most worm infestation takes place as a result of ingestion of foods and drinks which are contaminated with worms at any stage of its development. Others worms like hook worms, filarial worms enter the human host though the skin. These worms are parasites to the human body in that they depend on their host for their survival. When these worms reach large numbers in the human body, they interfere with the normal functioning of the host systems and organs causing physiological problems/disease of the host.

Worm infestations are classified based on the type of worm with characteristic symptoms for each type.

Ascariasis:

Infection with Ascaris lubricoides, the intestinal roundworm, the most common worm infection in humans.

Ascaris eggs are found in the soil. Infection occurs when a person accidently ingests (swallows) infective ascaris eggs. Once in the stomach, larvae (immature worms) hatch from the eggs. The larvae are carried through the lungs then to the throat where they are then swallowed. Once swallowed, they reach the intestines and develop into adult worms. Adult female worms can grow over 12 inches (4.8 cm) in length. Adult male worms are smaller. Adult female worms lay eggs that are then passed in faeces; this cycle takes between 2 and 3 months. Adult worms can live 1 to 2 years.

Infection occurs worldwide. It is most common where sanitation and hygiene are poor. Children are infected more often than adults.

Domestic animals can be infested with ascaris and occasionally, infestation can be spread to humans; this occurs waste products from these animal are used as manure and they contaminate the soils from where humans pick it.

Signs and symptoms

Infestation is often silent. But if someone is heavily infected, they may have abdominal pain. While the immature worms migrate through the lungs, they may cough and have difficulty breathing. And if someone has a very heavy worm infection in the intestines, the intestines may become blocked. Chronic ascaris infection can stunt the growth of children.

Pinworm (*Enterobius vermicularis*)

Any individual may develop a case of pinworms. The infection occurs most frequently in school children between 5 to 10 years of age. Pinworm infections occur in all socioeconomic groups; however, human-to-human spread is favored by close, crowded living conditions. Spread among family members is common. Animals do not harbor pinworms - humans are the only natural host for this parasite.

The most common symptom of pinworms is an itchy rectal area. Symptoms are worse at night when the female worms are most active and crawl out of the anus to deposit their eggs.

Signs and Symptoms

Most salient symptoms is itching around the anus

Thread worms (Strongyloides stercoralis)

The infection is usually symptomatic but patients may have vague symptoms such as abdominal pain, nausea, flatulence, vomiting, acute fatty diarrhoea, epigastric pain and weight loss. Heavier infections are more likely to produce stronger symptoms. Adult Strongyloides stercoralis live in the gut and produce larva which penetrate the gut wall and invade the tissues, resulting into auto-infections.

Hook worm (Ancylostomiasis)

Hookworm disease is caused by infection of the small intestine with Ancylostoma duodenale or Necator americanus. It is one of the major clinical causes of Anaemia in many communities. The majority of patients are asymptomatic. However, in Hookworm disease the major clinical manifestations are iron deficiency Anaemia.
A patient should be adviced to take Ferrous Sulphate if anaemic.

Tape worms (Cestode Infections)–

A person gets tapeworms by eating raw or undercooked beef infected with Cystricercus bovis, the larval stage of Taenia Saginata (beef tapeworm) or uncooked food containing pork tapeworm. Most tapeworm infections are symptomless and the commonest way of presentation is the appearance of segments in the stool. There may be mild epigastric discomfort, nausea, weight loss and diarrhoea. Chronic worm infection may result into anaemic status, allergic reactions and fatigue.

Diagnosis

- Diagnosis is majorly clinical based on the signs and symptoms.
- Where possible stool examination may be done

To prevent infection worm infestations:

- Avoid contacting soil that may be contaminated with human faeces or domestic animal faeces.
- Do not defecate outdoors.
- Dispose of human excreta in a pit latrine
- Wash hands with soap and water before handling food.
- Wash, peel or cook all raw vegetables and fruits before eating.
- Avoid scratching the anal region.
- Avoid biting the fingernails.
- Keep fingernails short and clean.
- Wash all bedding and pajamas regularly.
- Be sure your child changes underwear daily
- Avoid eating half cooked food.

Treatment of worm infestation

Most commonly used medicines in work infestations include mebendazole and albendazole. These medicines are effective and appear to have few side effects. Additional stool exams are done 1 to 2 weeks after therapy; if the infection is still present, treatment is repeated.

Mebendazole

Presentation:
Tablet 100mg; Suspension 100mg/5mL

Indication:
Treatment of Round worms, Pinworms, Hookworm, threadworms and tapeworms

Dose (Adult and Child)
Adult and Child over 2 years:
100mg every twelve hours for 3 consecutive days or 500mg single dose

Side Effect: rarely, but could be due to hypersensitivity reactions, abdominal pain

Precautions:
- Not indicated during the first 3 months of pregnancy
- Not indicated for children under two years

Vital advice to patient:
- Take a full dose otherwise it may fail
- It is better to chew the tablets before they are swallowed with sufficient water.

Albendazole

Presentation:
Tablet 200mg; 400mg; Suspension 400mg/10mL

Dose (Adult and Child)
The dose for Adult and Child above 2 years – 400mg single dose
However in severe infections 400mg every 12 hours for three days. It can be repeated after 3 weeks if necessary.

Cautions:
- -Not for pregnant or lactating mother
- -Use Non-hormonal contraception during treatment and for one month after treatment.

Side Effects:
Gastrointestinal disturbances, headache, dizziness

Vital information to patient:
- Woman not to take oral contraceptives during treatment
- Chew the tablet(s) and swallow with enough water
- Avoid driving or operating machine if feels dizzy

NOTE: always counsel patients on how to prevent getting infected or spreading the infection to others

There are other worm infestations such as schistomiasis or bilharziasis but these are normally handled by more specialized health facilities

16. Course Name: Dermatological Conditions

SKIN DISEASE CONDITIONS

The skin is always the first line of defence against infections to the body. When the integrity of the skin is disrupted, it exposes the body to infections. Several factors may disrupt the integrity of the skin. Although many of these are from the external environment of the body, in some instances changes on the skin may be a sign of a bigger problem in the body. ***Generalized skin problems (skin problems that cover a large part of the body) and localised skin problems that the medicine seller may not exactly recognize should be promptly referred for specialised attention***. The following are some of the skin diseases

Boils

A boil is also referred to as a skin abscess. A boil is a localized bacterial infections deep in the skin. A boil generally starts as a reddened, tender area. Over time, the area becomes firm and hard and tender. Eventually, the centre of the abscess softens and becomes filled with infection-fighting white blood cells that the body sends from the bloodstream to eradicate the infection. This collection of white blood cells, bacteria, and proteins is known as pus. Finally, the pus "forms a head," which can be surgically opened or spontaneously drain out through the surface of the skin.

