

**THE UNITED REPUBLIC OF TANZANIA  
MINISTRY OF HEALTH AND SOCIAL WELFARE  
NATIONAL AIDS CONTROL PROGRAM**



**Participant's manual for the pharmacy module database  
Version 5 – February, 2014**

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# **CHAPTER 1: BACKGROUND**

**1.1. Introduction**

**1.2. Goal and Broad Objective**

## CHAPTER 2: OVERVIEW OF ART REGIMENS AND DRUGS

### 2.1 Introduction:

This chapter intends to equip participants with the knowledge on the goal of ART in Tanzania, specifically on HIV infected adults, adolescents, children and infants. It will also explain criteria for initiating ART to adults, adolescents, exposed children and infants; description of ART regimens and drugs to adult, adolescent and children patients available in Tanzania (first line regimens); reasons for substituting a single drug within the first line. It is expected that, healthcare workers will utilize this knowledge to execute the general care and treatment portfolio in their daily practice while using the pharmacy module tool.

### 2.2 Specific Objectives:

At the end of this session participants will be able to:

1. Describe the goals of ART in Tanzania
2. Describe eligibility criteria for initiating patient on ART
3. Describe ART regimens and drugs to adult and adolescent patients available in Tanzania

### 2.3 Primary Goals of ART

1. Ensure maximal and durable suppression of HIV replication and therefore prevent disease progression.
2. Preserve, enhance, or reconstitute the immune system and therefore reduce opportunistic infections
3. Reduction of HIV related morbidity and mortality
4. Reduce the burden of HIV and AIDS to patients
5. Promote optimal growth and development in children
6. Improve quality of life
7. Prevent HIV transmission from mother to child (PMTCT)



## 2.4 Eligibility for ART

### 2.4.1 HIV infected Adults and Adolescents

**Table 1: Criteria for initiating ART for Adults and Adolescents**

WHO Clinical Stage	CD <sub>4</sub> Count	Recommended action
Stage 1 &2	Below or equal to 350 cells/mm <sup>3</sup> priority gradual transition to ≤ 500	Initiate ART
Stages 3 &4	Regardless of CD4 count	Initiate ART
HIV patients with active TB	Regardless of their CD4 count	Initiate ART

### 2.4.2 HIV exposed children includes:

- Children born to HIV-infected mothers
- Children who are HIV antibody test positive but the HIV status of the mother is unknown

**Table 2: Criteria for initiating exposed children on ART**

Age in months	HIV status	WHO Clinical Stage	CD <sub>4</sub> Count	Recommended action
Below 24 months	Confirmed	1,2,3 or 4	Irrespective of CD <sub>4</sub> count	Initiate ART
Below 18months	Not confirmed	3 or 4 (severe HIV disease)	Not available	Initiate ARV therapy & HIV antibody test be repeated at 18months of age continue ARV therapy with confirmed infection
24 months and above	Confirmed	3 & 4	Irrespective of CD <sub>4</sub> count	Initiate ART

24 - 59 months	Confirmed	1 or 2	< 25% (750cells/mm <sup>3</sup> )	Initiate ART
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### 2.4.3 Other factors to be considered before initiating ART:

Psychosocial considerations these include:

- Demonstrated reliability, commitment and readiness
- No evidence of active alcohol or other substance of abuse that could affect adherence
- No untreated active depression

## 2.5 Description of ART regimens and drugs to adult and adolescent patients available in Tanzania

### 2.5.1 First line ARVs in Tanzania

The MOHSW suggested the following ARVs to be used for the treatment of HIV/AIDS in Tanzania:

- Zidovudine (AZT)
- Lamivudine (3TC)
- Emtricitabine (FTC)
- Tenofovir (TDF)
- Nevirapine (NVP)
- Efavirenz (EFV)

**Table 3: Updated ARV regimens with corresponding CTC codes**

ADULTS 1L	CURRENT CODE	NEW CODE
TDF+3TC+EFV	1g	1g-A
AZT+3TC +NVP	1b	1b-A
AZT+3TC+EFV	1c	1c-A
TDF+FTC+EFV	1e	1e-A

The following fixed dose combinations are currently available:

- AZT/3TC
- AZT/3TC/NVP
- TDF/FTC/EFV
- TDF/FTC
- TDF/3TC/EFV

### 2.5.2 Use of Antiretroviral Therapy in Adults and Adolescents

Note: EFV 600 mg is for adults with weight above 40kg and for patients weighing below 40kg dosage chart in the HIV/AIDS guideline should be referred

Examples of Alternative First Line Regimens

- Zidovudine (AZT) + Lamivudine (3TC) + Nevirapine (NVP) can be prescribed when Efavirenz is contraindicated, such as in neuropsychiatric complications.
- Tenofovir (TDF) +Lamivudine (3TC) +Efavirenz (EFV) can be given in the presence of anemia (Hb< 7.5g/dl) and/or concomitant use of Rifampicin in case of TB where Nevirapine cannot be used. This is because AZT can cause bone marrow suppression hence potential for worsening the anemic condition while Rifampicin lowers blood levels of Nevirapine.
- Tenofovir (TDF) +Lamivudine (3TC) + Nevirapine (NVP) can be used when there is significant anaemia and use of Efavirenz is contraindicated.

- The following regimen can be used when a patient cannot use Zidovudine, for example in the case of severe anaemia.
  - Tenofovir (TDF) + Emtricitabine (FTC) + Efavirenz (EFV)
  - Tenofovir (TDF) + Emtricitabine (FTC) + Nevirapine(NVP)
  - Tenofovir (TDF) + Lamivudine (3TC) + Efavirenz (EFV)
  - Tenofovir (TDF) + Lamivudine (3TC) + Nevirapine (NVP)

Reasons for substituting a single drug within the first line regimen include:

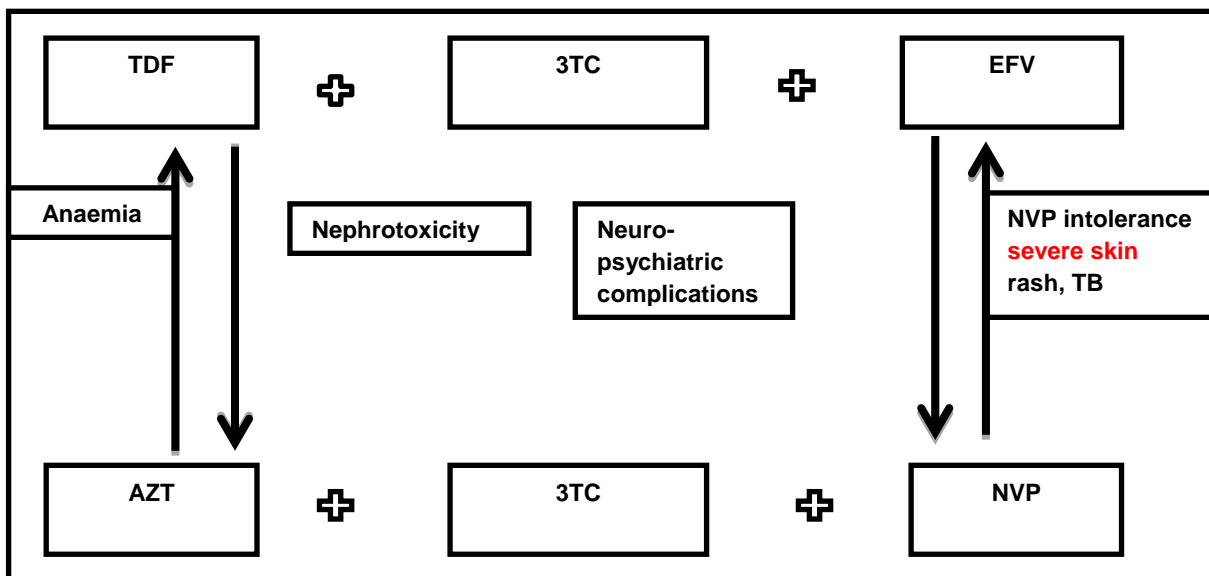
Drug - specific side effects which are intolerable.

Examples:

- Anaemia
- Systemic allergic reactions e.g. Steven Johnson syndrome
- Organs toxicity-E.g. Hepatotoxicity , nephrotoxicity

Preexisting medical conditions such as TB

**Figure 1: Recommended shifting within First line drug regimen in Tanzania**



## 2.6 Use of Antiretroviral Therapy

### 2.6.1 Pregnant Women

All confirmed HIV infected pregnant women should start ART regardless of their CD4 status. The recommended regimen is Tenofovir300mg/Lamivudine300mg/Efavirenz600mg. However, there are other alternatives like AZT300mg/3TC150mg + EFV600mg and AZT300mg/3TC150mg/NVP200mg.

### 2.6.2 Exposed infants

All infants exposed to HIV through their mothers during pregnancy, delivery and breastfeeding should be initiated on NVP prophylaxis.

**Table 4: The use of ARVs for exposed infants**

Scenario	Duration of Infant Nevirapine prophylaxis
Mother diagnosed with HIV during pregnancy, labour, immediately after delivery, breastfeeding and initiated ART	6 week
Infant identified as HIV exposed after birth (through infant or maternal HIV antibody testing), mother initiated ART and is breastfeeding	12 weeks

**Table: 5: Infant NVP dosing recommendations**

Low birth weight infants should receive mg/kg dosing, suggested starting dose is 2 mg/kg once daily

Infant NVP dosing recommendations	
Infant age	NVP daily dosing (10mg/ml)
Birth to 6 weeks	
Birth weight 2000–2499 g	10 mg (1ml) once daily
Birth weight ≥2500 g	15 mg (1.5ml) once daily

## 2.7 Antiretroviral Therapy in Children

**Table 6: Recommended regimen in children**

Age	Recommended regimen	Reason
Below 3 years	Abacavir + Lamivudine + Lopinavir/ritonavir	Default regimen
	Zidovudine + Lamivudine + Nevirapine	Alternative regimen
3years & above	Abacavir + Lamivudine + Efavirenz	Default regimen
	Zidovudine + Lamivudine + Nevirapine (or Efavirenz)	Alternative regimen

The following FDC for children are available

- Abacavir60mg/Lamivudine30mg
- Zidovudine60mg/Lamivudine30mg/Nevirapine50mg
- Zidovudine60mg/Lamivudine30mg

## PEDIATRIC ARV REGIMENS AND CTC2 CODES

**Table 7: Pediatric first line ARV regimens**

PAEDIATRICS - 1L	PREVIOUS CODE	NEW CODE
AZT + 3TC + NVP	1b	1b-P
AZT + 3TC + EFV	1c	1c-P
ABC + 3TC + LPV/r		1n-P
ABC + 3TC + EFV		1k-P

## 2.8 Antiretroviral Therapy in TB patients

### For Adults

ART should be initiated for *all* people living with HIV with active TB disease irrespective of CD4 cell count. TB treatment should be started first, followed by ART as soon as possible, within the first eight weeks of starting TB treatment. The recommended first-line ART regimens for TB patients are those that contain Efavirenz (EFV), since interactions with anti-TB drugs are minimal.

For those who are unable to tolerate or have contraindications to an EFV-based regimen, AZT +3TC + NVP or TDF +3TC or FTC + NVP or a triple NRTI regimen, e.g. AZT+3TC+TDF, is recommended. When using Nevirapine based regimen, the patient should be started on a normal dose (200mg bd). A leading dose is not required.

In individuals who need TB treatment and require an ART regimen containing a boosted protease inhibitor (PI), it is recommended to use Rifampicin and a boosted antiretroviral regimen containing Lopinavir with additional Ritonavir dosing (LPV/r 400mg/400mg BID). This regimen is associated with high levels of toxicity, and requires close clinical and laboratory monitoring. If a patient develops TB while on ART the following consideration should be kept in mind;

- ART should be continued but changes should be made to avoid interactions and toxicities

- Occurrence of TB may be due to treatment failure that may need change of regimen

### For Paediatrics

**Table 8: Recommended ARV treatment for children and adolescents co infected with TB**

<b>Recommended regimens for children and adolescents initiating ART while on TB treatment</b>		
Younger than 3 years old		Two NRTIs + NVP, ensuring that dose is 200 mg/m <sup>2</sup> or Triple NRTI (AZT + 3TC + ABC)
3 years and older		Two NRTIs + EFV or Triple NRTI (AZT + 3TC + ABC)
<b>Recommended regimen for children and infants initiating TB treatment while receiving ART</b>		
Child on standard NNRTI-based regimen (two NRTIs + EFV or NVP)	Younger than 3 years	Continue NVP, ensuring that dose is 200 mg/m <sup>2</sup>  Or Triple NRTI (AZT + 3TC + ABC)
	3 years and older	If the child is receiving EFV, continue the same regimen If the child is receiving NVP, substitute with EFV or Triple NRTI (AZT + 3TC + ABC)
Child on standard PI based regimen (two NRTIs + LPV/r)	Younger than 3 years	Triple NRTI (AZT + 3TC + ABC) or Substitute NVP for LPV/r, ensuring that dose is 200mg/m <sup>2</sup> or Continue LPV/r
	3 years and older	-If the child has no history of failure of an NNRTI-based regimen:  Substitute with EFV or Triple NRTI (AZT + 3TC + ABC) or Continue LPV/r  -If the child has a history of failure of an NNRTI-based regimen:



		Triple NRTI (AZT + 3TC + ABC) or Continue LPV/r
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## 2.9 Use of ARVs for post exposure prophylaxis

PEP should be started as soon as possible preferably within 2 hours post exposure. When given after 24-36 hours post exposure may be substantially less effective and not effective after 72 hours. Two regimens are used for post exposure prophylaxis of HIV depending on the risk of exposure as highlighted in the table below

**Table: 7: Risk levels in Post exposure prophylaxis**

Risk level	HIV Status of the source person	Mode of exposure	PEP regimen
Low risk	Asymptomatic HIV infected Source of unknown HIV status (deceased body)  Unknown source (e.g. a needle from a sharps disposal container)	Superficial percutaneous injury by solid needle  Few drops of blood	Dual therapy: AZT + 3TC
High risk	Symptomatic HIV infection, AIDS, acute sero-conversion	Large-bore hollow needle, deep puncture, visible blood on device, or needle used in patient's artery or vein  Large volume  Sex and presence of  Blood  Survivor or assailant with STD  with inflammation  Multiple assailants or multiple penetrations by assailant(s)	Triple therapy: AZT + 3TC + EFV or LPV/r

		Ejaculation by assailant Anal penetration Trauma to the genital area Assailant(s) is HIV positive	
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## 2.10 Switching to Second Line ART Regimens

The need to change to second line ART regimen can be made if treatment failure is identified. Treatment failure can be detected using the following clinical or laboratory parameters:

**Clinical failure:** New or recurrent clinical event indicating severe immunodeficiency (WHO clinical stage 4 conditions) or malignancy within 6 months or more of effective treatment.

**Immunological failure:** 50% decrease in CD4 count from peak value, or return to the baseline CD4 count or lower

**Virological failure:** Plasma viral load above 1000 copies/ml based on two consecutive viral load measurements after 3 months, with adherence support.

Treatment failure can be caused by drug resistance due to nature of virus or mutations. It can be caused by other correctable factors contributing to suboptimal drug levels and poor clinical response. These include:

- Under-dosage
- Drug interactions that may reduce the efficacy of some of the ARV eg. Metabolism of NVP is increased when interacting with Rifampicin which may reduce level of effectiveness of Nevirapine
- Patients' non adherence.
- Evidence of mal-absorption
- Use of less potent ARVs.

## 2.11 Second line ARVs

The following ARVs have been recommended by the MOHSW as second line medicines for Adults and Adolescents;

- Abacavir(ABC)
- Zidovudine (AZT)
- Lopinavir boosted with Ritonavir(LPV/r)
- Atazanavir boosted with Ritonavir(ATV/r)
- Tenofovir (TDF)
- Emtricitabine (FTC)
- Lamivudine (3TC)

**NB:** The second line NRTI choice for adults and adolescent depends on the first line regimen used

**Table: 8. Recommended second line ART Regimens and codes in Tanzania**

ADULTS 2L	PREVIOUS CODE	NEW CODE
TDF+FTC +LPV/r	2f	2f-A
TDF+FTC + ATV/r		2h-A
AZT+3TC+ ATV/r		2s-A
ABC+3TC+LPV/r		2g-A

The following fixed dose combinations are currently available:

**TDF/FTC**

**AZT/3TC**

**LPV/r**

**ATV/r**

Second line ARVs approved for Children are:

**Table: 8. Recommended Second line ART Regimens and codes for Children in Tanzania**

1L Regimen	Age	2L Regimen	PREVIOUS CODE	NEW CODE
LPV/r based 1L	Less than 3 years	No change		
	3 years and above	ABC+3TC+ EFV		
		AZT+3TC+EFV		
NVP or EFV based regimens	All ages	AZT+3TC+LPV/r		2n-P
		ABC+3TC+LPV/r	2g	2g-P

The following fixed dose combinations are currently available:

**AZT/3TC**

**ABC/3TC**

**LPV/r**

**NB:** Children below 3 years alternative 2L regimens in the presence of advanced clinical disease progression or lack of adherence specifically because of poor palatability is ABC(or AZT)+3TC + NVP.

For Children 3 years and older, if started on LPV/r based 1L regimens, alternative 2L regimen is AZT+3TC+EFV

## **2.12 Opportunistic infections prophylaxis**

HIV infected persons are prone to develop opportunistic infections such as *Pneumocystis jiroveci* pneumonia, toxoplasmosis and bacterial lower respiratory tract infections, gastrointestinal infections and bacterial skin infections.

Cotrimoxazole prophylaxis is highly recommended in the current HIV/AIDS guidelines as a strategy to prevent occurrence of *Pneumocystis jiroveci* pneumonia and some of these opportunistic infections.

### **2.12.1 Criteria for Cotrimoxazole Prophylaxis in Adults in Tanzania**

- All HIV infected patients, in WHO Stage 2, 3 and 4
- Asymptomatic HIV infected individuals with CD<sub>4</sub> counts of <350 cells/ml
- All HIV infected pregnant women throughout their pregnancy

### **2.12.2 When to Stop Cotrimoxazole Prophylaxis**

Cotrimoxazole prophylaxis should be stopped in the following cases

- Occurrence of severe side effects such as severe cutaneous reactions or fixed drug reactions
- If ART is initiated and CD4 count is 500 cells/ml or above
- If use of antiretroviral agents causes renal and/or hepatic insufficiency or severe haematological toxicity

### **2.12.3 Cotrimoxazole Dosing Recommendations in adults**

Two single strength tablets 400/80 mg tablets daily or one double strength tablet daily

Duration:

- Ongoing for patients who qualifies to be on ARV but not on ARVs
- Stop when CD4 is 500cells/mm<sup>3</sup> for patients taking ARVs

## 2.12.4 Cotrimoxazole Prophylaxis Therapy (CPT) in Children

All infants exposed to HIV through mothers should be initiated with CPT regardless of their HIV status.

**Table 9: Cotrimoxazole Prophylaxis in children**

HIV-exposed infants and children *	Infants and children confirmed to be living with HIV		
	< 1 Year	1 to < 5 Years	≥ 5 Years
Cotrimoxazole prophylaxis is universally indicated, starting at four weeks after birth and maintained until cessation of risk of HIV transmission and exclusion of HIV infection	Cotrimoxazole prophylaxis is indicated regardless of CD <sub>4</sub> percentage or clinical status	WHO clinical stages 2, 3, and 4 regardless of CD <sub>4</sub> percentage OR Any WHO stage and CD <sub>4</sub> <25%	Follow adults recommendations

The dose of Cotrimoxazole for prophylaxis in children is 4 mg/kg once a day. In case of sulphur allergy: Give Dapsone Dose: 2 mg/kg once daily

## 2.12.5 When to Stop Cotrimoxazole Prophylaxis in children:

Children who are born to HIV infected women can stop prophylaxis;

- When the HIV infection has been ruled out and the risk of exposure (e.g. breast feeding) has ceased
- If ART is initiated and CD<sub>4</sub> count is above 25%
- If use of antiretroviral medicines causes renal and/or hepatic insufficiency or severe haematological toxicity

Children older than 18 months can continue with prophylaxis only if diagnosis of HIV has been confirmed

### **2.12.6 When to start Isoniazid preventive therapy (IPT) and Fluconazole in children and adults**

Observe initiation criteria after a comprehensive screening of active TB amongst HIV patients. All HIV patients without active Tb disease should be provided with IPT to prevent them from getting TB. Patients with fungal infection are eligible for Fluconazole medicines. Refer the treatment guideline.

## CHAPTER 3: THE LOGISTICS SYSTEM FOR ARVS AND OI'S

### 3.1 Introduction to logistics:

#### 3.1.1 Introduction

Logistics system is the process of getting goods through the supply chain from the point of origin to the point of consumption. Logistic system aims to get the product to the customers thereby providing good and reliable customer service.

This chapter intends to empower health care providers with knowledge and skills on the definition of key logistics terms; components of the logistics cycle including product selection, quantification, procurement, inventory management (storage, distribution and stock levels), Logistics management information system and serving the customer; inventory management tools; the flow of information and commodities in the supply chain; the ordering cycles (A, B, C Groups) and components of the prescription.

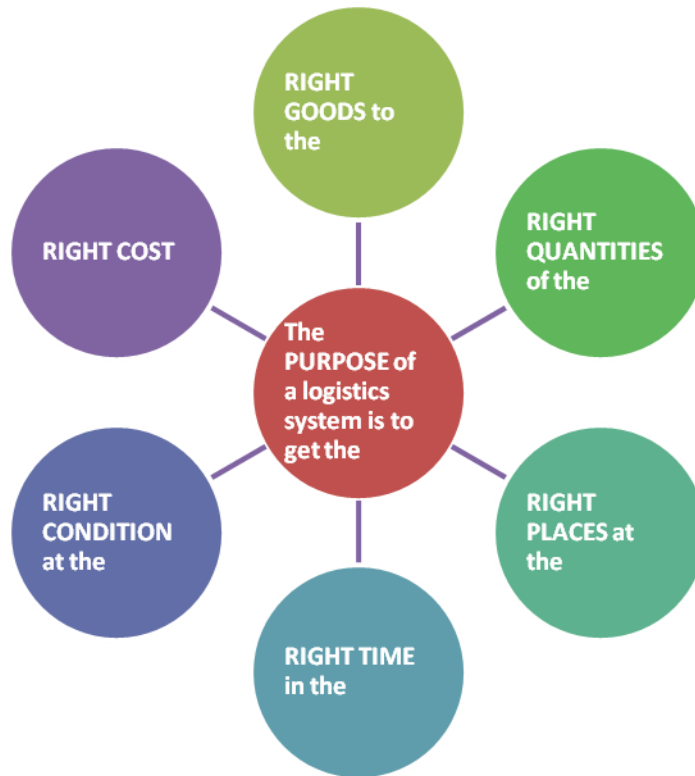
#### 3.1.2 Specific Objectives:

At the end of this session participants will be able to:

1. To Describe the purpose of logistics systems
2. To define the key logistics terms
3. To explain the components of logistic cycle
4. To Describe the flow of information and commodities in the supply chain
5. To describe inventory management including assessing stock status and determining months of stock
6. To describe the inventory management tools
7. To differentiate the ordering cycles (A, B, C Groups)



### 3.2 Purpose of logistic system



### 3.3 Definition of key logistic terms

- a) **Service Delivery Point (SDP):** is a facility that serves clients directly and where clients (users) receives supplies e.g. Clinics, hospitals, health centers and dispensaries
- b) **Pipeline:** is the entire chain of storage facilities and transportation links through which supplies moves from manufactures to consumers, including port facilities , central warehouse, regional warehouses, district warehouses, all service delivery points and transport vehicles
- c) **Lead-time:** The time when the new stock is ordered to when is received and available for use
- d) **Pull system:** is the distribution system in which a personnel who receives the supplies determines the quantities to be issued
- e) **Push system:** is the distribution system in which the personnel who issues the supplies determines the quantities to be issued.
- f) **Shelf life:** the length of time a product may be stored without affecting its usability, safety, purity or potency.
- g) **Consumption data/ consumption records :**is the record kept on product consumed
- h) **Dispensed to user data:** Is the information on the quantities of products actually given to customers

- i) **Issue data:** is the information on quantity of goods shifted from one level of a system to another
- j) **Physical inventory :** is the process of counting by hand the total number of usable units of each commodity in a store or health facility at any given time

### 3.4 The logistic cycle

The components of logistic cycle describe interrelationship among themselves as they relate to the logistic cycle. The components include Product selection, Quantification and procurement, Inventory Management and Serving customer. Between each component Quality Monitoring is done to ensure the quality in each component.

The LMIS act as a drive engine for Logistic components. It provides information to other logistic component for decision making. Without the information, logistic system would not be able to run smoothly.

