PHARMACEUTICAL AND MEDICAL DEVICES MANAGEMENT MONITORING AND EVALUATION TRAINING COURSE

REVISED VERSION

Participant's manual

February 2024

APPROVAL STATEMENT OF THE MINISTRY

The Federal Ministry of health of Ethiopia has been working towards standardization and institutionalization of In-Service Trainings (IST) or Continuous Professional Development (CPD) 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 Pharmaceutical and Medical Devices Management Monitoring and Evaluation Training Course package for Pharmacy and Biomedical Engineering Professionals have been reviewed based on the standardization checklist and approved by the Ministry in February, 2024.

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Foreword

Pharmaceuticals and medical devices are essential for delivering effective and quality healthcare services. They also account for more than half of the health service budget. Therefore, it is vital to have a robust system that ensures the continuous availability and optimal use of pharmaceuticals and medical devices at all levels of service delivery. This requires a strong monitoring and evaluation (M&E) system that enables evidence-based decision making and minimizes wastage and inefficiency.

The Ministry of Health recognizes the importance of having a strong M&E system for pharmaceutical and medical device management. Since 2019, the Ministry has developed and implemented a framework for monitoring and evaluating the performance of the system at health facilities. In 2023, the framework was revised to cover the national level as well, allowing for a comprehensive assessment of the system's strengths and weaknesses.

This training manual is based on the revised framework and aims to enhance the capacity and skills of the relevant stakeholders to implement the M&E system effectively. I hope that this manual will serve as a useful resource for improving the pharmaceutical and medical device management system and ultimately the health outcomes of the population.

I would like to express my gratitude to all the contributors who participated in the revision of this training manual

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Acknowledgment

The Ministry of Health is grateful to all the participants and their organizations who contributed to the preparation of this training material with their dedication and hard work. The Ministry also thanks the following contributors and their organizations for their invaluable support in revising the training manual

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Acronym

APTS	Auditable pharmaceutical transaction and service
CPS	Clinical pharmacy service
DHIS2	District health information system
DIS	Drug information service
DTC	Drug and therapeutic committee
EFDA	Ethiopian Food and Drug Authority
EPSS	Ethiopian Pharmaceutical Supply Service
IPLS	Integrated pharmaceutical logistic system
LEO	Lead executive office
MEMIS	Medical equipment management information system
MOH	Ministry of Health
M&E	Monitoring and evaluation
PMD	Pharmaceutical and medical device
RHB	Regional health bureau
WoHO	Woreda health office
ZHD	Zonal health department
ScHO	Sub city health office

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Introduction to the Manual

The Ministry of Health (MOH) is spearheading a sector-wide reform to enhance the accessibility and quality of health services. Since 1997, Ethiopia has followed successive Health Sector Development Plans (HSDPs) and implemented the Health Sector Transformation Plan (HSTP) I & II. The HSTP II was revised after three years of implementation and the Health Sector Medium Term Development and Investment Plan (HMIP) was developed for the period of 2023/4 to 2025/26. The HMIP aims to improve domestic financing by developing investment plans, using the existing HSTP II as a reference document.

The health sector has identified the top key priorities or transformation agendas based on the situational analysis of the major challenges. These are the areas that form the backbone of the health system and, if implemented successfully, will enable the health sector to provide comprehensive, quality and equitable health services that lead to better health for all. The priorities/focus areas of HSTP II that have been continued in the HMIP period are: Quality and Equity, Motivated, Competent and Compassionate (MCC) Health Workforce, Health Financing and Leadership.

Health Information System (HIS) is one of the six building blocks of the health system and plays a vital role in its functioning. The main objective of investing in HIS is to improve informed decision making and innovation. The M&E framework for HIS has been in place since 2019. However, there are still some performance gaps in the implementation of the M&E framework at different levels, such as poor documentation, inadequate data quality assurance, and insufficient availability of computers.

The ultimate goal of the information revolution is to enhance the capacity of the health system to generate and use high-quality data for evidence-based decision making and improve health system performance. The information revolution is not only about changing the methods of data and information management, but also about fostering a fundamental cultural and attitudinal shift towards valuing and using information. In HSTP II, efforts will concentrate on three pillars of the information revolution: transforming a culture of high-quality data use, digitizing the HIS, and improving HIS governance.

The 2020 baseline assessment revealed the following key results: the average wastage rate of health commodities at health facilities was 3.9%, higher than the WHO standard (less than

2%) ; the availability of essential medicines varied across regions from 70.7% to 96%, indicating regional disparities; and the average functionality of medical equipment in health facilities was 74%. The 2021 End-line evaluation of National Medical Oxygen and Pulse Oximetry Scaleup finding showed that there were only 17 oxygen plants available in public hospitals.

Currently, oxygen plants were installed in 43 public hospitals, and 26 medical equipment maintenance workshops were established across the nation. and using Enterprise Resource Planning (ERP) and Auditable pharmaceutical transactions and services (APTS) to manage and track stocks.

The HSDIP aims to strengthen the systems that ensure the uninterrupted supply and access to safe, effective, and affordable medicines and medical devices for the community's health needs. It also seeks to ensure that these products are used rationally and properly. Some of the strategies that the HSDIP will employ include reducing wastage, disposing of expired and damaged products in an environmentally friendly manner, promoting local production, and standardizing procurement and management processes.

The management of medicines, medical supplies, and equipment is essential for effective health programs. It involves Pharmaceuticals Supply, medical equipment, pharmacy service, and traditional medicine. To ensure the quality and efficiency of these aspects, a robust monitoring and evaluation (M&E) system is needed. The M&E system can track the performance of healthcare products and professionals, and guide the implementation of initiatives and systems.

The Ministry of Health (MOH) has updated the National Pharmaceutical and Medical device M&E framework. The training manual has also been revised to support the MOH, RHBs, ZHD, Woreda Health Offices, health facilities and development partners in applying the new M&E framework. The framework aims to assess the performance and identify the factors that affect the service delivery outcomes.

The updated M&E training will provide professionals with the necessary knowledge, skills, and attitude to conduct regular and periodic M&E of Pharmaceuticals and medical device management activities. The data collected from the M&E will inform the decision-making process. The training material includes Participant Manual, Facilitator Guide and PowerPoint Presentations. The training course is designed to be participant-centered and interactive.

Core competency

- Apply the concept of National monitoring and evaluation framework in the field of PS, Pharmaceuticals Supply and MD Management
- Perform baseline organizational assessment using the national Pharmaceutical Supply Management, PS, and MD monitoring and evaluation indicators
- Organize the necessary data required for monitoring and evaluation of PS, Pharmaceuticals Supply and MD management indicators
- Compute indicators to measure PS, Pharmaceuticals Supply and MD activities to determine the level of performance
- Apply the result of performance evaluation and feedback to building organizational capacity and development learning
- Communicate Effectively the result of performance evaluation to the next level according to the reporting standard

Course Syllabus

Course Description

This 3-day training course is designed to enable trainees to understand and implement National pharmacy service, pharmaceutical supply and medical device management monitoring and evaluation framework.

Course Goal

To produce competent, compassionate and committed Health and related professionals working at various level of health service delivery to implement the National pharmacy service, pharmaceutical supply and medical device management monitoring and evaluation framework.

Participants learning objective

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

- Discuss the Operational Standards for Pharmacy Services and Medical device Management
- Identify and compute Indicators used to Measure Pharmacy Service, Pharmaceuticals Supply and Medical device Management activities
- Apply the basic concept of Monitoring and Evaluation into Pharmacy and Medical device Management sector
- Discuss the principles and importance of Data Management and its impact on decision making
- Describe the importance of performance monitoring, effective Feedback Mechanisms and motivation in performance improvement
- Figure out the Roles and responsibilities of stakeholders

Training Methods

- Individual reflection
- Interactive lecture
- Demonstration
- Group exercise
- Case study
- Pair exercise
- Question and answer
- Individual and group reading
- Experience sharing

- Home take assignments
- Matching exercise
- Individual exercise

Learning Materials and Resources

- Participant manual
- Facilitator guide
- Power Point presentations
- LCD Projector
- M&E framework
- White board and markers
- Computer
- Flipchart and Markers
- Masking tape

Participant selection criteria

- Pharmacy Professional
- Biomedical Professionals
- Health Information Technicians
- Monitoring and Evaluation Experts
- Other health professionals working in the area

Facilitator / Trainer Selection Criteria

- Course material developing technical team
- Pharmacists
- Biomedical Engineers
- Monitoring and evaluation expert

Methods of Evaluation

A. Trainees Evaluation

- ***Formative***
    - Direct observation with feedback
    - Group activities and presentations
    - Individual reflections for questions
    - Pretest
- ***Summative***
    - ***For basic training***

        - Post-test - 100%
    - ***For TOT training***
        - Teach back: - 50%
        - Post-test: - 50%

B. Course Evaluation

- Daily evaluation
- End of training evaluation
- Participant oral feedback

Certification Criteria

For Basic Training, a trainee is eligible for certification if and only if he/she:

- Attend 100% of the course
- Score 70% and above on summative assessment
- Continuing Education Unit: 15 CEU

For TOT Training, a trainee is eligible for certification if and only if he/she:

- Attend 100% of the course
- Score 80% and above on summative assessment

Course Duration: Three days

Suggested Class size: Suggested training class size: shall not be more than 25 participants per training venue.

Participant-Trainer Composition: 6:1 (six participants to one trainer)

Training Venue: The training will be conducted at the nationally recognized IST centers/CPD providers having appropriate facilities, trainers, and attachment health facilities.

Course schedule: Training on Pharmaceutical and Medical Devices Management Monitoring and Evaluation

Day One			
Time	Topics	Presenter	Moderator
8:30 – 8:45	Registration	Participant	
8:45 – 9:00	Welcome speech: Introducing workshop Objective and expected outcome of the workshop,		
9:00 – 10:30	Introduction to the Training Manual and Introductory activities		
10:30 –10:45	Health Break	Organizer	
10:45 –11:45	Chapter 1: Basics of Monitoring and Evaluation		
11:45 –12:30	Chapter 1: Basics of Monitoring and Evaluation…		
12:30 – 2:00	Lunch	Self	
2:00 – 3:45	Chapter 2: Pharmacy Service and Pharmaceutical Supply Management Indicators		
3:45 – 4:00	Health Break	Organizer	
4:00 – 5:30	Chapter 2: Pharmaceutical and Medical Devices Management Cross Cutting Indicators…		
Day Two			
8:30 – 10:30	Chapter 2: Pharmaceutical and Medical Devices Management Cross Cutting Indicators…		
10:30– 10:45	Health Break	Organizer	
10:45 –12:30	Chapter 3: Medical Devices Management Indicators		
12:30 – 2:00	Lunch	Self	
2:00 – 2:40	Chapter 3: Medical Devices Management Indicators…		
2:40 – 3:30	Chapter 4: Pharmaceutical and Medical Devices Management Cross Cutting Indicators		
3:20 – 3:40	Health Break	Organizer	
3:40– 5:30	Chapter 5: Data Management		
Day Three			
8:30 – 10:30	Chapter 6: Reporting, Performance Monitoring and Feedback		
10:30 – 10:45	Health Break	Organizer	
10: 45 – 11:15	Chapter 6: Reporting, Performance Monitoring and Feedback		
11:15 – 12:30	Chapter 7: Roles and responsibilities of stakeholders		
12:30 – 2:00	Lunch	Self	
2:00 – 3:30	Chapter 8: Planning and Getting Started		
3:30-3:45	Health Break	Organizer	
3:45-4:15	Post Test		
4:15 – 5:00	General Discussion and Closing		

CHAPTER ONE

BASICS OF MONITORING AND EVALUATION

Allocated time: 90 minutes

Chapter description: This chapter briefly discusses monitoring and evaluation (M&E), its importance, and basic terminologies. The chapter also introduces a national pharmaceutical and medical device (PMD) monitoring and evaluation (M&E) framework.

Chapter objective: At the end of this chapter, the participants will be able to describe the basic concepts of M&E in the context of the PMD M&E framework.

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

- Describe monitoring and evaluation
- Identify basic terminologies in M&E
- Describe the national PMD M&E framework.

Chapter outline

1.1. Introduction to monitoring and evaluation

1.2. Basic terminologies in M&E

1.3. Overview of the national pharmaceutical and medical device monitoring and evaluation framework

1.4. Chapter summary

1.1. Introduction to monitoring and evaluation

	Activity 1.1: Individual reflection
	**Instruction**: Individually read and reflect your answer to large group. Upon a visit to a hospital, you identified that the hospital has implemented M&E systems. • What do you think are the possible purposes of M&E system at health facility? • Limit your discussions on pharmaceutical and medical device management in the health facility. **Time**: **10 minutes**

Monitoring and evaluation (M&E) is are the process of collecting and analyzing data to measure the performance and impact of an organization, project, program, or initiative. It helps to track progress, identify problems, learn from successes and failures, and improve decision-making. M&E involves the processes of data collection, compilation, analysis/interpretation, presentation, and use.

The purposes of M&E system are mainly to:

- Provide a clear picture of the goals, objectives, indicators, and outcomes
- Track progress and performance of a program or any intervention
- Inform and share data to stakeholders
- Ensure transparency and accountability among stakeholders
- Promote evidence-based decision making
- Enhance the quality and effectiveness of program interventions.

	Activity 1.2: Think-pair-share
	**Instruction**: Be in pair and answer the question. • What is the difference and relationship between monitoring and evaluation? **Time: 5 minutes**

The terms monitoring and evaluation are generally used together to refer to the whole process of assessing the progress of a project or program towards its results. But they have differences, even if they are related.

Monitoring is the continuous process of tracking the implementation of activities in a project or program and progress towards attaining its outputs.

It helps to provide real time information on the progress in terms of completing activities and achieving immediate outputs. Thus, monitoring is an activity to see if an ongoing project or program is proceeding on track.

Evaluation is a periodical, systematic investigation to see if a program achieves its intended outcomes and impacts. An evaluation is conducted to see whether the envisioned objectives and goals are achieved or not.

Some of the distinctions between monitoring and evaluation are summarized in the below.

Monitoring:

- Continuous process
- Focuses on activities and progress
- Conducted at the operational level
- Aims to improve efficiency
- Performed mainly internally

Evaluation:

- Periodic activity
- Assesses overall impact and effectiveness
- It occurs at program/project level
- Seeks to improve effectiveness

1.2. Basic terminologies in monitoring and evaluation

	**Activity 1.3: Individual matching exercise**
	Instruction: Individually match the key M&E terms with their definitions that the facilitator will provide. **Time: 10 minutes**

The following are key terminologies that should be accurately understood to facilitate proper communication in monitoring and evaluation:

Data is individual facts, statistics, and raw numbers.

Information is the knowledge or processed data that is acquired or shared through different forms of communication.

Analysis is the process of converting data to information; it should be in a format that is useful for decision making.

A goal is a statement, usually general and abstract, of a desired state toward which a program is directed (usually not measurable).

Baseline data is basic information gathered before a program begins; it is used later as a comparison for assessing program impact.

M&E plan: An M&E plan is a document that describes how to monitor and evaluate a project or program. It defines the indicators, data sources, methods, and timing for measuring progress, effectiveness, and impact. It also assigns the roles and responsibilities of the M&E stakeholders. The M&E plan helps to assess and improve the project or program's performance

Inputs are set of resources (e.g., funds, policies, personnel, facilities, supplies, etc.) required to implement a program/activity.

A process is a set of interventions (e.g., training, supervision, reporting) in which inputs are used to achieve objectives and desired results.

Outputs are results obtained at the program level, i.e., direct products or deliverables of a program (e.g., number of people trained, M&E materials developed and available for use).

Outcomes are results obtained at the population level following interventions (e.g., improved access and product availability, improved skills). It is the level of performance or achievement that occurred because of the activity or services an organization provided.

Impact is long-term results or outcomes also obtained at the population level (e.g., changes in total fertility rate [TFR] or in morbidity and mortality).

Feedback is the information provided about the performance of a project and its activities based on information disseminated by implementers.

Tools, or data sources, are the resources used to obtain or gather data for measuring indicators.

Performance is the progress towards and achievement of results.

Results are the outputs, outcomes, or impacts (intended or unintended, positive and/or negative) of an intervention.

An indicator is a quantitative or qualitative variable that provides a valid and reliable way to measure achievement, assess performance, or reflect changes connected to an intervention.

Target is the objective a program or intervention is working towards, expressed as a measurable value—the desired value for an indicator at a particular point in time.

1.3. Overview of pharmaceutical and medical devices management monitoring and evaluation framework

Activity 1.4: Think-Pair-Share

Instruction: Be in pair and answer the question.

- What are the thematic areas of the national pharmaceutical and medical device management M&E framework?
- Indicate the inputs, activities, processes, outputs, outcomes, and impact(s) associated with each of the following areas:
  - Training on drug and therapeutics committee (DTC)
  - Maintenance of medical devices

Time: **10 minutes**

Pharmacy service, pharmaceutical supply and medical device management activities are integral parts of the healthcare system and require a strong M&E system to track performances and ensure results are in line with the goals of the sector.

Recognizing its importance, the MOH has prepared a national pharmaceutical and medical devices (PMD) management M&E framework that includes regulatory activities, upstream and downstream supply chains, pharmacy services, traditional medicine, and the local manufacturing.

The major objective of the framework is to:

- Provide guidance for gathering of timely, accurate and complete information for monitoring and evaluating pharmaceutical and medical device management.
- Standardize data collection and reporting tools and procedures across all levels
- Promote information sharing among stakeholders
- Promote evidence-based decision-making
- Promote continuous improvement in the pharmaceutical and medical device sector

Figure 1 indicated below shows the PMD management M&E framework. It links the inputs, processes, outputs, outcomes, and impacts of the pharmaceutical and medical device sectors.

- Input indicators check how resources are mobilized, distributed, and used.
- Process indicators are activities performed to achieve the outputs
- Output indicators track utilization and coverage.
- Outcome indicators assess medium-term results, such as rational use of medicines and quality pharmaceutical services.

- Impact indicators measure the effects of interventions inside and outside the sector, such as pharmacy services and medical device system efficiency and effectiveness. These impacts depend on other actors and interventions beyond pharmaceutical and medical device management.

The M&E framework uses various data sources. These include routine administrative data sources (like HMIS and MEMIS), surveys, and supportive supervision findings.

Pharmaceutical and Medical Devices Management Monitoring and Evaluation Framework					
Indicator domains	Objectives prove effectiveness and efficiency of pharmaceutical supply chain management system prove availability and quality of pharmacy services prove medical device availability, utilization and management				
	Inputs →	**Process** →	**Outputs** →	**Outcome** →	**Impact**
	Workforce LMG Coordination Guiding documents Finance Information Logistics Technology	Quantification, Procurement and distribution of medicines Establishing DTC Developing facility-specific drug list Perform activities to implement APTS Implement clinical Pharmacy Perform pharmaceutical compounding Capacity-building activities Conduct HTA Establish Medical device management committee (MDMC) Perform scheduled preventive maintenance Implement IPLS Develop electronic systems for reporting and use of data Conduct supervision and mentorship	Improved essential medicine availability Reduced stock out of medicines Availability of national and facility-specific medicine list Reduced medicine waste Improved storage of medicines Improved disposal of unfit-for-use medicines Availability of quality pharmaceutical products and effective services Availability of DTC and MEMC APTS implemented Capacitated workforce on pharmacy services and supply management Improved availability of MEs Improved procurement, distribution, installation, maintenance and disposal of MEs	Improve patient satisfaction in pharmacy services Improved rational use of medicine Reduced medicine therapy problems Improved, equitable access to quality health services Effective and safe utilization of medical devices Improved diagnostic capacity of HFs	Improved health status Reduced drug resistance Improved efficiency and effectiveness in pharmacy services and medical device management systems
Indicator domains					
Data collection and reporting	Routine reporting formats, admin reports, regular facility surveys, HMIS, EHCRI and EHSI reports; SS reports Submission and aggregation of reports with the existing hierarchy of health administration			Facility surveys, population surveys	

Analysis and interpretation	Data quality assurance at all levels; assessment of progress of performance versus plan, performance indicators to discuss during regular performance monitoring meetings
Dissemination and use	Dissemination of data through different platforms, such as regular reporting, quarterly and annual review meetings, and publication of bulletins

Figure 1: PMD Management Results framework

Data analysis will be conducted from the facility level to the national level to be used for evidence-based decision-making.

M&E findings will be disseminated to stakeholders using different channels. Quarterly and annual reports will be produced and shared with stakeholders. The data will be used in performance review meetings to review strengths and challenges and to agree on future interventions. MOH/RHB will conduct inspections to verify activities are undertaken at the grass-roots level. In addition, the involvement of all stakeholders is highly required in the implementation of the M&E process up to the use of information.

In the PMD management M&E framework, 46 indicators are included, which are categorized into six thematic areas:

- Pharmacy service: 12
- Pharmaceutical SCM: 9
- Medical device management: 8
- Regulatory: 5
- Upstream SCM: 8
- Cross-cutting: 4

1.4. Chapter summary

- Monitoring and evaluation is the process of collecting and analyzing data to measure the performance and results of a program or initiative.
- Monitoring focuses on input and process, whereas evaluation focuses on outcome and impact level of results.
- The national PMD M&E framework comprises 46 indicators related to regulatory, upstream, and downstream supply chains, pharmacy services, and local manufacturing.

CHAPTER TWO

PHARMACY SERVICE AND PHARMACEUTICAL SUPPLY MANAGEMENT INDICATORS

Allocated time: 295 Minutes

Chapter description: This chapter describes key indicators employed for monitoring and evaluating health facility pharmacy services and pharmaceutical supply management performance. It also outlines pharmacy service and pharmaceutical supply management operational standards.

Chapter objective: At the end of this chapter, participants will be able to describe indicators used for monitoring and evaluating pharmacy service and pharmaceutical supply management in health facilities.

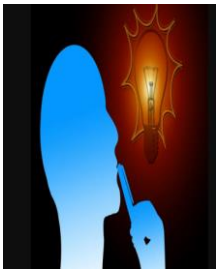
Enabling objectives: At the end of this chapter, participants will be able to:

- List pharmacy service and pharmaceutical supply management operational standards
- Describe indicators used for monitoring and evaluating pharmacy service
- Describe indicators used for monitoring and evaluating pharmaceutical supply management

Chapter outline

2.1. Operational standards of Hospital and Health Center pharmacy service and pharmaceutical supply management
2.2. Pharmacy service indicators
2.3. Pharmaceutical supply management indicators
2.4. Chapter summary:

2.1. Operational standards of hospital and health center pharmacy service and pharmaceutical supply management

	**Activity 2.1: Individual reflection**
	Instruction: Individually read and reflect your answer to large group. 1. What hospital and health center pharmacy services and pharmaceutical supply management operational standards do you know? 2. What differences do you anticipate between the operational standards of hospitals and health centers? Time: **10 Minutes**

The pharmacy and pharmaceutical supply management chapter of the Ethiopian hospitals service improvement guideline (EHSIG) and the pharmacy chapter of the Ethiopian health centers reform implementation guideline (EHCRIG) have 13 and 11 operational standards, respectively. These standards guide hospitals and health centers in pharmacy services and pharmaceutical supply management to attain the health sector medium-term development and investment plan (HMDIP) and meet the demands of patients.

Hospital operational standards for pharmacy services and pharmaceutical supply management

1. The hospital pharmacy service and supply management are organized in a way that facilitates pharmaceutical care and enables coordination with programs and clinical services.
2. The hospital has a functional drug and therapeutics committee (DTC).
3. The hospital has an effective system for pharmaceutical selection, quantification, procurement, warehouse and inventory management, distribution, and information management, including emergency supply management.
4. The hospital has standardized cold chain and vaccine management system.
5. The hospital has an effective oxygen supply management system.
6. The hospital conducts continuous segregation, documentation, and safe disposal of pharmaceutical waste.
7. The hospital has functional auditable pharmaceutical transactions and services (APTS) and executes good dispensing practices at all dispensing outlets.

8. The hospital has functional clinical pharmacy services in the inpatient, outpatient, and emergency departments.
9. The hospital provides drug information services.
10. The hospital has a functional compounding service.
11. The hospital has an antimicrobial stewardship program (ASP).
12. The hospital has a rational use, distribution, and handling system for narcotic drugs and psychotropic substances.
13. The performance of pharmacy service and supply management is regularly monitored and evaluated.

Health center operational standards for pharmacy services and pharmaceutical supply management

1. The health center has a functional drug and therapeutics committee (DTC).
2. The health center has a separate pharmacy department comprising dispensaries and medical store directed by a registered pharmacist and/or pharmacy technician
3. The health center develops, utilizes, and annually updates a comprehensive list of pharmaceuticals prioritized by VEN.
4. The health center implements Auditable, Transparent, and Accountable Pharmaceutical Transactions and Services (APTS). (if applicable)
5. The health center provides drug information services to health care providers, patients, and the public in order to optimize drug use.
6. The health center has policies and standard operating procedures for identifying and managing drug use problems, including: identifying and reporting adverse drug reactions and prescription monitoring.
7. The health center has a pharmaceutical supply and inventory management system for drugs, medical supplies, and equipment.
8. The health center ensures proper and safe disposal of pharmaceutical waste and expired drugs in line with national guidance.
9. The health center pharmacy assists and monitors pharmaceutical management activities at the health posts/private clinics
10. The health center conducts audits of all drugs, medical supplies, and consumable equipment in the store and in each dispensing unit at a minimum bi-annually by internal auditor and once a year by external auditor.
11. The health center has functional antimicrobial stewardship program.

