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MINISTRY OF HEALTH-ETHIOPIA
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Common Non-Communicable Diseases and their Pharmaceuticals Management

Facilitator guide

March, 2023

APPROVAL STATEMENT OF THE MINISTRY

The Federal Ministry of health of Ethiopia has been working towards standardization and institutionalization of In-Service Trainings (IST) at national level. As part of this initiative, the ministry developed a national in-service training directive and implementation guide for the health sector. The directive requires all in-service training materials fulfill the standards set in the implementation Guide to ensure the quality of in-service training materials. Accordingly, the ministry reviews and approves existing training materials based on the IST standardization checklist annexed on the IST implementation guide.

As part of the national IST quality control process, this Common Non-Communicable Diseases and their Pharmaceuticals Management training package for Pharmacy Professionals has been reviewed based on the standardization checklist and approved by the Ministry in May, 2023.

Assegid Samuel Cheru
Human Resource Development Improvement Lead executive Officer
Ministry of Health-Ethiopia

Foreword

The Federal Ministry of Health (FMOH) has been coordinating sector wide reforms that aim to improve equity and quality of health services. It is widely known that; the sector is growing in line the overall growth and transformation plan of the country and the sector is being guided by the health sector transformation plan (HSTP). As part of this, non-communicable diseases (NCDs) program is one of the focus areas of the sector.

Even though increasing access to NCDS services in all levels of the health care system is imperative concern rational use of those medicines for the management of NCDS is also more decisive.

Recognizing vital role of pharmacy professionals in securing rational use of medicine with the particular focus on NCDS, training manual is developed. This training manual will equips pharmacy professionals with the necessary knowledge, skill and attitude gaps identified to manage NCDS thus to improve the supply management and rational use of medicines at health facilities.

I would like to take this opportunity to thank all who participated in the revision and development of this training manual.

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Pharmaceuticals and Medical Equipment Lead Executive Officer

Ministry of Health-Ethiopia

Acknowledgments

The Ministry of Health would like to thank all the persons and organizations who contributed to the development of this training manual. The shared technical knowledge, experiences, and perspectives have produced a training manual that will have a positive impact on the attitudes and capabilities of pharmacy professionals on the management of pharmaceuticals for non-communicable.

Sincere appreciation is extended to the following team of experts and their respective organizations for their unreserved commitment and support to develop this training manual:

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Acronyms

ACE	Angiotensin-Converting-Enzyme
ACEI	Angiotensin-Converting-Enzyme Inhibitors
ADE	Adverse Drug Event
ADR	Adverse Drug Reaction
AMC	Average Monthly Consumption
ARB	Angiotensin II Receptor Blockers
ARF	Acute Rheumatic Fever
CCB	Calcium Channel Blockers
CO	Cardiac Output
COPD	Chronic Obstructive Pulmonary Disease
CVD	Cardiovascular Diseases
DBP	Diastolic Blood Pressure
DKA	Diabetic Ketoacidosis
DPI	Dry Powder Inhaler
EFDA	Ethiopian Food And Drug Authority
FMOH	Federal Ministry Of Health
GDP	Gross Domestic Product
IDF	International Diabetes Federation
NSAP	International Diabetes Federation
NCDI	Non Communicable Disease And Injury
NCDs	Non Communicable Diseases
SSA	Sub-Saharan Africa
SBP	Systolic Blood Pressure
TPR	Total Peripheral Resistance
WHO	World Health Organization

Table of Contents

Introduction to the Training Manual

In Ethiopia, Non-communicable diseases (NCDs) program is one of the focus areas of the government. Ministry of health is working to increase access to NCDS services in all levels of the health care. Though clinical services are decentralized to primary health care settings, hospitals and health centers, access to essential non-communicable medicines and health technologies commodities are far away from the expected standards. Besides, inappropriate use of essential non-communicable medicines and health technologies commodities are leading to serious consequences of poor health outcomes due to weak adherence to therapy.

NCDs management strategy requires involvement of all health care professionals in patient care delivery. Pharmacy professionals have to play a critical role in availing medicines and health care technologies as well as in rational utilization of those products. They have indispensable roles in helping clinicians in selecting proper drugs for NCDS management, promoting rational use, counseling drug and health technology use, advising patients on lifestyle modification (non-pharmacologic therapy) and in managing supply chain management– including medicines quantification, procurement, storage, inventory, distribution, and documentation.

Despite their critical contributions as mentioned above, they are often ignored and weakly involved in NCDs decision making process, including in capacity building schemes regarding NCDS programmatic updates, therapeutic management guidelines and protocols. Because of this, pharmacy practitioners are not playing the critical roles they are expected to discharge in NCDS management. As the result, patients are not being benefitted from easily accessible and cost-effective human resources, pharmacy personnel.

Hence, this course is intended to achieve pharmacy personnel's competencies in the areas of key NCDs management tasks that include: NCDs essential medicines and technologies pharmacotherapy, logistics management, medicine availability, rational use, NCDS pharmacy

establishment and medicines safety. Besides, it will help them to advise physicians and patients on proper medicines selection and lifestyle modification respectively.

The core competencies that the trainees are expected to attain after going through this course are:

- Support the implementation of national NCDS prevention and control strategy to meet strategic targets
- Implement protocol based selected NCDs treatment and care
- Avail essential medicines and health technologies for NCDs
- Promote the rational use of essential medicines and health technologies for NCDs
- Monitor patient safety for NCDS medicines

Course Syllabus

Course Description:

This three days training course is designed for pharmacy professionals to enhance their knowledge, skills, and attitude in the effective management and rational use of medicines and health technologies for NCDS management.

Course Goal

To provide pharmacy personnel with the required knowledge, skills, and attitudes for the effective management and proper use of medicines and health technologies for NCDS management at health centers and hospitals.

Course Objectives

After completion of this course, the trainees will be able to:

- Describe major NCDs in accordance with the national strategy for prevention and controls of NCDs.
- Provide pharmaceutical management to cardiovascular diseases as per the national protocol.
- Provide pharmaceutical management of diabetes mellitus according to the national NCDs management protocol.
- Provide pharmaceutical management for cervical cancer, asthma, and COPD.
- Promote the rational use of medicines for patients treated for non-communicable diseases.
- Apply the supply chain management principles for selection, quantification, procurement, and stock management of NCDS products at health facilities.
- Describe NCDS medicine safety monitoring system, reporting and management of ADE.

Learning Methods & Activities

- Interactive presentation
- Group discussion
- Group exercises
- Think- pair-share
- Case study
- Individual reflection
- Demonstration

Learning Materials

Effective Management and proper utilization of Pharmaceuticals used for non-Communicable diseases management Training for Pharmacy Personnel package:

- Participant's manual
- Facilitator's guide
- PPT slides
- National NCDS management protocol latest edition (soft copy)
- National Strategic Action Plan on Prevention and Control of NCDSs (soft copy)
- National EML latest edition (soft copy)
- Ethiopian primary health care clinical guide line (soft copy)
- EPSS Pharmaceutical procurement list latest edition (soft copy)
- Flipchart & marker
- LCD Projector
- Tape
- Laptop
- BP apparatus
- Glucometer with test strips
- Lancet
- Cotton & alcohol
- Glacial Acetic acid
- Graduated cylinder
- Amber bottle
- Purified water
- Inhalers (MDI, DPI, bottle spacer)
- ADE report form & Mobil app.

Participant selection criteria

Participants for this course shall be pharmacy personnel who are responsible for supply management, pharmaceutical store management, and dispensing of NCDS medicines and health technologies in health facilities. Additionally, pharmacy professionals working directly or indirectly with NCDS medicines and health technologies at FMOH, RHBs/ZHD/WoHO, etc. are target audiences of this training.

Trainer selection criteria

Trainer of this course shall fulfill the following criteria:

- Trainers who developed this training manual (TWG)
- Trainers who have a TOT certificate on this training course
- Trainers with basic training on this course plus facilitation skill training

Methods of Evaluation Participant

- Formative
  - Direct observation with feedback
  - Individual exercise
  - Group exercises
  - Review of reports
  - Pre-test
- Summative
  - Posttest
- Course
  - Daily feedback filled by the participants
  - End of course evaluation filled by the participants
  - Oral feedback by the participants
- Certification Criteria:
  - Certification for this course is based on the following criteria.

- Full attendance of the course
- Knowledge assessment using posttest 70% for basic training

- CEU: 15
- For TOT training
  - Formative assessment 30%
  - Teach back 20%
  - Posttest 50%;
  - Aggregate value of 80% and above
- Note that TOT participants who score less than 80%, shall be given certificate for basic training given that they score 70% and above on the posttest.

Duration of the training

- 03 days.

Suggested class size and number of trainers

- Suggested training class size shall not be more than 25 participants per classroom for basic training
- For TOT, the maximum class size shall be 20
- Four trainers shall be assigned per one training event.

Training Venue

The training will be conducted at accredited CPD providers having appropriate facilities, trainers, and attachment health facilities.

Course Schedule

Total Duration: Three Days

Time	Day 1	Presenter	Moderator
08:30-09:05	Registration		
09:05-09:45	Welcome and startup activities		
09:45-10:15	Pretest		
10:15-10:30	Health Breaks	Organizer	
10:30-11:00	Introduction to Non-communicable disease		
11:00–12:30	Management of Cardiovascular disease		
12:30-01:30	Lunch break		
01:30-03:30	Management of Cardiovascular disease…		
03:30-03:45	Health Break	Organizer	
03:45-04:55	Management of Cardiovascular disease…		
04:55-05:25	Management of Diabetes		
05:25-05:30	Daily evaluation		
	Day 2		
08:30-08:45	Recap of day 1		
08:45-10:30	Management of Diabetes…		
10:30-10:45	Health Break	Organizer	
10:45-10:55	Management of Diabetes…		
11:25-12:30	Management of other NCDs		
12:30-01:30	Lunch Break		
01:30-02:00	Management of other NCDs…		
02:00-03:30	Rational use of NCDS Medicines		

03:30-03:45	Healthy Break	Organizer	
03:45-04:15	Rational use of NCDs Medicines…		
04:15-05:25	Pharmaceuticals Supply Chain Management for NCDs		
05:25-05:30	Daily evaluation		
	Day 3		
08:30-08:45	Recap of day 2		
08:45- 10:30	Pharmaceuticals Supply Chain Management for NCDs…		
10:30-10:45	Healthy Break	Organizer	
10:45-12:30	Pharmaceuticals Supply Chain Management for NCDs…		
12:30-01:30	Lunch break		
01:30-02:50	Pharmaceuticals Supply Chain Management for NCDs…		
02:50-03:30	Safety Monitoring and ADE Reporting of NCDS Medicines		
03:30-03:45	Health Break	Organizer	
03:45-04:05	Safety Monitoring and ADE Reporting of NCDS Medicines		
04:05-04:35	Post test		
04:35-05:30	Course evaluation and Close of Training		

General Guidance for Trainers

The **General guidance for trainers** is designed to allow participants know other trainees and trainers, describes course goal, objectives and schedule. Participants will also establish group norms and complete pre-test.

Enabling Objectives: At the end of this activity, participants will be able to:-

- Identify other participants and trainers in the course
- Describe the course goals and objectives
- Describe the training schedule
- Establish group norms
- Complete pre-test

Allocated Time: 70 minutes

S/N	Activity	Mode of delivery	Duration (Minutes)	Materials
1	Getting to Know each other	Interactive introduction /presentation	20	Markers Flip chart LCD, Laptop & Screen PowerPoint Slides PM TG
2	Course Goal, Objectives and Schedule	Individual reading and interactive presentation	10	
3	Logistics issues	Interactive presentation	5	
4	Establish group norms Brainstorming	Brainstorming	5	
5	Complete Pre-test	Individual exercise	30	Pre-test Question paper

Facilitator preparation before the session

- Write points to be included during presentation by groups on the flip chart.
- Prepare flipchart on the introduction points for “getting to know each other”
- Prepare Blank flipchart entitled “Parking Lot”
- Prepare Blank flipchart entitled “Group Norms”
- Ready cardstock or blank paper for name tent

- Ensure training material packages are placed for each participant on the tables before they arrive in the training room.

As participants arrive, trainers should welcome them and ask them to write their name on a piece of cardstock (folded into a name tent). Assist them with marking pens and request that they write their name and facility/organization.

Welcome

Start the course by welcoming participants. **Tell** participants that if they have any administrative questions, concerns with the hotel, or problems, to please let the course administrator know so that we can help them solve the problem or guide them in the right direction.

Getting to know your colleagues – 20 minutes

Inform the participants that they will begin with a brief activity to enable us to get to know each other.

Display the introductory points in the pre-prepared flip chart and introduce yourself accordingly.

Activity 1.1: Getting to know your colleagues

Instruction: Let participants Introduce based on the following points:

1. Name
2. Profession
3. Job title
4. Work place
5. Years of experiences

Years of experience flip chart

As participants introduce each other, one of the facilitators should write the number of years of experience of each participant on the flip chart. After all the participants have been introduced, the facilitator should quickly sum up the YEARS OF EXPERIENCE figures and comment that this number represents the total years of experience of all participants in the course. The facilitator should then appreciate the sum total of participant experience

represented in the room and note that this will be used as appropriate during the upcoming different chapters of the training.

Course Goal, Objectives and Schedule – Interactive presentation – 10 minutes

Ask the participants to open the “Course Syllabus” in their participant manual.
Allow participants to review the course description, goals, learning objectives, methods of evaluation and certification criteria for 3 minutes.
Explain the significance of the course in relation to improve medicine supply management and rational medicines use.
Ask different participants turn by turn to read aloud each objective to the large group. The facilitator may clarify as needed.
Point out the flipchart entitled “**Parking Lot”** and mention that we will use this flipchart to keep track of any topics that are raised outside of the topic of discussion and that can be discussed during the course when time is available.
Inform the participants that this is four days training and the schedule of the whole sessions is already packed & found inside their folder.