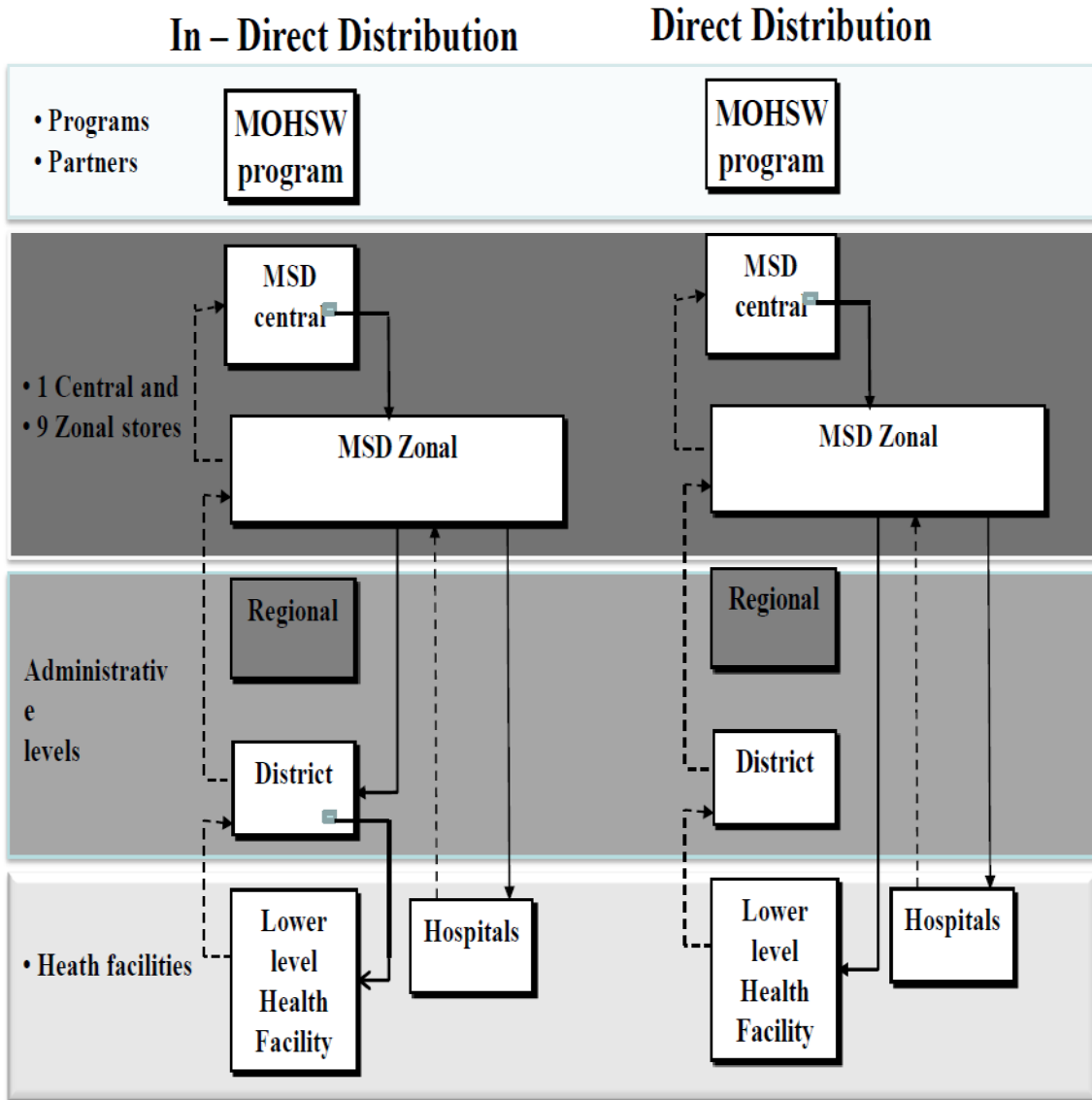


***Components of a Logistic Cycle:***

- **Product selection:** in any logistic system product must be selected. In Health logistic system, product selection may be the responsibility of the government through the MOH
- **Quantification and procurement (Forecasting & Procurement):**
  - After product selection, the quantity of each product must be determined and procured
- **Inventory Management:** is concerned with maintaining stock at sufficient levels to Satisfy demand and keep cost reasonable .After the product is procured it must be stored until the customer needs it
- **Serving customers:** The primary function of the logistic cycle. This is done by selecting, procuring, storing or distributing products to meet customer needs
- **Quality monitoring:** The quality of procurement decision should be monitored because it plays an important role in forecasting and procuring the right product based on the product selection
- **Policy:** Logistic manager should aware and updated of current policies and follow them as specified by the government
- **Adaptability:** is the logistic system's ability to obtain the resources that are necessary to address changes in demand. Policy and Adaptability have strong influence on the logistic system.

a. The flow of information and commodities in the supply chain

**Structure of ordering and supplies** LEGEND - - -> Or  
————> Con



**3.5 Inventory Management**

Inventory management is the process of efficiently overseeing the constant flow of commodities into and out of existing inventory. The process involves controlling the transfer in of commodities in

order to prevent the overstocking or diminishing of commodities which can lead to expiry or stock outs respectively.

By using calculations, one determines the correct amount of commodities to order and store at a given interval to avoid stock out, under-stocking or over-stocking.

The correct amount to order can be computed by using the following the three essential data items which are:

- i. Stock on hand
- ii. Loss and adjustment
- iii. Consumption data

Apart from these essential data items other data to be considered are

- i. The beginning balance
- ii. Commodities received during the review period

### 3.6 Stock assessment

The purpose of assessing stock status is to determine how long supplies will last. When you review your stock status, you determine how much of each product you have at your facility and how long these stocks last. You review your stock status by counting the usable stock available, as you do during a physical count. By doing this, you will have an absolute quantity of stock available.

But, it is much more important to know **how long the stocks will last**. We refer to this as **months of stock**.

**Months of Stock:** is the number of months a products will last based on the present consumption rate. For example: Three months of stock means that your stock will last three months, as long as consumption remains at the current rate.

By reviewing your stock status you will be able to determine if your facility is understocked, overstocked, or adequately.

If you are under-stocked of a particular product, and you know that a recently ordered shipment is not on the way, you may need to place an emergency order or seek an assistance from nearby health facility through borrowing.

If you are over-stocked, you may need to inform higher authority or transfer to a nearby facility through redistribution.

A system to control supplies so that quantities in stock fall within an established range is called the **Max-min Inventory Control System**.

By definition the:

**Maximum inventory level:** Is the level of inventory that should never be exceeded. Calculating the Maximum inventory level is one method of inventory control.

**Minimum inventory level:** Is the level below which the inventory should never drop.

### 3.7 Determining Months of Stock

By calculating the months of stock, a facility can determine if the right quantities of commodities are in stock. To determine how long stock will last, the following simple formula can be used:

$$\frac{\text{Stock on hand}}{\text{How much we have used (AMC)}} = \text{How long supplies will last (Months of SOH)}$$

Before calculating Months of stock, the formula above requires you to have two pieces of information: Stock on Hand and Average Monthly Consumption.

To determine Average Monthly Consumption (AMC), add the latest three months' consumption of a particular product, then divide by three.

Use the following formula to determine AMC:

$$\frac{\text{Previous three month's consumption}}{3} = \text{AMC}$$

**Follow these steps when assessing stock status:**

- STEP 1** Conduct physical count of the item you wish to assess stock (This will give you the first piece of information-Stock on Hand). Include only those usable stocks.
- STEP 2** Add all the consumption data for the past three months. This is obtained from past three months issues from dispensing register. If a stock out has been experienced in any of those quarters, either adjust the data for stock out using data from next most recent complete quarterly consumption for which there was no stock out
- STEP 3** Divide the figure obtained in step 2 above by three. Round up to the nearest whole number, using normal math rules (4 and lower round down, 5 and higher rounds up). This will give you the second piece of information i.e Average months of consumption)
- STEP 4** Divide the figure obtained in step 1 above by the figure obtained in step 3 above and round to the first decimal using normal math rules (4 and lower round down, 5 and higher rounds up). See formula for determining stock status above.

The number you get is the months of stock and this tells you how long stocks will last. For example if the figure obtained in step 4 above is 7.37, then round up to 7.4 (**one decimal place**), this means you have enough stock to last for seven months and 12 days at the current consumption rate, that is **[7 months plus (0.4 x30)] = 7 months and 12 days.**

Health facilities are not allowed to have more than the stock set through maximum level. If you have more stock than the set maximum stock levels consider redistributing to other facilities which may need the stocks.

**Stock status assessment and products near their expiration date:**

Be concerned when the remaining shelf life is short. If you have assessed stock and determined that the stock you have will expire before the next ordering period consider redistribution and place an emergency order regardless of the month of stock you have. Make sure not to receive the same batch with the same expiry date.

### 3.8 When to Assess Stock Status

The stock status for a facility should be assessed at any time you suspect that the stock levels do not fall within the recommended maximum and minimum stock levels for your facility. This may occur if there is a loss of supplies due to damage, expiry, or theft, or if there is an unexpected increase or decrease in consumption.

### 3.9 Logistic Management Information System (LMIS) Tools

A logistic management information system tools collect, organize, and report data that enables people to make logistic system decisions. The tools used include the following:

- Stores ledger and bin cards
- Prescriptions
- Daily Dispensing register
- Ordering and reporting: Form A3 (Monthly R & R) and Form A2 (Quarterly R &R )
- Requisitions and issue vouchers
- MSD sales invoices
- Claim and verification forms

#### 3.9.1 Store Ledger and Bin cards

Stores ledger is a stock keeping records that keeps the information about all lots transactions of a Product. Stock card/ bin card- is stock keeping record that keeps information of a single lot transaction for a single product

**JAMHURI YA MUUNGANO WA TANZANIA**



**WIZARA YA AFYA NA USTAWI WA JAMII**

**STORES LEDGER**

FACILITY CODE: \_\_\_\_\_

FACILITY NAME: \_\_\_\_\_

TYPE OF FACILITY (GOV/NGO/FBO/OTHER): \_\_\_\_\_

NAME OF COUNCIL/REGION: \_\_\_\_\_

DATE LEDGER BOOK OPENED: \_\_\_\_\_

DATE LEDGER BOOK CLOSED: \_\_\_\_\_

LEDGER No. \_\_\_\_\_



**TABLE OF CONTENTS:**

S/ No.	Supply Item	Page/ Folio No.
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MINISTRY OF HEALTH AND SOCIAL WELFARE PRESCRIPTION FORM		
Date: 02/06/2013		
Patient ID: 02505	Age: 30	Sex: F
Weight: 50 kg		
No	Medicines	Quantity issued
1	Rx TDF300/3TC300/EFV600 I Tab Nocte x 1/12	30
2	Rx Cotrimoxazole 480mg II Tabs OD x 1/12	60
Prescribed by: Mary L. Signature: Mary		Date: 2/6/13
Dispensed by: Joseph Andrew Signature: AJoseph		Date: 2/6/13

### 3.9.3 Daily Dispensing register

**Daily Dispensing Register:** Is the record that gives the quantity of each product dispensed to user by user name or user number and by date at the Service delivery point.



## A: Report and Request Form for quarterly ordering facilities

### FOMU A2: TAARIFA NA MAOMBI YA DAWA ZA ARV NA MAGONJWA NYEMELEZI

Jina la Kituo \_\_\_\_\_ Namba ya Kituo \_\_\_\_\_ Aina ya Kituo (Gov/NGO/FBO/Injine) \_\_\_\_\_

Wilaya \_\_\_\_\_ Kipindi cha Taarifa: Mwezi \_\_\_\_\_ hadi \_\_\_\_\_ Mwaka \_\_\_\_\_

#### I: MAOMBI YA DAWA ZA ARVs

Na. ya MSD	Maelezo ya Bidhaa	Kipimo cha Ugavi	Sallo la Mwanzo	Kiasi kilichopokewa	Kiasi Kilichotumika	Upotevu/ Marekebisho	Sallo la Mwisho (Hesabu kwa mkono)	Makisio ya Dawa kwa Wagonjwa Wapya	Makisio ya Jumla ya Matumizi	Kiasi cha Juu cha Shehena	Kiasi cha Kuagiza	Kiasi kilichoombwa	Kiasi kilichoidhi nishwa	Maelezo
		U	A	B	C	D = E+C-A-B	E	F = Na. Ya wagonjwa wapya × idadi ya vidonge vya mwezi × 3	G (G= F + C)	H (H= G X 2)	I (I = H - E)	J (J= I ÷ U)	K	L
10157	TDF/FTC/EFV (300/200/600mg)Tab	Bottle 30 Tabs												
10140	AZT/3TC (300mg/150mg) Tab	Bottle 60 Tabs												
10139	3TC/d4T/NVP (150/30/200mg) Tab	Bottle 60 Tabs												
10156	3TC/AZT/NVP (150/300/200mg)Tab	Bottle 60 Tabs												
10136	Efavirenz 600 mg Tabs	Bottle 30 Tabs												
10137	Efavirenz 200 mg Tabs	Bottle 90 Tabs												
10138	Nevirapine 200 mg Tabs	Bottle 60 Tabs												
10141	Lamivudine 150mg Tabs	Bottle 60 Tabs												
10143	Zidovudine 300 mg Tabs	Bottle 60 Tabs												

	Solution 20mg/ml													
10227	Lopinavir/Ritonavir (100mg/25mg) Tab	Bottle 60 Tabs												
40026	3TC/AZT/NVP (30/60/50mg)	Bottle 60 Tabs												
40025	Nevirapine Oral Solution 50mg/5ml	Bottle 20ml												

## II. MAOMBI YA FOMU

JINA LA FOMU	IDADI
FOMU A1: KUMBUKUMBU YA SIKU YA UGAWAJI WA ARVs	
FOMU A2: TAARIFA NA MAOMBI YA DAWA ZA ARVs	
FOMU A3: TAARIFA YA MWEZI YA MATUMIZI YA ARVs YA VITUO TEGEMEZI	

## III. TAARIFA NA MAOMBI YA DAWA ZA MAGONJWA NYEMELEZI

Na. ya MSD	Maelezo ya Bidhaa	Kipimo cha Ugavi	Salio la Mwanzo	Kiasi kilichopokewa	Kiasi Kilichotumika	Upotevu/ Marekebisha	Salio la Mwisho (Hesabu kwa mkono)	Kiasi cha Juu cha Shehena	Kiasi cha Kuagiza	Kiasi kilichoombwa	Kiasi kilichoidhinishwa	Maelezo
		U	A	B	C	D D = E+C-A-B	E	H (H= C X 2)	I (I = H - E)	J (J= I ÷ U)	K	L
10195	Co-trimoxazole 400mg/80mg Tabs	T/100 Tabs										
10020	Co-trimoxazole 400mg/80mg Tabs	T/1000 Tabs										
40028/ 40002	Co-trimoxazole Susp 200mg/40mg/5ml	Bottle 100mls										
40020	Co-trimoxazole Susp 200mg/40mg/5ml	Bottle 60mls										
10080	Fluconazole 200mg Tabs	Pack 100 Tab										
10207	Acyclovir 200mg Tabs	Pack 500 Tab										

## B: Request and Report form for monthly reporting Facilities

FOMU A3: TAARIFA YA MWEZI YA MATUMIZI YA ARV KWA VITUO TEGEMEZI

Jina la Kituo: \_\_\_\_\_ Aina ya Kituo: (Gov/NGO/FBO/Other) \_\_\_\_\_ Jina la Kituo Mama: \_\_\_\_\_

Wilaya: \_\_\_\_\_ Kipindi cha Taarifa: Mwezi \_\_\_\_\_ Mwaka \_\_\_\_\_

Maelezo ya Bidhaa	Kipimo cha Ugavi U	Salio la Mwanzo A	Kiasi kilichopokelewa B	Kiasi kilichotumika C	Upotevu / Marekebisho D D=E + C - A - B	Salio la Mwisho (Hesabu kwa mkono) E	Kiasi cha juu cha Shehena F (F=C×2)	Kiasi cha Kuagiza G (G=F - E)	Kiasi kinachoomba H (H=G ÷ U)	Maelezo

MUHTASARI WA IDADI YA WAGONJWA KULINGANA NA DAWA MCHANGANYIKO (REGIMENS) WANAZOTUMIA

Dozi Mchanganyiko	Idadi ya Wagonjwa waliopatiwa ARVs kwa mwezi huu	Makisio ya Wagonjwa wapya	Idadi ya Wagonjwa waliofariki/walioacha tiba	Maelezo
<b>Watu Wazima</b>				
3TC + AZT + EFV				
3TC + AZT + NVP				
TDF + FTC + EFV				
TDF + FTC + NVP				
TDF + 3TC + EFV				
TDF + 3TC + NVP				
ABC + 3TC + NVP				
ABC + 3TC + EFV				
d4T + 3TC + NVP				
TDF + FTC + LPV/r				
TDF + FTC + ATV/r				
TDF + 3TC + ATV/r				
TDF + 3TC + LPV/r				
ABC + 3TC + LPV/r				
ABC + 3TC + ATV/r				
AZT + 3TC + ATV/r				
AZT + 3TC + LPV/r				
<b>Watoto</b>				
AZT + 3TC + NVP				
AZT + 3TC + EFV				
d4T + 3TC + NVP				
d4T + 3TC + EFV				
ABC + 3TC + EFV				
ABC + 3TC + NVP				
AZT + 3TC + LPV/r				
ABC + 3TC + LPV/r				

Imetayarishwa na: \_\_\_\_\_ Sahihi: \_\_\_\_\_ Tarehe: \_\_\_\_\_

Imewasilishwa na: \_\_\_\_\_ Sahihi: \_\_\_\_\_ Tarehe: \_\_\_\_\_

Imepokewa na: \_\_\_\_\_ Sahihi: \_\_\_\_\_ Tarehe: \_\_\_\_\_

### 3.9.5 Requisitions and Issue Vouchers

**Requisition and Issue Voucher:** Is the transaction records used in the pull distribution system that list the items and quantities requested by a facility and the quantity actually issued.

**LOCAL STORES ISSUE VOUCHER**

- (1) To: \_\_\_\_\_
- (2) Issued Voucher No: \_\_\_\_\_
- (3) Date: \_\_\_\_\_

A REQUISITION/ISSUE VOUCHER  
ALLOCATED STORES ONLY

NOT FOR USE IN CONNECTION WITH UNALLOCATED STORE OR LOCAL PURCHASE

No: .....

(4) Description of Article	(5) Unit	Quantity		Ledger Folio	
		(6) Required	(7) Issued	(8) Issuer	(9) Receiver

- (10) REQUESTING OFFICER  
Signature: \_\_\_\_\_ Designation: \_\_\_\_\_ Station: \_\_\_\_\_
- (11) ISSUING OFFICER  
Signature: \_\_\_\_\_ Designation: \_\_\_\_\_ Station: \_\_\_\_\_
- (12) CERTIFIED  
A. RECEIVED IN GOOD ORDER  
B. TAKEN ON CHARGE IN MY STORES LEDGER/FOR IMMEDIATE USE  
(DELETE WHICHEVER IS APPLICABLE)
- (13) RECEIVING OFFICER  
Signature: \_\_\_\_\_ Designation: \_\_\_\_\_ Date: \_\_\_\_\_

### 3.9.6 MSD Sales Invoice

**Sales Invoice:** Is the document which provides the information regarding the purchased commodities, the unit of measure, the quantity purchased, batch details and the cost of those commodities.

For MSD, the document accompanies the shipment during delivery to the facilities and upon counter-checking the commodities, the supplier and receiver need to sign the document for reference.



Invoice No: 86933

**Sales Invoice**

Zone: Dar es Salaam  
Plant

**Sold to:**  
DR310004  
Temeke Hospital  
P.O.BOX 45232 Dar es Salaam  
  
D20001  
DAR ES SALAAM  
TANZANIA

**Ship to:**  
DR310004  
Temeke Hospital  
P.O.BOX 45232 Dar es Salaam  
  
D20001  
DAR ES SALAAM  
TANZANIA

**Sales Order no:** 65504  
**Invoice date:** 26/09/2013  
**Cust Ref:**  
**Ship via:** Customer Own Collect

**Sales Cat:** VP Sales  
**Payments Terms:** On Account  
**Sales Person:** Yonah Msengi.  
**Del Term:** EX- Works (Named palce)

Item Code	Description	UOM	BatchSerial/ Number	Batch/ Serial Qty	Batch Expiry date	Unit Price	Amount(TZS)
10010158AB	TENOFOVIR 300MG+EMTRICITABINE 200MG (FTC/TDF) TABLETS	30TB	1111449	1,000	30/05/2014	600	600,000
10040026BA	LAMIVUDINE 30mg + ZIDOVUDINE 60mg + NEVIRAPINE 50mg TABLETS	60TB	1082612	1,215	31/10/2013	2,800	3,402,000

Invoice Line Total:	4,002,000.00
Invoice Line Discount:	0.00
Invoice Miscellaneous Charge	0.00
<b>Invoice Total:</b>	<b>4,002,000.00</b>

Invoice Total Amount in Words: four million two thousand and xx / 100

Missed items

Item code	Description	UOM	Missed QTY	Reason
10010158AB	TENOFOVIR 300MG+EMTRICITABINE 200MG (FTC/TDF) TABLETS	30TB	1,200	Out of Stock

Missed items

GOODS RECEIVED IN GOOD CONDITION

Prepared by (MSD) \_\_\_\_\_ Authorized Signature (MSD) \_\_\_\_\_ Invoice acceptance \_\_\_\_\_ Shipping Person \_\_\_\_\_ Delivery acceptance \_\_\_\_\_  
Macrina Nchimbi

Legal Number: INDR-006899

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### 3.9.7 Claim and Verification forms

**UNITED REPUBLIC OF TANZANIA  
MINISTRY OF HEALTH**

**VERIFICATION AND CLAIMS FORM**

Name of Health Facility .....

Name of supplier ..... Supplier delivery note .....

Supplier Invoice No. .... Supplier receipt no. ....

Transporter ..... Driver .....

**Physical Control of Received Items**

Items ordered but not received accordingly			
<b>Order form</b>	<b>Item description</b>	<b>Quantity ordered</b>	<b>Quantity received</b>
034	Tablets Lamivudine 150mg	500	400

Items with close expiry date (3 months )		
<b>Item description</b>	<b>Quantity</b>	<b>Expiry date</b>
Abacavir 300mg tablets	3	30 <sup>th</sup> , September 2009.

**DISCREPANCY**

Breakages					
<b>Invoice No.</b>	<b>Code</b>	<b>Item description</b>	<b>unit</b>	<b>Quantity</b>	<b>Remarks</b>

Invoiced but missing					
<b>Invoice No.</b>	<b>Code</b>	<b>Item description</b>	<b>Unit</b>	<b>Quantity</b>	<b>Remarks</b>

Over Issued					
<b>Item description</b>	<b>Code</b>	<b>Item description</b>	<b>Unit</b>	<b>Quantity</b>	<b>Remarks</b>

3 Name of Witness 1 .....Signature ..... Date .....

4 Name of Witness 2 .....Signature ..... Date .....

5 Name of Witness 3 .....Signature .....Date .....

**6 DMO Office:**

7 Seen and forwarded to *MSD/ZMS*

8 Name Signature Date....

**3.10 Ordering cycles**

Ordering facilities are divided into three (3) groups i.e. Group A, B and C. Each group orders quarterly as indicated in the table of ordering cycles below.

It is important for each ordering facility to submit their order at the scheduled time. The facility’s order must be submitted to MSD by 14<sup>th</sup> of the reporting month and for non-ordering facilities’ orders must be submitted to the district level by the 5<sup>th</sup> of the reporting month.

ORDERING GROUP CYCLES

Summary of activities for the whole year would be

Order being...	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
<ul style="list-style-type: none"> <li><b>Prepared</b> R &amp; R completed by facility based on data from past 3 months and submitted in Week 1 of the month. District approval and submission to MSD by Week 2 of the month (2 weeks)</li> </ul>	A	B	C	A	B	C	A	B	C	A	B	C
<ul style="list-style-type: none"> <li><b>Processed</b> Orders packed by MSD in 3<sup>rd</sup> and 4<sup>th</sup> week of the month (2 weeks)</li> </ul>	A	B	C	A	B	C	A	B	C	A	B	C
<ul style="list-style-type: none"> <li><b>Received</b> MSD prepares to deliver to the District by Week 1 of the following month (1weeks) District and arranges delivery to the facilities by Week 2 of the month (1 week)</li> </ul>	C	A	B	C	A	B	C	A	B	C	A	B

## CHAPTER 4: BASIC COMPUTER SKILLS

### 4.1 Session Goal

Participants will gain basic computer knowledge and skills to enable them use pharmacy module database.

### 4.2 Session Objectives

After completing the activities in this session, participants will be able to:

1. Define what is a computer
2. List and describe computer components
3. Describe input and output devices
4. Demonstrate how to turn the computer on and off
5. Explain how the computer operates
6. List some of the functions of a computer
7. Demonstrate the use of a keyboard and a mouse
8. Describe how to manage computer windows i.e. close, minimize and maximize
9. Provide some examples of backup devices
10. Describe how to maintain a computer and keep it safe i.e. using ant virus

### 4.3 Overview

This is a class for very beginning computer users. You are not expected to have ANY experience with computers. If you've never touched a computer before, this is the right place for you.

We will be using PC computers running the Microsoft Windows operating system. You may have heard these words before, but if not, don't worry. We'll cover their meanings later in class.

**Don't get discouraged!** Remember: Practice makes perfect and everyone starts out as a Beginner. Using the keyboard and mouse may be challenging at first, but it will become easier the more you use them. Note: The mouse is intended for you to use with your right hand, regardless of whether or not you are right-handed. This shouldn't be an issue in class, but if the mouse is uncomfortable for you, let your instructor know.

## 4.4 Introduction

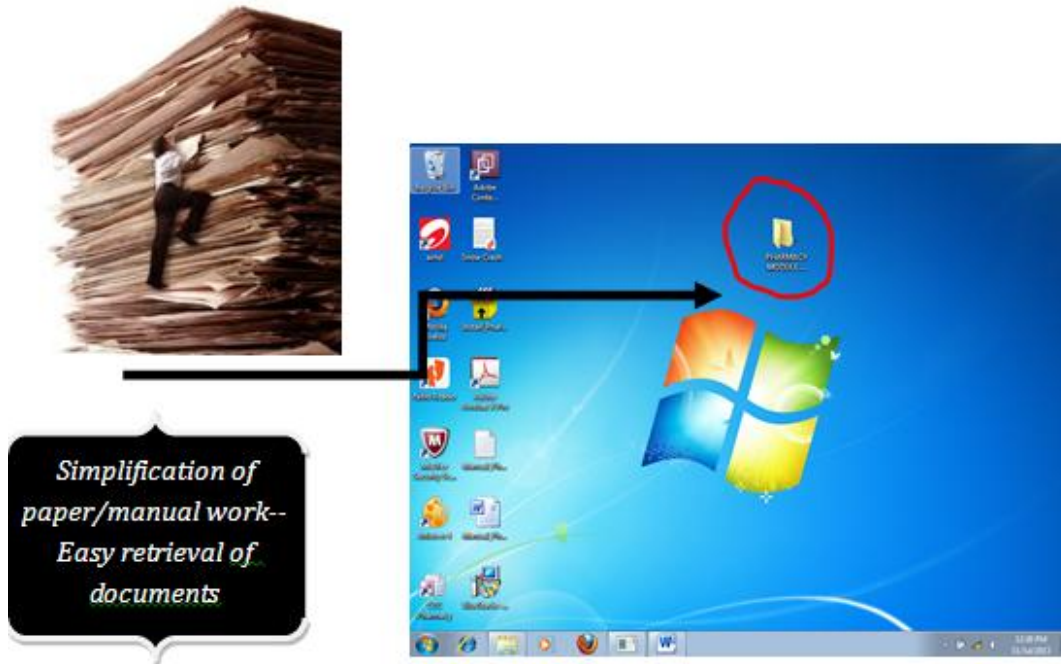
### ***What is computer?***

A **computer** is an electronic device that manipulates information, or "data." It has the ability to **store**, **retrieve**, and **process** data. You can use a computer to type documents, send email, and browse the internet. You can also use it to handle spreadsheets, accounting, database management, presentations, games, and more.