Clinical features

One or more acute tender, painful swelling at the site of infection. The site of the boil may feel hot, inflamed lymph node and sometimes fever.

Management

- The primary treatment for most boils is heat application, usually with hot soaks or hot packs. Heat application increases the circulation to the area and allows the body to better fight off the infection. Advice patient to apply hot soaks
- ***NOTE: Do not incise the boil this may spread the infection to other areas, refer immediately patients with accompanied fever and generalised lymph node inflammation***
- Give pain killers such as paracetamol to relive pain and refer for further management

Ringworm (Tinea)

Ringworm is a fungal infection that occurs on the surface of the skin. It is characterized by round spots that may occur on any part of the skin such as head, feet, back**,** face etc**.** Ringworm causes a scaly, crusted rash that may itch. Depending on the location of the infection**,** types of ringworm infections are:

1. **Tinea barbea**: ringworm of the bearded area of the face and neck, with swelling and marked crusting, often with itching, sometimes causing the hair to break off.
2. **Tinea capitis**: Ringworm of the scalp commonly affects children, mostly in late childhood or adolescence. This condition may spread in schools. Tinea capitis appears as scalp scaling that is associated with bald spots

3. **Tinea corporis**: When fungus affects the skin of the body, it often produces the round spots of classic ringworm. Sometimes, these spots have an "active" outer border as they slowly grow and advance.
4. **Tinea criris**: Tinea of the groin ("jock itch") tends to have a reddish-brown color and to extend from the folds of the groin down onto one or both thighs.
5. **Tinea faciei**: ringworm on the face except in the area of the beard. On the face, ringworm is rarely ring-shaped. Characteristically, it causes red, scaly patches with indistinct edges.
6. **Tinea manus**: ringworm involving the hands, particularly the palms and the spaces between the fingers. It typically causes thickening (hyperkeratosis) of these areas, often on only one hand.
7. **Tinea pedis**: Athlete's foot may cause scaling and inflammation in the toe webs,
8. **Tniea Unguium**: Finally, fungus can make the fingernails and, more often, the toenails yellow, thick, and crumbly. This is referred to as fungal nails

Management

- All types of ringworm infections can be treated topically such as **clotrimazole cream, Whitsfield's ointment or sulphur ointment.** These are applied twice a day on the affected part after bathing.
- If the infection does not respond to topical preparations, refer for specialized attention

Prevention

Minimizing sweat and moisture and improving personal hygiene can help prevent fungal infections.

Scabies

Is a contagious skin disease associated with severe itch. It is caused by a parasitic mite that is transmitted through personal contact

Clinical features:

The main clinical features are itching initially between the fingers or on the buttocks or genitals or other body folding that may latter can be generalized. If not well managed, infected areas may be infected by bacteria that may lead to other complications like rheumatic fever and glomerulonephritis.

Management

- Advise patient to wash the body thoroughly and apply **Benzyl benzoate Application (BBE) every 12 hours avoid contact with the eyes**
- Give antihistamines such as chlophenilamine to relieve itching
- Treat all close contacts, especially children in the same house hold with BBE
- Wash clothing and bedding and leave in the sun to dry
- In case where secondary bacterial infection characterized by septic sores, refer for specialized attention
- Advice that the itch may continue for several weeks

Skin Allergy/Urticaria

An acute, sub-acute or chronic inflammation of the skin caused by contact with a multitude of agents that induce allergic reactions

Clinical Features

Skin inflammation characterised by redness, itching and oedema,

Management

- Try to establish cause and remove cause
- Apply calamine lotion 15% twice a day
- Give pain killers like paracetamol to relieve pain
- Give:
    - **Chlorphenilamine**; *Adults* 4mg every 8 hours, *Children* 2mg per dose
    - **Promethazine**; *Adults* 25mg once a day or every 12 hours, *children* 6.25mg-12.5mg once a day or every 12 hour
    - **Cetrizine;** *Adults and children above 6 years* 10mg once a day, *children* 2-6 years 5mg once a day
      (Note: children below 12 years should be given the syrup form of the medicine of choice)

Nappy Rash

It is a reddish, yellow skin rash in areas covered by the a baby's nappy such as buttocks, external genetalia, thighs and lower abdomen caused by persistent dampness of wet nappies that leads to irritation of the skin.

Management

- Advice parent to change the childs nappy more regularly
- Apply calamine lotion twice a day
- If the rash persists or becomes worse refer for further management

Wounds

It is an injury of the skin that exposes tissue beneath the skin. The injury be due to an object cutting through the skin, burns due to chemicals or heat or may be as a result of an infection. Since wound break the body's first line of defence, badly managed wounds may get infected leading to complications such sepsis, tetanus, etc.

Management

- Large wounds and wound that have lasted for several week are more likely to be infected and may expose patients to complications and should be referred immediately for specialist attention immediately
- Minor particularly fresh ones can be managed by applying antiseptics such as iodine tincture and antibiotic creams such as silver sulfadiazine cream to keep from getting infected

Herpes Zoster (Shingles)

Clinical features:

Due to the resurgence of the varicella zoster virus, which also causes chickenpox. Severe burning pain precedes a rash which is vesicular and almost always unilateral, does not cross the midline. In uncomplicated cases the rash disappears in 24 weeks, in the haemorrhagic necrotizing form (HIV related) scarring often remains.

Management

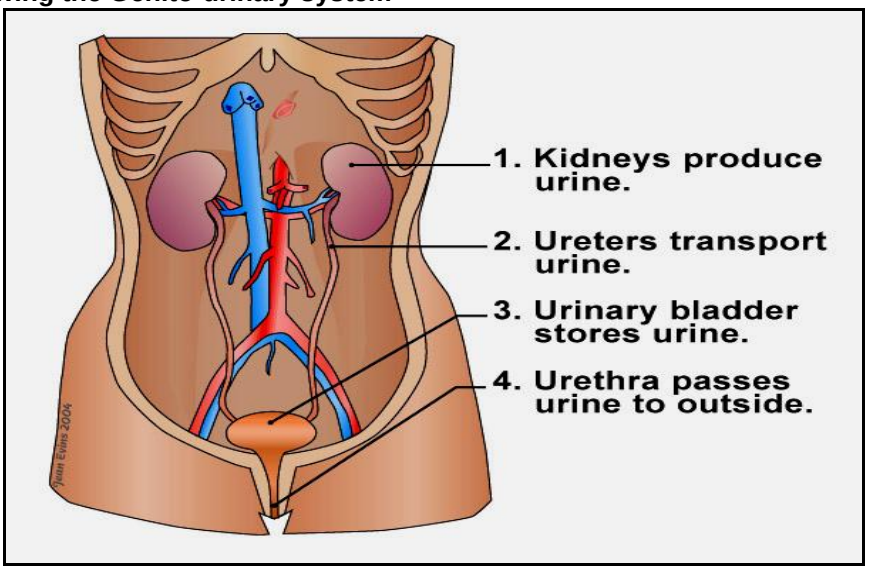
- Give analgesic: see pain management
- Diclofenac may be helpful in the acute phase
- Apply topical calamine lotion

17. Course Name: Diseases of Reproductive System

Review of the Genito-Urinary System

The Genito-urinary system refers to structures that urine passes through before being eliminated from the body as shown in the diagram.