Course Logistics – Interactive presentation – 5 minutes

Inform the participants the following points related with logistics of the course:

- Location for health (tea/coffee) breaks
- Location for lunch (if lunch is arranged)
- Location of washrooms/toilets
- Payment of travel expenses and per diems

Establishing Group Norms – Brainstorming – 5 minutes

Introduce this activity by explaining that since participants will be working closely together during the course, it is important to agree on behaviors all participants will follow.
Explain that these behaviors are known as "GROUP NORMS."
Display the flipchart paper with “GROUP NORMS” written at the top.
State that an example of a norm is "everyone participates equally” or "observe punctuality."

Ask participants and trainers to think about norms or behaviors they want everyone to follow during the course.

As an idea is presented, trainer should quickly **check** with everyone to be sure the majority agrees to the norm. If so, add it to the list. **NOTE:** Do not write each norm on the flipchart until it has been agreed upon.

Make sure at least the following points are included in the "group norms"

- Listen carefully to everyone's ideas
- Attend workshop 100% of the time
- Be punctual
- Avoid side talk
- Cell phones: silent
- Actively participate in the activities

When it is completed, **Post** it on the wall where it can be easily seen by participants when they enter and exit the room. The list of norms should remain on the wall throughout the course.

Thank participants for their assistance in developing this list.

Pre-test evaluation –Individual exercise- 25 minutes

Inform participants that they will be assessed before the training, during the training and at the end of the training. Inform also the certification criteria for this training.

Explain that these assessments are designed to assist the trainers in understanding how well participants have learned the knowledge and skills necessary to ensure the rational medicine use and pharmaceuticals supply chain management of NCDS in the health facilities.

Tell participants that there will be pre-test, mid-term evaluation and post-test evaluation. The purpose of these tests is to evaluate their understanding on the course contents before, during and after the course.

Tell them that they are now going to work now on pre-test for the next 25 minutes.

Remind them to put a code, preferably the first letters starting from their grand-father, father and their first name and at last digit mobile number. For example, if the participant name is Abebe Bekele Kebede the code could be –KBA 34.

After participants finished the pre-test, mark the pre-test using the key answer, make sure that the pre-test mark is registered on a flip chart by a participant code and make it posted visibly for all participants.

Trainer Preparation:

- Get well prepared by reading the participant manual, facilitator guide, power point and reference materials (at the end of the chapter in the participant manual).
- Prepare on the activities before the presentation.
- Make sure that all materials to be used for the training session are fulfilled to successfully facilitate the sessions

Chapter One: Introduction to Non-Communicable Diseases

Allocated Time: 30 minutes

Chapter Description: This introductory chapter will give a general overview to participants about NCDs. It focuses on the definition, epidemiology and risk factors of major NCDs; and the national strategy for prevention and control of the risk factors and the NCDs.

Primary Objective: By the end of this chapter, participants will be able to describe major NCDs in accordance with the national strategy for prevention and controls of NCDs.

Enabling objective: By the end of this chapter, participants will be able to:

- List major NCDs of public health importance.
- Explain the global and national burden of NCDs.
- Discuss the socioeconomic impacts of NCDs.
- List risk factors of major NCDs in Ethiopia
- Identify the national priority areas and key interventions in the prevention and control of major NCDs.
- List the role of pharmacy professionals in NCDS treatment and care.

Chapter Outline

S/N	Activity	Mode of delivery	Duration (Minutes)	Materials
1.1	Overview of Non-communicable diseases	Individual reflection, interactive presentation	7	• Markers • Flip chart • LCD Projector, Laptop & Screen • PowerPoint Slides • Participant manual • Facilitator guide
1.2	Global and National Burden of NCDs	Interactive presentation	5	
1.3	Socio-economic Impact of NCDs	Interactive presentation	3	

1.4	Risk factors for NCDs	Interactive presentation	3	
1.5	National Strategy for Prevention and Control of NCDs	Interactive presentation	4	
1.6	Role of Pharmacy Professionals in NCD Management	Group discussion, interactive presentation	6	
1.7	Summary	Interactive presentation	2	

Activity 1.1. Overview of Non communicable diseases

Method: Individual reflection, interactive presentation

Time: 7 minutes

Activity 1.1 Individual reflections

Instruction: Individually read and reflect your answer to large group:

1. What are the major NCDs in Ethiopia?
2. Why are we so concerned about NCDs?

Time: 2 minutes

Start the session by explaining the chapter's objectives. Follow this by asking the participants to think about what they know about NCDs and which NCDs are major problems in Ethiopia.

Give them two minutes then ask 3 volunteers to reflect on these topics.

Discuss important characteristics of NCDs using the PowerPoint slides 5 through 7.

Activity 1.2. Global and National Burden of NCDs

Method: Interactive presentation

Time: 5 minutes

Discuss slides 8 and 9 on the global and national burden of NCDs. **Emphasize** Ethiopia's epidemiologic transition and its effect on the public.

Activity 1.3. Socioeconomic Impact of NCDs

Method: Interactive presentation

Time: 3 minutes

Display slide 10 and discuss that the Ministry of Health, in collaboration with WHO and UNDP, has estimated the economic cost of NCDs and their risk factors in Ethiopia using data from 2016. **Stress** on the finding that economic costs of NCDs are significant and are due principally to their impact on the non-health sector (reduced workforce and productivity).

Activity 1.4. Risk factors for NCDs

Method: Interactive presentation

Time: 3 minutes

Start the session by asking the participants, "What is the difference between modifiable and non-modifiable risk factors?". **Explain** each category on slide 11 then show how the major NCDs share common modifiable risk factors on slide 12.

Conclude the activity by discussing the prevalence of these risk factors in Ethiopia on slide 13.

Activity 1.5. National Strategy for Prevention and Control of NCDs

Method: Interactive presentation

Time: 4 minutes

Introduce participants to the National Strategic Action Plan on Prevention and Control of NCDs (2021-2025) and discuss priority areas highlighted on slide 14.

Emphasize the need for prevention of NCDs for low- and middle-income countries from the economic perspective.

Give detailed explanation of the WHO's best-buy interventions for prevention of NCDs on slide 16-19.

Activity 1.6. Role of Pharmacy Professionals in NCD Treatment and Care

Method: Interactive presentation

Time: 6 minutes

Instruct participants to form 5 groups and **discuss** on the question below in 3 minutes.

Activity 1.2: Group Discussion

Instruction: Be in group and discuss the following question

As a Pharmacy professional, what roles can you play in the management of NCDs at health facilities?

Time-3 minutes

Receive ideas from participants and jot them down on a flipchart to be displayed during the entire training.

Conclude the activity by displaying slide 21 and emphasizing bold points.

Activity 1.7. Summary

Method: Interactive presentation

Time: 2 minutes

Summarize the session by raising the following points discussed on slide 22:

- The major NCDs are CVDs, cancers, chronic respiratory diseases, and diabetes.
- NCDs are responsible for 71% of all deaths globally, and 85% of premature deaths occur in LMICs.
- In Ethiopia, NCDs account for 39% of all deaths.
- It is estimated that NCDs cost Ethiopia at least 31.3 billion birr (US$ 1.1 billion) per year, equivalent to 1.8% of the GDP.
- NCDs risk factors are majorly classified as modifiable and non-modifiable.
- The national NCDs prevention and control strategic plan is organized into four priority areas.
- As a member of health care team, pharmacists play critical role in the management of NCDs at health facilities.

Chapter Two: Management of Cardiovascular Diseases

Allocated Time: 4:40 hours

Chapter Description: This chapter describes the basic knowledge, and skills required for screening, diagnosis, and management of cardiovascular disease (Including hypertension and rheumatic heart disease) for pharmacy professionals providing services at the primary health care unit and general hospital.

Primary Objective: By the end of this chapter, participants will be able to provide pharmaceutical management to cardiovascular diseases as per the national protocol.

Enabling Objectives:

At the end of this chapter, participants will be able to:

- Describe the management principles of hypertension in line with the national protocol.
- Discuss the management principles of tonsillopharyngitis.
- Discuss the management principles of acute rheumatoid fever and rheumatic heart disease.
- Identify the role of pharmacy professionals in the management of cardiovascular diseases.

Chapter Outline

S/N	Activity	Mode of delivery	Duration (Minutes)	Materials
2.1	Management of Hypertension	• Interactive presentation • case study • paired discussion • General/Group discussion.	180	• PowerPoint slides • Participant manual and facilitator guide • Checklist for BP measurement • Flipchart
2.2	Management of tonsillopharyngitis	• Think-Pair-Share • Interactive presentation	30	

2.3	Management of Rheumatic fever and Rheumatic heart disease	• Group discussion • Interactive presentation	50	• Flipchart marker • Tape ,
2.4	Role of pharmacists in management of cardiovascular diseases	Group discussion	20	
2.5	Summary	Interactive presentation	5	

Activity 2.1. Management of Hypertension-

Method: Interactive presentation, case study, paired discussion, Group discussion.

Time: 3 hours

Start the session by explaining the enabling objectives of the session using PowerPoint slide # 2 & 3 prepared for this purpose.

2.1.1 Definition and epidemiology of Hypertension

Time: 20 minutes

Divide the participants into groups of 4-5 people and **ask** them to read and analyze the following case and respond to the four questions that follow. Note them that the case is also in their manuals. Then **ask** one member of each group to respond to the questions.

Activity 2.1: Case Study

Instruction: read and analyze the following case, and respond to the questions that follow

Case: "At an international Cardiology conference held in UK four delegates had the following preconference BP measurements made at the gate of conference venue":

- James, 50-year-old, British, BP= 170/95 mmHg
- Ibrahim, 38-year-old, Iranian, BP 130/100 mmHg
- Adamu, 65-year-old, Ethiopian, BP 160/80 mmHg
- Carlos, 56-year-old, Brazilian, BP 130/85 mmHg

Questions

1. Which delegate has hypertension?
2. Which delegate has normal blood pressure?
3. In which delegate is the likelihood of complications higher?
4. Which delegate lives in the high prevalent area of hypertension in the world?

Time: 10 minutes

Validate and summarize the case by using the following responses to each question.

Question	Responses
Which delegate has hypertension?	None, any raised BP is not hypertension, it should be confirmed on repeated measurements to say it is hypertension
Which delegate has normal blood pressure?	None, optimal ("normal") Blood pressure is below 120/80mmHG.
In which delegate is the likelihood of complications higher?	Complications are higher with Adamu due to older age and black race.

Make **interactive presentation on** definition and epidemiology of hypertension using PowerPoint slides 7-9. **Ask** participants if they any questions and respond before continuing to the next topic.

2.2.2 Pathophysiology of Hypertension

Time: 25 minutes

Begin this section by **asking** the participants to be in pair and read and discuss on the following questions.

Use 10 minutes for the discussion. Then give 2 minutes for selected participants to reflect their pair discussion to the plenary. Depending on your time management, you can assign 1 participant to discuss on the first question, and other on the remaining ones.

After the pair discussion reflection is done, use the next 13 minutes to make **interactive presentation** on pathophysiology of hypertension using PowerPoint slides 11-16.

Ask participants if they have questions, address them and proceed to classification of hypertension.

2.1.3 Classification of hypertension

Time: 20 minutes

Use PowerPoint slide 17 to **explain** about classification and grading of hypertension. Emphasize that the normal BP for adults is <130/85mmHg, <120/80mmHg; and this

classification also applies to those on antihypertensive medications. Also make sure that participants understood the difference between systolic and diastolic blood pressure.

Divide the participants into groups of 4-5 people and **ask** them to read and analyze the following case and respond to the two questions that follow. Note them that the case is also in their manuals.

Activity 2.2: Case study

Instruction: read and analyze the following case, and respond to the questions that follow

He is known to have diabetes for the last five years but never told to have hypertension. His father died suddenly while walking to workplace with suspected heart problem at age 50. On physical examination he had PR of 112/min, temperature of 37.9° C. His blood pressure was 150/95 on right arm and 155/102 mmHg on his left arm. His calculated BMI was 32. No positive findings in other system examination.

Questions

1. How do you interpret the BP values of this patient?
2. Classify the BP reading of this patient.

Time: 10 minutes

Then **ask** one member of each group to respond to the questions.

Validate the response of the groups against the following answer key and **emphasize** that If there is a disparity in category between the systolic and diastolic pressures, the higher value determines the severity of the hypertension.

1. How do you interpret the BP values of this patient?
    - *The measurement of both arms indicates that the patient is hypertensive.*
    - *The SBP of both arms and the DBP of left arm lie in grade I hypertension. But the DPB of the left arm is in grade II HTN.*
2. Classify the BP reading of this patient.
    - *This is Grade II HTN; note that we always use whichever value is higher (systolic or diastolic).*

2.1.4 Risk Factors of Hypertension

Time: 20 minutes

Ask the following 3 questions one by one for the general group. Give the chance for 2-3 participants to reflect on each of the questions.

After receiving their responses, use PowerPoint slides 20 and 21 to **summarize** the important risk factors under each category. **Emphasize** the modifiable (behavioral) factors.

Activity 2.3: Group Discussion

I**nstruction**: respond to each of the following questions individually.

1. What do you think are the risk factors for hypertension?
2. Why do we need to assess hypertension risk factors?
3. From your experience, what will be your action plan to prevent or mitigate hypertension risk factors?