Monitoring and evaluating pharmacy services and pharmaceutical supply management against operational standards involves assessing various pharmacy services and pharmaceutical supply management key indicators. These indicators are used to measure how well actual performance is related to the standards.

There are different pharmacy service and pharmaceutical supply management indicators used in measuring pharmacy services and pharmaceutical supply management performance in health facilities.

2.2. Pharmacy service indicators (PSI)

Activity 2.2: Individual Reflection

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

- Mention indicators used in measuring pharmacy service performance in health facilities that you may know.

Time: **10 minutes**

PSI 1. Drug and Therapeutics Committee (DTC) functionality

DTC is responsible for identifying, developing, and implementing interventions to address problems related to medicine use and supply in health facilities. DTCs are among the most effective strategies for ensuring the rational and cost-effective use of medicines. The management and use of medicines involve multiple factors and require the participation of all relevant staff and departments. Therefore, every hospital and health center must have a functional DTC with members from different disciplines.

Table 1: DTC functionality Performance indicator reference sheet (DTC-PIRS) and its criteria

Definition	Percentage of fulfilled functionality criteria of the facility drug and therapeutic committee (DTC)
Formula	Drug and therapeutic committee (DTC) functionality = □□□ □□ □□□□h□ □□ $fulfilled$ □□□□□□□□ □□ □□□ □□□□□□ □□□□□ □□□□h□ □□ □□□□□□□□ □□ □□□ □□□□□□□□
Interpretation	The facility is considered to have functional DTC if it meets at least 75% of the criteria. DTC functionality serves as a proxy indicator of the ability of a health facility to avail pharmaceuticals and ensure rational use.
Disaggregation	By health center, hospital

Aggregation	Percentage of health facilities with functional DTC = $\frac{Number\ of\ health\ facilities\ that\ have\ functional\ DTC}{Total\ number\ of\ health\ facilities}$ x 100
Sources	The following documents archived at DTC secretary office are data sources: DTC minutes, official assignment letters, approved terms of reference (TOR), action plan, facility-specific medicine list, policy and procedures, action letter or notice of DTC decisions, DTC performance reports, and medicine use study/evaluation reports.
Method of data collection	Checklist is used to review the various documents listed on data source
Frequency of reporting	Every six month the report is submitted to the next higher level, and every year, it is sent to MOH

DTC functionality criteria

S. N	Criteria	Weight	Score
1.	Official letter of assigned DTC members (2.5) and updated and approved TOR are available (2.5)	5	
2.	Annual action plan is approved	5	
3.	Documented minute that shows regular meetings, at least every two months	10	
4.	Updated (annually) health facility specific pharmaceutical list prioritized by VEN	10	
5.	Availability of medicine management policy and procedures (at least three policies) (Example: procurement policy, formulary management policy, prescription management policy, stock transfer policy, inventory management and storage policy, disposal policy)	10	
6.	Conduct pharmaceutical supply studies (at least one assessment report semi-annually) (ABC/VEN reconciliation, stock status analysis, etc.)	10	
7.	Conduct medicine use studies using indicator study method (at least annually)	10	
8.	Conduct in-depth medicine use studies using medicine use evaluation (at least one study annually)	10	
9.	Take actions based on the supply and medicine use study findings with report, minutes, letter of action and any related	20	

	document		
10.	ADE/AEFI reports are generated, monitored regularly and take actions on the finding	5	
11.	Report its performance activities to the management	5	
	Total score (%)		
	Functionality of DTC if ≥75%, Yes, If < 75%, No		

Activity 2.3: Think-Pair-Share

Instruction: Be in pair and try to fill and calculate the functionality of DTC in your facility using the checklist above.

Time: **10 minutes**

Activity 2.4: Group Discussion

Instruction: Form five groups, read and discuss the remaining 11 indicators which you are assigned to the following indicators.

- Group 1 discuss PSI 2 and PSI 7
- Group 2 discuss PSI 3 and PSI 8
- Group 3 discuss PSI 4 and PSI 9
- Group 4 discuss PSI 5 and PSI 10
- Group 5 discuss PSI 6, PSI 11 and PSI 12

Discuss possible intervention to achieve indicator targets and present indicators that will be assigned to your group.

Time: 30 minutes

PSI 2. Clinical pharmacy service (CPS) functionality

CPS is patient-oriented service developed to promote the rational use of medicines and, more specifically, to maximize therapeutic benefits, minimize risk, and reduce cost. The service should be well integrated with all clinical departments.

The delivery of pharmaceutical care involves the following logical processes:

- Assess the patient's medication therapy needs and identify actual and potential drug therapy problems (DTP).

- Develop a care plan to resolve and/or prevent the DTPs.
- Implement the care plan.
- Evaluate and review the care plan.

Table 2:CPS functionality Performance indicator reference sheet (CPS-PIRS) and its criteria

Definition	Percentage of functionality criteria fulfilled at a hospital in the provision of clinical pharmacy service.
Formula	Clinical pharmacy service functionality = $\frac{Sum\ of\ weight\ of\ fulfilled\ CPS\ functionality\ criteria}{Total\ weight\ of\ CPS\ functionality\ criteria}\ x\ 100$
Interpretation	A hospital is considered to have functional CPS when 75% of the criteria are met. A functional clinical pharmacy service requires the provision of pharmaceutical care from admission to discharge.
Disaggregation	None
Aggregation	Percentage of hospitals with functional clinical pharmacy service = $\frac{Number\ of\ hospitals\ with\ functional\ CPS}{Total\ number\ of\ hospitals}\ x\ 100$
Sources	Patient chart, clinical pharmacy service report, assignment letter, bedside round book, duty program, MDT morning session book, interview of ward nurse, minutes of pharmacy only morning session, and daily CPS summary.
Method of data collection	The data is collected by survey from the various source documents indicated above including interviews with ward nurses/physicians and observation of actual performance.
Frequency of collection/ Reporting	Should be reported semi-annually to the RHB and annually to MOH.

Clinical pharmacy functionality criteria

S. N	Criteria	Weight	Score
1.	Dedicated pharmacist/s	5	
2.	Continuous care (24/7)	10	
3.	Service provided for at least major wards (medical, pediatrics, surgery, emergency based on availability of these wards or specialty services)	10	
4.	Assess medication history at admission and perform medication reconciliation	10	
5.	Participate in multidisciplinary round	5	
6.	Participate in multidisciplinary morning session	5	
7.	Conduct pharmacy-only rounds and morning session	10	
8.	Identify and intervene in drug therapy need/problem	10	
9.	Perform medication therapy management for chronic care patients	5	
10.	Monitor oxygen therapy	5	
11.	Provide discharge planning and counseling	5	

12.	Implement unit dose dispensing system (UDDS)	5	
13.	All clinical pharmacy service activities documented (daily progress note, daily summary, DTP report) and reported	15	
	Total score (%)		
Functionality of clinical pharmacy service; If ≥ 75%, Yes; If < 75%, No.			

PSI 3. Drug information Service functionality

Access to authoritative, unbiased, and well-referenced drug information is fundamental for the rational and effective use of drugs.

Health facilities should provide drug information service to health professionals, patients, and the public. The service generally responds to drug information queries. It also provides education and training to health professionals and/or the public regarding the appropriate and safe use of medicines.

Table 3: DIS functionality Performance indicator reference sheet (DIS-PIRS) and its criteria

Definition	Percentage of functionality criteria fulfilled at health centers and hospitals in the provision of drug information service
Formula	Drug information service functionality = $\frac{Sum\ of\ weight\ of\ fulfilled\ DIS\ functionality\ criteria}{Total\ weight\ of\ DIS\ functionality\ criteria}\ x\ 100$
Interpretation	A health facility DIS is considered functional when 75% of the functionality criteria are fulfilled. This indicator measures the provision of DIS for health professionals, patients, and the public.
Aggregation	Percentage of health facilities with functional DIS = $\frac{Number\ of\ health\ facilities\ with\ functional\ DIS}{Total\ number\ of\ health\ facilities}\ x\ 100$
Disaggregation	Health center, Hospital
Sources	DIS query, DIS response, sample alerts, newsletters, monographs, poison information, medication education program, DIS monthly performance reports.
Method of data collection	Observation of DIS facilities, SOP, sample query and response, sample alerts, newsletters, monographs, and performance reports.
Frequency of collection/ Reporting	Should be reported semi-annually to the next higher level and annually to MOH.

DIS functionality criteria

S. N	Criteria	Weight	Score
1.	Availability of required facilities (i.e., room, equipment, furniture, telephone, internet, reference materials) and dedicated pharmacist	20	
2.	Approved annual action plan for the fiscal year	5	

3.	Availability of standard operating procedure	5	
4.	Provides therapeutic and pharmaceutical information using standardized query and responses formats	20	
5.	Organizes medicine use education to patients and general public, and training program to the staff at least monthly (health education programs, community forums)	15	
6.	Prepares and disseminate at least five of (drug alerts/newsletters, new arrivals, bulletins, therapy updates, monographs, error prone abbreviations, look-alike and sound alike medication) at least monthly	20	
7.	Provides poison information	5	
8.	Prepare and disseminate performance reports monthly	10	
	Total Score (%)		
Functionality of drug information service; If ≥ 75%, Yes; If < 75%, No.			

PSI 4. Compounding service functionality

A hospital pharmacy should prepare non-sterile preparations such as prescription-based ointments, creams, solutions, lotions, pastes, and bulk preparations (e.g., alcohol-based hand rubs, hydrogen peroxide, alcohol of different strengths, gentian violet), which are not available commercially but are needed for patient care. Both sterile and non-sterile preparations in the hospital should fulfill efficacy, safety, and quality parameters. In order to produce quality-assured compounded products, good compounding practice (GCP) should be implemented.

Table 4: Compounding service functionality Performance indicator reference sheet and its criteria

Definition	Percentage of criteria fulfilled at hospitals on the implementation of compounding service
Formula	Compounding service functionality = $\frac{The\ sum\ of\ weight\ of\ fulfilled\ compounding\ service\ functionality\ criteria}{Total\ weight\ of\ the\ compounding\ service\ functionality\ criteria}\ x\ 100$
Interpretation	A hospital compounding service is considered functional when 75% of the criteria are fulfilled. This indicator measures the presence of compounding capability of a hospital pharmacy to prepare non-sterile preparations.
Aggregation	Percentage of hospitals with functional compounding service = $\frac{Number\ of\ hospitals\ with\ functional\ compounding\ services}{Total\ number\ of\ hospitals}\ x\ 100$
Disaggregation	None
Sources	Compounding registration, SOP, calibration certificates
Method of data	Observation of compounding facilities, prepared products, availability of

collection	reagents and ingredients and reviewing of registration
Frequency of collection/ Reporting	Should be annually reported to the next higher level.

Compounding service functionality criteria

S.N	Criteria	Weight	Score
1.	Presence of dedicated and trained pharmacy professional for compounding service	5	
2.	Presence of dedicated room with basic equipment required for compounding services (each equipment = 0.625 points) - Working bench - Mortar and pestle - Spatula - Glass rod - Funnel - Beakers - Volumetric flask - Weighting Balances - Ointment tile - Pipettes - Graduated measuring cylinder - Wall thermometer - Fire extinguisher - Weighing paper: Normal paper; grease proof for semisolids - Packaging material (plastic containers) - Labeling material	10	
3.	Availability of pharmaceutical grade chemicals required for compounding and personal protective equipment (one point for each items listed below) (salicylic acid powder, white petrolatum, liquid paraffin, absolute alcohol, hair covers, gown, gloves, facemasks, aprons, eye goggle)	10	
4.	Availability of SOP and job aids	5	
5.	Activities segregated in a way to prevent contamination and ensure good compounding practice (weighing, compounding, and cleaning station)	20	
6.	Presence of proper labeling for compounded product	5	
7.	Presence of dermatological preparations and alcohol-based hand rub (ABHR) (Hint: at least dermatological preparations and production of ABHR and other disinfectants)	20	
8.	The presence of documentation system for compounded product	15	
9.	Calibration of weighing balance annually (hint: certificate)	10	
	Total score (%)		
	Functionality of compounding (75%) If ≥ 75%, Yes; If < 75%, No.		

PSI 5. APTS functionality

APTS is a data driven package of interventions designed to establish accountable, transparent, and responsible pharmacy practice. APTS continuously monitors the number, mix and performance of pharmacy workforce. It has five result areas: efficient budget utilization, transparent and accountable transactions, reliable information, effective workforce development and deployment, and improved customer satisfactions.

Table 5: APTS functionality Performance indicator reference sheet and its criteria

Definition	Percentage of criteria fulfilled at health centers and hospitals in the implementation of APTS
Formula	APTS functionality = $\frac{Sum\ of\ weight\ of\ fulfilled\ APTS\ functionality\ criteria}{Total\ weight\ of\ the\ APTS\ functionality\ criteria}\ x\ 100$
Interpretation	APTS is considered functional when 75% of the criteria are fulfilled. This indicator measures the extent of implementation of APTS principles in health facilities.
Disaggregation	By health center, hospital
Aggregation	Percentage of health facilities with functional APTS = $\frac{The\ number\ of\ health\ facilities\ with\ functional\ APTS}{Total\ number\ of\ health\ facilities\ implementing\ APTS}\ X\ 100$
Sources	Cash sales ticket, credit/free register, daily summary, APTS reports, Vouchers, assessment report, service registers, other relevant reports
Method of data collection	Observation of pharmacy dispensing units and review of different documents such as cash sales ticket, credit register, daily summary, APTS report, vouchers, audit report and report of ABC/VEN reconciliation and stock status analysis
Frequency of collection/ Reporting	Should be reported semi-annually to the RHB and MOH.

APTS functionality criteria

S. N	Criteria	Weight	Score
1.	Presence of dedicated pharmacy accountant with office, computer, shelf, and file folders	3.75	
2.	Presence of standardized premises to keep patient safety, privacy, and satisfaction (entry and exit doors, counter design, and workflow arranged as evaluator/biller à cashier a counselor at OPD pharmacy and appropriate arrangement in other dispensing outlets	1.25	
3.	Presence of properly recorded sales tickets and credit/free registers at dispensaries	3.75	
4.	Bin ownership is implemented in dispensary (assigned names, FEFO arrangement, documented IFRR, damage and expiry report)	1.25	

5.	Implementation of pharmaceutical coding system in all dispensaries and stores (check M-19 health, M-22 health, sales ticket, credit/free registers, inventory, and price control sheet)	2.5	
6.	Presence of monthly reports for finance and services and quarter report for products (hint: see at least last 3 reports)	10	
7.	Presence of financial, product, and service audit report (internal) (hint: last 6 months)	10	
8.	Presence of dispensing aiding materials (tablet counter, cutter, packaging material like envelope, labeling material)	5	
9.	Presence of prescribing and dispensing reference materials (at least soft or hard copy STG or Formulary in dispensaries and OPD clinics, FSML in dispensaries)	2.5	
10.	Evaluation of prescription using the standard checklist (check for DTP assessment, prescription completeness, legality, legibility)	10	
11.	Presence of proper labeling practice (hint: observe 5 patients randomly)	10	
12.	Achievement of 100% patient knowledge on correct dosage (dose, frequency, route, & duration) (hint: interview randomly selected 5 patients)	15	
13.	Achievement of 80% patient satisfaction level on dispensing service (hint: use the health facility recent report)	7.5	
14.	Presence of good documentation practice (hint: take 5 prescriptions randomly and check their record)	7.5	
15.	Provision of reconstitution of oral powdered dosage form to patients	10	
	Total Score (%)		
	Functionality of APTS; If ≥ 75%, Yes; If < 75%, No.		

PSI 6. Antimicrobial stewardship program functionality

The cause of antimicrobial resistance (AMR) is complex and multi-sectorial. Inappropriate use of antimicrobials is a key contributor. Tackling AMR requires a multi-sectorial response. Optimizing the use of existing antimicrobial agents through the implementation of antimicrobial stewardship program in health facilities settings is pivotal to overcoming the threat. Antimicrobial stewardship is a coherent set of actions that promote the responsible use of antimicrobials. The main objectives of antimicrobial stewardship include optimizing the use of antimicrobials, promoting behavior change in antimicrobial prescribing and dispensing practices, improving quality of care and patient outcomes, and saving on unnecessary health care costs.

Table 6: Antimicrobial stewardship program functionality Performance indicator reference sheet and its criteria

Definition	Percentage of criteria fulfilled in the functionality of ASP at health centers and hospitals

Formula	Antimicrobial stewardship program functionality = $\frac{Sum\ of\ weight\ of\ fulfilled\ criteria\ of\ ASP\ functionality}{Total\ weight\ of\ the\ criteriaof\ ASP\ \ functionality}\ x\ 100$
Interpretation	The facility is considered to have functional ASP if it meets ≥75% of the criteria.
Disaggregation	By health center, hospital
Aggregation	Percentage of health facilities with functional ASP = $\frac{Number\ of\ health\ facilities\ with\ functional\ ASP}{Total\ number\ of\ health\ facilities}$ x 100
Sources	Letter of assignment, TOR, action plan, antimicrobial consumption document, FSML, antimicrobial use policies, and reports
Method of data collection	Review of the above documents
Frequency of collection/ Reporting	Should be reported to the all-administrative bodies annually.

ASP functionality criteria

S.N	Criteria	Weight	Score
1.	Assigned ASP members by official letter	7	
2.	Inclusion of ASP's role and responsibilities of the chair and secretary in their job description	7	
3.	Presence of Terms of Reference and action plan	6	
4.	Presence of antimicrobial drug use policy	10	
5.	Categorizes antibiotics into Access, watch and Reserve (AWaRe)	20	
6.	Presence of prospective audit and feedback practice (on daily, weekly, monthly basis)	25	
7.	Conducts review of the facility antimicrobial consumption/use and resistance at least annually	25	
	Total Score (%)		
	Functionality of ASP; If ≥ 75%, Yes; If < 75%, No.		

PSI 7. Percentage of encounters with antibiotic prescribed

Antibiotics are currently the most commonly prescribed drugs in health facilities worldwide. However, the inappropriate use of antibiotics contributes to the development of bacterial resistance, which accelerates the emergence and spread of resistant microorganisms and has a significant impact on the treatment outcome. The health facility DTC or assigned subcommittee should conduct this assessment and use the results to see trends of antibiotics prescribing and implement corrective measures whenever % of antibiotics use is above the optimum level indicated above.

Table 7 : Percentage of encounters with antibiotic prescribed Performance indicator reference sheet and data collection form:

Definition	The percentage of encounters with one or more antibiotics prescribed at OPD					
Formula	Percentage of encounters with antibiotic prescribed = $\frac{Total\ number\ of\ encounters\ with\ one\ or\ more\ antibiotics\ at\ OPD}{Total\ number\ of\ encounters\ at\ OPD}\ x\ 100$					
Interpretation	The target for optimum use of antibiotics in health facilities is between 20-30%. Results above 30% may indicate irrational use of antibiotics; therefore, the health facility should see into the reasons for overprescribing of antibiotics and implement relevant corrective strategies.					
Aggregation	Percentage of encounters with an antibiotic/s prescribed = $\frac{Summation\ of\ encounters\ with\ one\ or\ more\ antibiotic\ from\ all\ facilities}{Summation\ of\ total\ number\ of\ encounters\ from\ all\ facilities}\ x\ 100$					
Disaggregation	By Health Center, Hospital					
Sources	Prescription papers, prescription registration book (DHIS2 register)					
Method of data Collection	- Census of all prescribing encounters within the reporting period (DHIS2 register) - Antibiotics used for parasitic infections, such as malaria or tuberculosis, or medicines such as antiprotozoal and anthelminthic should not be counted for this indicator. - Prescriptions from inpatient wards dispensed at OPD pharmacy should be excluded.					
Frequency of collection/ Reporting	Health center	Hospital	WoH	ZHD/ Sc	RHB	MOH
	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly

Data collection form for indicators obtained from prescriptions

Name of Health Facility: _____
Investigator: _____ _____ Reporting period: from……to …….

S.N	# of medicines	# Generics	Injection (0/1)	Antibiotics (0/1)	# on FSML*	Diagnosis
1						
2						
3						
4						
5						
6						
7						
8						

9							
10							
--							
--							
--							
100							
Total							
Average							
Percentage	X		% of total drugs	% of cases	% of total cases	% of total drugs	X
**FSML-Facility specific medicine list*							

PSI 8. Percentage of clients with 100% prescribed drugs filled

This indicator measures proportion of clients who get all the prescribed drugs. It is one of the indicators that measures continuous availability of medicines. Getting prescribed drugs within the facility pharmacy improves treatment outcomes, patient satisfaction, and overall trust and confidence in the health sector.

Table 8:Percentage of clients with 100% prescribed drugs filled Performance indicator reference sheet

Definition	Percentage of clients who get all the prescribed medicines (100%) from health facility dispensary from all the clients who received prescriptions in a reporting time period.
Formula	Percentage of clients with 100% prescribed drugs filled = $\frac{Number\ of\ clients\ who\ received\ all\ prescribed\ drugs}{Total\ number\ of\ clients\ who\ received\ prescriptions}\ x\ 100$
Interpretation	The target for percentage of clients who get all the prescribed drugs (100%) from dispensary is 100%.
Aggregation	Percentage of clients with 100% prescribed drugs filled = $\frac{Summation\ of\ total\ number\ of\ clients\ who\ received\ all\ prescribed\ drugs\ from\ all facilities}{Summation\ of\ total\ number\ of\ clients\ who\ received\ prescriptions\ from\ all\ facilities}\ x\ 100$
Disaggregation	By Health Center, Hospital
Sources	Dispensing registration book (DHIS2) from all dispensing units
Method of data Collection	- Dispensing registration book (DHIS2) review - Patients who receive all prescribed medicines are scored as "1"; whereas, if any number of medicines is not dispensed, they are scored as "0".
Frequency of collection/ Reporting	Should be reported monthly to all next high level.

PSI 9. Percentage of medicines prescribed from the health facility medicine list

Health facilities should have a medicine list that contains all medicines, medical supplies, and reagents that can be used in the facility. The list should be reviewed and updated at least annually and health facilities should follow the continuous supply of these essential health commodities regularly.

Table 9: Percentage of medicines prescribed from the health facility medicine list Performance indicator reference sheet

Definition	Percentage of medicines prescribed from the health facility specific medicine list (FSML) among all prescribed medications
Formula	Percentage of medicines prescribed from the FSML = $\frac{Total\ number\ of\ medicines\ prescribed\ from\ FSML}{Total\ number\ of\ medicines\ prescribed}\ x\ 100$
Interpretation	This indicator measures the level of prescriber's adherence to the facility specific medicine list. Good adherence to the medicine list promotes rational prescribing and dispensing practice. 100% adherence to the FSML is expected from the facility.
Disaggregation	By health center, hospital
Aggregation	Percentage of health facilities with 100% adherent to the FSML = $\frac{Number\ of\ facilities\ that\ are\ 100\%\ adherant\ to\ the\ FSML}{Total\ number\ of\ health\ facilities}\ x\ 100$
Sources	Dispensing register, prescription paper, DHIS-II registers, FSML
Method of data Collection	Survey of prescription paper and DHIS2 register. The data collector should randomly take 100 prescriptions registered/ prescription paper and perform the evaluation.
Frequency of collection/ Reporting	Should be reported quarterly to the next higher levels.

PSI 10. Client satisfaction with pharmacy services

Client satisfaction is an important and commonly used indicator for measuring the quality in healthcare. It is about the timely, efficient, and patient-centered delivery of quality health care. This indicator measures the overall outcome of all reform activities to improve pharmacy services in general and quality of dispensing activities in particular. Clients are requested to express their experience in terms of availability of medicines, information

provision, premises and personnel.

Table 10: Client satisfaction with pharmacy services performance indicator reference sheet and criteria to measure client satisfaction

Definition	The percentage of clients satisfied with pharmacy services among all interviewed patients in a health facility
Formula	Client satisfaction with pharmacy services = $\frac{Number\ of\ clients\ satisfied\ with\ pharmacy\ services}{Total\ number\ of\ clients\ interviewed}\ x\ 100$
Interpretation	It indicates the degree to which dispensing service meets clients' expectations. A minimum of 80% client satisfaction with pharmacy service is considered as acceptable. Client satisfaction is a proxy but a very effective indicator to measure the ability of health facilities to fulfill clients' need and expectations.
Aggregation	Percentage of health facilities with acceptable (80%) overall client satisfaction in pharmacy services = $\frac{Number\ of\ health\ facilities\ that\ score\ client\ satisfaction\ of\ 80\%\ and\ above}{Number\ of\ reporting\ health\ facilities}\ x\ 100$
Disaggregation	By health center, hospital
Sources	Survey report
Methods of data collection	Survey based on exit interview for 100 clients from all dispensaries. The clients are selected based on systematic random sampling.
Frequency of collection/ Reporting	Should be reported bi-annually to the RHB and MOH.