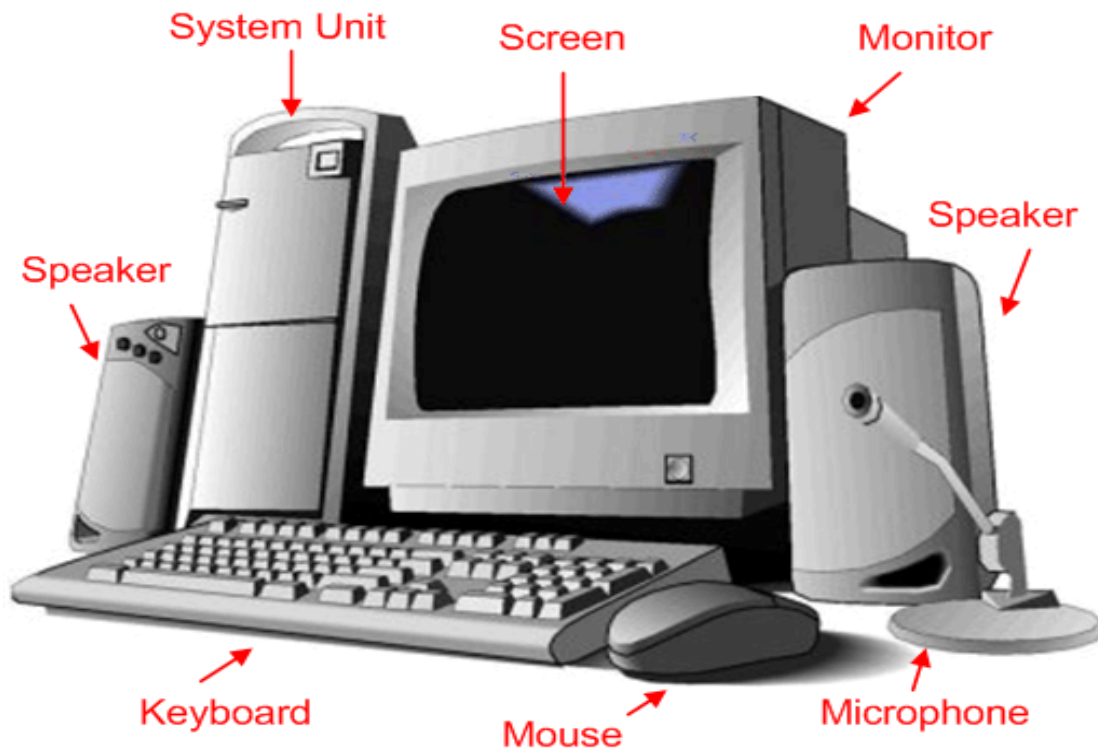
### ***So why use a computer?***

Compared to manual desk work, a computer can be of a great advantage. Learn to use it and it will help you to:

- work faster and more precise
- use one piece of information in different documents
- make calculations without mistakes and correct your English spelling
- present your work better and more professional
- make as many copies and different versions of documents as you like
- store and keep track of your (electronic) documents
- send (electronic) mail and documents to distant relatives and business relations within a matter of minutes
- find information you need, available on one of the millions of computers that are worldwide connected to the Internet



**Components of a computer**



**Input Devices**

Device	Function
Keyboard	The computer keyboard is used to enter text information into the computer, as when you type the contents of a report. The keyboard can also be used to type commands directing the computer to perform certain actions
Mouse	This is the other way to interact with your computer. Most mice have a right button, a left button and a scrolling wheel
Camera	Is a hardware device used to take photographs, consisting of a lightproof box with photosensitive film or plate within the box

**Output Devices**

Device	Function
Monitor	The monitor looks like a television screen and is where you see what is happening on your computer. It's how you interact with your computer by seeing a visual representation of what you are doing.
Printer	An external hardware device responsible for taking computer data and generating a hard copy of that data. Printers are one of the most used peripherals on computers and are commonly used to print text, images, and photos.
Speaker	A hardware device connected to a computer's sound card that outputs sounds generated by the computer.

**Turning the Computer On**

Before turning on the computer, check the following;

- The power cable is connected to the power supply
- The switch at which the power cable of the computer is connected is turned on.

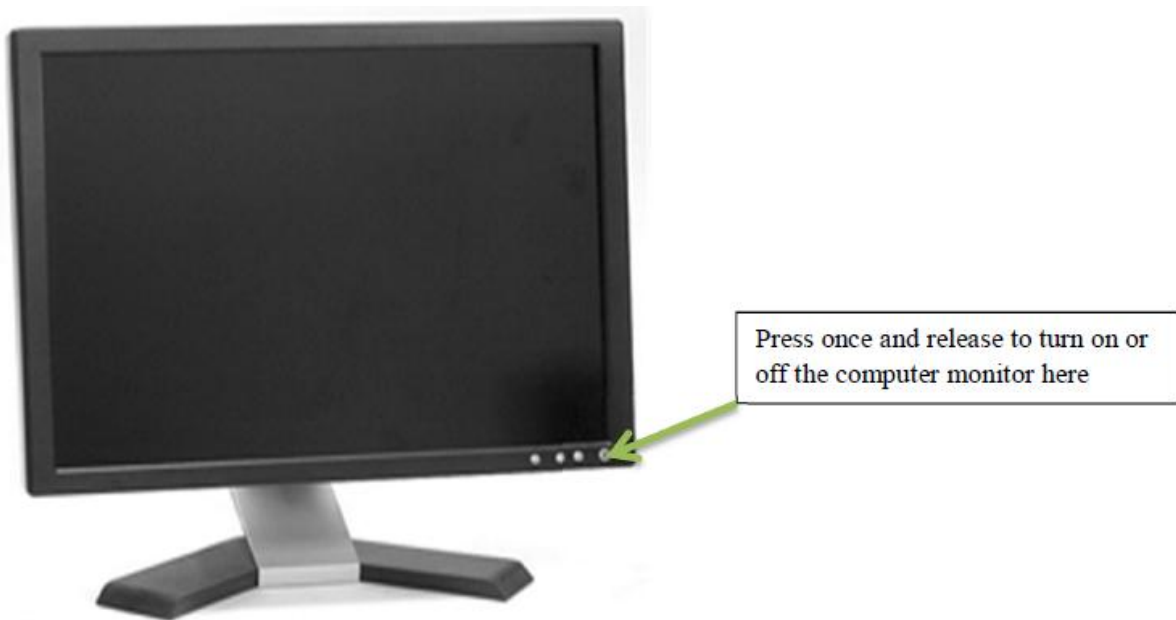


- The computer monitor is turned on.

#### Turning on and off the computer monitor

Before turning on the CPU first turn on the computer monitor, this will allow a display of the information from the CPU. After turning off the CPU, also turn off the computer monitor. Turning on and off the CPU and monitor is illustrated below.

#### The computer monitor



#### The CPU

Let's get started! As you sit down at your desk, you can assume that your computer

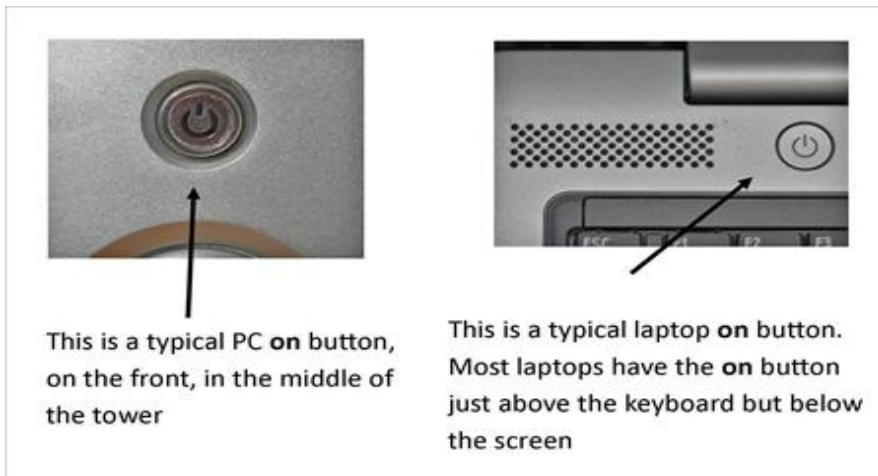
System is one of two states:

**OFF:** This is exactly what it sounds like: The computer is off, and no parts are running or working. The monitor is black (no images), there is no “whirring” sound from the CPU (system unit), and the computer is unresponsive to mouse movements or Pressing keys on the keyboard. The power button (if it lights up) should not be lit up.

**ON:** When a computer is on, you should see images on the monitor, possibly hear a “whirring” noise coming from the CPU (hopefully not too loud!), and the pointer on the screen (the small white arrow) should respond when you move the mouse.

### Steps to turn on computer

To turn a computer on, simply press the power button once (no need to hold the button just press and release). We will go over how to turn off a computer later in this handout.



### Logging On

Once you turn the computer on, the computer will go through a series of automated tasks before it is ready for you to interact with it; this process is called “startup.” This process will last between one and two minutes. If the computer is not working correctly, you may see an error message during

startup. If the computer is performing as it should, however, you will probably see one of the following screens:



This is called a “Log On” window, and it means that the computer is password protected. If you do not see this window upon starting the computer, you can assume that your computer is NOT password-protected and may be used by anyone. To log on, you simply enter your user name and password.

After you log on, the computer will display what is known as your desktop within a few seconds to a few minutes. The desktop is what appears on your screen after you’ve first logged on and before you have opened any documents or programs.



The desktop includes

- Icons and shortcuts
- The Start button
- A task bar

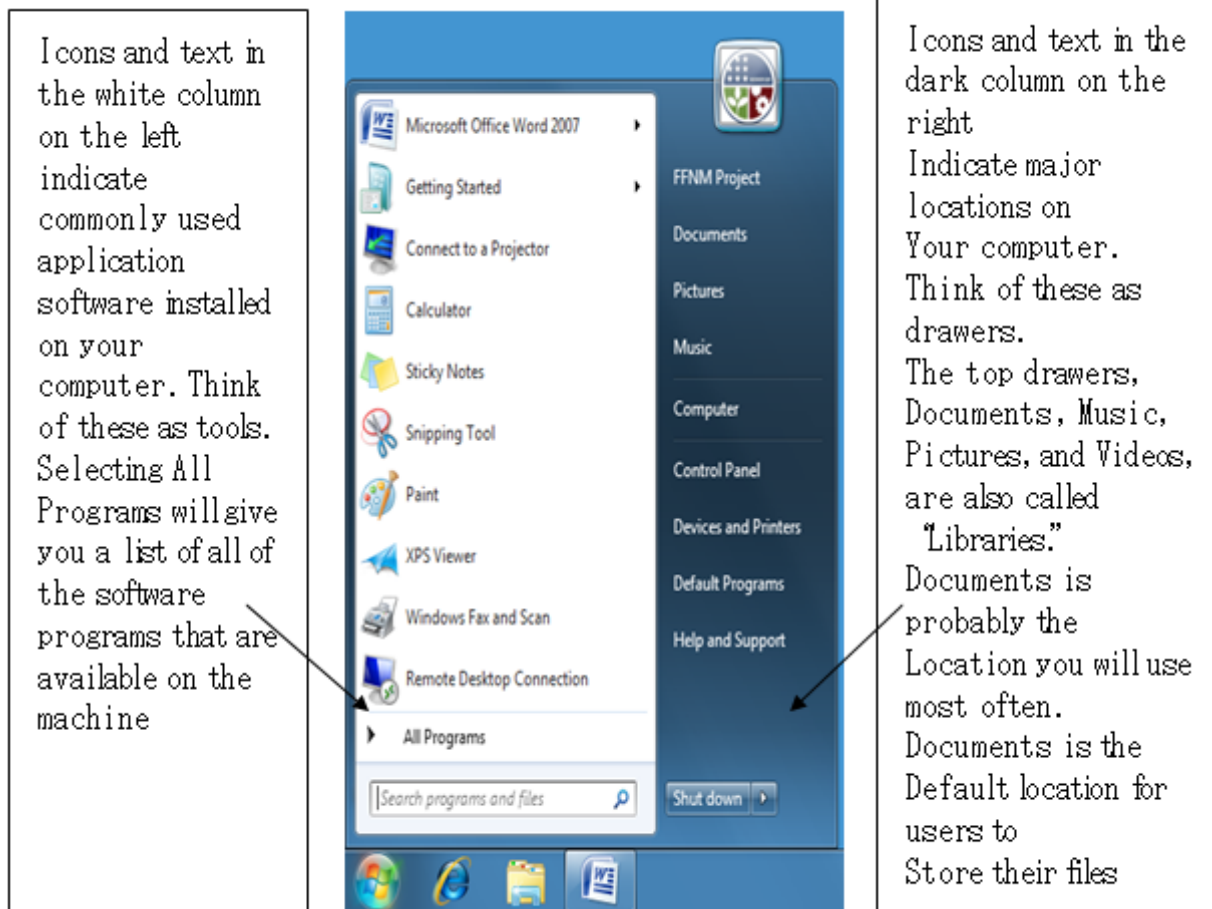
### ***Icons and Shortcuts***

- Icons are small pictures on your desktop that indicate a shortcut to a file
- Shortcuts provide direct access to a file or program

### ***Start Button***

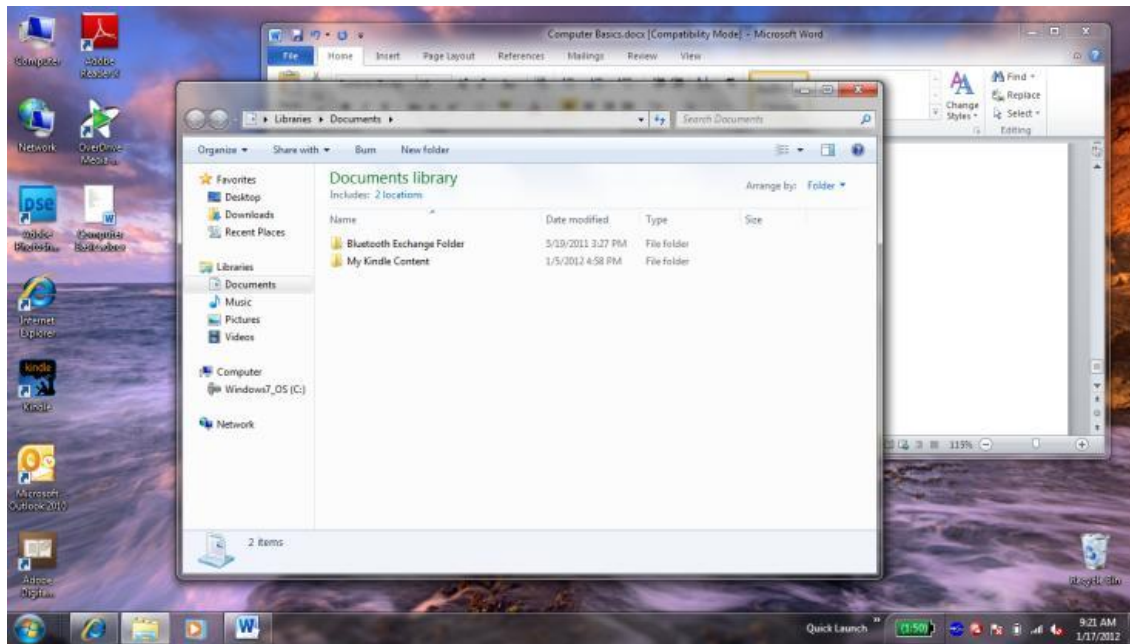
- Find the Windows 7 Start Button on your desktop in the lower left corner.
- Left-click on the button once it will open start menu
- The **Start Menu** is a good place to, well, start! The Start button (which opens the menu) is located in the lower left corner of your screen. **LEFT-CLICK** once on the Start Button to open the menu.

This is the Start Menu as it appears in Windows 7.



### **Managing Windows**

Microsoft Windows is called "Windows" for a reason. Programs appear on your screen as "Windows". (Rectangular shapes) and are laid 3dimensionally on top of one another (see image at right), just like on a real desktop. The desktop is your work surface, and all of your open windows appear on top of it. If you can see a window, which means the program is *open* and running. It is possible to make the window bigger, smaller, or close it using the buttons in the top right corner of any window.



**Minimize:** Left click  
This button to shrink  
The window down  
To a small button

**Maximize:** Left click  
This button to make  
The window as large  
As it can be it should  
take up your entire.

**Close:** Left-click  
This button to close  
the window. The  
Program will close  
and stop running.

A close-up of the window control buttons: Minimize (horizontal line), Maximize (square), and Close (X). Three arrows point from the text boxes above to these buttons: one from the Minimize box to the Minimize button, one from the Maximize box to the Maximize button, and one from the Close box to the Close button.

### **The Task Bar**

You can access all four of these “libraries” together through an icon on the Task bar



### **Steps to turn off computer**

- Click the Start button, and then click Shut Down. Do not press the power button to turn off your computer!
- After you have clicked Shut Down, your computer will begin a shut-down process in which it saves things you have been working on, and ends all programs that are running. You may see a window that says, “Windows is shutting down.” When the computer is done shutting down, the screen will go black, and the computer tower will stop making any noise. It is now shut down. It is not necessary to press the power button—your computer will turn off automatically.



### **How Computer Operates (Hardware/Software): Basic Operations**

Computers use both hardware and software to perform their work. Think of hardware as the physical pieces of a computer—the monitor, the CPU, all the pieces and parts inside the CPU, the mouse, the keyboard, etc. Software, on the other hand, consists of programs that we use to interact with the computer. You can't physically touch software like you can for the keyboard, but you can still interact with it. A word processing program like Microsoft Word is a piece of software that you could use to type a grocery list. Games that you play on your computer are also considered software—it doesn't have to be work- Related!

### **What is hardware?**

Physical or tangible part of a computer. E.g. monitor (screen), mouse, keyboard and printers

## *The Keyboard*



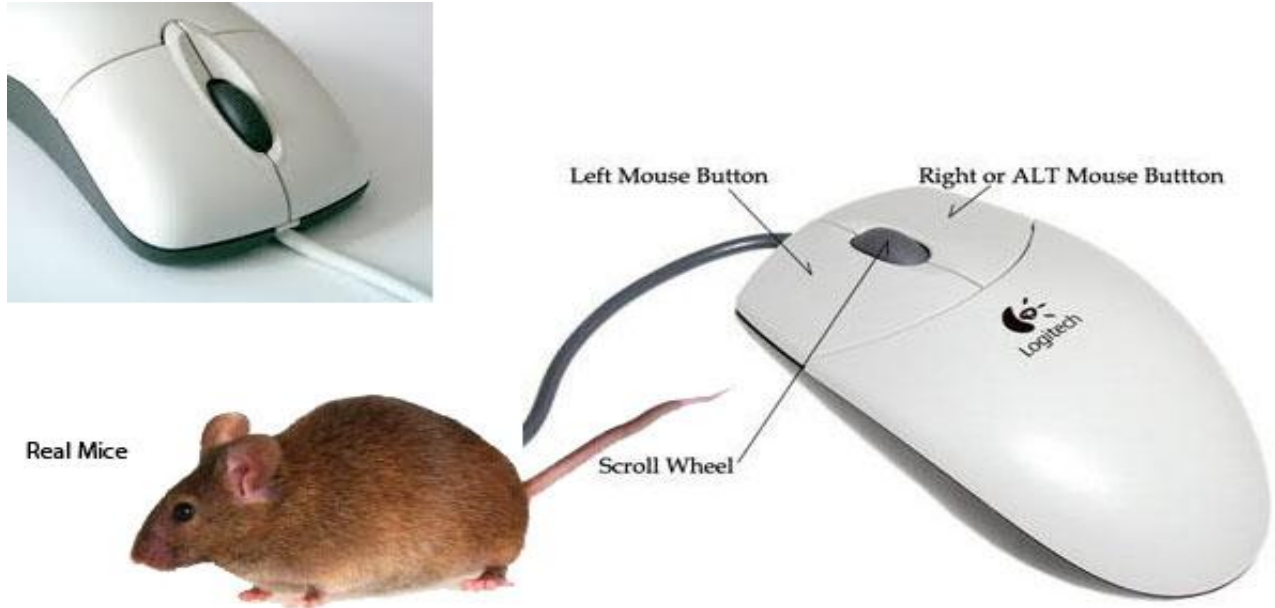
In order to use your computer effectively, you must interact with it using both the mouse and the keyboard. The above image of a keyboard may closely resemble (if it is not identical to) the keyboard in front of you; learning the function of just a few keys will help you to interact better with your computer and individual programs. The following is a list of commonly used keys that have special functions (keep in mind that key functions can change depending on which program you are using):

1. **Backspace:** This key deletes letters backward
2. **Delete:** This key deletes letters forward.
3. **Shift:** This key, when pressed **WITH** another key, will perform a secondary function.
4. **Spacebar:** This key enters a space between words or letters.
5. **Tab:** This key will indent what you type, or move the text to the right. The default indent distance is usually 1/2 (half) inch.
6. **Caps Lock:** Pressing this key will make every letter you type capitalized.
7. **Control (Ctrl):** This key, when pressed **WITH** another key, performs a shortcut.
8. **Enter:** This key either gives you a new line, or executes a command (pressed in a Word processing program, it begins a new line).
9. **Number Keypad:** These are exactly the same as the numbers at the top of the keyboard; some people find them easier to use in this position.
10. **Arrow Keys:** Like the mouse, these keys are used to navigate through a document or page.



**The mouse**

While the keyboard is primarily used to insert/input and manipulate text and numbers on a computer, the mouse is used mostly for navigating around the screen. Mouse comes in different shapes and sizes.



**Mouse’s Moving Parts**

Mouse part	Functions(What it does)
Left Mouse button	Used to issue commands, select items, or open files
Right Mouse button	Used to access special menu
Scroll wheel	Allow for quick movement up and down in a document

The mouse controls a “pointer” on the screen. The pointer is called a **cursor**

The cursor can indicate:

- Where your mouse pointer is, and
- Where you will interact with the information on your screen.

**What is software?**

**Software** is any **set of instructions** that tells the hardware what to do. It is what guides the hardware and tells it how to accomplish each task. Some examples of software are web browsers, games, and word processors such as Microsoft Word.

## 4.5 Basic functions of a computer

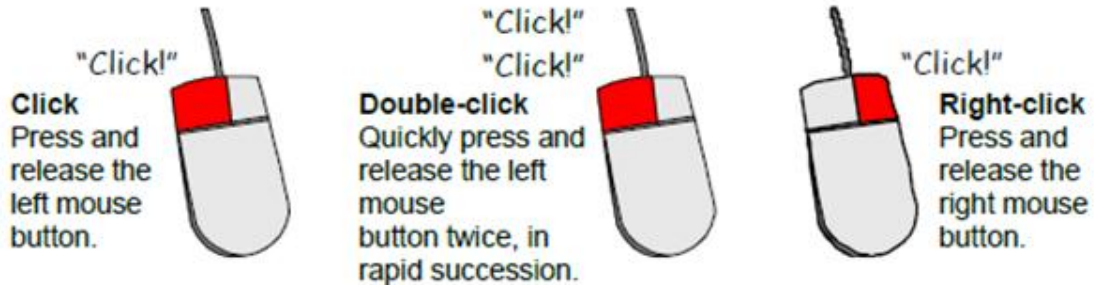
- How to open a program.
- Functions of left and right click.
- Drag and drop
- Basic programs
- Search files

### 4.5.1 How to Open a Program

- To open a program you will usually double click on a program name if you are selecting it from the desktop by using the left mouse button to click.
- If you are selecting the program from the start menu you will usually only need the click on the program name once, again using the left mouse button

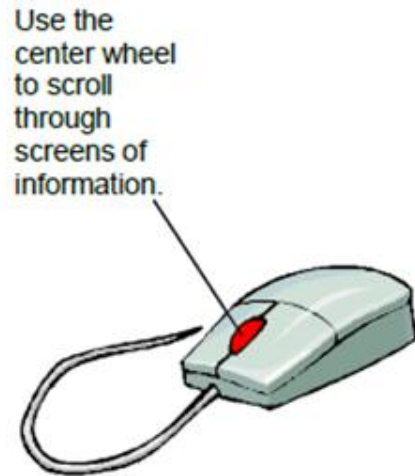
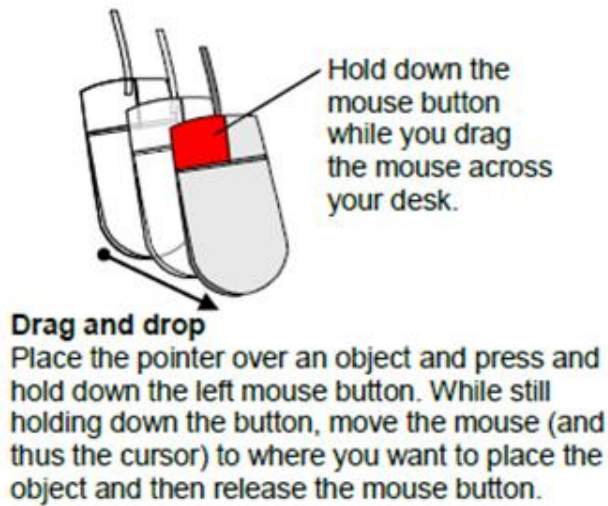
### 4.5.2 Left and Right Clicks

- When using a mouse, there are typically two buttons – a left button and a right button.



- The left mouse button is usually used to open up programs and folders.
- The left mouse button is also used when interacting with the various tools inside an open program.
- The right mouse button is used more to view information about things such as files and folders.

### 4.5.3 Drag and drop



#### Basic programs

- Some examples of basic programs that come preinstalled on computers are word processing programs and picture editing programs.
- Notepad and WordPad are basic text editing program where you can input text and then save it as a file.
- Paint is a basic picture editing program where you can use some simple tools to draw new pictures or edit preexisting pictures.