Time: 10 minutes

2.1.4 BP Measurement

Time: 40 minutes

Introduce how to measure BP by reviewing the steps on the checklist for BP measurement (annex 2.1 on participant manual. Also explain the importance of accurate BP measurement for management of hypertension and the materials used for the procedure.

Using PB apparatus and a volunteer from participants **demonstrate** BP measurement according to the checklist. Make sure that all participants see what you are demonstrating and follow you using the checklist.

After the demonstration, make the participants in groups of consisting of 4 participants. While one participant is measuring the BP of this colleague in the group, the other two will observe using checklist and provide feedback at the end.

Activity 2. 4: Demonstration and Coaching

Instruction: measure BP of your colleague using the Bp apparatus. Follow checklist on annex 2.1 of your manual.

Time- 30 minutes

Finally, allow participants to **reflect** on their practice, and **summarize** the practice using powerPoint slide 22.

2.1.5 Antihypertensive Drugs

Time: 20 minutes

Divide participants into 5 groups and allow them to read the participant manual, and summarize the mechanism of action, side effects and contraindications of each class of antihyperteinsion drugs. You may assign the group as follows:

- Group 1: Diuretics
- Group 2: ACE inhibitors and ARBs
- Group 3: CC blockers
- Group 4: Mixed α- and β-Blockers
- Group 5: Central α_2-agonists & direct arterial vasodilator

2.1.6 Management of Hypertension

Time: 30 minutes

Ask participants about recommended lifyestyle modifications in the management of hypertension. Then explain each non-pharmacologic interventions using powerPoint slide 25. Empasize that Grade 1 hypertensive patients will be on lifestyle modifications and shifted to medications if the hypertenions is not controlled.

Then deliver **interactive presentation** on pharmacloligc management of hypertension using powerPoint slides 26-30. Give empasis for recommendations on the national protocol on drug choice under special conditions.

Activity 2.2. Management of Tonsillopharyngitis

Method: Think-Pair-Share, Interactive presentation.

Time: 30 minutes

Begin this section by **asking** the participants to be in pair and read and discuss the following questions.

Activity 2.5: Group discussion

Instruction: Be in group, discuss the following questions and and finally share your opinions to the plenary

1. How do define acute tonsillopharyngitis?
2. What are the most common causes of acute tonsillopharyngitis?
3. What are the drugs of choice to treat bacterial Tonsillopharyngitis?

Time: 10 minutes

Use 10 minutes for the discussion. Then give 5 minutes for selected participants to reflect their pair discussion to the plenary. Depending on your time management, you can assign 1 participant to discuss on the first question, and other on the remaining ones.

After the pair discussion reflection is done, use the next 15 minutes to make **interactive presentation** on definition, pathophysiology and management of tonsillopharyngitis using PowerPoint slides 11-16.

Ask participants if they have questions, address them and proceed to management of ARF.

Activity 2.3 Management of Acute Rheumatic Fever and Rheumatic Heart Disease

Method: Group discussion and Interactive presentation

Time: 50 minutes

Divide the participants into 4-5 groups and let them **read and discuss** each of questions listed below. Inform each group to assign a chairperson who will lead the discussion and a secretary who will record their responses and **present** them to the large group. Tell them that the questions are also found in their manual.

Activity 2.6 Group Discussion

Instruction: be in groups, discuss the following questions in your groups and present to the large group.

1. Which organs are affected by ARF?
2. What are the drugs of choice for management, and secondary prophylaxis in rheumatic fever and RHD; for how long we administer the drugs?
3. Have any B. Penicillin reactions happened in your facility? If so, how do you manage the reaction?
4. What are the roles of pharmacy professionals in the management of B. Penicillin reaction?

Time: 15 minutes

Use 15 minutes for the discussion. Then allow 15 minutes to the group (3 minute for each) to present their reflections to the large group. Depending on your time management, you can assign one group to reflect on the first question, and others on the remaining ones.

After the discussion, use the next 30 minutes to make **interactive presentation** on the management of ARF and RHD using PowerPoint slides 37-42.

Ask participants if they have questions, address them and proceed to the next activity.

Activity 2.4. Role of Pharmacy Professionals in the Management of CVDs

Method: Group discussion

Time: 20 minutes

Divide the participants into 4-5 groups and let them **read and discuss** on the2 questions listed below. Inform each group to assign a chairperson who will lead the discussion and a secretary who will record their responses on flipcharts and **present** to the large group. Tell them that the questions are also found in their manual.

Activity 2.7: Group Discussion

Instruction: be in groups, discuss the following questions in your groups and present to the large group.

1. What are the major involvements of the Pharmacy professionals in CVD management currently?
2. What should be the roles for Pharmacy professionals in the management of CVDs like hypertension, ARF and RHD?

Time: 15 minutes

Use 15 minutes for the discussion. Then allow 10 minutes for the group (3 minute for each) to present their reflections to the large group. Depending on your time management, you can assign one group to reflect on the first question, and others on the remaining ones.

After the discussion, use the participant manual to **summarize t**he role of pharmacy professionals in the management of CVDs.

Ask participants for any questions and address before proceeding to the chapter summary.

Activity 2.4. Summary:

Method: interactive lecture

Time: 5 minutes

Summarize the chapter by telling the participants the following points about the topics raised. You may use participant manual or PowerPoint slide 45.

- Management of hypertension involves lifestyle modifications and pharmacology therapy.
- Immediately manage patients and consult a physician if showing signs of hypertensive emergency or urgency.
- BPG is a treatment of choice for management of bacterial tonsillopharyngitis, which could lead to ARF and RHD if untreated or poorly treated.
- Secondary prophylaxis is crucial in ARF and RHD patients to prevent recurrence of ARF and avoid/halt damage to the heart valves.
- Pharmacist provide drug information on CVDs for health professionals, patients and public to promote rational use of CVDs medications.

Chapter Three: Management of Diabetes Mellitus

Allocated Time: 2:25 hours.

Chapter Description: This chapter is designed to enable pharmacy professionals to play a critical role in the management of diabetes mellitus at health facilities. It focuses on basic concepts of diabetes mellitus, medications for management of diabetes, and role of pharmacists in the management of diabetes.

Primary Objective: By the end of this chapter, participants will be able to provide pharmaceutical management of diabetes mellitus according to the national NCDs management protocol.

Enabling objectives:

By the end of this chapter the participant will be able to:

- Describe basic concepts of diabetes mellitus,
- Describe the mechanisms of action, side effects and drug interactions of medications used for DM management,
- Summarize management of diabetes based on the national NCDs management protocol,
- Describe roles of pharmacy professionals in comprehensive diabetes care.

Chapter Outline

S/N	Activity	Mode of delivery	Duration (Minutes)	Materials
3.1	Basic Concepts of Diabetes Mellitus	Group discussion, interactive presentation, demonstration	50	Flip chart pen whiteboard pen and duster, LCD projector, laptops, measuring tape, glucometer, glucometer strip, lancet, cotton, alcohol,
3.2	Medications for Management of DM	Group discussion, Interactive presentation	30	
3. 3	Management principles	Case study, interactive	40	

	of DM	presentation		urine dipstick, soft drink
3.4	Roles of Pharmacy Professional in Comprehensive DM Care	Think-pair-share, interactive presentation	20	
3.5	Summary	Interactive presentation	5	

Before beginning the session, the facilitator should prepare the following materials for demonstration:

- Functional glucometer with 5 glucometer strips
- Lancet, cotton, alcohol

Activity 3.1. Overview of Non-communicable diseases

Method: Group discussion, interactive presentation, demonstration

Time: 50 minutes

Start the session by explaining the session's objectives. Follow this by asking the participants to form groups of 5 and discuss the following activity. Give them ten minutes then ask one member of each group to respond to the questions.

Activity 3.1 Group Discussion

Instruction

1. What is diabetes mellitus?
2. How do you classify DM?
3. What are sign and symptoms of diabetes mellitus (for type 1 & 2)?

Time-5 Minute

Discuss the definition, burden, classification, pathogenesis, clinical manifestation, complications, and diagnosis of DM using the PowerPoint slides 6 through 15 in 30 minutes. **Emphasize** on the signs and symptoms that will help participants pick out DM patients; especially those with acute complications.

Instruct participants to open page 56 of their participant manual and explain steps for glucometer use. Display slide 16 and assist participants to carry out blood glucose measurement.

Activity 3.2 Demonstration of blood glucose measurement

Instruction

Form four groups and demonstrate how to measure blood glucose using the glucometer, test strip, lancet, cotton swab and alcohol

Time- 15 Minutes

Activity 3.2. Medications for the Management of DM

Method: Group discussion, interactive presentation

Time: 30 minutes

Start the session by discussing the pathophysiologic pathways and the medications targeting each pathway using the image on slide 18. Introduce the main sites of action of oral agents.

Instruct participants to open page 57-58 of their participant manual then **divide** participants in 5 groups and assign each group one of the following medication classes to discuss for 10 minutes.

- Group 1: Biguanides
- Group 2: Sulfonylureas
- Group 3: SGLT-2 Inhibitors
- Group 4: GLP-1 Receptor Agonists
- Group 5: DPP4 inhibitors

Summarize the topic by having representatives from each group present on their assigned medications for 2 minutes each and address any information remaining.

Discuss the topic of insulins by discussing their preparations, complications and practical application tips using slide 20 to 24. Focus on practical tips that can be shared with patients by the pharmacists.

Activity 3.3. Management Principles of DM

Method: Case study, interactive presentation

Time: 40 minutes

Start the session by introducing the following case study. **Instruct** participants to form 5 groups, discuss on the questions and jot down their responses on a flipchart in 10 minutes.

Activity 3.3 Case Study

Case: A 24 yrs. old accountant, presented with history of polyurea, polydipsia of 2 weeks duration, he gives history of weight loss of 3 kgs. On arrival the doctor in the medical OPD evaluated him and ordered an urgent Blood sugar and Urine analysis. The result appeared after 30 mints showed Random blood sugar of 287 mg/dl and Urine sugar of 2 +, no ketonuria.

Questions:

1. What is the diagnosis of the patient?
2. What are the components of comprehensive management of the patient?
3. What measures (non-pharmacologic management) do you take in the diabetes care of the patient?

Time-10 minutes

Inform participants that the answers to the questions will be discussed at the end of this section.

Discuss management principles of type 1 and 2 DM using slides 27 to 33.

Summarize at the end of this section by going back to the case study and giving the following answers.

1. Type 1 DM.
2. Pharmacologic therapy and lifestyle modifications (Diabetes Self-Management Education)
3. Go through the 10 parts of DSME**.**
    - Basic knowledge of diabetes
    - Appropriate nutrition
    - Physical activity and exercise
    - SMBG and A1C and the targets of control

- Acute complications of therapy
- Intercurrent illness and life events
- Knowledge of late complications
- Psychological aspects of living with diabetes
- Foot & skin care
- Regular ongoing medical care

Activity 3.4. Roles of Pharmacy Professional in Comprehensive DM Care

Method: Think-pair-share, interactive presentation

Time: 20 minutes

Start the session by asking participants to form pairs and discuss the following:

Activity 3.4 Think-Pair-Share

What are the key roles of pharmacy professionals in comprehensive care of diabetes?

Time: 5 minutes

Allow participants to share points they prepared about the roles of pharmacy professionals in comprehensive care of diabetes.

Using slides 37 and 38, **discuss** the roles of pharmacy professionals currently practices and roles during refilling medications. **Focus** on the things to check before refilling medications.

Activity 3.5. Summary

Method: Interactive presentation

Time: 5 minutes

Ask participants if they have any questions and address them.

Summarize the session by raising the following points discussed on slide 38:

- Diabetes mellitus is metabolic disorder characterized by chronic hyperglycemia associated with disturbances of carbohydrate, fat and protein metabolism resulting from defects in insulin secretion, insulin action (insulin resistance), or both.

- Diabetes mellitus is in a state of global epidemic affecting every country, every age group and every economy across the world.
- Type 1 DM is mainly due to absolute insulin deficiency and core deficiency in Type 2 DM is insulin resistance in different tissues.
- Diabetic education is as important as administering insulin.
- The initial choice of oral antidiabetic medications is Metformin.
- As part of their role, pharmacists should educate patients on the nature of the diseases, lifestyle modifications, medication use, administration and storage of insulin and self-blood glucose monitoring.

Chapter Four: Management of other major NCDs

Allocated Time: 2:25 hours.

Chapter Description This chapter is designed to equip participants with basic knowledge and skills on the management of cervical cancer and chronic respiratory diseases. It addresses the burden of diseases, pathophysiology, risk factors, prevention mechanism and management of precancerous cervical lesions, asthma, and COPD.

Primary Objective: After completing this chapter participants will be able to provide pharmaceutical management for cervical cancer, asthma, and COPD.

Enabling objectives:

- Describe the management of precancerous lesions in cervical cancer.
- Describe the management principles of asthma.
- Discuss the management principles of COPD.

Chapter Outline

S.no	Sessions	Method of delivery	Time	Materials
4.1	Management of Precancerous Lesions in Cervical Cancer	Interactive presentation, demonstration	40	• Flipchart • Marker • LCD projector, laptop, and screen • Glacial acetic acid • Purified water • Amber bottle • Graduated cylinder • Syringe (5ml or 10 ml) • Inhalers (MDI, DPI, plastic bottle spacer)
4.2	Management of Asthma	Interactive presentation, demonstration	30	
4.3	Management of COPD	Case study, interactive presentation	20	
4.4	Summary	Interactive presentation	5	

Before beginning the session, the facilitator should prepare the following materials for demonstration:

- Glacial acetic acid
- Purified water
- Amber bottle
- Graduated cylinder
- Syringe (5ml or 10 ml)
- Inhalers (MDI, DPI, plastic bottle spacer)

Activity 4.1. Management of Precancerous Lesions in Cervical Cancer

Method: Interactive presentation, demonstration

Time: 40 minutes

Start the session by explaining the session's objectives. Follow this by explaining the burden, causes, risk factors, screening and prevention of precancerous lesions in cervical cancer using slides 5 to 9. Introduce participants to common clinical features of cervical cancer. **Emphasize** the primary and secondary prevention methods.