Criteria to measure client satisfaction

S.N	Client satisfaction with dispensing services	If yes, write "1"; if no, write "0"
1.	The OPD pharmacy is easily accessible	
2.	The pharmacy is clean	
3.	The pharmacy room is adequate for the service	
4.	The pharmacy ensures reasonable privacy	
5.	The waiting area is convenient	
6.	The dispensers were welcoming to patients	
7.	The dispensers were ready to listen to my problems	
8.	Waiting time was appropriate	
9.	All your prescribed medicine was given	
10.	The medicines are affordable to you	
11.	I trust the competence of the dispensers	

12.	I received adequate information about how I should use my medicines	
13.	I am generally satisfied by the service I received	
	Total Yes (1)	
	Level of client satisfaction with dispensing service (Total yes (1)/13*100)	
	Satisfaction: (≥80%) (If yes 1, If no 0)	

PSI 11. Patients' knowledge on correct dosage

Patient knowledge is vital to obtain, process, and understand health information and services needed to make appropriate health decisions. This information is important to achieve the best possible health outcomes and protect patients from possible harm. This indicator measures the effectiveness of the information given to patients on the dosage of medicines dispensed to them.

Table 11: Patients' knowledge on correct dosage performance indicator reference sheet and data collection tool

Definition	Percentage of patients who understood the correct dosage of their dispensed medications
Formula	Patients' knowledge on correct dosage = $\frac{Number\ of\ patients\ with\ adequeate\ knowledge\ on\ correct\ dosage}{Total\ number\ of\ patients\ interviewed}\ x\ 100$
Interpretation	100% of patient knowledge on the dosage of prescribed medication is expected. 100% Patients' Knowledge on Correct Dosage means all clients interviewed know the dose, frequency, route, and duration of medicine dispensed for them.
Aggregation	None
Disaggregation	By health center, hospital
Sources	Survey report
Methods of data collection	Survey based on exit interview of 100 clients at outpatient pharmacies. The patients are selected based on systematic random sampling.
Frequency of collection/ Reporting	Should be reported to the next higher levels biannually.

Patient knowledge on correct dosage data collection tool

Name of health facility: ……. Investigator: …… Reporting Period: ……. to ……					
Case #	**Dose**	**Frequency**	**Route**	**Duration**	If adequate '1', if not '0'

Total **Adequate** =					
% of patients' knowledge on correct dosage = total adequate/100 *100					

PSI 12. Percentage of medicines actually dispensed

Health facilities are expected to provide a continuous supply of medicines to render healthcare service properly. This indicator measures the degree to which the health facilities fulfill prescribed medicine. It shows the effectiveness of pharmaceutical supply chain in availing medicines in the health facility.

Table 12: Percentage of medicines actually dispensed performance indicator reference sheet and data collection tool

Definition	The percentage of medicines dispensed to clients from all prescribed medicines in a given reporting period
Formula	Percentage of medicine actually dispensed $\frac{Total\ number\ of\ medicines\ dispensed}{Total\ number\ of\ medicines\ prescribed}\ x\ 100$
Interpretation	The target for this indicator is 100%. This means that all medicines prescribed in the health facility are actually dispensed to clients.
Aggregation	Percentage of medicine actually dispensed = $\frac{Total\ number\ of\ medicines\ dispensed\ from\ all\ facilities}{Total\ number\ of\ medicines\ prescribed\ from\ all\ facilities}\ x\ 100$
Disaggregation	By Hospital, Health Center
Sources	Dispensing registers
Method of data collection	- survey of prescribing and dispensing data - Systematic random sampling
Frequency of collection/ Reporting	Should be reported bi-annually to the next higher level.

2.3. Pharmaceuticals Supply Management Indicators (PSMI)

Activity 2.5: Individual Reflection

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

- Mention a few indicators you know for measuring pharmaceutical supply management performance

Time: 5 Minutes

Effective management of pharmaceutical supply involves acquiring the correct product in the right quantity, delivering it to the designated place, ensuring its proper condition, and meeting the specified time requirements, all at the appropriate cost. The process encompasses the careful selection, quantification, procurement, storage, inventory management, and distribution of pharmaceuticals. This comprehensive approach significantly contributes to enhancing treatment outcomes by ensuring the availability of high-quality, safe, effective, and affordable medicines. Monitoring and evaluation of pharmaceutical supply management helps to realize this.

Activity 2.6: <u>Think – Pair – share</u>

Instruction: Be in pair and match the indicators under Section I with the most appropriate descriptions that follow under Section II below. Share and compare your answers with a friend beside you and then present your pair`s agreed answers to the large group.

Section I. Indicators

1. Forecast accuracy
2. Inventory accuracy rate
3. Percentage of good storage condition
4. Supplier fill rate
5. Wastage rate
6. Essential drug availability
7. Availability of effective cold chain management system
8. Order fulfillment cycle time for emergency supplies
9. Availability of effective medical oxygen supply management system
10. Good storage condition

Section II: Descriptions

A. Serves as a proxy indicator for the ability of the health facility to meet clients` need with a full range of products and services

B. Acceptable practice requires at least 80% of 9 criteria
C. Acceptable practice should be completed within 72 hours
D. Requires official assignment of focal person for smooth management
E. National target is to maintain a value less than 2%
F. Compares quantities obtained from physical count and recording tools
G. Target for this indicator is 100%
H. Compares quantification and consumption data
I. Acceptable practice requires meeting 80% of the 13 criteria
J. Requires comparison of items and quantities in requisition document Vs. those indicated on facility`s receiving voucher

Time- 10 Minutes

PSMI 1. Forecast Accuracy

This indicator measures the degree of accuracy of a forecast in health facilities. Higher accuracy value indicates that there is a correspondence between the forecasted quantities and the actual consumption and this tells the forecasting accuracy is high. 100% accuracy is difficult to achieve. Hence, values between 75% and 125% are considered acceptable.

Table 13:Forecast Accuracy performance indicator reference sheet and data collection tool

Definition	The percentage of a measure of how closely forecasted quantity matches actually consumed or issued quantity
Formula	$[1-\left\lvert\frac{Forecasted\ quantity-Actual\ consumption}{Actual\ consumption}\right\rvert]\ x\ 100$
Interpretation	75%-125% forecast accuracy indicates precision reliability of predictions related to the quantity of pharmaceuticals needed. The closer the calculated value of the forecast accuracy to 100%, the better correspondence between the forecasted & actual consumptions.
Disaggregation	By Health Center, Hospital
Aggregation	Percentage of health facilities that have achieved acceptable Forecasted Accuracy (75%-125%) = $\frac{Number\ of\ Health\ Facilities\ With\ Acceptable\ Forecast\ Accuracy}{Total\ Number\ of\ Reporting\ Health\ Facilities} x100$
Sources	Facility forecast data/document, facility consumption data from bin card/DAGU
Method of data Collection	Health facilities collect data for randomly selected 10 RDF pharmaceuticals from quantification document and consumption records for the same period and report to their next level of administrative body.

Frequency of collection/ Reporting	Reported annually to next higher level

Forecast accuracy data collection tool

S.N	Candidate products	Forecasted Quantity (P1)	Consumed or Issued Quantity (P2)	Forecast error (P3) = |(P1-P2) |/P2	Forecast accuracy (1 – Error) *100%	If accurate, '1', if not '0'
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
					Total yes	
					Forecast accuracy = Total yes/10 * 100	

Activity 2.7: Small group discussion Instruction:

Form four groups, read and discuss on the remaining 8 indicators as assigned below:

- Group 1: Inventory accuracy rate and percentage of good storage condition
- Group 2: Supplier fill rate and wastage rate
- Group 3: Essential drug availability and availability of effective cold chain management system
- Group 4: Order fulfillment cycle time for emergency supplies and availability of medical oxygen supply management system

Time: 30 minutes

PSMI 2. Inventory accuracy rate

Inventory accuracy rate measures the accuracy of stock balances recorded in stock keeping

records (it can be manual or electronic) versus physical count over a range of items. High accuracy rate (100%) indicates good inventory practice.

Table 14: Inventory accuracy rate performance indicator reference sheet and data collection tool

Definition	The percentage of accuracy of stock balances recorded in stock keeping records versus physical count of all items.					
Formula	Inventory accuracy rate = $\frac{Number\ of\ items\ where\ stock\ recrd\ balance\ equals\ physical\ stock\ count}{Total\ number\ of\ counted\ items} x\ 100$					
Interpretation	A 100% inventory accuracy rate indicates that the recorded inventory levels perfectly match the actual physical inventory on hand.					
Aggregation	None					
Disaggregation	By Health Center, Hospital					
Sources	Manual or electronic bin cards, physical count					
Method of data collection	The health facility collects data for all pharmaceuticals from stock keeping records comparing with physical count. The accuracy rate should be conducted at stores.					
Frequency of collection/ Reporting	HC	Hospital	WoHO	ZHD/ ScHO	RHB	MOH
	Quarterly	Quarterly	Quarterly	Quarterly	Can conduct survey if needed	

Data collection tool for inventory accuracy

S.N.	**List of selected pharmaceuticals**	**Manual or electronic bin card record balance**	**Physical count**	**Bin card balance equals with physical count (if yes put 1, if no put 0)**
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
.				
.				
Total				
Number of items where bin card (Manual or Electronic) balance equals physical stock count **Sum=Total number of "1" Checks**				
Inventory accuracy rate = $\frac{Total\ yes}{total\ count} x100$				

PSMI 3. Percentage of Good Storage Conditions

This indicator measures the conditions of pharmaceutical store against a list of storage conditions required to protect the integrity of products. The good storage guideline standards are a set of standards that a well-functioning pharmacy store should maintain. There are total of 13 standards for storage condition. Storage facilities are expected to meet at least 80% of the requirements according to standard checklist.

Table 15: Percentage of Good Storage Conditions performance indicator reference sheet and criteria

Definition	The percentage of good pharmaceuticals storage conditions measure of how well the quality and safety of pharmaceutical products are maintained during storage.
Formula	$\frac{Total\ count\ of\ met\ storage\ conditions\ principles}{13} x100$
Interpretation	An acceptable storage condition is when a facility meets at least 80% of the requirements according to the 13 good storage principles.
Disaggregation	By Hospital, Health Center
Aggregation	Percentage of health facilities that have acceptable storage condition (≥80% storage conditions) = $\frac{Number\ of\ health\ facilities\ that\ have\ acceptable\ storage\ conditions(\geq 80\%\ storage\ conditions)}{Total\ number\ of\ health\ facilities} x100$
Sources	Filled checklist of good storage principle
Method of data collection	This data is collected through observation using checklist of 13 good storage principles.
Frequency of collection/ Reporting	Reported annually to the next higher level

Criteria for Good Storage Practice

S.N	Criteria	If the criteria is met, put Yes, if not put No
1	Products are arranged on shelves with arrows pointing up, and with identification labels, expiry dates, and manufacturing dates clearly visible.	
2	Products are stored and organized to FEFO procedures and are accessible for counting and general stock management.	

3	Outer cartons are in good condition (not crushed, perforated, stained, or otherwise visibly damaged).	
4	Damaged and expired products are separated from usable products in the storeroom, and procedures exist for removing them from inventory.	
5	Products are stored in a dry, well-lit, well-ventilated storeroom. *(Visually inspect roof, walls, and floor of storeroom.)*	
6	Cartons and products are protected from direct sunlight.	
7	There is no evidence of rodents or insects in the storage area. *(Visually inspect the storage area for evidence of rodents [droppings] or insects that can damage or contaminate the products.)*	
8	Storage area is secured with a lock and key but is accessible during normal working hours; access is limited to authorized personnel.	
9	Products are stored at the appropriate temperature according to product temperature specifications (8°– 30°C) and including cold chain storage (2°– 8°C), as required for certain products.	
10	Roof is maintained in good condition to avoid sunlight and water penetration.	
11	Storeroom is clean, with all trash removed, no evidence of food and drinks, products stored on sturdy shelves/bins, and boxes organized neatly.	
12	Current storage space is sufficient for existing products and planned program expansion. ➢ For Health Center: 106.28m^2 (sum of two separate stores: - Medicine and Medical Supply and Medical Equipment, and Chemical) ➢ For primary hospitals: 230.9m^2, (sum of three separate stores: - Medicine, Medical Supply and Medical Equipment, and Chemical) ➢ For General hospitals: 249.5m^2 (sum of three separate stores: - Medicine, Medical Supply and Medical Equipment, and Chemical) ➢ Comprehensive Specialized hospital: 291m^2 (sum of three separate stores:- Medicine, Supply and Medical Equipment, and Chemical)	
13	Products are stored separately from insecticides, flammable products, and chemicals.	
	Total number of Yes	
	Storage condition score (%) = $\frac{Total\ yes}{13} x100$	
	If storage condition score is $\geq$ 80%, say acceptable	

PSMI 4. Supplier Fill Rate

This indicator measures suppliers' ability to fill orders completely in terms of items and quantity during a definite period of time.

Table 16: Supplier Fill Rate performance indicator reference sheet and Data collection tool

Definition	The percentage of line items adequately supplied against items ordered by health facility from supplier					
Formula	$\frac{Total\ number\ of\ each\ line\ item\ supplied\ with\ at\ least\ 80\%\ of\ quantity\ ordered}{Total\ number\ of\ line\ items\ ordered} x100$					
Interpretation	Line items filled with 80% and above are considered as adequately supplied within a given period of time. An 80% and above supplier fill rate typically refers to the percentage of ordered products that a supplier adequately supplied.					
Disaggregation	By supplier: EPSS (RDF, Program), other suppliers (RDF)					
Sources	RRF report, receiving voucher, purchase order, sales invoice					
Method of data Collection	➢ The health facility collect data from the approved procurement request, RRF and receiving vouchers					
Frequency of collection/ Reporting	HC	Hospital	WoHO	ZHD/ ScHO	RHB	MOH
	Quarterly	Quarterly	Quarterly	Quarterly	Quarterly	Quarterly

Data collection tool

Suppliers	Pharmaceutical Category	Total number of line items requested to the supplier in the quarter (P2)	Total Number of line Items supplied in the quarter	Total Number of line items which are correctly supplied in greater than 80% of the quantity requested (P1)	Supplier Fill Rate $\frac{P1}{P2}$*100
EPSS	Program from RRF				
	RDF Pharmaceuticals				
Private (s)	RDF Pharmaceuticals				

PSMI 5. Wastage Rate

Wastage rate is the percentage of the stock of products, in value, that are unusable. It is usually calculated after a physical inventory is taken. Unusable stock that has been accumulated for long period and were not disposed previously (expired and damaged items that were transferred from previous quarter) should not be included during calculation for the current reporting quarter. In addition, items that were unusable during the quarter reviewed but were disposed with in the quarter should be taken in to consideration during calculation. This indicator is calculated for medicines, reagents, chemicals and supplies by using the registration a format prepared for this purpose.

Table 17: Wastage rate performance indicator reference sheet

Definition	The percentage cost of pharmaceuticals expired, damaged and wasted due to quality defects from the total cost of stock during the reporting period					
Formula	$\frac{Total\ cost\ of\ unusable\ stock\ of\ products}{Total\ cost\ of\ stock\ available\ for\ sale\ (beginning\ balance + received\ stock)\ during\ the\ reporting\ period} x100$					
Interpretation	This indicator measures how efficiently resources are utilized and how effectively the pharmaceutical supply chain is managed. The national target is to reduce wastage of pharmaceuticals to less than 2% and should show decreasing trend.					
Disaggregation	By Program, RDF By health center, hospital					
Aggregation	$\frac{Sum\ of\ total\ cost\ of\ unusable\ stock\ from\ all\ health\ facilities}{Sum\ o\ total\ cost\ of\ stock\ available\ for\ sale\ (beginning\ balance + received\ stock)\ during\ the\ reporting\ period}$x100					
Sources	Bin cards, electronic records, Model 19, Inventory sheet, Unusable Products registration sheet,					
Method of data collection	➢ Health facilities collect data for unusable stock from the data sources.					
Frequency of collection/ Reporting	HC	Hospital	WoHO	ZHD/ ScHO	RHB	MOH
	Quarterly	Quarterly	Quarterly	Quarterly	Quarterly	Quarterly

PSMI 6. Essential drug availability

Essential drugs should always be available. If a product is not available (stocked out) for one day in the month, then it's considered as not available for the whole month. Essential drugs availability indicator measures the percentage of tracer drugs available throughout the month averaged over all tracer drugs under the review in the month. It will help to know if products are available whenever the client needs them, and thus it must be carefully measured.

Table 18: Essential Drugs availability performance indicator reference sheet

Definition	The percentage of tracer drugs available throughout the month from the overall tracer drugs
Formula	$\frac{Number\ of\ tracer\ drugs\ available\ throughout\ the\ month}{Total\ number\ of\ tracer\ drugs\ (25)} x100$
Interpretation	This indicator measures tracer drugs availability and indicates the ability of the health facility to meet clients' need with a full range of products and services. The target for this indicator is 100%.
Disaggregation	By hospital, Health center
Aggregation	Percentage of tracer drugs availability = $\frac{Summation\ of\ number\ of\ tracer\ drugs\ available\ in\ health\ facilities\ throughout\ the\ month}{25\ x\ number\ of\ health\ facilities} x100$
Sources	Bin card, electronic records, tracer drug availability sheet.

Method of data collection	Collecting data from availability tracking sheet. Tracer drugs availability from service delivery and dispensing units should be reviewed on daily basis.					
Frequency of collection/ Reporting	HC	Hospital	WoHO	ZHD/ ScHO	RHB	MOH
	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly

PSMI 7. Availability of effective cold chain management system

The cold chain is a system of storing and transporting vaccines and medicines at recommended temperatures from the manufacture to the point of use. It includes all of the materials, equipment, and procedures used to maintain vaccines and medicines in the required temperature range of +2 ^{o}C to +8 ^{o}C until the product is administered to individuals. Health facilities should have standard pharmaceutical cold chain and vaccine management system.

Table 19: Availability of effective cold chain management system performance indicator reference sheet and criteria

Definition	The percentage of effectiveness criteria fulfilled at health facilities in the implementation of cold chain management system
Formula	Availability of effective cold chain management = $\frac{The\ sum\ of\ the\ weights\ of\ fulfilled\ criteria\ of\ effective\ cold\ chain\ management\ system}{Total\ weight\ of\ the\ criteria} X100$
Interpretation	The facility is considered to have effective cold chain management system if it meets at least 80% of the criteria.
Disaggregation	By Hospital, Health Center
Aggregation	$\frac{Number\ of\ HFs\ that\ have\ effective\ \ cold\ chain\ management\ system}{Total\ number\ of\ health\ facilities} x\ 100$
Sources	Temperature monitoring charts, Bin cards/vaccine ledger book, IFRR, cold chain management policy/procedure document, work order/preventive maintenance file, VRF
Method of data collection	Data is collected by observation, reviewing of the documents
Frequency of collection/reporting	Should be reported semi-annually to the next higher level

Criteria for effective cold chain management system

S.N	Criteria	Weight	Score
1	The vaccines/products are stored in appropriate ice lined refrigerator (ILR) or deep freezer in the medicine store	10	
2	All ILR are fitted with the correct vaccine storage baskets and vaccines are arranged in appropriate compartment	10	
3	All refrigerators are attached to standardized functional UPS	10	

4	The temperature of the refrigerator is recorded at least twice per day	15	
5	The vaccine vial monitors are daily checked and recorded	10	
6	Presence of cold chain management policy/procedure	10	
7	Regular cleaning and maintaining functionality of refrigerator	10	
8	Regular vaccine utilization reporting and requesting practice using VRF	15	
9	The vaccine distribution to service delivery units is done by using cold boxes/vaccine carrier	10	
Total score (%)			
The System is considered to be effective if the indicator is ≥ 80%, Yes, If < 80%, No			

PSMI 8. Average Order fulfillment cycle time for emergency supplies performance indicator

This indicator gives a valuable insight on the effectiveness of the emergency order fulfillment process. The process flow for emergency order fulfilment cycle starts when an order placed to the supplying entity and ends with the products received at the service delivery points. This indicator is particularly important when it comes to emergencies that require immediate responses.

Table 20: Average Order fulfillment cycle time for emergency supplies performance indicator reference sheet and criteria

Definition	Average Order fulfillment cycle time for emergency supplies is the time it takes from a request/order received by the supplying entity to final delivery of the products to the service delivery point.
Formula	Average Order fulfilment cycle time = $\frac{\text{Sum of (delivery date} - \text{order date)}}{\text{total orders supplied}}$
Interpretation	Average order fulfilment cycle time that is completed within 72 hours can be considered as acceptable OFCT and those completed after 72 hours as delay.
Disaggregation	By health facilities, Emergency Staging Areas (ESAs)
Sources	Incident reports, Request letter, Model 19
Method of data Collection	Incident report review
Frequency of data collection/Reporting	To the higher level based on the incidence

PSMI 9. Availability of effective medical oxygen supply management system

Medical oxygen is lifesaving and an essential element of appropriate management for a wide range of clinical conditions.

Sustained and adequate availability of oxygen is required to ensure implementation of MOH initiatives, including the Newborn and Child Survival Strategy, the Maternal and Neonatal Health (MNH) Road Map, the Saving Lives Through Safe Surgery Initiative, the establishment of trauma centers, the strengthening of emergency medical services, and the expansion of ICU services to realize the health sector transformational plan.

Table 21: Availability of effective medical oxygen supply management system performance indicator reference sheet and criteria

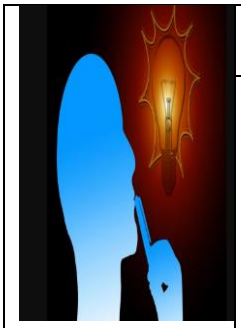
Definition	Percentage of effectiveness criteria fulfilled at health facilities on the implementation of medical oxygen supply management system
Formula	$\frac{Sum\ of\ weight\ of\ fulfilled\ criteria\ for\ effective\ medical\ oxygen\ SMS}{Total\ weight\ of\ criteria\ of\ medical\ oxygen\ SMS}\ x\ 100$
Interpretation	Medical oxygen supply management should always ensure the availability of medical oxygen 24/7. The facility is considered to have effective medical oxygen supply management system if it meets at least 80% of the criteria.
Disaggregation	By health center, hospital
Aggregation	Percentage of health facilities with effective Medical Oxygen Supply System = $\frac{Number\ of\ health\ facilities\ that\ have\ effective\ Medical\ Oxygen\ Supply\ System}{Total\ number\ of\ health\ facilities}$ x 100
Sources	Official assignment letter for focal person, facility specific medicine list, quantification reports, policy & procedures, medical oxygen reporting and requesting forms, Bin cards, monthly consumption reports, receiving documents at store and medical oxygen prescriptions/patient card)
Method of data collection	Data is collected by reviewing different documents mentioned below using checklist provided in the table below. Can be collected through survey and during supportive supervision.
Reporting frequency	Should be reported semi-annually to the next higher level and annually to MOH

The verification criteria for effective medical oxygen supply management system are summarized in the table below.

S.N	Criteria	Weight	Score
1	Medical oxygen and consumable oxygen devices are included in the FSML	5	
2	Medical oxygen and consumable oxygen devices are included in the facility pharmaceutical quantification	5	
3	Presence of focal person for medical oxygen supply management	10	
4	Presence of policy for medical oxygen supply management	10	
5	Oxygen cylinders are checked during receiving to ensure proper	15	

S.N	Criteria	Weight	Score
	filling (see signed receiving documents)		
6	Medical oxygen is stored in secured and separate area for empty and filled cylinders	10	
7	Presence of updated Bin card for medical oxygen stock management (for filled and empty cylinders) (check at oxygen storeroom)	15	
8	The facility uses internal facility reporting and requesting forms (IFRR) for oxygen supply (check 3 recent reports from maternal, inpatient, ICU and emergency)	15	
9	Presence of monthly consumption report (check 3 recent reports)	10	
10	Oxygen prescriptions contain flow rate and monitoring frequency	5	
	Total score	100	
	The indicator is considered to be functional if sum of scores ≥ 80%.		

Exercises on Forecast Accuracy and Wastage Rate – 45 minutes



Activity 2.8: Individual Exercise on Forecast Accuracy

Instruction: Given below are data on forecast and consumption of pharmaceutical products for Tenachin Hospital. Using the data given, calculate forecast accuracy for each product as well as the forecast accuracy for the Tenachin hospital.

Time: 15 minutes

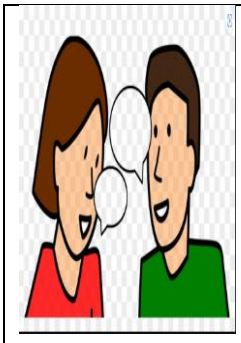
The forecasted and actual consumption data for 10 items of Tenachin Hospital is indicated below.

a. Calculate the forecast accuracy for each item and interpret the results.

b. Calculate the overall Tenachin Hospital's forecast accuracy

Product No.	Forecasted consumption (tablets, vials, etc.)	Actual consumption (tablets, vials, etc.)	Forecast Accuracy	If accurate, '1', if not '0'
Product 1	38,425	37,000		
Product 2	26,547	27,777		

Product 3	35,000	71,426		
Product 4	22,425	15,567		
Product 5	68,700	72,004		
Product 6	2,500	4,200		
Product 7	3,300	3,000		
Product 8	215,000	232,000		
Product 9	355,000	305,250		
Product 10	47,475	62,000		
Tenachin Hospital's forecast accuracy				



Activity 2.9: Pair Exercise on Wastage rate

Instruction: Be in pair and work on the wastage rate exercise using the data given below. Use the tools to register wastage information along with the data. After calculating wastage rates for each quarter and the annual wastage rate, present them to the large group.