Diagram showing the Genito-urinary system



Based on: Mader, S., *Inquiry Into Life*, **McGraw-Hill**

A urinary tract infection (UTI) is an infection involving the kidneys, ureters, bladder, or urethra. As a rule, the farther up in the urinary tract the infection is located, the more serious it is.

- The upper urinary tract is composed of the kidneys and ureters. Infection in the upper urinary tract generally affects the kidneys (pyelonephritis).
- The lower urinary tract consists of the bladder and the urethra. Infection in the lower urinary tract can affect the urethra (urethritis) or the bladder (cystitis).

Urinary tract infections are usually referred to as simple or complicated.

- Simple infections occur in healthy urinary tracts and do not spread to other parts of the body. They usually go away readily with treatment.
- Complicated infections are caused by anatomic abnormalities, spread to other parts of the body, or are resistant to many antibiotics. They are more difficult to cure.
- Urinary tract infection is much more common in adults than in children, but about 1-2% of children do get urinary tract infections. Urinary tract infections in children are more likely to be serious than those in adults and should not be ignored.
- These infections are much more common in girls and women than in boys and men younger than 50 years. The reason for this is not well understood, but sexual activity may be partially responsible in sexually active women.

Causes of UTI

The urine is normally sterile. An infection occurs when bacteria get into the urine and begin to grow. The infection usually starts at the opening of the urethra where the urine leaves the body and moves upward into the urinary tract. The commonest cause is Escherichia coli, a bacteria that normally leaves in the bowel (colon) and around the anus.

- These bacteria can move from the area around the anus to the opening of the urethra. The two most common causes of this are poor hygiene and sexual intercourse.
- Usually, the act of emptying the bladder (urinating) flushes the bacteria out of the urethra. If there are too many bacteria, urinating may not stop their spread.
- The bacteria can travel up the urethra to the bladder, where they can grow and cause an infection.
- The infection can spread further as the bacteria move up from the bladder via the ureters.
- If they reach the kidney, they can cause a kidney infection (pyelonephritis), which can become a very serious condition if not treated promptly.

Symptoms
Lower urinary tract infection (cystitis): The lining of the urethra and bladder becomes inflamed and irritated.

- Dysuria - Pain or burning during urination
- Frequency - More frequent urination (or waking up at night to urinate)
- Urgency - The sensation of not being able to hold urine
- Hesitancy - The sensation of not being able to urinate easily or completely (or feeling that you have to urinate but only a few drops of urine come out)
- Cloudy, bad smelling, or bloody urine
- Lower abdominal pain
- Mild fever (less than 39°C), chills, and "just not feeling well" (malaise)

Although most people have symptoms with a urinary tract infection, some do not.

Which symptoms necessitate referral?
If a patient has symptoms of a lower urinary tract infection and any of the following, they may have a urinary tract infection that involves the kidneys and therefore need to be referred;

- Vomiting and inability to keep down clear fluids or medication
- Not better after taking antibiotics for two days
- Pregnant; an unrecognized infection can cause miscarriage or other pregnancy complications
- Having diabetes or another disease that affects the immune system (for example, AIDS)

Infants, children, and elderly people with any of the signs and symptoms should be referred to health centre IV or hospital.

- Fever, lethargy, and poor appetite may be signs of something more serious.
- Urinary tract infections have the potential to make these vulnerable people very ill.

Also patients with Upper urinary tract infection (pyelonephritis) should be referred immediately Symptoms develop rapidly and may or may not include the symptoms for a lower urinary tract infection.

- Fairly high fever (higher than 38°C)
- Shaking chills
- Nausea
- Vomiting
- Flank pain - Pain in your back or side, usually on only one side at about waist level

NB
In newborns, infants, children, and elderly people, the classic symptoms of a urinary tract infection may not be present. Other symptoms may indicate urinary tract infection.

- Newborns – Fever or low body temperature, poor feeding, jaundice
- Infants - Vomiting, diarrhoea, fever, poor feeding, not thriving
- Children - Irritability, eating poorly, unexplained fever that doesn't go away, loss of bowel control, loose bowels, change in urination pattern
- Elderly people - Fever or low body temperature, poor appetite, lethargy, change in mental status

These should always be referred for further management

Supportive treatment
The following supportive measures can help reduce the discomfort:

- Take a pain-relieving medication.
- Use a hot-water bottle to ease pain.
- Ensure high fluid intake. Drink plenty of water.
- Avoid coffee, alcohol, and spicy foods, all of which irritate the bladder.
- Quit smoking. Smoking irritates the bladder and is known to cause bladder cancer.
- Finish all antibiotic medication even if you are feeling better before the medication is gone.

Pharmacological treatment
The usual treatment for both simple and complicated urinary tract infections is antibiotics. The type of antibiotic and duration of treatment depend on the circumstances.

- In an otherwise healthy young female, a three-day course of antibiotics is usually enough. Some providers prefer a seven-day course to be sure of getting rid of the infection. Occasionally, a single dose of a powerful antibiotic is used.
- Adult males with a UTI require seven to 14 days of antibiotics. If the prostate is also infected (prostatitis), four weeks of antibiotic treatment may be required.
- Adult females with potential for or early involvement of the kidneys, urinary tract abnormalities, or diabetes are usually given a five- to seven-day course of antibiotics.

Medications will include;

- Alkalinise the urine with oral **sodium bicarbonate solution** 5% (dissolve 5g in 100mL water) twice daily - may help to relieve symptoms in mild cases
- **Cotrimoxazole** 1.92g (4 tablets of 480mg) single dose, *child:* 48mg/kg single dose *or* **ciprofloxacin** 500mg single dose, *child:* 10-15mg/kg single dose

If poor response, or recurrent infections, do not continue to treat 'blindly' refer to more specialised health centre for investigation of Culture &Sensitivity and further management

Prevention

- Women and girls should wipe from front to back (not back to front) after going to the bathroom. This helps prevent bacteria from the anus entering the urethra.
- Empty your bladder regularly and completely, especially after sexual intercourse.
- Drink plenty of fluids.
- Improved personal/genital hygiene
- Avoid sharing of bathing basins, towels, soap, etc

Sexually Transmitted Diseases

Sexually transmitted diseases (STDs) that are spread through sexual intercourse and mostly affect sex organs or the mouth; the infection can also be spread through contact with blood during sexual activity. STDs are among the most common infectious diseases in Uganda. For effective management of these conditions, a syndromic approach is used where medicine is given for all the suspected causative organisms depending on the symptoms.