Follow this by instructing participants to form 5 groups open page 71 of their participant manual. **Explain** the steps for preparation of acetic acid and **supervise** groups as they perform the activity.

Activity 4.1 Preparation of 5% acetic acid

Instruction: Using the procedure on participant manual, prepare a 5% acetic acid from glacial acetic acid.

Time-10 minute

Activity 4.2. Management of Asthma

Method: case studies, interactive presentation, demonstration

Time: 30 minutes

Start the session by introducing the following case study.

Activity 4.2 Case Study

Case: Fitsum is a 30 years old man who has worked at flower farm for the past two years. He visited the Health Post and informed the HEW that he has a productive cough with thick and whitish sputum in the mornings for the last 6 months. The cough worsens at nighttime. Often time, he experienced shortness of breath when he climbed a small mountain near his house. His mother had follow up in the nearest hospital for cough and difficulty breathing worse in cold weather for 10 years now. He used to have sneezing and running nose whenever he is working at the farm. Otherwise, Fitsum has not experienced any fever, night sweating, weight loss.

Questions

1. What is/are the likely diagnosis of this patient?
2. What actions will you take?

Time -5 Minute

Inform participants that the answers to the case will be discussed after the session of management of COPD.

Explain the definition, burden, risk factors, triggers, and management of asthma. **Focus** on the stepwise approach to asthma therapy according to the severity of asthma and ability to control symptoms. **Elaborate** on the difference between control medications (corticosteroids) which reduce airway inflammation and help to prevent asthma symptoms and reliever or rescue medications (mainly short acting beta-agonists or SABAs) which quickly ease symptoms that may arise acutely by reducing bronchoconstriction.

Follow this by **demonstration** of use of inhalers. Ask participants to go to page 78 of their participant manual and **explain** the steps for use of MDIs, DPIs, and plastic bottle spacers.

A. How to use Metered Dose Inhaler

1. Remove the cap and check the mouthpiece is clean and free of objects.
2. Shake the inhaler 4-5 times.
3. Holding the inhaler upright with your thumb on the base, breathe out as far as comfortable.
4. Place the mouthpiece in your mouth; closing your lips around it to form a good seal - do not bite.
5. Start to breathe in slowly; press down firmly on the top of the canister to release a dose, while continuing to breathe in slowly and deeply.
6. Removing the inhaler from your mouth; hold your breath for about 10 seconds, or as long as is comfortable.
7. Breathe out gently away from your inhaler mouthpiece.
8. For a second dose, wait approximately 30 seconds before repeating steps 2-7.
9. Replace the cap.

Figure 4.1: Metered Dose Inhaler.

B. How to use Accuhaler® (Dry powder inhaler-DPI)

1. Check dose counter.
2. Open cover (Use thumb grip).
3. Hold the casing of the inhaler in one hand while sliding the thumb grip away until a click is heard.
4. Holding your inhaler with the mouthpiece towards you slide the lever away from you until a click is heard. This makes the dose available for inhalation and moves the dose counter on.
5. Holding the inhaler horizontally, breathe out as far as comfortable.

6. Place the mouthpiece in your mouth; closing your lips around it to form a good seal - do not bite
7. Breathe in as strongly and deeply as possible.
8. Removing the inhaler from your mouth; hold your breath for about 10 seconds, or as long as is comfortable.
9. Breathe out gently away from your inhaler mouthpiece.
10. To close the inhaler, slide the thumb grip back towards you as far as it will go until it clicks.

Figure 4.2: Dry Powder Inhaler (Accuhaler).

C. How to use Spacers.

- If a patient is unable to use an inhaler correctly, add a spacer to increase drug delivery to the lungs, especially if using inhaled corticosteroids. This may also reduce the risk of oral candida.
- Clean the spacer before first use and every second week: remove the canister and wash spacer with soapy water. Allow it to drip dry. Avoid rinsing with water after each use.
- Spacers are not commonly available in Ethiopia. So, a 500ml plastic water bottle can be used to prepare a spacer as indicated in figure 4.6 below:

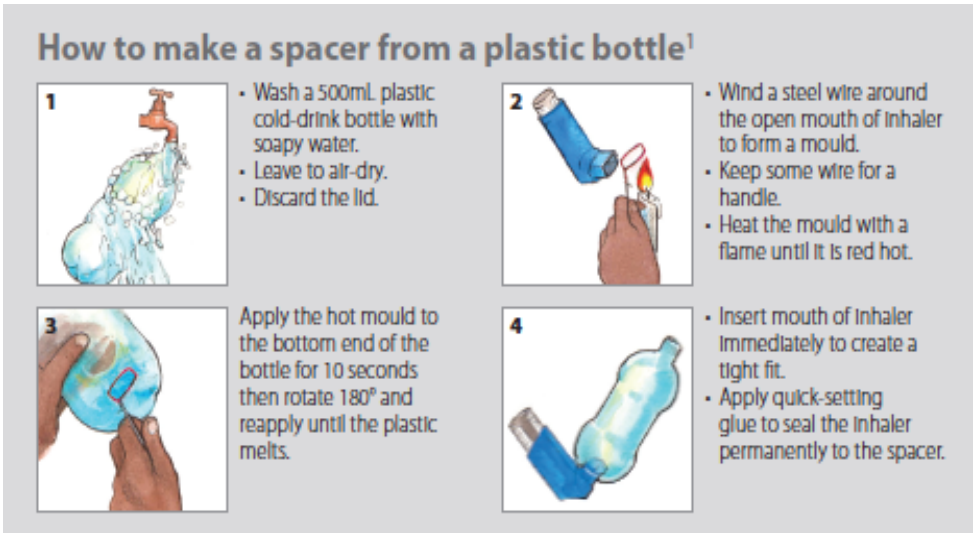


Figure 4.3: How to make a spacer from a plastic bottle.

- Follow the steps indicated in the figure to use a bottle spacer properly:

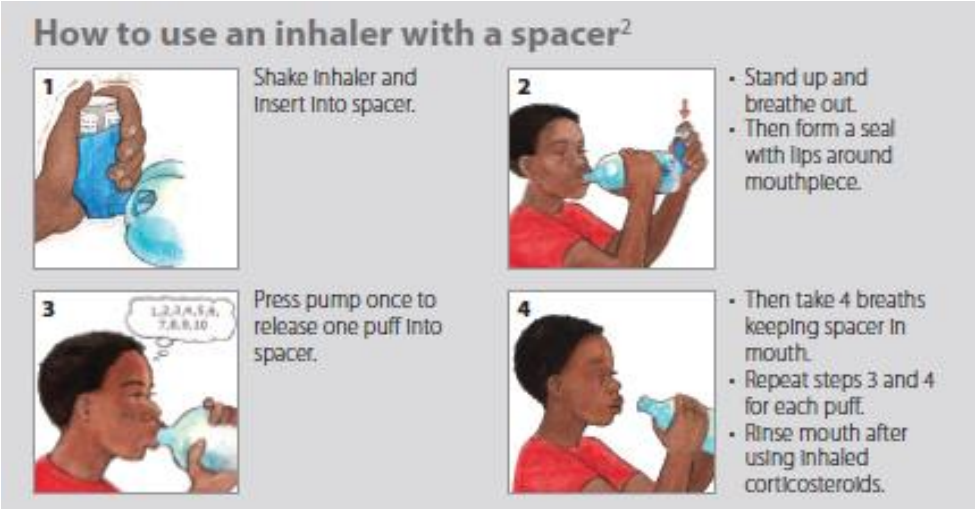


Figure 4.4: How to use an inhaler with a spacer.

Conclude the session by restating the role of pharmacists in ensuring proper use of inhalers.

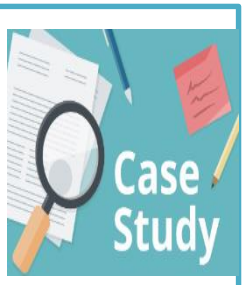
Activity 4.3. Management of COPD

Method: Case study, interactive presentation

Time: 20 minutes

Start the session by introducing the following case study.

Activity 4.3 Case Study



Case: A 45 years old woman from rural village has noticed a persistent, occasionally productive cough for the past 6 months. The cough is worse whenever she spends the day at her home while cooking where she is exposed to the smoke of the wood fire. She finally decides to visit the health post. Her husband and she never smoked cigarettes. The cough has been present for many years but it got worse recently. She has no fever or chills. She does admit to more shortness of breath when she walks for long distance over the past six months.

Questions:

1. What is the likely diagnosis for this patient?
2. What actions will you take?

Time -5 Minute

Inform participants that the answers to the case will be discussed at the end of the session. Using slides 24 to 28, **explain** the definition, symptoms, risk factors and management of COPD. Emphasize on lifestyle modifications that are common for asthma and COPD.

Conclude the session by going back to case study 4.2 and discuss the following answers.

1. What is the likely diagnosis for this patient?
    - Most likely COPD, chronic bronchitis. **Challenge** participants with the consideration of Asthma.
2. What actions will you take?
    - Lifestyle modifications
    - Prevention of exposure to triggers
    - Reducing the frequency and severity of exacerbations

- Pharmacologic therapy
    - Stable COPD (bronchodilators, combined inhaled glucocorticoids and bronchodilators)
    - Acute exacerbations (oxygen, bronchodilators, corticosteroids, antibiotics)

Activity 4.4. Summary

Method: Interactive presentation

Time: 5 minutes

Ask participants if they have any questions and address them.

Summarize the session by raising the following points discussed on slide 29:

- Cervical cancer is the 2nd major cause of morbidity and mortality in Ethiopia. It is mainly caused by HPV. It can be prevented by avoiding risk factors, vaccination and systematic screening of target populations and ensuring treatment of positive cases.
- A stepwise approach to pharmacologic therapy is recommended to gain and maintain control of asthma. Asthma treatment should contain both reliever and controller medicines.
- COPD is characterized by chronic cough, dyspnea, wheezing and sputum production. It is caused by exposure to be inhaled pollutants. Management involves lifestyle modifications and pharmacologic therapy.

Chapter Five: Rational use of NCDS Medicines

Allocated Time: 2:00 hrs

Chapter Description: This chapter introduces the concepts of rational medicines use in NCDs management. It also describes the components of medicine use process, factors contributing for irrational prescribing and dispensing practice and their respective interventional strategies. The role of pharmacists towards rational use of medicine also presented.

Primary Objective: The primary objective of this chapter is to promote the rational use of medicines for patients treated for non-communicable diseases.

Enabling objectives: At the end of this chapter, participants will be able to**:**

- Define rational medicine use for NCDs
- Describe the components of medicines use
- Identify factors associated with irrational drug use among patients treated for NCDs
- Discuss strategies and interventions that can promote and improve RMU in NCD management.
- Describe role of pharmacists towards rational use of medicine

Chapter Outline

S/N	Activity	Mode of Delivery	Duration (minutes)	Materials
5.1	Introduction to RMU for NCDs	Interactive presentation and individual reflection	30	Marker, flipchart, Participant guide, Facilitator guide
5.2	The medicine use process for NCD	Interactive presentation and Group discussion	30	
5.3	Factors associated with irrational use of NCDs medicines	Pair discussion & Interactive presentation	20	
5.4	Strategies and interventions that can improve RMU for NCD management	Group discussion and Interactive presentation	20	

5.5	Role of pharmacists towards rational use of NCD medicine	Individual reflection & Interactive presentation	15	
5.6	Summary	Interactive presentation	5	

Activity 5.1: Introduction to RMU for NCDs

Method: Interactive presentation and individual reflection

Time: 30 minutes

Begin the session by going through the objectives and outline of the session in 5 minutes.

Ask the following questions and receive answers from not more than 2 participants for each question within 5 minutes:

Activity 5.1 Individual reflection

Instruction: Individually read and reflect your answer to large group:

- How do you define Rational Drug use?
- Share your experience in promoting rational use of medicine for NCDS program.

Time: 5 Minute

Ask a volunteer participant to **read aloud the definition of rational medicine use** in the first paragraph under Introduction. After the participant reads, explain the following points in detail within 10 minutes:

Rational medicine use requires:

- Appropriate indication
- Appropriate medicine considering efficacy, safety, suitability for the patient, and cost
- Appropriate dosage, administration and duration
- Appropriate patient
- Correct dispensing including appropriate information to patient
- Patient adherence to treatment
- Outcome monitoring/Follow-up

Explain them that **Irrational Medicine Use** is the use of medicines in a way that is not compliant with rational use as defined above.

Tell participants that they are going to discuss about the the commonly encountered irrational medicines use

Then **turn the prepared flip chart** which contains the following on separate pages:

Commonly encountered irrational Prescribing
Commonly encountered irrational Dispensing
Commonly encountered irrational Patient adherence

Ask them to tell the whole class on each of the above topics. Take 5 minutes per each topic. Let them also refer table 5.1 in the participant manual

While they answer, make sure that the points mentioned in the participant manual are well addressed. You can add points as necessary

Conclude this activity by telling to the participants Rational medicine use (RMU) of NCDs generally covers appropriate prescribing, appropriate dispensing and appropriate patient use of medicines for the diagnosis, prevention, mitigation and treatment of NCDs

Activity 5.2: The medicine use process for NCDs

Method: Interactive presentation and Group discussion

Time: 30 Minutes

Start this activity by asking participants the following questions?