Time: 30 minutes

Cheleleka health center manages both budget and program commodities. The health center conducts quarterly physical inventory, registers usable products and expired products using the appropriate registration forms separately. As part of the M&E activity and physical inventory, the health center reported wastage rate on quarterly basis during the four quarters of 2015 E.C. The information indicated in the table below shows the four-quarter data of Cheleleka Health Center. In line with this,

1) Complete the wastage rate registration formats for the four quarters and the full year.
2) What is the trend of the wastage rate over the four quarters?
3) How would you characterize the performance of the health center with regards to the standard set in the HSDIP?

Wastage information for four quarters

	Wastage (Damage + expiry)	**Cost**			
		Quarter 1	Quarter 2	Quarter 3	Quarter 4

1	Total cost of Beginning Balance of p**rogram** drugs (total cost obtained from inventory at end of the previous quarter) in birr	382,155	401,102	376,268.00	450,230
2	Total cost of **program** drugs received + transferred in to the health facility from other facility in this quarter in birr	291,903	96,033.15	222,671.22	430,000
3	Total cost of **program** drugs transferred out to other health facility in this quarter in birr	21,222	0	15,470	0
4	Total cost of **program** drugs damaged and expired in this quarter in birr	2,177	0	52,47.27	9,866
5	Total cost of Beginning Balance of **budget** drugs (total cost obtained from inventory at end of the last quarter) in birr	392,726	392,726	392,726	350,000
6	Total cost of **budget** drugs received + transferred in to the health facility from other facility in this year in birr	36,400	185,888.24	288629.73	50,000
7	Total cost of **budget** drugs transferred to other health facility in this year in birr	2,222	0	1,547	0
8	Total cost of **budget** drugs damaged + expired in quarter in birr	2,497	2,418.04	3,966.74	4,233

Wastage Registration

Quarter 1

#	RDF Category	Unusable stock of products during a period in monetary value in the Quarter (P1)	Value of Beginning stock at the beginning of the Quarter (P2)	Value of total items received during the Quarter (P3)	Wastage Rate $\frac{P1}{P2+P3} * 100$
1	RDF Pharmaceuticals				
2	Program Pharmaceuticals				
	Summation				
				Wastage Rate	

Wastage Registration

Quarter 2

#	RDF Category	Unusable stock of products during a period in monetary value in the Quarter (P1)	Value of Beginning stock at the beginning of the Quarter (P2)	Value of total items received during the Quarter (P3)	Wastage Rate $\frac{P1}{P2+P3} * 100$
1	RDF Pharmaceuticals				
2	Program Pharmaceuticals				
	Summation				
				Wastage Rate	

Wastage Registration

Quarter 3

#	RDF Category	Unusable stock of products during a period in monetary value in the Quarter (P1)	Value of Beginning stock at the beginning of the Quarter (P2)	Value of total items received during the Quarter (P3)	Wastage Rate $\frac{P1}{P2+P3} * 100$
1	RDF Pharmaceuticals				
2	Program Pharmaceuticals				
	Summation				
				Wastage Rate	

Wastage Registration

Quarter 4

#	RDF Category	Unusable stock of products during a period in monetary value in the Quarter (P1)	Value of Beginning stock at the beginning of the Quarter (P2)	Value of total items received during the Quarter (P3)	Wastage Rate $\frac{P1}{P2+P3} * 100$
1	RDF Pharmaceuticals				
2	Program Pharmaceuticals				
	Summation				
				Wastage Rate	

Annual wastage rate registration

#	RDF Category	Unusable stock of products during a period in monetary value in the Quarter (P1)	Value of Beginning stock at the beginning (P2)	Value of total items received during the (P3)	Wastage Rate $\frac{P1}{P2+P3} * 100$
1	RDF Pharmaceuticals				
2	Program Pharmaceuticals				
	Summation				
	Wastage Rate				

2.4. Chapter Summary

- There are operational standards expected from hospitals and health centers. The EHCRIG outlines 11 standards for health centers and hospitals are expected of 13 standards as indicted by the EHSIG.
- The performances of health centers and hospitals are evaluated by 12 and 9 indicators of pharmacy service and pharmaceutical supply chain management, respectively.

CHAPTER THREE

MEDICAL DEVICES MANAGEMENT INDICATORS

Allocated time: 195 minutes

Chapter description

This chapter outlines the national health facilities medical device management standards and provides an in-depth explanation of key indicators employed for monitoring and evaluation of health facilities medical device management performance.

Chapter objective:

At the end of this chapter, the participants will be able to describe indicators used to monitor and evaluate medical device management.

Enabling objectives:

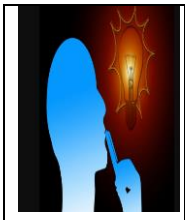
By the end of this chapter, the participants will be able to:

- Identify operational standards of health facility medical device management.
- Discuss indicators used for monitoring and evaluations of medical device management.

Chapter Outline

- Operational standards of health facility medical device management
- Indicators to measure medical device management.
- Chapter summary

3.1. Operational standards of health facility medical device management

	**Activities 3.1: Individual Reflection**
	Instruction: Individually read and reflect your answer to large group. 1. What operational standards do you know for health facilities medical device management? 2. What difference do you anticipate between the operational standards of medical devices management in hospitals and health centers. **Time: 10 min**

3.1.1 Standards of Medical Device Management for Hospital

Medical devices management involves the strategic planning, acquisition, maintenance, and oversight of medical devices within healthcare facilities. Effective management of medical devices is essential to ensure patient safety, regulatory compliance, and the efficient delivery of healthcare services. To improve medical device management across all hospitals, the MoH has introduced and implemented standards. These standards outline activities that a hospital should undertake to appropriately implement the Healthcare Technology management.

To make healthcare technology management efficient in hospitals, a set of 12 operational plan are established.

1. The hospital has organized Healthcare Technology Management (HTM) directorate/ department
2. The hospital has Healthcare Technology Management committee (HTMC) from a multi-disciplinary team.
3. The hospital has a functional HTM information system.
4. The hospital has standard medical device maintenance and training workshop.
5. The hospital has medical oxygen gas and devices management system.
6. The hospital has a cold chain equipment (CCE) management system.
7. The hospital has separate medical device, spare part and consumable accessories store.
8. The hospital has an appropriate acquisition system for medical devices.
9. The hospital has proper medical devices installation and commissioning practice.
10. The hospital has a proper medical device maintenance practice.

11. The hospital conducts capacity building sessions for users and Biomedical professionals on proper management and maintenance of medical devices.
12. The hospital implements a proper decommissioning and disposal system for medical devices.

OS1. The hospital has organized Healthcare Technology Management (HTM) directorate/ department

The criteria indicated below is used to assess the implementation of this standard

Healthcare technology management Directorate/ Department verification criteria

S/N	Criteria	Score	
		Weight	Result
1	The unit is reflected in the hospital organogram	2	
2	the unit is staffed with appropriate staff in terms of number and professional mix	2	
3	Presence of the HTMU staff JD	1	
4	The unit has updated annual plan	2	
5	Confirm the HTMU led by a Biomedical professional	1	
6	Availability of budget for the unit	2	
7	Ensure the HTMU head/Director is the member of hospital management team	2	

NB: operational standards two to four are briefed under the medical devices management indicators of this chapter.

OS5. The hospital has medical oxygen gas and devices management system.

Medical oxygen is essential for healthcare, as it is used for various treatments and life-saving procedures. To manage medical oxygen devices, health facilities need to ensure that they have a steady and dependable supply of oxygen, store it properly, and use it safely.

Health facilities that produce their own oxygen should also perform quality assurance tests regularly, using the appropriate tools. They should check that each oxygen source or plant produces the expected amount of oxygen (m3 per hour), according to the manufacturer's manual. They should also make sure that they have enough oxygen production and supply at all times. Furthermore, health facilities should have all the necessary oxygen devices,

consumables, accessories, and equipment for the production, distribution, delivery, and monitoring of medical gas, to provide safe care for patients.

Hospital medical oxygen devices management system verification criteria

S.n	Criteria	Score	
		Weight	Result
1	Availability of medical oxygen production quality and capacity monitoring system (oxygen production registration document using analyzer)	2	
2	Ensure Oxygen cylinders are color coded as per the standard, safely stored and transported	2	
3	Ensure the hospital has medical oxygen manifold and central pipeline system (observation)	1	
4	Presence of Oxygen Cylinder refilling, Inspection & acceptance testing practice	2	

OS6. The hospital has a cold chain equipment (CCE) management system.

As immunization programs is one of the hospital critical service, Vaccines, some pharmaceutical, Laboratory reagents and blood products must be kept in appropriate cold chain system.

For this purpose, equipment needed to move and store vaccines, reagents, and blood products at the ideal temperature range. Temperature monitoring devices play a crucial role in ensuring that proper storage conditions are maintained throughout the cold chain.

The hospital cold chain equipment (CCE) management system Verification Criteria

S.n	Criteria	Score	
		Weight	Result
1	Availability of separate CCE and spare part inventory	2	
2	Availability of adequate CCE with temperature monitoring devices	2	
3	Confirm CCEs maintain its appropriate temperature range (observe CCE temperature monitoring)	3	

OS7. The hospital has separate medical device, spare part and consumable accessories store.

The medical device and spare parts store manager should properly store medical device and spare parts following guidelines/ SOP for good storage practices for medical device and spare parts. Standardized forms for inventory management like bin cards and stock record cards should be used by all store management.

The hospital separates medical device and spare part store - verification Criteria

S.no	Criteria	Score	
		Weight	Result
1	Presence of assigned BME/T for managing medical device and spare part store	2	
2	Availability of bin card and stock card	2	
3	There is proper management and labeling practice of medical devices (MD Name & status)	2	

OS8. The hospital has an appropriate acquisition system for medical devices.

To acquire medical devices that support patient care, healthcare facilities need to follow a series of systematic steps. These steps include:

- Planning and need assessment: This involves establishing a Multi-disciplinary Team/HTMC, collecting data and defining strategic areas, developing a list of required devices with their quantities and specifications, and specifying the site requirements for each device.
- Medical Devices Development Plan: This is a document that considers the current devices inventory and the 'model medical device list' to plan for the acquisition of new devices.
- Specification: This is a detailed description of the requirements and characteristics of a particular medical device that is needed by the facility.

Medical device procurement is a collaborative process that requires the involvement of healthcare professionals, procurement specialists, and vendors. They need to make informed decisions that match the organization's goals and priorities. The hospital should also adhere to the National Medical Devices Donation Directive when receiving donated medical devices. All donations should be evaluated by HTMU and approved by the hospital management before acceptance.

The hospital appropriate acquisition system for medical devices verification Criteria

S.no	Criteria	Score	
		Weigh	Resul

		t	t
1	Confirm medical device need assessment is conducted	2	
2	Presence of approved Short-term & long-term MDDP with estimated budget	1	
3	Confirm preparation of medical devices specification based on HTA	2	
4	Confirm involvement of BME/T on medical device procurement process	2	
5	Ensure managing/follow-up of after sale service as per the contract agreement.	2	
6	Ensure execution of medical devices procurement as per MDDP	1	

NB: operational standards nine is briefed under the medical devices management indicators of this chapter.

OS10. The hospital has a proper medical device maintenance practice.

It is important to have a well-planned and managed maintenance practice to ensure medical device are reliable, safe, and available all time when it is needed for diagnostic procedures, therapy, treatments, and monitoring of patients. In addition, such activities lengthen the useful life of the device and minimize the repair related cost of device. All maintenance should be recorded by the management team including the work order requests, maintenance activities, performance testing and calibration as well as report.

Hospital proper medical device maintenance practice Verification Criteria

S.no	Criteria	Score	
		Weight	Result
1	Presence of schedule for performance testing, calibration, Preventive and corrective Maintenance	3	
2	Presence of prioritized medical device list for corrective maintenance	2	
3	Presence of work order-based maintenance practice	2	
4	Availability of SOPs, manual & risk assessment for each medical device	2	
5	Confirm the PM & CM has been done on time (check PM schedule & workorder)	3	

OS11. The hospital conducts capacity building sessions for users and Biomedical professionals on proper management and maintenance of medical devices.

Medical devices management team of the health facilities in collaboration with the human resources should assess the training needs, prepare action plans, implement trainings, monitoring and evaluate the impacts.

Hospital conducts capacity building for users and BME/T on proper utilization, safety, and maintenance of medical devices -Verification Criteria.

S.no	Verification Criteria	Score	
		Weight	Result
1	Plan for short- and long-term training for users and BME/T	2	
2	Provision of end user and technical training	2	
3	Availability of recorded training conducted by other organizations	2	
4	Presence of incident management system (tracking, recording, reporting and intervention)	2	

OS12. The hospital implements a proper decommissioning and disposal system for medical devices.

Decommissioning is the process of removing a medical device from service in a health care facility following a decision to disinvest. Disposal is process of remove medical devices from the health facility through donation, transfer, sale, destruction, and incineration which undertaken with local and international standards at minimum risk and financial cost.
When medical devices are decided to decommission and disposal the hospital Biomedical engineering/technician perform a technical assessment and verify it for decommissioning and the hospital HTMC approved the decommissioning and disposal.

Hospital proper decommissioning and disposal system -Verification Criteria.

S.no	Verification Criteria	Score	
		Weight	Result

1	Presence of functional Medical Equipment Disposal Committee as per EFDA guideline	1	
2	List of medical devices to be disposed is approved by HTM committee	1	
3	Presence of secured warehouse for decommissioned devices until it is disposed	2	
4	Ensure decommissioning and disposal of medical devices is based on EFDA guideline	2	

3.1.2. Standards of medical device management for health centers

Ensuring availability of functional medical devices at health center level help the health system to offer a safe and quality to the standard essential services to beneficiaries. It is very crucial to implement Medical Equipment Management in the health center to manage and coordinate the planning, procurement, training, operation, maintenance, decommissioning, and disposal.

Standards that health center should adhere to appropriately manage their medical devices, allowing for the provision of services while ensuring the safety of its patients are listed below:

1. The Drug and Therapeutic Committee (DTC) should be responsible for overseeing the entire Medical Equipment Management.
2. The health center has an active medical equipment maintenance work order system and ensures functional work relationship with workshops available within zone health department or nearby Primary Hospital.
3. The health center has a paper-based or computer-based current equipment history file documentation.
4. All new equipment is installed and commissioned in accordance with the manufacturer's specifications and undergoes acceptance testing prior to its initial use to ensure the equipment is in good operating condition.
5. All equipment operators and personnel are trained in proper application, safety, and maintenance of medical equipment.
6. The health center ensures decommissioning including relocation, uses as spare, donation.

7. Health center conducts proper disposal of medical equipment according to national and regional legislations.

3.2 Medical Device Management Indicators (MDMI).

Effective medical device management involves the systematic control and oversight of medical devices throughout their lifecycle, from acquisition to disposal. Measuring the performance of medical device management is crucial for ensuring patient safety, regulatory compliance, and overall operational efficiency. There are 8 indicators that measures the operational standards described and under this section which are systematically interlinked in such a way that they can show the performances of each level from health facilities up to the MoH with respect to medical device management. For all the indicators the method of data collection is document review, survey and/or observation. Hence, the necessary data elements should be well documented at respective levels and the frequency of reporting is quarterly, biannually or annually depending on the type of the indicators. Regularly assessing these indicators will hlp health facilities to identify areas for improvement, optimize resource utilization, enhance patient safety, and maintain compliance with regulatory requirements in the field of medical device management.

MDMI 1: Healthcare Technology Management Committee (HTMC)

The healthcare technology management committee has an advisory role on medical device management system and should be organized from clinical, administrative, finance, and other relevant hospital departments. This indicator measures functionality of HTMC in the health facility.

Table 22: Percentage of Healthcare Technology Management Committee performance indicator reference sheet and criteria

Definition	Percentage of criteria fulfilled at health facilities on the functionality HTMC
Formula	$\frac{\text{Sum of weight of scored HTMC functionality criteria}}{\text{Total weight of HTMC functionality criteria}} * 100$
Interpretation	The facility is considered to have functional HTMC if it meets at least 80% of the criteria.
Disaggregation	Hospital, Health Center
Aggregation	Percentage of Health Facilities with Functional HTMC = $\frac{\text{Number of health facilities with functional HTMC}}{\text{Total Health Facilities}} * 100$
Sources	Minutes, official assignment letters, approved TOR, action plan, notice or letters of HTMC decision, performance, and different documented

	reports					
Method of data collection	Observation of the above documents, Survey					
Frequency of collection/reporting	HC	Hospital	WoHO	ZHD/ ScHO	RHB	MOH
	Quarterly	Quarterly	Quarterly	Quarterly	Annually	Annually

Healthcare Technology Management Committee functionality criteria

S.n	Criteria	Weight	Score
1	Confirm that each member is assigned with official letter	10	
2	Check an availability TOR of HTMC	16	
3	Check that HTMC Conduct regular meeting every 2 months with documented minutes	16	
4	Check the presence of HTMC action plan	16	
5	Check the presence of updated model medical device list approved by the committee	16	
6	Verify the availability of MDDP	10	
7	Ensures the execution of medical device and related policies, procedures, and guidelines and SOP (minute review)	16	
	Total score (%)		
	Functionality of HTMC if ≥75%, Yes, If < 75%, No		

Activity 3.2 Gallery Walk

Instructions: Form five groups, read, discuss and write on flip chart of medical devices management indicators as assigned below and explain for other groups:

- Group 1: MDMI 2:
- Group 2: MDMI 3:
- Group 3: MDMI 4 &5
- Group 4: MDMI 6:
- Group 5: MDMI 7&8:

Time: 55 minutes

MDMI 2: Medical Equipment Management Information System (MEMIS) Functionality

A Medical Equipment Management Information System (MEMIS) is a comprehensive software solution designed to facilitate the efficient management and oversight of medical equipment throughout its entire lifecycle. Here are key features and functions typically associated with a MEMIS:

- **Medical device inventory** includes information about the type of equipment, its location, status, maintenance history, and other relevant details. Managing
- **Equipment History File** should be maintained for each item of equipment that contains inventory date, risk level of the device, maintenance activities and other documents and manuals.
- **Medical device risk classification** should be undertaken to classify each item of equipment as 'high', 'medium' or 'low' risk. This level of risk determines the priority with which equipment should be repaired and maintained or replaced if no longer operable.
- **Spare parts and accessories inventory stock** should be maintained for most commonly replaceable spare parts.

Table 23: Medical Equipment Management Information System (MEMIS) Functionality performance indicator reference sheet and criteria

Definition	Percentage of fulfilled criteria for MEMIS implementation functionality at health facilities					
Formula	The sum of weights of scored MEMIS functionality criteria / Total weights of the standards for functionality					*X 100%*
Interpretation	MEMIS is said to be functional if the health facility meets 80% and above of the criteria.					
Disaggregation	By health center, Hospital					
Aggregation	***Percentage of health facility with Functional MEMIS*** = (Total number of health facilities with functional MEMIS / Total Health Facilities) X100%					
Sources	MEMIS, history file, inventory records, documented reports					
Method of data collection	MEMIS and document review					
Frequency of Collection /Reporting	HC	Hospital	WoHO	ZHD/ ScHO	RHB	MOH
	Quarterly	Quarterly	Quarterly	Quarterly	Biannually	Annually

MEMIS functionality Criteria

S.n	Criteria	Weight	Score
1	Assigned trained biomedical focal person for MEMIS	10	
2	Availability of updated medical equipment inventory (web based and signed hardcopy with seal) (each 15 point)	30	

3	Availability of file history for each medical device (at least five equipment) (each 6 point)	30	
4	Presence of maintenance and installation notification and work order system (check notification and work order form)	20	
5	Availability MEMIS manual and inventory SOP (each 5 point)	10	
MEMIS functionality (%) Sum of total score			
Functionality of MEMIS if ≥80%, Yes, If < 80%, No			

MDMI 3: Availability of Standardized medical device maintenance workshop

Hospitals should establish a separate medical equipment maintenance workshop based on their level as per the standardized medical devices maintenance workshop criteria.

Table 24: Availability of Standardized medical device maintenance workshop performance indicator reference sheet and criteria

Definition	Availability of standard medical device maintenance workshop at hospitals that met expected standards.				
Formula	The sum of weight of score medical device maintenance workshop criteria / Total weight of standard criteria				*X100 %*
Interpretation	A hospital is considered to have a standard MD maintenance workshop if it meets at least 80% of criteria set				
Disaggregation	None				
Aggregation	***Percentage of hospitals with standardized MD maintenance workshop*** = (Number of hospitals with standardized MD maintenance workshop/ Total number of hospitals) X 100%				
Sources	Facilities of the workshop				
Method of data collection	Physical observation				
Frequency of collection/Reporting	Hospital	WoHO	ZHD	RHB/City	MOH
	Annually	Annually	Annually	Annually	Annually

Standardized Medical Devices maintenance workshop criteria.

S.n	Criteria	Weight	Score
1.	Presence of office with furniture, computer, printer, and internet for workshop staffs (each 5 point)	20	
2.	Availability of store for testing tools, measuring equipment, spare parts, and personal protective devices	10	
3.	Presence of maintenance, calibration & testing tools, appropriate gases (e.g. Acetylene, oxygen) & other tools	20	
4.	Check the availability of adequate PPE including safety shoes	10	

5.	Availability of equipped maintenance training workshop capable of mechanical & electrical activities	20	
6.	Presence of appropriate and adequate space walk way for transportation of medical devices.	20	
Availability of standard biomedical workshop (%) Sum of total score			
Standardized biomedical workshop criteria is available if ≥ 80%, Yes, if < 80%, No			

MDMI 4: Percentage of medical equipment installed and commissioned

Proper installation and commissioning ensure that medical devices function as intended, comply with safety standards, and meet monitoring requirements. The hospital senior management in-collaboration with healthcare technology management directorate/department shall in place proper medical device installation and commissioning procedure/protocol or other guiding documents. When an order has been placed to purchase a new item of equipment, or a donation has been accepted, preparations must be made for receipt of the item.

Table 25: Percentage of medical equipment installed and commissioned performance indicator reference sheet

Definition	Percentage of medical equipment installed and commissioned within the specified period of time	
Formula	Number of medical equipment installed and commissioned within the specific period	*X100%*
	Total number of medical equipment delivered to the health facility that needs installation within the last three months	
Interpretation	This indicator measures how much the medical equipment that needs installation is installed and commissioned after delivered to the health facility timely. And it is expected to be 100%.	
Disaggregation	By Health center, Hospital	
Aggregation	Total number of medical equipment installed and commissioned	X100%
	Total number of medical equipment that needs installation	
Sources	Medical equipment history file, inventory data, Model-19, MEMIS	
Method of data Collection	The health facilities collect installation performance by reviewing documents indicated above. Administrative bodies could evaluate	

	installation performance using survey method.					
Frequency of collection/Reporting	HC	Hospital	WoHO	ZHD/ ScHO	RHB	MOH
	Quarterly	Quarterly	Quarterly	Quarterly	Quarterly	Quarterly

MDMI 5: Percentage of preventive maintenance practice

It is important to have a well-planned/scheduling and managed maintenance practice to ensure medical device are reliable, safe, and available all time when it is needed for diagnostic procedures, therapy, treatments, and monitoring of patients. Preventive maintenance schedule includes regular inspection, testing, safety, and calibration for each medical equipment as per the manufacturer's service manual. If the manufacturer's manual is not available, inspection, testing and preventive maintenance should be conducted at a minimum every six months.

Table 26: Percentage of preventive maintenance practice performance indicator reference sheet and criteria.

Definition	Percentage of performed preventive maintenance as per their respective schedule in the given time.	
Formula	Number of medical equipment for which preventive maintenance was performed Total number of medical equipment scheduled for preventive maintenance	x 100%
Interpretation	A facility is said to have good preventive maintenance practice if it scores 80% and above.	
Disaggregation	By Hospital, Health Center	
Aggregation	Number of health facilities with at least 80% preventive maintenance performance Total number of health facilities	*X100 %*
Sources	History file, MEMIS	
Method of data collection	Review of history file and/or MEMIS	

Frequency of Reporting	To the next level quarterly.

Scheduled preventive maintenance practice criteria

S.n	Scheduled Medical devices for maintenance	Caring & Cleaning (C&C)		Safety Procedure in place		Performance test		Calibration testing		Preventive maintenance checks (PMC)		Preventive maintenance done (yes‘1’ or no ‘0’)
		Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	
Total no. of yes(1)												
Expected number scheduled preventive maintenance												
Percentage of performed preventive maintenance = (Total yes/ Expected number of scheduled preventive maintenance) *100												

MDMI 6: Percentage of medical equipment maintenance work order performed.

A medical equipment maintenance work order is a formal document used in healthcare settings to initiate and document maintenance or repair activities for medical equipment. Work orders help healthcare technology management to manage and track the maintenance of their medical devices, ensuring compliance with regulations, minimizing downtime, and promoting the overall safety and reliability of medical devices in healthcare settings.

Creating a medical equipment maintenance work order involves documenting details related to the maintenance task.

Table 27: Percentage of medical equipment maintenance work order performed indicator reference sheet.