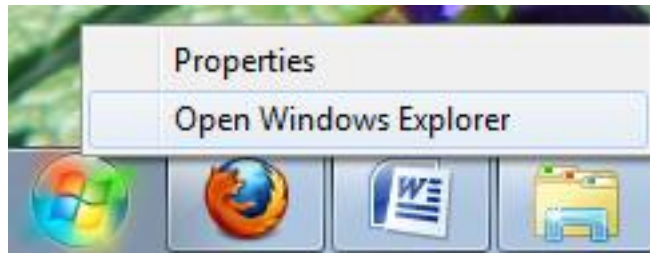
There are also other programs that you can install i.e. Microsoft office

Let's look at one of the Microsoft office program

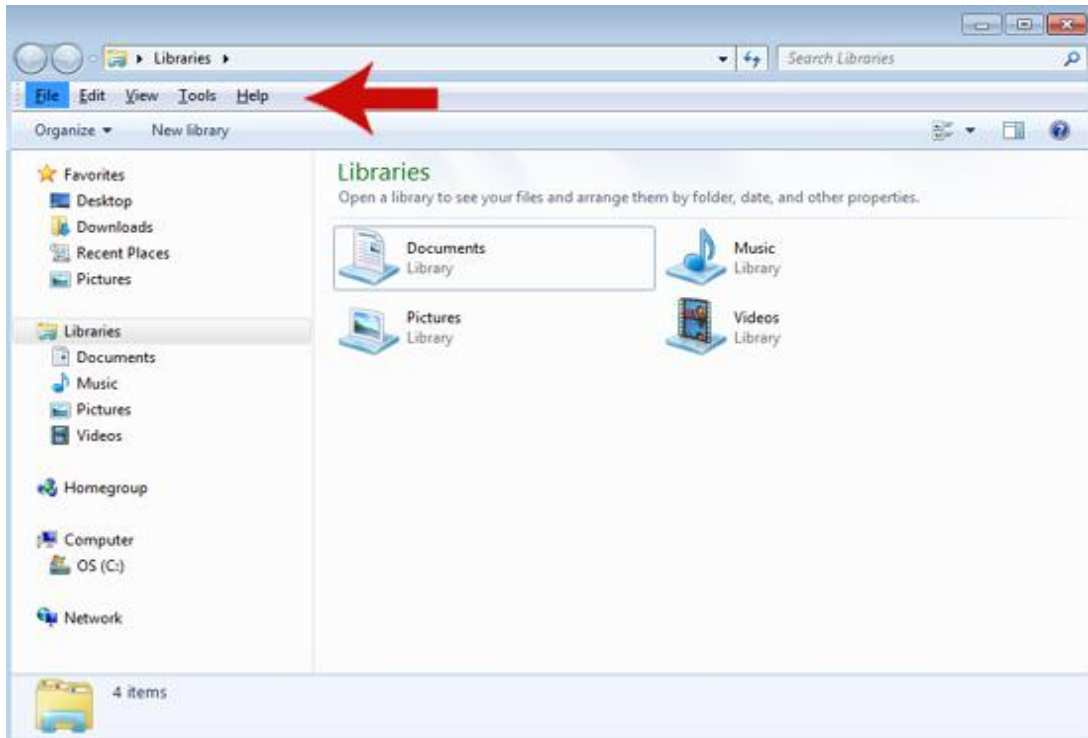
### 4.5.4 Search files

Steps to search files in windows 7

- 1) Right-click the *Start* button and select *Open Windows Explorer*.

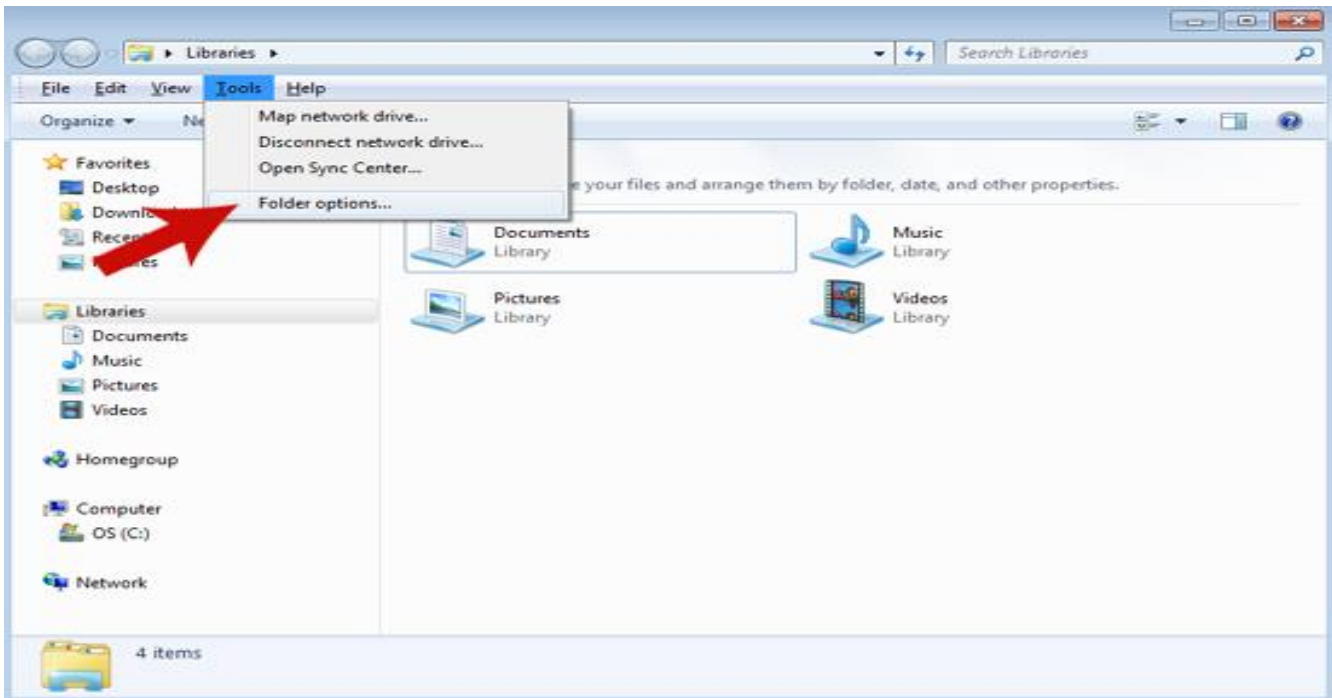


2) Press **ALT**. This will cause a toolbar to appear near the top of the Windows Explorer window.

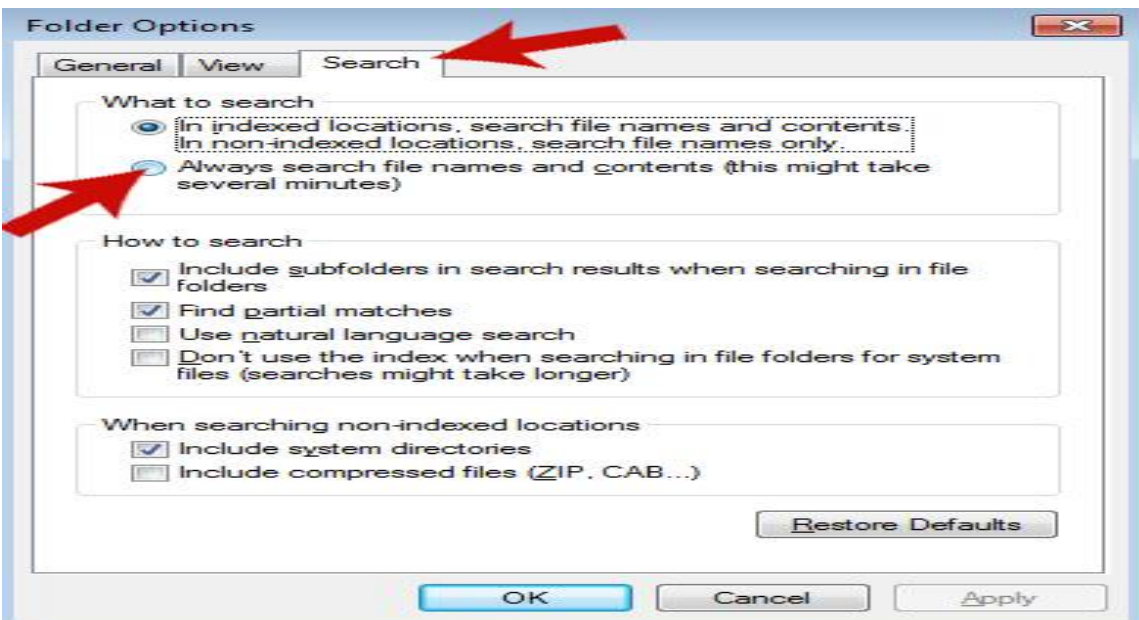


3) G  
o  
t  
o

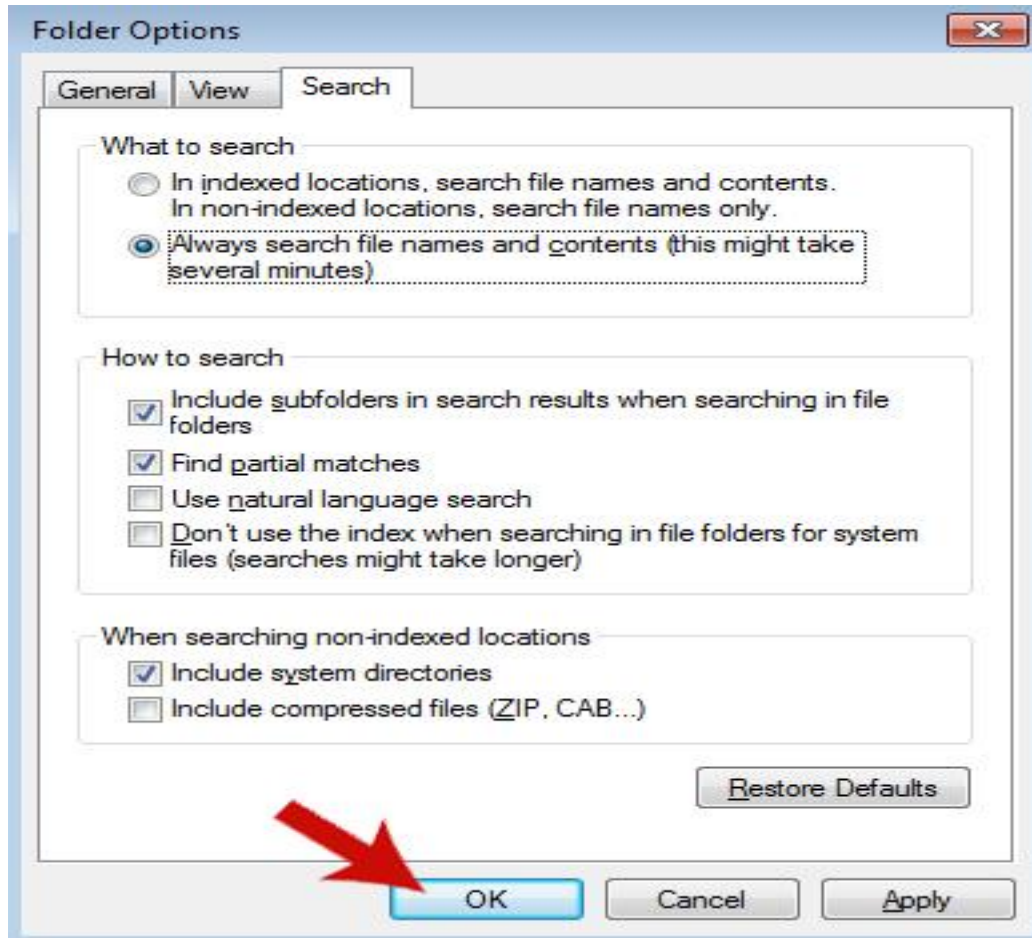
Tools > Folder Options.



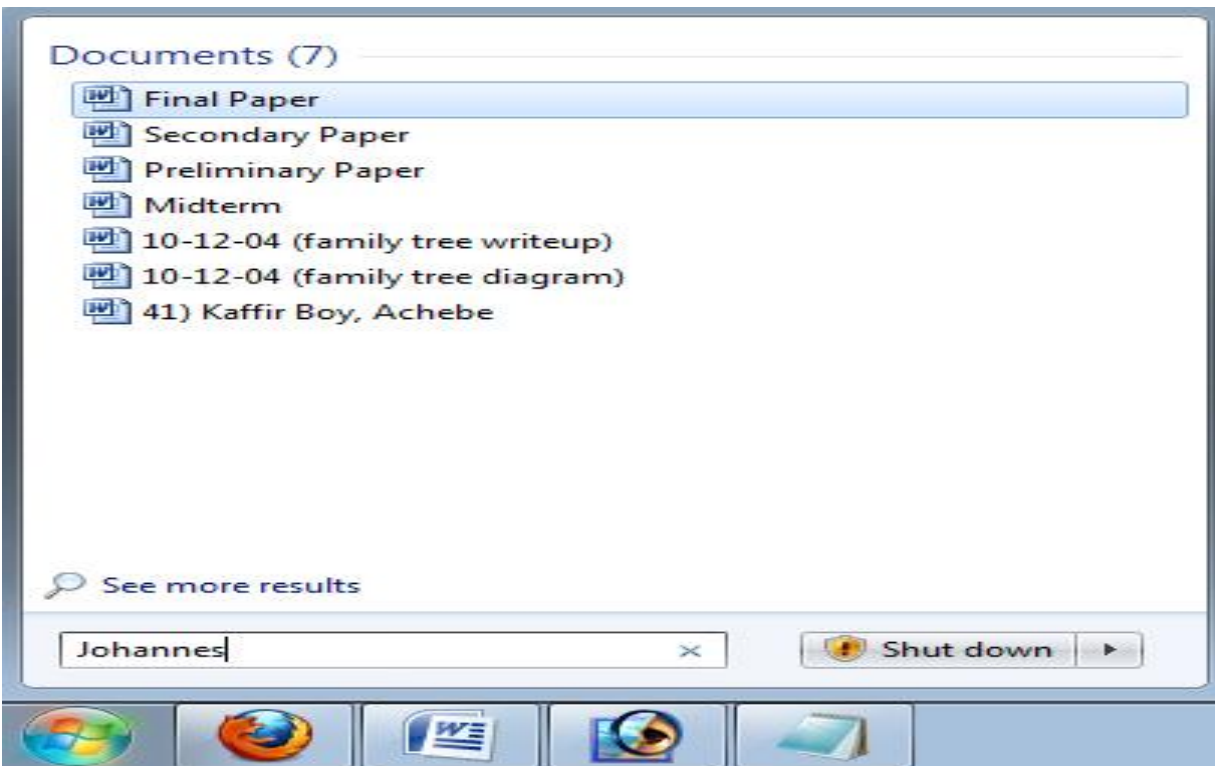
- 4) Under the *Search* tab, click *Always search file names and content*. Allowing this to process might take several minutes.



5) Press *OK*



6) **Run a test search.** Go to *Start* and type a keyword in the *Search Programs and Files* box. The results should contain the keyword in more than just the file.



## 4.6. Backup

An operation or procedure that copies data to an alternative location, so it can be recovered if deleted or becomes corrupted.

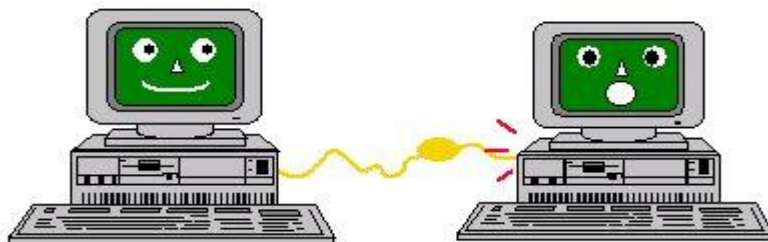
### *Why backup?*

The primary reason for backing up your data is that failures happen. To be ready for computer failures, we want you to back up your data. A backup procedure is easiest to carry out if all the files that need to be copied are in one upper-level folder instead of scattered here and there.

### *Remote backup*

It is important to perform remote backup or backup to external devices.

Remote backup means copying data to another alternative location outside your working computer. .Example of remote backup



## CHAPTER 5: ADMINISTRATION OF THE CTC PHARMACY MODULE

### 5.1 Introduction

The CTC Pharmacy module can be either a stand-alone system, or be used in conjunction with the CTC2 database. The CTC2 database is used for patient monitoring of HIV care and treatment patients and infants exposed to HIV, and based on the CTC2 card and official NACP reports. The CTC pharmacy module is used for managing information on the stocks and logistics of ARV and OI drugs, and is based on the official logistic information management system tools including the Report and Request form.

The CTC2 database and CTC pharmacy module have two possible installation options – Access-Access and Access-MySQL. In both cases, the front end of the system uses MS Access, but the back end or data can be stored in either MS Access data file or in MySQL.

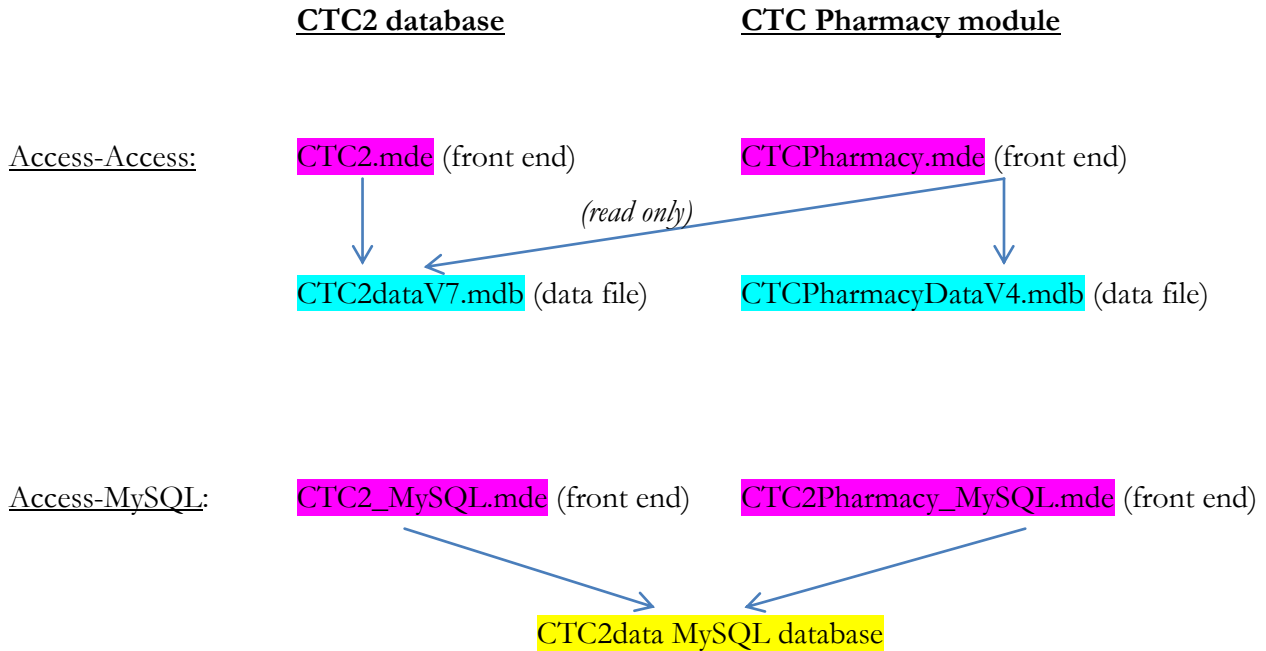
### 5.2 Specific Objectives

- List various installation options and choose options appropriate for particular context.
- To Install and configure system, including configuration for ordering sites and non-ordering satellite sites, and linking front ends with back end
- To set a lists of dispensers, system users, and link them where appropriate
- To set lists of non-ordering satellite facilities that are being catered for by the ordering site.
- To locate and manage user privileges
- To demonstrate how to Link the CTC pharmacy module with CTC2 database data file
- To demonstrate how back up of Pharmacy Module data base is done



## 5.3 Installation and upgrade of CTC Pharmacy Module

### 5.3.1 Explanation of system components



### 5.3.2 Choosing an installation option

In considering whether to use the Access-Access option or the Access-MySQL version, consider the following:

- Note that the CTC2 database and the CTC pharmacy module should both use the same option in a particular clinic. Therefore if the CTC2 database is in Access-MySQL then the CTC pharmacy module should also be in Access-MySQL and they should be linked together over a network. If there is no internal network available (cable connection or wireless connection between computers in the clinic), both systems should be in Access-Access.
- How many users will be using the system simultaneously? If only one user will be using the CTC2 database and one user using the Pharmacy module, then Access-Access is appropriate. If more than six simultaneous users, Access-MySQL is appropriate. For 3-5 users, consider other factors.

- Are there on-site staffs at the clinic with good IT background and knowledge of networking? If not, consider using Access-Access version where installation and upgrades are simpler and tasks like backup are more automated.
- How many patients does your clinic encounter? If it is a large clinic attending more than 8,000 patients, Access-MySQL may be more appropriate.

### 5.3.3 Preparation of computers before installation.

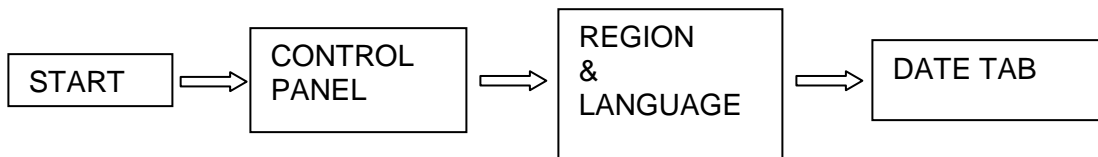
#### *System Requirements:*

Installation of Pharmacy module software requires Microsoft Access 2000 or above (i.e. 2000, 2003, 2002/XP or 2007) to be installed on your computer, RAM at least 512 MB and processor 1 GHz.

#### *Date format and Language:*

Most computers have system date and language set during the initial system configuration. The date should be formatted as dd/mm/yyyy. However, if your computer displays a different date and language follow the instruction below.

To do this in Microsoft Windows XP, click on “Start”, “Settings” and go to the “Control Panel” of your computer. Choose “regional and language options”, choose “customize” and click on the “date” tab. Set the date formats so that days come before months, for example the short date format could be “dd-mm-yy”. Click “Apply”.



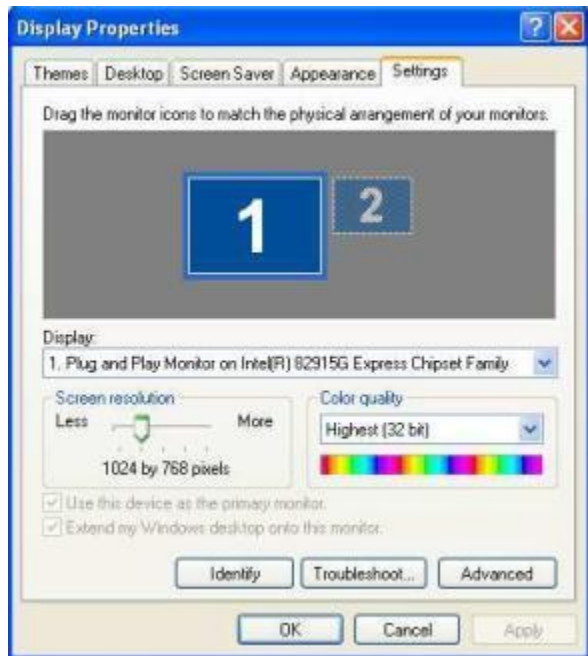
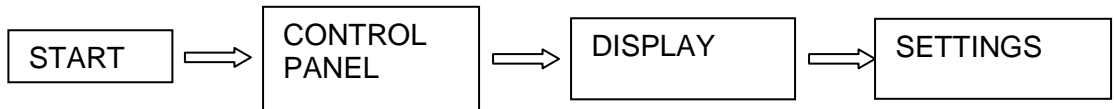
In other versions of Windows the process is similar - change the setting through the control panel.

The system also requires that the computer language setting be set to English, for the purposes of processing the names of months. This can also be checked through “regional and language options” in the control panel

**Screen Resolution**

In order to see the screens of the Pharmacy Module correctly, you should set the computer’s screen resolution at 1024 x 768 or higher.

To do this in Microsoft Windows XP click on “Start”, “Settings” and go to the “Control Panel” of your computer. Click on “Display”, and choose the “Settings” tab. Drag the screen resolution pointer until it shows 1024 x 768. Click “Apply” and choose “yes” to the confirmation messages.



In other versions of Windows the process is similar - change the setting through the control panel.

### 5.3.4 Installation of the Access-Access option

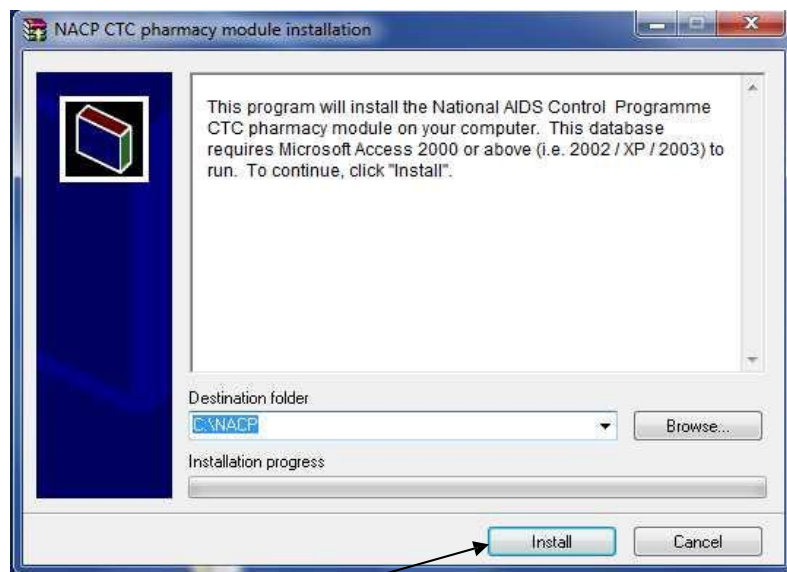
Note, installation of the Access-MySQL option is more complex and not covered in this manual but in separate documents. The instructions below cover how to install the Access-Access option. The latest version of pharmacy Module installation file can either be downloaded from the NACP website: <http://www.nacp.go.tz/ctc-databases> or from an external device provided by your administrator.

#### Installation on one computer

Double click the installation file Install\_Pharmacy\_Module.exe



The installation will create a folder named NACP in the C: Drive.



Click the Install button

After the installation the system will create a shortcut on the desktop. In order to access the data base double click the shortcut from the desktop

#### Installation on a Network

If you wish to install the CTC Pharmacy Module on a small network so that two or three users can access and change data at the same time, you should then follow these instructions:

On the first computer

- Install the system as above
- Move the file “CTCpharmacydataV4.mdb” from the “Destination Folder” (C:\NACP by default) to a shared network location.

On the other computers

- Install the system as above
- Delete the file “CTCpharmacydataV4.mdb” from the “Destination Folder” (C:\NACP by default)
- Open the database using the short-cut on the desktop or start button
- You will see the “Link data file” dialog box
- Click the “browse file” button
- Navigate to the shared network location and click on “CTCpharmacydataV4.mdb”.
- Click the “Link Data File” button

After the installation the system will create a shortcut on the desktop. In order to access the data base, double click the shortcut from the desktop.