Activity 5.2 Individual reflection

Instruction: Individually read and reflect your answer to large group:

- Who are the major actors in the medicine use process for NCDs?

Time: 5 Minutes

Take 2-3 Reponses; write their responses on the flip chart

Tell them to be in pairs to study Figure 5.1 in the participant manual

Then give 5 minutes for selected participants to reflect their pair discussion to the plenary.

Summarize by pointing out that there are three main players in the medicine use process:

- The **prescriber** who writes down the prescription after diagnosing patient complaints,
- The **dispenser** who is responsible for counseling of the patient on the appropriate use of medicines and the **client** whom the medicine is finally meant for.

Tell them that in the effort to promote rational medicines use, it is necessary to ensure that the medicine is prescribed, dispensed and used by the client appropriately

Entertain if they have questions

Tell them that next discussion will be on the RMU assessment published study using WHO Medicine use indicators

- Let the participants read the published article result summary on the PM and ask them to discuss and analyze the case for about 15 minutes as per the annexed reference standards for WHO drug use indicators and receive answers of the below questions for not more than two groups.

Activity 5.3 Group case discussion

Be in group of five and based on the information provided below

from published study (*Wendie et al, 2021*) discuss on the following question:

- Is there irrational use of medicines? Elaborate your answer.
- Analyze the findings as per the WHO INRUD indicator standards

Time:15 Minute

Explain and summarize the discussion as follows:-

- The implication of the research findings with respect to rational use of medicines for patients treated for NCDs.
- The respective facility's has to conduct WHO core medication use study quarterly to design and implement intervention strategies towards rational use of medicines for NCDs

Activity 5. 3: Factors associated with irrational use of NCDs medicines

Method: pair discussion & Interactive presentation

Time: 20 minutes

Instruct participants to be in pair and ask them what they understand about the major factors contributing for the irrational use of medicines indicated under Activity 5.4 in

participant manual. Participants in each pair are expected to explain their understandings about factors contributing to irrational use of medicine to the large group

Activity 5.4: Pair discussion

Be in pair and discuss the major factors contributing for the irrational use of medicines and reflect to the larger group.

Time: 5 minutes

Conclude the activity by **reminding** the following points:

There are different factors associated with irrational use of medicines and all derived from patients, prescribers, pharmacist, the workplace, the supply system including industry influences, regulation, drug information and misinformation, and combinations of these factors.

Continue the discussion by asking participants what the consequences of irrational management and use of medicines are. Receive not more than 5 answers and write their answers on flipchart.

Summarize the question by telling participants that irrational medicine use has significant adverse effect on: **health care costs, quality of medicine therapy, and medical care.** It can also be a primary contributor to the spread of **antimicrobial resistance**.

Activity 5.4: Strategies and interventions that can improve RMU for NCD management

Method: Group discussion & Interactive presentation

Time: 20 Minutes

Start the session by collecting individual reflection orally from participants on their experience of the possible intervention strategies to promote rational use of NCDs from the participant manual.

Activity 5.5: Group Discussion

Be in group of five and discuss on the following questions and reflect to large group

From your experience,

1. What are the possible intervention strategies to promote rational use of NCDS drugs?
2. How do you promote rational use of NCDS medicine?

Time: 10 Minute

Explain to participants that irrational medicine use have very damaging consequences. However, but there are proven strategies to prevent the occurrence or minimize their effect and control them.

Tell participants that we are going to see the core strategies developed by the WHO.

Ask participants to open their training manual on "Interventions to promote rational Medicine Use" and let them read the 12 core strategies to improve medicines use and the identified 5 strategies recommended to be effective in developing countries for 5 minutes.

Entertain if they have questions

Summarize by pointing out:

The ultimate goal RMU intervention in NCDs is:

- To ensure better quality of pharmaceutical care
- To minimize the cost of medicines for treatment of NCDs
- To avoid preventable adverse drug reactions and drug interactions,
- To maximize therapeutic outcomes and to promote patient adherence.

Activity 5.5: Role of pharmacists towards rational use of NCD medicine

Method: Individual reflection and Interactive presentation

Time: 15 minutes

Ask participants what they think about the role of pharmacists in promoting RMU

Activity 5.5: Individual reflection

What are the roles of pharmacists in each medication use process cycle to promote rational use?

Time: 5 minutes

Take 2-3 Reponses;

Summarize by explaining that pharmacy professionals ensure rational use of medicines by:

- The right medicines are stocked for dispensing
- Appropriately interpreting and evaluating the medicines prescribed by the prescriber
- Providing the medicines to the patient with appropriate information
- Provide patient education
- Make sure that patients understand how to use the medicines
- Following treatment outcomes (goals of therapy and adverse drug events)
- Availing affordable medicines, etc.

Activity 6: Chapter Summary

Method: Interactive presentation

Time: 5 Minutes

- RMU can also be described as safe, cost-effective and economically viable use of drugs.
- The medicine use process rests on the practices of prescribing, dispensing, and client use.
- Factors associated with irrational use of medicines are derived from patients, prescribers, pharmacist, the workplace, the supply system including industry influences, regulation, drug information and misinformation, and combinations of these factors.
- WHO has devised effective strategies meant to improve medicines use and promote rational use
- The pharmacy professionals have major roles in ensuring rational medicines use for patients treated for NCDs.

Chapter Six: NCDs Pharmaceutical Supply Chain Management

Allocated Time: 6:00 hours.

Chapter Description: This chapter introduces an overview of pharmaceutical supply chain management for NCDs pharmaceuticals. It also discusses the selection, quantification, procurement and inventory management of NCDs pharmaceuticals. Finally key indicators to monitor and evaluate NCD pharmaceuticals supply chain management is presented.

Primary Objective: By the end of this chapter, participants will be discuss to apply the supply chain management principles for selection, quantification, procurement, and stock management of NCDS products at health facilities.

Enabling Objectives: By the end of this chapter, participants will be able to:

- Describe the pharmaceuticals supply chain management system
- Discuss pharmaceuticals selection process for NCDs management
- Discuss the various quantification methods used to quantify NCDs pharmaceuticals requirements.
- Follow key principles of good procurement practice for NCDs pharmaceuticals
- Explain inventory management principles to manage stock status of NCDs pharmaceuticals
- Demonstrate key indicators to monitor and evaluate NCD pharmaceuticals supply chain management

Chapter outline

S. No.	Activity	Method of delivery	Time (Minutes)	Materials
6.1	Introduction to pharmaceuticals supply management	Individual reflection and Interactive presentation	**35**	Participant manual, Facilitator guide, Flip chart tape, Marker LCD
6.2	Selection of NCDs pharmaceuticals	Pair discussion Interactive presentation, Individual reflection and Group exercise	**70**	

6.3	Quantification of NCDs pharmaceuticals	Interactive presentation Individual reflection Small group discussion and Individual exercise	**75**	Computer The National EML recent edition (soft copy) The National NCD management protocol (soft copy) Ethiopian Primary Healthcare Clinical Guideline (EPHCG) (for health centers only) (soft copy) Pharmaceutical Procurement plan list of EPSS (soft copy)
6.4	Procurement of NCDs pharmaceuticals	Interactive presentation, Individual reflection, Individual study and large group discussions	**40**	
6.5	Inventory management and storage of NCDs pharmaceuticals	Interactive presentation, Individual reflection, Individual study and large group discussions	**60**	
6.6	Monitoring and evaluation of NCDs supply management	Interactive presentation, Individual reflection, Individual study and large group discussions	**40**	
6.7	Chapter summary	Interactive presentation	**5**	

Activity 6.1: Introduction to Pharmaceuticals Supply Management

Method: Individual reflection and Interactive presentation

Time: 35 minutes

Start the session by explaining the chapter outline and enabling objectives of the session using slide 2 & 3 prepared for this purpose.

Ask participants the questions indicated below. Note them that the questions are also in their manuals

Activity 6.1: Individual Reflection

Instruction: After reading the following questions, share your thoughts with the entire group

1. What logistic activities do you do in managing the supply of NCDs pharmaceuticals at your facility?
2. What are the major challenges health facilities face in managing NCDs pharmaceuticals?

Time – 10 minutes

Use 10 minutes to receive responses from two or three participants for each of the questions

After the individual reflection activity, **use** the next 15 minutes to summarize the importance of a good SCM system for health care delivery in general and NCDs in particular. Then display the pharmaceuticals management cycle diagram using slide 4 and briefly describe the cycle. **Summarized** the diagram as follow:

Pharmaceutical supply chain management is a vicious cycle which includes technical processes of selection, quantification, storage, and inventory management and distribution activities. The cyclical processes should be supported by logistic management information system (LMIS), as well as support functions including HR, quality monitoring for each logistic activity.

Conclude this presentation by raising the following questions which also displayed on slide 5 to the general group and make some participants to reflect.

Activity 6.2: Individual Reflection

Instruction: Read and reflect individually the following questions.

1. Which component of the SCM cycle is more important? Why?
2. Which component of the SCM cycle is more challenging? Why?

Time – 5 minutes

After the reflection, emphasis that each component of the cycle is equality important and if one component is missing, it is difficult to continue the cycle

Address questions that may arise from participants.

State that successful NCDs management requires a reliable supply chain. However, there are many challenges observed supply chain for NCDs pharmaceuticals particularly at health facilities.

Inform participants that some of the challenges that we face are evidenced with national documents (as indicated from pharmaceutical sector assessment study findings). **Tell** participants that they can refer those challenges from their manuals

Finally **conclude** this session by informing the participants that in the next session's selection, quantification, procurement and inventory management will be treated in detail.

Activity 6.2: Selection of NCDs pharmaceuticals

Methods: Pair discussion, Interactive presentation, Individual reflection and Group exercise
Time: 70 minutes
Begin this section by **asking** the participants to be in pair and read and discuss on the following questions.

Activity 6.3: Pair discussion

Instruction: Be in pairs, think over the following questions individually, discuss in pairs and finally share your opinions to the plenary

1. How has NCDs product selection been performed at your health facilities?
2. What is the rationale for having a limited list of essential pharmaceuticals?
3. What criteria did you use to select NCDs pharmaceuticals in your health facility?

Time : 10 minutes

Use 10 minutes for the discussion. Then give 2 minutes for selected participants to reflect their pair discussion to the plenary. Depending on your time management, you can assign 1 participant to discuss on the first question, and other on the remaining ones.

After the pair discussion reflection is done, use the next 5 minutes to make interactive presentation on rationale for having a limited list of essential pharmaceuticals.

Mention that the selection of pharmaceuticals has a considerable impact on the quality of care and the cost of treatment and, therefore rational selection is important to better supply, more rational use and lower cost. **Make** interactive **presentation** of the **'**Advantages of a limited list of pharmaceuticals' using slide 7

Entertain if they have any questions.

Tell them that next discussion will be on the criteria for NCDs pharmaceuticals selection

Instruct the participants to open the criteria for NCDs pharmaceuticals selection section in the participant manual and direct them down to the list of criteria (Take one minute for each principle).

- Disease Patterns of the catchment area

- Level of health facility and its capacity (eg. diagnostic facilities, STG)
- Training and experience of available personnel
- Efficacy, safety and quality
- Cost and cost-effectiveness
- Inclusion in the national EML NCDs management protocol
- Priority to single ingredient pharmaceutical pharmaceuticals instead of fixed ratio combination pharmaceuticals unless the advantage outweighs

Let one participant read one criteria and try to explain what he/she understands about this criteria. Elaborate if you think he/she didn't explain well.

Follow the same procedure for the rest of the criteria.

Summarize this sub topic by explaining that they need to follow these criteria in selecting NCDs pharmaceuticals.

Tell them that next discussion will be on the steps in the process of pharmaceuticals selection

Inform participants to **read** the steps in the process of pharmaceuticals selection. In the following 5 minutes, open the power point slide 8 and explain the steps.

Summarize this topic by explaining the following point:

It is important to use the national NCD management protocol and Primary Healthcare Clinical Guideline (EPHCG) as a reference when selecting medicines for management of NCDs, as this will help align the lists of medicines with the scope of NCD service at the health facility.

Tell them that next discussion will be on the structuring / categorization of selected pharmaceuticals

Tell the participants VEN analysis is one of the approaches to categorize selected medicines

Ask the participants what is meant by VEN classification

Activity 6.4: Individual Reflection

Instruction: Reflect on the following questions
What isVEN classification?

Time – 5 minutes

Receive 2-3 Responses.

Ask if they have questions and summarize by saying:

- **Vital** medicines are those potentially lifesaving and their absence greatly affects the service a facility is giving.
- **Essential** medicines are medicines effective against less sever nevertheless significant forms of illness
- **Non-essential** medicines are those used for minor illness. They may be items in the facility's medicine list and maybe important.

Ask them to turn the table a sample guideline for VEN analysis in their participant manual and study the table.

Ask the participants if they understood the concept and entertain any question raised.

Summarize this part by:

VEN categorization is best done by team of experts, such as DTC and the classification should be determined primarily on the basis of the public health impact of individual medicines. Unit prices should be secondary consideration, and popularity of medicines should have minimal influence on the process.

Tell them that they will discuss the steps that will be followed while developing and maintaining facility specific medicines list.

Begin the discussion by defining that facility specific medicines list is a list of medicines and medical devices approved for use in a specific health care setting.

Ask participants if any of them have experience in the development of (facility specific or national) medicines list. If so, ask what steps/ procedure they followed to select medicines and medical devices to the list

Activity 6.5: Individual reflection

Instruction: Share your experience.
Do you have facility level medicines list that includes NCD pharmaceuticals for your health facility?