- STDs affect men and women of all ages and backgrounds.
- STDs have become more common, partly because young people are becoming sexually active at a younger age and are having multiple partners.
- Frequently, STDs cause no symptoms, especially in women. However, they remain infective to their sexual partners
    - Health problems from STDs tend to be more severe for women than for men. Some STDs can cause pelvic infections that may lead to scarring of the reproductive organs, which can result in an ectopic pregnancy (a pregnancy outside the uterus) and infertility for women.
    - STDs can be passed from a mother to her baby before, during, or immediately after birth.
- Because the method of becoming infected is similar with all STDs, a person can easily pick up more than one infection at a time.
- Experts believe that having an STD that is not AIDS increases one's risk for becoming infected with AIDS.

Take special care in STD patients
Sometimes people with STDs are too embarrassed or frightened to ask for help or information. However, most STDs are easy to treat. The sooner a person seeks treatment and warns sexual partners about the disease, the less likely the disease will do permanent damage, be spread to others, or be passed to a baby.

Once a diagnosis of an STD has been made, the patient should:

- Seek treatment to stop the spread of the disease.
- Be encouraged to notify sexual contacts and urge them to have a check up.
- Take all of the prescribed medication.
- Sometimes, follow-up visits and tests are important.
- Consult a health worker with any specific needs and questions.
- Avoid sexual activity while being treated for an STD.

Urethral discharge syndrome (Males)

Causes
A number of diseases, usually spread by sexual intercourse, produce similar manifestations in the male and may be difficult to distinguish clinically:

- **Gonorrhoea:** caused by the bacterium *Neisseria gonorrhoea*
- **Trichomoniasis:** caused by the protozoan *Trichomonas vaginalis*
- **Non-gonococcal urethritis:** caused by virus-like bacteria *Mycoplasma* and *Chlamydia trachomatis. Chlamdia trachomatis* is most common cause of bacterial STDs. Transmitted through oral and anal sexual contact

Clinical features

- Patients complain of mucus or pus appearing at the tip of the penis or staining of underwear
- Burning pain on passing urine (dysuria)
- Examination may show a scanty or profuse discharge

Treatment (patients and partners)

- **Ciprofloxacin** 500mg single dose *plus* **doxycycline** 100mg every 12 hours for 7 days

If partner is pregnant:

- Give **erythomycin** 500mg every 6 hours for 7 days *plus* **cotrimoxazole** 2.4g (5 tabs) every 12 hours for 3 days

If discharge still persists:

- ***Refer for specialist management***

Lower abdominal pain syndrome (female)/Pelvic Inflammatory Disease (PID) Syndrome

Causes

- Infection of the uterus, tubes and ovaries by *N. gonorrhoea, Chlamydia* and anaerobes

Investigations

- Take history, check if period overdue

- If possible examine the patient bimanually - for pregnancy, bleeding, recent delivery or abortion
- Check for severe pain, vomiting or rebound tenderness

Treatment

If any of the above signs and symptoms are found:

- Refer quickly for further management

If none of the above signs and symptoms are found:

- Give ciprofloxacin 500mg every 12 hours for 3 days *plus* doxycycline 100mg every 12 hours for 10 days *plus* metronidazole 400mg every 12 hours for 10 days

If there is an IUCD:

- Remove it 2-4 days after commencing treatment

If no improvement within 7 days:

- **Refer for specialist management**

Abnormal Vaginal Discharge Syndrome

An abnormal vaginal discharge is often the first evidence of genital infection, although absence of abnormal vaginal discharge does not mean absence of infection

Causes

- Can be a variety and often mixture of organisms
- Bacterial vaginosis

Clinical features

- In all cases: abnormal increase of vaginal discharge - normal discharge is small in quantity and white to colourless
- *Gonorrhoea* produces a thin mucoid slightly yellow pus discharge with no smell
- *Trichomoniasis* causes a greenish-yellow discharge with small bubbles and a fishy smell and itching of the vulva
- *Candida albicans* causes a very itchy, thick white discharge like sour milk
- *Mycoplasma, chlamydia* may cause a non-itchy, thin, colourless discharge
- Ectopic pregnancy and infertility are most serious complications

Treatment

If there is lower abdominal tenderness:

- Treat as Lower abdominal pain syndrome,

If there is no lower abdominal tenderness but there is itching, erythema or excoriations:

- Insert one nystatin pessary 100,000 IU into the vagina at night for 14 days *or* insert one clotrimazole pessary 500mg single dose at night for 1 night *plus* metronidazole 2g single dose

If no improvement within 7 days:

- **Refer for specialist management**

In pregnancy:

- Give erythromycin 500mg every 6 hours for 7 days *plus* cotrimoxazole 2.4g (5 tabs) every 12 hours for 3 days
- Do *not* give cotrimoxazole in the 1st trimester or after 36 weeks
- Postpone giving metronidazole until after 1st trimester
- Do *not* give ciprofloxacin, doxycycline

Child: (7-day course)

- cotrimoxazole 24mg/kg every 12 hours *or* erythromycin 12.5mg/kg every 6 hours *plus* metronidazole 12.5mg/kg every 8 hours

Prevention

The best way to prevent STDs is to avoid sexual contact with others. If people decide to become sexually active, they can reduce the risk of developing an STD in these ways:

- Counsel patient on risk reduction, e.g. practice of safe sex by using condoms, remaining faithful to one sexual partner, personal hygiene, avoiding anal intercourse, abstaining or delaying sexual relations as long as possible.
- Encourage to correctly and consistently use a male latex condom.
- Have regular checkups.
- Avoid having sex during menstruation. (HIV is passed more easily at this time.)
- Give health education about STIs (very important) e.g. including symptoms of STDs. Provide specific education on the need for early reporting and compliance with treatment
- Ensure notification and treatment of sexual partners
- If necessary and possible, schedule return visits

18. Course Name: Reproductive Health

Family Planning
The effective ability to control when and whether a woman becomes pregnant is referred to as family planning. It is always a women who decide whether and when to become pregnant but is always good that the other partner is involved in the decision particularly on the choice of birth control method. Factors to consider include; how easy it is to use, safety, risks, cost, and personal considerations.