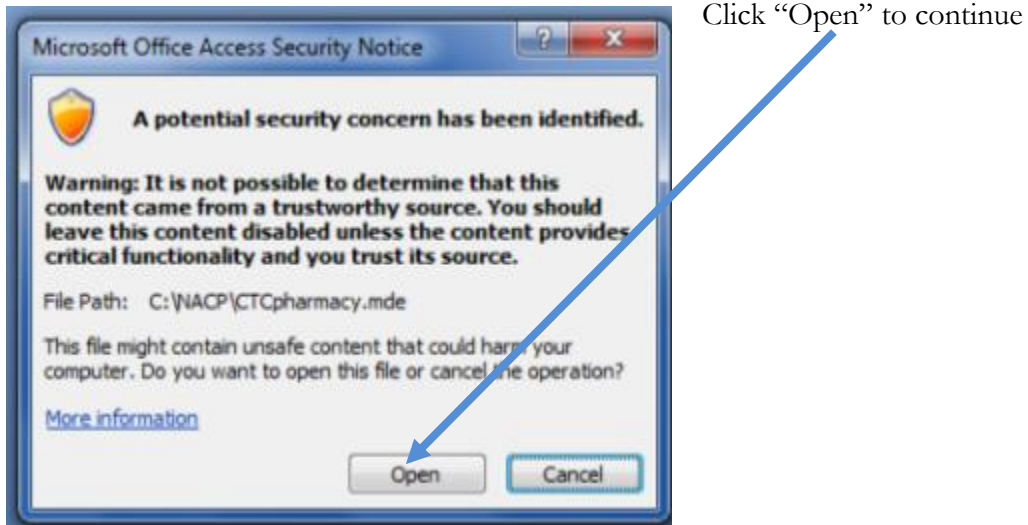
### 5.3.5 Upgrading

From time to time, new versions of the pharmacy module are issued. There are two types of upgrade – a minor upgrade and a major upgrade. A minor upgrade is for example from version 4.1 to version 4.2. A major upgrade is for example from version 3 to version 4.2. In the case of minor upgrades, you can simply download a new front end file (CTCpharmacy.mde) from the NACP website and replace all your existing front end files. In the case of a major upgrade, you should download an upgrade pack and follow the instructions inside the upgrade pack. Before any procedure is done concerning upgrading the system, the technical administrator should be consulted.

## 5.4 Opening, configuration and navigating through the menus

### 5.4.1 Opening the CTC Pharmacy Module

**Open** the CTC Pharmacy Module by double clicking the shortcut icon on the desktop. You may see the security warning below:



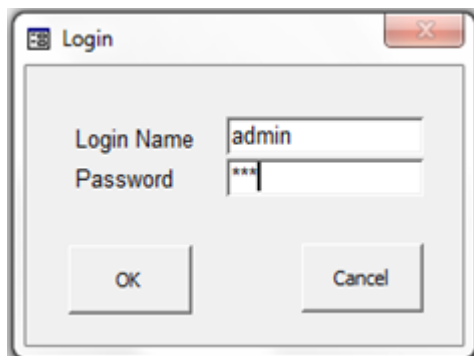
The following Login screen will appear

The default login details are:

Login name: admin

Password: ctc

NB: This password can be changed by the administrator when assigning user roles in the utilities section



## 5.4.2 Configuring the CTC Pharmacy Module

Only during the first time installation, after successful login the following configuration screen will appear.

**Welcome to the National AIDS Control Programme  
Pharmacy Module for CTC clinics**

Please configure the system by choosing your region,  
district and facility

Region: 18 ▼ Kagera  
District: 1808 ▼ Misenye  
Facility: 18080100 ▼ Mugana DDH

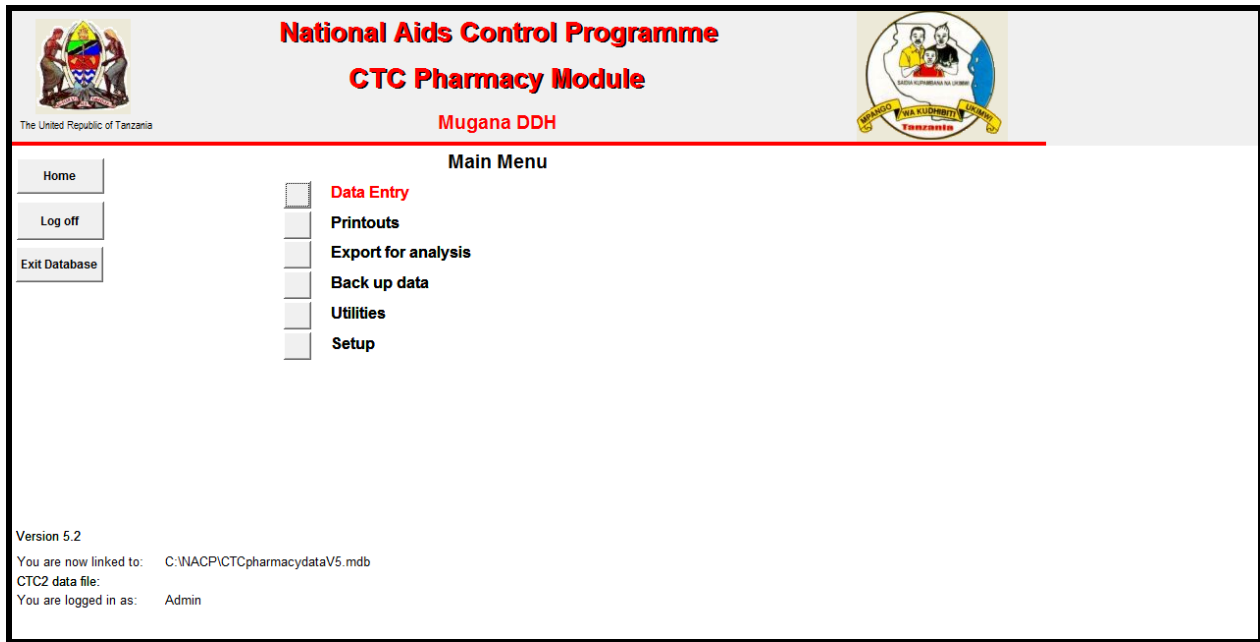
Facility type: FBO ▼  
Facility ordering-level: ▼

OK Cancel

- Select your Region, District and facility from the drop down menu. If your facility is not listed in the database, contact your respective DACC / RACC so as to inform NACP for addition of your health facility. Also check your facility's details in the Online Health Facility Registry <http://hfr.chealth.go.tz>
- Carefully select your site as ordering "O" or non-ordering "NOS" facility as the selection will determine the type of report that can be generated from your facility. [Ordering sites can produce quarterly R&R (from A2) while non-ordering sites can only produce monthly R&R (form A3)].

## 5.4.3 Navigating through the menu system

After successful login the CTC pharmacy module switch board menu will be displayed as seen below:



The main six menu icons will lead to different application of the data base as illustrated below:-

Some of the buttons lead to a sub menu (for example the data entry submenu). If you wish to return from a submenu to a higher level menu or from another screen to a menu, use the return button



Pressing the return buttons repeatedly on each screen or submenu will lead you back to the main menu. To return directly to the main menu from any submenu click the “Home” button.



#### 5.4.4 Logging off or exiting

In order to change user, the current user must log off. To log off, press the “Log off” button as shown below.

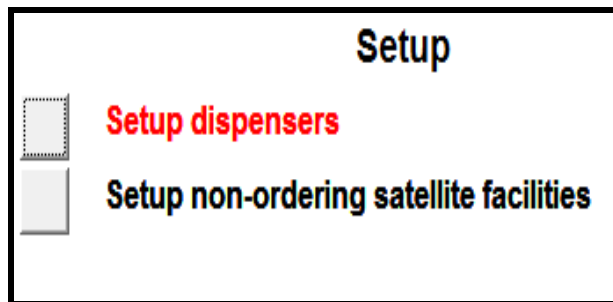
To exit the data base completely click the “Exit Database” button as shown.





## 5.5 Setup

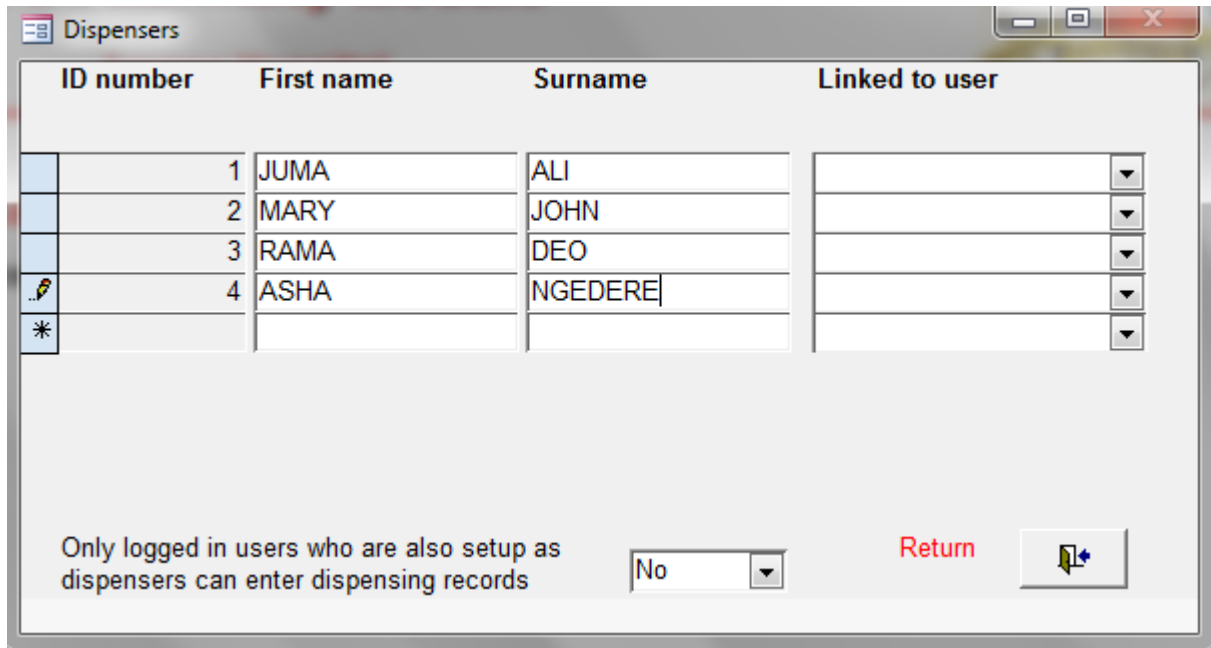
There are two types of setup procedures as shown in the diagram.



### 5.5.1 Setup dispensers

In order to link dispensing records to a dispenser/pharmacist, it is necessary that a list of dispensers and be set up in the system. The list can be updated or added to from time to time.

Choose Setup from the main switchboard menu. Choose “Setup Dispensers”.



Enter the names of dispensers on each line. The ID number is assigned automatically. If the dispenser is also a database user you can choose the user from the drop down list (See “Manage Users” section of the database).

You may delete an existing dispenser by choosing the record selector: and pressing the delete key on your keyboard.

If at your pharmacy the dispensers also normally enter records directly into the dispensing register in the pharmacy module, choose “Yes” in the box in the bottom of the screen. If at your pharmacy drugs are normally dispensed by one person but then another person (e.g. a data entry clerk) enters them into the pharmacy module dispensing register, choose “No”.


If “Yes” is selected during data entry in the dispensing register there will be No option for selection of dispenser as the person entering the data is the default dispenser.

### 5.5.2 Setup non ordering sites

If you have configured your facility as an “ordering” facility, you may or may not have “non-ordering satellite facilities” which are facilities who place their orders via your facility. If your facility does have satellite facilities you should list them in the setup screen.

Non-ordering satellite facilities	
Choose a list of facilities which your facility supports orders ARVs and OI drugs on behalf of	
18-08-0101	Bunazi Health Centre Govt.
18-08-0102	Kigarama Dispensary - ELC1

Choose Setup from the main switchboard menu. Choose “Setup non-ordering satellite facilities”. Click on the combo box and select a non-ordering satellite facility, repeat on the next row until you have selected all your satellite facilities.

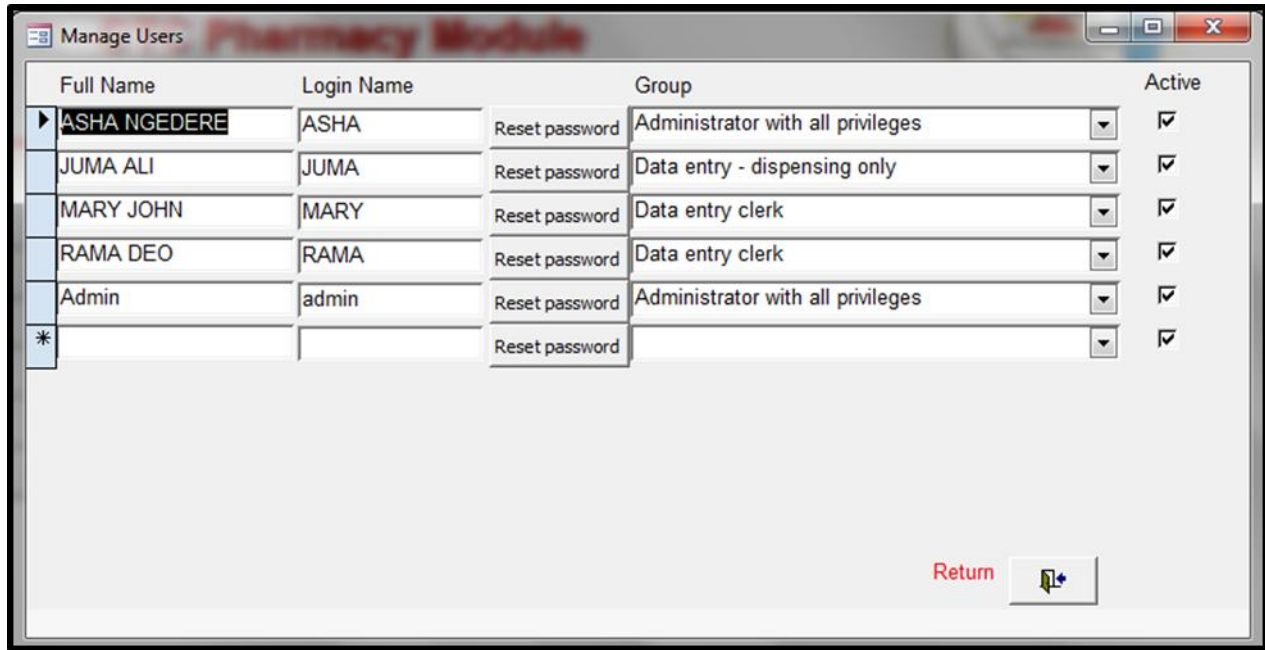
You may delete an existing satellite facility by choosing the record selector:  and pressing the delete key on your keyboard.

Note that only those with administrator (level 4) access can alter the lists of dispensers and non-ordering satellite facilities.

## 5.6 User administration

It is the role of the administrator to manage users. **It is very important to assign different users levels for performing different tasks.** This means assigning user names and passwords to different people who have access to the system.

If you are the administrator, you can access the following manage users screen from the Utilities menu.



There are several groups of access that can be assigned:

Group description	Export	User administration	Printouts aggregate data	Printouts patient data	Enter Setup	Data Entry Dispensing	Data Entry
Data Entry – Dispensing data	No	No	Yes	Yes	No	Yes	No
Data clerk	No	No	Yes	Yes	No	No	Yes
Data User – including patient data	Yes	No	Yes	Yes	No	No	No
Administrator	All privileges	Yes	Yes	Yes	Yes	Yes	Yes

- Data Entry is for users who can enter only dispensing data and print information from the system but cannot make any changes.
- Data clerk is for users who can perform dispensing data entry and print.
- Data user is for users who can export data for analysis and print.

- Administrator is for a system administrator. This person can perform all the privileges in the system including setting up lists of dispensers and creating new users.

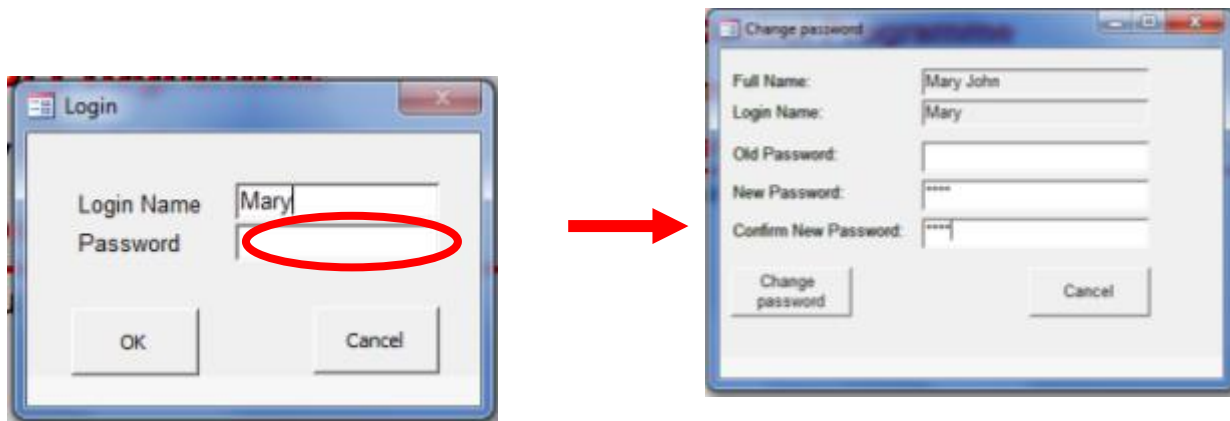
To create a new user, type their full name (for your future reference), their login name (which is the name they will enter in the login screen) and choose the access you are assigning to them.

When you create a user, their password will initially be blank. The new user should log in with no password and they will be prompted to change their password.

You can delete a user by choosing the record selector and pressing the delete key on your keyboard. Those login details will no longer be valid. Note that you cannot delete you own login details. Note also that at any one time, there should be at least one person who has administrator (level 4) access. If all users with administrator access forget their login names or passwords it is necessary to contact UCC.

You can change the access level for a user by simply choosing a new access level next to their login details. You can also update or correct their full name. If you change a login name you should inform the user, otherwise they will not be able to login using their old login name.

On login in again the user will use their login name and password will be “blank” as shown

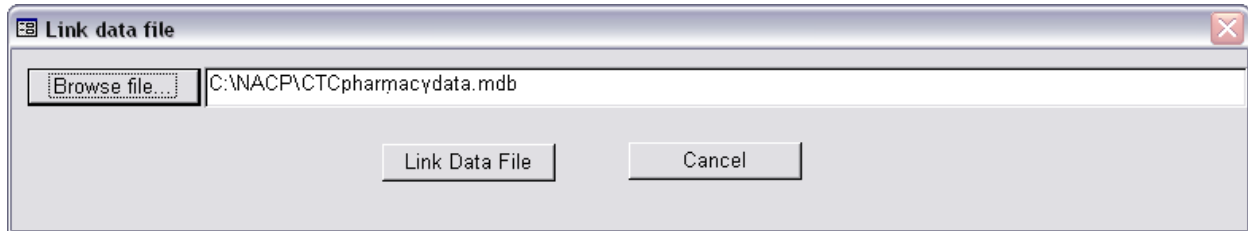


The initial login will take the participant to the change password screen. The password used during sign in for the first time will be assigned to the respective user and MUST be kept at a secure place. Especially the Administrator’s password must be documented and stores in a safe place.

## 5.7 Link Pharmacy Module data file (Access-Access)

Linking a data file is usually done when the system is set up on a new computer or is upgraded. There are two files in the CTC Pharmacy Module – the “front end” which stores all the information

on how to process and display the information and the “back end” which stores the data itself. It is possible to have the front end installed on each computer but one back end on a network to allow multiple users to update the information at the same time. The “link data file” function allows you to link the front end to the back end. If they are not linked the system does not work.



To link the data file, click browse, go to the location of the “back end” file which should usually be called CTCpharmacydataV4.mdb and then click “Link Data File”. You will be informed if the linking is successful. You can create multiple data files by copying the original. There should be data files for training, testing/practicing and piloting before starting using the real (live) data in the computer.

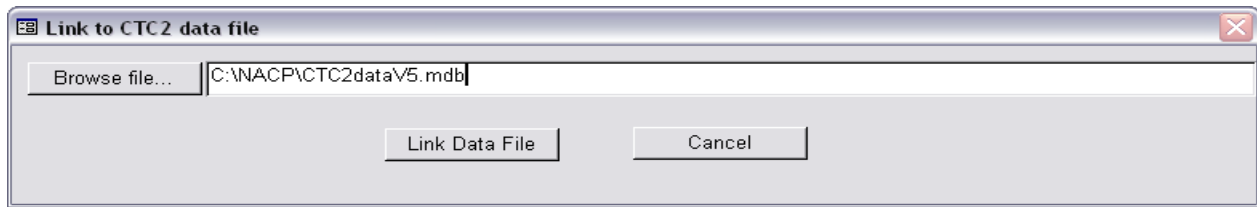
## 5.8 Link Pharmacy Module with CTC2 database data file (Access-Access)

It is important to link the Pharmacy Module with CTC2 database so as to extract relevant patient information from CTC2.

If you link to a CTC2 data file, patient names will be displayed as well as ID numbers, and the printout which matches regimens between the pharmacy module and the CTC2 database will work. If you do not link the CTC2 data file, these functions will not work.

There are several options for how the pharmacy module can work with the CTC2 database.

- CTC2 database and Pharmacy module both installed on the same computer.
- CTC2 database and Pharmacy module installed on different computers but linked over a network (pharmacy module linked to CTC2 database data file over the network).
- CTC2 database and pharmacy module installed on different computers but not linked over a network. Periodically, the CTC2 database data file (CTC2dataV6.mdb) is copied from the computer with the CTC2 database to the computer with the Pharmacy module so it can be used for displaying patient names and matching regimens. This is possible as the Pharmacy module does not change any data in the CTC2 database but accesses it read-only.



To link the CTC2 data file, click browse, go to the location of the CTC2dataV6.mdb data file and then click “Link Data File”. You will be informed if the linking is successful. You can quickly see which CTC data file you are linked to at the bottom of the switchboard menu.

## 5.9 Linkage of CTC2 Data file in MySQL system

In the Access-MySQL option, both the CTC2 database data and the CTC pharmacy module data are all in the same MySQL database. You can use the “Link data file” screen to link the front end to the MySQL database. Detailed instructions are in a separate document.

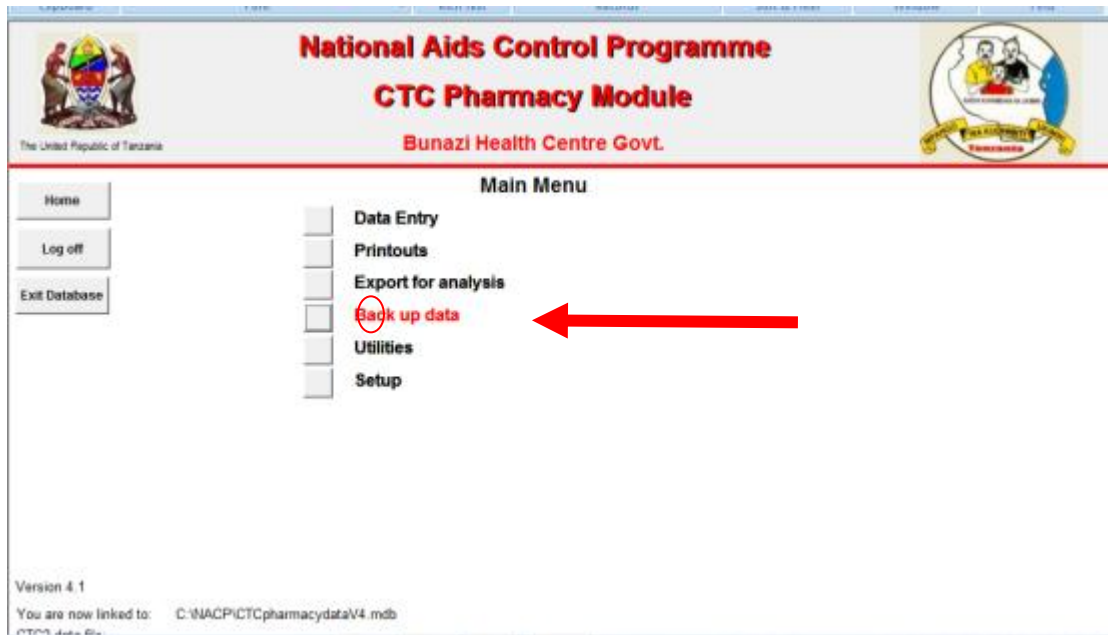
## 5.10 Back up of CTC Pharmacy Module data

It is very important to have a system of backing up data routinely. The pharmacy module provides two options for data backup. There is the internal automatic backup and the backup to external device.

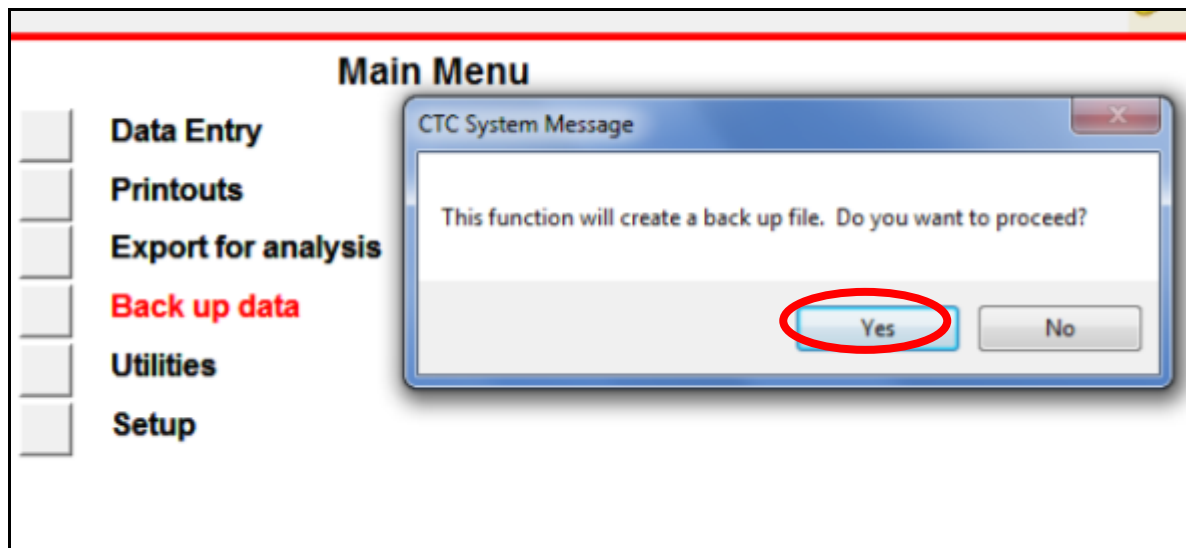
Automatic Back up is created every time the user exits the system. This file is placed in sub folder “Auto-Backup” and within that, in subfolders for the days of the week. A back up created on a Monday will replace a backup created on previous Mondays etc. so that no more than five to seven backups are stored at a time.