- If yes, describe the process of development of the list at your facility?
- If no, what is the reason?

Take one response for each scenario and list down the reflections on the flip chart

Explain that:

- Development of facility specific medicines and medical devices list should be done in a systematic way.
- The most logical approach is selecting medicines based on disease prevalence and recommended treatment measures.

Inform participants to open their manual and **ask** one volunteer to read aloud the first step. Clarify. Do same for next steps.

Inform that they will use these steps to exercise the development of list of medicines for selected NCDs. **Ask** if they have questions or require clarification and entertain accordingly.

Tell the participants they are now going to exercise developing a pharmaceutical list for NCDs

Form groups of five members.

Ask them to turn their participant manual to activity 6.6 and do the exercise provided.

Activity 6.6: Group Activity - Develop a sample policy

Instruction: Form a group and do the following exercise on preparing

a sample facility level medicines list for selected NCDs and VEN categorization

- Based on the criteria discussed above, and using the national EML, and the national NCD management protocol and Ethiopian Primary Healthcare Clinical Guideline (EPHCG) as a reference, prepare a sample list of pharmaceuticals for management of cardio vascular diseases, Diabetes mellitus, chronic respiratory diseases and cancer for your facility.
- For each product included in the list, conduct VEN analysis using the guideline above. Use the following template to organize the EML.

Time: 30 minutes

Tell them that they have 30 minutes to complete this exercise

Make sure that the participants have computers (if applicable), and the soft copies of the following references are available.

- The National EML, 6th edition
- The National NCD management protocol
- Ethiopian Primary Healthcare Clinical Guideline (EPHCG) (for health centers only)

- Pharmaceutical Procurement plan list of EPSS

As they exercise proceeds **move around and support** each group. Other trainers should also assist you during the activity. After time is done**, let** the first two groups which finished first present to the large group.

Encourage other groups comment on the presented NCDs pharmaceuticals lists.

Activity 6.3: Quantification of NCDs pharmaceuticals

Methods: Interactive presentation, Individual reflection and Individual exercise

Time: 110 minutes

Start the session by informing the participants that Quantification is one of the critical activities for health service provision

Instruct participants to be in pair and ask them what they understand by the terms indicated under Activity 6.7 in participant manual. Participants in each pair are expected to explain their understandings about each term to their pair mate.

Activity 6.7: Pair discussion

Instruction: Be in pairs, think over the following terms individually, d in pairs and finally share your opinions to the plenary.

What do you understand by the following terms?

- Quantification
- Forecasting
- Supply Planning

Time- 3 Minutes

Finally **ask** pairs to share respective understandings about the terms to the large group for 2 minutes.

Summarize the basic concepts by noting the following statements about the terms:

Quantification is the process of estimating the quantity and cost of the pharmaceuticals required for a health facility, and to ensure an uninterrupted supply, determining when the pharmaceuticals should be procured and distributed.

Forecasting: is the process of estimating the quantities of pharmaceuticals that will be dispensed to clients or used by the health program over a specific period of time in the

future. **Supply planning:** Refers the process of estimating quantities and total costs of pharmaceuticals required for procurement, and determining order and receipt dates.

Tell them that next discussion will be on the purpose of pharmaceutical quantification.

Ask participants what they think about the purpose of quantification from the participant manual

Activity 6.8: Individual

Instruction: Reflect on the following questions

Why Quantification is needed?

Time – 5 minutes

Take 2-3 Reponses; write their responses on the flip chart

Pair participants to read and discuss the purpose of quantification

Summarize by explaining that the purpose of quantification includes:

- Provide data on specific pharmaceutical requirement and cost to inform annual budget allocation
- Helps to minimize the risk of stock out of pharmaceuticals
- Applicable in program/ service expansion
- Helps to implement new guidelines, interventions, new programs
- Inform manufacturers and suppliers in a better way
- Promotes the use of new/available data – to be harmonized, on program and product
- Prioritize the most critical requirements

Entertain if they have questions

Tell them that next discussion will be on the steps in quantification of pharmaceuticals

Explain the process of quantification of pharmaceuticals encompass three steps i.e preparation, forecasting and supply planning.

Display the figure on steps of quantification using power point slide 10 prepared for this purpose and elaborates the details of each step as follows:

In Preparatory phase, the following major activities should be carried out:

- Establishing a quantification team
- Describing the program (program performance, policies & strategic plans)

- Defining the purpose & scope of the quantification exercise (stake holder, users, pharmaceuticals, timing)
- Collecting required data (for forecasting and supply planning)

The Forecasting phase includes the following tasks:

- Organizing, reviewing & adjusting the data
- Building and obtaining consensus on the forecasting assumptions
- Calculation of the forecasted consumption for each product
- Comparing and reconciliation of results of different forecasts

The Supply planning phase: includes

- Organizing and analyzing data
- Building supply planning assumptions
- Estimating total commodity requirements
- Developing supply plan
- Comparing costs to available funding

Tell them that next discussion will be on the methods of pharmaceuticals quantification

Ask the following questions to the participants, and within ten minutes, receive answers for each question from two to three participants

Activity 6.9: Individual Reflection

Instruction: After reading the following questions, share your thoughts with the entire group

1. How has NCDs pharmaceuticals quantification been performed at your health facilities?
2. What quantification methods have you commonly employed in your facility to estimate NCDs pharmaceuticals requirements?

Time : 10 minutes

After receiving their answers, **summarize** their response by explaining the following points: quantification in the health facilities can be done using the following methods:

- Consumption method
- Morbidity method
- Adjusted-consumption
- Service-level projection of budget requirements

The method used should be chosen according to actual & potential availability of data.

Inform participants that the consumption based and morbidity based methods are the two commonly used quantification methods at health facilities

Tell participants they're going to compare and contrast the type and source of data, advantages and limitations of consumption- and morbidity-based methods using activity 6.11 from the participants' manual

Activity 6.10: Small Group discussion

Instruction: Form a small group, discuss on the following questions, and then present your findings to the larger group

1. When to conduct consumption and morbidity-based quantification?
2. Discuss the types and their respective sources of data for morbidity and consumption based methods
3. Discuss the advantages and disadvantage of consumption-based quantification?
4. Discuss the advantages and disadvantage of morbidity-based quantification?

Time : 10 minutes

Divide participants in to groups and **instruct** them to select the group's chairperson and secretary. If groups were formed in previous sessions, you can use such groups.

Tell them that they have 10 minutes to complete their activity and **instruct** each group to discuss one question. If the number of groups exceeds 3, one question can be given for more than one group

Encourage participants to use flip charts and marker to prepare presentation of their group work.

Instruct the participants to close the participant manual and apply their prior experience to do the activities

Tell the participants that the first four groups finished first will present to the large group.

As the activity proceeds move around the group and support each group. Other trainers should also assist you during the activity.

Ask groups to present their discussion points to the whole class. **Allow** five minutes for each presentation

Encourage other groups comment on the presented points.

While they present, make sure that the points mentioned in table 6.2 in the participants manual are well addressed. You can add points as necessary

Conclude the activity by acknowledging the presenters and participants

Tell them that next discussion will be on steps of quantification using consumption methods

Make interactive **presentation** of the "Quantification Steps Using Consumption Method**"** using slides 11-15.

After the presentation**s inform** the participants they are now going to exercise Consumption Based Quantification individually and in group (Activity 6.12 & 6.13) in participant manual.

Tell them that next discussion will be on steps of quantification using morbidity methods

Ask one volunteer participants to read aloud the steps of quantification using morbidity methods. **Explain** each step briefly as necessary.

Use the prepared flip chart which contains the following formula during discussion and exercise

Formulae Used in Morbidity-Based Calculations

Number	Formula	Calculation
1	Quantity of medicines needed/treatment episode	$Q_E = D_{CU} \times N_D \times L_D$
2	Expected total number of contacts (in thousands)	$C_E = C + (C \times A_U)$
3	Expected treatment episodes	$E_T = C_E \times F$
4	Total quantity of medicines needed	$Q_T = E_T \times Q_E \times P_T$

Q_E = Quantity of each medicine needed for each treatment episode
DCU = Basic units/dose
N_D = Number of doses/day
L_D = Length of treatment (in days)
C = Past total number of contacts
A_U = Utilization adjustment
C_E = Expected total number of contacts
F = Frequency of health problem (per 1,000)
E_T = Expected treatment episodes
Q_T = Total quantity required
P_T = % of cases expected to be treated

After the presentation**s inform** the participants they are now going to exercise morbidity Based Quantification in group (Activity 6.14) in their participant manual.

Ask the participants whether they bought all items they quantified without budget restriction or not.

Activity 6.11: Individual Reflection

Instruction: Share your experience.

Have you purchased all the pharmaceuticals you quantified without budget restriction? If not, why?

Time- 2 Minutes

Take 2-3 responses from the participants and thank them.

Tell the participants to read their participant manual Budget reconciliation section

Summarize by explaining:

- If sufficient funding is available, the final quantity to procure for each product will be the same as the quantity to order.
- If funding is insufficient, the quantification team will need to determine whether additional resources can be mobilized
- When it is impossible to mobilize additional resources to procure the full quantities of pharmaceuticals required, the forecasted consumption will need to be reduced.

Entertain if they have any questions.

Tell the participants they are now going to do individual exercise using the transaction given in the stock card

Ask them to turn their participant manual to activity 6.12 and do the exercise provided.

Activity 6.12: Individual Exercise

Instruction: Calculate the following using the stock record card transa
given below

1. Recorded consumption
2. Calculate the consumption adjusted for avoidable wastage
3. AMC adjusted for stock out

Time – 10 minutes

Medicine- Glibenclamide 5mg tablet Unit=100

Date in local calendar	Issued to or Received from	Quantity				Unit price	Expire date	Remark
		Received	Losses/ Adjustment	Issued	Balance			
30/4/2013	Beginning stock				150	370.00	Sep-23	
20/5/2013	Dispensary			25	125			
28/5/2013	EPSA AA hub	38			163	372.00	Oct-24	
16/6/2013	Dispensary			30	133			
12/7/2013	Dispensary			25	108			
15/7/2013	Dispensary			14	94			
2/8/2013	Dispensary			25	69			
17/9/2013	Dispensary			30	39			
20/10/2013	Dispensary			39	0			
2/11/2013	EPSA AA hub	60	1		160	378.0	Dec-24	
25/1/2014	Dispensary			25	135			
18/2/2014	Dispensary			30	105			
4/3/2014	Physical count		-10		95			Damage
20/3/2014	Dispensary			25	70			
4/4/2014	Yekatit 12 hospital		15		55			Transfer
19/4/2014	Dispensary			25	30			
30/4/2014	Dispensary			12	13			

Tell them that they have 10 minutes to complete this exercise

After time is done**, let** the one participant which finished first present to the large group.

Answer key to Activity 6:12

C = Beginning stock + Received – End Balance

150+198-13

= 335

Consumption adjusted for wastage (C w) = C- Avoidable wastage.

= 335-10

= 325

aAMC = $\frac{\text{Total quantity issued}}{(\text{Rm}-(\text{SOD}/30.5)}$

$12/(12-12/30.5)$

Tell the participants they are now going to exercise Consumption Based Quantification in group.

Form groups of five members.

Ask them to turn their participant manual to activity 6.13 and do the exercise provided.

Tell them that they have 15 minutes to complete this exercise

Activity 6.13: Consumption Based Quantification

Calculate the following variables using the given assumption and fill the table

1. Adjusted monthly consumption
2. Projected Average monthly consumption
3. Total annual quantity to be order

Time – 15 minutes

After time is done**, let** the first group which finished first present to the large group.

Answer key to Activity 6:13

No	Item	BU	Total Consumption	SOD	**aAMC**	**PAMC**	**Total Annual forecast**
1	Atenolol 50 mg	Tab	89,000	34	18,218	21,862	262,341
2	Hydrochlorothiazide 25mg	Tab	59,500	0	9,917	11,900	142,800
3	Acetyl salicylic Acid 81mg	Tab	2,500	0	417	500	6000
4	Warfarin 10 mg	Tab	59,500	0	9917	11900	142800
5	Mannitol 25%/50ml inj	ml	45,000	34	9211	11054	132644
6	Glibinclamide 5mg	Tab	334,879	0	55813	66976	803710
7	Metformin 500mg tab	Tab	4,128	0	688	826	9907
8	Insulin /lente 100IU	ml	234,878	29	46518	55822	669860
9	Cisplatin 50mg	vial	50,000	0	8333	10000	12000
10	Beclomethasone 100mcg/dose	inh	2,414	31	484	581	6975

After Quantification Steps using Morbidity Method presentation, ask the participants to turn their participant manual to activity 6.114 and do the morbidity based quantification exercise in their previous formed group.

Tell them that they have 15 minutes to complete this exercise

Activity 6.14: Morbidity Based Quantification Group

Calculate the following variables using the formulas in the step and fill the table

1. Quantity of medicines needed/treatment episode
2. Expected total number of contacts (in thousands
3. Expected treatment episodes
4. Total quantity of medicines needed

Time – 15 minutes

As they exercise proceeds **move around and support** each group. Other trainers should also assist you during the activity

After time is done**, let** the first group which finished first and not present the previous exercise present to the large group.