> **NOTE:** Medicine sellers can provide information about family planning but should not initiate clients to family planning. If a client has never been on any form of family planning, ***refer to the nearest family planning clinic for appropriate counselling and initiation.***

Several methods of family planning exists such as;

Behavioural Methods

Continuous abstinence
Continuous abstinence is completely refraining from sexual intercourse. There are no hormonal side effects, and abstinence is endorsed by many religious groups. It is 100% effective in preventing pregnancy, and it also prevents sexually transmitted diseases (STDs). However, abstinence may be difficult for some couples to maintain.

Coitus interruptus
Coitus interruptus involves withdrawal of the entire penis from the vagina before the man ejaculates (before sperm leaves the penis). Fertilization is prevented because sperm does not contact a woman's egg. This method remains a significant means of fertility control in less advantaged countries. However, it depends largely on the man's capability to withdraw prior to ejaculation. Its advantages are that it can be used at any time, with no devices, no cost, no chemicals or hormones involved, and may offer a lower risk for other problems. Disadvantages include a high risk for unintended pregnancy and it does not protect against sexually transmitted diseases (STDs).

Rhythm Method:
Couples who practice the rhythm method, also called the calendar method, decide when to abstain from intercourse based on calendar calculations of the past 6 menstrual cycles. However, allowances are not made for the normal variations in the menstrual cycle that many women experience
Moon beads follow this principle

Breastfeeding
After the birth of a child, certain hormones prevent a woman from ovulating and releasing eggs if she is breastfeeding. The length of time hormones are suppressed varies. It depends on how often the woman breastfeeds and the length of time since the baby's birth. Ovulation usually returns after 6 months despite continuous nursing.

- **Advantages:** A woman has no periods during this time.

- **Disadvantages:** When a woman is fertile again is uncertain. Frequent breastfeeding may be inconvenient. This method should not be used if the mother is HIV positive. This method does not protect against STDs.

Barrier Devices

Male condom

The male condom (also called a rubber) is a thin sheath placed over an erect penis. Condoms made from latex are the best at preventing pregnancy. They also protect against sexually transmitted diseases such as AIDS and gonorrhea. Do not use condoms with Vaseline or other brands of petroleum jelly, lotions, or oils. They can decrease the effectiveness of the condom and increase the chance of pregnancy and transmission of sexually transmitted diseases. They can be used with lubricants such as K-Y Jelly. Although effective condoms have failure rates particularly due to consistence in use. Advantages include: readily available and usually are low cost, involvement of the male partner in the contraceptive choice. Disadvantages include: possibly decrease enjoyment of sex, some users may have a latex allergy, condom breakage and slippage makes them less effective.

Other barrier methods

Other barrier methods include; Female condom, Diaphragm, Cervical cap, Spermicides (chemical barrier), Intrauterine Devices.

Hormonal Methods

Oral Contraceptives

These are pills containing hormones that are taken orally to try to mimic the natural menstrual cycle. The pills prevent ovulation (release of an egg) and thus prevent pregnancy. When a woman decides to use oral contraceptives, she needs to consistently take them. If a she misses 1 or 2 pills, she should take 1 as soon as it is remembered. She then takes 1 tablet twice daily until each of the missed pills has been accounted for. Women who have missed more than 2 consecutive pills should be advised to use a backup method of birth control at the same time, finishing up the packet of pills until her next period.

Oral Contraceptive pills can either be Combined Oral contraceptive pills (COC) or Progestin only pills (POP)

- Combined Oral contraceptive pills: contain an oestrogen and a progestin. It is recommended;
    - Women less than 35 years
    - Both breast feeding and non breast feeding
    - Women with dysmenorrhea
    - Women with heavy periods or ovulation pain

Contra Indications:

Never use in individuals with cardiac diseases, thrombo – embolic disease, cerebral vascular disease, known or suspected carcinoma of the breast, abnormal undiagnosed vaginal bleeding, known or suspected pregnancy, impaired liver function.

Products available on the market

Products are normally come in as 28 – day packs, with the pills for the last 7 days containing only ferrous sulphate. This is implies that the active pill is taken daily for 21 days, followed by a 7 days pill free period.
Products include; Microgynon, Lofemenal, Newfem, piplan

Unwanted effects:

- Nausea oedema, light headache
- Breakthrough bleeding
- Weight gain, acne.
- Withdrawal bleeding
- Interaction with other medicines

Additional risks: Some women may be at risk for blood clots (venous thrombosis). At particular risk are heavy smokers (especially those older than 35 years), women with high or abnormal blood lipids (cholesterol levels), and women with severe diabetes, high blood pressure, and obesity.

Some Benefits of Oral Contraceptives:

- Combination oral contraceptives reduce the incidence of ovarian and endometrial cancers within 6 months of use
- Decrease incidence of ovarian cyst
- Regulate menses
- Reduces menstrual blood loss
- Less pre menstrual tension
- Decreased frequency of painful menstruation (dysmenorrhoea)

Progestin-only pills

Progestin-only pills, also known as the mini-pill, It is good for women who are breastfeeding and women who cannot take estrogen e.g women above 40 years.

Contraindication

Known or suspected breast or genital malignancy, suspected or known pregnancy and undiagnosed vaginal bleeding

Products available on the market

They are packed like the COC and the product available on the market are; Ovrette, Softsure

Unwanted effects:

- Spotting
- Amennorrhea
- Unpredictable irregular periods
- Interaction with some medicines

Injectable Progestin only contraceptive

It is a slowly absorbed depot IM injection which provides contraceptive protection for 3 months. It is used for women requiring long term contraception, breast feeding, HIV positive women who need FP or women with sickle cell.

Contraindication
As in POP above

Products available on the market
Depo-provera injection

Unwanted effects
Amenorrhea, heavy and prolonged bleeding, weight gain, loss of libido, delayed return to fertility, headaches and severe abdominal pain

Progestin only sub-dermal implant
It is a flexible progestin releasing plastic rod that is surgically inserted under the skin of a woman's upper arm which provides contraceptive protection for 5 years. it is used by women who want long term contraception

Contraindication
As in POP above

Products available on the market
Norplant

Unwanted effects
Amenorrhea, heavy, irregular and prolonged bleeding, not effective in women above 70 kg, infection at site of insertion and must be inserted and removed surgically

Other Family planning methods
Other family planning methods include, Natural Family Planning Method, Diaphragm vasectomy, Tubal ligation

19. Course Name: Anaemia and Nutritional Deficiencies

Definition: This is a condition caused by inadequate blood Haemoglobin levels.