Routine Back up to external media to safe guard data in case the computer hard drive gets corrupted or the computer is destroyed due to fire, theft etc. It should be emphasized at a dedicated media be assigned for routine backup and should be stored in a separate place away from the dedicated pharmacy module computer.

It is preferable to use CD-W or a flash drive as the external back up device and be stored in medical officer in charge’s office.

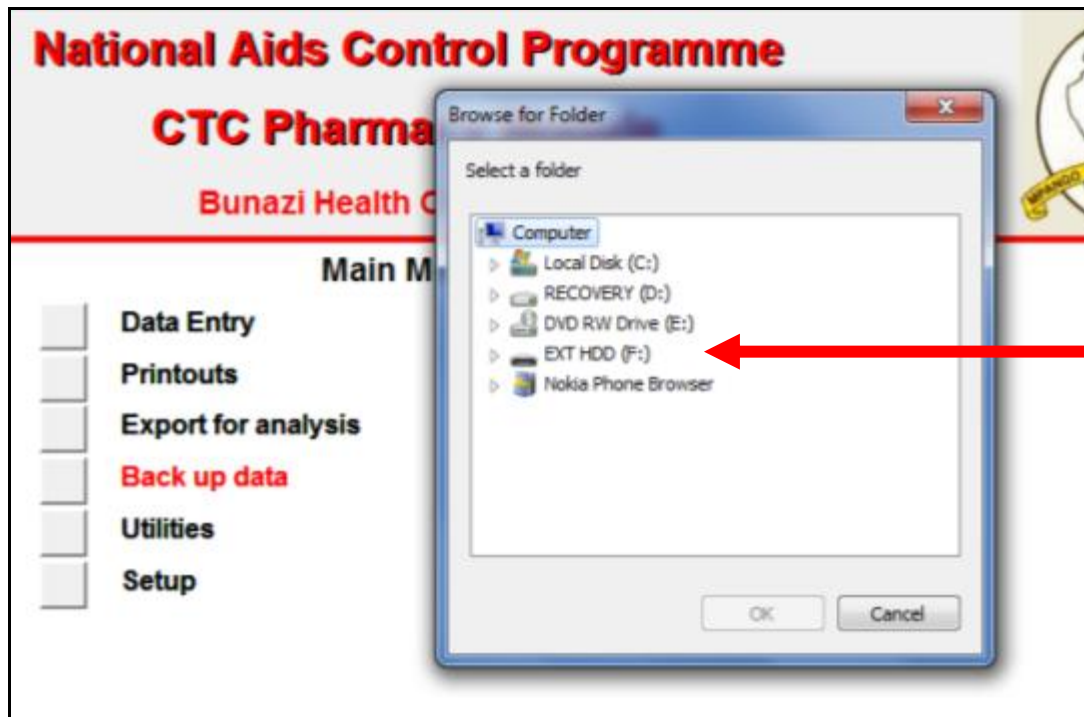


When you click the “Back up data” button a system message pop ups below:-



Click “Yes” to continue. The user is prompted to choose the external media location as shown below:-





Select the external flash / hard drive by “double clicking” and choose folder to save.

## CHAPTER 6: DATA ENTRY

### 6.1 Introduction

Data is factual information, especially information organized for analysis or used to reason or make decisions. In computers, data is information represented in a form suitable for processing by computer. Data are input, stored, and processed by a computer to generate usable information as output.

**Data Entry:** Is the act of transcribing some form of information into another medium, usually through input into a computer program. Forms of data that people might transcribe include handwritten documents, information off spread sheets, and sequences of numbers, as well as codes and even names.

Importance of data entry:

- The issue of entering accurate data for generation of quality reports.
- The essence of entering data on time for timely submission of R&R

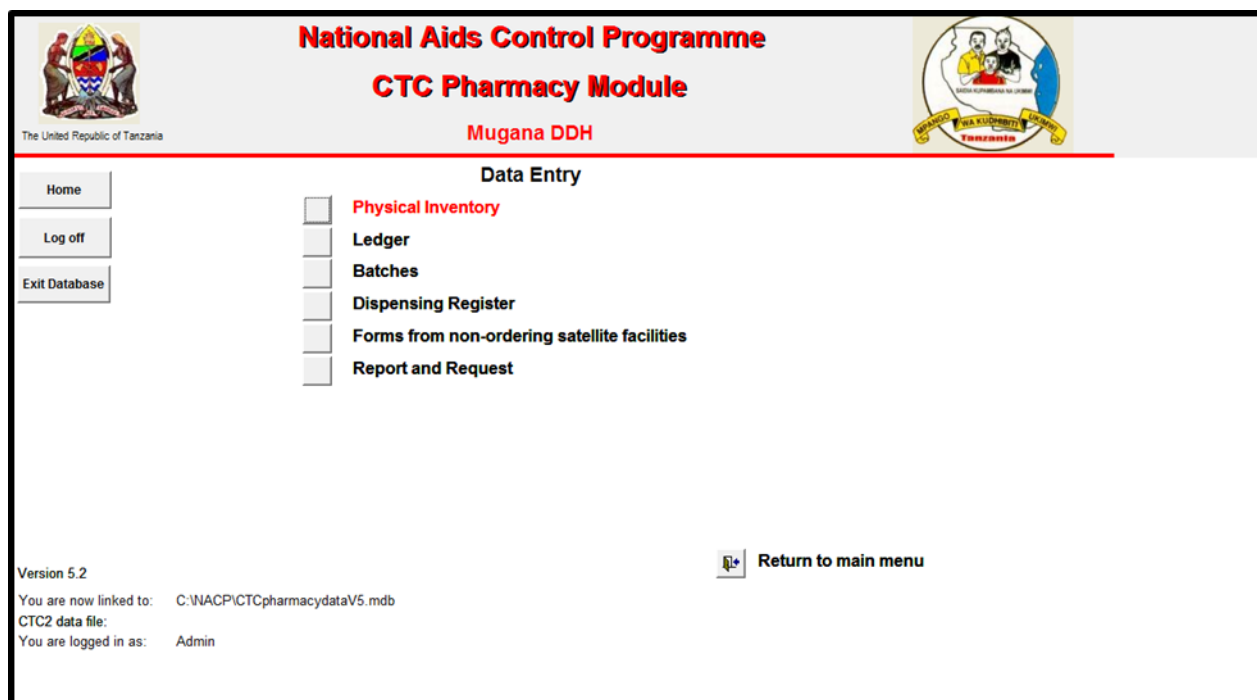
## 6.2 Specific Objectives

At the end of this session participants will be able to:

- Define data and data entry and
- Explain the importance of data entry
- Complete data entry for physical inventory, ledger, batches, forms from NOS facilities and requests
- Complete data entry for dispensing activities
- To compute and print out electronic report and request [Form A2 and A3] from the pharmacy database and manually adjust quantities ordered if necessary

## 6.3 Data entry overview

The data entry screens are where you routinely enter records. The data entry submenu has the following options:



- The **Physical Inventory screen** is used whenever a physical inventory, or stock-taking, is done on monthly and quarterly basis for NOS and ordering facilities respectively.

- The **Ledger screen** is used whenever medicines are received from MSD/district or elsewhere or to enter losses and adjustments (damaged, expired, given to other related or unrelated facility and lost).
- The **Batches screen** is used when medicines are received, to record batch numbers and expiry dates. It is also updated when inventories are done to show how much of each batch remains.
- The **dispensing register screen** is used to enter daily records of medicines dispensed to each patient.
- The **Forms from non-ordering satellite facilities screen** is used by ordering facility for entering monthly A3 R & R reports received from the respective NOS.
- The **Report and requests screen** is used for making manual adjustments to the automatically generated report and request form, and for entering some additional information needed for printing of the report and request. The R&R is monthly for NOS facilities and quarterly for ordering facilities.

## 6.4 Physical Inventory

Conduct physical inventory, when starting to use the pharmacy module for the first time before entering any data in the system

**Job:** Doing a physical count of all ARV and OI medicines stored in all rooms in the facility, and filling physical inventory in the pharmacy database properly.

**Responsible person:**

- Pharmacy in-charge
- CTC dispenser
- Any authorized personnel

**When to update:**

- NOS facilities update physical inventory at the end of every month (last day of the month or within 7 days before the end of the month).
- Ordering facilities update physical inventory at the end of the

reporting period (on the last day of the quarter or within 7 days before the end of the quarter).

**Resources needed:**

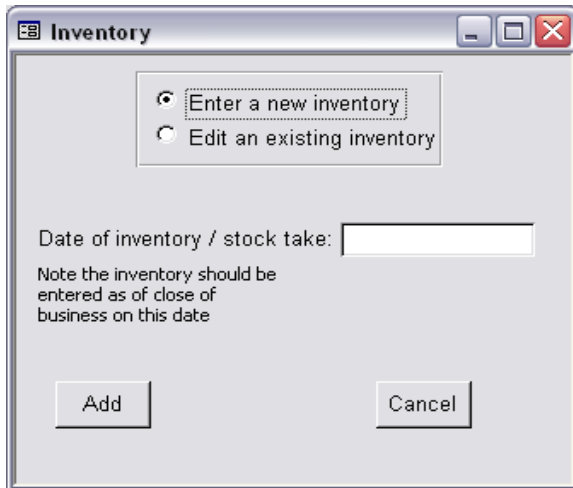
- Access to all the rooms where ARVs and OIs are stored
- Updated ledger and/bin card
- Calculator

**Steps in entering data**

1. Click on “physical inventory” to enter a new inventory, or edit an existing one.

**Note:** Conduct physical inventory, when starting to use the pharmacy module for the first time before entering any data in the system.

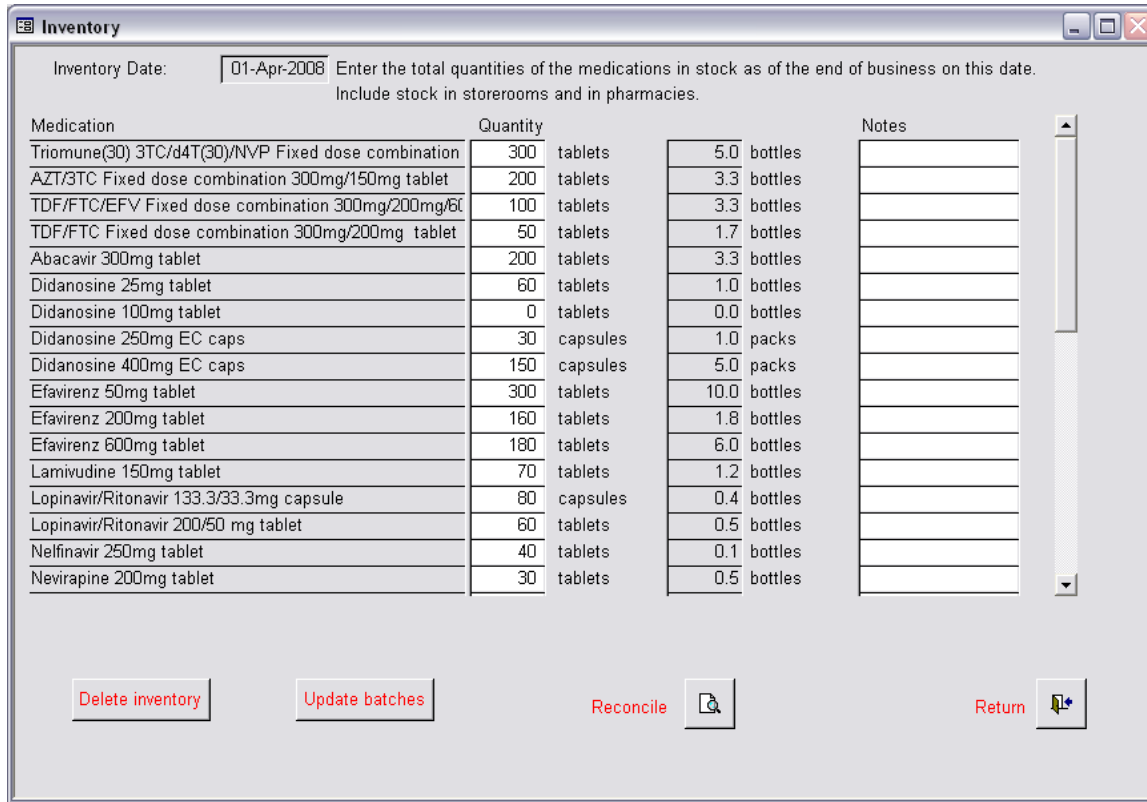
2. For a new inventory, select “enter a new inventory” and enter the date of an inventory and click “Add”. Once you click the “Add” button the date cannot be edited. For an existing inventory select “edit an existing inventory”



**Note:** If you are editing an existing inventory, click the date of the inventory in the list and click “Edit”.



3. After appearance of a list of ARVs and OI medicines, fill in the “Quantity” field. Quantities should be filled in using the smallest units (e.g. tablets/capsules) as written on the screen, and the system will calculate the number in the larger units (e.g. Packs/bottles). You can also write notes on any of the inventory figures.
4. Scroll down to the end to enter quantities of all medicines in the list. If you do not have any stock of a particular medicine, enter zero in the “Quantity” field.



**Note:** The system assumes that the inventory is conducted at the end of the day after any dispensing or ledger entries for that day.

You will see a list of all ARV and OI medicines.

If you wish to delete the inventory, click “Delete inventory”. This will remove all the records of the inventory and the system will be as if no inventory was done.

## 6.5 Ledger

A ledger is used for entering information when medicines are received either from the MSD (for ordering facilities) or from ordering facilities (for NOS facilities), or elsewhere. It is also used for entering information when medicines are transferred to other facilities, or lost/damaged/expired. It is used for entering all flows of medicines in and out of the facility, except for dispensing records which are in the dispensing register.

**Note:** Receipts of medicines are positive entries in the ledger.

Medicines which have expired, damaged, lost or transferred to another health facility (non-ordering satellite facility or unrelated facility) are regarded negative entries in the ledger

**Job:** Filling the ledger properly

**Responsible person:**

- Pharmacy in-charge
- CTC dispenser
- Any authorized personnel

**When to update:**


- When ARVs and OI medicines are received from MSD, donation, related or unrelated facility.
- When ARVs and OI medicines are issued to non-ordering satellite facilities or to unrelated facilities.
- When medicines are damaged, expired or lost.

**Resources needed:**

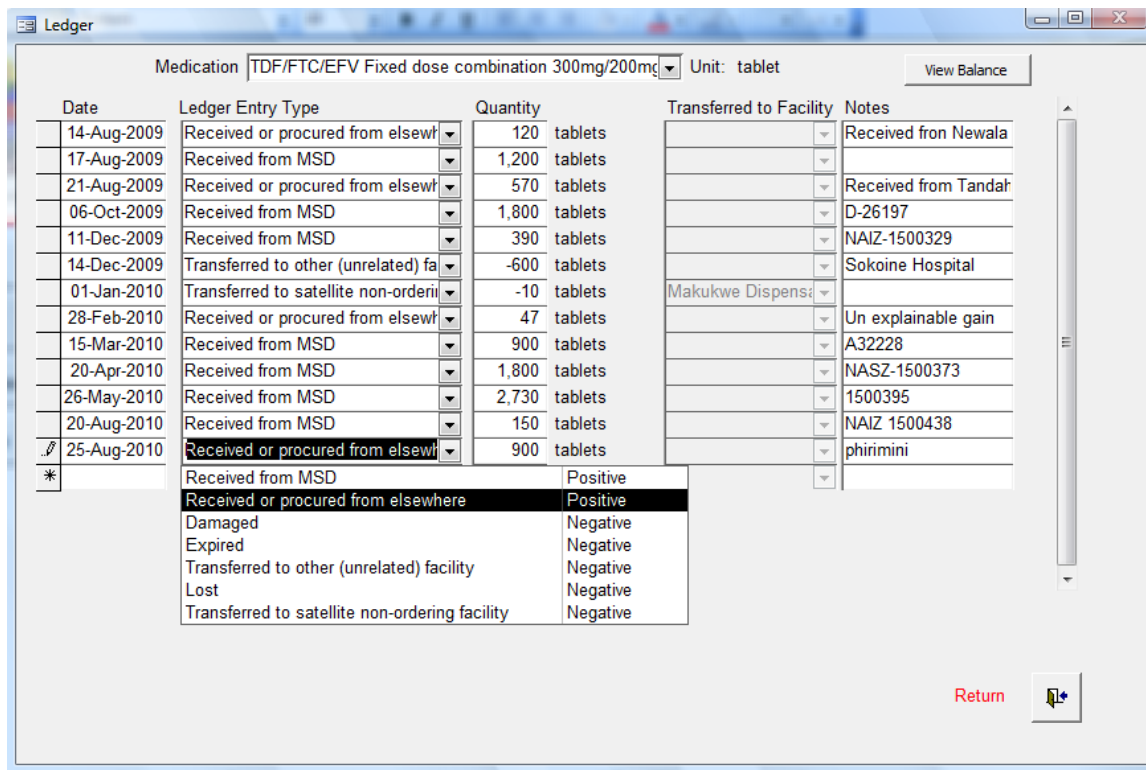
- MSD sales invoice
- Stores ledger
- Requisition and issue voucher

1. **Steps in entering data** From the data entry screen click on Ledger
2. **Choose a medicine from the drop down list** at the top of the screen.
3. Enter the date at which the transaction [received or issued] has been effected.
4. Choose a ledger entry type from the list.
5. Enter the quantity in tablets or capsules.
6. Click “return” button, a pop up batches screen will appear.
7. Enter batch reference code/number, expiry date, invoice number and notes if any

**Note:**

- The sign (positive or negative) of the ledger entry will be corrected automatically so that it corresponds to the ledger entry type.
- If you choose that medicines have been transferred to a non-ordering satellite facility, you must specify which one.
- In case there is the ledger entry mistake and you wish to delete a ledger entry row, click the record selector:  and press the delete key on your keyboard.
- If you receive several batches at the same time, use a different raw for each with the same date.

When doing physical inventory, open a batch screen and tick “finished” for all the batches which are no longer available. For example, the medicines have been completely used up by dispensing, damaged, expired, or lost.



**Note:**



- There is a shortcut to view the balance of the selected medicine as shown in the table below.

The screenshot shows a window titled "Balance" with the following fields and values:

Medication	Triomune(30) 3TC/d4T(30)/NVP Fixed dose combination tablet	Unit: tablets
View balance for date:	04-Apr-2008	Today
<b>Calculate balance</b>		
Last Inventory Date:	01-Apr-2008	
Quantity on last inventory date:	300	
Consumption between inventory date and balance date:	20	
Received from MSD / district between inventory date and balance date:	0	
Other ledger entries between inventory date and balance date:	-100	
<b>Balance on balance date:</b>	<b>180</b>	
Average monthly consumption last three months:	22	
<b>Number of months supply in stock:</b>	<b>8.2</b>	

At the bottom right, there is a "Return" button and a mouse cursor icon.

### How to view balance:

1. Enter a balance date, or click the “today” button to enter today’s date as the balance date.
2. Then click the “Calculate Balance” button. The screen will show the last inventory date before the balance date and the quantity of the selected medicine on the balance date.

### Entries that will be seen:

1. The “flows” between the last inventory date and the balance date – consumption/dispensing, medicines received from MSD/ordering facility, other ledger entries.
2. The balance on the balance date which is the last inventory quantity minus consumption plus medicines received from MSD/ordering facility plus or minus other ledger entries.
3. The average monthly consumption/dispensing over the past three months and based on this, the number of months’ supply in stock (which is the balance divided by the average monthly consumption).

## 6.6 Dispensing register

Dispensing register is the register used to enter medicines dispensed to specific patients. The dispensing register screen can be viewed in two ways:

1. Register view
2. Transactional view

### 6.6.1 Register view:

The screenshot shows a software interface for a dispensing register. At the top, there are filters for 'Date dispensed' (01-Jan-2011) and 'Today', along with a 'Switch to stacked view' button. Below this, it says 'Dispense records entered by Mary Kamugisha'. The main area is a table with columns for 'Patient ID', 'Medication', 'Quantity', and 'Dispensed by'. The 'Medication' column is divided into 'ARVs' and 'O/drugs'. The 'Patient ID' column includes a 'Tick box for transit patient' and a 'Previous records' link. The 'Dispensed by' column shows 'Mary Kamugisha' for all entries. At the bottom, there is a 'Total' row and a 'Return' button.

Patient ID	Medication	Quantity	Dispensed by
01-04-0100-002267	ARVs: efavirenz Tablet 600mg	30	Mary Kamugisha
01-04-0100-001168	ARVs: efavirenz Tablet 600mg	30	Mary Kamugisha
01-04-0100-001418	ARVs: efavirenz Tablet 600mg	30	Mary Kamugisha
01-04-0100-000661	ARVs: efavirenz Tablet 600mg	30	Mary Kamugisha
15-04-0100-001435	ARVs: efavirenz Tablet 600mg	30	Mary Kamugisha
<b>Total:</b>		30 30 30 30 30 30	

The advantage of register view is that it looks exactly like the paper based register and so is useful for new users.

## 6.6.2 Transactional view:

The screenshot displays the 'Transactional view' of a pharmacy management system. At the top, it shows the date dispensed as '09-Jul-2013' and the records entered by 'Admin'. A 'Switch to Register View' button is visible. The main form area contains the following fields and options:

- Patient ID:** 20-04-0100-001300
- Name:** Mariamu Charles Masija
- Age:** 30
- Sex:** Female
- Transit patient?**  (with 'Repeat prescribe' and 'Previous records' buttons)
- Medication:** A table with columns for Medication and Quantity.
 

Medication	Quantity
TDF/FTC/EFV FDC tablet	60 tablets
cotrimoxazole Tablet 400mg/80mg (pack of	tablet
*	
- ARV regimen:** (empty field)
- Dispenser:** (dropdown menu)
- Buttons: 'New dispense record' and 'Delete this dispense record'

At the bottom right, there are buttons for 'Save records for 09-Jul-2013' and 'Return'.

The advantage of the transactional view is that;

1. It is faster for entering data as it eliminates the need for tabbing through many unused boxes.
2. The medicines can easily be searched in the medication option using the drop down list or shortcut keys
3. In this view; name, age, sex and ART regimen are displayed in the dispensing screen.
4. It allows the dispenser to enter multiple entries without entering the CTC unique ID of the same patient during dispensing.

**Note:** You can easily switch between the views by using the shortcuts on the top of the screen.

**Job:** Filling dispensing register [form A1] properly.

**Responsible person:**

- Pharmacy in-charge
- CTC dispenser
- Any authorized personnel

**When to update:**


- Whenever medicines are dispensed to patients.

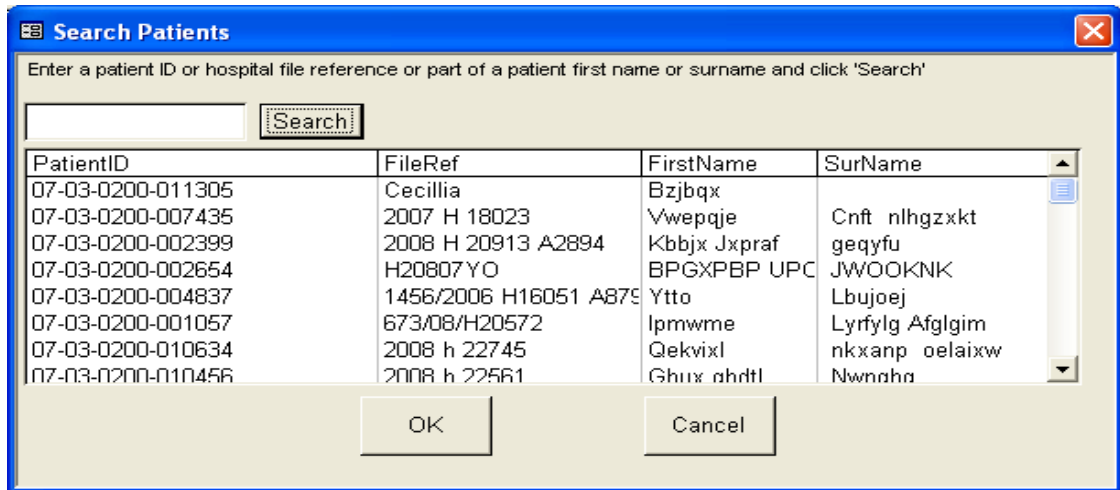
**Resources needed:** - Prescription

**Steps in entering data:**

1. Enter the date at which the medicines are dispensed at the top. You can use the “today” shortcut button to insert today’s date.
2. Enter patient ID number as it appears on CTC1 card

**Note:**

- For the pharmacy database module which have been linked to CTC2 data file [CTC2 database], instead of entering the patient ID, click the search button  then search from the patients in the CTC2 database by entering part of their ID number (e.g. the last 4 digits) or part of their name or file reference number, in the search box and clicking “search”.
- Choose a patient and click “OK” and the patient ID will be shown in the dispensing register.



Instead of searching, you may enter the patient ID directly

- If the patient is a care and treatment (CTC) patient, the ID should be a 14 digit number in the format 00-00-0000-000000. The previous 8 digit patient IDs have now been converted to 14 digits.
- If the patient is a PEP patient, enter “PEP” followed by a reference number. If the patient is a “transit” patient, then tick the box. A transit patient is a patient who normally attends another CTC clinic, but is has come to this clinic on a once-off basis to collect medicines (for example due to being temporarily away from home), but their main CTC2 card file remains at the original clinic and so they do not have a CTC2 card at this clinic.

Their medicines should be recorded on their paper CTC1 card which they carry with them.

- If the pharmacy module is currently linked to a CTC2 database [CTC2 data file], and if the patient is already registered in that database, then the patient's name will appear beside the ID automatically.
  - If you are not linked to your facility's CTC2 database and if the patient ID is not registered in the CTC2 database, the space to the right of the ID will remain blank.
  - You can click the button "previous records" which is a shortcut to a printout showing a full history of dispensing records for that patient. This can be useful for checking.
  - You can also use the button "repeat prescribe" which will look up the last regimen and amounts picked up by the patient and copy those into today's record.
3. Select the medication from the drop down list and enter the quantity of tablets/capsules/bottles dispensed.

**Note;**

- In register view; enter the quantity in the box of the relevant medication heading or headings (if the patient is collecting more than one type of medicine).
- In transactional view; for each type of medicine dispensed, select the medicine (type the first few letters for speed and it will select automatically) and typing the quantity.
- If a patient is being dispensed three separate medicines on a date, they will have three rows in the transactional view, but only one row in the register view with three boxes filled in [all quantities should be entered using the "smaller units" such as tablets or capsules] and bottles for paediatric suspension.

4. Click “new dispensing record” to enter dispensing data for the next client on the same date

Name Of The Medicine	Abbreviation	Shortcuts In The Database
COMBIVIR TABS	AZT/3TC	A
DUOVIR-N TABS ADULT	3TC/AZT/NVP – 150/300/200	3TC/A
DUOVIR-N TABS [PEDIATRIC]	AZT/3TC/NVP – 60/30/50	AZT/3TC/
EFAVIRENZ 600MG TABS	EFV	E
NIVERAPINE 200MG TABS	NVP	N
ATRIPLA TABS	TDF/FTC/EFV	T
TRUVADA TABS	TDF/FTC	T
ABACAVIR 300MG TABS	ABC	AB
LOPINA VIR/RITONAVIR TABS	LPV	LOP
LAMIVUDINE 150MG TABS	3TC	L
ZIDOVUDINE 300MGTABS	AZT	Z
TLE Tenofovir/Lamivudine/Efavirenz	- TDF/3TC/EFV	TDF/3

## 6.7 Forms for non-ordering satellite facilities

If your site is an ordering site, you will have the option to enter paper forms received from your non-ordering satellite facilities. This form resembles form A3 of the paper based tools for ARVs logistics system in the approved forms used in Tanzania.

The form has 2 parts:

1. Consumption part whereby consumption and stock on hand data are entered.
2. Regimens part whereby numbers of specific regimen are entered.

**Job:** Filling of forms from NOS facilities.

- Responsible person:**
- Pharmacy in-charge
  - CTC dispenser
  - Any authorized personnel

**When to update:**

- When the NOS facilities prepare monthly reports and submit to Ordering facilities.

- Resources needed:**
- Updated ledger.
  - Requisition and issue voucher
  - Form A3

**Steps in entering data: consumption and end balance form**

1. In the data entry screen; click “forms for non-ordering satellite facilities”, you will be prompted to choose “Consumption and end balance” or “Regimens”.
2. Click consumption and end balance, a pop window will display.
3. Choose the month and the year of the report.
4. Select which non-ordering Satellite facility is reporting and click OK. If the site is not in the drop down list, you must setup the site as a satellite facility (see setup part of this manual).



5. Form A3 will appeared automatically as shown below

Ministry of Health						
FORM A3: MONTHLY REPORT ON CONSUMPTION OF ARV/OI DRUGS BY NON-ORDERING SATELLITE FACILITIES						
FOMU A3: TAARIFA YA MWEZI YA MATUMIZI YA ARV KWA VITUO TEGEMEZI						
Non Ordering Satellite Facility: Bunazi Health Centre Govt.			Ordering Mother Facility: Mugana DDH			
Name of District: Misenye			Month: April 2014			
MSD code	Supply item / Maelezo ya bidhaa	Unit of issue / Kipimo cha Ugavi	Received from mother site / Kiasi kilichopokelewa (B)	Actual dispensed / Kiasi kilichotumika (C)	Lost / Adjusted / Upotevu / Marekebisha (D)	Ending Balance / Safio la Mwisho (E)
10010157	TDF/FTC/EFV FDC tablet 300mg/200mg/600mg	bottle 30 tablets	0 tablets	tablets	tablets	tablets
10010140	AZT/3TC FDC tablet 300mg/150mg	bottle 60 tablets	0 tablets	tablets	tablets	tablets
10010139	3TC/d4T(30)/NVP FDC tablet 150/30/200mg	bottle 60 tablets	0 tablets	tablets	tablets	tablets
10010156	3TC/AZT/NVP FDC tablet 150/300/200	bottle 60 tablets	0 tablets	tablets	tablets	tablets
10010136	Elavirenz Tablet 600mg	bottle 30 tablets	0 tablets	tablets	tablets	tablets
10010137	Elavirenz Tablet 200mg	bottle 90 tablets	0 tablets	tablets	tablets	tablets
10010138	Nevirapine Tablet 200mg	bottle 60 tablets	0 tablets	tablets	tablets	tablets
10010141	Lamivudine Tablet 150mg	bottle 60 tablets	0 tablets	tablets	tablets	tablets
10010143	Zidovudine Tablet 300mg	bottle 60 tablets	0 tablets	tablets	tablets	tablets
10010158	TDF/FTC FDC tablet 300mg/200mg	bottle 30 tablets	0 tablets	tablets	tablets	tablets
10010152	3TC/d4T/NVP baby FDC tablet 30/6/50	bottle 60 tablets	0 tablets	tablets	tablets	tablets
10010151	3TC/d4T/NVP junior FDC	bottle 60	0 tablets	tablets	tablets	tablets

**Note;**

- In this screen, column (A) is the ending balance of the last month, which is the beginning balance this month. If this is the first month being reported, column A is not needed and is hidden.
  - Column (B) is the amount of medicines received from the ordering facility during the month.
6. For the remaining columns (C), (D) and (E) which are consumption (dispensed), losses/adjustments and ending balance, enter this information as shown from the paper form A3 received from the respective NOS.


**Steps in entering data: Regimens form**

1. Click the second form “Regimens” on the screen, a pop window will display.
2. Choose the month and the year being reported on.
3. Select which non ordering Satellite facility is reporting.

**Note;** Regimens form will appear automatically as shown below.



Ministry of Health					
SUMMARY OF REGIMENS DISPENSED					
MUHTASARI WA IDADI YA WAGONJWA KULINGANA NA DAWA MCHANGANYIKO (REGIMENS) WANAZOTUMIA					
Non Ordering Satellite Facility: Bunazi Health Centre Govt.			Ordering Mother Facility: Mugana DDH		
Name of District: Misenyne			Month: April 2014		
Adults / Children / Watu / Wazima / Watoto	Regimen code	Regimen	Idadi ya Mahudhuri ya Wagonjwa waliopatiwa ARVs kwa mwezi huu	Number of patient-visits on this regimen this month	
Adult	1g-A	TDF, 3TC, EFV	First line		
Adult	1b-A	AZT, 3TC, NVP (adult dose)	First line		
Adult	1c-A	AZT, 3TC, EFV (adult dose)	First line		
Adult	1e-A	TDF, FTC, EFV	First line		
Adult	1f-A	TDF, FTC, NVP	First line		
Adult	1h-A	TDF, 3TC, NVP	First line		
Adult	1k-A	ABC, 3TC, EFV (adult dose)	First line		
Adult	1m-A	ABC, 3TC, NVP (adult dose)	First line		
Adult	1a-A	d4T, 3TC, NVP (adult dose)	First line		
Adult	1a(30)L	d4T (30), 3TC, NVP loading dose	First line		
Adult	1d(30)	d4T (30), 3TC, EFV	First line		
Adult	1x-A	Other first line (adult)	First line		
Adult	5a	AZT prophylaxis	Prophylaxis		
Adult	5b	AZT, 3TC, sdNVP prophylaxis	Prophylaxis		
Adult	5c	AZT, 3TC prophylaxis	Prophylaxis		
Adult	2f-A	TDF, FTC, LPV/r	Second line		
Adult	2h-A	TDF, FTC, ATV/r	Second line		
Adult	2s-A	AZT, 3TC, ATV/r	Second line		
Adult	2g-A	ABC, 3TC, LPV/r (adult dose)	Second line		
Adult	2e-A	TDF, 3TC, LPV/r	Second line		

Delete form Return 

- Enter the number of times each regimen was dispensed this month at the NOS from the information received on the form A3.

## 6.8 Report and Request

This form resembles form A2 and A3 of the paper based tools for ARVs logistics system that is used for report and request ARV medicines and related supplies from MSD and ordering facilities respectively. For ordering facilities, it is quarterly and for non-ordering satellite facilities it is monthly.

**Job:** Filling Report and Request form

**Responsible person:**

- Pharmacy in-charge
- CTC dispenser
- Any authorized personnel

**When to update:**

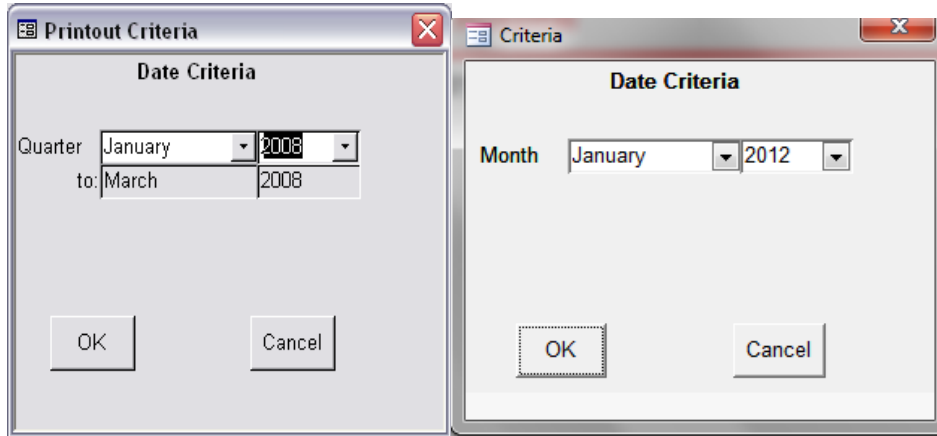
- At the end of the month (non-ordering satellite facilities)
- or at the end of the reporting quarter (ordering facilities)

**Resources needed:**

- Updated ledger
- Information regarding number of clients expected to be eligible for ART for the next month or quarter for NOS and ordering facility respectively.
- Calculator

**Steps in entering data:**

1. Calculate the quantity of medicines required for new clients
2. On the data entry screen, click the request button. A pop up window which prompts to date criteria will appear. Choose a quarter (for ordering facilities) or a month (for NOS facilities). For ordering facility; choose the beginning month and year of the specified quarter, the end month and year will be shown automatically. When clicking OK, form A2 will appear automatically.



**Ministry of Health**  
**FORM A2: QUARTERLY REPORT & REQUEST FOR ARV AND OI DRUGS**

Facility Code: 24010100      Facility Name: Bububu Military Hospital      Type: GOV  
 Name of District: Unguja West      Report for Quarter: February 2013 to April 2013  
 Date prepared: 27-Sep-2013      Submission date:   
 Last inventory date: 29-Apr-2013

MSD code	Supply item	Unit of issue	Beginning Balance	Received from MSD during period	Actual dispensed during period	Lost / Adjusted	Ending Balance (Stock on hand)	Quantity Required for new patients	Total estimated consumption	Maximum Stock Quantity	Quantity to order	Quantity Requested	Remarks
			(A)	(B)	(C)	(D=E+C-A-B)	(E)	(F)	(G=F+C)	(H=Gx2)	(I = H - E)	(J)	(K)
10055049	TDF/FTC/EFV FDC tablet 300mg/200mg/600mg	bottle 30 tablets	5,040 tablets	16,200 tablets	1,470 tablets	-16,800 tablets	2,970 tablets	0 tablets	1,470 tablets	2,940 tablets	0 tablets	0 bottles	
10055009	AZT/3TC FDC tablet 300mg/150mg	bottle 60 tablets	100,266 tablets	17,400 tablets	19,820 tablets	318,314 tablets	416,160 tablets	0 tablets	19,820 tablets	39,640 tablets	0 tablets	0 bottles	
10055008	3TC/d4T(30)/NVP FDC tablet 150/30/200mg	bottle 60 tablets	18,992 tablets	0 tablets	0 tablets	15,568 tablets	34,560 tablets	0 tablets	0 tablets	0 tablets	0 tablets	0 bottles	
10055048	3TC/AZT/NVP FDC tablet 150/300/200	bottle 60 tablets	-91,500 tablets	0 tablets	44,100 tablets	232,500 tablets	96,900 tablets	0 tablets	44,100 tablets	88,200 tablets	0 tablets	0 bottles	
10055001	Efavirenz Tablet 600mg	bottle 30 tablets	19,638 tablets	0 tablets	9,882 tablets	69,864 tablets	79,620 tablets	0 tablets	9,882 tablets	19,764 tablets	0 tablets	0 bottles	
10055002	Efavirenz Tablet 200mg	bottle 90 tablets	13,230 tablets	0 tablets	164 tablets	-13,066 tablets	0 tablets	0 tablets	164 tablets	328 tablets	328 tablets	4 bottles	
10055004	Nevirapine Tablet 200mg	bottle 60 tablets	6,466 tablets	16,380 tablets	254 tablets	-21,512 tablets	1,080 tablets	0 tablets	254 tablets	508 tablets	0 tablets	0 bottles	
10055010	Lamivudine Tablet 150mg	bottle 60 tablets	-3,000 tablets	132,900 tablets	120 tablets	-85,440 tablets	44,340 tablets	0 tablets	120 tablets	240 tablets	0 tablets	0 bottles	

- For the NOS; choose month and year of the reporting period, when clicking OK, Form A3 will appear automatically

**Ministry of Health**  
**FORM A3: MONTHLY REPORT & REQUEST FOR ARV AND OI DRUGS**

Facility Code: 04010101      Facility Name: Mlalo Health Centre      Type: GOV  
 Name of District: Lushoto      Report for month: June 2013  
 Date prepared: 11-Jul-2013      Submission date:   
 Last inventory date: 30-Jun-2013

MSD code	Supply item	Unit of issue	Beginning Balance	Received from MSD during period	Actual dispensed during period	Lost / Adjusted	Ending Balance (Stock on hand)	Quantity Required for new patients	Total estimated consumption	Maximum Stock Quantity	Quantity to order	Quantity Requested	Remarks
			(A)	(B)	(C)	(D=E+C-A-B)	(E)	(F)	(G=F+C)	(H=Gx2)	(I = H - E)	(J)	(K)
0065049	TDF/FTC/EFV FDC tablet 300mg/200mg/600mg	bottle 30 tablets	3,570 tablets	0 tablets	120 tablets	150 tablets	3,600 tablets	0 tablets	120 tablets	240 tablets	0 tablets	0 bottles	

Most of the columns of the report and request form are calculated automatically

**Column A** is the beginning balance or previous ending balance of the last month/quarter. For ordering facilities, added to this are the ending balances of the month before the reporting quarter.

**Column B** is the total amount received from MSD (for ordering facilities) or from the ordering facility (for NOS facilities) during the period.

**Column C** is the total amount dispensed during the period from the dispensing register. For ordering facilities, added to this is the total amount dispensed at NOS facilities according to the forms received.

**Column D** is the quantity of losses and adjustments [received from elsewhere, damaged, expired or lost] in the facility.

If an inventory has been conducted during the period, column D will also include any inventory “discrepancies” between the previous inventory and that inventory which have not been resolved, although it is recommended that discrepancies should be zero for all inventories

**Column E** is the ending balance of the reporting period. For ordering facilities, added to this are the ending balances from NOS facilities in the last month of the reporting quarter.

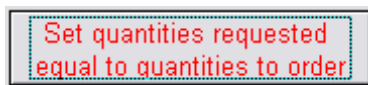
4. Enter the estimated quantity needed for new patients under Column F – These figures must be entered by the user as they cannot be calculated. You should forecast the number of new patients you expect during the coming month/quarter and the regimens they will need, based on your experience.

**Column G** – estimated consumption – this is column C (medicines needed for existing patients) plus column F (medicines needed for new patients).

**Column H** – maximum stock quantity – it is recommended by the NACP to have two reporting periods supply (6 months’ supply for ordering facilities, 2 months’ supply for NOS facilities) as the maximum stock level.

**Column I** – the recommended quantity to order is the maximum stock quantity minus the existing balance at the end of the period, i.e. the quantity needed to top up to the maximum stock quantity. This is displayed both in small units (e.g. tablets), and underneath it is also displayed in large units (e.g. bottles).

5. Set the quantity requested equal to the recommended quantities under Column J by clicking the button – Set quantity requested equal to quantities to order as shown below.



6. You may also change these figures based on your own judgement due to your knowledge of the situation in your facility.
7. Write some short notes under Column K if any.

**Note:**

Columns F, J and K require data entry from the user.


If you enter data in these columns and later close this screen and open the screen again for the same period, the quantities entered will be remembered by the system, but the calculated columns will be re-calculated in case of any changes to the inventory, ledger or dispensing records.

8. Enter the date the report is being sent in the submission date box.

The report **MUST** be printed on the last business day of reporting month or quarter for A3 and A2 respectively.

9. Then print the report and request for that month/quarter accordingly.

**Note:**

The Print Preview button  takes you straight to a printable version of the report and request form for that month/quarter.

The screen version shows all medicines, but the printout shows only medicines for which there is non-zero dispensing, ledger or request data.

## CHAPTER 7: PRINTOUTS AND ANALYSIS

### 7.1 Introduction

CTC Pharmacy module database provides an opportunity to generate and print various reports of ARVs and OIs drugs dispensed and stock management. These reports can be exported in excel or unsecured MS-Access formats in which various analysis can be made depending on user's needs. The reports generated from pharmacy module tool can help to reconcile inventories, dispensing and ledger records, remind on un-reconciled inventories/unused batches with drugs that are close to expiry. Furthermore, the tool can be used to perform calculations and produce electronic Reports and Requests (R&R).

The following reports can be generated from the Pharmacy Module database:

1. Inventory reconciliation printout
2. Un-reconciled inventories printout
3. Unfinished batches printout
4. dispensing register printout

5. Dispensing daily summary printout
6. Report and Request printout
7. Request outcome printout
8. Time series printout
9. Matching ARV Regimens and Drugs
  - a. Dispensed drugs which match with regimen
  - b. Dispensed drugs which don't match with regimen
  - c. Regimen recorded but no drugs dispensed
  - d. Dispensed drugs but no regimen recorded – not explained
  - e. Dispensed drugs but no regimen recorded - explained
10. Matching Cotrimoxazole
11. List of other regimens printout
12. Patient dispensing record printout
13. The number of drugs dispensed printout
14. Number of regimens dispensed printout
15. number of patient by regimen printout
16. Balances
17. Patient type summary
18. Patient starting new medications

## **7.2 Specific Objectives:**

At the end of this session participants will be able to:

- Describe various reports which can be generated from the Pharmacy Module database
- Describe the importance of the various reports generated from the Pharmacy Module database and how to use the data for better planning and decision making at facility level  
Explain how to produce various reports from the Pharmacy Module database

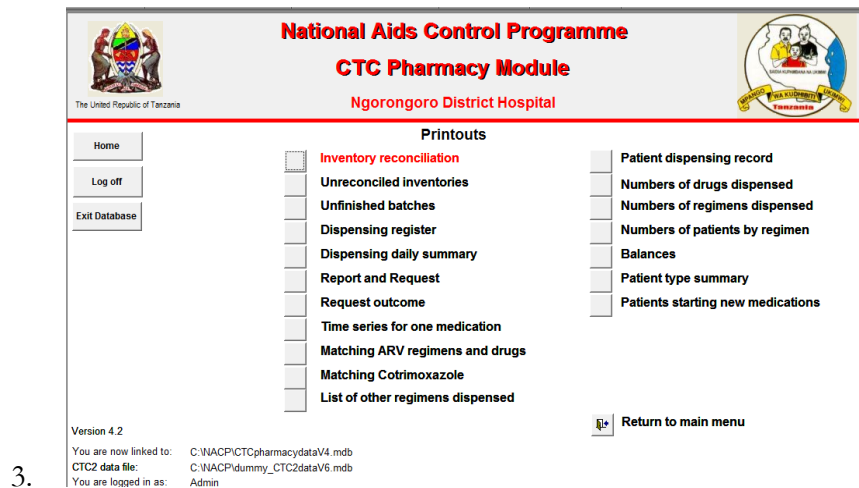
- Explain how to export various reports for further analysis using MS-Access or MS-Excel

## 7.3 Printouts

### 7.3.1 Steps for extracting reports from Pharmacy Module database

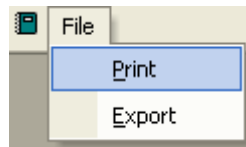
In order to extract a report, the following general points should be followed:

1. Log in into the system by entering user name and password. The main menu will be displayed on the screen
2. From the main menu, click “Printouts”. Various reports will be displayed on the screen.



4. You can then select the specific reports that you wish to see. Section below provides a summary explanation for each report.

Once you have selected the report, you have the option of printing it out.



5. To return to the switchboard menu press the escape key on your keyboard.

**Note:** Most of the reports will require entry of certain parameters such as client ID and dates depending on the printout chosen.

## 7.3.2 Description of various printouts

### 7.3.2.1 Inventory reconciliation

The inventory reconciliation printout is used to put together data entries for inventories, ledger and dispensing registers in order to address any discrepancies. It shows the previous inventory date before this inventory, the previous inventory quantity, how much was dispensed, received and other ledger entries between the previous inventory and this one, the expected quantity for this inventory (i.e. the previous inventory plus or minus the consumption, receipts and adjustments in the ledger between the previous inventory and this one) and the actual quantity entered in this inventory. The difference between the expected quantity and the actual quantity is a discrepancy. All discrepancies should be zero. If there are discrepancies, you should make adjustments in the ledger or correct the inventory quantities so that the discrepancy is zero. Below is an example of an inventory reconciliation printout.

<b>Monduli District Hospital</b>									
<b>Inventory reconciliation</b>									
<b>Current Inventory taken on 01-Apr-2008</b>									
MSD code	Medication	Previous Inventory Date	Previous Inventory Quantity	Dispensed between inventories	Received from MSD/ district between inventories	Other ledger entries between inventories	Expected quantity for this inventory	Actual quantity for this inventory	Difference / discrepancy SHOULD BE ZERO
			(A)	(B)	(C)	(D)	E=A-B+C±D	(F)	G=F-E
10055008	Triomune(30) 3TC/N4T(30)NVP Fixed dose combination tablet	01-Jan-08	10 tablets	682 tablets	1,000 tablets	-115 tablets	213 tablets	300 tablets	87 tablets
10055009	AZT/3TC Fixed dose combination 300mg/150mg tablet	01-Jan-08	20 tablets	120 tablets	200 tablets	0 tablets	100 tablets	200 tablets	100 tablets

### 7.3.2.2 Un-reconciled Inventory

The purpose of this printout is more or less similar to the inventory reconciliation report. While inventory reconciliation report aims to reconcile the selected inventory with the immediate previous inventory, the un-reconciled inventories printout shows basic details of all un-reconciled inventories, i.e. all inventories where there are non-zero discrepancies.



<b>Monduli District Hospital</b>
----------------------------------

**Unreconciled Inventories**

**Inventory date: 01-Apr-2008**

MSD Code	Drug	Expected Quantity*	Inventory quantity	Discrepancy
10055008	Triomune(30) 3TC/d4T(30)NVP Fixed dose combination tablet	780 tablets	300 tablets	-480 tablets
10055009	AZT/3TC Fixed dose combination 300mg/150mg tablet	180 tablets	200 tablets	20 tablets

### 7.3.2.3 Unfinished batches (First Expiry First Out - FEFO Concept)

Unfinished batches printout shows all batches which are no longer available due to have been completely used up by dispensing, damaged, expired, lost etc. This allows you to ensure that the batches closest to expiry are shown on the top and should be used first. In this print out, all batches of drugs which are not ticked as finished from data entry for batches will be displayed. Below is an example of Unfinished Batches printout.

<b>Monduli District Hospital</b>
----------------------------------

**Unfinished Batches**

MSD code	Drug	Batch Number	Date Received	Expiry Date	Notes
10055008	Triomune(30) 3TC/d4T(30)NVP Fixed dose combination tablet	4618	01-Jan-2008	01-Jan-2009	
10055008	Triomune(30) 3TC/d4T(30)NVP Fixed dose combination tablet	def123123	01-Apr-2008	01-Jan-2010	
10055008	Triomune(30) 3TC/d4T(30)NVP Fixed dose combination tablet	23423423	01-Mar-2008	01-Feb-2010	

### 7.3.2.4 Dispensing Registers

The dispensing register shows all the dispensing transactions conducted on daily basis. This printout is the same as the ARV dispensing register (A1). It allows keeping of a paper record of the dispensing records as well as computerized record. Below is view of the dispensing register.

		<b>Monduli District Hospital</b>																		
		<b>Dispensing Register</b>																		
		<b>02-Jan-2008</b>																		
		Tablets or capsules																		
		Fromunaf(30) gr CM4r(30)MP Fixed	9279TC Fixed dose combination, 300mg/50mg	TD5FTC Fixed dose combination, 300mg/200mg	TD5FTCEPV Fixed dose combination	94asair 300mg tablet	Dihydrostre 100mg tablet	Dihydrostre 25mg tablet	Dihydrostre 250mg EC caps	Dihydrostre 400mg EC caps	Efavirenz 50mg tablet	Efavirenz 200mg tablet	Efavirenz 600mg tablet	Zamivudine 150mg tablet	Logivirent/Konvirat 133.3/33.3mg e capsule mg tablet	Logivirent/Konvirat 200/30 mg tablet	Neftrair 250mg tablet	Neftrair 200mg tablet	Ritonavir 100mg tablet	
02-03-0200-001000	Zqsazyied Lletfut	1a(30)	123																	
07-03-0200-000629	Ajrap Xgqeqoju	99	444	50																
07-03-0200-004267	Qrajijy Wuy gyu k	99	4	30																
07-03-0200-005199	Fusn Xypaxixe	1a(30)	25																	
07-03-0200-005261	Vjgtyukic D Ixajjlex	1a(30)	30																	
07-03-0200-005546	Bawuplits U Mqofiq	99		40										50						
07-03-0200-005321	Iowbene D K kped	99					30													
07-03-0200-006092	Jxofbqex Mkolbr	99							83							5				
07-03-0200-006205	Hngizo Cnria	99								84										
07-03-0200-005670	Dwuzefu Rbbij	99									50									
11-01-0100-000034		99											82							
07-03-0200-004371	Alidr Gubuppo	99																		
07-03-0200-006587	Fmjfab V Nujwahu	1a																		
07-03-0200-005681	Kduwduq Spukuuku	99																		
07-03-0200-005798	Lahime Uictaj	1b																		
07-03-0200-006070	Zehkkt Quoos	99																		
07-03-0200-006338	Rwpegth Qlepy	99																		

### 7.3.2.5 Dispensing daily summary register

The dispensing daily summary shows one line for each date within a date range, and the total amount of drugs dispensed of each type on that date

**Monduli District Hospital**

**Dispensing Daily Summary**

**01-Jan-2001 to 01-Jan-2011**

	Tablets or capsules																		
	Ritonavir-100mg tablet	Nevirapine 200mg tablet	Neftiravir 250mg tablet	Lopinavir/Ritonavir 200/50 mg tablet	Lopinavir/Ritonavir 133.3/53.3mg capsule	Lamivudine 150mg tablet	Efavirenz 600mg tablet	Efavirenz 200mg tablet	Etravirenz 50mg tablet	Didanosine 400mg EC caps	Didanosine 250mg EC caps	Didanosine 100mg tablet	Didanosine 25mg tablet	Abacavir 300mg tablet	TDF/FTC Fixed dose combination 300mg/200mg	TDF/FTC/EFV Fixed dose combination	AZT/3TC Fixed dose combination 300mg/150mg	Trometamol(30)	ST CMA47 (30)/NMP Fixed
01-Jan-2001	3																		
20-Jun-2006	90																		
02-Jan-2008	626																		
03-Feb-2008	3																		
01-Mar-2008	3																		
01-Apr-2008	50																		
02-Apr-2008	20																		
02-Feb-2008																			
<b>Total:</b>	<b>795</b>																		

Note that the less common OI drugs which are only available in the stacked view are not displayed in this printout.