Definition	The percentage of medical equipment repaired at health facility from the total maintenance work ordered.	
Formula	Number of medical equipment work order performed in Number of medical equipment requested work order	X100%
Interpretation	A facility should have medical equipment maintenance work order performance of 100%. This indicator measures the health facility’s capacity and responsiveness in repairing medical devices.	
Disaggregation	By Health Center, Hospital	

Aggregation	Total number of medical equipment order performed during the period					X100%
	Total number of medical equipment ordered for maintenance					
Sources	Work order, MEMIS					
Method of data collection	Review of work order and MEMIS					
Frequency of collection / Reporting	HC	Hospital	WoHO	ZHD/ ScHO	RHB	MOH
	Quarterly	Quarterly	Quarterly	Quarterly	Quarterly	Quarterly

MDMI 7: Percentage of Medical Equipment Functionality

Medical devices functionality refers to the ability of medical devices perform their intended tasks effectively, accurately, and safely. Ensuring the functionality of medical devices is indeed a shared responsibility among various stakeholders within healthcare institutions. This collaborative effort involves coordination between different departments, staff members, manufacturers, and regulatory bodies to guarantee the safety, effectiveness, and reliability of medical devices.

Table 28: Percentage of Medical Equipment Functionality performed indicator reference sheet

Definition	Percentage of functional medical equipment from the health facility's updated medical equipment inventory list.	
Formula	Number of functional medical equipment in the health facility	***X 100***
	Number of medical equipment in the facility from updated ME inventory list	
Interpretation	A facility should have medical equipment functionality of 100%. This indicator measures percentage of functional medical equipment in the health facility from update inventory.	
Disaggregation	By hospital, Health Center	
Aggregation	Total number of functional medical equipment reported by all health facilities	X100%
	Total number of medical equipment available in the facilities	
Sources	ME inventory report, history files, and BME unit annual report	
Method of	Document review	

data collection						
Frequency of collection/reporting	HC	Hospital	WoHO	ZHD/ ScHO	RHB	MOH
	Annually	Annually	Annually	Annually	Annually	Annually

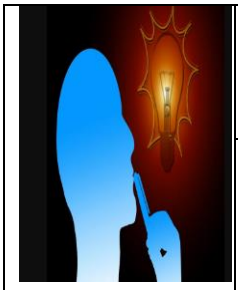
MDMI 8: Availability of medical devices as per the national standard

The availability of medical devices in accordance with national standards contributes to the overall effectiveness and reliability of healthcare systems. Healthcare organizations and regulatory bodies play a key role in monitoring and enforcing compliance with national standards for medical equipment. Regular audits, inspections, and certification processes contribute to maintaining the availability of high-quality and standardized medical equipment across the healthcare system.

Table 29: Availability of medical devices as per the national standard performed indicator reference sheet

Definition	Percentage of medical devices availability as per the national standard at health facilities.	
Formula	The total number of medical equipment available at health facility as per the standard	***X 100***
	Total expected number of medical equipment available at health facility as per standard	
Interpretation	Health facilities that have 80% of the medical equipment according to the national standard for the level are considered as acceptable. This indicator measures medical equipment availability (or absence) over a period and serves as a proxy indicator of the ability of a program to meet clients' needs with a full range of products and services	
Disaggregation	By health center, Hospital	
Aggregation	Number of health facilities that have medical equipment as per the national standard	X100 %
	Total number of health facilities	
Sources	BIN card, inventory record, list of standard medical equipment and MEMIS	
Method of data	Document review, survey, MEMIS	

collection						
Frequency of collection/reporting	HC	Hospital	WoHO	ZHD/ ScHO	RHB	MOH
	Annually	Annually	Annually	Annually	Annually	Annually



Activity 3.3: Individual Exercise on medical device management indicators

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

- Given below are data on medical device management indicators at a few HFs. Using the data given answer all questions under exercise 1 and 2.

Time: 15 minutes

Based on table below, answer the following questions on medical device management indicators:

1. Determine the availability of scheduled preventive maintenance in percentage.
2. Calculate the availability of functional MEMC.
3. How many biomedical professionals are required to meet the work force needed for the above five health facilities?
4. Compute the percentage of biomedical professional positions filled at facility B

Exercise 1 on medical device management indicators

Indicators Descriptions	**Health Facilities**									
	A		B		C		D		E	
Whether the facility has scheduled preventive maintenance?	No		Yes		No		No		Yes	
Whether the facility has functional MEMC?	Yes		No		Yes		No		Yes	
Approved and available biomedical professional positions at health facility	Approved	Available	Approved	Available	Approved	Available	Approved	Available	Approved	Available
	3	0	5	4	4	2	6	1	11	5

Exercise 2 on medical device management indicators

Based on the table below, answer the following questions on ME management indicators:

1. How many medical devices are installed for the facility X?
2. What is the percentage of installed medical device?
3. What is the percentage of functional medical device?
4. Does facility X meet the criteria for scheduled preventive maintenance? Justify it.

No	Type of equipment	Installed & accepted	Functional	PPM schedule
1	ECG	Yes	Yes	No
2	DEFIBRILATOR	Yes	No	No
3	Mechanical ventilator	Yes	Yes	Yes
4	Patient monitor	Yes	Yes	Yes
5	Oxygen concentrator	Yes	Yes	Yes
6	OR Table	Yes	Yes	No
7	Ultrasound	Yes	Yes	Yes
8	Portable x- ray	Yes	Yes	Yes
9	Shaker	Yes	Yes	No
10	Microscope	Yes	Yes	Yes
11	General centrifuge	Yes	Yes	Yes
12	Refrigerator	Yes	Yes	Yes
13	Patient monitor	Yes	Yes	Yes
14	Suction machine	YES	No	No
15	Refrigerator	Yes	Yes	No
16	Patient monitor	Yes	No	No
17	Suction machine	Yes	Yes	No
18	Fetal monitor	Yes	Yes	Yes
19	Rotator/Shaker	Yes	Yes	Yes
20	Refrigerator	Yes	Yes	No
21	Hematology analyzer	Yes	Yes	Yes
22	Oxygen concentrator	Yes	No	No
23	Autoclave	Yes	No	No
24	Suction machine	Yes	No	No
25	Anesthesia machine	No	No	No
26	Infant incubator	No	No	No
27	steam sterilizer	Yes	Yes	Yes
28	Steam sterilizer	No	No	No
29	Electric suction unit	Yes	Yes	Yes
30	Electric suction unit	Yes	Yes	Yes
31	operation light	Yes	Yes	Yes
32	operation light	Yes	No	No
33	Anesthesia	Yes	Yes	Yes
34	Anesthesia	No	No	No
35	Anesthesia	Yes	Yes	Yes
36	patient monitor	Yes	No	No
37	OR table	Yes	Yes	Yes

38	OR table	Yes	Yes	Yes
39	OR table	No	No	No
40	Water distiller	Yes	Yes	Yes
41	Olympus microscope	No	No	No
42	Refrigerator	No	No	No
43	Dry oven	No	No	No
44	chemistry analyzer	No	No	No
45	cell dyne	No	No	No
46	Hematology analyzer	Yes	Yes	Yes
47	Shaker	No	No	No
48	cd4 cell counter	Yes	No	No
49	water distiller	No	No	No
50	Vortex	Yes	No	No
51	Chemistry Analyzer	Yes	Yes	Yes
52	roller mixer	Yes	Yes	No
53	Vortex	Yes	Yes	No
54	Table top centrifuge	Yes	Yes	No
55	Refrigerator	Yes	Yes	No
56	Refrigerator	Yes	No	No
57	Refrigerator	Yes	Yes	No
58	Water bath	Yes	No	No
59	Water distiller	Yes	Yes	No
60	water distiller	Yes	Yes	No
61	Examination Light	Yes	Yes	No
62	Baby CPAP	Yes	Yes	Yes
63	Refrigerator	Yes	Yes	No
64	Examination Light	Yes	Yes	No
65	Patient monitor	Yes	Yes	Yes
66	Mechanical Ventilator	Yes	Yes	Yes
67	Mechanical Ventilator	Yes	Yes	Yes
68	Mechanical Ventilator	Yes	No	No
69	Ultrasound	Yes	Yes	Yes
70	Phototherapy	Yes	No	No
71	Phototherapy	No	No	No
72	Phototherapy	Yes	Yes	Yes
73	Super LED phototherapy	No	No	No
74	Super LED phototherapy	Yes	No	No
75	Phototherapy	Yes	Yes	No
76	Phototherapy	Yes	Yes	No
77	Phototherapy	Yes	Yes	No
78	Infant warmer	Yes	Yes	Yes
79	Radiant warmer	No	No	No
80	Incubator	Yes	No	No
81	Incubator	No	No	No
82	Incubator	Yes	Yes	Yes
83	Incubator	No	No	No

84	Incubator	Yes	No	No
85	Suction machine	Yes	Yes	No
86	Electrical Suction machine	Yes	Yes	Yes
87	Infant radiant warmer	Yes	Yes	Yes
88	Infant radiant warmer	Yes	Yes	Yes
89	patient monitor	No	No	No
90	patient monitor	No	No	No
91	Phototherapy	No	No	No
92	ECG	No	No	No
93	Infant radiant warmer	Yes	Yes	Yes
94	Oxygen concentrator	Yes	Yes	Yes
95	Fetal monitor	Yes	Yes	Yes
96	Patient monitor	Yes	Yes	Yes
97	photo therapy	No	No	No
98	suction machine	Yes	Yes	No
99	suction machine	No	No	No
100	Patient monitor	No	No	No

3.4 Summary

- There are operational standards expected from hospitals and health centers. The EHCRIG outlines 7 standards for health centers and hospitals are expected of 12 standards as indicted by the EHSIG.
- The performances of health centers and hospitals are evaluated by 8 indicators of medical device management.

CHAPTER FOUR

PHARMACEUTICAL AND MEDICAL DEVICES MANAGEMENT CROSS CUTTING INDICATORS

Allocated time: 40 minutes

Chapter description: This chapter describes Pharmaceutical and Medical Devices management cross cutting indicators used to monitor health facility pharmaceutical and medical devices management.

Chapter objective: At the end of this chapter, participants will be able to describe cross cutting indicators used for monitoring pharmaceutical and medical devices management in health facilities.

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

- Discuss cross cutting indicators used for monitoring pharmaceutical and medical devices management

Chapter outline

4.1. Pharmaceutical and Medical Devices management Cross cutting indicators

4.2.Chapter summary:

4.1. Pharmaceutical and medical devices management cross-cutting indicators

CCI 1. Number of Review Meetings conducted

Number of review meeting conducted measures the presence of coordination, leadership, and commitment. Resilient pharmaceutical and medical device management systems require the involvement of stakeholders that are involved in all aspects of the system strengthening efforts. It is to be noted that these review meetings should participate all stakeholders to align plans and monitor progress in a timely fashion. Hence, review meetings at respective administrative bodies can play an important technical and political role by coordinating the different actors working in the pharmaceutical and medical device sector.

Table 30: Number of review meetings conducted performance indicator reference sheet

Definition	The number of pharmaceutical and medical device management related review meetings conducted within a year per administrative levels			
Formula	Number of review meetings conducted on pharmaceutical and medical devices management			
Interpretation	Review meeting is expected to be conducted at least annually at each administrative level.			
Disaggregation	By RHBs			
Sources	Reports of review meetings			
Frequency of reporting	ZHD	RHB	MOH	Agencies
	Annually	Annually	Annually	Annually

CCI 2. Coverage of supportive supervision

This indicator measures the percentage of health facilities that received technical and administrative support on their pharmacy service, pharmaceutical supply chain and medical device management. The supervision should be conducted using standard checklist which is approved by RHB/FMOH.

Table 31: Coverage of supportive supervision performance indicator reference sheet

Definition	The percentage of health facilities that received supportive supervision on their pharmaceutical and medical device management activities by immediate administrative units using standard checklist within the specified time-period.			
Formula	$\text{Percentage of health facilities that received supportive supervision} = \frac{\textit{Number of health facilities supervised}}{\textit{Total number health facilities under immediate administrative level}}$ x 100			
Interpretation	The higher the percentage of health facility that received supportive supervision the more maintaining a motivated and effective health workforce			
Disaggregation	By RHB			
Sources	Completed checklist, copy of written feedback provided			
Method of data collection	Survey and supportive supervision (Document review)			
Frequency of collection/ Reporting	WoHO	ZHD	RHB	MOH
	Quarterly	Quarterly	Bi-annually	Annually

CC3. Percentage of pharmacy workforce positions filled at health facilities

This indicator measures the number of pharmacy staff deployed at health facilities as per the structure/determined by workload analysis. The measurement of this indicator shows the pharmacy staff gap and help to fulfill the pharmacy department through recruitment.

Table 32: Percentage of pharmacy workforce positions filled at health facilities performance indicator reference sheet

Definition	The percentage of pharmacy workforce positions filled at health facilities					
Formula	$\text{Percentage of pharmacy workforce positions filled at health facilities} = \frac{\text{Number of pharmacy workforce at health facility}}{\text{Number of allowed pharmacy workforce positions}}$ x 100%					
Interpretation	100% indicates pharmacy workforce of health facility is fulfilled per the allowed position/determined work load analysis					
Disaggregation	By type of health facility, type of professionals (pharmacy professional and other pharmacy workforce)					
Aggregation	$\text{Percentage of pharmacy workforce positions filled at health facilities} = \frac{\text{Sum of number pharmacy workforce at health facilities}}{\text{Sum of allowed position for pharmacy workforceprofessional}}$ X100					
Sources	HR records					
Method of data collection	Document review and routine report					
Frequency of Reporting	HC	Hospital	WoHO	ZHD	RHB	MOH
	Annually	Annually	Annually	Annually	Annually	Annually

CCI4- Percentage of Biomedical professional positions filled at health facilities

This indicator measures the number of biomedical engineers and technicians deployed as per the approved workforce position for the health facilities. The successful filling of biomedical professional positions is essential for maintaining the functionality, safety, and reliability of medical equipment within health facilities.

Table 33: Percentage of Biomedical professional positions filled at health facilities performance indicator reference sheet

Definition	The percentage of Biomedical professional workforce positions filled by health facilities				
Formula	$\text{Percentage of biomedical professional positions filled at health facility} = \frac{\text{Number of biomedical professional at health facilities}}{\text{Number of allowed position for biomedical professional}}$ X100				
Interpretation	100% indicates health facility is fulfilled with allowed number of biomedical engineer and technician load analysis				
Disaggregation	By type of health facility, type of professionals (biomedical engineer and technician)				
Aggregation	$\text{Percentage of biomedical professional positions filled at health facilities} = \frac{\text{Sum of number of biomedical professional at health facilities}}{\text{Sum of allowed position for biomedical professional}}$ X100				
Sources	HR records				
Method of data collection	Document review and routine report				
Frequency of collection/Reporting	Hospital	WoHO	ZHD	RHB/City	MOH
	Annually	Annually	Annually	Annually	Annually

4.3. Chapter Summary

- There are four cross cutting indicators that measure coordination, leadership, and commitment of immediate administrative units of health facilities.

CHAPTER FIVE

DATA MANAGEMENT

Allocated time: 95 minutes

Chapter description: This chapter describes about data management cycle, principles and data quality dimensions and their impact on decision making in monitoring and evaluation of pharmaceutical and medical devices management performance.

Chapter objectives: At the end of this chapter, participants will able to identify the data management cycle, principles and data quality dimension and their impacts.

Enabling objectives: At the end of this chapter participants would be able to: -

- Describe data management cycle
- Explain data management principles
- Describe data quality and its impact on decision making

Chapter outline

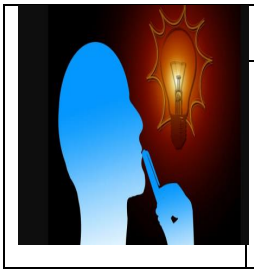
5.1.Data Management Cycle

5.2.Data management principles

5.3.Data quality dimensions and its impact on decision making

5.4.Chapter summary

5.1. Data Management Cycle



Activity 5.1: Individual reflection

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

- What is data and data management?

Time: **5 minutes**

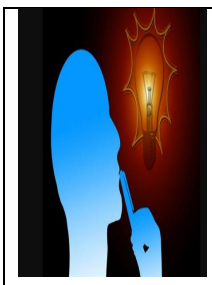
Data is a value, or set of values, representing a specific concept. It represents real world objects, in a format that can be collected, stored, elaborated, retrieved, and exchanged in information systems. Data become information when **analyzed** and combined with other data in order to extract meaning and to provide context.

Data management is the process of collecting, storing, organizing, and analyzing data efficiently and securely. With the massive amount of data generated and collected in health sector, effective data management has become crucial for organizations to make informed decisions, improve operations, meet regulatory requirements, and gain a competitive edge.

Data recording, documentation and collection are the key components identified as part of an M&E strategy to measure and evaluate PMD management through developed indicators. M&E data can be collected through different approaches such as: -

- Supportive supervision
- Routine and periodic reports
- Survey and periodic assessments

Data that can be retrieved from the above activities include; availability of medical device and essential medicines, stock-out duration, wastage rate, reporting rates, staffing, functionality of HTMC, DTC, APTS, DIS and others. Some indicators collected and used by each level without reporting to the next level while the others are reported to the next level.



Activity 5.2: Individual Reading

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

- Read steps in data management cycle

Time: **10 minutes**

The data management cycle is a process that involves the collection, description, storage, analysis, and use of data. The cycle can be split into steps or phases: generation or recording, collection, processing, storage, analysis and interpretation.

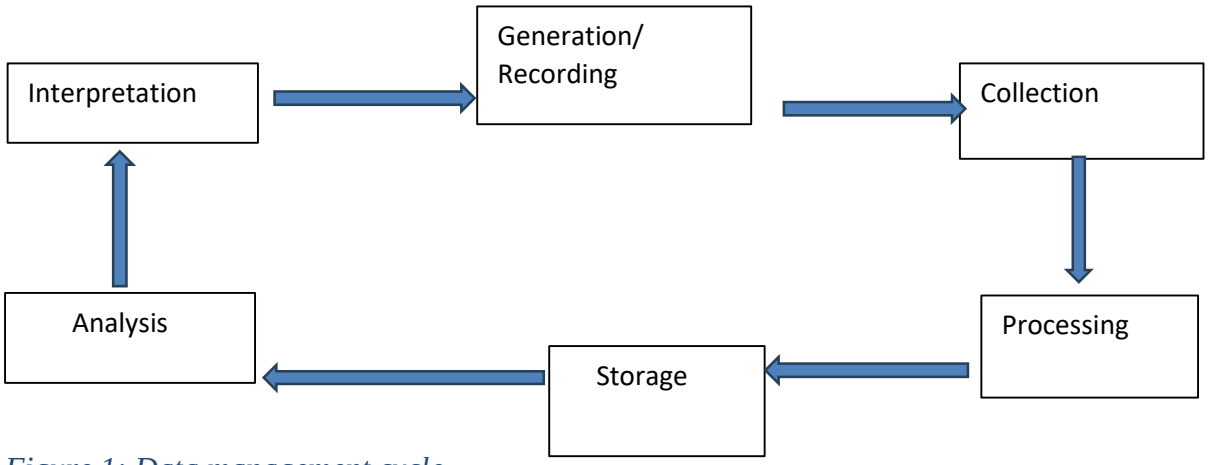


Figure 1: Data management cycle

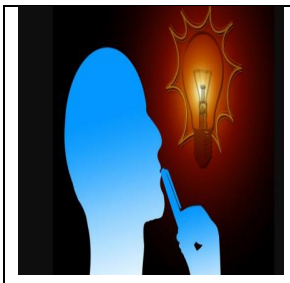
1. **Recording**

Data recording is the process of generating, creating or producing new data. For the data life cycle to begin, data must first be recorded or generated. It can be generated from real world phenomena, surveys, experiments or simulations.

There are registers, logbooks, tally sheets and forms which are used as data sources in PMD management M&E reporting.

Dispensing Registration Book

Is a serially register kept at pharmacy dispensaries and used to track both patient and product information in handling data elements reportable in PMD management M&E report as well as DHIS2.



Activity 5:3. Individual Work

Instruction: Work it individually.

- Using Prescriptions provide on the **annexes** record the prescription papers on **Dispensing Registration Book (use the format on the PM)**
- Talley on **Tracer drug availability tally sheet** provided on the PM.

Assume that all prescribed drugs were from the FSML.

Time: 10 minutes

Health Facility Dispensing Registration Book

Region _____ Woreda _____ Name of Health Facility _____

S.N	MRN	Patient Name	Age	Sex	Diagnosis (NCoD)	Drugs Prescribed	All dispensed (1,0)	Antibiotics (1,0)	Total Prescribed	# on FSML*	Remark
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)

Count					

FMOH V2 2013

FSML*: Facility specific medicine list.

The following reportable data elements are generated from this register

- Total number of encounter and total number of clients with prescription
- Total number of medicines prescribed
- Total number of medicines prescribed from Health facility medicine list
- Total number of clients who received all prescribed drug
- Total number of encounters with one or more antibiotics

Tracer Drugs Availability Tally Sheet

This tally sheet has to be filled daily with 1 or 0 when the drug is available or not on that date respectively. At the end of the month, on the overall column, 1 will be filled to say the product was available in all 30 days of the month while 0 will be filled when the drug was not available even on a single day a month.

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MINISTRY OF HEALTH - ETHIOPIA

Tracer drug availability tally sheet

Woreda ——— Facility Name ——— Year ——— Month ——— Period: ——/—— to ——/——

S/No	Tracer drug list	21	22	23	24	25	26	27	28	29	30	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Overall* (1,0)
1	Medroxyprogesterone Injection																															
2	Pentavalent vaccine																															
3	Magnesium Sulphate injection																															
4	Oxytocine inj																															
5	Gentamycin injection																															
6	ORS+/- Zinc sulphate																															
7	Amoxicillin dispersable/suspension/capsule																															
8	Iron + folic acid																															
9	Albendazole/Mebendazole tablet/suspension																															
10	TTC eye ointment																															
11	RHZE/RH																															
12	TDF/3TC/DTG																															
13	Co-trimoxazole 240mg/5ml suspension																															
14	Arthmeter + Lumfanthrine tablet																															
15	Amlodipine tablet																															
16	Frusamide tablets																															
17	Metformin tablet																															
18	Normal Saline 0.9%																															
19	40% glucose																															
20	Adrenaline injection																															
21	Tetanus Anti Toxin (TAT) injection																															
22	Omeprazole capsule																															
23	Metronidazole capsule																															
24	Ciprofloxacillin tablet																															
25	Hydralizine injection																															

Note: Tick on each day, if the drug is available on the working day or leave it as blank if the drug is not available. Enter 1 in "overall" column if the drug is available on working days and zero if it is out of stock for one or more working days in that reporting period. If the facility doesn't give service on holidays and weekends, enter "NA" in the specifc dates and exclude the dates from the list of stock out dates.

Reportable data element generated from tally sheet is Essential drug availability.

Medicines Waste Registration Book

Medicines which are unfit for use or wasted should be handled safely and registered on medicine waste registration book.

No.	Description of Medicines Wastes (generic & brand name, strength and dosage form)	Unit Type and Size	Quantity	Batch Number	Expiry Date	Reason for Disposal (expired, damaged, spilled, etc)	Manufacturer/ Supplier	Store Location	Purchase Value
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									

From this registration book, the quantity and cost of drugs wasted in the reporting period can be generated as an important data element. It is mainly used as a data source in calculating Medicines Wastage rate.

Medical Devices Inventory Form

A medical device inventory is a detailed record of all medical equipment and devices within a healthcare facility. It includes information about the type of equipment, its location, status, maintenance history, and other relevant details. Managing a comprehensive and accurate medical device inventory is crucial for ensuring patient safety, regulatory compliance and efficient healthcare operations.

Inventory Number	Equipment Type	Equipment Name	Department	Location	Installation Date	Warranty Expire Date	Country of Origin	Manufacturer	Model	Serial Number	Power Requirement	Manufactured Year	Acquisition Type	Years Used	Supplier	Purchased Year	Cost	Estimated Life Span (Years)	Equipment Risk Classification	Status

Some of the data elements generated from MD inventory form are:

- Implementation of Medical Equipment Management Information System
- Percentage of medical equipment installation and commissioning
- Percentage of Medical Equipment Functionality status
- Availability of medical equipment as per the national standard

2. **Collection**

Not all of the data that's generated every day is collected or used. It's is important to identify what information should be captured and the best means for doing so, and what data is unnecessary or irrelevant.

You can collect data in a variety of ways, including:

- Document review
- Surveys
- Interviews
- Direct Observation

3. Processing

Once data has been collected, it must be processed. Data processing can refer to various

activities, including:

- Cleaning and transforming from its raw form into something more accessible and usable.
- Transforming into a format that can be more efficiently stored.

Taking a printed form and digitizing it can be considered a form of data processing.

4. **Storage**

After data has been collected and processed, it must be stored for future use. This is most commonly achieved through the creation of databases or datasets.

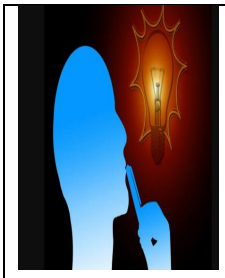
5. **Analysis**

Data analysis refers to processes that attempt to obtain meaningful insights from raw data.

6. **Interpretation**

Finally, the interpretation phase of the data life cycle provides the opportunity to make sense of your analysis and visualization.

5.2. Data management Principles



Activity 5.4: Individual Reflection

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

- What are the most widely known data management principles?