Answer key to Activity 6:14

Disease	Age group	F Episode / 1000 contact	CE Expected no contact	ET Expected no of episode	No of regimen	PT % cases treated with regimen	Medicines	QE Basic unit/ Episode	QT Total basic unit needed
Hypertension	>5	55	3,279,578	180,377	1	100	HCT 25mg	28	5,050,551
					2	70	Paracetamole 500 mg	20	2,525,275
Heart Failure	>5	50	3,279,578	163,979	1	100	Digoxin 0.25mg	730	119,704,612
	<5	5	3,279,578	16,398	1	100	Digoxin 0.05mg/5ml elixir	1825	299,261,529

Activity 6. 4: Procurement of NCDs pharmaceuticals

Method: Interactive presentation, Individual reflection, Individual study and large group discussions

Time: 40 minutes

Start the session by collecting individual reflection orally from participants on their experience of NCDs pharmaceuticals procurement process and methods in their health facilities from the participant manual.

Activity 6.15: Individual Reflection

Instruction: After reading the following questions, share your thou the entire group

1. How has NCDs pharmaceuticals procurement been performed at your health facilities?

What procurement methods have you commonly employed in your facility to purchase NCDs pharmaceuticals?

Time- 5 Minutes

Receive answers for each question from no more than three participants within 10 minutes. After receiving the response describe each process of procurement cycle using the slide 17 for 10 minutes.

Summarize this topic by explaining the following points:

NCDs pharmaceuticals procurement process involves determining quantities needed; reconciling needs and funds; choosing appropriate procurement method; locating and selecting suppliers; specifying contract terms; monitoring order status; receiving and checking pharmaceuticals; and making payment.

Let participant **read** the participant manual about NCDs pharmaceuticals procurement methods for 5 minutes, entertain if there are any questions from the participants in 3 minutes.

Summarize key point from the participant manual about the procurement methods by mentioning the following points;

The major NCDs pharmaceutical procurement methods used by health systems are open tender, restricted tender, competitive negotiation, and direct procurement, which vary with respect to their effect on the price, delivery times, and workload of the procurement office.

Tell them that next discussion will be on general principles and procedures to be followed during pharmaceuticals procurement

Ask participants to respond to the questions in the activity below. Inform participants that they can find the questions from their manuals under Activity 6.14.

Activity 6.16: Experience Sharing: Large Group Discussion

Instruction: List your procedures and share to the large group. What key principles and procedure do you follow during procurement of NCDs pharmaceuticals at your facilities?

Time- 7 Minutes

Ask participants to list their answers on their notebooks in 3 minutes. Receive their responses

from 3 or 4 participants and write their responses on the flipchart for 5 minutes and discuss the general principles indicated in the participants' manual by inviting participants to read loudly one by one.

Activity 5: Inventory management
Method: Interactive presentation, Individual reflection, Individual study and large group discussions

Time: 60 minutes

- Start the session by describing the learning objectives and outline by referring the module on slide number 2
- Give one minute for participant to read the individual case study and reflect within two minutes.

Activity 6.17: Individual Activity

Access to and utilization of medicines is one of the foundations on which a responsive health system is built; for NCDs such as diabetes and hypertension, access to continuous care and treatment at a nearby primary care facility is crucial.

Reflect on the benefit of inventory management to avail NCDs management?

Time: 5 minutes

- In the next minutes, **define and elaborate** the definition of inventory management from the slide number 3.
- In five minutes take individual reflection from participants by brainstorming on Activity 6:17
- Continue by **highlighting** to the participant how poor inventory management in the public pharmaceutical supply chain leads to waste of financial resources. Explain historical events that contribute the development of pharmacy ethics from global context.
- Next, **discuss** inventory data management system on slide number 5

- Ask participants to form a group of five and collect participants reflection on activity 6:18, use a total of five minutes to undertake this activity.

Activity 6.18: Group Activity case Study

A primary hospital manager knew from her experience that stock-outs of non-communicable disease treatment products in her facilities fosters distrust in healthcare providers and contributes to low utilization of the formal healthcare system as well as non-adherence to medications. In order to mitigate this, she wanted to know how long the current stock of Glibenclamide 5mg will last and when do the store man need to order the supplies. In addition to that she wanted to know if there is product that is on the pipeline or whether the current stock could initiate an emergency order.

Form a group of five and discuss: What information would the hospital manager need to answer those questions and from which data source does he need to refer to make informed decisions?

Time: 3:00 minutes

Key points: Inventory position (stock on hand, stock on order), Consumption in the past few months, Bin card, Purchase order, Historical data on lead time

- Continue to **discuss** on effective inventory management and standard forms used for inventory records in the next eight minutes on page 113.
- Ask participants to reflect in activity 6. 19

Activity 6.19: Individual Activity

List the difference between stock keeping records, transaction records and consumption records? and what information they contain?

Time-3Minute

Key points:

Stock keeping records: holds information about products in storage.

Transaction records: holds information about products being moved.

Consumption records: holds information about products being consumed or used.

- **Explain** the concept of inventory control system and its purpose from slide number 5 to 7 in the first five minutes.
- **Ask** participant to explain the meaning key inventory terms from the list displayed in activity 6.20

Activity 6.20: Individual Activity

Explain the meaning of key inventory control terms.

- ✓ Maximum months of stock
- ✓ Minimum months of stock
- ✓ Emergency order point
- ✓ Max-min inventory control system:
- ✓ Review period/review period stock:
- ✓ Safety stock level
- ✓ Lead time stock level
- ✓ Back-order
- ✓ Inventory position

Key points:

1. **Maximum months of stock:** is the largest amount of each pharmaceutical an institution should hold in the store at any one time. (4 month)
2. **Minimum months of stock:** is the approximate level of the 'stock on hand' at the time of the expected arrival of the next delivery from the supplier. (2 month)
3. **Emergency order point:** is the level where the risk of stocking out is likely, but there is still time to receive an emergency delivery to avoid stock-out. (0.5 month)
4. **Max-min inventory control system:** A max-min inventory control system is designed to ensure that the quantities in stock fall within an established range.
5. **Review period/review period stock:** This is the routine interval of time between assessments of stock levels to determine if additional stock is needed**.**
6. **Safety stock level:** This is the additional buffer, cushion, or reserve stock kept on hand to protect against stock outs caused by delayed deliveries, markedly increased demand, or other unexpected events.
7. **Lead time stock level:** This is the level of stock used between the time new stock is ordered and when it is received and available for use.
8. **Back-order** Quantity of item ordered by a customer which has not been filled yet.
9. **Inventory position**: Stock on hand + stock on order - backorders.

- Next **discuss** with three types of min-max inventory system in five minutes.
- **State** the concept of stock status analysis and its purpose in the next five minutes on page number 115.
- Now, **ask** the participants to exercise stock status analysis using activity 1.5. individually and collect their feedbacks for 3 minutes.

Activity 6.21: Individual Activity

The consumption of Enalapril 5mg tablet in the medical store for the last month was 2800 tablet and this month's consumption is 3200. Currently there is 4200 Enalapril tablet in the store. How much months of stock does the pharmacy store hold?

Time: 3: Minutes

Answer key: 1.4 months

- **Ask** participants to return to their individual place and ask if they have questions and clarify them accordingly.
- **Describe** medical stores operations and its goal in first two minutes from the module on page 115.
- **Continue** discussing each operation and storage conditions in the next 10 minutes from page 116 to 117.
- **Ask participants analyze** the effect of keeping insulin according to the standard and recommend the best way to store insulin the primary health care facility. Write there answer on the flip chart within 3 minutes.
- **Continue by discussing internal facility distribution in three minutes.**

Activity 6.22 Individual case study

This figure shows packaged insulin placed directly on ice cubes. In the top part, the insulin bottles are still in their cardboard box and in the lower one, the insulin bottles have been removed from the packaging.

From both pictures analyze the effect of keeping insulin according to the standard and recommend the best way to store insulin the primary health care facility?

Time-3: 00 Minutes

Key points: In both cases the method of keeping insulin cool is not recommended as it may result in the insulin freezing. Moreover, the melting water will destroy the labels on the insulin bottles.

- Ask participants if they have questions and clarify them accordingly

Activity 6: Monitoring and Evaluation of NCD supply management

Method: Interactive presentation, Individual reflection, Individual study and large group discussions

Time: 40 minutes

- **Start** the session by describing difference between monitoring and evaluation from the slide number 30
- Continue the session by **explaining** the purpose of supply chain management monitoring and evaluation from the slide number 31.
- **Discuss** the list of pharmaceutical supply chain management key performance indicators from the participant manual.
- Let the participant **exercise** the activity 6.23 on fill rate from the table in the participant manual.

Activity 6.23 Group Activity

Form a group of five and find the supply fill rate of the following procured products?

Ser.no	Item description	Unit	Ordered quantity	Quantity received
1	Insulin NPH	Vial	2000	1200
2	Metformin 500mg	10*10	50	30
3	Amlodipine 10mg	10*10	30	25
4	Amoxicillin 500mg	10*50	10	10
5	Lisnopril 10mg	10*10	15	10
6	Asprin 75mg	10*10	20	18
7	Glibenclamide 5mg	10*10	30	20
8	Benzathine penicillin G 1 .2 million IU	50	5	5
9	Hydrochlorothiazide 25mg	10*10	20	15

Time: 5 minutes

Answer

Ser.no	Item description	Unit	Orderd quantity	Quantity received	%
1	Insulin NPH	Vial	2000	1200	75
2	Metformin 500mg	10*10	50	40	80
3	Amlodipine 10mg	10*10	30	25	83.33333
4	Amoxicillin 500mg	10*50	10	10	100
5	Lisnopril 10mg	10*10	15	10	66.66667
6	Asprin 75mg	10*10	20	18	90
7	Glibenclamide 5mg	10*10	30	20	66.66667
8	Benzathine penicillin G 1 .2 million IU	50	5	5	100
9	Hydrochlorothiazide 25mg	10*10	20	15	75

Supply fill rate= Number of line item delivered at least 80% X 100

Total number of line item requested

$$= \frac{5*100}{9} = 55.6\%$$

Give participants 5 minutes to calculate the wastage rate for the following case;

Activity 6. 24 Individual reflection

At beginning of the quarter, stock on hand of Amlodipine 10mg of 10*10 pack were 50, with a total value of 35,000 Birr. During the same period, 100 packs which worth of 90,000 Birr were purchased. At the end of the quarter, the store manager separates unusable stocks of Amlodipine 10mg with a value of 7,000 Birr. What is the wastage rate of Amlodipine 10mg?

Time-5 minute

Answer

Given: Value of Beginning stock=35,000birr

Purchased =90,000 Birr

Unusable stock =7,000 Birr.

Wastage rate $= \frac{Unusaleble\ stock\ products\ during\ a\ period\ in\ monetary\ value}{Beginning\ stock + received\ stock\ dduring\ the\ same\ period\ in\ monetary\ value} \times 100$

Wastage rate= 7000Birr *100 = 5.6%

35000 Birr+90000 Birr

Ask what 5.6% mean and after receiving two answer discuss there is high wastage rate (more than 2%) is it better to manage the inventory and procure based on consumption. Ask participants if they have questions on the chapter and address accordingly. You may invite other facilitators for addressing questions which refer to sections you didn`t facilitated.

Chapter summary

Method: Interactive presentation,

Time: 5 minutes

Summarize the chapter by mentioning the following summary points about the chapter:

- Pharmaceuticals supply management at health facilities involves the following basic functions: selection, quantification, procurement, storage, distribution and use. Effective PSCM needs well organized and functioning Logistics Management Information Systems.
- Selection is a process of deciding the type of pharmaceuticals needed for the prevalent diseases.
- Quantification refers to process of estimating the quantities and costs of the pharmaceuticals required for a defined health service and period
- Procurement is the process of acquiring pharmaceuticals from private, public, or other suppliers through purchase, donation or manufacture.
- Inventory management is the system that involves ordering, receiving, storing, issuing and recording limited pharmaceuticals based on the policy listed by the responsible body.
- Various performance indicators are used to monitor and evaluate the supply chain activities NCDs pharmaceuticals

Chapter Seven: Safety Monitoring and ADE Reporting of NCDS Medicines

Allocated Time: 40 minutes

Chapter Description: This chapter describes the importance of NCDS Medicine Safety Monitoring to ensure safety, efficacy, and quality of medicines after they are made available for use in the market. It also describes classification and Adverse Drug Event (ADE) reporting mechanism.

Primary Objective: By the end of this chapter participants will be able describe NCDS medicine safety monitoring system, reporting and management of ADE.

Enabling objectives: By the end of this chapter, participants will be able to:

- Describe the medicine safety monitoring
- Describe prevention and reporting mechanisms of ADEs
- Describe role of pharmacy professionals in ADE monitoring

Chapter Outline

The chapter has the following outline:

S/N	Activity	Mode of delivery	Duration (Minutes)	Materials
1	Overview of medicine safety monitoring	Interactive presentation and individual reflection	10 minutes	Power point, flip chart, PM and TG
2	Prevention and reporting of ADEs	Group discussion and reflection	15 minutes	
3	Role of pharmacy professionals in ADE monitoring	Group discussion and reflection	10 minutes	
5	Summary		5 minutes	

Activity 7.1: Overview of medicine safety monitoring

Method: Interactive presentation and individual reflection

Time: 5 minutes

- Start the session by describing the learning objectives and outline by displaying from the Power Point on slide no.2 & 3.
- In the next minutes, display slide 4 and take individual reflection from participants by asking the difference between Adverse drug event and adverse drug reaction.

Activity 7.1: Individual reflection

What is the difference between Adverse Drug Event and Adverse Drug Reaction?

Time: 3 Minutes

- Remind the participants the concept of medicine safety monitoring by highlighting the need of availing quality, safe and efficient medicine in NCDs.
- Summarize the activity by mentioning the four key points when ADEs report is considered complete.