### 7.3.2.6 Report and Request printout

This is the electronic Report and Request printout generated from Pharmacy module database which resembles the paper based R&R form from the LMIS tools for ARVs and OIs.

There are two forms of R&R. these are;

- Quarterly R&R (A2) for ordering facilities directly from MSD
- Monthly R&R (A3) for non ordering satellite facilities that order from mother sites.

To print out R&R, you will be required to choose a quarter (for ordering facilities) or a month (for non-ordering facilities). Note that before producing these printouts ensure that data entry for columns F (Quantity Requested for new clients), J (Quantities to order) and K (Remarks if necessary) has been completed. Below is an example of these printouts.

Ministry of Health													
FORM A: QUARTERLY REPORT & REQUEST FOR ANTI-RETROVIRAL DRUGS (ARVs)													
Facility Code: 02010100		Facility Name: Monduli District Hospital					Type: GOV						
Name of District: Monduli													
Date submitted: 02-Dec-2008		Report for quarter: January 2008 to March 2008											
MSD code	Supply item	Unit of issue	Beginning Balance	Received from District/ MSD during quarter	Actual dispensed	Lost/ Adjusted	Ending Balance (Stock on hand)	Quantity Required for new patients	Total estimated consumption	Maximum Stock Quantity	Quantity to order	Quantity Requested	Remarks
			(A)	(B)	(C)	(D)	(E=A+B-C+D)	(F)	(G=F-C)	(H=Gx2)	(I=H-E)	(J)	(K)
10055008	Tamune(30) 3TC/4T30/NVP Fixed dose combination tablet	tablet 60	500	2,000	65	-1,605	830	100	165	330	-500	-8	0
10055009	ACT3TC Fixed dose combination 300mg/150mg tablet	tablet 60	100	200	40	-80	180	50	90	180	0	0	4
903	TDF/FTC/EFV Fixed dose combination 300mg/200mg/600 mg tablet	tablet 30	200	100	0	-190	110	0	0	0	-110	-3	0
904	TDF/FTC Fixed dose combination 300mg/200mg tablet	tablet 30	100	0	0	-50	50	0	0	0	-50	-1	0
10055016	Abacavir 300mg tablet	tablet 60	300	0	0	-260	40	0	0	0	-40	0	0
10055017	Didanosine 25mg tablet	tablet 60	500	0	0	-470	30	30	30	60	30	1	1
10055018	Didanosine 100mg tablet	tablet 60	200	0	30	-120	50	0	30	60	10	1	1
10055045	Didanosine 250mg EC caps	capsule 30	400	0	83	-400	-83	0	83	166	249	9	9
10055046	Didanosine 400mg EC caps	capsule 30	600	0	84	-560	-44	0	84	168	212	8	8
10055019	Efavirenz 50mg tablet	tablet 30	700	0	50	-650	0	0	50	100	100	4	4
10055002	Efavirenz 200mg tablet	tablet 30	100	0	52	-10	38	0	52	104	66	1	1

### 7.2.3.7 Request outcome printout

The request outcome printout is used to compare the quantities of commodities ordered against deliveries (Demand vs Supply). It also shows the number of days between the R&R submission date and the date the requested drugs were received. The figure below depicts an example of a Request outcome printout.

<b>Monduli District Hospital</b>
----------------------------------

## Request outcome

Requests for quarter Jan-2008 to Mar-2008

Date submitted: 07-Apr-2008

MSD code	Medication	Quantity Requested	Earliest MSD delivery date	Number of days	Earliest MSD delivery quantity	Total MSD deliveries in next quarter	Total received from other sources in next quarter
10055008	Triomune(30) 3TC/d4 T(30)/NVP Fixed dose combination tablet	0 tablets 0 bottles			tablets	0 tablets	300 tablets
10055009	AZT/3TC Fixed dose combination 300mg/150mg tablet	240 tablets 4 bottles	01-May-08	24	230 tablets	230 tablets	0 tablets
10055049	TDF/FTC/EFV Fixed dose combination	0 tablets			tablets	0 tablets	0 tablets

### 7.3.2.8 Time Series printout

The time series printout shows the trend of consumption of particular item for a specified period of time. The following table shows time series of Triomune 30 for a period of January to June 2008.

<b>Monduli District Hospital</b>
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## Dispensing and Ledger Summary by Month

Triomune(30) 3TC/d4T(30)/NVP Fixed dose combination tablet

Units: tablet

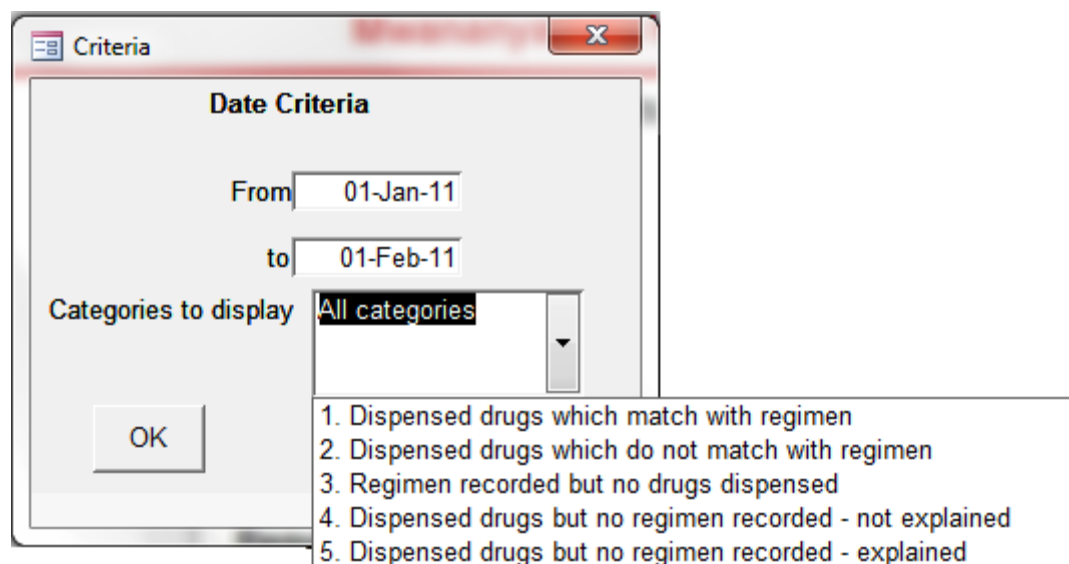
January 2008 to June 2008

Month	Received from MSD / district	Received or procured from elsewhere	Dispensed	Damaged	Expired	Lost	Given to other facility	Overall Change
Jan-2008	1,000		-55	-22	-60			863
Feb-2008			-3					-3
Mar-2008	1,000		-7	-33				960
Apr-2008		300	-70		-400			-170
Total	2,000	300	-135	-55	-460			1650

### 7.3.2.9 Matching ARV regimen and drugs

The matching ARV Regimen and drugs printout is a tool for matching dispensing data from the Pharmacy Module with client's records data from the CTC2 database. This will only work if the

pharmacy module is linked to a CTC2 database data file. Chapter 5 of this manual has a detailed description of how to link the pharmacy module to a CTC2 database data file.



There are five categories of printouts one can select from the dropdown menu of the ARV matching printout. You have the option of selecting one or all categories. The categories are described in detail below:

1. **Dispersed drugs which match with regimen:** This printout presents the dosage regimen prescribed to a client and recorded in the dispensing register of the pharmacy module database. This record should match the medicines dispensed at a particular visit as prescribed in the CTC 2 card.

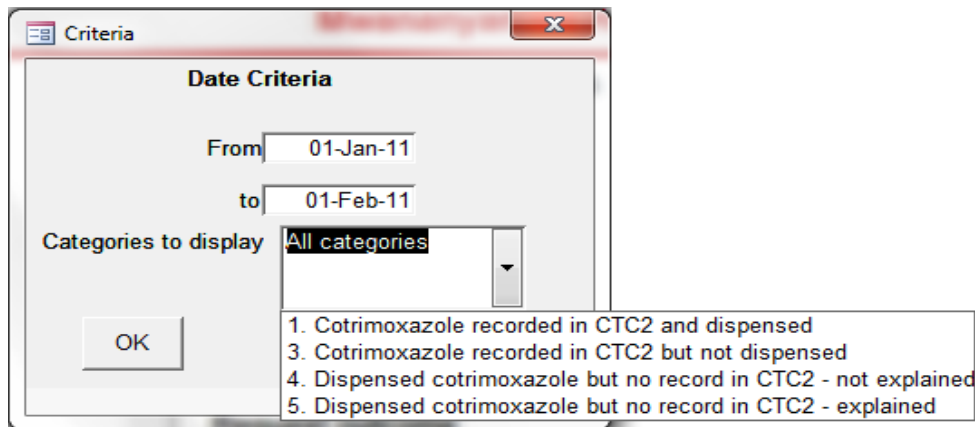
**Monduli District Hospital**  
**Matching of regimens recorded in CTC2 card and drugs dispensed at pharmacy**  
**01-Jan-2008 to 03-Jan-2008**

Patient ID	Date	Regimen in CTC2 card	Drugs dispensed
<b>1. Dispersed drugs which match with regimen</b>			
07-03-0200-004267	02-Jan-2008	1a(30) Triomune 30 d4T, 3TC, NVP	10055008 Triomune(30)3TC/d4T(30)/NVP Fixed dose combination tablet
07-03-0200-005798	02-Jan-2008	1b ZDV, 3TC, NVP	10055003 Lamivudine 10mg/ml, 100ml suspension 10055007 Zidovudine 50mg/5ml, 100ml suspension 10055013 Nevirapine 50mg/5ml, 240ml suspension
<b>Total number of patient visits in this category:</b>			<b>2</b>
<b>2. Dispersed drugs which do not match with regimen</b>			
02-03-0200-001000	02-Jan-2008	1a(40) Triomune 40 d4T, 3TC, NVP	10055043 Triomune junior 3TC(60)/d4T(12)/NVP(100) Fixed dose combination tablet
07-03-0200-005261	02-Jan-2008	1a(40) Triomune 40 d4T, 3TC, NVP	10055008 Triomune(30)3TC/d4T(30)/NVP Fixed dose combination tablet

2. **Dispensed drugs which do not match with regimen:** This printout presents the mismatch between the dosage regimen prescribed to a client and the medicines dispensed in the dispensing register of the pharmacy module database.
3. **Regimen recorded but no drugs dispensed:** This printout presents a situation where there is a visit record in the CTC2 database for a client showing that drugs were prescribed, but there is no corresponding record in the dispensing register of the pharmacy module for the same client and the same date.
4. **Dispensed drugs but no regimen recorded – not explained:** This printout presents a situation where there is a dispensing record in the dispensing register of the pharmacy module showing drugs were dispensed but there is no corresponding visit record in the CTC2 database for the same client and date. This means that drugs were dispensed with no explanation i.e. the client should have a CTC2 record.
5. **Dispensed drugs but no regimen recorded – explained:** This printout presents a situation where there is a dispensing record in the dispensing register of the pharmacy module showing drugs were dispensed but there is no corresponding visit record in the CTC2 database for the same client and date. This means that drugs were dispensed and explained by the fact that the client is either from PMTCT, PEP or on-transit.

### 7.3.2.10 Matching Cotrimoxazole printout

The Matching Cotrimoxazole printout is a tool for matching dispensing data from the Pharmacy Module with client's records data from the CTC2 database. This will only work if the pharmacy module is linked to a CTC2 database data file. Section 7.5 of this manual has a detailed description of how to link the pharmacy module to a CTC2 database data file. There are four categories of printouts one can select from the dropdown menu of the Matching Cotrimoxazole printout. You have the option of selecting one or all categories. The categories are described in detail below:



1. **Cotrimoxazole recorded in CTC2 and dispensed:** This printout presents the Cotrimoxazole prescribed to a client and recorded in the CTC 2 database. This record should match the medicines dispensed at a particular visit and recorded in the dispensing register of the pharmacy module database.
2. **Cotrimoxazole recorded in CTC2 but not dispensed:** This printout presents the situation where Cotrimoxazole was prescribed to a client and recorded in the CTC 2 database but no records exist in the dispensing register of the pharmacy module database.
3. **Dispensed cotrimoxazole but no record in CTC2 – unexplained:** This printout presents a situation where there is a dispensing record of cotrimoxazole in the dispensing register of the pharmacy module showing the drug was dispensed but there is no corresponding visit record in the CTC2 database for the same client and date. This means that drugs were dispensed with no explanation i.e. the client should have a CTC2 record.
4. **Dispensed cotrimoxazole but no record in CTC2 – explained:** This printout presents a situation where cotrimoxazole was dispensed but there is no corresponding visit record in the CTC 2 database for the same client and date. This means that drugs were dispensed and explained by the fact that the client is either from PMTCT, PEP or on-transit.

### 7.3.2.11 List of other regimens dispensed

This printout shows a list of dispensing records where the dispensed drugs do not match any regimen in the NACP CTC2 card, i.e. they are classified as “other”. This may occur when:

- a. The prescriber selects the wrong regimen
- b. New regimens have been introduced but not yet included in the CTC2 card
- c. Clients received PMTCT or PEP medicines.

### 7.3.2.12 Patient dispensing record

This printout shows you the entire dispensing history of a specific client. When you select the patient dispensing record icon, it prompts you for a client ID. When you select the patient ID, you are able to see the dispensing history of that patient.



### 7.3.2.13 Number of drugs dispensed

This printout presents the number of times and quantity a particular drug was dispensed (and recorded in the pharmacy module) in a specific period. This printout presents the information for both the mother site and the satellite facilities and also presents the total. This printout also disaggregates the dispensed quantity by the section from which the drug was dispensed, i.e. on-transit, PEP or PMTCT clients. This is noted by “of which”.

<b>Ngorongoro District Hospital</b>							
<b>Drugs dispensed during period</b>							
<b>01-Aug-08 to 30-Nov-09</b>							
Drug	Number of times this drug was dispensed	At this facility		At satellite facilities		Total	
		Quantity dispensed in units of dispensing	Quantity dispensed in units of issue	Quantity dispensed in units of dispensing	Quantity dispensed in units of issue	Quantity dispensed in units of dispensing	Quantity dispensed in units of issue
10055049 TDF/FTC/EFV FDC tablet 300mg/200mg/600mg	2	220 tablets	7.3 bottles	9,988 tablets	332.9 bottles	10,208 tablets	340.3 bottles
	<i>of which</i> PEP	1	60 tablets				
10055009 AZT/3TC FDC tablet 300mg/150mg	1	60 tablets	1.0 bottles	219 tablets	3.7 bottles	279 tablets	4.7 bottles
10055008 3TC/d4T(30)/NVP FDC tablet 150/30/200mg	1	90 tablets	1.5 bottles	887 tablets	14.8 bottles	977 tablets	16.3 bottles
10055048 3TC/AZT/NVP FDC tablet 150/300/200		tablets	bottles	866 tablets	14.4 bottles	866 tablets	14.4 bottles
10055001 Efavirenz Tablet 600mg	1	30 tablets	1.0 bottles	965 tablets	32.2 bottles	995 tablets	33.2 bottles
10055002 Efavirenz Tablet 200mg		tablets	bottles	1,085 tablets	12.1 bottles	1,085 tablets	12.1 bottles
10055004 Nevirapine Tablet 200mg	1	30 tablets	0.5 bottles	9,797 tablets	163.3 bottles	9,827 tablets	163.8 bottles
	<i>of which</i> PMTCT	1	30 tablets				
10055010 Lamivudine Tablet 150mg		tablets	bottles	9,877 tablets	164.6 bottles	9,877 tablets	164.6 bottles

11-Jul-13

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### 7.3.2.14 Number of regimens dispensed

This printout presents the number of times a particular dosage regimen was dispensing at a facility over a period of time. The printout presents the frequency information of a dosage regimen for both the mother site and the satellite facilities.

<b>Ngorongoro District Hospital</b>
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**ARV regimens dispensed during period**

**01-Aug-08 to 01-Aug-09**

Regimen		Number of times this regimen was dispensed at this facility	Number of times this regimen was dispensed at non- ordering satellite facilities	Total
1e	TDF, FTC, EFV	2	76	78
1b	ZDV(AZT), 3TC, NVP	1	117	118
1a	d4T, 3TC, NVP (paediatric dose)	1	10	11
1c	ZDV(AZT), 3TC, EFV	1	100	101
99	Other - please specify	1		1
1a(30)	d4T (30), 3TC, NVP	1	179	180
1a(30)L	d4T (30), 3TC, NVP loading dose		107	107
1d(30)	d4T (30), 3TC, EFV		177	177
2a	ABC, ddl, LPV/r		26	26
2b	ABC, ddl, SQV/r		813	813
1d	d4T, 3TC, EFV		14	14
1g	TDF, 3TC, EFV		4	4
1h	TDF, 3TC, NVP		5	5
2d	ABC, ddl, ATV/r		85	85
2e	TDF, 3TC, LPV/r		153	153
2f	TDF, FTC, LPV/r		82	82
2g	ABC, 3TC, LPV/r		17	17
1x	Other first line		25	25
2x	Other second line		27	27
1f	TDF, FTC, NVP		5	5
<b>Total number of dispensing records:</b>		<b>7</b>	<b>2,022</b>	<b>2,029</b>

### 7.3.2.15 Number of patients by regimen

This printout presents the information about the number of clients that are currently receiving a certain regimen at a given facility. If the site is an ordering facility with non-ordering sites reporting to this mother site the print out will display the information for the two categories of sites

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**Current ARV regimens of patients during period**

**29-Aug-08 to 28-Dec-09**

Regimen		Number of patients currently on this regimen at this facility	Number of patients currently on this regimen at non-ordering satellite facilities	Total
1a	d4T, 3TC, NVP (paediatric dose)			
	Child		10	10
1a(30)	d4T (30), 3TC, NVP			
	Adult		179	179
1a(30)L	d4T (30), 3TC, NVP loading dose			
	Adult		107	107
1b	ZDV(AZT), 3TC, NVP			
	Adult		106	106
	Child		11	11
1c	ZDV(AZT), 3TC, EFV			
	Adult		88	88
	Child		12	12
1d	d4T, 3TC, EFV			
	Child		14	14
1d(30)	d4T (30), 3TC, EFV			
	Adult		177	177
1e	TDF, FTC, EFV			
	Adult		76	76
1f	TDF, FTC, NVP			

### 7.3.2.16 Balances

This printout shows the stock on hand, average monthly consumption and estimates how long the existing stock will last of selected products.

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**Balances**

**01-Aug-13**

Regimen	Balance on date	Average monthly consumption	Number of months supply in stock
10055049 TDF/FTC/EFV	534	122	4.4
10055009 AZT/3TC	17	23	0.7
10055008 3TC/d4T(30)/NVP	978	0	
10055048 3TC/AZT/NVP	-4	30	-0.1
10055001 Efavirenz	87	0	
10055002 Efavirenz	66	0	
10055004 Nevirapine	79,852	15	5,323.5
10055010 Lamivudine	88	0	
10055012 Zidovudine	99	0	
10055050 TDF/FTC	0	0	
10055044 3TC/D4T/NVP baby	55	0	
10055043 3TC/D4T/NVP junior	66	0	
10055019 Efavirenz	44	0	
10055011 Stavudine	22	7	3.1
10055051 Tenofovir	11	7	1.6

### 7.3.2.17 Patient type summary

This printout presents a summary of patients in various categories; including CTC, PMTCT, PEP and on-transit. The information is broken down by the number of times the medication was dispensed to the patients in that specific category and the number of distinct patients being dispensed with those medications.

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**Types of patients being dispensed medication during period**

**01-Aug-08 to 01-Aug-09**

Patient type	Number of times medications were dispensed to this type of patient	Number of distinct patients of this type being dispensed medications
CTC	4	4
Transit	1	1
PMTCT	1	1
PEP	1	1
<b>Total:</b>	<b>7</b>	<b>7</b>

### 7.3.2.18 Patients starting new medications

This printout shows the number of new patients who used a particular drug for the first time during a period. It can be used for forecasting purposes, as drugs which many patients have started will need to have the orders adjusted upwards together with the information of eligible clients for ART initiation (in the new patients column in the R&R).

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**Patients dispensed medication for first time during period**

**01-Aug-08 to 01-Aug-09**

	Number of patients who received this medication for the first time during the period
10055049 TDF/FTC/EFV FDC tablet 300mg/200mg/600mg	2
10055009 AZT/3TC FDC tablet 300mg/150mg	1
10055008 3TC/d4T(30)/NVP FDC tablet 150/30/200mg	1
10055001 Efavirenz Tablet 600mg	1
10055004 Nevirapine Tablet 200mg	1
10055044 3TC/D4T/NVP baby FDC tablet 30/6/50	1
10055060 AZT/3TC/NVP FDC tablet 60/30/50	1

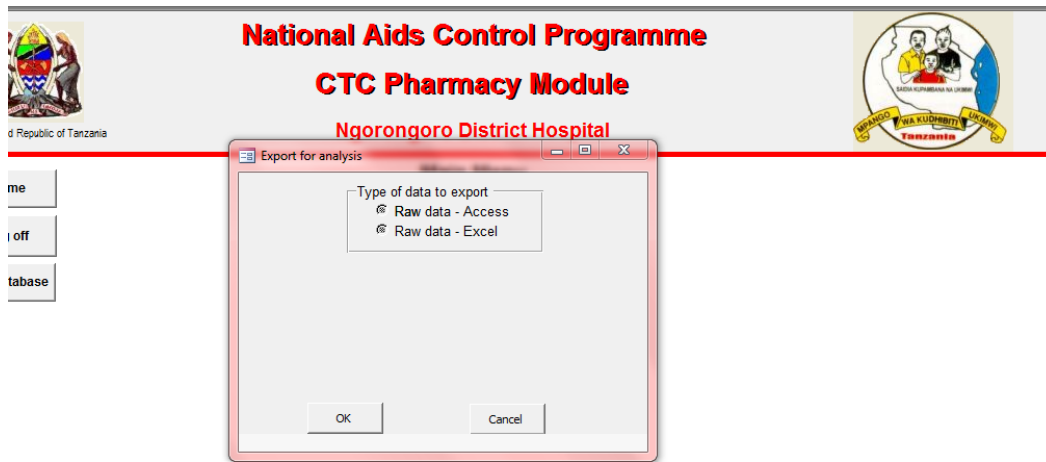
## 7.4 Export for Analysis

In some instances, one may need to conduct further analysis of the data collected in the pharmacy module database. In such instances, the following steps can be followed:

**Step 1:** Create first a new folder where you want to save the exported data for further analysis in the drive disk of your preference.

**Step 2:** Click the “Export for Analysis” tab on the home page

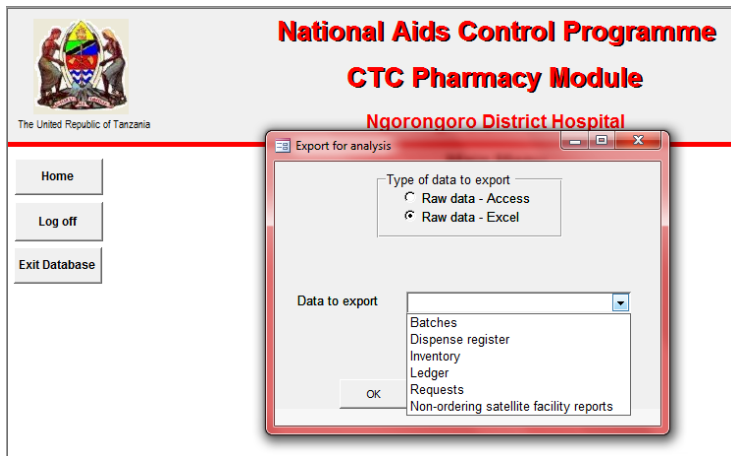
**Step 3:** A window will pop up asking you to specify if you want to export your data to Excel or Access.



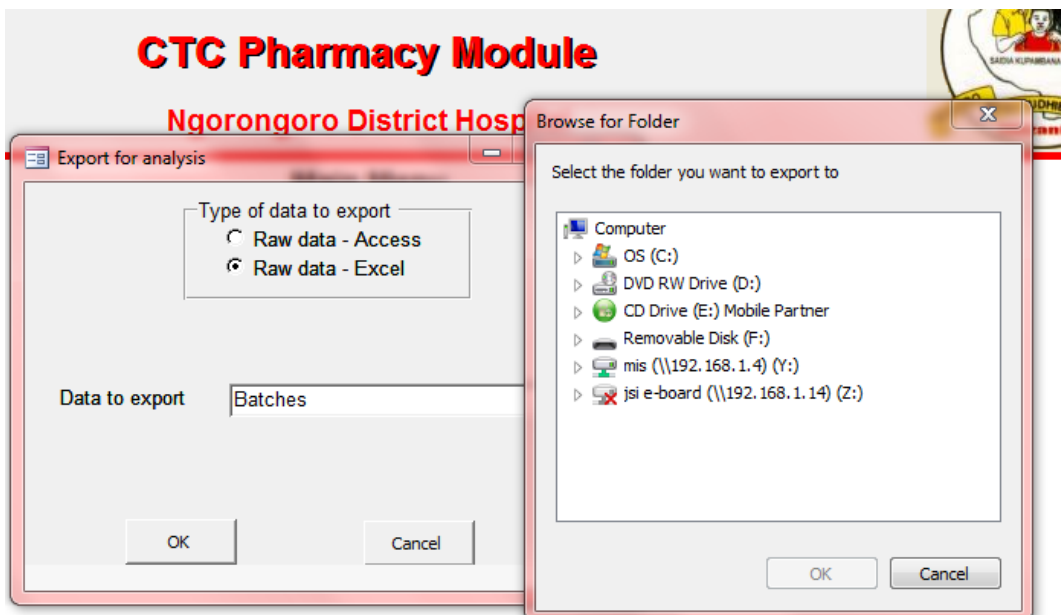
**Step 4:** Select export to Excel or export to Access

Once you specify the export format, another section will appear prompting you to specify the data to export. Currently, you are only able to export:

- a. Batches
- b. Dispensing register
- c. Inventory
- d. Ledger
- e. Requests
- f. Non-ordering satellite facility report



**Step 5:** Find the folder that you created in order to save the exported file then click OK to export the data as seen below.



**Step 6:** Open the file

You will need to go to the folder that you saved the export data and open the file. At this point, you may also transfer the data to any other analysis software.