Time: **5 minutes**

Principles of data management refer to the fundamental guidelines and best practices for effectively managing data throughout its lifecycle. These principles help ensure the accuracy, integrity, accessibility, and security of data, as well as facilitate efficient data handling and usage. Data management principles ensure that data are treated as a valued resource.

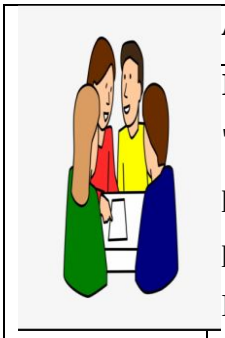
The most widely known data management principles are:

- **Ensure data accessibility:** timely access to accurate data is essential to improve the quality and efficiency of organizational decision-making.
- **Clearly defined data management plan**: Data management plan describes the generalized outputs or data uses and how the documentation associated with the entire system is managed.
- **Implementation of data lifecycle control:** From the time data is collected or acquired until reporting and even beyond we need to have a clear understanding of how the data is being managed in order to maintain the data quality and usefulness. Assuring the implementation of data lifecycle allows us to store, validate, and manage the appropriate data

and also gives us guidance on when to archive or delete data.

- **Identification of data ownership and stewardship**: Identifying data owners and data stewards allows us to ensure that the right people are assigned to the right roles within our data management system. Integrating data management team with subject matter experts is essential to ensure that data integrity and quality is maintained while also making smart decisions about what information needs to be captured.
- **Ensuring data security**: It is important to ensure appropriate and standard security protocols are in place for all systems, including our data management.
- **Maximizing data usefulness:** It is essential to take time to collect data properly the first time to avoid re-collecting data and re-processing.
- **Establishing data quality standards**: The creation, maintenance and development of quality data require a clear and well-specified management system. It is vital to establish the level of data quality required for various decision-making scenarios.
- **Ensuring proper documentation and tracking of data:** Without the ability to review and examine how data has been collected, verified, reported, and analyzed, we cannot effectively troubleshoot areas of concern.

5.3. Data quality dimensions and its impact on decision making



Activity 5.5: Group Discussion: Case Scenario

Instruction: Make a group of four and discuss on the following scenarios.

"In a health facility, the medical equipment inventory management system is plagued by data quality issues, impacting the accuracy of records and causing potential risks to patient care.

How would you suggest implementing measures to enhance data quality, reduce errors, and ensure the reliability of information within the medical equipment inventory system?" **Time: 15 minutes**

Data quality dimensions are used to assess the overall quality and reliability of data. These dimensions help identify potential flaws or issues with the data, which can have a significant impact on decision making in organizations.

Data quality

Data quality refers to the reliability, accuracy, and completeness of data. It is the measure of the fitness of data for its intended use in a specific context. High-quality data is error-free, consistent, timely, relevant, and properly formatted. Poor data quality can lead to incorrect analysis, ineffective decision-making, and inefficiencies. Various factors contribute to data

quality, such as data accuracy, data completeness, data consistency, data integrity, and data validity.

If data are relevant to their intended uses and are of sufficient detail and quantity, with a high degree of accuracy and completeness, consistent with other sources, presented in appropriate ways, and relevant for operations, decision making and planning, it is called quality data.

When working with data in each stage of process, attention should be paid to the quality of the data. If the data is not of good quality, then the information that it provides will also not be of good quality as many people like to say, **"Garbage in – garbage out."** Therefore, the data validation, editing, and transformation should be conducted according to written procedures and monitored through regular quality control checks during the data processing steps.

Data quality dimensions

Data quality is a multidimensional complex concept resulting from the composition of various characteristics or dimensions. The widely applied data quality dimensions are accuracy, precision, reliability, completeness, timeliness, integrity, consistency and confidentiality. The data quality dimensions are not independent and need to establish trade-offs in their utilization or preference for use. Data quality explains that each of these components needs to be met in order for data to be quality. The data quality dimensions are explained in the table below.

	**Activity 5.6: Group discussion**
	Instruction: Make a group of four and read the data quality dimensions and discuss it within your group. Time: **10 minutes**

Table 34: Data Quality Dimensions and their descriptions

Dimensions of data quality	**Description**
Accuracy	Accurate data are considered correct: the data measure what they are intended to measure as well as provide required sufficient detail. Accurate data minimize errors (e.g., recording or interviewer bias, transcription error, sampling error) to a point of being negligible.

Validity	It implies precise and exact results acquired from the indicators data collected. In technical terms, a measure can lead to proper and correct conclusions to be drawn from the samples that are generalizable to the entire population. Indicators are valid to the extent that they clearly and directly measure the result they are intended to measure. It is very easy to assume that the data tool is valid. However, this must be verified through scientific processes.
Reliability	The data generated by a program's information system are based on protocols and procedures that do not change according to who is using them and when or how often they are used. The data are reliable because they are measured and collected consistently using appropriate tools. The data actually exists and can be verified.
Precision	This means that the data have sufficient detail. For example, an indicator requires the number of individuals who received HIV counselling & testing and received their test results, by sex of the individual. An information system lacks precision if it is not designed to record the sex of the individual who received counselling and testing.
Completeness	Completeness means that an information system from which the results are derive inappropriately inclusive: it represents the complete list of eligible persons or unit sand not just a fraction of the list. All data items required are available (i.e. no missing field).
Timeliness	Data are timely when they are up-to-date(current), and when the information is available on time. Timeliness is affected by:(1) the rate at which the program's information system is updated ;(2) the rate of change of actual program activities; and (3) when the information is actually used or required.
Integrity	Data have integrity when the system used to generate them is protected from deliberate bias or manipulation for political or personal reasons.
Homogeneity and consistency	Homogeneity is that information collected by a service provider would not have been different if collected by someone else (develop SOPs and train). Internal consistency is data recorded in any part of the tool does not contradict data reported in other parts, e.g. closing balance of a previous month should be consistent with the opening balance of the next month. Database consistency is data entered into a database (if available) is the same with the data recorded in the data collection instrument.
Confidentiality	Confidentiality means that clients are assured that their data will be maintained according to national and/or international standards for data. This means that personal data are not disclosed inappropriately, and that detain hard copy and electronic form are treated with appropriate levels of security (e.g. Kept in locked cabinets and in password protected files).

Possible causes of poor data quality at various levels

The most commonly observed source of data quality problem in health supply chain, pharmacy service and medical device management include:

- Arithmetic error
- Lack of adherence to the reporting period
- Untimeliness/delay of reporting
- Incompleteness (missing line items or certain data or incomplete report)
- Inconsistent reporting
- Lack of attention for unit of measurement
- Reporting of false/incorrect figures- data manipulation
- Data entry on wrong line items on the format
- System related problems

Impact of data quality on decision making

Data quality is the responsibility of all staff. For quality data to be produced by and flow through a data management system, key functional components need to be in place at all levels of the system - the points of service delivery, the intermediate level(s) where the data are aggregated (e.g. districts, regions) and the M&E unit.

Impacts/consequences of poor data quality

The consequences/impacts of poor data quality are often experienced in everyday life. Poor data quality has serious consequences which have far-reaching significance, in affecting the efficiency and effectiveness of organizations. Some of the consequences/impacts of poor data quality in Ethiopian PS, SC and ME management are:

- **Increased Costs:**
    - Frequent/repeated delivery of products to health facilities- example increased emergency order
    - Wastage of pharmaceuticals and medical device (example through expiry, damage, etc)
    - Over or under procurement of pharmaceuticals and medical device
    - Increased workloads, detection and correction, increased process times, and rework etc.
- **Decreased confidence:**
    - Lack of trust or reputation in the health system
    - Client dissatisfaction
    - Lack of transparency and accountability
    - Organizational trust issues, impaired decision method, impaired forecasting, inconsistent management reporting

- **Increased Risk:**
    - Long stay at health facility, disability, death, etc
- **Missed opportunities:**
    - Wrong decision making,
    - loss of reputation,
    - substandard customer service
    - Lack of delivery of products to health facilities

Therefore, it is important to understand that poor data quality has a substantial impact on the safety of service users or the clients.

On the other hand, reliable and accurate public health information is essential for monitoring health services and for evaluating and improving the delivery of health-care services and programs. Some of the impacts/consequences of good data quality in Ethiopian PS, SC and ME management are:

- **Appropriate decision:** The better the data quality, the more confidence users will have in the outputs they produce, lowering risk in the outcomes and increasing efficiency.
- **Maximize Productivity:** Good-quality data allows staff to be more productive. Instead of spending time validating and fixing data errors, they can focus on their core mission.
- **Quality service provision:** Better data enables more accurate targeting and communications, especially in the good service provision and quality care

Activity 5.7. Case study

Instruction: Make a group of four and review the reports generated from DHIS2.

Discuss on quality of data, possible causes for poor data quality, and solution using the following data (case 1/Case 2).

Time: **20 minutes**

Case 1: Wastage rate and supplier fill rate reported by health facilities via DHIS2.

	Percentage of Stock Wasted due to Expiration or Damage in monetary value				**Supplier fill rate (in percent)**			
Health facility	**01/02-30/04/2015**	**01/05-30/07/2015**	**01/08-30/10/2015**	**01/11-30/01/2016**	**01/02-30/04/2015**	**01/05-30/07/2015**	**01/08-30/10/2015**	**01/11-30/01/2016**
1					200			

2		58.6	98.1				100	
3							125	92.3
4			100				200	
5							100	
6	2.3							
7								200
8				100				5000
9		100			100	100	100	100
10	100				100			
11						100	100	
12							76.1	
13							100	
14					106.7			

Case 2: Functionality of medical equipment

Health facilities	Functionality of medical equipment (%) Hamle 2014 to Sene 2015	Health facilities	Functionality of medical equipment (%) Hamle 2014 to Sene 2015
1	**66**	32	**2900**
2	**76**	33	**79.6**
3	**88.9**	34	**93.5**
4	**100**	35	**1533.3**
5	**100**	36	**1875**
6	**95.3**	37	**93.7**
7	**503.6**	38	**85.3**
8	**95.9**	39	**100**
9	**90.9**	40	**80**
10	**95**	41	**97.5**
11	**95**	42	**94**
12	**94.1**	43	**90.4**
13	**91.6**	44	**8250**
14	**91.3**	45	**100**
15	**100**	46	**96.6**
16	**81.7**	47	**88.6**
17	**91.3**	48	**94.9**
18	**79.7**	49	**71.4**
19	**45**	50	**68**
20	**96.6**	51	**85**
21	**91.4**	52	**84.5**
22	**79.8**	53	**92**
23	**95.8**	54	**97.5**
24	**100**	55	**92.6**
25	**43.2**	56	**89.3**
26	**106.7**	57	**284.6**
27	**95.8**	58	**94.4**
28	**100**	59	**91.9**
29	**91.8**	60	**92.8**

30	**94.4**	61	**88.8**
31	**77.9**		

5.4. Chapter summary

- Data is a value, or set of values, representing a specific concept. Data management principles ensure that data are treated as a valued resource.
- The data management cycle is a process that involves the collection, description, storage, analysis, and use of data
- Data quality dimensions are accuracy, precision, reliability, completeness, timeliness, integrity, consistency and confidentiality.

CHAPTER SIX

REPORTING, PERFORMANCE MONITORING AND FEEDBACK

Allocated time: 150 minutes

Chapter description: This chapter describes PMD M&E report flows and schedules, reporting tools, and performance monitoring. It also explains feedback mechanisms and motivation.

Chapter objectives: At the end of this chapter, participants will be able to describe PMD M&E performance reporting tools, monitor performance and feedback mechanisms.

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

- Explain flow of M&E reports and schedule for different administrative level
- Explain PMD M&E reporting and reporting tools
- Describe performance monitoring
- Explain different feedback mechanisms
- Discuss motivating factors for enhanced performance

Chapter outline

6.1.PMD M&E reports flows and schedule

6.2.PMD M&E Reporting tools

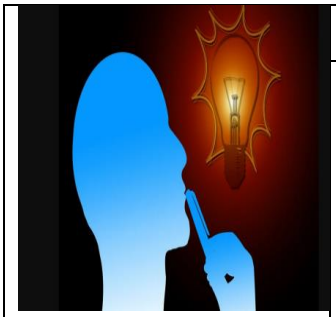
6.3.Performance monitoring

6.4.Feedback mechanisms

6.5.Motivation

6.6.Chapter summary

6.1. PMD M&E reports, flows and Schedule



Activity 6.1. Individual reflection

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

- Please share your experience about how often you report PMD M & E and whom to report.

Time: **10 minutes**

A report is a formal document that is structured and presented in an organized manner, with the aim of conveying information, analyzing data, and providing recommendations. The process begins with the identification of the objectives and indicators to be measured,

followed by the collection and analysis of data through various methods such as surveys, interviews, and observations. Once the data is gathered, it is then organized and presented in a clear and concise manner, highlighting key findings, trends, and recommendations. These reports are then shared with relevant stakeholders, such as health facilities, program managers, funders and policymakers, who use the information to make informed decisions and improvements to the program or project being evaluated.

PMD Monitoring and evaluation (M&E) reports play a crucial role in the effective utilization of resources and the achievement of desired outcomes. These reports provide organizations and decision-makers with valuable insights into the progress, effectiveness, and impact of programs, projects or policies. By analyzing key performance indicators, success and implementation challenges, M&E reports inform evidence-based decision-making, identify areas for improvement, and guide future planning and resource allocation. Additionally, these reports enhance transparency and accountability, as they provide a comprehensive overview of the initiatives' strengths and weaknesses. Ultimately, the utilization of M&E reports strengthens the effectiveness, efficiency, and sustainability of interventions, leading to improved results and positive change in targeted communities or sectors.

Flow of Report

Monitoring and evaluation reports follow a structured flow to ensure comprehensive analysis and presentation of the data and findings. The flow of monitoring and evaluation reports ensures that the process is systematic, transparent and contributes to evidence-based decision-making. Data elements that are selected for reporting from one level to the next follow the existing hierarchy of report flow in the health system. Report flow from the lowest to the highest levels of the health system and feedback should be bi-directional as depicted in figure 2 below.

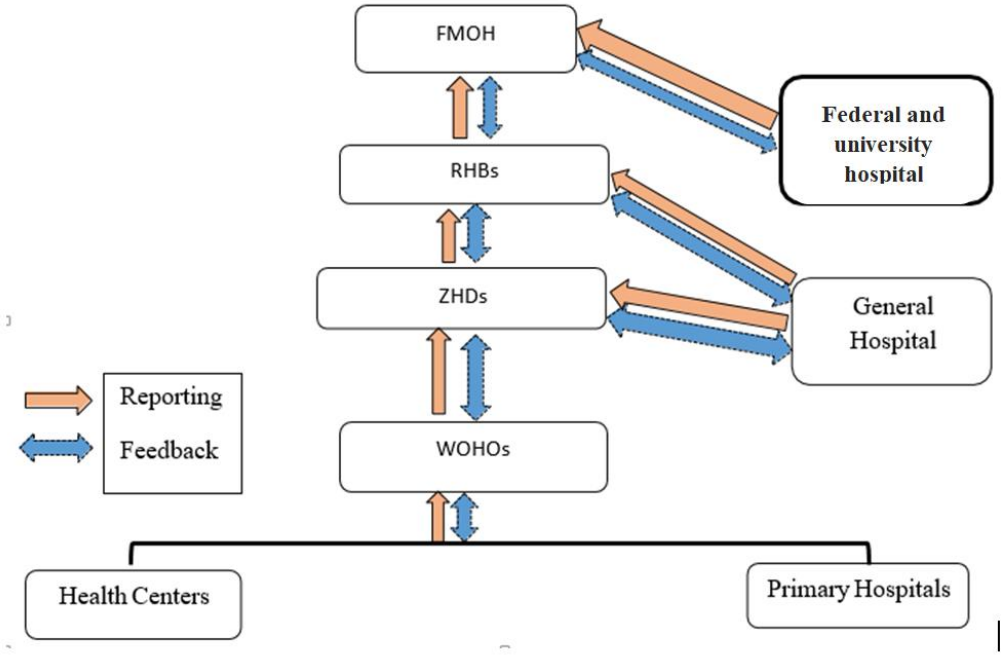


Figure 2: Pharmaceutical Supply Chain, Pharmacy Service and Medical device Management M&E Indicators Report Flows

Each level prepares the report sends to next level. All the reports will be submitted as per the schedule in the PMD management M&E framework. A reporting timeline, which is in line with the DHIS2 reporting schedule, is set for each level.

Accordingly, a Monthly report of a health facility is compiled from the 21st of the previous month up to the 20th of the reporting month and submitted to the next level the latest by the 26th of the reporting month.

Example: For Tikimt 2011 E.C monthly report, the data should be collected from Meskerem 21 up to Tikimt 20, 2011. The reporting channel and period of public health facilities and administrative health units will follow the following schedule, as depicted in the table 7 below.

Table 35: Reporting hierarchy, frequency and schedule of public health facilities and administrative health units

Unit	Reports to	Timeline	Latest date report should be submitted*	Type of reporting form
Health Centre	WoHO	Quarterly	26th day of the last month of the quarter	Reporting form for health centers
Hospital	ZHD/RHB	Quarterly	26th day of the last month of the quarter	Reporting form for hospitals

WoHO	ZHD	Quarterly	2nd day of the 1st month of the next quarter	Reporting form for Woreda Health Offices
ZHD	RHB	Quarterly	7th day of the 1st month of the next quarter	Reporting form for Zonal Health Departments
RHB	MOH	Quarterly	15th day of the 1st month of the next quarter	Reporting form for RHBs

Quarterly reports consist of data for three months according to the Ethiopian fiscal year. It should follow the following periods:

- Quarter 1: Sene 21-Meskerem 20
- Quarter 2: Meskerem 21- Tahsas 20
- Quarter 3: Tahsas 21- Megabit 20
- Quarter 4: Megabit 21- Sene 20

Annual reports contain data for a one-year period from Sene 21 of the previous fiscal year to Sene 20 of the current fiscal year.

Example:

For the 1st quarter of the Ethiopian Calendar, health facilities should submit their quarterly reports of the first quarter the latest by Meskerem 26; WoHO will aggregate the reports and submit to ZHD until Tikimt 2; ZHD will submit their report to RHBs until Tikimt 7; and RHBs should submit their quarter report to the FMOH by the 15th of Tikimt.

6.2. PMD M&E reporting tool

Activity 6.2: Think Pair Share

Instruction: Be in pair and discuss. Share your ideas on PMD M&E reporting tool.
Time: **5 minutes**

PMD M&E reporting tool is an excel based, semi-automated, dash board which helps health facilities to generate reports and ready for analysis and to make informed decisions. As shown below, the main content of PMD P&M reporting tool are:

- Major indicators are shaded with color and boldly written
- Under each and every indicator there are activities or verification criteria listed
- Collected data will be filled in front of each activity or verification criteria under a specified month or quarter.
- Only data entry places are open and free to write on it. After data entry aggregation and indicator calculation will be done by the system itself.

	A. enter number (for quantitative values) **B. if yes= 1; If no=0 (for yes or no for qualitative data)** **C. if not applicable =NA**								
	Monthly Reports	**QUARTER 1**				**QUARTER 2**			
1	**SC2. Essential Medicine availability**	**Ham**	**Neh**	**Mes**	**Q1**	**Tik**	**Hid**	**Tah**	**Q2**
1.1	Number of tracer drugs available througthout the month				**0**				
1.2	Total number of tracer drugs(25)	**25**	**25**	**25**	**75**	**25**	**25**	**25**	**75**
	% of essential drug availability	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**
2	**PS7. Percentage of encounters with antibiotic/s prescribed**	**Ham**	**Neh**	**Mes**	**Q1**	**Tik**	**Hid**	**Tah**	**Q2-**
2.1	Total number of encounters with one or more antibiotics				**0**				**0**
2.2	Total number of encounters								
	Percentage of encounters with antibiotic/s prescribed	**#####**	**####**	**####**	**###**	**###**	**###**	**####**	**###**
3	**PS8. Percentage of clients With 100% prescribed drugs filled**	**Ham**	**Neh**	**Mes**	**Q1**	**Tik**	**Hid**	**Tah**	**Q2**
3.1	Number of clients who received all prescribed drugs **(B)**				**0**				**0**
3.2	Total number of clients who received prescriptions and then served by **(OPD. EOPD, IPD, ART etc)** pharmacies in this reporting period **(P)**								**0**
	Percentage of clients With 100% Prescribed Drugs Filled	**#####**	**####**	**####**	**###**	**###**	**###**	**####**	**###**

6.3. Performance monitoring

Activity 6.3: Think Pair Share

Instruction: Be in pair and discuss on the meaning of Performance and Performance monitoring

Time: **10 minutes**

Performance is achievement of the organization in relation with its set objectives. It includes outcomes achieved through contribution of individuals or teams to the organization's strategic goals. **Performance monitoring** is a continuing function that aims primarily to provide the management and main stakeholders of an ongoing intervention with early indications of progress. Performance reviews will be conducted to monitor performance towards attainment of targets. It can be presented through indicators that have been selected to evaluate the outcome, output and input level.

Performance of each activity has to be monitored to check if it is aligned with the set goals using different methods.

Performance monitoring can be conducted through self-assessment, survey, participatory review meetings, supportive supervision, and dissemination of the information to stakeholders.

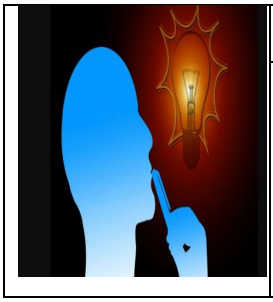
Indicator analysis and interpretation should follow basic analytical procedure for understanding the health facilities' performance by:

- Comparison of performance with the targets/performance objectives
- Comparison with previous performance over time (time trends)
- Comparison with other similar health facilities
- Comparison with national or international standards
- Disaggregating performance by different levels

The results of PMD management M&E activities can be presented in the performance review meetings organized either at facility level or at higher level such as Woreda, Zonal, Regional, or Federal level. The overall objective of the performance review meetings is to assure result-based monitoring and evidence-based decision making to improve system performance in-line with the objectives set in the annual plan and set standards.

The pharmacy and medical device management department, together with performance monitoring team/ quality team should analyzed the performance and develop action plan for indicators with lower/below the set plan or standard to improve performance.

6.4. Feedback mechanisms



Activity 6.4: Individual reflection

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

- Mention the feedback mechanisms that you know.

Time: **20 minutes**

A feedback mechanism is a process that uses the conditions of one component to regulate the function of the other. It is part of a cause-and-effect loop where information about a system is returned to the controller of the system to improve its performance. When the process tends to increase the change in the system, the mechanism is known as positive feedback. On the other hand, negative feedback refers when the process seeks to counter the change and maintain equilibrium. The positive and negative naming of the mechanisms do not indicate whether the feedback is good or bad.

Developing feedback is one of the major parts of systems improvement**.** During developing feedback: -

- Develop a consolidated summary of key points and observations.
- Develop action points for improvement as per the expectation and objectives set for further action.

- Outline feedback for health supply chain management, pharmacy service and medical device system strengthening.

Presenting feedback is as equally important as selecting effective feedback. Here are the key guidelines for presenting feedback: -

- Observe all courtesies, greetings, protocols that are presumed to be in the local culture.
- Mention at least as many good things among your observations as you do problems.
- Pick a limited number of key feedbacks rather than list of points.
- The feedback themselves can usually be expressed in one sentence. The impact of the feedback is always appropriate to mention.
- Do not make the error of giving the decision-makers information that they first gave you. You need to go beyond that information and make some solid feedback with a brief rational for each.
- Briefly mention how you gathered the information, e.g., sites you visited, interviews you did, documents you reviewed.
- Offer your thanks for the support and cooperation you received from various parties.
- Summarize with the action plan at the end.
- Recap the feedback.

Feedback reports can help managers to make operational decisions, monitor the performance of the system, and manage the system overall. These reports are sent to all levels of the supply chain down to the facility level; at the central level, they can be shared with program managers or donors, if the program is externally funded. So, feedback can and should, be given up, down, and sideways

Effective feedback

The purpose of giving feedback is to improve the situation or the person's performance. It is not accomplished by being harsh, critical or offensive. Hence effective feedback should follow the following principles.

Timely: The closer to the event you address the issue, the better. If the situation involved is highly emotional, wait until everyone has calmed down before you engage in feedback.

Regular: Feedback is a process that requires constant attention. It's not a once-a-year or a once-every-three- month event. When you make a conscious choice to give and receive feedback on a regular basis you demonstrate that it is a powerful means of personal development and positive change.

Prepare specific comments: Clear points should be prepared and discussed rather than reading a handful of documents. It needs to be clear about what are going to be said and improved. Always discuss the direct impact of the behavior and don't get personal or seek to blame.

Criticize in private: While public recognition is appreciated, public scrutiny is not. Establish a safe place to talk where you won't be interrupted or overheard.

Talk about positives too: To get much more from people, approach is positively and focused on improvement. That's not to say feedback always has to be good, but it should be fair and balanced. A good rule is to start off with something positive. This helps put the person at ease. It will also allow helps to "see" what success looks like and what steps needs to take next time to get it right. Try to end on a high note, too.

Many people tend to overdo this and end up sandwiching the constructive feedback between too many positives. It may cover the main take away message and affects the end result.