Activity 7.2: Prevention and Reporting of ADEs (10 Minutes)

Method: Group discussion and reflection

Time: 5 minutes

- Explain Identification and management of ADEs from the slide number 9-10 in the next 3 minutes.
- Ask participants to open their manual and read SOP for completing ADE formats and summarize key points from the table.
- Summarize four key points listed to consider ADE report complete from slide number 11.
- Lastly, ask participants if they have any question and address them accordingly.

Activity 7.3. Role of pharmacy professionals in ADE monitoring

Method: Group discussion and reflection

Time: 5 minutes

- Present the role of pharmacy personnel in ADE monitoring for 5 minutes from slide number 12 to 13.
- In the next 5 minutes, display slide 14 and request participants to form a group of five and discuss and reflect the case study on the adverse drug reaction from their participant manual.

Activity 7.2: Group Activity case Study

An asthmatic patient who is taking a high dose Beclomethasone 600µg puffs BID plus Theophedrine tabs PO tid came to emergency medicine with a symptoms of serious allergic reaction, including: rash, itching/swelling of the face, tongue, and throat. Upon examination he discloses he have recently changed the brand of the medications he used to take. As a pharmacist working in the emergency department, you want to report the case to Ethiopian Food and Drug Authority. List and complete the steps needed to report the ADE in the case?

For a group of five and list and complete the steps needed to report the ADE in the case?

Time: 6 Minute

Activity 7.4: Chapter summary

Method: Interactive presentation,

Time: 5 minutes

Ask volunteer participants to summarize the session by reading participant manual and rephrase it on their way.

- Continuous availability of needed medicines for the treatment of proven safety, efficacy/performance and quality and their appropriate use are indispensable for diagnosis, prevention, and treatment of non-communicable diseases.
- The importance of establishing of national pharmacovigilance for assuring safety, efficacy, and quality of medicine and medical devices
- Ask participants if they have questions and clarify them accordingly.

Annex Pre/post test

Name: _____ (Confidential) Code_____

Assessment for Training on management of Pharmaceuticals for Non-Communicable Diseases Management in Health Facilities for Pharmacy Professionals

Instruction: choose one best answer and **encircle** your letter of choice. Allowed time: **30 minutes**.

1. Choose the correct order of contribution of major NCDs to pre-mature deaths in low-and-middle income countries?
   A. Cancer, CVDs, diabetes, chronic respiratory diseases
   B. Chronic respiratory diseases, diabetes, CVDs, cancer
   C. CVDs, cancer, chronic respiratory diseases, diabetes
   D. Diabetes, cancer, CVDs, chronic respiratory diseases
2. WHO proposed "best buy" population-wide, cost-effective and achievable public health interventions for NCDs. Which intervention is correctly matched with the respective NCD?
   A. Home-based palliative care for cancer
   B. Inhaled beclomethasone for symptom relief in asthma
   C. Metformin for type II diabetes
   D. HPV vaccination for breast cancer
3. Which figure indicates the ideal Blood Pressure (BP) at rest, according to the national NCD protocol?
   A. <120/80 mmHg
   B. >120/80 mmHg
   C. <130/85 mmHg
   D. <140/90 mmHg
4. Ato Mulatu is 52 years old male person presented to a clinic for cough, fever and chest pain over the last three days. He is known to have diabetes for the last five years. On physical examination he had PR of 112/min, temperature of 37.9^{o} C. His blood pressure was 150/95 on right arm and 155/102 mmHg on his left arm. His calculated BMI was 32. No positive findings in other system examination. How do you classify the BP reading of this patient?
   A. Pre-hypertension
   B. Grade I hypertension
   C. Grade II hypertension
   D. Grade II Hypertension
5. Which of the following could lead to secondary hypertension?
   A. Obesity
   B. Family history
   C. Hyperthyroidism
   D. All of them

6. Which of the following drug is currently recommended as first line for uncomplicated hypertension in primary health care settings of Ethiopia?
   A. Hydrochlorothiazide
   B. Amlodipine
   C. Methyl dopa
   D. Enalapril
7. A 40-year-old female come with weight loss. She was also drinking more water than usual and making more frequent trips to the bathroom. Her fasting blood glucose was 210 mg/dl and 215mg/dl on two tests. How do you classify her diabetes?
   A. Type 1 diabetes mellitus
   B. Type 2 diabetes mellitus
   C. It needs time to classiy her DM
   D. Further testing to confirm the diagnosis
8. Which statement is true about insulin storage?
   A. Patients can store their unopened insulin at room temperature for two months.
   B. In hot climates, where refrigeration is not available, we can use sand to store insulin
   C. Patients can store their opened insulin vials at room temperature for two months
   D. Insulin can be frozen
9. Which is the most common adverse effect of insulin?
   A. Hypoglycemia
   B. Lipodystrophy
   C. Weight gain
   D. Worsening retinopathy
10. From the oral anti-hyperglycemic medications, one of the following has proven benefit in reducing cardiovascular mortality than the others.
   A. Metformin
   B. Gliclazide
   C. Vildagliptin
   D. Empagliflozin
11. Which one is correct about the pathogenesis of hyperglycemia in type 2 diabetes?
   A. Decreased glucose production by the liver.
   B. Decreased Incretin activity.
   C. increased glucose uptake by the skeletal muscles
   D. Decreased glucose reabsorption in the kidney.
12. Which of the following oral antidiabetic agents are often associated with weight gain in type 2 diabetic patients?
   A. Metformin
   B. α-Glucosidase inhibitors
   C. Gliptins/DPP-4 inhibitors
   D. Sulfonylureas
13. Which statement is correct regarding rheumatic heart disease?

A. Untreated viral tonsillopharyngitis is the underlying cause
B. Joints, brain and the heart are the target organs
C. It is often the diseases of old aged individuals
D. A patient with the disease takes secondary prophylaxis lifelong.

14. Which one is the drug of choice for secondary prophylaxis of rheumatic heart disease in Ethiopia?
    A. Amoxicillin
    B. Erythromycin
    C. Benzathine penicillin G
    D. Azithromycin
15. Choose the correct statement about asthma and COPD?
    A. Both often have family history of similar conditions.
    B. COPD is the end stage of asthma.
    C. Compared to asthma, COPD is prevalent is early ages
    D. Both shares overlapping symptoms
16. Which of the following is considered as secondary prevention measure against cervical cancer?
    A. Smoking cessation
    B. Vaccination against human papilloma virus
    C. Treatment of precancerous cervical lesions
    D. Radiation therapy
17. Which one is the most important factor in deciding the VEN categorization of NCD medicines?
    A. Health impact of the product
    B. Fund available for procurement
    C. The storage capacity of the health facility
    D. Level of the health facility
18. True about class A pharmaceuticals in ABC Category
    A. They consume 10 – 20 % budget of pharmaceuticals.
    B. They are greatest potential for savings.
    C. They share 70-80 percent of pharmaceuticals.
    D. All of the above
19. The process of acquiring NCDs products through purchase, manufacture and donation is known as:
    A. Selection
    B. Quantification
    C. Procurement
    D. Distribution

20. A health professionals team working in chronic care clinic in the health facility is asked to conduct non communicable diseases pharmaceuticals quantification. The facility has reliable inventory records. What is the most appropriate method of quantification to be used?
    A. Consumption method
    B. Morbidity method
    C. Proxy consumption method
21. Service level projection methodIn 2014 E.C, the total consumption for 500mg Metformin tablet in primary Hospital was 25,000 tablets. The lead time was two months and no stock out of medicines during the year. What is the safety stock level of metformin for the hospital?
    A. 50,000 tablets
    B. 12,500 tablets
    C. 2,083 tablets
    D. 4,167 tablets
22. Which of the following procurement method is appropriate during emergency situation?
    A. Open tender
    B. Restricted tender
    C. Direct procurement
    D. Competitive negotiation
23. The consumption of Hydrochlorthiazide 25mg tablet in the medical store for the last month was 235 tablet and this month's consumption is 436. Currently there is 660 25 mg HCT tablet in the store. How much months of stock does the pharmacy store hold?
    A. 1.96
    B. 1.69
    C. 1.56
    D. 0.96
24. This is the level of stock used between the time new stock is ordered and when it is received and available for use.
    A. Maximum stock level
    B. Lead time stock level
    C. Minimum stock level
    D. Cycle stock level
25. Identify the correct statement about Max-Min inventory control system
    A. In a forced-ordering system the trigger for ordering is when the facility reaches the minimum level
    B. In a continuous review system, the trigger for ordering is the end of the review period

C. In a standard system, the trigger for ordering is the end of the review period for the commodities that are at the minimum level
D. All are correct

26. You work at the regional health bureau, and you went to a general hospital to assess the rational use practice. At your visit you observed that from the total of 439 medicines prescribed in that day 320 where not included in the drug list.

    What is the percentage of Medicines Prescribed from health facility medicine list?

    a. 75%
    b. 72.89 %
    c. 27.10%
    d. 25%

27. The regional health bureau with the relevant partner have taken the initiative to avail ant-diabetic medicines to the community. To assess the availability of essential medicines they took a yes or no check list for selected medicines.

    What is the most likely indicator the regional health bureau used?

    A. Availability of copy of the health facility's medicines list
    B. Percentage availability of key essential medicines
    C. Percentage of medicines actually dispensed.
    D. Percentage of Medicines Prescribed from health facility medicine list.

28. A team of researchers wanted to investigate the average number of consultation time a physician takes to consult a patient with hypertension cases. They pose as a patient and visit a physician.

    What kind of qualitative method of assessment is described in the above case?

    A. Focus group discussion.
    B. Structured observation
    C. Simulated patient survey.
    D. Average number of consultation time

29. Any response to a drug which is noxious and unintended, and which occurs at doses normally used in human for prophylaxis, diagnosis, or therapy of disease, or for the modification of physiological function.

    What is the most appropriate term that can describe the above term?

A. Adverse Drug Event (ADE)
B. Adverse Drug Reaction (ADR)
C. Serious Adverse Effect
D. Fatal adverse reaction

30. Varieties of adverse drug events or medicine-related injuries, with at least a reasonable possibility to be caused by the NCD medicines need to be reported to EFDA by healthcare professionals or patients.

    Which one of the following is should be reported to EFDA by completing ADE formats?

    A. Patient visit
    B. Treatment failure
    C. Medication history
    D. Prescriber name

Answer key

1. C	11.B	21.D
2. A	12.D	22.C
3. C	13.D	23.A
4. C	14.C	24.B
5. C	15.D	25.C
6. B	16.C	26.C
7. C	17.A	27.B
8. B	18.B	28.C
9. A	19.C	29.B
10.D	20.A	30.B

Annex A: Daily Participant feedback form

Course Title: Effective Management and proper utilization of Pharmaceuticals used for Non-Communicable diseases management for Pharmacy Professionals

Region: _____ **Venue Town**: _____**Date**: _____(GC)

The purpose of this daily evaluation form is to gather your input on this training. We are very interested in your feedback and use your suggestion to improve the next day's session of this training.

Please respond to the following questions about the sessions presented TODAY. Thank you for your input.

1) What did you enjoy most about today?

2) What did you learn today that you will use in your work?

3) What did you not understand?

4) What do you want to see improved for tomorrow?

5) Any questions/comments?

Thank you for completing this form

Annex 4: Overall Course Evaluation Form

Course Title: Effective Management and proper utilization of Pharmaceuticals used for Non-Communicable diseases management for Pharmacy Professionals

Region: _____ Venue Town: _____ Date: _____

Dear participant: Now that you have completed the training course, please take a few minutes to fill the following evaluation.

Please complete the following by ticking the column of your choice.

1. Please rate the overall training outlook using the following overall parameters:

Please write your explanations in the Comments column. (Evaluation Point: 0= Poor, 1= Fair, 2= Good, 3= Very good, 4= Excellent)

Items	0	1	2	3	4	Comments
Overall content of workshop						
Overall training objectives were met						
Overall time allocation						
Quality of slides						
Quality of participant handbook						
Overall facilitation by trainers/ facilitators						
Group discussions						
Overall Organization/conduction						

of the workshop						

2. Evaluate subject matter, presenters, and allocated time

Evaluation Point	Relevance of Subject Matter	Presenter skill & knowledge	Duration (Allocated Time)
0	Not useful	Poor	Too short; couldn't learn enough in such a short time.
1	May be useful	Fair	A little too short
2	Useful	Good	Just fine
3	Very useful	Very good	A little too long
4	Essential	Excellent	Definitely too long, the concepts could be learned in much less time.

Sr. No	Session Title	Subject Matter					Presenter					Allocated Time				
		0	1	2	3	4	0	1	2	3	4	0	1	2	3	4
1																

2																
3																
4																
5																
6																
7																
8																

1. **Do you think this training was useful for your practice? Yes □ No □**

2. **If Yes to Q3, how much will this training help you to better contribute to the following competency areas** (**Evaluation Point:**0= Poor, 1= Fair, 2= Good, 3= Very good, 4= Excellent)

SN	Parameter	0	1	2	3	4
1	Contribute to the attainment of NCDS program and strategic targets					
2	Provide medicine information to relevant healthcare providers and patients					
3	Manage the supply chain of NCDS commodities					
4	Promote the rational use of NCDS medicines					
5	Exercise good dispensing practices for NCDS patients					
6	Identify and manage potential interactions with NCDS medicines					
7	Identify and manage side effects of NCDS medicines					
8	Provide lifestyle modification counseling					
9	Promote patient safety for NCDS medicines					
10	Effectively communicate with healthcare providers and patients about NCDS management					

If No to the Q3, please explain why?

_____

_____

3. **How should the workshop be improved?**

_____

_____

4. **Any other comments?**

_____

_____

Thank you for completing this form