Causes of anaemia

- Loss of blood or increased break down of blood cells
- Iron deficiency due to malaria, malnutrition, acute and chronic blood loss e.g hemorrhage, after trauma, hookworm infestation, pregnancy, abortion, heavy menstrual loss
- Vitamin deficiency/malabsorption as in folic acid and vitamin B_{12} deficiencies.
- Blood disorders e.g leukemia
- Congenital disorders e.g sickle-cell anaemia
- Chronic infections e.g TB, AIDS (especially in adults), schistosomiasis

Clinical Features

- Tiredness
- Headache, dizziness, palpitations
- Swelling of body or feet cases
- Pallor of palms and mucous membranes- tongue, eye
- Breathlessness
- Poor appetite
- Heart failure

In children

- Severe wasting
- Oedema of both feet
- Palmor pallor

Differential diagnosis

- Conditions which cause heart failure
- Conditions which cause general body weakness

Management of Anaemia

- Iron deficiency anaemia: ferrous sulphate 200mg every 12 hours with food for 3 months to replenish iron stores
- For a child:
  2 to < 4 mths or 4 to 6kg: 30mg elemental iron
  4mths to 3 years or 6 to <14kg: 60mg elemental iron
  3yrs to < 5years or 14 to < 19kg: 90mg elemental iron
- Pregnant women- give ferrous sulphate + folic acid tablets

Prevention

- Improved nutrition-give foods reach in iron and vitamins e.g vegetables, fruits, meat, liver
- Prevention or prompt and effective treatment of infections and infestations especially malaria, hookworm and respiratory infections

NUTRITION

Balanced diet- a balanced diet is a meal containing all the necessary nutrients for normal growth, maintain health and general wellbeing in their right quantities.

Essential components

- Energy giving foods (carbohydrates): glucose, posho (especially the unrefined type), rice, sweet potato, yams, cassava, matooke, millet
- Body building foods (proteins): meat, chicken, fish, milk, eggs, liver, beans, peas, soya porridge, groundnuts, simsim
- Fats: milk, cooking oils, meat
- Vitamins and minerals: these are needed in small amounts but are vital to the well-being of a human being. Foods rich in these nutrients include
  - Vegetables-dodo, nakati, cabbage, bugga, jobyo , irish potatoes
    They should not be overcooked or the nutritional value is lost
  - Fruits- mangoes, pineapples, fenne (jackfruit), avocado, passion fruit, tomatoes
  - Milk, meat, carrots rich in vitamins A, minerals like iron, calcium, e.t.c

Conditions that can lead to deficiency

- Insufficient intake- malnutrition, under nutrition; unbalanced diet; alcoholism; poor appetite; chronic diseases
- Reduced absorption- parasitic infections(hookworms, malaria, bilharzia); elderly people, alcoholism, smoking
- Increased requirements- increased physical activity, growth, infection and healing time after sickness, pregnancy and lactation

Signs and symptoms: Management

It is difficult to detect slight or even severe vitamin and mineral deficiencies. Vague symptoms can include fatigue(tiredness, weakness, loss of appetite, lowered resistance to certain infections.

a. Protein- Energy deficiency (Kwashiorkor, Marasmus)

Due to reduced consumption of protein and high energy foods; chronic diseases in children, chronic diarrhea, inadequate breastfeeding

Features- wasting, stunting(child looks younger than their real age), muscle wasting especially at buttocks, boniness, oedema of both feet, misery, poor attitude(apathy), irritable, poor appetite, thin hair and brown hair, wise old man facial appearance, severe pallor of palmsand soles, dehydration

Management: Advice mother/caretaker on proper feeding; Check for other diseases-malaria, diarrhea: Give foods rich in proteins especially soya meal, groundnuts, milk. Give children multivitamin syrup to improve appetite.

b. VITAMINS

NAME	SYMPTOMS OF DEFICIENCY	TREATMENT
A	Drying of skin (rough and thickened; toadlike)and mucous membranes, bulging eyes, night blindness, blurred vision	Give Vit A supplements. Eat foods rich in vit A e.g milk, carrots, vegetables, avocado
D	Bow legs	Vit D supplements; get enough early morning sunlight; eat foods rich in vit D e.g vegetables, milk, meat, eggs
E		
K	Bleeding tendencies	Multivitamin supplements; advise to increase meaty foods and vegetable intake
B1	Weak appetite, nerve problems esp. in alcoholics e.g itching, back pain, shaking	Vit B complex supplements; advise o nutrition
B2	Mouth sores, pain to look at light, uncontrolled tearing, itching eyes, weak vision	Vit B complex supplements; advise o nutrition
B3	Skin flaking and itching, diarhoea, confusion	Vit B complex supplements; advise o nutrition
B6 Pyridoxine	Hyperirritability, depression, nerve problems, mouth sores and peeling, diarhoea/ constipation, stomach ache	Vit B complex supplements; advise on nutrition or vit B6 tablets
B12	Pernicious anemia	Vit B complex supplements; advise on nutrition
C	Delayed wound healing, mouth wounds, brittle bones and teeth, bleeding gums, loose teeth, anemia	Treat anemia; give vit C supplements; advise on nutrition
Folic acid	Anemia	Treat as anemia- iron + folic acid + vitamin B supplements

c. MINERALS

NAME	SYMPTOMS OF DEFICIENCY	TREATMENT
Potassium	Dizziness, muscle weakness, confusion	Adequate feeding; potassium rich foods, e.g., bananas, citrus fruits
Calcium	Bone abnormalities-weak teeth, bone pains, weak nails	Milk, Calcium supplement
Magnesium	Psychiatric abnormalities, muscle cramps, general weakness	Milk
Sodium	Excessive sweat, dizziness, confusion, muscle cramps	Common salt, ORS
Zinc	Delayed wound healing, reduction in taste, smell sense, growth abnormalities	Milk
Iron	Anemia-restlessness, tiredness, pallor	As for anemia

PATIENT COUNSELLING AND CONDITIONS FOR REFERRAL

- Advise on adequate feeding, that is balanced diet and ensure that they have understood.
  Ask mother/caregiver what foods child feeds on, how many times, fluids, fruit and vegetable intake, how large the servings are, breastfeeding habits

- Monitor response to treatment, e.g., routine weighing, level of appetite, loss of oedema, sensory and emotional changes, e.g., no longer withdrawn.
  In general, resolution of symptoms is a good sign.
- Advise on prompt and proper management of infections/infestations, e.g., malaria, worms
- Give Vitamin A to children with measles, chronic respiratory infections, persistent diarrhoea and lactating mothers. Ask if child had Vit A in last 6 months, if nt, give.
- Check deworming: ask if patient has dewormed, especially children in last 3 months, if not give mebendazole

Conditions for referral

- Severe deficiencies which have resulted in associated diseases. Yu can tell from the severity of the symptoms above
- Identify patients at high risk of malnutrition and deficiencies and refer. For example pregnant women, smokers and alcoholics, elderly and people trying to lose weight, growing children who are very wasted, persons with other diseases or recovering from other diseases, people chronically using other medications.

COMMON MEDICATIONS

NAME	DOSE	COMMON SIDE EFFECTS/INTERACTIONS	COMMON PREPARATIONS
Iron Ferrous sulphate	Adults:tablets 200mg three times a day	Gastrointestinal disturbance	FEFOL, Ferro B, Vitaglobin, Ferrous sulphate tablets
Folic acid	Single daily dose for 14 days < 5years 2.5mg > 5 years 5 mg		Folic acid tablet,
Vitamin A	Give 3 doses (days 1, 2, 14) <6months 50000 IU 6-12 months 100000 IU > 12 mths 200000 IU		Vitamin A caps
Vitamin C	Vit.C100mg orally every 8hr max. 4 g		Vitamin C caps
Multivitamin preparations			Rinavit syrup,
Calcium			Calcium lactate tabs
Vitamin B complex			Vitamin B complex tabs

20. Course Name: Ear, Nose, and Throat Infections and Disorders

EYE CONDITIONS

Some eye conditions are short-lived and can successfully be managed at the medicine outlet. However many of them need to be referred for specialised attention as they can be a sign of serious complicated that may easily lead to permanent eye damage or even loss of vision.

NOTE: IT IS HIGHLY RECCOMMENDED THAT WHEN MEDICINE SELLERS ENCOUNTER CASES WITH EYE CONDITION THEY MAY PROVIDE FIRST AID THEN REFER THE PATIENT FOR FURTHER MEDICAL ATTENTION

Eye conditions that can be managed by Medicine sellers

1. Foreign body (FB) in the EYE

Causes
Solids: dust, insects, metal or wood particles, Liquids: splashes of irritating fluids

Clinical features
May be severe pain, tears or redness, FB may be visible

Differential diagnosis
Other injury or trauma

Management (all patients): Make a thin 'finger' of moistened cotton wool, move the eyelid out of the way and gently remove the FB

- **If this fails***:* Refer to an Eye Specialist
- **For irritating fluids in the eye:** Wash the eye with plenty of clean water or saline
  If cornea is damaged apply tetracycline eye ointment cover the eye and refer to eye specialist

2. STYE (Hordeolum):
A localized infection of the hair follicle of the eyelids. Locally known as *"kasekere"*

Cause: a bacteria called *Staphylococcus aureus*

Signs and symptoms
Itching in the early stages , Swelling, Pain, tenderness, Pus formation,
This may burst spontaneously

Management

- Usually the stye will heal spontaneously, avoid rubbing the eye as this might spread the infection and apply a warm/hot compress to the eye
- Apply **tetracycline eye ointment 1%** 2-4 times daily
- Remove the eye lash when it is loose

Prevention

- Remove any loose eyelashes
- Good personal hygiene

Conditions the need to be recognised and referred

3. CATARACTS

An opacity of the lens inside the eye by far the commonest cause of blindness in Uganda

Cause: Old age, Trauma, Genetic, Severe dehydration in childhood

Signs and symptoms:

Reduced vision, Pupil is **not** the normal black colour but is grey, white, brown or reddish in colour, Condition is not painful unless caused by trauma, Eye is not red unless condition is caused by trauma

Management (adults and children)

Do **not** give any medicines. Explain to patient that the condition is very **treatable** and refer to a cataract surgery centre (hospital)

Prevention

- Give early treatment for childhood diarrhoea and vomiting to prevent severe dehydration
- Wear protective goggles when hammering, sawing, chopping, grinding, etc
- Caution children playing with sticks about risk of eye injuries

4. CONJUCTIVITIS

Causes

Infection: bacterial or viral, Trauma: chemicals, foreign bodies, Smoke, dust, Allergy

Clinical features

- Watery discharge (virus or chemicals)
- Pus discharge (bacteria)
- Cornea is clear and does not stain with fluorescein
- Visual acuity is normal
- Redness (usually both eyes, but may start/be worse in one, usually reddest at outer edge of the eye)
- Swelling
- Itching (may be present)

Management (adults & children: 7 day course)

Apply **tetracycline eye ointment 1% HC1** *or* **chloramphenicol eye ointment 1%** and refer to a higher health center

Caution

Do not use steroid preparations unless sure of the diagnosis as they may mask infections

Prevention

- Personal hygiene; daily face washing
- Wear protective goggles when using dangerous chemicals, hammering, sawing, chopping, grinding,
- Warn children playing with sticks on risk of eye injuries
- Avoid irritants and allergens

5. KERATITIS

Inflammation of the cornea

Cause

Infection: bacterial, viral or fungal, leading to corneal ulceration, Trauma: chemical, foreign bodies

Clinical features: As for conjunctivitis **except** that in keratitis, the cornea is **not** clear and cannot see clearly, Condition is often in one eye, The eye is painful

Management (adults and children)

Apply **tetracycline eye ointment 1**%

Explain the seriousness of the condition to the patient

Refer to a qualified eye health worker

Prevention

- Wear protective goggles when hammering, sawing, chopping, grinding, etc
- Warn children playing with sticks on risk of eye injuries

6. OPHTHALMIA OF THE NEWBORN

Purulent discharge from the eyes in babies <1 month

Causes: Infections: usually from mother's birth canal or due to poor hygiene of the person caring for the newborn - bacterial, eg. *Gonococci* - chlamydial

Clinical features

- Reddening of one or both eyes
- Swelling of the eye lids
- Purulent discharge
- Excessive production of tears (lacrimation)
- If not treated early, will result in scar formation or perforation of the cornea, either of which will lead to blindness

Prevention and prophylaxis

Good antenatal care with screening and treatment of mother for genital or urinary tract infections

Clean delivery; prophylactic treatment of all neonates

Management

Apply **tetracycline eye ointment 1**% twice daily, carefully clean away any purulent discharge as required and refer for further management

7. TRACHOMA
A chronic infection of the outer eye caused by *Chlamydia trachomatis,* a type of bacterium

Signs and symptoms: Only the eyes are involved
In early stages:
Reddening of the eye, Itching, Follicles (grain-like growth) on the conjuctiva
In the later stages:
Scar formation on the eyelids causing the upper eyelid to turn inwards and causing the eyelashes to scratch the cornea; Scarring of the cornea leading to blindness

Management:
Antibiotic treatment
Adults and children: Apply **tetracycline eye ointment 1**% twice daily and refer for further management

Prevention
Good personal hygiene, regular face washing; Clean deliveries

8. XEROPHTHALMIA
Dryness of the part of the eye ball exposed to air and light due to Vitamin A deficiency

Clinical features
Starts with night blindness, followed by dryness of the conjunctiva and cornea, Eventually the cornea melts away, the eye perforates and total blindness occurs

Management : supplement with Vitamin A

Prevention
Good balanced diet especially for children, women, long-term hospital in-patients, boarding school students, etc

EAR CONDITIONS

Ear conditions may be an indication of a serious and complicated condition that may easily result into deafness. It is important that when a medicine seller recognizes ear condition of a patient he or she must be referred for specialist attention.

NOTE: IT IS HIGHLY RECCOMMENDED THAT WHEN MEDICINE SELLERS ENCOUNTER CASES WITH EAR CONDITION THEY MAY PROVIDE FIRST AID THEN REFER THE PATIENT FOR FURTHER ATTENTION

1. FOREIGN BODY (FB) IN THE EAR

Causes

- Children may insert foreign bodies in their ears as they play . Types of FB commonly involved include insects (eg. flies, cockroaches, ants) seeds, beads,
- Adults: usually insects, cotton buds
- Occasionally the FB may penetrate adjacent parts and lodge in the ear

Signs and symptoms

- Blockage - FB may be seen
- Noise in the ear
- Hearing loss
- If attempts have been made to remove the FB: Bleeding/discharge from the ear

Management

- These are normally mechanically removed using special equipment. Because such equipment may not be present at the medicine outlet refer for specialist attention

NOTE: Attempts to remove the FB at the medicine outlet may lead to eardrum perforation that may lead to deafness

2. OTITIS MEDIA (Middle ear infection)

It may or may not present with pus effusion

Cause

Blockage of the Eustachian tube by: adenoids, infection in the tube, thick mucoid fluid, tumours, unresolved acute otitis media, Viral or Bacterial infection, eg. *Streptococcus pneumoniae*, *H.influenzae* commonly follows an acute infection of the upper respiratory tract

Clinical features

- Hearing impairment (the main feature) which often fluctuant, i.e. the patient sometimes hears, sometime he doesn't
- Presence of non-purulent fluid in middle ear
- Buzzing noise in ears/head
- Retracted or bulging ear drum
- Loss of usual colour of ear drum or dullness
- Acute onset of pain in the ear, redness, Fever, Pus discharge in case of otitis media with pus
- Bulging of the eardrum

Management

- Give an antibiotic ear drop e.g. Chloramphenical ear drop
- Give amoxicillin 500mg every 8 hours for five days, *child:* 15mg/kg per dose
- Give paracetamol 1g every 8 hours and as indicated above in children
- Refer to ENT specialist in case on otitis media with no pus or otitis media with pus lasting for more than 7 days
- Review after 5 days – if eardrum is still red, repeat the above course

Prevention

- Health education, e.g., advising patients on recognizing the discharge of otitis media (believed by some to be 'milk in the ear')
- Early diagnosis and treatment of otitis media and URTI

3. OTITIS EXTERNA (Infection of the outside ear)

Infection of the external ear canal which may be localised or generalised (diffuse)

Causes: Bacterial, fungal, viral infections

Clinical features

- Pain, tenderness on pulling the pinna (external ear)
- Itching
- Swelling
- Pus discharge

Investigations

Good history and physical examination are important in making a diagnosis
If discharge is white or black, it is fungal - if discharge is yellow, it is bacterial

Management

- Thoroughly clean external ear canal
- Apply antibiotic drops, eg. chloramphenicol ear drops 1% 2 drops into the ear every 8 hours for 14 days
- Give pain killers
- If fungal infection suspected: Apply gentian violet 1% application 2-3 times daily - continue until discharge dries up

Refer is condition does not improve or if severe

4. WAX IN THE EAR

An accumulation of wax in the external ear

Cause

Excessive and/or thick wax production, Small and/or hairy ear canal

Clinical features

Blocked ears, Buzzing sound, Sometimes mild pain

Management (adults and children)

Wax in the ear is normal and usually comes out naturally from time to time

If it accumulates to form a wax plug and causes a problem for the patient

- Soften the wax by inserting drops of **vegetable oil** *or* **glycerin** into the ear 3 times a day for a few days - after this the wax may fall out on its own
- Refer to the health centre where the ear may be cleaned
- Advise the patient not to poke anything into the ear in an attempt to clean it as this may damage the eardrum

5. MASTOIDITIS

Inflammation of the mastoid bone behind the ear

Causes

Usually a complication of middle ear infection with pus

Clinical features

Pain or tender swelling felt over the mastoid bone - with or without pus discharge from the ear, Fever,

Management

Refer to hospital urgently

NASAL CONDITIONS

1. NOSE BLEEDING

Bleeding from the nostrils - may be arterial or venous. You should take note that Nose bleeding may be a symptom of a serious disease.

Causes:

Nose-picking, Trauma, Infections of the nose, Tumours, High blood pressure, Bleeding disorders, Pertussis, Sickle-cell trait/disease, kidney failure or it may be genetic.

Clinical features

- Bleeding from the nose - on examination the site of bleeding may be seen
- Signs and symptoms of shock if bleeding is severe

Management

General management:

- Sit the patient up (if patient not in shock)
- Instruct patient to pinch the nose between the finger and the thumb for 15 minutes, breath through the mouth and spit out any blood
- Manage as indicated in the course of first aid

If bleeding still does not stop after this period: Refer to hospital for further management

Prevention

- Avoid picking the nose
- Treat/control predisposing conditions

2. NASAL ALLERGY

- An abnormal reaction of the nasal tissues to certain allergens which tends to start in childhood although it may start at adolescence. It may be hereditary or may be predisposed by infections.

Causes

Changes in humidity and temperature, dust mite, certain foods and medicines and infection

Clinical features

Often present in school age children, sometimes preceded or followed by eczema or asthma. Clinical features include: Sneezing in spasms, Profuse watery nasal discharge, Nasal obstruction - variable in intensity and may alternate from side to side, Postnasal drip (mucus dripping to the back of the nose)

Management

- Avoid precipitating factors (most important)
- Antihistamines, e.g., **chlorphenamine** 4mg every 12 hours when necessary
- Reassurance and refer if no improvement
- Do **not** use vasoconstrictor nasal drops, e.g., ephedrine and xylometazoline as (especially with repeated or prolonged use) they cause rebound congestion and alter the nasal environment making structures hardened

3. SINUSITIS (Acute)
Inflammation of air sinuses of the skull

Causes
Allergy, Foreign body in the nose, Dental focal infection, Viruses, eg. rhinovirus, often as a complication of URTI or Bacteria, e.g., *Streptococcus pneumoniae, Haemophilus influenzae, Streptococcus pyogenes*

Clinical features
- Throbbing headache above the eyes, sinus tenderness
- Discharge from nostrils and into the throat - clear when due to viruses - yellow (purulent) when due to bacteria
- Nasal blockage (sometimes)

Management
- Give pain killers and give supportive management as in common cold
- Refer if symptoms persist or if become severe

Other nose conditions such as adenoid disease, atrophic rhinitis should be referred for specialized attention.