Follow Up: The whole purpose of feedback is to improve performance. It needs to be measured whether or not that is happening and then make adjustments as you go. Be sure to document all the conversations and discuss what is working and what needs to be modified.

After routine supportive supervision, the mentor or supervisor should give relevant feedback that help to improve the underperformance and keep best performance. The feedback should be based on the findings and not extend outside those findings.

Generally, use the reports to identify areas for action. The reports can be used as an input for subsequent supportive supervision /mentorship visits.

By providing effective feedback, health facilities can enhance **motivation** and performance of the workforce. **Motivation** is a need or desire that energizes behavior and directs it towards a goal. In order to motivate health professionals, health facilities and respective administrative bodies should implement contextualized benefits package for the staff. To this effect, RHBs and health facilities should apply monetary and non-monetary incentives.

Providing feedback on employee ‘s performance, recognizing employee of the month and employee of the year by linking with performance management. Training of all managers on the non-monetary ways of recognition, team building; accommodating life events (death, birth, wedding), and creating a sense of belongingness

6.5. Chapter summary

- Monitoring and evaluation reports follow a structured flow to ensure comprehensive analysis and presentation of the data and findings.

- Performance of each activity has to be monitored to check.
- After routine monitoring or periodic evaluation, feedbacks should be provided for continues improvement.
- The feedback should be given based on the findings. And effective feedbacks are specific and feasible actions that can be done soon to improve the system.
- Feedback reports can help managers make operational decisions, monitor the performance of the system, and manage the system overall.

CHAPTER SEVEN

ROLES AND RESPONSIBILITIES OF STAKEHOLDERS

Allocated time: 45 minutes

Chapter description: This chapter enumerates the principal stakeholders and delineates their respective roles and responsibilities within the pharmaceutical and medical device management monitoring and evaluation system.

Chapter objective: At the end of this chapter, participants will be able to describe the roles and responsibilities of stakeholders in implementing PMD management monitoring and evaluation framework.

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

- Identify stakeholders
- Describe roles and responsibility of each stakeholder

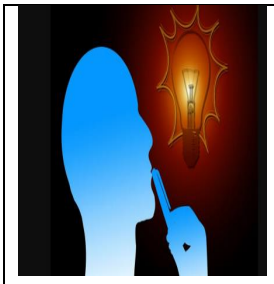
Chapter outline

7.1. Key stakeholders in pharmaceutical and medical device M&E system

7.2. Roles and responsibilities of key stakeholders

7.3. Chapter summary

7.1. Key Stakeholders in pharmaceutical and medical device M&E system



Activity 7.1. Individual Reflection

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

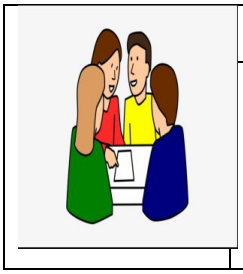
- Mention the major stakeholders involved in M & E

Time: 5 Minutes

Multiple stakeholders are involved in establishment of effective pharmaceutical and medical device management M&E system. The proper engagement and collaboration of government, non-government bodies, and partners is significant in the implementation of the M&E framework. The following are key stakeholders involved in this implementation process:

- MOH
- RHBs
- EPSS
- EFDA
- ZHDs
- WoHOs
- Health facilities (Hospitals/Health centers)

7.2. Roles and responsibilities of key stakeholders



Activity 7.2: Group discussion

Instruction: Form four groups and discuss on the role and responsibilities of the stakeholders.

Time: 30 minutes

Each health institution at all levels of the health system has specific roles and responsibilities in implementing M&E of pharmaceutical and medical device management. The following sections are the major roles and responsibilities of each key stakeholder.

MOH/RHBs

The following are roles and responsibilities expected from MOH/RHBs in implementing the frame work.

- **Design and follow the M&E system**, ensuring its continuous improvement through periodic reviews and updates.
- **Develop and maintain standardized tools**, such as forms and electronic databases, to facilitate efficient data management and reporting.

- **Assess and integrate appropriate technology transfer** to support the implementation of M&E activities.
- **Collect and analyze performance data** from various levels, using the insights for performance enhancement.
- **Provide constructive feedback** to health facilities and administrative levels based on data analysis.
- **Appoint dedicated personnel** for managing data and conducting supportive supervision visits.
- **Engage in research and evaluations** to inform policy options and program implementation strategies.
- **Build capacity** among staff across all health system levels through training and support.
- **Ensure data integrity** by conducting regular data quality assessments.
- **Organize national and sub-national performance review meetings** to evaluate progress and set targets.
- **Monitor program performance** against established targets, ensuring timely and consistent execution of M&E plans.
- **Lead and coordinate national surveys and operational research** related to M&E, while also mobilizing necessary resources.
- **Track and manage the use of M&E indicators** at the national and sub-national level to inform decision-making and policy recommendations.

EFDA/EPSS

The following are roles and responsibilities expected from EFDA/EPSS in implementing the frame work.

- **Appoint an M&E Coordinator**: Assign a dedicated individual who will oversee the M&E activities, ensuring that primary data sources for Key Performance Indicators (KPIs) are well-maintained and accessible.
- **Regular Data Compilation**: Systematically gather data, ensuring that it is complete and timely for accurate tracking of KPIs.
- **Quality Assurance**: Implement rigorous data quality checks to validate the accuracy and reliability of the information collected.
- **Performance Analysis**: Calculate indicators based on the compiled data and perform regular self-assessments.

- **Process Improvement**: Utilize feedback from MOH and other stakeholders to refine and enhance M&E processes and systems.
- **Reporting and Communication**: Prepare comprehensive reports detailing the findings from the M&E activities and present them during review meetings to discuss progress and areas for improvement.
- **Report Submissions**: Compile and forward detailed regular reports to the Ministry of Health (MOH) for further evaluation, policy formulation, and strategic decision-making.

ZHDs/WoHOs

The following are the expected ZHDs/WoHOs roles and responsibilities from them in implementing the frame work.

- **Implement the M&E system** by tracking its execution and collecting performance data from subordinate levels.
- **Analyse the gathered data** to inform decision-making and provide targeted feedback to health facilities.
- **Designate focal persons** for data management and ensure they conduct supportive supervision visits.
- **Enhance staff capabilities** through training and other capacity-building activities.
- **Assess data quality** regularly and present findings in review meetings and other relevant platforms.
- **Coordinate and facilitate program implementation** at the zonal and woreda levels, while also fostering connections between zonal hospitals and associated health centers.

Health facilities

Health facilities are the sources of data where all the expected indicators emanate. The following are the major roles and responsibilities of hospitals and health centers in M&E implementation.

- **Designate a focal person** for M&E who will be responsible for maintaining the primary data sources for Key Performance Indicators (KPIs).
- **Generating and filing data**
- **Compile data regularly**
- Undertake data quality and provide feedback.
- **Compute indicators** and conduct self-assessments to gauge performance.
- **Regular performance and data utilization for decision making**

- **Act on feedback received** to continuously improve processes.
- **Prepare and present data** for monthly progress review meetings.
- **Generate and submit regular reports** to the next level for further analysis and decision-making.

7.3. Chapter summary

- The key stakeholders in the M&E implementation are: MOH/RHBs, EPSS/EFDA, ZHDs/WoHOs, Health Facilities (Hospitals/Health Centers) and Partners organizations.
- Each stakeholder has significant roles and responsibilities in the implementation of the M&E in their respective level.

CHAPTER EIGHT

PLANNING AND GETTING STARTED

Allocated time: 60 minutes

Chapter description: This chapter discusses on the stepwise approach of Pharmaceutical and Medical Device M&E framework implementation and action plan preparation.

Primary objective: At the end of this chapter, the participant will be able to prepare Pharmaceutical and Medical device M&E framework implementation plan for their organization.

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

- Discuss the stepwise approach of implementing PMD M&E framework
- Prepare draft action plan to implement PMD M&E framework in their organization

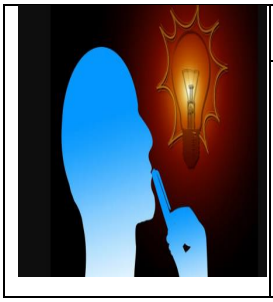
Chapter outline

8.1.Stepwise approach to implement PMD M&E framework

8.2.Action plan preparation for PMD M&E framework implementation

8.3.Chapter summary

8.1. Stepwise approach to implement M&E framework



Activity 8.1: Individual reading

Instruction: Read individually, the stepwise approach of Pharmaceutical and Medical device M&E framework implementation.

Time: 5 minutes

In Ethiopia, the M&E system for pharmaceutical and medical device management lacked standardization and was implemented in a fragmented manner. For the implementation of M&E framework, a stepwise approach should be used by the organization to regularly monitor and evaluate its performance of pharmaceutical and medical device management.

The stepwise approach to regularly monitor and evaluate the organization performance should follow the following detailed steps to implement the M&E framework starting from sensitization.

Table 36: Stepwise approach to implement M&E framework

Steps	Activity	Approach
Step 1	Organize sensitization for the management, pharmacy, biomedical staff and PMT	● Organize orientation for department heads and other relevant staff. ● The M&E framework manual and the materials collected from this training can be used as a main reference for the orientation. ● Orientation should be conducted when the organization starts implementation of M&E framework and when it is required during implementation
Step 2	Assign M&E focal person	● The management will assign M&E focal person with official letter
Step 3	Avail recording formats of the data source	● The recording formats (hard and soft copies) to record data sources and indicators should be availed and distributed to all concerned units with an official letter
Step 4	Collect data	● Collect data using the recording from each responsible departments/teams as per agreed

		schedule
Step 5	Monitor the quality of data	● Monitor the quality of data sources regularly. Data quality should also be monitored at each step of the implementation.
Step 6	Conduct analysis	● Conduct data analysis for each collected data
Step 7	Generate Pharmaceutical and Medical device indicators report	● Use the M&E data aggregation and reporting format to generate M&E report
Step 9	Disseminate the report	● Disseminate/share the report with the management and higher administrative bodies timely as per the reporting schedule indicated in the M&E framework
Step 10	Receive feedback and identify gap	● Receive feedback and/or identify the gaps as well as areas for improvement in the quality of data and M&E framework implementation
Step 11	Develop action plan	● Develop action plan to fill all possible gaps /areas for improvement
Step 12	Communication and Discussion on the action plan	● Communicate the action plan to the management and responsible staff and conduct discussion to get consensus on the planned activities
Step 13	Implementation of action plan	● Perform planned activities, follow their implementation, and review performance
Step 14	Ensure availability of recording formats and collect data	● Ensure availability of recording formats for indicators and collect data from each responsible department/team as per agreed schedule **(Continue from Step 3&4 above)**

8.2. Action plan preparation for M&E framework implementation

Activity 8.2: Individual exercise

Prepare draft action plan to implement M&E framework in your organization, use the planning template annexed.

Time: **15 minutes**

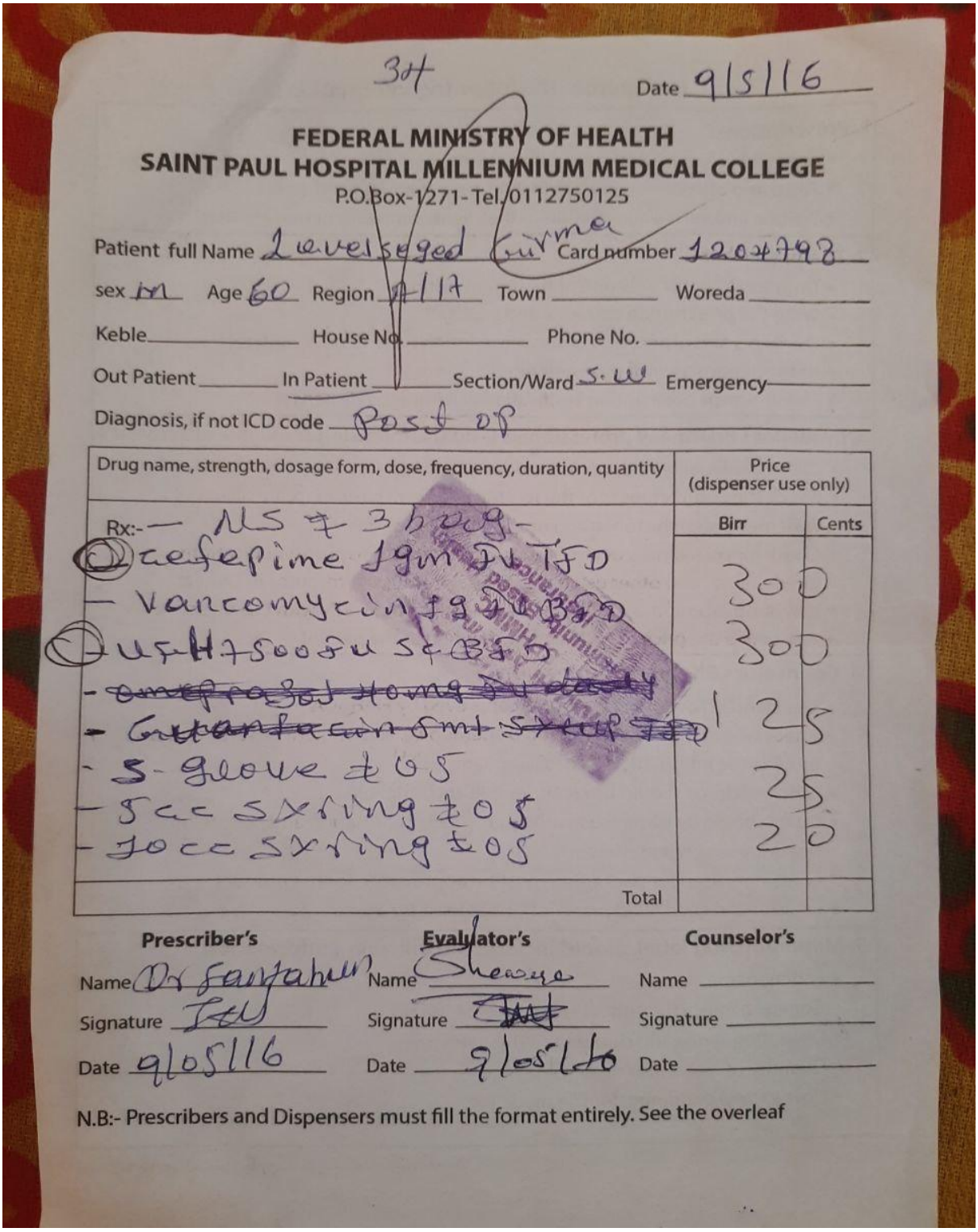
8.3. Chapter summary

- A stepwise approach should be followed for the implementation of pharmaceutical and medical device M&E framework.
- Organizations should prepare action plan to implement the pharmaceutical and medical device M&E framework.

Annexes

Annex A: Prescription Papers for dispensing drug registration demonstration and participant exercises.

1



304

Date 9/5/16

FEDERAL MINISTRY OF HEALTH
SAINT PAUL HOSPITAL MILLENNIUM MEDICAL COLLEGE
P.O.Box-1271-Tel.0112750125

Patient full Name Lewelseged Furma Card number 120798

sex M Age 60 Region 7/17 Town _____ Woreda _____

Keble _____ House No. _____ Phone No. _____

Out Patient _____ In Patient _____ Section/Ward S.W Emergency _____

Diagnosis, if not ICD code Post op

Drug name, strength, dosage form, dose, frequency, duration, quantity	Price (dispenser use only) Birr	Cents
Rx:- NS # 3 bag-		
Cefepime 1gm IV TFD	300	
Vancomycin 1gm IV BID		
UFH 7500 IU SC BID	300	
~~omeprazol 40mg IV daily~~		
~~Gentamycin 8ml SXcup TFD~~	125	
5- glove #05	25	
5cc SXring #05		
10cc SXring #05	20	
Total		

Prescriber's	Evaluator's	Counselor's
Name Dr Fantahun	Name Sheaya	Name _____
Signature [illegible]	Signature [illegible]	Signature _____
Date 9/05/16	Date 9/05/16	Date _____

N.B:- Prescribers and Dispensers must fill the format entirely. See the overleaf

3

2

Date 09/05/16

FEDERAL MINISTRY OF HEALTH
SAINT PAUL HOSPITAL MILLENNIUM MEDICAL COLLEGE

P.O.Box-1271- Tel. 0112750125

Patient full Name Birtukan Alefe Card number 120929

sex F Age 38 Region ____ Town ____ Woreda ____

Keble ____ House No. ____ Phone No. ____

Out Patient ____ In Patient ____ Section/Ward ____ Emergency ____

Diagnosis, if not ICD code Liver Abscess

Drug name, strength, dosage form, dose, frequency, duration, quantity	Price (dispenser use only) Birr	Cents
Rx:- ✓ ceftriaxone 1gm IM BID #04		
✓ metronidazole 500mg IV TID #07		
✓ PCM 1g PO Qid #02		48
✓ Surgical glove #05		66
✓ Syringe 10cc #05		10
✓ Syringe 5cc #05		125
✓ Plazol 10mg IV TID #03		25
✓ omeprazole 40mg IV daily #01		25
Total		

Prescriber's	Evaluator's	Counselor's
Name Dr Instructor	Name Shewaye	Name ____
Signature ____	Signature ____	Signature ____
Date 09/05/16	Date 09/05/16	Date ____

N.B:- Prescribers and Dispensers must fill the format entirely. See the overleaf

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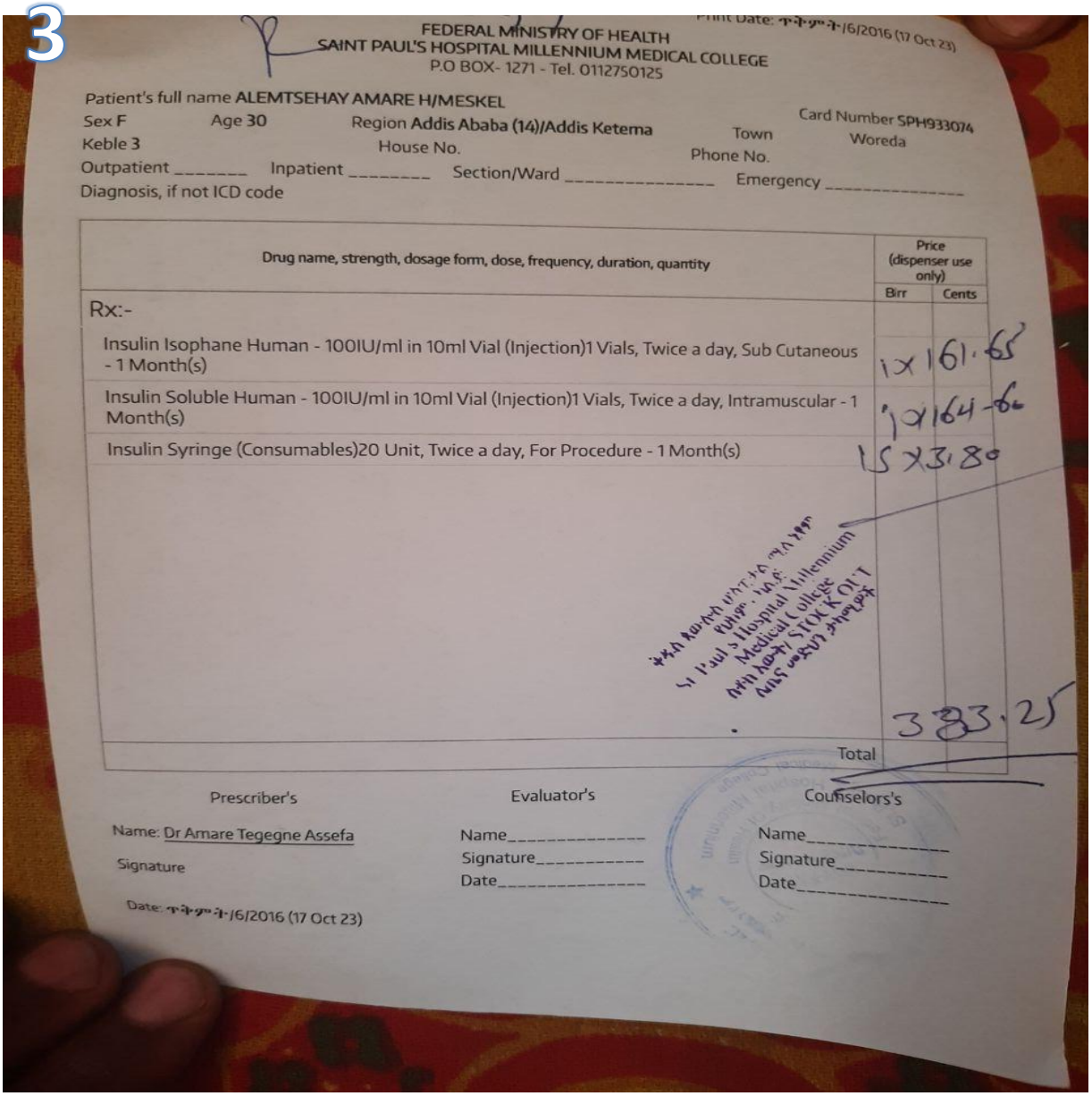


FEDERAL MINISTRY OF HEALTH
SAINT PAUL'S HOSPITAL MILLENNIUM MEDICAL COLLEGE
P.O BOX- 1271 - Tel. 0112750125

Print Date: ጥቅምት/6/2016 (17 Oct 23)

Patient's full name ALEMTSEHAY AMARE H/MESKEL
Sex F Age 30 Region Addis Ababa (14)/Addis Ketema Card Number SPH933074
Keble 3 House No. Town Woreda
Outpatient _____ Inpatient _____ Section/Ward _____ Phone No. Emergency _____
Diagnosis, if not ICD code

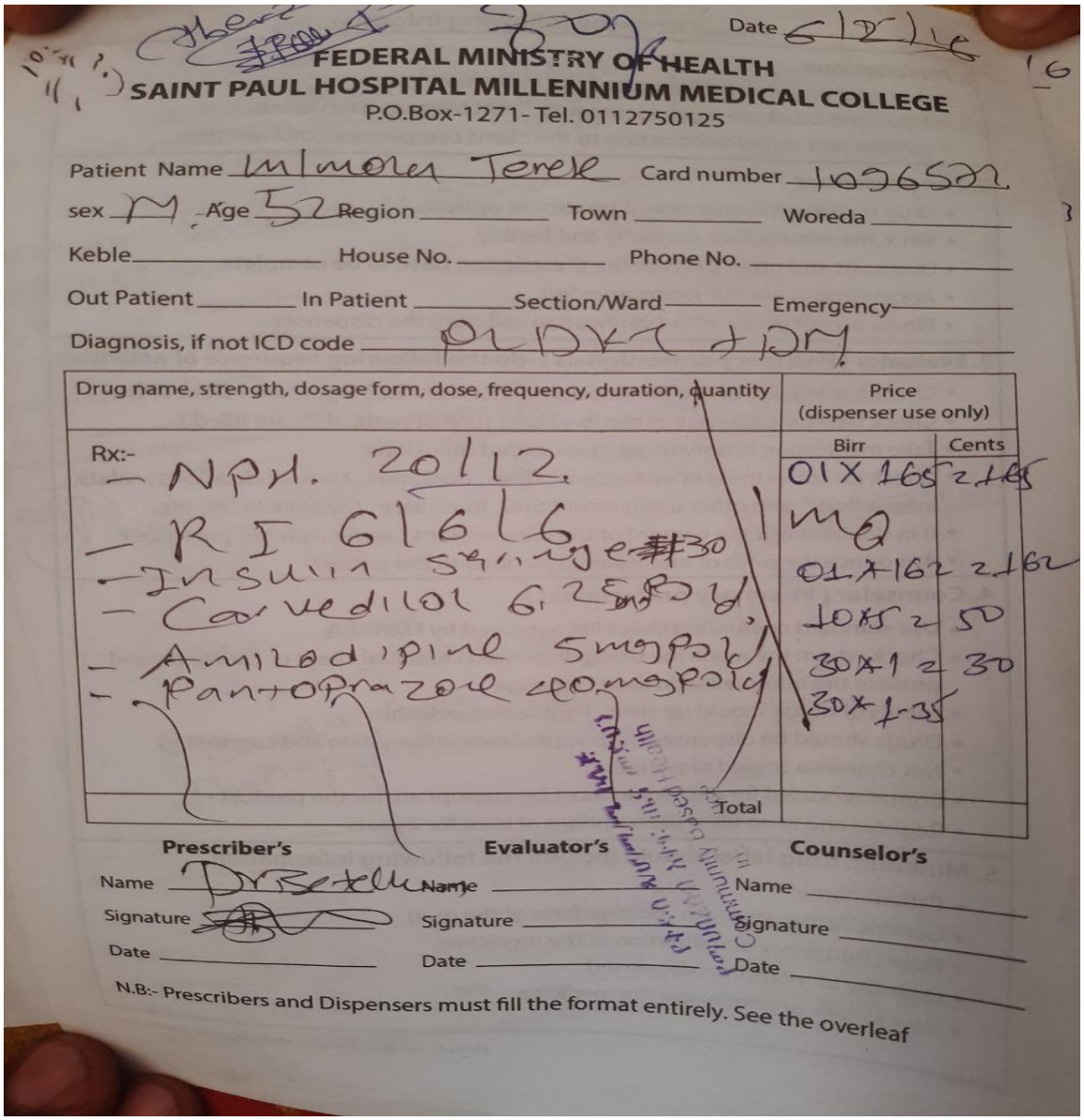
Drug name, strength, dosage form, dose, frequency, duration, quantity	Price (dispenser use only) Birr	Cents
Rx:-		
Insulin Isophane Human - 100IU/ml in 10ml Vial (Injection)1 Vials, Twice a day, Sub Cutaneous - 1 Month(s)	1x161.65	
Insulin Soluble Human - 100IU/ml in 10ml Vial (Injection)1 Vials, Twice a day, Intramuscular - 1 Month(s)	1x164.60	
Insulin Syringe (Consumables)20 Unit, Twice a day, For Procedure - 1 Month(s)	15x3.80	
	Total	383.25

St Paul's Hospital Millennium Medical College PHARMACY STOCK UNIT

Prescriber's
Name: Dr Amare Tegegne Assefa
Signature
Date: ጥቅምት/6/2016 (17 Oct 23)

Evaluator's
Name_____
Signature_____
Date_____

Counselors's
Name_____
Signature_____
Date_____



FEDERAL MINISTRY OF HEALTH
SAINT PAUL HOSPITAL MILLENNIUM MEDICAL COLLEGE
P.O.Box-1271- Tel. 0112750125

Date 6/12/16

Patient Name Mulmoken Terek Card number 1096502

sex M Age 52 Region _____ Town _____ Woreda _____

Keble _____ House No. _____ Phone No. _____

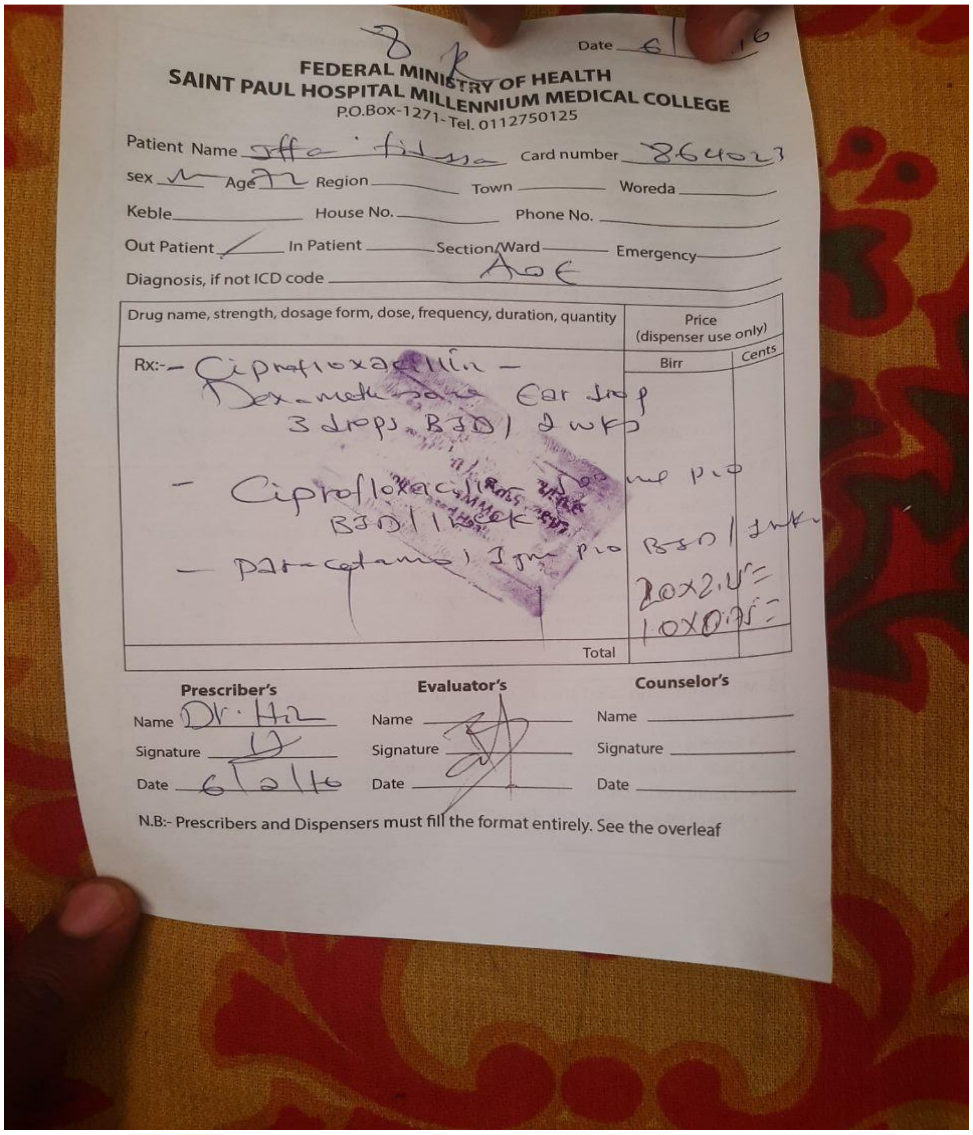
Out Patient _____ In Patient _____ Section/Ward _____ Emergency _____

Diagnosis, if not ICD code T2DM

Drug name, strength, dosage form, dose, frequency, duration, quantity	Price (dispenser use only) Birr	Cents
Rx:-		
- NPH. 20/12.	01 X 165	2.165
- RI 6/6/6	1 MQ	
- Insulin Syringe #30	01 X 162	2.162
- Carvedilol 6.25mg PO bid.	10 X 5	2 50
- Amlodipine 5mg PO od	30 X 1	2 30
- Pantoprazole 40mg PO od	30 X 1.35	
Total		

Prescriber's	Evaluator's	Counselor's
Name DrBetelh	Name	Name
Signature	Signature	Signature
Date	Date	Date

N.B:- Prescribers and Dispensers must fill the format entirely. See the overleaf



Date 6/16

FEDERAL MINISTRY OF HEALTH
SAINT PAUL HOSPITAL MILLENNIUM MEDICAL COLLEGE
P.O.Box-1271-Tel. 0112750125

Patient Name Iffa Tilahun Card number 264023
sex M Age 22 Region ____ Town ____ Woreda ____
Keble ____ House No. ____ Phone No. ____
Out Patient ✓ In Patient ____ Section/Ward ____ Emergency ____
Diagnosis, if not ICD code AoE

Drug name, strength, dosage form, dose, frequency, duration, quantity	Price (dispenser use only) Birr	Cents
Rx:- Ciprofloxacillin – Dexamethasone Ear drop 3 drops BID 1 wk		
– Ciprofloxacillin [illegible] BID 1/52 [illegible]		
– Paracetamol 1 gm PO BID 1/52	20x2.4= 10x0.75=	
Total		

Prescriber's	Evaluator's	Counselor's
Name Dr. Hiz	Name	Name
Signature	Signature	Signature
Date 6/2/16	Date	Date

N.B:- Prescribers and Dispensers must fill the format entirely. See the overleaf

Annexes B. Pharmaceuticals and Medical Devices Indicators

Registration formats for Pharmacy Service indicators

Annex 1.: DTC functionality Criteria

S. N	Criteria (weight in %)	Weight (%)	Score
1	Assigned DTC members by official letter (10)	10	
2	Has approved TOR (10)	10	
3	Meets regularly at least every month with documented minute (10)	10	
4	Has developed action plan (10)	10	
5	Has updated health facility specific medicine and medical devices list (15)	15	
6	Has medicine use policy and procedures (at least two policies (10)	10	
7	Conduct supply and medicine use problem studies (10)	10	
8	Take actions based on the supply and medicine use study findings (15)	15	
9	Report its performance activities to the management (10)	10	
DTC functionality (%) Sum of total score			
Functionality of DTC, if ≥75%, **Yes**. If <75%, **No**			

A health facility is considered as having functional DTC if it scores greater than 75%

Name of DTC members who filled the score and their signature

1._____

2._____

3._____

DTC Approval date

Annex 2: Data Collection form for indicators obtained from Prescriptions/ Prescription registration book

1. Data Collection Form for Indicators Obtained from Prescriptions							
Health Facility: _____ Investigator:_____ Reporting period: from to _____							
SN	# Drugs		# Generics	Injection (0/1)	Antibiotics (0/1)	# on FSML*	Diagnosis
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
--							
--							
--							
100							
Total	X				XXX	YYY	X
Average	X		X	X	X	X	X
Percentage	X		*% of total drugs*	*% of cases*	*% of total cases*	*% of total drugs*	X
**FSML: Facility Specific Medicines List* *For this M&E framework, Antibiotics (XXX) and # on FSML*(YYY) are reported to the next administrative level.*							

Take a sample of 100 prescriptions using systematic random sampling from the prescription register/prescription paper during the fiscal year.

Name of DTC members who filled the score and their signature

1. _____ 2. ___ 3. ___ DTC Approval date __

Annex 3: Counseling time registering form

Patient #	Counseling time in seconds		
	T1	T2	T2-T1
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			
17.			
18.			
19.			
20.			
21.			
22.			
23.			
24.			

Method

Observe a series of at least 100 patients and record the time spent for each encounter. Time is recorded when a patient receives the medicine during which instruction on the use of medicine is provided.

Name of DTC members who filled the score and their signature

1. __ 2. __ 3. ___ DTC Approval date _____

Annex 4: Data Collection Form for patient knowledge and labeling Interview

Labelling and knowledge data is obtained by observing a sample of at least 100 clients during exit interview. To analyze knowledge, the label of medicine dispensed to patients can be checked.

Data Collection Form													
Health Facility: _____ Investigator: ___ Reporting period: from_to _____													
Case #	Dispensing Counseling Time (seconds)	Adequacy of Labeling							Patient Knowledge on Dosage				
		Patient Name	Drug Name	Dose	Frequency	Duration	Route	Adequate (1), If not adequate	Dose (Y, N)	Frequency (Y,N)	Route (Y,N)	Duration (Y,N)	Adequate (1), If not adequate (0)
1.													
2.													
3.													
4.													
5.													
6.													
7.													
8.													
9.													
10.													
11.													
--													
--													
--													
100													
Total													
Average													

NB. When regional/national assessments are conducted, take 30 encounters from each of 20 health facilities.

Annex 5: Health Facility Dispensing Registration Book

Region _____ Woreda _____ Name of Health Facility _____

SN		Patient Name	Age	Sex	Diagnosis (NCoD)	Medicines Prescribed	Therapeutic Category	Level of Importance by VEN			Dispensed (Y/N)	Overall* (1,0)	Remark
								Vital (√)	Essential (√)	Non-Essential (√)			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
		Count total patient								Count Total 1			

Overall*: Enter '1' only if all the prescribed medicines are dispensed and enter '0' if one or more medicines not dispensed.

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Annex 6: Functionality of clinical pharmacy

Criteria to measure clinical pharmacy functionality			
S. N	Criteria	Weight	Score
1	Dedicated pharmacist	9	
2	Continuous care (24/7)	8	
3	Service provided in all wards	5	
4	Assess medication history at admission	8	
5	Participate in multidisciplinary round	8	
6	Participate in multidisciplinary morning session	8	
7	Conduct pharmacy only rounds	8	
8	Identify drug therapy need / problem	15	
9	Perform medication reconciliation	15	
10	Provide discharge planning and counseling	7	
11	All clinical pharmacy service activities documented and reported	9	
Total Score			
Functionality of Clinical pharmacy, if ≥75%, Yes. If <75%, No			

Annex 7: Criteria to measure UDS functionality

SN.	Criteria	Availability	
		Yes (1)	No (0)
1	Dedicated ward pharmacy (s)		
2	Dedicated pharmacist		
3	Medicines are dispensed in a single dose package		
4	Medicines are dispensed in a ready to administer form		
5	Medicines are dispensed only for 24 hours		
6	Pharmacy specific documentation is maintained		
7	The pharmacist reviews all medication orders written by the physician		
Total Yes/7			
UDS functionality (%)			
Functionality of UDS (≥75%) (If yes 1, If no 0)			

Annex 8: Criteria to measure compounding functionality

S. N.	Criteria	Availability	
		Yes (1)	No (0)
1	Separate room/area dedicated for compounding,		
2	Dedicated pharmacist		
3	Compounding equipment		
4	Chemicals		
5	Standard Operating Procedure (SOPs)		
6	Compounding registration form		
Total Yes/6			
Compounding functionality (%)			
Functionality of compounding (≥75%) (If yes 1, If no 0)			

Annex 9: DIS functionality

Criteria to measure DIS functionality			
S. N	Criteria	Weight	Score
1	Dedicated room	8	
2	Dedicated pharmacy professional	8	
3	Reference materials	8	
4	DIS equipment (furniture, computer, printer)	8	
5	Standard operating procedure	8	
6	Sample query responses	15	
7	Medicine education program and report	15	
8	Sample alerts/newsletters prepared	15	
9	Annual action plan	7	
10	Performance reports	8	
Total Score			
Functionality of DIS, if >75%, Yes. If <75%, No			

Annex 10. APTS functionality

Criteria to measure APTS functionality			
S. N	Criteria	Weight	Score
1.	Designed workflow	15	
2.	Implement APTs in all dispensaries and stores	15	
3.	Produce daily summary and monthly report	15	
4.	Bin ownership	5	
5.	Conduct audit as per the standard	5	
6.	Workforce deployment and development as per the workload analysis	10	
7.	Availability of adequate APTS registers and vouchers	5	
8.	Conduct physical inventory as per the standard	10	
9.	Perform ABC/VEN analysis and reconciliation	10	
10.	Perform stock status analyses	10	
Total Score			
Functionality of APTS, if ≥75%, Yes. If <75%, No			

Annex 11. Patients‟ satisfaction with pharmacy service

SN	Client satisfaction criteria	Client Response	
		Yes (1)	No (0)
1	The OPD pharmacy is easily accessible		
2	The pharmacy is clean		
3	The pharmacy room is adequate for the service		
4	The pharmacy ensures reasonable privacy		
5	The waiting area is convenient		
6	The dispensers were welcoming to patients		
7	The dispensers were ready to listen to my problems		
8	Waiting time was appropriate		
9	All my prescribed medicine were given me		
10	The medicines are affordable to me		
11	I trust the competence of the dispensers		
12	I received adequate information about how I should use my medicines		
13	I am generally satisfied by the service I received		
Total Yes/13			
Patient satisfied with dispensing service (%)			
Satisfaction (≥80%) (If yes 1, If no 0)			

Registration formats for pharmaceuticals supply indicators

Annex 12. Forecast Accuracy

	Forecast accuracy for tracer products				
	Quantity				
S.N.	Tracer products	Forecasted quantity (P1)	Consumed (Issued) Quantity (P2)	Forecast error (P3) |(P1-P2)/P2|	Forecast Accuracy (1-P3x100)
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
Summary Forecast accuracy					

Annex 13. Supplier Fill Rate

EPSA					
S.no	Pharmaceutical Category	Total number of line items requested to EPSA in the quarter (P2)	Total Number of Items supplied in the quarter	Total Number of Items which are correctly supplied in greater than 80% of the quantity requested (P1)	Supplier Fill Rate P1*100 P2
1	Program from RRF				
	RDF Pharmaceuticals				
	Total				
EPSA Refill Rate for RDF and program drugs = P1* 100 / P2					

Private					
S.no	Pharmaceutical Category	Total number of line items requested to private supplier in the quarter (P2)	Total Number of Items supplied	Total Number of Items which are correctly supplied in greater than 80% of the quantity requested (P1)	Supplier Fill Rate P1*100 P2
1	RDF Pharmaceuticals				
2	RDF Pharmaceuticals				
3	RDF Pharmaceuticals				
Private Supplier Refill Rate for RDF drugs = P1 * 100 / P2					

Annex 14. Average Lead Time

#	Reporting Period	Date the report & request was summited to EPSA	Date the products are delivered by EPSA to HF	Number of days it took by EPSA to deliver products
1	Reporting Period 1			
2	Reporting Period 2			
3	Reporting Period 3			
4	Reporting Period 4			
5	Reporting Period 5			
6	Reporting Period 6			
7				
	Total Number of Days			
	Number of reporting periods considered for the calculation			
Average Lead Time =				

Annex 15. Tracer Drug Availability Tally Sheet and Stock Out Duration Registration Form

Woreda---------- Facility Name---------- Month---------- Year----------

S/No	Tracer drug list	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	Overall * (1,0)	No. of stock out days in the month
1	Medroxyprogesterone Injection																																
2	Pentavalent vaccine																																
3	Magnesium Sulphate injection																																
4	Oxytocin inj																																
5	Gentamycin injection																																
6	ORS+/- Zinc sulphate																																
7	Amoxicillin dispersible/suspension/capsule																																
8	Iron + folic acid																																
9	Albendazole/Mebendazole tablet/suspension																																
10	TTC eye ointment																																
11	RHZE/RH																																
12	TDF/3TC/DTG																																
13	Co-trimoxazole 240mg/5ml suspension																																

14	Artemether + Lumfanthrine tablet																														
15	Amlodipine tablet																														
16	Frusemide tablets																														
17	Metformin tablet																														
18	Normal Saline 0.9%																														
19	40% glucose																														
20	Adrenaline injection																														
21	Tetanus Anti Toxin (TAT) injection																														
22	Omeprazole capsule																														
23	Metronidazole capsule																														
24	Ciprofloxcaxillin tablet																														
25	Hydralazine injection																														
	Sum of stock out days																														

Note: Tick on each day, if the drug is available on the working day or leave it as blank if the drug is not available. Enter 1 in "overall" column if the drug is available on working days and zero if it is out of stock for one or more working days in that reporting period. If the facility doesn't give service on holidays and weekends, enter "NA" in the specifc dates and exclude the dates from the list of stock out dates. For the number of stock out days in a monthly: count the number of stock out days (Number of zeros) in the month and write on the last column. Then, sum the stock out days for all tracer drugs.

Annex 16. Wastage rate

#	RDF Category	Unusable stock of products during a period in monetary value in the period (P1)	Value of Beginning stock at the beginning of the Period (P2)	Value of total items received during the Quarter (P3)	Wastage Rate $\frac{P1 * 100}{P2+P3}$
1	RDF Pharmaceuticals				
2	Program Pharmaceuticals				
	Summation				
	Wastage Rate				

Annex 17. Percentage of facilities that maintain acceptable Storage Conditions

Assess the storage conditions of main storage area. Place a check (tick) mark in the appropriate column based on visual inspection of the storage area. To qualify for a "Yes" response, all products must meet the criteria for each item.

Good Storage Condition Criteria			
S.N.	Criteria	Met	
		Yes (1)	No (0)
1	Products are arranged on shelves with arrows pointing up, and with identification labels, expiry dates, and manufacturing dates clearly visible.		
2	Drugs are stored and organized to FEFO procedures and are accessible for counting and general stock management.		
3	Outer cartons are in good condition (not crushed, perforated, stained, or otherwise visibly damaged).		
4	Damaged and expired products are separated from usable products in the storeroom, and procedures exist for removing them from inventory.		
5	Drugs are stored in a dry, well-lit, well-ventilated storeroom. *(Visually inspect roof, walls, and floor of storeroom.)*		
6	Cartons and products are protected from direct sunlight.		
7	There is no evidence of rodents or insects in the storage area. *(Visually inspect the storage area for evidence of rodents [droppings] or insects that can damage or contaminate the products.)*		
8	Storage area is secured with a lock and key but is accessible during normal working hours; access is limited to authorized personnel.		
9	Products are stored at the appropriate temperature according to product temperature specifications (8°–30°C) and including cold chain storage (2°–8°C), as required for certain products.		
10	Roof is maintained in good condition to avoid sunlight and water penetration.		
11	Storeroom is clean, with all trash removed, no evidence of food and drinks, products		

	stored on sturdy shelves/bins, and boxes organized neatly.		
12	Current storage space is sufficient for existing products and planned program expansion.		
13	Drugs are stored separately from insecticides, flammable products, and chemicals.		
Total number of Yes			
Storage condition score (%) = $\frac{\text{Total Yes}}{13} * 100$			
If storage condition score is $\geq$ 80%, say acceptable			

Annex 18. Inventory Accuracy Rate

S.No.	List of Tracer Drugs	Bin Card/Electronic Record Balance	Physical Count	Bin Card Balance equals with physical count (if yes put 1, if no put 0)
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
Number of items where bin card (Manual or Electronic) balance equals physical stock count Sum=Total number of "1" Checks				
Inventory accuracy rate = Total yes *100 10				

Annex 19. RRF Reporting Rate

Date entry: (enter 1 if the facility reported using the RRF, 0 if the facility does not use RRF report in the reporting period. Please fill for each period).

RRF reporting rate			
S.N.	Reporting Period	Date RRF sent to EPSS	Send RRF report on time (if sent until the 10th day of the month, put 1. if not, put 0)
1	Reporting Period 1		
2	Reporting Period 2		
3	Reporting Period 3		
4	Reporting Period 4		
5	Reporting Period 5		
6	Reporting Period 6		
	RRF reporting rate (total number of RRF sent on time/expected number of RRF)		

Annex 20. **Disposal of unfit-for-use medicines**

S.no.	Activity	Write 1 if yes; write 0 if no
1	Did the health facility dispose unfit-for-use medicines at least in the past 12 months (EFY)?	

Registration and Reporting Formats for Medical device Management

Annex 21. Availability of updated medical device inventory and Percentage of Functional Medical device

Medical device inventory form

Name of Hospital…… Date of conducting survey……

										Operational condition											
No	Location / Department	Name of Equipment	Inventory No.	Model	Seria l No.	Manufacturer	Country of Origin	Year of manufacturing	Supplier/ Local agent	functional	Non-Functional but repara ble	Non-Functional and not reparable	why down	When down	Ho w often is it Use	Trained Operator (yes/No)	Trained Technician/Engineer	Spare parts availability (Yes/No)	Do you have user Manuals (Yes/No)	Do you have service Manuals

Annex 22. Functionality of Medical device Management Committee

	Criteria to functionality of medical device committee		
S. N	Criteria	Functional Yes	No
1	Assigned Medical device Committee members by official letter		
2	Has approved TOR		
3	Meets regularly at least every two months with documented minute		
4	Has annual action plan and monitor performance		
5	Has updated Model Medical device list		
6	Conduct Annual Medical Device Inventory		
7	Has Medical device policy and procedures		
8	Maintain Equipment History Profile for all Model Medical device		
9	Follow disposal of non-functional medical device		
10	Follow the reporting and implementation of medical device indicator findings		
11	Review and follow medical device procurement and installation request		
	Total number of "yes"		
	Total Criteria	11	
	Percentage Functionality of MEMC		
	Note: A health facility is considered as having functional MEMC if 80% of the above requirements are met.		

Annex 23. Percentage of health facilities with scheduled preventive maintenance practice

	Criteria											
No_	Medical device	Caring & Cleaning schedule (C&C)		Safety Procedure in place		Functional & Performance (F&P)		Calibration testing		Preventive maintenance checks (PMC)	
		Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
	ME4.1=Total no. of yes										
	ME4.2=Expected PPM										
	Percent PPM performed = (ME4.1/ ME4.2) *100										
	Overall average PPM performed	Percent PPM performed = ____ 5									

Annex 24. Percentage of Medical device Installation

S. N	Criteria	Number
MDI.1	Number of installed medical device within the past three months	
MDI.2	Total number of medical devices delivered to the health facility in the past six months that needs installation	
	Percentage of medical device installed in the past three months that needs installation (MDI.1/ MDI.2*100)	
MDI.3	Number of installed medical device within the past 4-6 months	
MDI.4	Total number of medical devices delivered to the health facility in the past six months that needs installation	
	Percentage of medical device installed in the past six months that needs installation (MD5.3/ MD5.4*100)	

Note: ME5.2 and ME5.4 (total medical device delivered within the past six months) are the same number

Annex 25. Availability of medical device as per the national standard

S. N	Criteria	ME available as per standard?	
		Yes	No
1	Does the health facility have medical device as per the national standard?		
	NB: it is ―yes‖ if it meets 80% of the national standard.		

Annex C. M&E Implementation Action plan

Pharmacy Services, Pharmaceuticals Supply and Medical devicemanagement

Monitoring and Evaluation

S. N	Areas to be improved or challenges	Responsibleperson	Due date
1.	Collect the relevant documents including the Manual on M & E framework, M & E data aggregation and reporting format		
2.	Organize Sensitization for the management, pharmacy and biomedical staffs and others on the M and E indicators and role of respective staffs		
3.	Assign a focal person for M&E		
4.	Generate *baseline data* using the M & E data aggregation and reporting format and share this with management and PMED		
5.	Print (and also soft coy) data sources and distribute to all concerned units with an official letter which is aimed at generating data for the Q2 2016 report required by PMED		
6.	Monitor the quality of data sources at least once per week		
7.	Generate, aggregate and disseminate report of Q2, Q3 and Q4 M and E reports		
8.	Develop action plan to fill all possible gaps each quarter report may indicate		
9.	Share **soft copy** of Q2, Q3 and Q4 M and E reports with management and PMED -supported with an official letter		
10.	Document M and E documents (both soft copy and hard copy)of the M and E reports and data sources for each quarter in a dedicated folder		
11.	Make an annual trend analysis		
12.	Develop a scheme for skill transfer among staffs		

13.			
14.			
15.			

S. No	Name	Responsibility	**Tel**	**Signature**
1.				
2.				
3.				

Management approval date:_____Management approval letter ref. No: