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TRAINING MANUAL IN

LEADERSHIP MANAGEMENT & GOVERNANCE

FOR HEALTH SYSTEM STRENGTHENING IN AFRICA

VOLUME 2

JICA

REPUBLIC OF KENYA

MINISTRY OF HEALTH

amref health africa

REFER TO VOLUME I

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HEALTH MANAGEMENT INFORMATION SYSTEM

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MODULE INTRODUCTION

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OBJECTIVES OF THE COURSE

By the end of the course, you should be able to:

- Define certain terminology and concepts associated with HMIS
- Explain the role of HMIS in health services management
- Properly fill HMIS instruments, forms and tools
- Describe the HMIS management procedures
- Explain HMIS data quality assurance techniques
- Analyze, and interpret HMIS indicators
- Use HMIS information for improving health services performance
- Describe the process of evaluating and improving HMIS
- Describe the role of ICT in HMIS strengthening

MODULE OUTCOMES

The general objectives of this course are as outlined above. The following outcomes can be formulated. After completing the study of this module, you should be able to:

- Demonstrate Knowledge of HIS & HMIS
- Assess the role of HMIS in Health Systems Strengthening
- Relate the functions of HMIS to Health System Strengthening
- Critically analyse the different key components of HMIS
- Appraise the structure and design of a Health Information management systems
- Select ICT solutions significant for HMIS strengthening

MODULE CONTENT

The **HMIS** module is divided into the following 5 units:

Unit 1: Overview of HMIS

Unit 2: Roles and Functions of HMIS

Unit 3: Elements and Components of HMIS

Unit 4: Design and Implementation of HMIS

Unit 5: Role of ICT in HMIS strengthening

UNIT 1: OVERVIEW OF HIS &HMIS

1.1 Introduction

Welcome to the first unit in Health Management Information Systems. In this unit we are going to focus our attention on the various concepts of HMIS as well as the benefits it provides to health care. Health care is an information intensive industry (Rodrigues, 2010), in which reliable and timely information is a critical resource for the planning and monitoring of service provision at all levels of analysis. It is in this view that HMIS plays a critical role in enhancing creation, use and sharing of this information to make sound decisions. Our learning outcomes and the main sub topics of this unit are as outlined below:

1.2 Unit Outcome

	By the end of the unit you should be able to: • Define various terms in HMIS • Outline the evolution of HMIS • Learn the importance of HMIS

Every topic in this unit has been addressed maximally to provide you with a level base understanding of the topic. However you are advised to read further and get additional materials to compliment these notes. This course demands a lot of reading, effort and discipline. The more you put into it, the more enriching you will find it. We hope that it will be a challenge which you will take up with enthusiasm. The following is a breakdown of the topics that will be covered in this unit:

- Evolution of HMIS
- Definition of terms and Concepts
- The Knowledge Pyramid (DIKW) data, information knowledge and Wisdom
- Examples of HMIS
- The importance of HMIS in HSS

1.3 Definition of terms and Concepts

To clearly understand the scope of HMIS it is important to define certain terminology and concepts that will be used constantly in this manual. These are the basic concepts and theoretical points of departure that you will need in your study. Understanding them will assist you to avoid confusing them in the context in which they are used throughout this module.

1. **Data**
2. **Information**
3. **Knowledge**
4. **Wisdom**

The above four elements make up the Knowledge Pyramid (DIKW). For purposes of this unit, we shall only define these four terms.

- **Data :** are input raw materials from which information is produced. These are facts obtained by reading, observation, counting, measuring, weighing, which are then recorded
  - Some examples of data sources are health facilities, community, other government agencies (e.g. Registration of births and deaths, National Bureaus of Statistics)

- **Information** refers to data that have been analysed, interpreted, presented and understood by the recipient of the communication
- **Knowledge** is defined by Du Plessis (2007:21) as "any relevant intellectual capital information, learning, and personal perspective that stimulates, contributes to, or result in greater understanding, deliberate action, new behaviours, better decision-making, adaptation, and further learning". Knowledge is often characterized as tacit or explicit. Tacit knowledge is generally regarded as personal and subjective since it resides within people who possess it. Explicit knowledge is usually regarded as easier to recognize, document, communicate, transfer, store and retrieve Some examples of knowledge sources in health management include experienced healthcare personnel
- **Wisdom: refers to** the ability to use your knowledge and experience to make good decisions and judgments

The above four aspects form the DIKW pyramid which is diagrammatically illustrated below:

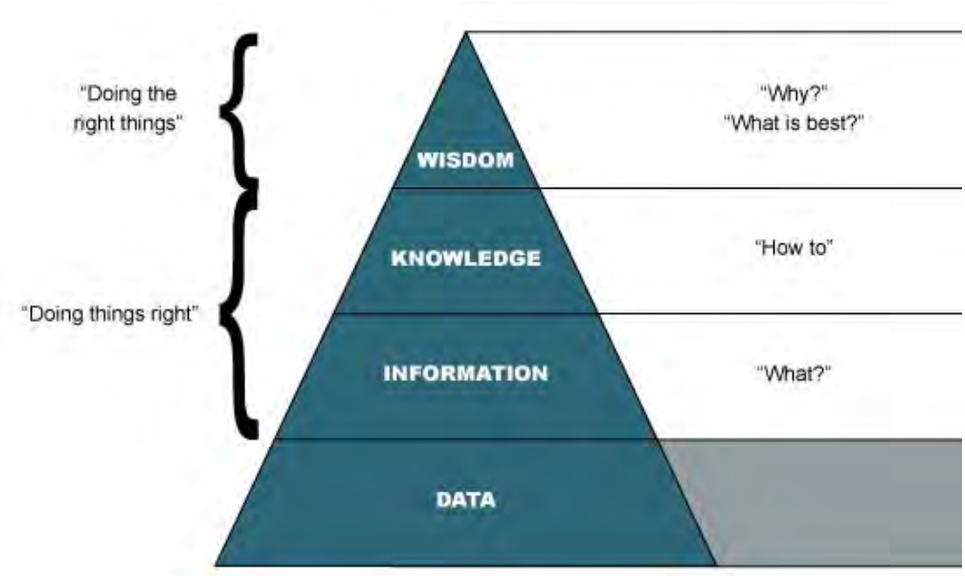


Figure 1: Data, Information, Knowledge and Wisdom Pyramid (Defranza, 2014)

Please note that the four aspects complement each other such that you can have data (bottom of pyramid) without information, BUT you cannot have information without data. Similarly you will require information to accrue knowledge and wisdom.

Having defined the above terms, it is also important to define certain concepts that will enhance your understanding of HMIS.

Information Systems (IS):

A system that provides information support to the decision-making process at each level of an organization (WHO, 2000). It consists of a set of information elements or components that

- collect (input)
- manipulate (process)
- disseminate (output) data and information
- store (save) data for future reference; and
- provide a feedback mechanism to meet an organizational objective and mandate

In a broader context, information systems are not only about hardware, software or infrastructure components, but also include people and processes. This is because without the relevant people and processes information systems never succeed. It is also important to note that,people are the greatest resource in any entity without which nothing would function maximally.

	Unit 2 will expound more on the elements and components

Health Management Information System

A health management information system is defined as the effective and efficient collection, analysis, dissemination and use of the information relating to characteristics of people and communities and their external milieu (i.e. environmental, socio-cultural, economic and available health systems) and health interventions to enable informed decision-making.

WHO defined HMIS as "an information systems specially designed to assist in the management and planning of health programs, and delivery of care"(WHO, 2000). The Ministry of Health (MoH Kenya, 2008) further elaborated HMIS as a comprehensive and integrated structured processes that collect, collate, analyse, evaluate, store, and disseminate, health and health-related data and information for use by all stakeholders.

	HMIS is one of the six building blocks essential for health system strengthening

	What are some of the sources of information in health management that you can think of?

	Identify additional sources of knowledge in health management? Please indicate whetherit is tacit or explicit knowledge

1.4 Broad parts of HMIS

Typically HMIS is made of two broad parts

Institution-based: This is also referred to as routine Health Information system. It includes all the information systems that captures data generated from routine contact at the service delivery points, aggregate records of priority public health services offered and the Resources invested in to make the services available: Human resources, Finance, Medicines and medical supplies**.**

Population-based: This includes the periodic population surveys e.g Multi-indicator cluster surveys, Registration of vital events i.e births and deaths and national censuses**.**

Subsystems of HMIS

HMIS manifest in different operation areas in health management. Here, only four examples are given:

- Client Management System: an information system used to capture data, manipulate, analyze, store, retrieve, and disseminate information regarding an clients' transactions
- Human Resources Information System (HRIS): an information system used to capture data, manipulate, analyse, store, retrieve, and disseminate information regarding an organization's human resources
- Financial Information System (FIS): an information system used to capture data, manipulate, analyse, store, retrieve, and disseminate information regarding an organization's financial management
- Logistic and Supplies Management Information System (LMIS): an information system used to capture data, manipulate, analyse, store, retrieve, and disseminate information regarding an organization's commodity supply chain management

1.5 Evolution of HMIS

HMIS is rapidly getting its place in the framework of health systems. Efficiency in information management is becoming increasingly essential because of the concern for its contribution towards health system strengthening. HMIS has moved from the vestigial status in the 70s, and 80s to distinct, recognizable sub-systems in the 90s and now laud talk of integration is gaining currency.

The evolution of HMIS is generally linked to various operational needs such as:

- Routine data processing and management
- Timely information access and dissemination
- Effective reporting

Evolution of HMIS in Africa has taken many forms, such as:

- From paper-based to computerized systems for example And in Botswana, the government has rolled out an electronic medical records system to all of the country's main hospitals, and the country continues to improve the coding and reporting of health conditions and internet connectivity.
- From a fragmented system to well coordinated system
- From a centralized to a decentralized system
- From vertical channels of information to integrated systems

Developing countries try to achieve all of the above to strengthen their health management information systems to better serve the health system as a whole.

Evolution of HMIS in Kenya:

Closely study the Kenya experience

Insert the Kenya experience: pg270

In Kenya HMIS evolution has resulted in certain implications such as:

- Increased need for quality and timely data
- Increase in the complexity of operational, policy and strategic information requirements
- Changes in the roles and responsibilities of health records information officers
  - Need to re-tool this cadre of health workers
  - Need to revise the training curriculum in tertiary institutions
- Increased need to employ use of ICT for automation and integration
- Exposure of gaps in policy and legislation around information management in health

There is a lot of documented evidence of other evolution case studies of African countries in the web. Countries such as Ethiopia, Uganda, South Africa and Swaziland have published in-country experiences.

Activity:

In half a page, discuss the evolution of HMIS in your country or any country of your choice. You may use a flowchartdiagram or any clear illustration

Further, list and explain 4 implications of the evolution in your country

1.6 Summary

This unit gave an overview of HMIS through relevant definitions, illustrations, examples and case studies.

Unit References:

- Ackoff, R.L. (1989). "From Data to Wisdom", Journal of Applied Systems Analysis,16,pp.3-9
- Due Plessis, M. (2007). "The role of knowledge management in innovation", Journal of Knowledge Management, 11(4), pp.20-29
- WHO (20

Further Reading:

UNIT 2: FUNCTIONS AND ROLES OF HMIS IN HSS

2.1 Introduction

Welcome to unit 2, now that we have been introduced to what HIS and what HMIS is, let's explore the functions of HIS and HMIS and understand the important role it plays in Health System Strengthening and why it is referred to as the '*central nervous system*' of the Health system as a whole.

2.2 Unit Outcome

	By the end of the unit you should be able to: Relate the functions and roles of HMIS to HSS

2.3 Functions and roles of HMIS in HSS

Health information is needed at all levels of the health system. Important users of health information are illustrated in fig 1

Figure 2: Users of Health Information.

As you move along this unit, you will come to know how the outputs of the health information system will serve the need of each of the above users.

Health Information Systems

The primary role of the Health information system and its sub-systems it to capture and manage data, generating operational and strategic information about inputs and investments in the health sector. It shows the status and level of planned outputs, and provides insight about outcomes in the short term (1-3 years) and about health impacts in the long term (5-10 years) .This necessitates generation of quality information in a timely manner to aid informed decisions that affect the health system.

1. Role of HMIS in policy and decision making : It assists in the following

- Management of routine information
- Link between plans and implementation
- Link between strategy, approach, intervention and outcomes, impact
  - Operational research
  - Programme evaluation
  - Rapid surveys
  - Trend and time series analysis
- Surveillance systems

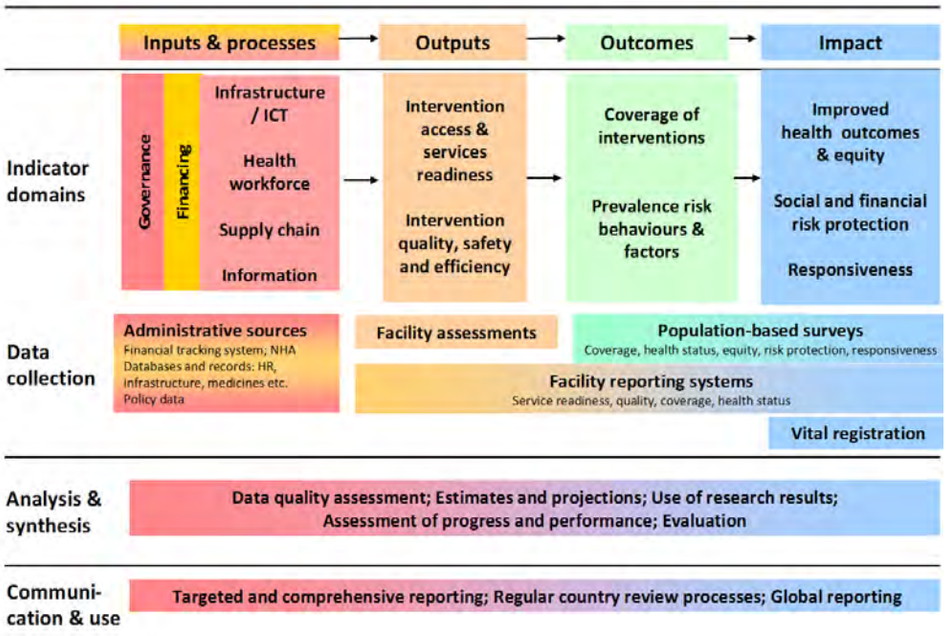


Figure 3: Role of HMIS in policy and decision making

Source: Health Metrics Network Framework and Standards for Country HIS 2nd edition, 2008

2. Role of HMIS IN Health Systems Strengthening

- Support of effective health sector planning
- Support of effective health sector performance monitoring
- Management information system for
  - financing
  - HRM
  - logistics and supplies
  - infrastructure
- Support for correlational analytics
- Establishment of institutional memory

In view of the above an effective HMIS should support the following activities:

- Developing and guiding policies and legal frameworks governing Health information systems.
- Measuring and quantifying the health status and health needs of the population.
- Developing of Indicators for the health system according to standards. (with M&E)
- Training and capacity building of relevant health personnel on data collection, compilation, storage, analysis and interpretation.
- Informing decision makers and policy makers about the general health status of the population.
- Dissemination of information to all sectors working in health and to the public
- Coordination with other sectors and stakeholders who produce data relevant to health (civil registration, national statistical office, private sector...etc.)

From the above functions, try to deduce the role that an effective HMIS will play in health system strengthening?

A strong HMIS ensures efficient production of essential HIS products and plays a significant role in health system strengthening.

The role of an effective HMIS plays in health system strengthening can be deduced by reflecting on the different information users and linking then to the different health sector activities that HMIS supports:

- A strong HMIS will ensure timely and accurate data is provided for evidence based decision making.
- It identifies the effectiveness of health programs and interventions and show whether they are showing progress in improving the health status of the population.
- Helps policy makers see the impact of endorsed policies on the health of the nation
- As indicators are developed according to standards, this allows for comparison within the country, regionally and internationally.
- An effective HMIS means reliable data that can set a stronger ground for donor support in health programs
- It Supports effective health sector planning, setting priorities and developing decisions regarding resource allocation and mobilization through identifying important areas that need more focus and investment
- HMIS also support effective health sector performance monitoring and helps in tracking outbreaks in timely manner
- Information system outputs can help in setting of national research priorities
- An efficient HMIS will also help establishment of institutional memory

HMIS is an important tool for monitoring trends of impact indicators at population level. However, other population surveys are conducted by stakeholders and sectors outside the health sector. This means an effective national HMIS should build strong coordination mechanisms with related sectors to get information needed by the health system. Population surveys help us understand better aspects like:

- **Health outcomes**: Mortality rates
- **Equity:** Fairness in the output and outcome indicators
- **Social and financial risk protection:** Cushioning individuals and families from impoverishment from ill health and costs of seeking health services
- **Responsiveness**: Meeting the felt and expressed health needs of communities, families and individuals

	Information related to health are Not only produced by the Health Sector. This means HMIS should coordinate with the other sectors producing information relative to health.

Over and above, HMIS enhances **data driven management** and positively contributes to sustainable health systems strengthening by supporting a range of management decisions and actions such as:

- Planning programmes & obtaining resources
- Enhancing population's access to services
- Quality measurement & improvement
- Productivity/efficiency - benchmark to national or global standards
- Accounting for resources- Financial as well as physical resources (e.g. drugs, supplies)

	In this unit we explored the different functions of HIS and HMIS and the important role it plays in Health System Strengthening. We also learnt that HMIS cannot work independently as some information relevant to health is captured by other stakeholders which necessitates building collaborations and coordination mechanisms with the different stakeholders. In the next unit we will be looking at the elements and components of health information systems.

Assessment Questions:	Choose the best Answer: **We need Health information Systems to:** 1. Quantify our health problems 2. Make informed decisions 3. Support policy makers become aware of the impact of endorsed policies 4. None of the Above 5. All of the Above

References

Park, K., & Park, K. (2011) Text book of preventive and social medicine. Jabalpur: Banarsidas Bhanot Publ,

Health Metrics Network. Framework and standards for country health information systems. Geneva, World Health Organization, 2008

UNIT 3: ELEMENTS AND COMPONENTS OF THE HMIS

3.1 Introduction

In unit 2 we have learnt how important an efficient HMIS is for the health system. So what does efficient mean? In this unit we will break the Health information system into its different components to examine them closely and see how each is essential for the HIS to be effective and fully functional.

The **Health Metric Network (HMN) (2008)** has identified six key components for Health Information systems. These are

- Resources
- Indicators
- Data Sources
- Data Management
- Information Products
- Dissemination and Use

Source: Health Metrics Network Framework and Standards for Country HIS 2nd edition, 2008

In addition to its six components, a health information system can be further subdivided into its inputs, processes and outputs. Inputs refer to resources, while processes touch on how indicators and data sources are selected and data is collected and managed. Outputs deal with the production, dissemination and use of information.

	**Activity:** **Describe the prerequisites of a health information system.**

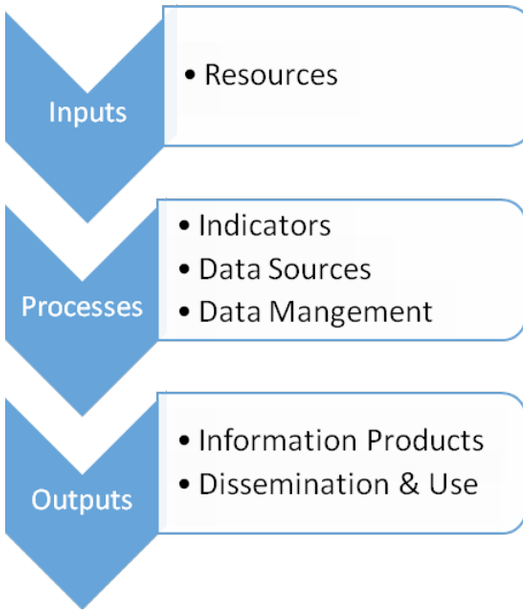


Figure 4 below illustrates the categories and the elements where they belong.

Components & Elements of HIS (based on HMN framework)

	**Take a minute to reflect on what are the components of Health Information Systems? How do they interact together?**

Now that we have listed the components, we will now examine each of them separately. But first let us remind ourselves of the categories or elements of a HIS into which the components are sub-divided.

3.2 Elements of the HIS:

As any system, health information has three principle elements:

INPUTS

- Health information system resources – these include the legislative, regulatory and planning frameworks required to ensure a fully functioning health information system, and there sources that are prerequisites for such a system to be functional. Such resources involve personnel, financing, logistics support, information and communications technology (ICT), and coordinating mechanisms within and between the six components

PROCESSES

- Indicators- they need to encompass determinants of health; health system inputs, outputs and outcomes; and health status.
- Data sources – can be divided into two main categories; (1) population-based approaches (censuses, civil registration and population surveys) and (2) institution-based data (individual records, service records and resource records).
- Data management – this covers all aspects of data handling from collection, storage, quality-assurance and flow, to processing, compilation and analysis.

OUTPUTS

- Information products – data must be transformed into information that will become the basis for evidence and knowledge to shape health action.
- Dissemination and use – the value of health information can be enhanced by making it readily accessible to decision-makers (giving due attention to behavioral and organizational constraints) and by providing incentives for information use.

For the above to work in harmony there should be an effective **Feedback mechanism** that will monitor the progress and influence the need for future inputs, a change in processes and therefore improvement in outcomes
After being reminded of what **inputs**, **processes** and **outputs** are, we can move on to the next section and discuss the 6 key components of health information systems.

3.3. Components of Health Information systems

You still remember the 6 key components of the HIS we mentioned at the beginning of the unit? These were:

- Resources
- Indicators
- Data Sources
- Data Management
- Information Products
- Dissemination and Use

Now let us examine each one:

1. Health information systems Resources

Any systems need resources for it to operate. They are the essential requirements or prerequisites that are needed for the system to function fully and effectively. That is why they are considered the **inputs** of the system. Health Metric Network (2008) lists the following as the **Health information systems resources;**

i) **Coordination and leadership-**There should be a management body that has the authority (e.g. ministry of health HMIS) to lead and plan for the HIS system and make sure that all these resources are available and sufficient. These include the ministry of health central health information unit, disease surveillance and control units, and the central statistics office. These are responsible for designing, strengthening or supporting data collection, transmission, analysis, and reporting and other dissemination.

a) A committee comprising key stakeholders from health and statistics constituencies is needed to guide the development and maintenance of a health information system, and to ensure that data is shared across programmes and institutions.

b) A health information system strategic plan is also essential for coordination. This can guide health information system investments, with indications of the timeline and anticipated activities budget to be completed in the short term (1–2 years), intermediate (3–9 years) and long term (10years and beyond).

ii) **Health information policies** that governs the system including the legislations, policies, regulations, health laws and planning frameworks.

iii) **Human Resources** or Manpower- all personnel working in HMIS- healthcare providers, managers, statisticians, medical assistants, accountants

iv) **Health information system Infrastructure**- The infrastructural needs of the health information system can be as simple as pencils and paper or as complex as fully integrated, web-connected, Information and communication technology.

v) **Financial resources**- funds from for example government, organization, donors that are allocated for HIS activities.

	a.) Why is it important to have policies and legal frameworks for Health Information systems? b.) What are the roles of a Health information system: • committee and • Strategic plan?

As we previously learnt, not all health relevant information is produced by the health system. We also learnt that a HMIS should form collaborations and coordination mechanisms with different stakeholders to get needed information. This is why the presence of policies and legal frameworks that dictate the responsibilities of different stakeholders are important.

The focus of HMIS Policy & Legal Framework should be to:

- Address the country institutional HMIS framework
- Identify the main elements and needs to streamline the functions of HMIS
- Identify the different stakeholders of health information and state their roles and responsibilities.
- Guarantee availability and accessibility of quality data as a public good for decision making
- Enforce establishing and maintenance of a simple, coherent, scientifically sound, easily understandable and compatible information system
- Encourage robust system to track achievements of the health sector objectives at all levels, taking into account the national values of universal health coverage, equity, quality and social justice
- Ensure ethical considerations guiding information sharing

They should also address issues like:

- Reporting obligations by different service providers such as:
  - public vs. private actors
  - government vs. development partners in health
  - implementing partners
- Data structures and exchange standards
- Data confidentiality and privacy
- Public access to health information
- Direct financing of HMIS activities for example as (% of Total Health Expenditure and Government Expenditure on Health)

HMIS Policies should also promote:

- unified and integrated HMIS used by all actors
- incentivized data demand and information use
- functional linkage among all statistical constituencies
- continual improvement in data quality
- individual and institutional learning
- knowledge creation and management
- public access to health information in user friendly formats

Now that we know what the resources of health information systems are and how it is the responsibility of the HMIS to make sure that these resources are available, we will move to second component of HIS, namely, the indicators.

	What are indicators? Can you list 3 that you know of?

2. Indicators

Indicators are the means of measuring and monitoring progress. Health indicator is a characteristic of an individual, population or an environment which can be measured and used to describe one or more aspects of the health of an individual or population (Medical Dictionary 2009). Table below illustrates examples of a health indictor;

health indicator

A limited but measurable element of the health of a community that is used to gauge public health as a whole.
See: table

Environmental	General	Maternal-Child	Prevention and Screening	Treatment
Air quality advisories	Birth rate	Infant mortality rate	Mammography use	Access to care
Motor vehicle emissions	Life expectancy	Birth weight of infants	Pap testing	Availability of primary care providers
Pesticide levels in foods	Obesity	Maternal mortality rate	Tobacco counseling	Waiting times for diagnostic services
Source (drinking) water contaminants	Self-reported health levels	Prenatal visits	Vaccination rates	Waiting times for therapeut services

"CITE" Medical Dictionary, © 2009 Farlex and Partners

Figure 5: Source: Medical Dictionary (2012)

Since indicators are developed and formulated, they are part of the **processes** of the HIS. Developed Indicators should be **SMART**- **s**pecific, **m**easurable, applicable or **a**ttainable, **r**eliable and **t**ime bound.
They should be able to measure the outcome of different health programs and interventions and be reliable in evaluating progress and detecting both positive and negative changes in the health status. They should also be standardized to allow for comparison and easy monitoring.

	Remember Indicators should be **SMART**- **S**pecific, **M**easurable, **A**ttainable, **R**ealistic, **T**ime Bound

Each country usually have many health indicators but there is should be a minimum set of core indicators standardized to allow for comparisons within a country and between countries. These indicators should address 3 domains:

- Health determinants: e.g. demographic and socioeconomic indicators and risk factors
- Health system, addressing:
  - Inputs (resources-human, financial, policy),
  - outputs(service availability and quality) and,
  - outcomes(service coverage and utilization)

Health status of the population: morbidity and mortality indicators
In 2015, WHO headquarters released a document identifying 100 core indicators for countries to choose from that address the health determinants, health status and the health system.

The WHO East Mediterranean region for example has identified fifty eight core indicators that its member states have agreed upon and should report on annually. It is the responsibility of the HMIS to collect this information and report to the regional office.

We know now that it is important to develop indicators but from where will the indicators data be collected from. Here come the **data sources**, our third component, that shows from where these indicators are collected.

3. Data Sources

Data sources indicate from where the data is being collected. It is also considered part of the processes of HIS.

	List six health information data sources

HIS data sources come from 2 main sources as shown in Figure 3.2:

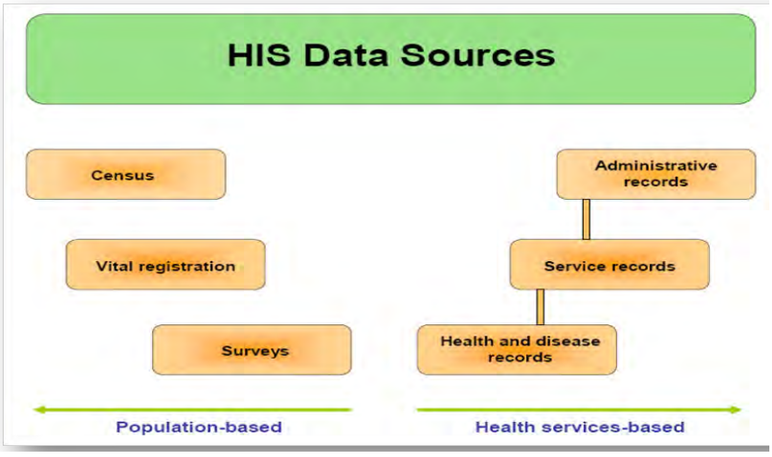


Fig 6: HIS data sources (HMN)

- Population based - from the population through national census, civil registration (birth and death registration) & surveys (household surveys, multi-indicator cluster surveys- MICS)
- Institution or Facility Based- from health care institutions and these include individual or patient records(number of patients, diseases, causes of death), service records (priority health services offered - Lab, X-rays, procedures, vaccinations), and resource records (Human resources, Finance, Medicines and medical supplies.This is also referred to as the routine health information system.

In the following table, you can see how that data sources cover the 3 domains of indicators mentioned before:

Table 1. Sources of data for health indicators by domain

	Determinants of Health	Health Systems		Health status
		Inputs and outputs	Outcomes (coverage and use)	
Censuses	•	•		•
Civil Registration	•			•
Population Surveys	•	•	•	•
Individual Records	•	•	•	•
Service Records		•	•	•
Resource Records		•		

HMN framework 2008

An Integrated HMIS will be able to aggregate data from different sources to have an overview of how the health system is performing and have an over view of the health status and determinants. As the data is not all collected solely by the health system, this entitles the close collaboration and coordination with other bodies that collect data relevant to health (e.g civil registration, bureau of statistics, private sector, and NGOs.

With this we have the means of measure and the sources of data. Let us move on to the actual collection and management of this data. This takes us to our fourth component, **data management.**

4. Data Management

After indicators are developed and the sources from which it will be collected are determined, the next step is for data collection & management. Data management includes:

i. Data **Collection**- choosing the appropriate way to collect the data (quantitative, qualitative, mixed, through questionnaires or taking body samples). Developing suitable data collection forms is very important especially for routine information.

ii. Data **Compilation**- data alone is not efficient, it must be compiled to become information that is meaningful and can be used.

iii. **Storage-** where the data is stored for future use, confidentiality and security are important. This also includes indexing and classifying information for easy storage and retrieval purposes.

iv. Quality Assurance- quality data means that the data is:

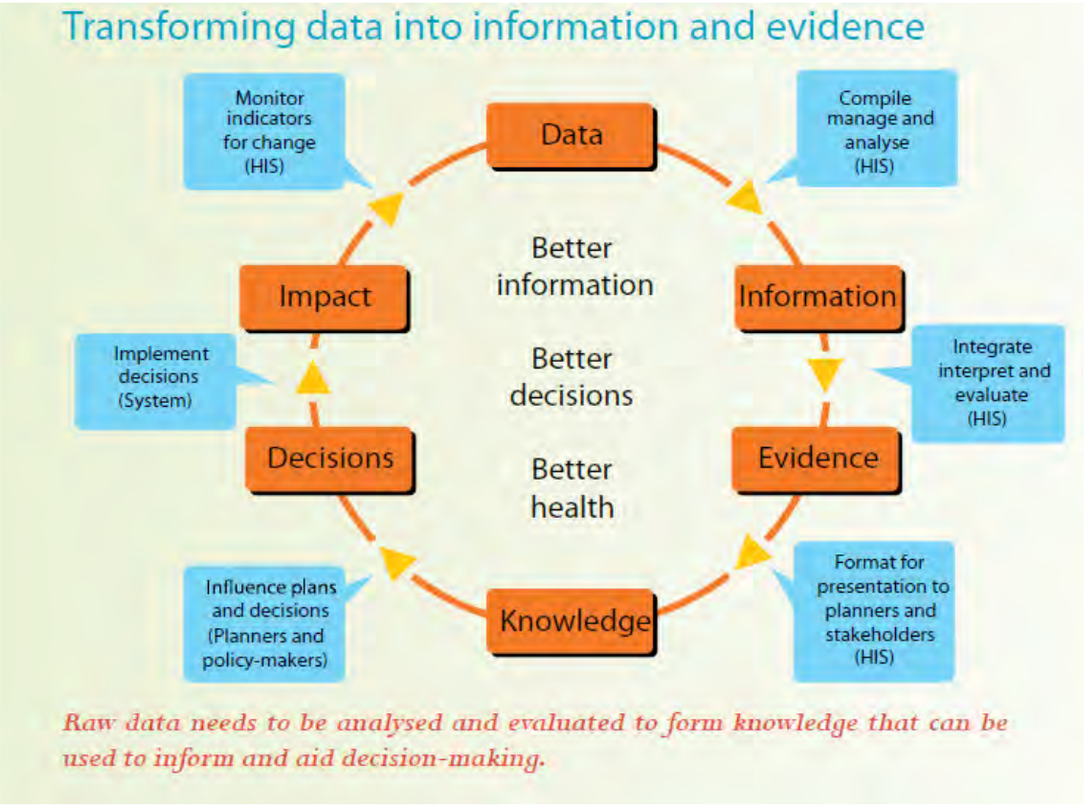
- Complete
- Accurate
- Standardized and representable
- Timely
- Verifiable and consistent
- Accessible
- Secure

- Data processing & Interpretation- statistical interpretation of the data, analysis…By this we have developed our indicators, determined our sources for each indicator, collected the data, analyzed and stored it. This brings us to our fifth component, information products, and here we will know how the data after being processed will be presented to be used. Remember the health information users in unit 2?

5. Information Products

Data in itself is not meaningful until it is compiled and analysed to produce information that can give an overview of the situation and drive change. The HMIS is responsible for changing data into information and then presenting this information in different ways depending on the targeted audience. Information products include: statistical reports, dashboards, alerts and queries or even policy briefs. ICT can be used to produce innovative solutions that are more attractive. Innovation in information products is important as here you are aiming at transforming the evidence into knowledge and practice.

The diagram below illustrate how when data is processed into knowledge and evidence it becomes useful knowledge that can drive change and lead to informed decisions with desirable outcomes that can impact the health of the population.



Source: WHO (2008:44). Transforming data into information and evidence

6. Dissemination and Use

Generating information has no value if this information is not used. Dissemination is important to direct health decisions in the right way. The HMIS is responsible to advocate for the utilization of information and evidence for decision-making. the overriding purpose of HMIS is getting the right information to right manager at the right time. Many factors will affect whether disseminated information will be used. These would include:

- Quality (accuracy)
- how it is presented
- Timeliness
- And Relevance

	Remember a Major goal of **HMIS** is: To provide the **right information** to the **right decision-maker** at the **right time** in the **right way**

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3.4 Summary

Well done! We have completed exploring the elements and components of Health Information Systems. We are now ready to move on to the next unit.

UNIT 4: DESIGN & IMPLEMENTATION OF HMIS

4.1 Introduction

Now that we have explored the 6 key components of HIS, we can move forward to see how we can implement HMIS in order to assess and strengthen our Health information systems. **Systems implementation** is the process of: defining how the information **system** should be built (i.e., physical **system** design), ensuring that the information **system** is operational and used, ensuring that the information **system** meets quality standard (i.e., quality assurance). On the same note design and implementation of an effective and efficient health information system are intimately linked and must fit into the organization of the health system for which it generates information. Development of a rationally structured routine information system can potentially contribute to the overall improvement of the management capabilities of the health services.(WHO 2000 : 49).

4.2 Learning outcome

By the end of the unit you should be able to:
Appraise the structure and design of HMIS
Implement a Health Management Information System

4.3 Design and structure of HMIS

The WHO (regional office for Western Pacific, 2004) developed a practical guide for developing Health Management Information Systems in developing countries. It specifies 10 steps each country should follow in looking and assessing their system. These are:

1. **Review the existing system:** An efficient HMIS cannot be a standalone system. It must integrate with other existing systems. In order for this to happen, the rule of the thumb is "Do not destroy existing systems; build on the strengths and learn from the weaknesses of what already exists. WHO 2004:5. In the review of the existing systems, take an inventory of quality of data , problems with the current system and aspects of the system that need to be retained, modified or abolished.
2. **Define the data needs of relevant units within the health system:** Different administrative levels in the health system have different roles, and therefore have different data needs. Not all data needs should be generated through the routine system of data collection. Data that are not frequently needed or are required only for certain subsets of the population can be generated through special studies and sample surveys. By doing so, define the various roles of each level as well as the indicators needed by each level to perform its functions,
3. **Determine the most appropriate and effective data flow :** Not all the data collected at a certain level need to be submitted to higher levels. The most detailed data should be kept at the source, and reporting requirements to higher levels should be kept at a minimum.
4. **Design the data collection and reporting tools :** This entails coming up with simple and short data collection tools.
5. **Develop the procedures and mechanisms for data processing:** The way the HMIS data is processed should be consistent with the objectives for data collection and the plans for data analysis and utilization.
6. **Develop and implement a training programme for data providers and data users:** Develop a training programme based on the needs and levels of the target groups. This means that a Training Needs Assessment (TNA) must be carried out before hand to help in identification of the said needs and levels.
7. **Pre-test the system :** The system should be pre-tested in conditions that reflect as much as possible the actual conditions prevailing during its implementation .and if necessary, redesign the system for data collection, data flow, data processing and data utilization until the expected outcome is achieved.

8. **Monitor and evaluate the system :** The goal of monitoring and evaluation is not to focus on what is wrong and condemn it; rather, it is to highlight the positive aspects of the system that make it work, as well as to identify what went wrong as a basis for improving the system.

9. **Develop effective data dissemination and feedback mechanisms:** An effective way of motivating data producers is to constantly provide them with both positive and negative feedback on the status of the data they produce. Determine the most effective and efficient way of disseminating the data generated from the HMIS by considering the following factors: (1.1) To whom should the data be disseminated? The needs of target groups have to be considered. (1.2) What should be disseminated? This should include not only the outputs of the HMIS, but also feedback on who is using the information and what/how they are using it. (1.3) How often should data be disseminated to the different target groups? (1.4) In what form should the data be disseminated to each of the different target groups? The whole range of forms and venues for data dissemination should be considered.

Enhance the HMIS: The development of the HMIS is always a work in progress. It is a dynamic endeavour where managers and workers strive for constant improvement.

Once all the above has been done the system design should be well grounded to achieve efficiency and should have the following desired characteristics

1. Completeness
2. Relevance
3. Accuracy
4. Timeliness
5. Conciseness

	Keep reminded that it is always best to build on **existing systems**, try to improve rather than re-design except if very necessary.

4. 4 Assessment of HMIS (HMN)

Reviewing Health information Systems is very important. But how do we assess our HMIS? The HMN provides a tool for assessment of National HMIS. So why don't we move on to understanding that tool.

Assessment of HMIS

	**Can you deduce what should be assessed putting in mind what we learned in Unit 3?**

Assessment of a country health information system using HMN assessment tool usually puts the following under assessment:

1. National HIS Resources
2. National HIS Indicators
3. National HIS Data Sources
4. National HIS Data Management
5. National HIS Information Products
6. National HIS Information Dissemination and use

Remember them?! Yes, these are the 6 key components of a health information system.

The template below is used to assess each of the components above. It shows the number of questions in each section and the possible scores and interpretation of these scores.

Template for Analysing Results of the Assessment Tool

Categories	Number of Questions	Total Possible Score	Highly adequate	Adequate	Present but not adequate	Not adequate	Not functional
I. Resources	**23**	**69**	**55-69**	**41-54**	**27-40**	**14-26**	**0-13**
A. Policy and planning	8	24	19-24	14-18	10-13	5-9	0-4
B. HIS institutions, human resources and financing	9	27	22-27	17-21	11-16	6-10	0-5
C. HIS infrastructure	6	18	15-18	11-14	8-10	4-7	0-3
II. Indicators	**5**	**15**	**13-15**	**10-12**	**7-9**	**4-6**	**0-3**
III. Data sources	83	249	200 - 249	150 - 199	100 - 149	50 -99	0-49
A. Census	9	27	22-27	17 - 21	11 - 16	6 - 10	0- 5
B. Vital statistics	13	39	31 - 39	24 - 30	16-23	9-15	0-8
C. Population-based surveys	11	33	27 - 33	20 - 26	14-19	7-13	0-6
D. Health and disease records (e.g. surveillance)	12	36	29 - 36	22 - 28	14 - 21	8 - 13	0-7
E. Service records	12	36	29 -36	22 - 28	14 - 21	8 - 13	0 - 7
F. Administrative records	26	78	63 - 78	47 - 62	32 - 46	16 - 31	0 - 15
i. infrastructure	7	21	17 - 21	13 - 16	9 - 12	5 - 8	0 -4
ii. human resources	4	12	10 -12	8 - 9	5 - 7	3 - 4	0-2
iii. financial	**8**	**24**	**20 - 24**	**15 - 19**	**10 - 14**	**5 - 9**	**0 - 4**
iv. equipment, supplies, commodities	7	21	17 - 21	13 - 16	9 - 12	5 - 8	0 - 4
IV. Data management	**5**	**15**	**13 - 15**	**10 - 12**	**7 - 9**	**4 - 6**	**0 - 3**
V. Information products: selected indicators	**137**	**411**	**329 - 411**	**247 - 328**	**165 - 246**	**83 - 164**	**0 - 82**
A. Health status	33	99	80 - 99	60 - 79	40 - 59	20 - 39	0-19
1. Mortality	21	63	51 - 63	38 - 50	26 - 37	13 - 25	0- 12
2. Morbidity	12	36	29 - 36	22 - 28	15 - 21	8 - 14	0 - 7
B. Health system information	54	162	130 - 162	98 - 129	65 - 96	32 - 64	0 - 31
C. Determinants	18	54	44 - 54	33 - 43	22 - 32	11 - 21	0 - 10
VI. Dissemination and use	**20**	**60**	**49 - 60**	**37 - 48**	**25 - 36**	**13 - 24**	**0 - 12**
A. Analysis and use	6	18	15 - 18	11 - 14	8 - 10	4 - 7	0 - 3
B. Policy and advocacy	4	12	10-12	8 - 9	5 - 7	3 - 4	0 - 2
C. Planning and priority setting	3	9	8 - 9	5 - 7	4 - 5	2 - 3	0 - 1
D. Resource allocation	4	12	10-12	8 - 9	5 - 7	3 - 4	0 - 2
E. Implementation and action	3	9	8 - 9	5 - 7	4 - 5	2 - 3	0 - 1

Before you move on, Take some time and think about your National Health Information System, how do you think it will score in each of the above components? Which will be the weakest component?

Design of HMIS strengthening activities should consider the following:

- Requirements for efficient and effective data collection: clinician notes, longitudinal registers, summary sheets, User-interface electronic data capture screens.
- Requirements for establishing standards for data capture, exchange, system integration and interoperability.
- Infrastructural requirements for building data repositories and banks.
- Infrastructure requirements for data presentation and visualization
- Focus on end user data and information requirements
- Effectively profile the end-user data and information needs
- Determine their preferred presentation format and platform/media
- Determine their preferred frequencies of dissemination
- Adopt appropriate technology to meet dissemination requirements
- Adopt appropriate technology to archive the data and information

For an effective National HMIS, the Country should:

- Define the data elements needed from each data source
- Design standard data capture tools
- Build the capacity of the health care workers on data capture
- Make electronic formats of the tools
- Design a IT interactive interface and a robust database
- Determine essential dataset needed from each data source
- Design IT interface to mine data from priority databases
- Develop an integrated data repository relevant to the organizational specific needs
- Build capacity for data analysis and data presentation
- Determine the appropriate decision support tools required
    - Dashboards
    - Messaging services
    - Flash alerts
- Adopt appropriate technology to support the data presentation requirements

Design of HMIS strengthening activities should consider the following:

- **Requirements for efficient and effective data collection:** clinician notes, longitudinal registers, summary sheets, User-interface electronic data capture screens.
- Requirements for establishing standards for data capture, exchange, system integration and interoperability.
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- Infrastructure requirements for data presentation and visualization
- Focus on end user data and information requirements
- Effectively profile the end-user data and information needs
- Determine their preferred presentation format and platform/media
- Determine their preferred frequencies of dissemination
- Adopt appropriate technology to meet dissemination requirements
- Adopt appropriate technology to archive the data and information

UNIT 5: ROLE IF ICT IN HMIS

5.1 Introduction

You have come to the last unit of the module. In the previous module you learnt about the design and implementation of HMIS, including its assessment. Throughout this module, HMIS is being emphasized as a key player in health systems strengthening. This unit will highlight the important role ICT plays in strengthening the impact of HMIS in the overall health systems strengthening goal. The unit covers the following topics:

1. Digitalization of health information systems
2. Data warehouse
3. E-health
    i) Telemedicine
    ii) Electronic medical records
    iii) Mobile health
4. Learning and development
5. Infrastructure and requirements

5.2 Unit outcomes

	By the end of the unit you should be able to: Apply ICT solutions for HMIS strengthening

1. Digitization of health information system

In many developing countries the Health information systems have been paper based but recently many countries have worked their way towards digitization of their health information system using open software systems like DHIS2 (District health information system) and developing integrated data repositories, which have proved to increase reporting rate and minimize the burden and time consuming aspects associated with paper-based systems. This also improved the quality and timeliness of the data produced.

Figure 6.1 illustrates the digitization of HMIS from facility level to the national level. The sharing of information with several stakeholders through this system is effective.

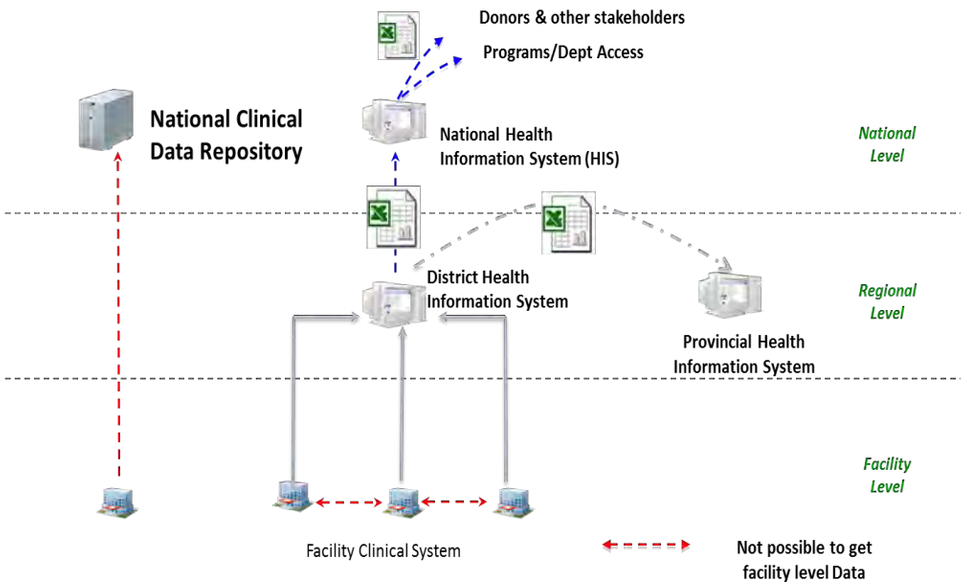

Figure 7: (Source: LMG Manual, p.292)

2. Data warehouse

A data warehouse is a subset of the overall data available in a system, collected over large periods of time, and needed to process a relatively small number of very large data requests.

It is an interim database that lies somewhere between the source databases and the reporting platform.

Data warehousing is used for archiving, data mining, and analytics or some combination of all three. A data warehouse maintains its functions in three layers: staging, integration, and access. Staging is used to store raw data for use by developers (analysis and support). The integration layer is used to integrate data and to have a level of abstraction from users. The access layer is for getting data out for users

	**Glossary:** please refer to the glossary for explanation of technical terms like data mining

Data warehouse is useful for sharing data, extracted from an organization's multiple sources, to facilitate analysis, reporting and strategic decision making (Grob and Hartzband, 2008). Figure 6.2 illustrates how an organization's information system can be integrated into a data warehouse.

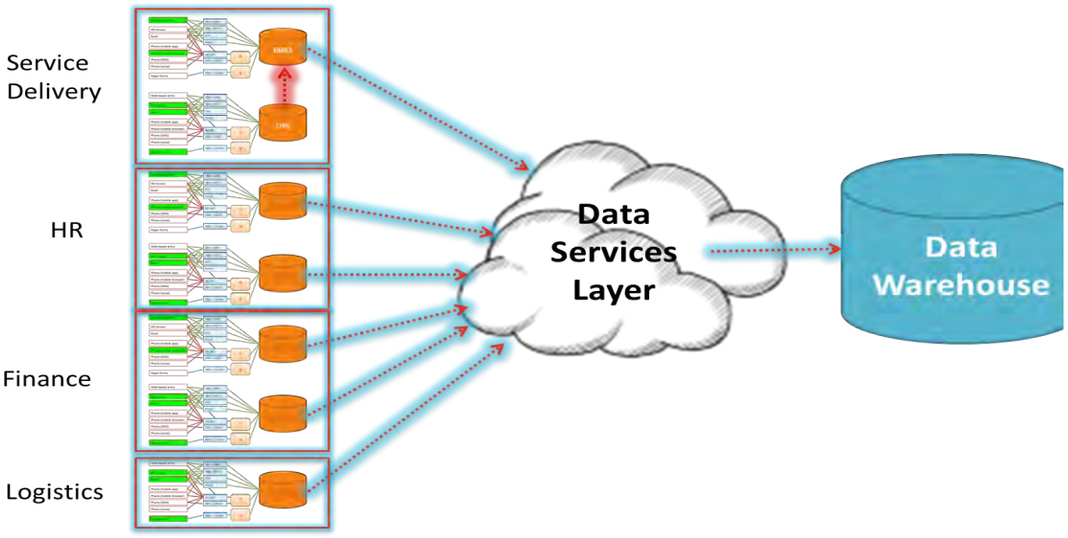

Figure 8: Data Warehouse Integrating Information System (Source: LMG Training Manual, pg.293)

In figure 8, the data warehouse is used for sharing information and also obtaining feedback.

Insert Information sharing and feedback illustration on pg.293 of LMG training manual

3. E-health

In-text question:
What do you understand by the term e-health?

E-health refers to healthcare practice that is supported by electronic processes and communications. It involves the use of information and communications technologies to improve health in general and the healthcare system in particular (Medina-Garrido and Crisostomo-Acevedo, 2010).
E-health has several uses including telemedicine, electronic medical records and m-health. The three uses will be discussed below.

I. Telemedicine

Telemedicine is the remote diagnosis and treatment of patients by means of telecommunications technology. It provides patients in remote locations the opportunity to access medical expertise quickly, efficiently and without leaving their location. It is feasible in countries where there is a shortage of health manpower, for example, Ethiopia (Shiferaw and Zolfo, 2012). Telemedicine, also called telehealth, evolved through the use of telephone and telegraph. In recent years it relies on various ICTs to strengthen health care delivery.
The case study below shows how the African Medical and Research Foundation has successfully used telemedicine in Kenya.

Telemedicine in AMREF
AMREF is improving its clinical outreach program with the help of telemedicine. Many sites have been set up to test the approach and gradually expand it acr..oss nearly 80 rural hospitals currently served by AMREF across East Africa. The AMREF telemedicine project provides expert second opinion to clinicians in those hospitals supported by the AMREF outreach programme. The primary goal is to improve the quality of and access to specialist care. The secondary goal is to improve care through training using tele-consultation and CME courses.
An AMREF clinician and physicians consult on specific cases. Clinical staff from the rural hospital use e-mail to forward the case notes and supporting images of the patients to be seen the following day. Notes may be scanned images of handwritten notes or PC-based using proprietary software. Digital images of the patient, digital images and/or video clips of any visible lesion, and digital images of X-rays can accompany the notes together with the results of any other diagnostic procedures. The outreach clinic accesses the Internet for transmission of the clinical notes and attachments, and begins the virtual consultation.
Consultants meet to prepare opinions and at an agreed time a teleconferencing connection will be established. On completion of the consultations, the entire record is saved on a dedicated library file on the AMREF server. In this way, AMREF helps link thousands more patients in remote areas every year with services and skills in an increasing number of hospitals in Eastern Africa.
Source: www.amref.org cited in InfoDev,2006

II. Electronic health records (EHRs)

An electronic health record is a digital version of a patient's paper chart. EHRs are real-time, patient-centered records that make information available instantly and securely to authorized users. EHRs are related to electronic medical records (EMRs), but go beyond in that they are built to go beyond standard clinical data collected in a provider's office and can be inclusive of a broader view of a patient's care. EHRs can, among other things:

- Contain a patient's medical history, diagnoses, medications, treatment plans, immunization dates, allergies, radiology images, and laboratory and test results
- Allow access to evidence-based tools that providers can use to make decisions about a patient's care (https://www.healthit.gov/providers-professionals/learn-ehr-basics)

III. Mobile health

Mobile health, also called m-health, refers to the application of mobile commerce for healthcare. In particular, mobile e-health involves a spectrum of information and telecommunication technologies to provide healthcare services to patients who are at some distance from the provider and also to provide supporting tools for the mobile healthcare professional (Panteli, Pitsillides, Pitsillides& Samaras, 2007).

The use of mobile devices in health is capitalizing on the widespread availability and affordability of these devices. M-health is also expected to reduce the disparities in the population in access to healthcare.

	**In-text question**: Do you think m-health would have much success in your community?

4. Learning and development

Learning and development is important in strategic human resource management, performance improvement and overall service delivery. You are aware that health care is a sensitive, yet dynamic practice industry. It is very easy to find oneself irrelevant in health care practice. Hence the need for continuous learning and development. Here we can appreciate the use of ICT in two main areas, training and development, and also research.

i) Training and development (T&D)

Here ICT can be used for training needs analysis (TNA) and T&D effectiveness evaluation by health managers. ICT can also be used to delivery training to health workers, even in scattered geographic locations using leaning content management systems. Computer-based training systems are now used to strongly support efficient learning for health care professionals at all levels.

ii) Research

Research and evidence-based practice is crucial in all areas of healthcare practice, including clinical and administrative. You know by now that research relies a lot on availability of accurate and accessible information for its generation. ICT has improved access to availability of current evidence-based health information. And in recent years web-based electronic health research databases are amassing, and affordable to developing country researchers. Global health partnerships (funders, publishers and academia) are willing make these resources available to minimize the gap between developed and developing countries. Hence we have Research4life databases (www.research4life.org), health sciences online (www.hso.info), among many freely available to specified band countries of the developing world.

In-text question:
Do you consider research important for your own professional development in health practice?
Has ICT been effective in satisfying your own information needs?

5. Infrastructure and requirements

In all the above topics (sub-units), you have learnt how ICT can be effectively applied in HMIS strengthening. This topic highlights the key infrastructure and requirements for ICT to be effective in this role.

i. **Physical**
Physical infrastructure refers to the tangible hardware that has to be put in place. ICT needs computers, input and output devices to work. In the case of m-health, supporting mobile devices should be available.

ii. **Software, interoperability and maintenance**
Software is the engine of ICT application in HMIS. There is usually a lot of consideration with regard to software selection. Inappropriate software can stall an ICT based HMIS attempt. The use of simple, local technology and locally adopted user-friendly software, are key to overcoming the technical difficulties that can be encountered in terms of software interoperability and maintenance problems (Recommended by Shiferaw and Zolfo, 2012)

iii. **Connectivity**
As you know, some ICTs depend on connectivity to work. Therefore, connectivity issues, such as reliable Internet service, bandwidth and affordable mobile data are key requirements of successful ICT in HMIS.
Bandwidth, reliable Internet service

iv. **Human capacity**
Capacity building for ICT is very important in HMIS strengthening. People should be prepared to work with technology and be comfortable around it.

v. **Security issues**
ICT based HMIS poses a lot of security threats. There is security of data, which should not be vulnerable to third party. And there is security of equipment or hardware resources that may require complex security design measures to be put in place.

vi. **Sustainability**
Sustainability refers to guaranteed availability of a system, and its relevant response to challenges at the time in which it is required. Sustainability is more of a concern in the era of free web-based applications since some web hosted applications may not last long. Costs and resource requirements associated with use and maintenance of ICT-based HMIS also need a sustainability consideration.

Activity:
Briefly outline how you would apply ICT to strengthen HMIS in your organization.
What challenges do you for see, and what would you do to overcome them?

5.2 SUMMARY

Integrating ICT in HMIS can positively contribute to health systems strengthening and universal health coverage. The success however depends on proper and sustainable infrastructure and requirements considerations.

GLOSSARY	Archiving – Archiving is a process for backing up data that may not be routinely accessed, but to which an organisation wants to retain the ability to access should the need arise. By archiving data, database queries become faster and more efficient, translating into faster, more responsive experiences for the end users Data dictionary – A data dictionary, or metadata repository, as defined in the IBM Dictionary of Computing, is a "centralised repository of information about data such as meaning, relationships to other data, origin, usage, and format." In other words, a data dictionary helps describe the data in the system, and help translate the data of one system into terms acceptable in another system Data dissemination – Once data has been integrated into the national HIS, stored in the data warehouse, sent to the various data marts for data mining and visualisation, the "results" should be accessible by the decision makers. The method of dissemination depends on what the results look like and who needs them; however, data dissemination could occur by web page, email, RSS, SMS text message, paper report, voice phone call, a briefing, or another method Data governance – Data governance embodies a convergence of data quality, data management, data policies, business process management, and risk management surrounding the handling of data in an organisation. Through data governance, organisations are looking to exercise positive control over the processes and methods used by their data stewards and data custodians to handle data Data mart – A data mart (DM) is the access layer of the data warehouse (DW) environment that is used to get data out to the users. The DM is a subset of the DW, usually oriented to a specific business line or team. There can be multiple data marts inside a single HIS system; each one relevant to one or more business units for which it was designed Data mining – Data mining is the process of extracting patterns from large data sets by combining methods from statistics and artificial intelligence with database management. Data mining is a process of inspecting, cleaning, transforming, and modeling data with the goal of highlighting useful information, suggesting conclusions, and supporting decision making Data Services layer (DSL) – The DSL provides a layer for data access that is independent of the physical schema. The purpose is to provide a consistent interface for accessing data, independent of the structure of the databases attempting to make the connection Data warehouse – A data warehouse is a subset of the overall data available in a system, collected over large periods of time, and needed to process a relatively small number of very large data requests. It is an interim database that lies somewhere between the source databases and the reporting platform. Data warehousing is used for archiving, data mining, and analytics or some combination of all three. A data warehouse maintains its functions in three layers: staging, integration, and access. Staging is used to store raw data for use by developers (analysis and support). The integration layer is used to integrate data and to have a level of abstraction from users. The access layer is for getting data out for users

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MODULE 7
HEALTH FINANCING AND FINANCIAL MANAGEMENT

LIST OF FIGURES

UNIT 1: OVERVIEW OF HIS &HMIS

1.1 Introduction

Welcome to the first unit in Health Management Information Systems. In this unit we are going to focus our attention on the various concepts of HMIS as well as the benefits it provides to health care. Health care is an information intensive industry (Rodrigues, 2010), in which reliable and timely information is a critical resource for the planning and monitoring of service provision at all levels of analysis. It is in this view that HMIS plays a critical role in enhancing creation, use and sharing of this information to make sound decisions. Our learning outcomes and the main sub topics of this unit are as outlined below:

1.2 Unit Outcome

	By the end of the unit you should be able to: • Define various terms in HMIS • Outline the evolution of HMIS • Learn the importance of HMIS

Every topic in this unit has been addressed maximally to provide you with a level base understanding of the topic. However you are advised to read further and get additional materials to compliment these notes. This course demands a lot of reading, effort and discipline. The more you put into it, the more enriching you will find it. We hope that it will be a challenge which you will take up with enthusiasm. The following is a breakdown of the topics that will be covered in this unit:

- Evolution of HMIS
- Definition of terms and Concepts
- The Knowledge Pyramid (DIKW) data, information knowledge and Wisdom
- Examples of HMIS
- The importance of HMIS in HSS

1.3 Definition of terms and Concepts

To clearly understand the scope of HMIS it is important to define certain terminology and concepts that will be used constantly in this manual. These are the basic concepts and theoretical points of departure that you will need in your study. Understanding them will assist you to avoid confusing them in the context in which they are used throughout this module.

1. Data
2. Information
3. Knowledge
4. Wisdom

The above four elements make up the Knowledge Pyramid (DIKW). For purposes of this unit, we shall only define these four terms.

- Data : are input raw materials from which information is produced. These are facts obtained by reading, observation, counting, measuring, weighing, which are then recorded
  - Some examples of data sources are health facilities, community, other government agencies (e.g. Registration of births and deaths, National Bureaus of Statistics)
- Information refers to data that have been analysed, interpreted, presented and understood by the recipient of the communication

MODULE 7: HEALTH FINANCING AND FINANCIAL MANAGEMENT

Module Introduction

Welcome to this module. The previous module considered the role of HMIS in the strengthening of Health systems. This module will now consider the health financing building block of the health system.

The module is organized as follows:

- Unit 1 provides definitions of health financing and financial management and their difference.
- Unit 2 discusses the objectives and goals of UHC, describes the different functions of health financing policy, and shows how, in conjunction with the health system performance, policy decisions can influence progress towards UHC. This unit also provides some example of health financing policy instruments.
- Unit 3 provides an overview of the principles and practices of good financial management for UHC. It equips the learner with skills and knowledge on management and accountability.
- Unit 4 covers the rationale and the principles of health expenditure tracking and accounting at all levels of the system.

Module Outcomes

	By the end of this module, you should be able to: • Define the role and concepts of health financing and financial management in the context of UHC • Describe different functions of health financing policy and how policy decisions can influence progress towards UHC • Apply financial management principles and tools for optimizing the allocation and efficient use of limited resources • Analyse health expenditure data for evidence based planning and accountability in health program and health facility settings

UNIT 1: CONCEPTS OF HEALTH FINANCING AND FINANCIAL MANAGEMENT

1.1 Unit Introduction

Welcome to the first unit of this module. In this unit we shall focus on definitions, terminologies and concepts used in health financing and financial management.

1.2 Learning Outcome

	By the end of this unit, you should be able to outline the concepts of health financing and financial management in the context of UHC

1.3 Topic 1: Concepts of health financing

In this topic, we shall define health financing and concepts used in health financing.

Sub-topic 1: Definition of health financing

Let us define health financing.

Health financing is much more than a matter of raising money for health. It is also a matter of who is asked to pay, when they pay and how the money is spent. It includes raising adequate funds for health, in ways that ensure people can use needed services, and are protected from financial catastrophe or impoverishment associated with having to pay for them. It provides incentives for providers and users to be efficient.

In the next sub-topic, we shall look at some terminologies and concepts used in health financing.

Sub-topic 2: Terminologies and concepts used in health financing

Revenue raising: It refers to the way money is raised to pay health system costs.

Pooling is accumulation and management of financial resources to ensure that the financial risk of having to pay for healthcare is borne by all members of the pool and not by the individuals who fall ill. The primary purpose is to spread the financial risk associated with the need to use health services.

Purchasing is the process of paying for health services.

Benefit package refers to the services and commodities paid for by the purchaser using prepaid funds.

Universal Health Coverage: UHC is about ensuring that everyone everywhere can access quality health services without facing financial hardship as a result (http://www.who.int/health_financing/en/)

We are now ready to navigate to the next topic where we shall define financial management and related concepts.

1.4 Topic 2: Concepts of financial management

In this topic we shall define financial management and look at terminologies and concepts used in financial management. Next, we shall start with defining financial management.

Sub-topic 1: Definition of Financial Management

Financial management is the process of achieving the organization's objectives in an efficient manner through planning (budgeting), acquiring, organizing, directing, monitoring, controlling and reporting.

Let us now introduce financial management terms and concepts, which will be used throughout this module.

Sub-topic 2: Terminologies and concepts used in financial management

Financial accounting: External reporting which emphasises historical, custodial and stewardship reporting to stakeholders.

Management accounting: Identification, measurement, accumulation, analysis, preparation, interpretation and communication of information that assists managers in fulfilling organisational objectives.

Auditing is a systematic process of objectively obtaining and evaluating evidence regarding assertions about economic actions and events to ascertain the degree of correspondence between those assertions and established criteria and communicating results to interested users.

Financial auditing: This is seeking objective evidence relating to reliability and integrity of financial and occasionally operating information.

Activity:

	What is the difference between Health Financing and Financial Management?

1.6 Summary

	In this unit we have covered terminologies and concepts used in health financing and financial management.

UNIT 2: HEALTH FINANCING POLICY FRAMEWORK & MECHANISMS

2.1 Unit Introduction

Welcome to unit 2 of this module.

In the first unit of this module, we looked at terminologies and concepts used in health financing and financial management. We are now ready to engage in this unit.

In this unit, we shall cover the following four topics. Let me briefly highlight the topics without going into details.

- Role of health financing policy in the achievement of UHC
- Overview of health financing policy framework
- How health financing influences health system performance
- Health financing policy instruments

2.2 Unit Outcome

	By the end of this unit, you should be able to use the health financing policy framework in making optimal allocation of resources in resource-constrained settings.

Let us now embark on the first topic in this unit.

2.3 Topic 1: Role of health financing policy for achievement of Universal Health Coverage (UHC)

Sub-topic 1: Health Financing Reforms

Our next sub-topic is health financing reforms. Before we discuss the topic, watch the video on UHC.

	You will now watch the video on UHC and Health Systems titled "Get Well, Maya: Universal Health Coverage Ensures Healthy Futures", World Bank, October 2012. Please click the link below to watch the YouTube Video https://youtube/5Jb6Ju3KQPE What inspires you in the video about health financing reforms?

What are health financing reforms and why are they necessary?

Health financing reform is about making deliberate changes on how the health financing system operates to improve the attainment of the health system goals. As already shown in module1 financing is one of the components of the health system. As such health financing functions have a direct effect on the overall performance of the health system and influence the attainment of the health system goals. Health financing reforms therefore forms part of the health system strengthening process.

Broadly speaking, health financing reforms could be in the areas of policies, institutional, administrative and legal reforms among others. Health financing reforms are necessary to ensure the achievement of intermediate objectives of universal coverage e.g. efficiency, transparency and accountability, and equity in resource distribution which are the precursor to the ultimate goals of UHC i.e. utilization relative to need, financial protection and equity in finance, and quality.

Sub-Topic 2: Goals of UHC and health financing

In this sub-topic, we want to see how health financing decisions affect achievement of the goals of UHC. We begin by understanding the aim of UHC.

According to the World Health Report 2010, UHC aims to;

- provide all people with access to needed health services
- of sufficient quality to be effective and
- ensure that the use of these services does not expose the user to financial hardship.

Let us now look at each of the goals of UHC:

Goal 1: Utilization relative to need

This first goal of universal health coverage is to provide all people with access to needed health services, or in other words to improve equity in service utilization. This means that the use of health services is driven or determined by health needs, rather than other factors such as capacity to pay or geographical location. In our framework diagram we refer to this as "utilization relative to need".

Goal 2: Quality

The second goal of universal health coverage is that the health services provided to all people are of sufficient quality to be effective. There are cases where people are "covered" or have entitlements to health services, but the quality is so poor that they are largely ineffective at treating health problems and improving a person's health.

Definition of quality in the context of UHC

Quality refers to the extent to which the health services being delivered are consistent with good medical practice. Poor service quality is widespread in many health systems, in part because there is great uncertainty in medical practice, but also because sometimes clinicians make mistakes. Health financing tool, such as performance based financing (PBF) may be an example how health financing tool improves the quality of care.

Goal 3: Financial protection and equity in finance

Finally, universal health coverage aims to provide financial protection so that the costs of using health services do not create financial hardship for those who need to use them. We also include equity in financial contributions as a fundamental goal, in other words that the burden of funding health services is shared fairly or equitably across society. The goal of financial protection in health ensures that payments made by people towards the cost of using health services (e.g. medicines) should not severely impact on their living standards.

Monitoring financial protection focuses on out-of-pocket payments (OOPS), made at the time of service use, and are found to a varying extent in all health systems. There are many disadvantages when health systems rely on OOPS as the predominant revenue source, most importantly that people may not seek the care they need, or that they may suffer severe financial hardship as a result of making such payments.

Financial protection is commonly measured in terms of **"catastrophic" and "impoverishing"** payments resulting from OOPS. **Catastrophic payments** tells us that a household's OOPS are so high compared with what it can afford, that they may forego other essential goods and services. **Impoverishing payments** are when OOPS push a household below, or further below, the poverty line.

Out-of-pocket payments for health services are called **catastrophic health expenditures** when they are greater than a given threshold (or proportion) of total household expenditure (or income).Out-of-pocket payments for health services are called **impoverishing health payments** when they push a household below, or further below, the poverty line.

The following graph from WHO Report (2010) is an example to explain the effect of OOPS spending on financial catastrophe and impoverishment. Please note that 20-30 percent of OOPs payments as a percentage of total health expenditure is threshold to increase both financial catastrophe and impoverishment (Reference: "Health Financing: The Path to Universal Coverage 2010", World Health Report 2010).

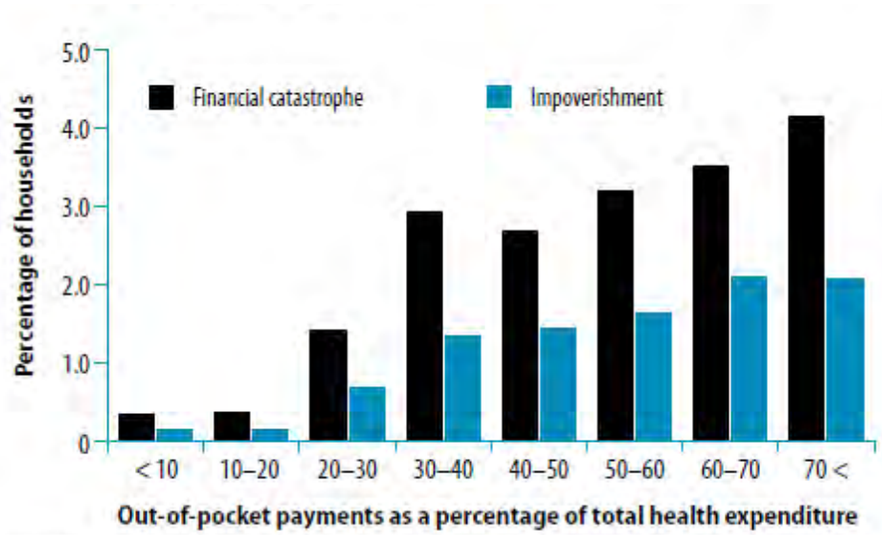


Fig 2.2 The effect of out-of-pocket spending on financial catastrophe and impoverishment

We can make the following observations from the graph:

1. As the proportion of out of pocket payments increases relative to Total Health Expenditure, there is corresponding increase in the percentage of households experiencing financial catastrophe and impoverishment.
2. The increase in financial catastrophe and impoverishment is more pronounced when out of pocket payment exceeds 30% of Total Health Expenditure.

Let us now look at equity in finance.

Equity in finance

Equity in finance is measured in terms of the amount of health-related payments, or financial contributions, a person makes relative to their capacity to pay. There are three types of funding:

1. **Regressive funding**: The type of funding methods places a higher financial burden on people with lower incomes because they are paying a higher percentage of their income than those with higher incomes. Regressive funding is the **least equitable** approach to funding health services.
2. **Proportional funding**: Some payments are made as a percentage of a household's income or earnings, irrespective of whether that household is rich or poor. This is often the case with payroll taxes earmarked for health.
3. **Progressive funding:** The amount any one individual contributes as a percentage of their income is higher for those with higher incomes, and lower for those with lower incomes. This is often the case for income taxes. Another way of thinking about this is that a tax is progressive if the percentage decrease in income which results is lower for low-income households.

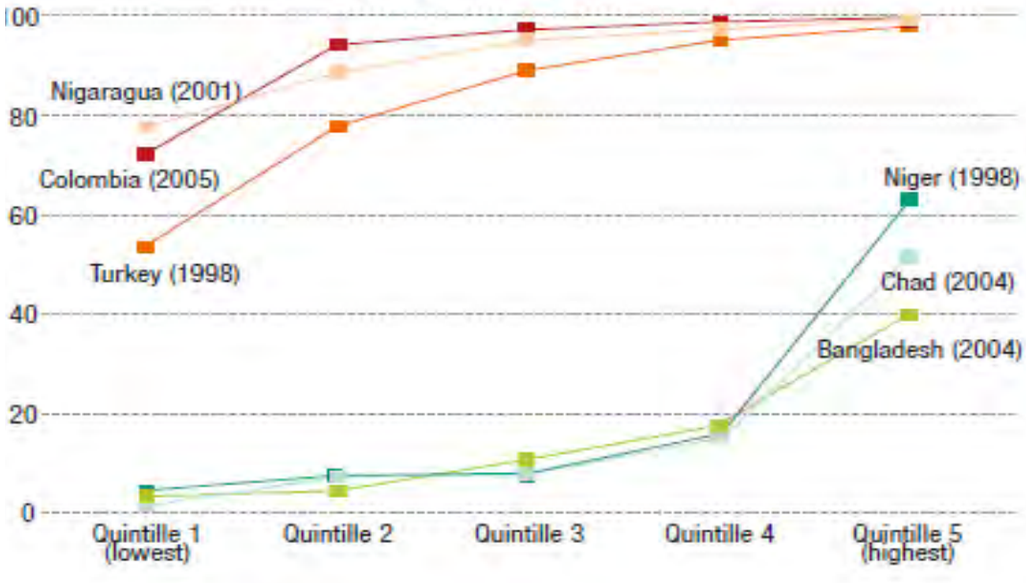
Equity in service use relative to health needs

Equity in health service use means, simply, that individuals that need a particular health service are able to get it. If health systems are to make the most progress towards UHC given the funds available, the amount of health services a person uses should reflect their need and not other factors, such as their ability to pay, or where they happen to live.

One way of illustrating equity in service use is with data about the extent to which pregnant women deliver their children in the presence of a skilled health worker, in other words with the relevant obstetric skills. From a health perspective, the need is clear: all women should deliver in the presence of a skilled, trained health professional. Use the graph below from WHR 2008 to explain there are huge gabs between countries, but also within countries in terms of access to essential health services, such as skilled birth attendance. (Reference: "Primary Health Care (Now More Than Ever", World Health Report 2008)

Before making observations from the graph, we note that the populations of the country is segmented in five groups (quantiles) where quantile 1 comprises the poorest (20%) and quantile 5 are the richest (20%) of the population.

Figure 2.4 Different patterns of exclusion: massive deprivation in some countries, marginalization of the poor in others. Births attended by medically trained personnel (percentage), by income group[27]



The following observations can be made:

1. In all countries access to skilled birth attendants is highest among the richest compared to the poorest
2. High income countries e.g. Nicaragua,Columbia and Turkey have better access to skilled birth attendants compared to lower income countries i.e. Bangladesh,Chad and Niger

2.4 Topic 2: Overview of health financing policy framework

In this topic, we shall understand whether it matters to label health financing systems and the functions of health financing in the context of policy framework for the achievement of universal health coverage.

	By the end of this unit, you should be able to use the health financing policy framework in making optimal allocation of resources in resource-constrained settings.

Sub-Topic 1: Labeling of health financing systems

The decisions and choices made by countries are frequently characterized in terms of broad models or labels; and these labels have tended to largely reflect the source of funds. Traditionally, health financing systems were labeled as two types of models. "Beveridge Model" or "Bismarck Model".

	Does labeling of health financing systems help? i.e. health financing systems that have adopted Beveridge Model or Bismarck Model of financing

The Beveridge Model refers to health systems which are funded through general government revenues, rather than a specific health tax, and in which the entire population is automatically covered i.e. entitled to access publicly funded health services. The term comes from William Beveridge who in 1942 laid the foundations of the British "National Health System" (NHS) established in 1948. The NHS is often referred to as a "tax funded health system"

The Bismarck Model refers to health systems funded predominantly from mandatory contributions made specifically for health, defined as a percent of wages, and typically levied on both employers and employees in the form of payroll taxes; access or entitlements to health services is conditional on these health-specific contributions being made. Named after Otto von Bismarck who established a number of social security schemes, including health insurance, in Germany in the late 19th century. The German health system is often referred to as a "Social Health Insurance System" (SHI).

Focusing on labels such as "tax-funded", or "social health insurance", is not a particularly useful way of thinking about health financing policy; for example just because Germany's health system is referred to as a "health insurance" system doesn't mean that German citizens are "more insured" or have better coverage than British citizens - the NHS also "insures" (or covers) its citizens, even though this terminology is not used to describe it.

So the label used to refer to a health system doesn't help us to do the type of detailed analysis we need to develop policy in a way that improves health system performance.

Sub-Topic 2: Functions of health financing in the context of UHC

In the previous sub-topic, we discussed how it does not matter the label associated with health financing system. Regardless of the label we give to a country's health system, all systems perform similar functions in terms of health financing. They all raise revenues for the health system, often from a variety of sources. They all accumulate these revenues on behalf of some or all of the population (pooling) and then transfer these resources to service providers (purchasing). All health systems make policy choices, explicitly or implicitly, regarding the benefit package or entitlements of the population.

Generally, health financing involves revenue raising, pooling, purchasing, and benefit package design (Reference: Kutzin, J. "Health financing for universal coverage and health system performance: concepts and implications for policy")

The following framework illustrates the relationship between the functions of health financing and the overall functions of a health system namely, stewardship, creation of resources and service delivery and the benefits that accrue from the relationship between the health system functions.

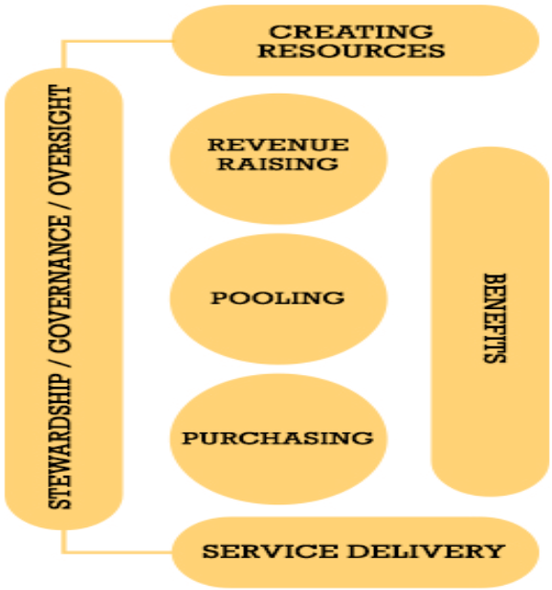


Figure 2.5: Functions of Health Financing in the context of UHC

We now take a closer look at each of the functions of health financing in the context of UHC.

Function 1: Revenue raising

Objectives of revenue raising are:

1. Raise adequate revenue for health;
2. Ensure the stable and predictable flow of funds to the health sector:
3. Equity in finance to ensure sure that financial burden is shared fairly across society; and
4. Move towards a predominate reliance on public source

There are mainly three different types of categories of revenue sources, for example:

1. Public domestic source (e.g. direct tax, indirect tax, non-tax revenues;
2. Public external source (e.g. external grants and external loans)
3. Private source (e.g. out-of-pocket payments and voluntary health insurance)

Details of each source of fund as needed:

- **Direct taxes** are based on the earnings of households and companies, and are paid directly to the government or another public agency. Income tax and corporation tax are examples of direct taxes and tend to be progressive, whereas payroll taxes earmarked for health are generally proportionate.
- **Indirect taxes** are based on what a household or company spends, not on what they earn, and are paid to government indirectly via a third-party e.g. a retailer or supplier. Value-added taxes, sales tax and excise taxes are examples of indirect taxes. These tend to be regressive, although may be proportionate or regressive depending on how people spend their money in a particular country, the presence of multiple tax rates e.g. higher rates on luxury items, and the presence of exemptions e.g. for essential food.
- **Non-tax Revenues:** Many governments receive substantial revenues from state-owned industries such as oil and gas. These are referred to as non-tax revenues and form part of general revenues which government then allocates to different sectors, including health.
- **External grants** are an important source of revenue for the health sector in many low-income and fragile countries. For example, funding from individual governments, multilateral development agencies, or development foundations are included in this category.
- **External loans** include those provided by the World Bank and other development banks, typically on a long term basis, and with a very low interest rate. This source becomes part of government revenues in any given year.
- **Out-of-pocket payments** are payments made by patients for health services at the time of service use. They tend to be regressive, as the amount paid is often a fixed or flat amount, irrespective of the patient's ability to pay.
- **Contributions to voluntary health insurance** schemes are a form of prepayment. These include profit-driven schemes which typically offer higher quality facilities or faster service, and non-profit community-based health insurance schemes.

What are the advantages and disadvantages of the following health financing methods

- Direct Taxes
- Indirect Taxes
- Non-tax Revenue
- External grants
- External loans
- Out-of-pocket payments
- Contributions to voluntary health insurance
- Contributions to compulsory health insurance

Do African countries prioritize health within their budget?

The Abuja declaration required government to contribute upto 15% of their Expenditure to health. Most importantly, in the SDGs era, in particular sustainable health financing and progressive realization for UHC, will not be achieved if countries rely heavily on external funding. (Reference:"Public financing for health in Africa: from Abuja to the SDGs, WHO, 2015)

"Most African countries have improved their budget allocations to health over the past 15 years, adopting the Abuja Declaration for increased spending on health as a proportion of total public expenditure. The average annual public expenditure on health in the region is 10% of total public spending in 2014, ranging from 4% (Cameroon) to 17% (Swaziland). However, while some countries have increasingly prioritized health spending over time (e.g. Ethiopia, Liberia, Swaziland, Burundi or Lesotho), in recent years nineteen of them have been spending less on health as a percentage of total public spending than was the case in the early 2000s."

Function 2: Pooling

Key objective of pooling is to maximize the redistributive capacity of available public revenues raised for health by:

- maximizing the redistributive capacity of available public revenues raised for health.
- distributing resource equally, facilitating equity in service use relative to the need for care, rather than relative to the ability to pay
- protecting people financially by spreading and sharing the risk of meeting the potentially high costs of health care

Depending on the characteristics of pooling, outcomes of *"insurance coverage"* to insured population are very diverse. For example, the pooling of health insurance scheme is whether:

- Compulsory or Voluntary?
- Public, Social or Private?
- National, Provincial or Community based?
- Big, medium or Small?
- High-risk, mix or Low-risk?

What are the characteristics of the following pooling mechanisms?

- Compulsory or Voluntary?
- Public, Social or Private?
- National, Provincial or Community based?
- Big, medium or Small?
- High-risk, mix or Low-risk?

Function 3: Purchasing Health Services (interventions)

"Purchasing" refers to the allocation of pooled funds to health providers. Moving towards more strategic purchasing is central to improving health system performance towards UHC and allocation of the funds should be based on:

- which services should be delivered as a priority, based on a health needs assessment of the population;
- how the staff and facilities delivering the services are performing
- what is the price, quantity and quality of services delivered, and how might negotiation and incentives contribute to improved performance

Design of the Benefit Package

A benefit package refers to the services and commodities paid for by the purchaser using prepaid funds. Entitlements are those services and commodities either fully or partially paid for from pooled funds, for the covered population. By clearly defining population entitlements through benefit package design, the population's obligations are also defined.

In the end of the unit, we will discuss how to prioritize expansion of benefit package while balancing three dimension of coverage (i.e. population coverage, service coverage, financial coverage).

2.5 Topic 3: influence of health financing on health system performance

In this topic we shall understand financial protection in the context of UHC and the objectives of UHC.

Sub-Topic 1: Financial Protection in the context of UHC

Let us now try to understand why defining problems is an integral part of effective decision making regarding financial protection.

Rather than saying "we have a problem with financial protection", the specific manifestation of the problem should be identified, for example, "15% of the popula tion experienced catastrophic expenditures when paying for health services last year".

If problems are not defined in terms of objectives and goals, then the reforms which are proposed as a result are likely to be "means-driven" and may not adequately address the real problem(s).

Only by identifying specific problems will it be possible to define a reform agenda to address the causes of those problems. You must always view the health financing reform agenda in terms of "what problems can we solve" rather than "what model or type of health system do we want to have".

Key principles of problem-based decision

For your decision to be effective, it needs to be based on a clear diagnosis and understanding of the current challenges in terms of health system performance problems, structured around the health financing functions, rather than an idea to use a specific tool. The following three points help to make your decision:

1. Separate ends and means: In the context of our framework, "ends" refers to the final goals of universal health coverage, whereas the "means" refers to the health financing policies and reforms that we design and implement. By separating "ends" from "means" we can be clear about the goals themselves, and the changes required moving towards those goals. In practice, problems and causes of problems are these are often mixed up and not clearly separated out.
2. Avoid means driven reforms: Health financing policy proposals first need to be defined and guided in terms of clear objectives and goals - the ends. Then there needs to be a clear link between the "means", the specific policy proposals, and the "ends". Often, this is not the case, with proposals defined in terms of the means, without any evidence that policies will improve progress towards the goals.
3. Multiple causes of problems: To design effective policy, it is critical to recognize that performance problems usually have multiple causes. Therefore, focusing on just one aspect of the system is unlikely to help develop effective policy. It is essential to do a thorough diagnosis of the problems identified in order to get at the root causes of why the system is underperforming in various ways.

What health financing reforms do you think should be prioritized in your country and what are your reasons?

How should your country address financial protection to ensure the poor, disadvantaged and vulnerable populations have access to quality health care?

Sub-Topic 2: Three intermediate objectives of UHC

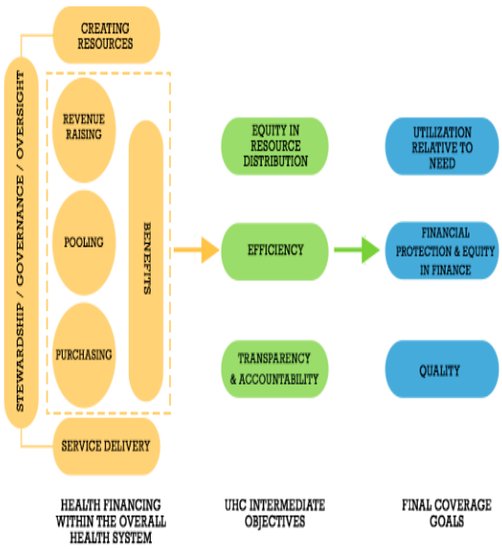
We shall now discuss three intermediate objectives of UHC.

UHC intermediate objectives are the pathways through which health financing policy or reforms, structured around the different functions, have an effect on the final coverage goals of UHC.

Intermediate objective 1: Equity in resource distribution

Equity in resource distribution can be achieved depending on the way in which revenues are pooled and this can have a positive impact on equity in utilization of services relative to health needs, as well as financial protection, two of the final coverage goals of UHC.

In some cases reforms can have a direct effect; for example reforming revenue raising policy in a way that reduces reliance on out-of-pocket payments has a direct effect on financial protection.



Source: Kutzin, J. "Health financing for universal coverage and health system performance: concepts and implications for policy"

We are now going to review health spending in Tajikistan to help us understand their problem with one of the intermediate objectives of UHC. Try on your own to state the problem this particular country has.

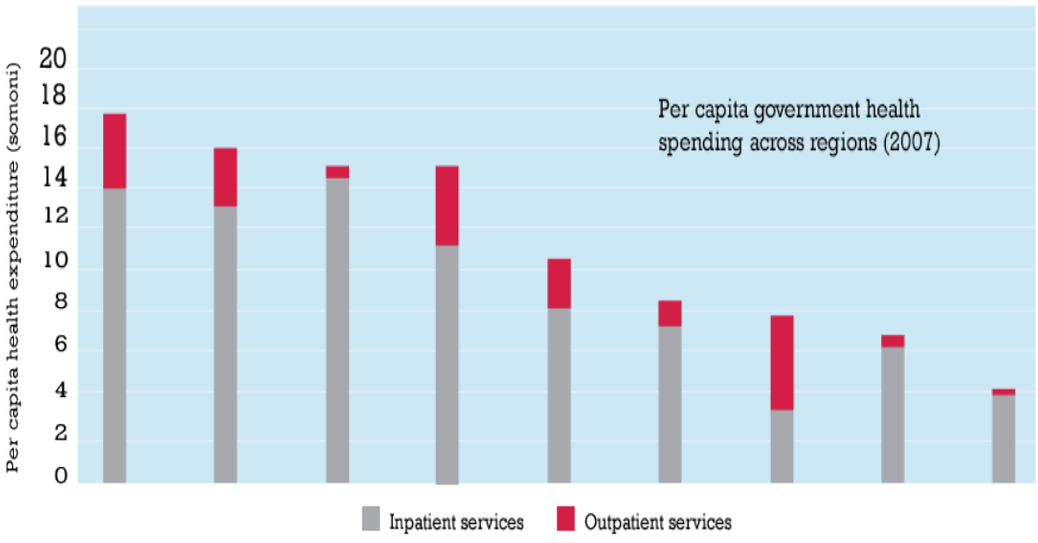
Quiz: Health spending in Tajikistan

Using the following graph, state the problem this country has with any one of the intermediate objectives of UHC?

Answers:

- Efficiency (incorrect)
- Equity in resource distribution (correct)
- Transparency and accountability (incorrect)

Figure 2.6: Distribution of Government Health spending in Tajikistan



Interpretation of this figure: Health financing systems distribute resources across the health system through

pooling and purchasing arrangements, as well as through revenue raising. The level of resources allocated has a strong influence on the services that can actually be delivered - hence it is defined as an intermediate objective. Problems in the distribution of resources manifest themselves in various ways. One commonly observed problem is geographic inequity, for example, large cities often receive a far greater allocation of public resources for health per capita than rural areas. Often these large differences are not warranted; the diagram shows the nearly fivefold difference in per capita allocations across the different regions of Tajikistan.

Intermediate objective 2: Efficiency

Efficiency is an intermediate objective because we are trying to make as much progress as possible towards universal health coverage given the resources we have available. This means, for example, improving equity in service use such as reducing the gap between the richest and poorest 20% of the population with a professionals attending a birth. It also means getting the best quality services, and the most financial protection for patients, given available funds. Resources used in a way which does not contribute to such progress are effectively being wasted, and are hence a source of inefficiency.

The following are some of the common causes of inefficiency:

MEDICINES:

- UNDERUSE OF GENERICS, HIGHER THAN NECESSARY PRICES
- INAPPROPRIATE OR INEFFECTIVE USE
- USE OF SUB-STANDARD AND COUNTERFEIT MEDICINES

SERVICES:

- INAPPROPRIATE HOSPITAL SIZE (LOW USE OF INFRASTRUCTURE)
- MEDICAL ERRORS, SUB-OPTIMAL QUALITY OF CARE
- INAPPROPRIATE HOSPITAL ADMISSIONS AND LENGTH OF STAY

SERVICES AND PRODUCTS:

- OVERSUPPLY AND OVERUSE OF EQUIPMENT, INVESTIGATIONS, PROCEDURES

HEALTH WORKERS:

- INAPPROPRIATE OR COSTLY STAFF MIX, UNMOTIVATED WORKERS

INTERVENTIONS:

- INEFFICIENT MIX OR INAPPROPRIATE LEVEL OF STRATEGIES

LEAKAGES:

- WASTE, CORRUPTION, FRAUD

Intermediate objective 3: Transparency and accountability

You have already learned the concept of transparency and accountability in the context of overall health system in the Governance Module of this course. From a health financing perspective, transparency is perhaps most important in terms of the extent to which people are aware of their entitlements and obligations, for example what services they are entitled to access, and if there are rules they must adhere to, such as following a referral system or making a co-payment. Clarity on these elements is an important intermediate objective of health systems.

Accountability is about being open regarding how funds are used in the health system, for example by producing accounts and reports which are freely available to the public, or reporting to governance institutions such as Parliament.

Transparency and accountability can both influence progress towards universal health coverage. For example, being fully aware of service entitlements can empower people to obtain the services they need. If people are not clear about their entitlements, they may pay for services which should be fully subsidised; this in turn can lead to worse financial protection. Informal or unofficial payments are often a direct reflection of poor transparency in a health system.

2.6 Topic 4: Health financing policy instruments

In this topic we shall deal with purchasing options for use in health financing and designing the benefit package in the context of UHC.

Sub-Topic 1: Purchasing options

You have learnt that one of the functions of health financing system is purchasing. We shall now have a closer look at various purchasing options and their advantages and disadvantages.

The common approaches to purchasing hospital services can be classified into two:

- Prospective: line-item budgeting, global budget, capitation payment
- Retrospective: fee-for-service, per inpatient day, per treated case (e.g. Diagnostic Related Groups)

Let us now look at each type of purchasing option and the challenges associated with each.

Salary:

- Method: A salary typically comprises a monthly payment to staff regardless of their performance.
- Potential challenge: If staff are paid entirely through a salary, there is no connection between payment and performance, and purchasing cannot be described as 'strategic'.

Capitation:

- Method: Payment based on the number of people being served, for example in a defined geographical area, or the number of people registered with a facility, irrespective of how much care is actually delivered or used. A fixed amount per person forms the basis of the payment to the provider, although there may be adjustments to reflect varying health needs, most commonly the on age and sex profile of the covered population.
- Potential challenge: There is a risk with capitation payments that services will be under-provided, given that the provider's income is fixed; patients may be referred unnecessarily to hospitals or outpatient specialists by the PHC provider in order to minimise their expenses.

Fee-for-service:

- Method: Payment is made for each service provided according to a set of official prices or tariffs, for example for an outpatient consultation, the cost of diagnostics, or a surgical intervention. This payment method creates an incentive for providers and doctors to treat more patients and conduct more diagnostic procedures and clinical interventions.
- Potential challenge:

There is a risk that providers will over-treat patients in order to generate more income. This payment method may help to increase the delivery of priority services where coverage is very low, but there are also risks of escalating costs and providing an inefficient mix of services.

RBF/PBF:

- Many countries have introduced a mixed approach to paying for PHC services, for example by combining capitation payments with an additional performance-based payment; this is especially the case in middle and upper income countries, and increasingly in low-income countries.
- The performance-based element, often referred to as results-based financing (RBF), links financial payments to providers based on the delivery of specific services, or targets met, that are expected to improve health. Other terms commonly used include performance-based financing, and pay-for-performance.

What are the challenges of the following types of purchasing options?

- Salary
- Capitation
- Fee-for-service
- PBF/RBF

Based on your experience, what can be done to prioritize expansion of the benefit package while balancing the three dimension of coverage?

Sub-Topic 2: Benefit Package Design

Designing an appropriate benefit package requires that one should consider the following three dimension of coverage:

Population coverage: What extend the beneficiaries of publicly funded health services are covered?

Service coverage: The range of diagnostics, clinical treatments, and other commodities to be include in, or exclude from, the benefit package?

Financial coverage: How much of the service costs are funded through public subsidy, via the benefit package?

Read the case study on page 21 of the case studies manual and answer the questions that follow

2.8 Summary

In this unit we have looked at

- Role of health financing policy in the achievement of UHC
- Overview of health financing policy framework
- How health financing influences health system performance
- Health financing policy instruments

2.9 References and Further Reading

Further learning

- Health financing functions are available for free targeting further learners from who.int/health_financing/training/e-learning-course-on-health-financing-policy-for-uhc/en/

- WHO webpage (Health financing for universal coverage:http://www.who.int/health_financing/en/), also provides variety of learning materials as well as the network for health financing policy makers and practitioners (WHO Health financing technical network https://ezcollab.who.int/hftn/public)

UNIT 3: FINANCIAL MANAGEMENT

3.1 Unit Introduction

Welcome to this unit. You are now in unit 3 of this module. After this unit we shall have unit 4 which is the last unit in this module.

In this unit, we shall understand the principles of financial management and the building blocks of a financial management system and tools used in financial management.

3.2 Unit Outcome:

	By the end of this unit, you should be able to apply the principles and tools of financial management for efficient and effective use of available financial resources

3.3 Topic 1: Principles of financial management

Financial Management was defined at the start of this unit as the process of achieving the organization's objectives in an efficient manner through planning (budgeting), acquiring, organizing, directing, monitoring, controlling and reporting. The process and functions of management are carried out within the context of key principles which serve to guide staff and managers on how to use funds effectively and efficiently. We shall use the acronym CATVISA to help us remember the principles of financial management.

CATVISA:

- **C**onsistency
- **A**ccountability
- **T**ransparency
- **V**iability
- **I**ntegrity
- **S**tewardship
- **A**ccounting standards

	Check point question: Which one of the following is not a principle of financial management? A: Consistency B: Availability (Correct Answer) C: Transparency D: Viability

3.4 Topic 2: Building blocks of financial management

Like a house, a strong financial management system requires basic building blocks. Each building block is necessary to hold the house together. If there is a weakness in one part of the building block, the house may collapse at the weak point. The financial management system requires that the necessary building blocks must be in place to ensure efficient and effective use of financial resources.

	Question Based on your experience, what are the essential building blocks of an efficient and effective financial management system?

The following are the essential building blocks of an efficient and effective financial management system:

- Financial planning
- Accounting records
- Financial organization
- Financial monitoring
- Internal controls

In the next topic we shall look at each building block and the relevant tools to be used in the context of the principles of financial management discussed earlier.

3.5 Topic 3: Tools of financial management

Now, let us look at the tools necessary to support each of the five building blocks of efficient and effective financial management discussed in our earlier topic.

1. Financial Planning Tools

In this session, we shall cover seven tools used in financial planning. These include:

2. Financial policies and regulations
3. Strategic plan
4. Business plan
5. Budgets
6. Work plans
7. Cash flow forecast
8. Feasibility studies

Let us now explain each of the tools of financial planning:

Financial policies and regulations

	What are the roles and responsibilities of the Board of Directors? What is the purpose of internal controls?

Answers:

The roles and responsibilities of Boards include but they are not limited to the following:

- Financial oversight
- internal controls: Internal are necessary to ensure fiscal discipline and responsibility

Examples of application of internal controls:

- Follow segregation of duties. No one person should handle all financial transactions.
- Define and document your purchasing and check-writing process (e.g., two signatures on checks, accounts payable, purchase orders).
- Document and follow a process to handle incoming funds (e.g., accounts receivable, checks and payments, credit cards, e-commerce, grant monies, contract payments).

It is important to have policies for financial transactions and to comply with government regulations. Some examples of policies include:

- Investment policies for cash reserves, land purchases, fixed assets, and securities.
- Safe harbor guidelines to prevent identity theft.
- Conflict-of-interest and confidentiality policies.
- Policies to ensure compliance with Employment and Labor laws (e.g., Remuneration, retirement and pension policies)
- Whistleblower and document-retention and destruction policies

Organizing Tools

The tools used in organizing are necessary to ensure people work in harmony in pursuit of common organizational goals and to ensure efficiency and effectiveness in financial operations. The tools guide the behavior and define relationships among people working in organizations. It is necessary to define and clarify people's roles and responsibilities to avoid conflicts and duplication of roles. The following are some of the tools used in organizing:

- Constitution
- Organizational charts
- Flow diagrams
- Job descriptions
- Chart of accounts (expenditure codes)
- Finance manuals
- Finance regulations
- Budgets

Controlling Tools

The tools used in controlling ensure consistency and integrity in the use of financial resources. Controlling is about ensuring that the organizations stays on course, organizational resources are used for the intended purposes according to budget, and any deviations are accounted for. The tools ensure sustainability of organizational resources as the organization is seen as a going concern. The tools of controlling include but they are not limited to:

- Budgets
- Delegated authority
- Procurement procedures
- Reconciliation
- Internal and external audits
- Fixed assets register
- Vehicle policy
- Insurance

Monitoring Tools

The tools necessary for monitoring are the various reports generated by the financial management system. The purpose of monitoring is to measure progress towards achieving set targets e.g. Revenue targets, Expenditure targets. Monitoring is necessary to provide justification for more resources and for accountability on use of financial resources especially funds from donors and government including private investors.

- Evaluation reports
- Budget monitoring reports
- Cash flow reports
- Financial statements
- Project reports
- Donor reports
- Audit reports
- Evaluation reports

Accounting Records

In a computerized system, all the books are automated, in the system and only the initial records for data entry are required for record keeping. However, whether a financial management system is computerized or manual the following records should be maintained:

Supporting documents: receipt of money received and paid, invoices, paying-in vouchers for bank deposits, bank statements, journal vouchers, payments vouchers, Local Purchase and Service Orders (LPOs/LSOs) and Goods Received Notes (GRNs).

Books of accounts: cash book for each bank account, petty cash book, general ledger, journal book, wages book, assets register and stock control book.

Check point question:

Which one among the following are correct about the role of Board of Directors in financial management?

A: They are responsible for auditing and audit reporting (correct answer)
B: They provide financial oversight
C: They ensure internal controls are adhered to (correct answer)

Financial accounting and management accounting

There are several differences between financial accounting and management accounting.

Financial accounting is about:

- Recording transactions
- Classifying transactions
- Reconciling records
- Summarizing transactions
- Presenting financial data

On the other hand, management accounting is about:

- Comparing results against goals
- Determining reasons for variations
- Helps identify corrective action
- Forecasting and planning
- Analyzing information and making informed decisions

Financial reports

The following are the commonly used financial reports whether in the public or private sector.

- Trial balance
- Income and expenditure account
- Balance sheet
- Cash flow statement
- Donor reports
- Government related reports

Interpreting the accounts

There are two types of financial analysis:

- **Trend analysis:** used to compare accounts over a period of time.
- **Ratio analysis:** helps answer questions of financial sustainability, Efficiency and Effectiveness.

Using the reports

The aim of using the financial reports is to assess the health of the organization and to reassure yourself that the organization's objective are being met. The reports help to:

- Identify problems, look for solutions such as
- Budget overspent
- Budget under spent
- Linked line items show different figures
- Predicting the future
- Managing cash flow: examine options available for managing cash flow

In addition, reporting to donors is for

- Accountability
- Ensuring terms and conditions of grant aid are fulfilled
- Reporting to other beneficiaries

Financial audit

Financial audit is the review of books of accounts and related documentation at the administrative office. The main purpose of financial audit is to:

- Detect compliance;
- Fraud
- Waste and
- Abuse

Financial statements

The financial position of an enterprise is primarily provided in the **Statement of Financial Position**. The elements include:

- **Asset**: An asset is a resource controlled by the enterprise as a result of past events from which future economic benefits are expected to flow to the enterprise.
- **Liability**: A liability is a present obligation of the enterprise arising from the past events, the settlement of which is expected to result in an outflow from the enterprise' resources, i.e., assets.
- **Equity**: Equity is the residual interest in the assets of the enterprise after deducting all the liabilities under the Historical Cost Accounting model. Equity is also known as owner's equity. Under the units of constant purchasing power model equity is the constant real value of shareholders´ equity.

A Profit & Loss statement provides information on the operation of the enterprise. These include sale and the various expenses incurred during the processing state.

[Add statement of Cash Flows]…check against the slides; Page 319

Questions

- What is your role in financial management in your work place?
- What are some of the challenges you experience in your work place in executing the financial management role?
- List five recommendations to improve financial management in your work place?

Read the case study in page 27 of the case studies manual and answer the questions that follow

3.7 Summary

In this unit we have learnt about the principles of financial management, the building blocks of financial management and the tools of financial management.

UNIT 4: EXPENDITURE TRACKING AND REPORTING

4.1 Introduction

Welcome to the last unit of this module. In this unit, we shall learn about National Health Accounts and Medium Term Expenditure Framework in the context of UHC.

4.2 Unit Outcome

By the end of this unit you should be able to:

Analyse health expenditure data for evidence based planning and accountability

4.3 Topic 1: National Health Accounts (NHA)

The National Health Accounts (NHA) constitutes a systematic, comprehensive and consistent monitoring of the resource flows in a country's health system for a given period. NHA is a tool designed to assist policy makers in the effort to understand their health system and to improve health system performance.

NHA measures the financial performance of a health system by answering questions like:

- Who in the country is financing health services?
- How much do they spend? On which services?
- Who benefits from these expenditures?

Why do you think reporting accurate health expenditure data from health facilities and district/provincial health office is important to prepare NHA in your country?

Sub-topic 1: Importance of NHA

The NHA provide decision-makers with information on the volume, sources and uses of financial resources for the health sector. It helps in developing national strategies for effective health financing and in raising additional funds Regular updates of the NHA facilitate reviews of public and private health expenditure trends over time and help to monitor and evaluate the country's health system. Information can be used to make medium term financial projection of a country's health system requirements, in comparison with the past or with those of other countries.

Sub-topic 2: Challenges of using NHA

The following are the challenges associated with using NHA:

- There is a danger of having parallel health accounts where harmonization with national framework is difficult
- There is a risk of building disease-based NHAs due to donor funding especially donors demand such as a requirement
- It is difficult to estimate cost of illness especially outpatient and chronic conditions
- There is a difficult in estimating household expenditures
- There are differences in modes of service delivery making comparisons difficult
- There are differences between fiscal and calendar year records
- It is difficult to capture international trade in health care
- Sustainability of NHAs is a major concern when they are done because donors fund it
- Distinctions between types of insurance is not very clear

4.4 Topic 2: Mid-term Expenditure Framework (MTEF)

The Mid-term Expenditure Framework (MTEF) is a national framework for mid-term financing and monitoring of resources (usually 3 - 5 year rolling plan). The plan is usually linked to national development plan, used to finance the health sector strategic plan and used to monitor the Annual Operation Plan (AOP).

Activity

What are the uses and challenges of the following reports?

- Evaluation Reports
- Budget monitoring reports
- Cash flow reports
- Financial statements
- Project reports
- Donor reports
- Audit reports

4.5 Unit Summary

In this unit we have learnt about the National Health Accounts and Medium Term Expenditure Framework.

Module Summary

In this module we have learnt about :

- Concepts of health financing and financial management
- Health financing policy framework and Mechanisms
- Principles, building blocks and Tools of Financial Management
- Expenditure tracking and reporting

Reference and Further Reading

Core Reference Material

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- WHO, "Health Financing: The Path to Universal Coverage 2010", World Health Report 2010 **(http://www.who.int/whr/2010/en/)**
- WHO e-Learning Course on Health Financing Policy for UHC, World Health Organisation. **(http://www.who.int/health_financing/training/e-learning-course-on-health-financing-policy-for-uhc/en/)**
- "Get Well, Maya: Universal Health Coverage Ensures Healthy Futures", World Bank, October 2012. **(https://youtu.be/5Jb6Ju3KQPE)**
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- "OneHealth Tool", Avenir Health. (http://www.avenirhealth.org/software-onehealth)
- "WHO Global Health Expenditure Database", World Health Organisation. **(http://apps.who. int/nha/database)**

MODULE 8
SERVICE DELIVERY

LIST OF TABLES

LIST OF FIGURES

8.1 Introduction

Welcome to module 8. Through the previous modules, you have learned about the concepts related to the organisation of the health system, as well as two of its key pillars: Governance-Leadership Management, human resources and its financing. This module deals with the health services delivered to the populations. There is no doubt that you are now well prepared to discuss service delivery because of the previous modules in this course.
In this module, you will learn how to improve the performance of health care services provided to populations through four units of instruction. It thus enables you to ensure quality, cost-effective, efficiency, timeliness, and basic health service coverage by the rules and regulations applied.

You will, therefore, need a connected device (laptop, PC, tablet) to review the course documents, but also do online research and carry out the activities.

8.2 Module Outcomes

By the end of this module, you should be able to:

i. Apply the principles and concepts of health service delivery in health service strengthening.

ii. Apply the essential elements of service delivery in practice of healthcare provision

iii. Describe the efficiency of the referral system

iv. Implement the process of quality accreditation

8.3 Module Content

This module is divided into the following 4 units:

- Unit 1: Principles and concepts of health service delivery
- Unit 2: Essential elements to improve the service delivery
- Unit 3: Effective referral systems
- Unit 4: Quality accreditation

UNIT 1: PRINCIPLES AND CONCEPTS OF HEALTH SERVICE DELIVERY

1.1 Unit Introduction

This Unit will help you to acquire knowledge about concepts and principles relating to health services, and comprehensive health service strengthening framework.

1.2 Unit Outcome

By the end of this unit, you should be able to:

- Apply the principles and concepts of health service delivery in health service strengthening.

1.3 Healthcare/service organisation and delivery

According to the Worl Health Assembly Report (2000), health care or services are outcomes of health activities that are defined as "any effort, whether in personal health care, public health services, or through inter-sectoral initiatives, whose primary purpose is to improve health". Health service delivery systems that are safe, accessible, high-quality health services, people-centred, and integrated are critical for moving towards universal health coverage.

Health service delivery systems that are safe, accessible, deliver high-quality health services, people-centred, and integrated are critical for moving towards Universal Health Coverage (UHC). Service delivery systems are responsible for providing health services for patients, persons, families, communities and populations in general, and not only care for patients. While patient-centred care is commonly understood as focusing on the individual seeking care (the patient), people-centred care principles and concepts encompass these clinical encounters and also includes attention to the health of people in their communities and their crucial role in shaping health policy and health services delivery.

Service delivery systems should, therefore, consider the whole spectrum of care from promotion and prevention to diagnostic, rehabilitation and palliative care. Additionally, it is essential to focus on all levels of care including self-care, home care, community care, primary care, long-term care, hospital care, to provide integrated health services throughout the life course of a beneficiary. World Health Organisation is supporting countries in moving towards universal health coverage through improving the efficiency and effectiveness of their health service delivery systems ("Improving Health Service Delivery Organizational Performance in Health Systems: A Taxonomy of Strategies and Conceptual Framework for Strategy Selection." International Health, doi:10.1016/j.nhe.2011.09.0020000).

In the next sub-topics, you will be assisted to acquaint yourself with some of the considerations in making quality services available and accessible in your area of jurisdiction. First, let us look at the pillars of the health services.

Pillars of the health services

As health services are highly context-specific, there is no single set of best practices that can be put forward as a model for improved performance. However, well-functioning health service delivery systems have certain shared characteristics. The characteristics include efficient and effective procurement and distribution services to deliver interventions to those in need. The delivery system must have sufficient health workers with the right skills, attitudes, and motivation. Also, such systems operate with financing services that are sustainable, inclusive, and fair to guarantee equity in allocation. Securing sustainable financial services should ensure that the costs of health care do not force impoverished households even deeper into poverty. Safeguarding against catastrophic out of pocket spending on health should be a primary responsibility of any health service provider. Safeguarding against catastrophic out of pocket expenditures is an integral aspect of UHC.

	What are core indicators of a health systems performance?

It is important to remember the six building blocks framework that is central to the organisation and co-creation of health services that are responsive to the health needs of the populations. We shall now discuss further on the single framework with the building blocks. As we discuss, remember what you covered in Module.

A single Framework with six building blocks

A key purpose of this framework is to promote a coordinated approach to the organisation and delivery of health services. A common understanding of what constitutes health systems strengthening is important in this respect. The argument is a strong health system facilitates the organisation and delivery of health care/services. It is essential to identify the problems in the system and rationally invest in the building blocks to guarantee provision of health services.

The WHO building blocks framework's approach (discussed in Module 1) defines a discrete number of "building blocks" that make up the health system (WHO, 2000). The building blocks in the framework include **ser**vice delivery; health workforce; information; medical products, vaccines and technologies; financing; and leadership and governance (stewardship).

The rationale for the six building blocks in health service Delivery

Good health services are those which deliver effective, safe, quality personal and non-personal health interventions to those that need them, when and where needed, with minimum waste of resources.

A well-performing health workforce is one that works in ways that are responsive, fair and efficient to achieve the best health outcomes possible, given available resources and circumstances (i.e. there is sufficient staff, fairly distributed; they are competent, responsive and productive).

A well-functioning health information system is one that ensures the production, analysis, dissemination and use of reliable and timely information on health determinants, health system performance and health status.
A well-functioning health system ensures equitable access to essential scientifically sound **medical products, vaccines, and technologies** of assured quality, safety, efficacy, and cost-effectiveness.

A good **health financing** system raises adequate funds for funding health interventions in ways that ensure the protection of people from financial catastrophe or impoverishment associated with having to pay to access the services. A good health financing system provides incentives for providers and users to inculcate and foster efficiency.

Leadership and governance involve ensuring strategic policy frameworks exist to effectively facilitate over sighting, coalition building, regulation and attend to system-design and accountability.

	Using the health system building blocks framework, critique the framework of your own or a health institution of your choice.

1.4 Principles of health care/service delivery

Strengthening health service delivery is a key strategy to achieving the Sustainable Development Goals (SDGs). This includes the delivery of interventions to reduce child and maternal mortality, and the burden of HIV/AIDS, tuberculosis and malaria.

Service provision is an immediate output of the inputs into the health system, such as health workforce, procurement and supplies and finances. Increased inputs should lead to improved service delivery and enhanced access to services. Ensuring availability and access to health services is one of the main functions of a health system. Such services should meet a minimum quality standard.

Good health services are those which deliver effective, safe, high quality, personal and non-personal care to those that need it, when needed, and with minimal waste. To ensure the delivery of acceptable quality of services, there are fundamental questions that deserve consideration by health managers in the development of proper public policy regarding health care delivery.

Each person is primarily responsible for his or her health care. It is the mutual responsibility of the individual, health care providers, government and community to play appropriate roles in the delivery of healthcare, but recognising that there are treatments and procedures which cannot be made available to all individuals.

The determinant of the level of basic health care:

Healthcare is not an unlimited entitlement. "Basic health care" is less than the full range of treatment options available. The definition of the specifics of "basic health care" is the responsibility of society. Society must prioritise the range of health services and procedures, and allocate limited government and healthcare resources to make what is defined as "basic health care" available.

	The principles of health care delivery strive to achieve the following: • Increased access to equitable health services • Improved quality of services in the sector • Improved efficiency and effectiveness of service delivery • Ensure timely responsiveness to health needs of the population • Ensure effectiveness of health actions • Ensure provision of ethical health care services

The principles of health care delivery are achieved by implementing and putting in place the following areas:

(i) **Health Systems**

The key pillars of health systems are implemented by developing the Health policies and the essential package for health. The essential package for health has health financing, human resource, referral at the district/county and regional/national levels as key performances.

(ii) **International laws on health**

For the United Nations, the rule of law refers to a principle of governance in which all persons, institutions and entities, public and private, including the State, are accountable to all publicly promulgated laws that are equally enforced and independently adjudicated. Such laws and their enforcement must be consistent with international human rights norms and standards.

Public health law concerns the legal powers and duties of the state to assure the conditions for people to be healthy. The conditions include but are not limited to identifying, preventing, and ameliorating risks to health in the population and the limiting the power of the state to constrain the autonomy, privacy, liberty, proprietary, or other legally protected interests of individuals. Ensuring the said conditions by the state guarantees the protection or promotion of community health (Gostin, L: Public Health Law: Power, Duty, Restraint, 1st ed. 2000).

The reason why the international corporation for health regulations are important is because they:

- Assist countries in the development of appropriate health laws adapted to their needs;
- Act as adviser for Headquarters and Regional Offices on health law;
- Develop tools for technical cooperation such as legislative guidelines;
- Ensure global transfer of information through the International Digest of Health Legislation and the Recueilinternational de Législation Sanitairee.

1. List few examples of international declarations affecting service delivery that you know
2. How are international declarations developed?
3. Why are international Declarations important to countries?

(iii) Health Regulation and Country Laws

Health law refers to a statute, ordinance or code that prescribes sanitary standards and regulations to promote and preserve the community's health. (Black's Law Dictionary, 8th ed. 2004)

1. List the laws affecting service delivery you know
2. Describe how they affect District/county health systems

(iv) Health Sector Reforms

1. Describe the conditions of health provision in your country for the last ten years
2. What are the observable changes in the organisation, planning and implementation of health services in your district/county or institution?

1.5 Unit Summary

In this unit, you have covered the concepts of healthcare/service delivery such as the health system strengthening, health actions, effectiveness, efficiency, and equity. We also looked at the WHO framework that outlines the following building blocks of a health system: Service delivery; health workforce; information; medical products, vaccines and technologies; financing; leadership and governance (stewardship).

We also agreed that a well-functioning health system main deliverable is an efficient and effective health service delivery that is based on the following principles access, equity, quality, efficiency and effectiveness, timeliness, responsiveness to the health needs and ethical considerations in the organisation of services.

Finally, you discussed the role of health laws and regulations at the National and International levels. We have seen that both international and national laws, as well as regulations, provide a framework for operationalising the applicable aspects of the law or regulation. Also, we saw that developing such laws and regulations is a process and that they require regular reviews and adaptations.

UNIT 2: ESSENTIAL ELEMENTS TO IMPROVE SERVICE DELIVERY

2.1 Unit Introduction

You are now conversant with the Principles and concepts of health service delivery. In this unit, the focus is to assist you to examine in detail the elements which are essential in improving service delivery.

This Unit exposes you to a wide-range of knowledge and the necessary skills of ensuring the essential elements enhance service delivery as part of health system strengthening.

2.2 Unit Outcome

	By the end of this unit, you should be able to: • Apply the essential elements of service delivery in practice of healthcare provision

Before you go through the content on essential elements of service delivery, reflect on the following question:

	Write down all the elements that you consider essential for a good service delivery provision, and why are they important.

An effective service delivery mechanism is vital to any health system. Service delivery is a fundamental input for influencing a population's health outcomes including health status and determinants of health. The precise organisation and content of health services will differ from one country to another. Nevertheless, in a well-functioning health system, the network of service delivery should have the following essential elements such as quality, access, availability, efficiency, effectiveness, and safety of the services.

2.3. Quality of service delivery

Whereas effective health services delivery mechanism is important, quality as indicated earlier is one of the critical elements. Let us now examine what is meant by quality and how one goes about to ensure delivery of quality health services.

	How do you define Quality?

Quality is defined as conforming to requirements', 'Fitness for use' (Juran, 1988). Customer perceived quality – quality can only be defined by customers and occurs where an organisation supplies goods or services to a specification that satisfies their needs.

The quality of technical care is in the application of medical science and technology in a way that maximises its benefits to health without correspondingly increasing its risks. The degree of quality is, therefore, the extent to which the healthcare provider is expected to achieve the most favourable balance between risks and benefits. The following are important categories into cold characterise health service:

- ***Structure,*** which includes personnel, equipment, buildings, record systems, finance, supplies and facilities;
- ***Process,*** which incorporates all aspects of the performance of activities of care; and
- ***The outcome,*** that denotes the results of care/service **(effectiveness)**.

All three categories are critical in obtaining quality acceptable to both provider and consumers of the services. Other elements of quality include:

- ***Timeliness*** (access, waiting and action time);
- ***Information*** (clarification by answering what, when, how, who and why);
- ***Technical competence*** (medical knowledge, skills and expertise; ethics, technology, completeness and success of treatment);
- ***Personnel interaction with clients,*** (courtesy and respect);
- ***Environment/ amenities*** (including buildings, cleanliness).

The structure, process, and outcome dimension of quality is a useful framework for helping health teams to define and analyse health service delivery related challenges/problems. Moreover, the frame can also assist the health teams to measure the extent to which they are meeting set quality standards.

2.3.1. Quality Improvement and Quality Management Concepts

Quality has two aspects to be considered: quality of care, and quality of service delivery.

Factors influencing quality of care

Quality of care refers to the characteristics of the system of healthcare that enable it to take care of the client, taking into account all their socio-economic and disease dimensions. The 'system' quality of care refers to health care as it is delivered in a functional 'system'. These systemic qualities of care usually correspond to the objectives of the health care system - acceptability and relevance; continuity of care; integration of care; holistic approach; and involvement of individuals, households and communities in taking care of their health. The elements of quality of care are as follows:

- **Acceptability and Relevance:** health care must take account of the demand for care and respond to the real and priority needs of the population. Health care should be rooted in the cultural and social reality of the communities and take user satisfaction elements in the health care delivery equation.
- **Continuity of care:** a person who seeks assistance in the system for a health problem (whether to cure or to prevent illness when at risk) is taken care of from the start of the illness or the risk episode until its resolution. This means that a functional referral and counter-referral system should exist to ensure referral services for a person in need and also includes the active follow-up of patients at risk because of the critical need.
- **Integration of care:** one health unit with one team in the community takes care of all health problems of this community through curative, rehabilitative, preventive and promotive activities. Every contact with individuals, households and communities is used to ensure this set of activities.
- **Holistic or Comprehensive approach:** the health needs of an individual are taken care of with full consideration contextual issues (the household, the community, related social, cultural, economic and geographic characteristics). The approach demands that the health teams at the community-based health units know the population well to foster sustainable interaction and dialogue with individuals, households, and the community at large.
- **The involvement of individuals and communities:** People express their involvement by taking up responsibility for their health; taking responsibility for one's health creates a sense of ownership for all what people undertake relating to their health (participation in the health activities of the health unit as well as the formation of Health Committees).
- **Availability of adequate and serviceable facilities**: Inadequate facilities or poor preventive maintenance of existing facilities affect staff motivation and quality of service.

From your experience, describe one element of quality of care that is in place in your country's health system or that could be easily improved

Factors influencing quality of services

Quality of services is influenced by seven factors:

- Human Resources: Inadequate staffing levels, lack of skills, poor staff attitude and weak supervision undermine the quality of services provided at the health facilities.
- Facilities and equipment**:** There is general lack of basic medical and hospital equipment to support service delivery together with poor maintenance of facilities.
- Information and communication technologies: Lack of basic ICT to support service delivery due to the absence of standard ICT guidelines developed a major impediment to the quality of services provided.
- Drugs and supplies: Availability of health commodities, pharmaceutical products and other medical supplies are essential for delivery of quality services. Weaknesses in the organisational setting, structures, competencies, and procedures for good practice, policy and planning are the cause of frequent stock-outs in health commodities and products. There is need to strengthen planning and forecasting, decentralise the procurement function and improve oversight.
- Insufficient evidence for decision-making: Surveillance and operational research contribute to the quality of services by providing necessary information on health delivery for decision-making.
- Poor waste management (hospital waste): the major constraints are lack of incinerators, toilets for patients, placenta pits in dispensaries. Inadequate skills, transport for handling medical waste, trained personnel, high casual staff turnover, waste segregation solid/liquid waste management and inadequate maintenance of waste disposal.
- Standards and guidelines: Constraints relating to standards and guidelines include insufficient standards and guidelines, poor use of standards and guidelines, staff attitude, poor dissemination of guidelines, inadequate facilitative supervision and rational use of drugs. Though norms exist, they have not been disseminated nor has there been training.

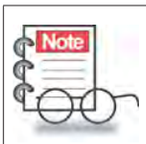
Before you proceed, list and explain all the factors influencing quality on service delivery

2.3. Assessment of quality and quality control

Measuring Quality consists of quantifying the current level of performance according to expected standards. It is the systematic identification of the current level of quality the facility or system is achieving. Without a clear definition of indicators and performance standard, it is impossible to measure Quality. Measurement involves assessment of the difference between expected and actual performance to identify opportunities for improvement. The quality of health services depends on the effectiveness of service delivery processes. Assessing the dimension of effectiveness answers the following questions:

- Does the procedure or treatment, when correctly applied, lead to the desired results?
- Is the recommended treatment the most technologically appropriate for the setting in which it is delivered?
- Interpersonal relations refer to the interaction between providers and clients, managers and health care providers, and the health team?
- Good interpersonal relations establish trust and credibility through demonstrations of respect, confidentiality, courtesy, responsiveness, and empathy?
- Inadequate interpersonal relations can reduce the effectiveness of a technically competent health service?

- Are services technically sound?
- Are there drug stock-outs?
- Are employees satisfied? (i.e. regarding workload, workplace environment-employee satisfaction surveys)
- Are consumers satisfied with the quality (Client satisfaction)?
- What is the rate of adverse events?
- What is the rate of with hospital-acquired infections among clients?

	You must have defined indicators and standards to measure Quality of health services. Module 10 on Monitoring and Evaluation will assist you in the formulation/adopttion such indicators

In a limited resource context, efficiency in the organisation and delivery of health services is an important dimension of quality because it affects product and service affordability. Efficient service delivery system provides optimal rather than maximum care and offers greatest possible benefit to the patient within the constraints of available resources. Continuity in health care means that the client receives the complete range of health services that he or she needs, without interruption, cessation, or unnecessary repetition of diagnosis or treatment. Services must be offered on an on-going basis. The client must have access to routine and preventive care provided by a health worker that has complete knowledge of the client's medical history. Where the circumstances demand, a client must also have access to timely referral for specialised services and to complete follow-up care.

As a dimension of quality, safety means minimising the risks of injury, infection, harmful side effects, or other dangers related to service delivery. Safety involves the provider as well as the patient. Amenities refer to the features of health services that do not directly relate to clinical effectiveness but may enhance the client's satisfaction and willingness to return to the facility for subsequent health care needs. Amenities may affect the client's expectations about and confidence in other aspects of the service or product. Amenities relate to the physical appearance of facilities, personnel, and materials; as well as to comfort, cleanliness, privacy, music, educational or recreational videos, and reading materials.

Other dimensions that can be measured include performing services right the first time, providing services at the promised time, keeping customers informed about when services will be performed, willingness to help customers promptly. Example: avoid keeping customers waiting for no apparent reason. Prompt service to customers, willingness to help customers, readiness to respond to customers' requests, ability to convey trust and confidence are critical. Example: being polite and showing respect for the customer.

Employees who instil confidence in customers, making customers feel safe in their transactions, consistently courteous, know how to answer customer questions, and ability to be approachable and add much value to the quality of care. For example, being a good listener, giving customers individual attention, dealing with customers in a caring fashion, and having the customer's best interest at heart are value addition actions.

Tangibles: Physical facilities and facilitating goods. Example: cleanliness, modern equipment, the visual appearance of facilities influence quality. Employees who have a neat, professional appearance, visually appealing materials associated with the service, as well as convenient business hours add to the quality.

Measuring quality of services needs methods that are varied, ongoing, participatory, and produces easily sharable results for immediate use by employees. Observation of service delivery (by expert observers, peers, supervisors); regular client surveys, use of mystery client method, an audit of individual patient records, review of data from automated information system are some of the approaches that are useful in generating measurement data.

Additionally, health worker interview, patient exit interview/transaction analysis as well as analysis of complaints are equally important methods that could be deployed. Multiple measurements are needed to obtain a reliable indication of usual performance. Since service quality defined as the difference between the standard of service that customers expect, and what they receive. Health services exist to meet the health needs of clients, so the delivery of health services should be designed to meet those needs. There is need to examine how and whether each step in a process is relevant to meeting client needs and eliminates steps that do not ultimately lead to client satisfaction or desired client outcomes.

	Using your daily experience, list other examples of measurable dimensions of Quality

Customer Focus is about refocusing services around the needs of the clients as a customer of health services, rather than the problems of those who provide the services. It signifies an organisational culture that aims to address the needs, expectations and behaviours of the public, and then adjusts every aspect of the organisation to align with customer values. Focus on meeting customers' requirements, needs and expectations, Customer satisfaction.

Focus on systems and processes: providers must understand the service delivery system and its key service processes to improve them. **Focus on measurement**: data are needed to analyse processes, identify problems, and measure performance.

Focus on teamwork: a team approach to problem-solving and quality improvement is the best vehicle for achieving quality in health care. This focus on the client can be achieved by gathering information about clients and then designing services to cater for the identified needs. Client-focused organisations meet client needs and expectations, thereby providing higher quality care. A focus on clients involves people that come to a facility to receive services (referred to as external customers), work-related needs of personnel (referred to as internal customers) involved in the delivery of care.

Characteristics of Focused Customer Methods focus on customer needs, eliminate non-value added activities, eliminate mistakes, leverage technology to provide 24/7 self-service options, and design service after taking into account precise customer needs. Service infrastructure does not dictate service process, **"Tail does not wag the dog."**

2.4 Access and availability of health services delivery

In this topic, will be highlighted the concepts of access and availability, the importance and parameters of access as well how to measure access.

2.4.1. Concepts of access and availability

Is there any difference between access and availability of service delivery?

Access means that health care services are unrestricted by geographic, economic, social, cultural, organisational, or linguistic barriers. Access takes many forms in the context of the health sector. Access is a prerequisite to high utilisation of health services as it brings services closer to the people as well as makes them cheaper. Additionally, geographical, economic, and socio-cultural factors influence access influenced by the intermediate goals of access, coverage, quality, safety and rights are all closely linked.

Availability is the relationship of the volume and type of existing services to the volume of clients and their need.

2.4.2. The importance and parameters of access

Access is a measure of the ability of a person/community to receive health care services. It defines the capacity, and factors influencing the entry into, or use of the health care system. It brings together a set of five specific dimensions describing the fit between the potential client, and the health system - availability, accessibility, accommodation, affordability, and acceptability. Description, measurement and monitoring of access need to capture these five dimensions.

***Geographical access**:* Poor distribution of facilities, poor public transport, and weak referral systems, insufficient community health services and weak collaborations with other service providers have perpetuated poor geographical access to health services.

There are imbalances in the geographical distribution of health facilities regarding the numbers and types of facilities available. Some areas have disproportionately more facilities than others. Consequently, while the average distance covered to reach the nearest health facility is reasonable (within 5 km as recommended by WHO), there are under-served in most countries of sub-Sahara Africa. Lack of defined norms and standards for infrastructure development largely explain the imbalances. We can measure Geographical access by modes of transportation, distance, travel time, and any other physical barriers that could keep the client from receiving care. Poor transport services due to inadequate ambulances and low budgetary provisions, poor preventive maintenance due, again, the absence of standard transport guidelines developed in line with the expected functions and workload, is a major impediment to accessing health.

***Economic access**:* Economic access, also referred to as financial access, has to do with the affordability of health services. Affordability is defined as having services continuously available and affordable at public or private health facilities or other outlets that are within one hour's walk from the homes of the consumer. Economic barriers to access include low household income, low prioritisation of health at the household level and low allocation of resources by the state to the health sector. Due to a high level of poverty, most households cannot afford to pay for health services. More often than not, health is not a priority in some households with low income. On its part, the governments are required to achieve the Abuja declaration recommending that governments allocate 15% of government expenditure budget to health. The measures include the introduction of National Health Insurance Fund, reviewing the cost-sharing strategy, community pre-payment schemes and developing criteria for allocation of public funds. The target of the Millennium Development Goals acknowledges the need to improve the availability of affordable services for the world's poor. Several countries have made substantial progress towards increasing access to the minimum essential care package, but access to care in developing and least developed countries is not adequate. Recent experience in some countries shows that access to essential care package can be improved

through a stronger partnership among governments, pharmaceutical companies and civil society, including consumers, working together to ensure universal access.

***Socio-Cultural access**:* Socio-cultural barriers associated with low literacy levels, religious beliefs and gender bias hinder access to health services, especially by women, children, and adolescents, the disabled and other vulnerable groups. Recognizing the problem brough about by the socio-cultural barriers, the government has to make the provision of health services more humane, compassionate and dignified. Targeted measures include ensuring privacy in the course of service delivery, especially for women. The human rights approach is promoted in clinical settings including establishing youth-friendly clinics and prioritising gender issues**.**

Access defines the capacity and factors influencing the entry into or use of the health care system.

2.4.3. Measuring access

Access is measured by assessing coverage of services. Coverage encompasses aspects of the range of services and the population that can benefit from the services. Depending on the context, the access may be primarily on broadening the package of services; on extending services in excluded groups; or on improving social protection. In all cases, the public health services delivery system has the primary responsibility for ensuring health protection of all citizens. Protection of all citizens is an important principle of the UHC strategy.

Coverage is measured regarding specific indicators or distribution of coverage (by age, sex, poverty levels, urban/rural).

Table 1: Measuring access

Access dimensions	**Possible sources of information**	**Type of information**
Availability	Service Availability Mapping surveys	Range of services being provided
Accessibility	Specific access surveys	Population with physical access to services
Affordability	National Health Accounts	Levels of out of pocket expenditures
Acceptability	Client satisfaction surveys	

2.5. Accessibility

Before you go through the content on accessibility, reflect on the following question.

	What is accessibility in health service delivery?

Accessibility refers to the equitable distribution of these health workers taking into account the demographic composition, rural-urban mix and under-served areas or populations. Services are directly and permanently accessible with no undue barriers of cost, language, culture and geography. Health services are close to the people, with a routine point of entry to the service network at primary care level (not at the specialist or hospital level). Services may be provided at home, the community, the workplace or health facility as appropriate.

It is important to differentiate the concept of accessibility from **Equity**, which concerns ensuring that all inhabitants of any administrative location not only have equal access to health services but also use them equally for equal need. Important determinants are geographical, demographic (age and gender), socio-cultural and economic features.

Accessible health services are those that are:

- Physically available-,
- Affordable (economically accessible, i.e. the ability of the client to pay for the services),
- Acceptable,
- Appropriate.

2.6 Efficiency and effectiveness of service delivery

Efficiency and effectiveness are among the key principles guiding the delivery of health services. The increasing demand for long-term care and change in customer expectation and structural changes in the health care system require different strategies to tackle the ever-increasing demands.

2.6.1. Efficiency

Efficiency aims to achieve more using least of the available resource. In other words, one works towards ensuring maximum output, using the least possible input. Efficiency is achieved when an allocation of inputs produces the exact quantity and quality of service the society needs (allocative efficiency) and at the lowest possible cost (productive efficiency).

Efficiency refers to what extent the particular activity outputs have been achieved as compared to the targets set. To achieve the targets set in the plan of action, all activities should be fully implemented, reaching the set targets and covering all the active components. Implementation of any activity involves utilisation of resources. The resources could be humans, financial, time and material among others. As described earlier, implementation of activity results in an output. Efficiency relates the output to the resource inputs and refers to the measure of output per unit resource input. When an activity is implemented, the result is called the output. For example, if you carry out a study, the result is a study report. The study report, therefore, would be output from this activity.

It is important to ensure that the health system is producing exactly the quantity and type of health care that society wants (allocative efficiency) and producing it at the lowest possible cost (productive efficiency). Efficiency influences price in that when production costs are high, then the price must be high. Price will affect equity as it reduces effective demand for services, due to inability to pay and thus the importance of allocative and productive efficiency. Inability to pay may also affect the choice of service type or source of care; customers only buy something

if it is worth as much as or more than the other things that the same money could buy.

For the producer or seller, the price they are willing to accept measures the cost of the resources involved in the production including the supplier's own time and effort. Thus, when a market is in equilibrium, the benefit received from the service consumed will exactly equal the cost of producing the service hence fulfiling the condition for allocative efficiency.

Inefficiency in the health delivery system is manifested through long waiting hours, late opening and early closing, heavy workload, lack of tools and poor surveillance monitoring.

2.6.2. Effectiveness

Effectiveness aims to ensure that the interventions we prioritise are the ones that give our clients the best possible health outcomes. Effects or impact include changes in the physical or social functioning of individuals or groups following an intervention.

The intervention should be able to restore the health of the client to as near normal position as us feasible. Thus in selecting interventions service providers would pick the one that would achieve the best health outcome at the lowest cost.

Effectiveness can be measured by noting the situation of individual, group, or population before the intervention as well as afterwards to assess the positive change in the situation. Outcomes are not always easy to measure due to the difficulty in the valuation of outcomes; some programs may be measured using units of intermediate output like access to service and coverage. These measures indicate effectiveness in extending service provision. A diverse range of consequences must be valued to assess the health impact of programs. These include Changes in health status, Savings in expenditure on treatment or Economic returns from increased productivity.

Measurement can be by routine epidemiological data based on record keeping and surveillance. A survey/study may be designed to generate the required evidence of effectiveness. Shortcomings of this method include time and cost constraints.

Before moving on to the next element,

1. List the importance of efficiency and effectiveness
2. Differentiate efficiency and effectiveness

2.7 Safety of service delivery

Safety is an element that aims to ensure the care provided does not become a cause of ill health. The World Health Organization estimates that health care errors affect 1 in 10 patients worldwide. Patient safety aims to limit/eliminate preventable adverse effects of care, whether or not these are evident or harmful to the patient. Maintenance of safety is strengthened through addressing weaknesses arising from the following three key areas:

Human Factors of safety in service delivery are:

- Variations in healthcare provider training and experience, fatigue, and burnout.
- Diverse patients, unfamiliar settings, time pressures.
- Failure to acknowledge the prevalence and seriousness of medical errors.

Medical complexities depend on:

- Complicated technologies
- Need for powerful drugs
- Intensive care needs
- Prolonged hospital stay

System failures stem from:

- Poor communication, unclear lines of authority amongst the care providers.
- Increased patient to Health Worker staffing ratios
- Disconnected and weak reporting and accountability systems: fragmented systems in which numerous hand-offs of patients' results in lack of coordination and errors
- Drug names that look alike or sound alike
- Poorly designed cost-cutting measures
- Environment and design factors. For example, in emergency situations, care may be accessed in areas unsuitable for safety monitoring.
- Infrastructure failures

2.8 Unit Summary

In Unit 2 you managed to discuss the essential element for improving service delivery and making them available and accessible. Now you are well acquainted with the following element: Quality of service delivery, Quality Improvement and Quality Management of health services. You also had an opportunity to discuss in detail factors that influence the quality of health care/services, how to assess the quality and quality control. Also critical is the exposure to the concepts and principles of measuring access using appropriate indicators. Last, the Unit has also introduced you to efficiency and effectiveness of service delivery. Lastly, you are now aware that health services delivered to the citizens must meet the laid down safety standards. It is clear that safety is an integral element in service organisation and delivery.

UNIT 3: REFERRAL HEALTH SYSTEM

3.1 Introduction

This unit will allow you to understand the concept of the reference system and to master the key elements on which you can support to make it perform.

3.2 Unit Outcome

By the end of this unit, you should be able to :

- Describe the efficiency of the referral system

3.3. Concepts and principles

How would you define Referral Health System?

A referral health system is a system of advising and directing clients upwards to the tertiary level or downwards to the community level to ensure continuity of people-centred health care. It means all the operations to be mastered and organised so that each patient is treated at the level where the care will be most efficient.

A referral can be defined as a process in which a health worker at one level of the health system, having insufficient resources (drugs, equipment, skills) to manage a clinical condition, seeks the assistance of a better or differently resourced facility. The assistance sought could be from the same or higher level facility, or take over the management of the client's case. Key reasons for deciding to refer either an emergency or routine case include:

- to seek expert opinion regarding the client;
- to seek additional or different services for the client;
- to seek admission and management of the client;
- to seek use of diagnostic and therapeutic tools.

The classic conceptual framework of reference systems is presented in Figure 1.

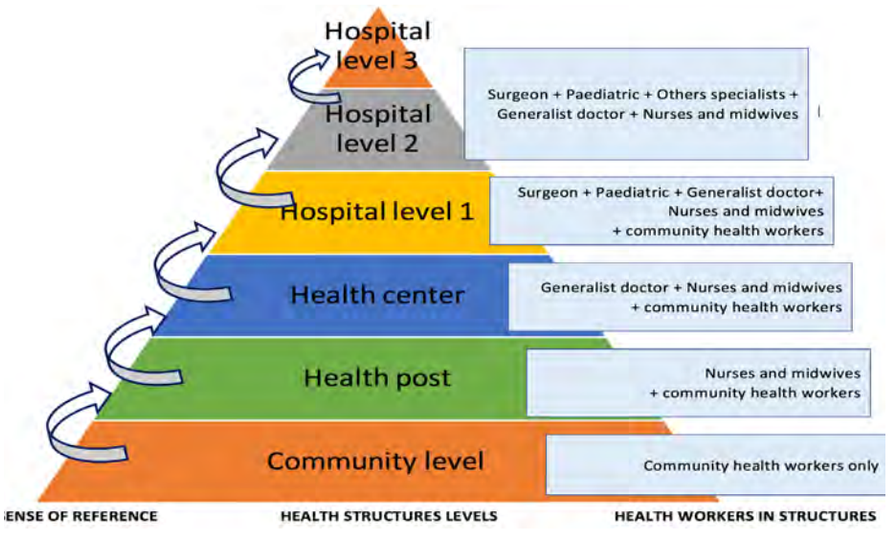


Figure 1: Framework of reference systems inspired by the Senegalese Referral Health System

In this model (Figure 1), the lower structure is represented by community health services. Community health workers in villages run these services. The level of health services provided is therefore basic, consisting of follow-ups on clients, monitoring, re-supply of pills for family planning, uncomplicated elective curative care (diarrhoea, malaria and uncomplicated respiratory infections among others) but usually no invasive gesture. These community structures have as reference structures health posts at the level of which nurses and midwives can take care of many of the basic needs in population health (deliveries, tuberculosis treatment, diarrhoea with dehydration, malaria prevention in Pregnant women and other conditions). These health posts usually do not have a biology unit, so some diagnoses will require either a referral to the health centre for better investigation or even better care. Health centres are structures where you can find doctors, a unit of biology, or even an X-ray unit and a technical platform to handle more difficult or at-risk deliveries. Hospitals will be the reference structures of health centres. Depending on the country, you can distinguish two to four levels of hospitals offering benefits:

- Increasingly global in choice of services (a range of services enabling the patient to be fully cared for)
- Towards specialised services (care delivered by providers in specialised units in a specific medical and surgical area)

Active feedback from a higher-level facility is very important because it allows the lower-level facility to know the outcome of the referral, plan for appropriate follow-up, and enhance skills set, thus improving their motivation. The need for a mutually beneficial professional relationship between staff and institutions is one of the reasons why we talk about a health pyramid.

	Schematize the Health Referral System of your country with the services offered at each level.

The reference is thus made to the health structures from the lowest level to those of the highest level. Respect for the existing levels of hierarchy in the health service organisation. The notion of counter references refers to the notion of the orientation of a patient from a high level of reference to a lower level of specialisation. For example, when a case of uncomplicated pulmonary tuberculosis is diagnosed in a referral hospital, the patient can be referred to a community health facility for follow-up treatment, thereby reducing both the patient and the community.

In this paper, the facility that starts the referral process is called the initiating facility, and they prepare an outward referral to communicate the client condition and status.

The facility that accepts the referred case is called the receiving facility, and at the end of their involvement, they prepare a back referral on the lower part of the forms to let the initiating facility know what has been done. This feedback is very important because it allows the low-level institution to know the outcome of the referral, but also to reinforce its skills, thus improving their motivation. The feedback from either level of services completes the referral loop between the two facilities.

	In practice, how is the referral organised in your service delivery structure?

A referral register is a means of maintaining a list of all outward and inward referrals for one facility or service provider. Information registered includes client referred, to where, when and why, whether the case is closed or continuing (the return-referral form has been received with any necessary rehabilitation or follow-up), and whether it was an appropriate referral or if there were any issues.

Some areas maintain a directory of services that lists all organisations providing specialist care. Such a directory can facilitate the search for the most appropriate service provider for a particular referral. Where such a directory is used, it is important that the contact information be kept up-to-date.

These terms are not hard and fast but are used here to assist clarity of description. The referral system in your country might use different terms.

The six principles of a referral health system are:

- Adaptability
- Urgency
- Coherence of diagnosis
- Ability to provide the required care
- Reliability of the service provider
- Availability of services required

Let us now see what each of the principle outlined above means by reading through the following bullets:

- **Adaptability:** A good reference system must be adaptable to the socio-economic, epidemiological and cultural context.

- **Urgency:** A good referral system should present the appropriate levels of care for different health emergencies, and not be the source of diagnostic delay for emergencies.

- **The coherence of diagnosis:** The quality of the diagnosis should be similar to all levels of the reference system. The concept of reference should only be applied at the level of specialisation required for care.

- **Ability to provide the required care:** Each level of the reference system must be sufficiently equipped to ensure the health benefits defined therein. The process of equipping requires the necessary qualification resources, but also the necessary diagnostic and therapeutic means.

- **Reliability of the service provider:** The service provider, whatever the level of the reference system, must be a trained and accredited agent to provide care for the reference level in which it is located. Even a community health worker must be capacity for the healthcare that he is supposed to be empowered to provide.

- **Availability of services required:** For an effective referral system, relationships between service providers are formalised, and referral procedures agreed upon. All levels of the health system, including primary health care services, need to be functioning appropriately. The folllllooowing must be met by each facilty:

  - being clear about their role, responsibilities and limitations
  - having readily available protocols of care for conditions for that level of service
  - having suitable means of communication and transport. Communication is generally through the referral form but may, in addition, be by radio, phone or fax or social media platforms. Where government is unable to provide an ambulance for health centres, a community-based system of organising transport may sometimes be possible.

1. How effective is your country's Referral Health System?
2. What makes you think so?

3.4. Development of referral health system

Design referral health follows the formal process of planning and solving health problems. Here, it will essentially require:

- Review the service delivery model
- Holistic assess the system using a SWOT analysis
- Design effectiveness strategies to improve the referral system
- Advocate all relevant stakeholders and if necessary recommend for legislation

Developing a successful and sustain referral system requires:

- An inclusive and participatory approach: This will involve working with clients to decide what their immediate needs are, but also with providers to identify bottlenecks and relevant solutions.
- A well-organised organisational diagnosis to describe the available health and social services options, the strengths and weaknesses of the system as well as opportunities and referrals;
- The development of a system covering all needs, with a relevant reference according to the epidemiology, but also the means of communication and means of transport, as well as the financial resources of the health structures.

It is necessary for each country to have a reference and counter-reference manual that presents the regulations in force about:

- provision of services for each level of the pyramid of care
- the health workers needed for each level and type of structure
- mechanisms of reference to high levels, and against references to low levels

	Individual Assignment 1. Review documents on a referral system that you are conversant with 2. Holistic assess the Referral Health System identified using a SWOT analysis 3. Redesign the referral if it is found to be ineffective or outline the characteristics that make you think the system is effective. 4. What obstacles do you envisage in redesigning and implementing the referral system?

3.4.1. Community health service

Community health workers make important contributions to health, health care, and prevention efforts. A community health worker is "a frontline public health worker who is a trusted member of and has an unusually close understanding of the community served. This trusting relationship enables the worker to serve as a liaison/link/intermediary between health/social services and the community to facilitate access to services and improve the quality and cultural competence of service delivery.

3.4.1.1. Definition of Community health worker

	How would you define Community health worker?

Community health workers should be members of the communities where they work, should be selected by the communities, should be answerable to the communities for their activities, should be supported by the health system but not necessarily a part of its organisation, and have shorter training than professional workers.

CHWs had and have a large number of different titles (Community drug distributor; Rural health motivator; Community health agent; Village health worker; Community health promoter, Community health representative or Community health volunteer). All these types of CHWs carry out one or more functions related to health care delivery and are trained in some way for the interventions they are expected to perform.

3.4.2. Performance

Performance is influenced by different but closely interlinked elements: individual health worker performance, organisation and delivery of services, use of services, health outcomes or impact, the effectiveness of the services and efficient use of resources or cost-effectiveness.

Community health worker performance: individual performance, while an important element, is somewhat difficult to discuss as a stand-alone issue, as it depends on all aspects of management, selection, training, supervision and support. Studies that explicitly explore the performance of CHWs illustrate that key reasons for the deficiencies in performance appear to be guideline complexity and inadequate clinical supervision.

Use of CHW: Like CHW performance, use is context-sensitive and linked to some factors internal and external to the program. It was documented that the implementation of a specific intervention that improved training, support and supervision of CHWs not only improved performance but also led to a significant increase in usage rates and improved rates in a choice of CHWs as "first stop" providers. On the other hand, the low use is seen to be linked to poor community introduction of the program, which often leads to political tensions or a preference for formal, established health services.

Retention/attrition: High attrition rates have been reported in many CHWs programs. Attrition was attributed to multiple causes such as inadequate pay, family reasons, lack of community support, and upgrading of health posts. Frequent turnover of CHWs means a lack of continuity in the relationships established among a CHW, community, and health system. The effects of the dropouts were decreased achievement of targets. Hence, retention is affected by central concerns with governance and management, such as sources of financing, community ownership and selection practices. Considerable investment should be made in each CHWs and CHWs program for identifying, screening, selecting, and training the CHW to lower attrition rates. It stands to reason that retention can and should be addressed as part of a broader package of management interventions.

Impact effectiveness: According to literature CHW impact effectiveness should be measured through assessing the effects of their interventions in primary and community health care on health care behaviours, patients' health and wellbeing, and patients' satisfaction with care.

Although impact effectiveness is a crucial benchmark for program planners and managers, it is important to note that it cannot be discussed in general, but needs a specific definition – not only regarding impact on what, but also impact over what period. The literature discusses effectiveness about a range of impacts, of which mortality and morbidity rank prominently, not only due to their obvious importance but also because they are quantifiable much more easily than measures such as client satisfaction or community mobilisation and are also mostly relatively short-term. Within these parameters, most studies indicate some degree of impact effectiveness.

Cost-effectiveness of CHW program

Services provided by community health workers are expected to be more appropriate to the health needs of populations than those of clinic-based services; less expensive; foster self-reliance and enhance local participation. Furthermore, because CHWs are more accessible and acceptable to clients in their communities, they are expected to improve the overall coverage of services as well as equity.

However, there is a dearth of data on the cost-effectiveness of CHW program to confirm these views. Cost-effectiveness analyses are insensitive to a range of social benefits (including community mobilisation), which often constitute the strength of CHW program. Thus, studies in several countries show different results when it comes to evaluating the employment of CHW in outreach programs. These comparisons conclude that the differences in cost-effectiveness are due to the nature of the interventions or the circumstances of the countries.

	Through these elements, analyse the performance of health community health in your country.

3.4.3. Managing CHW programs

Management is one of the most crucial, yet often sorely neglected, factors of CHW programs. Their geographical and organisational location on the periphery, often with ill-defined ownership and accountability, means that while they need particularly careful and attentive management, in practice they are often forgotten and dropped off the list of priorities.

	Key elements of CHW program management are recruitment, selection, training, support and supervision.

Recruitment and selection

As far as the selection of the CHW is concerned, the consensus today is that non-negotiable, CHW should be directly chosen by the households work with her/him. However, while the selection of CHWs from local communities is common practice, participatory selection processes remain an ideal that is relatively rarely practised, particularly in large-scale programs.

Thus, a balance is needed between the views of the community, the health system and also the training institutions, since the pattern of allegiance may be influenced by who makes the selection. Additionally, it is documented that where the community is actively involved in the selection process, those selected for training may turn out, in many cases, to be acknowledged opinion leaders in the community.

Initial and continuing training

When addressing training of CHWs, the literature reflects a great diversity of approaches, location, organisation and length of training, yet there is an agreement on one matter: that continuing or refresher training is as important as initial training.

Supervision and support

Although supervision is often identified as the vehicle through which the quality of health care services can be assured, it typically receives neither the human nor financial support needed to conduct and sustain the necessary supervisory activities.

In the current decentralisation of health services management occurring in many countries, full responsibility for the supervision of facility and community health workers has been shifted to area and district levels, often without providing the training and resources needed to undertake supervisory functions. Furthermore, the activities with which supervisors are charged are often poorly defined. Health care systems have a wide range of options in developing a locally appropriate and sustainable supervision strategy at the primary level. Key issues are who supervises and how often, and the use of supervisory job aids in measuring the quality of care

	How do you manage community health in your area of responsibility?

3.4.4. Governance, ownership and accountability

The literature is unanimous in its assertion that CHW programs should be owned and driven by communities and that CHWs should be accountable to their communities. However, the reality of programs often strays quite far from this ideal. There are three elements central to these debates: the role of communities and community participation, the relationship between CHW programs and formal health services, and the question of whether CHWs should be paid or should render services on a voluntary basis.

Community participation

Before you go through the content of community participation, reflect on the following question:

	How would you define Community participation?

Community participation could be understood as the mobilization of community resources (people, money, materials) to carry out health as well as an increasing "people's control over the social, political, economic and environmental factors determining their health."

It is agreed that while there are few success stories of lasting community participation, the sustainability and impact of programs require the ownership and active participation of communities as a non-negotiable pre-condition. Therefore, substantial and time-consuming investments must be made in: (1) securing participation of communities and (2) involving them in all aspects of the program, including the identification of priorities and project planning. In other words, community mobilization precedes and accompanies the establishment of CHW programs.

Relationships with the formal health services

How would you define Community participation?

The attitudes and interactions of health personnel in the formal health services with CHWs have an immediate impact on critical aspects of CHW program management. In many cases, the interactions among the health workers are affected by how programmes are introduced (frequently top-down introduction has resulted in the implementation of inadequately-thought-through schemes without the full participation of health workers at the local level).

In many programs, even those personnel who come into most contacts with CHWs are not involved in the planning, implementation, monitoring, and evaluation of such programs. It is hardly surprising, therefore, that they lend little support to these initiatives. Furthermore, many health personnel lack the background and orientation to provide a supportive environment for CHW programs. They are socialised into the hierarchical framework of disease-oriented medical care systems and have a poorly developed concept of primary health care.

Such paradigms are ill-suited to providing an environment supportive of partnerships and teamwork between different health workers, particularly if some categories are thought of as less important. A sense of superiority of health personnel has been observed as a problem, and attitude change is needed.

Although improving attitudes involves a complex process of educational and institutional reform, giving medical and health science students' specific examples of successful collaborative itervenetions can assist in developing positive attitudes towards CHWs. Ultimately staff trained in this way developed a new culture of working. As a bonus, even while they were learning, their assistance was supportive of the CHW program.

Describe the main obstacles to effective relationships within the formal health services and CHW in a health context that is familiar to you.

3.4.5. Incentives

How do you motivate the CHW?

It agreed that incentives and disincentives affect CHW motivation, retention and program sustainability. Some CHW ought to be volunteers supported in kind by the community, or paid through community or government funds. However there is no tidy package of incentives that will ensure motivated CHWs who will continue to work for years. Rather, a complex set of factors affects CHW motivation and attrition, and how these factors play out varies considerably from place to place.

Monetary incentives can increase retention. CHWs are poor people trying to support their families. Nevertheless, monetary incentives often bring a host of problems because the money may not be enough, may not regularly be paid, or may stop altogether. Monetary incentives may also cause problems among different cadres of development

workers who are paid and not paid. Many programs have used in-kind incentives effectively. " Non-monetary incentives are critical to the success of any CHW program. CHWs need to feel that they are a part of the health system through supportive supervision and appropriate training.

Relatively small things, such as an identification badge, can provide a sense of pride in their work and increased status in their communities (appropriate job aides such as counseling cards and regular replenishment of supplies can help ensure that CHWs feel competent to do their jobs).

Many successful programs use multiple incentives over time to keep CHWs motivated. A systematic effort that plans for multiple incentives over time can build up a CHW's continuing sense of satisfaction and fulfillment."

What are the key elements for CHWs to be able to make an effective contribution to the health sector?

1. How can a CHW performance be evaluated?
2. Describe the key elements of CHW programs management.
3. How can community ownership and participation be assured to implement successful CHW programs?

1. Briefly describe how CHWs can contribute to community development
2. How can CHWs' programmes improve access and coverage of basic health services in the communities?

3.5 Unit Summary

The Unit has taken you through the importance and rationale of developing and implementing a responsive and easily adaptable referral system to ensure seamless healthcare/service provision and coordination with different levels of health services organisation. The development and organisation of community health level services with the help of CHWs is well elaborated. The section on CHW went further to provide tips on how to initiate and sustain community-level health services programming and implementation through CHWs. Most importantly, the Unit exposed you to the classic referral system framework that is easily adaptable.

UNIT 4: QUALITY ACCREDITATION

4.1 Unit Introduction

In this unit, will be highlighted the definition of quality accreditation, their principles as well as the benefits of accreditation.

4.2 Unit Outcome

By the end of this unit, you should be able to:

- Implement the process of quality accreditation

4.3. Definition of accreditation

How would you define Quality accreditation?

Accreditation is the process by which an entity, separate and distinct from the medical organization, often non-governmental, evaluate the organisation of medical care to determine its ability to meet a set of requirements (standards) designed to improve safety and quality of care.

It is, therefore, a process to guarantee the quality of the services provided by a healthcare organisation, guaranteeing performance and thus allowing:

- improve and maintain satisfactory levels of quality
- protect the public from harmful practices in healthcare facilities
- ensure consistent use of standards by public and private health providers

4.4. Principles

Accreditation of services is based on the **seven principles**:

- The central role of the patient
- Improving safety in health care
- Continuous quality improvement
- Involvement of professionals working in the healthcare establishment
- A continuous process
- An obligation of objectivity
- Assessment and continuous improvement of the accreditation method

Let us now unpack the seven principles one by one as follows:

- **The central role of the patient:** Accreditation focuses on the patient's journey and the coordination of care within the healthcare facility and the healthcare network. Accreditation is a multi-professional evaluation, transversal to the institution, organisation, and results. The observations and levels of satisfaction of the patients and other users of the institution (patient entourage, attending physician but a few to mention) are taken into account in the evaluation.

- **Improving safety in health care:** safety is one of the major dimensions of quality of care and one of the main expectations of patients about the healthcare system; Hospital care, the effectiveness and complexity of which have grown in recent decades, is accompanied by risks for people. Risk prevention is based on some elements, including compliance with safety regulations, compliance with good practice and the establishment of an assessment and improvement system based on risk identification and implementation of the preventive action.

- **Continuous quality improvement:** it is based on the existence of a recognised system of quality management. It is achieved through the systematic improvement of processes, the reduction of dysfunctions and the involvement of people. The approach is pragmatic and proceeds from step-by-step improvements based on the existing situation objectified by measures.

- **Involvement of professionals working in the healthcare establishment:** improvement of quality is the result of the internal procedures carried out by the healthcare institution. The participation of all actors is essential for the acceptance of changes and the appropriation of solutions. It is essential that the various actors be involved in each stage of the accreditation process.

- **A continuous process:** obtaining results after a quality approach implies a long-term commitment by the healthcare institution. Accreditation should encourage the implementation of continuous quality improvement processes. It corresponds to a cyclical process in which the self-assessment and the visit make it possible to identify the priorities that will be the subject of action programs carried out by the following accreditation procedure.

- **An obligation of objectivity:** Accreditation helps the healthcare establishment to make a diagnosis of its situation on specific criteria established by the accrueditation bodyy with profesionals and clients.

- **Assessment and continuous improvement of the accreditation method:** the principles of assessment and continuous improvement of the quality required of healthcare establishments also apply to the accreditation itself. The accreditation body develops a monitoring system to mesure the effectiveness, cost, difficulties, and possible dysfunctions of the accreditation process. The accreditation body adapts and improves its approach according to the results of research, the feedback and advice of health professionals in the establishments. The information collected (results of the self-evaluation, observations of the visiting experts, types of anomalies encountered, opportunities for improvement) are critical in the accreditation processes.

Accreditation of healthcare establishments does not serve to establish a ranking of hospitals and clinics or to note physicians, caregivers and services. It mainly assesses the organisation of an institution and its capacity to put in place mechanisms to improve the quality and safety of care. Indeed, measures to prevent and treat the risks associated with care are many measures that must ensure the proper functioning of the community (a well-organised and accessible patient record, a checklist drawn up by professionals in the operating room, for example).

The accreditation of healthcare establishments is not a sanitary policy: inspections and inspections of health, social and medico-social establishments fall within the control structures and inspections of the Ministry of Health.

	As a group, choose a health area and analyse the degrees of application of these principles. What are the obstacles and propose solutions?

4.5. Standards for health care

Any accreditation process is based on pre-established standards.

	Process developing good standards of accreditation need the following six steps: ▪ Identification of peer participation ▪ Consultation ▪ Integrating laws and regulations ▪ Research ▪ Testing ▪ Evaluation

What do you need to do at each of these steps?

- **Identification of peer participation:** the participation of those who will use the standards and those who are directly interested in them (patients and consumer associations) is crucial for their design to be successful and for their proper use. Therefore, it is necessary to identify the relevant groups as soon as possible;

- **Consultation:** once the relevant groups have been identified, a well-structured consultation process must be established. This process should be aimed at obtaining the maximum number of participants and advice while remaining an easy to manage process in terms of time and resources;

- **Integrating laws and regulations:** health care delivery is governed by many laws and regulations, and it is important to prepare standards for healthcare organisations by being fully aware of these laws and regulations to make informed decisions about the appropriateness of citing them in standards and how to do so. We also need a process that allows us to be aware of new laws or changes that are made to existing ones

- **Research:** appropriate research should be carried out when standards are formulated and subsequently kept up to date;

- **Testing:** A means of testing standards must be developed and implemented before extending its use to ensure that standards meet the which are designed and that problems are detected before they are scaled up;

- **Evaluation:** once the standards have been put in place, mechanisms must be in place to evaluate them on an on-going basis.

Currently, there are several accreditation bodies, but all should have harmonised standards to facilitate the generalizability of results between entities, between countries and between supervisory bodies.

Classically, there are two groups of accreditation standards:

- Patient-centred standards
- Facility management standards

Table 1 presents the main accreditation standards according to the objectives.

Table 2: main accreditation standards according to the objectives.

	GOAL	STANDARDS
PEOPLE-CENTRED STANDARDS	Identify Patients correctly	The organisation develops an approach to improve accuracy of patient's identifications
	Improve effective communication	The organisation develops an approach to improve effectiveness of communication among caregivers
	Improve the safety of high alert medications	The organisation develops an approach to improve the safety of high alert medications
	Ensure correct –site, correct-procedure, correct-patient surgery (why surgery only?)	The organisation develops an approach to ensuring correct –site, correct- procedure, correct-patient surgery
	Reduce the risk of health care-associated Infections	The organisation develops an approach to reduce the risk of health care-associated infections
	Reduce the risk of patient harm resulting from falls	The organisation develops an approach to reduce the risk of patient harm resulting from falls
FACILITY STANDARDS	Leadership and planning	Relevant laws, regulations, facility inspection requirements, written plans, and qualified workers to manage risks
	Safety and security	The organisation plans and implements a programme to provide a safe and secure physical environment
	Hazardous materials	A plan for handling hazardous materials and waste
	Disaster preparedness	The organisation has and implements an emergency management plan to respond to likely emergency, epidemic and natural or other disasters
	Fire safety	A plan to ensure that all occupants are safe from fire, smoke and other emergencies in the facility
	Medical equipment	A plan a programme for inspecting, testing and maintaining medical equipment and documenting their results
	Utility system	Potable water and electrical power are available 24 hours a day seven days a week through regular or alternative sources to meet an essential patient t care needs
	Staff education	The organisation educates and trains all staff about their role in providing a safe and effective patient care facility

4.6. Benefits of accreditation

The accreditation process is designed to create a culture of safety and quality between an organisation that strives to continually improve prrocesses of care and results. Benefits include:

- improved public trust that the organisation is concerned for the patient safety and quality of care
- a safe and efficient work environment that contributes to worker satisfaction
- ability to negotiate on the quality of care
- Listen to patients and their families, respect their rights and involve them in the care process as partners
- Create a culture that is open to learning from timely reporting of adverse events and safety concerns
- Establish collaborative leadership that sets priorities for and continues leadership for quality and patient safety at all levels

	**1. Discuss the following in the context of** Accreditation**:** i. Client-centred standards ii. Health facility standards 2. How can you advocate for fast-tracking the accreditation process in a country or institutions of your choice, i.e. Establishing accreditation mechanisms (Legal framework, Establish regulatory bodies and professional associations, Develop guidelines for accreditation, Ensuring compliance)

4.7. What Have We Learnt

Successful health service strengthening requires the combined effort at all levels of management (Ministry of Health, local health officials at regional and county/district level as well as the other providers of care).

Health systems need to be strengthened, it is essential to be clear about the problems, where and why investment is needed, what will happen as a result, and by what means change can be monitored. The approach to assure this process is to define a discrete number of "building blocks" that make up the system: service delivery; health workforce; information; medical products, vaccines and technologies; financing; and leadership and governance.

To guarantte delivery of better services, we must apply certain principles and laws. The principles of health care delivery strive to achieve the following:

- Increased access to equitable health services
- Improved quality of services in the sector
- Improved efficiency and effectiveness of service delivery
- Ensure timely responsiveness to health needs of the population
- Ensure effectiveness of health actions
- Ensure provision of ethical health care services

Good service delivery is vital to a health service. Service delivery is a fundamental input to a population health status, along with social determinants of health. A well-functioning health system, the network of service delivery should have the following essential elements:

Quality has two aspects to be considered: quality of care, and quality of service delivery. Measuring Quality consists of quantifying the current level of performance according to expected standards. Quality cannot be measured without a clear definition or standard. Measurement involves assessment of the difference between expected and actual performance to identify opportunities for improvement. The quality of health services depends on the effectiveness of service processes.

Access and Availability: access means that health care services are unrestricted by geographic, economic, social, cultural, organisational, or linguistic barriers while availability is the relationship of the volume and type of existing services to the volume of clients and their need.
Accessibility refers to the equitable distribution of these health workers taking into account the demographic composition, rural-urban mix and under-served areas or populations.

Efficiency and Effectiveness: Efficiency refers to what extent the particular activity outputs have been achieved as compared to the targets set, whereas Effectiveness aims to ensure that the interventions we prioritise are the ones that give our clients the best possible health outcomes

Safety: Safety is an element that aims to ensure the care provided does not become, in it, a cause of ill health.

A referral health system is a system of advising and directing clients upwards to the tertiary level or downwards to the community level to ensure continuity of people-centred health care. It means all the operations to be mastered and organised so that each patient is treated at the level where the care will be most efficient. To be effective RHS must be built by the following six principles: Adaptability, Urgency, Coherence of diagnosis, Ability to provide the required care, Reliability of the service provider and Availability of services required.

Community health workers make important contributions to health, health care, and prevention efforts. A community health worker is "a frontline public health worker who is a trusted member of and has an unusually close understanding of the community served. Performance is made up of different but closely interlinked elements: individual health worker performance, use of services, impact effectiveness and financial performance or cost-effectiveness. Key elements of CHW program management are recruitment and selection, training, support and supervision.

Accreditation is the process by which an entity, separate and distinct from the medical organisation, often non-governmental, evaluate the organisation of medical care to determine its ability to meet a set of requirements (standards) Designed to improve safety and quality of care. It is, therefore, a process to guarantee the quality of the services provided by a healthcare organisation, guaranteeing performance to:

- improve and maintain satisfactory levels of quality
- protect the public from harmful practices in healthcare facilities
- ensure consistent use of standards by public and private health providers

Accreditation of services is based on the **seven principles**:

- The central role of the patient
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- Assessment and continuous improvement of the accreditation method

Process developing good standards of accreditation need the following six steps:

- *Identification of peer participation*
- *Consultation*
- *Integrating laws and regulations*
- *Research*
- *Testing*
- *Evaluation*

Currently, there are several accreditation bodies, but all should have harmonised standards to facilitate the generalizability of results between entities, between countries and between supervisory bodies.

Classically, there are two groups of accreditation standards:

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MODULE 9
PROCUREMENT AND SUPPLY CHAIN MANAGEMENT

LIST OF TABLES

LIST OF FIGURES

MODULE INTRODUCTION

Welcome to the ninth module on procurement and supply chain management. In the last module, we learnt about effective service delivery in healthcare facilities. For effective service delivery in healthcare you need a vibrant procurement and supply chain management system. The purpose of this module is therefore, to equip healthcare managers with competencies to manage the procurement and supply chain function for benefit of all stakeholders. To effectively learn this module, you should have a working calculator, note book and a pen.

Module Outcomes

	**Module outcomes:** At the end of this module you should be able to: 1) Apply the laws and policies governing procurement and supply chain 2) Implement the procurement and disposal process in the health care 3) Analyse the health care supply chain 4) Design appropriate inventory management systems in health care 5) Develop supply chain relationships with all stakeholders

	**Module competencies:** By the end of this module you should be able to: 1. Apply procurement laws, regulations & policies in h/care service delivery 2. Effectively manage the flow of health supplies 3. Design inventory systems to effectively control costs in healthcare facilities 4. Quantify users' needs/demand of various medical supplies 5. Develop and manage relationships with stakeholders along the healthcare supply chains

Module Content

This module is divided into the following five units:

Unit 1: Procurement laws, regulations and policies,

Unit 2: The procurement and disposal process,

Unit 3: Supply chain management,

Unit 4: inventory management and

Unit 5: Supply chain management relationships.

UNIT 1. PROCUREMENT LAWS, REGULATIONS AND POLICIES

1.1 Introduction

This is the first unit for this module. This unit introduces you to the procurement in a healthcare environment and emphasizes the various laws, regulations and policies applicable. The laws, regulations and policies focus on the legal environment for various countries. This unit will further emphasize the need for ethical behaviour among the stakeholders in procurement. Section 1.1 presents the introduction to procurement laws, regulations and policies.

1.2 Unit Outcome

By the end of this unit you should be able to:

1) Apply the laws, regulations and policies governing procurement and supply chain

1.3 Introduction to procurement laws, regulations and policies

Procurement is an activity undertaken in all organizations. In an attempt to survive in the ever-changing environment, many organizations have turned to effective management of the procurement function as an important link to the supply chain. There are various definitions of procurement. Some of the definitions are presented in the following paragraph.

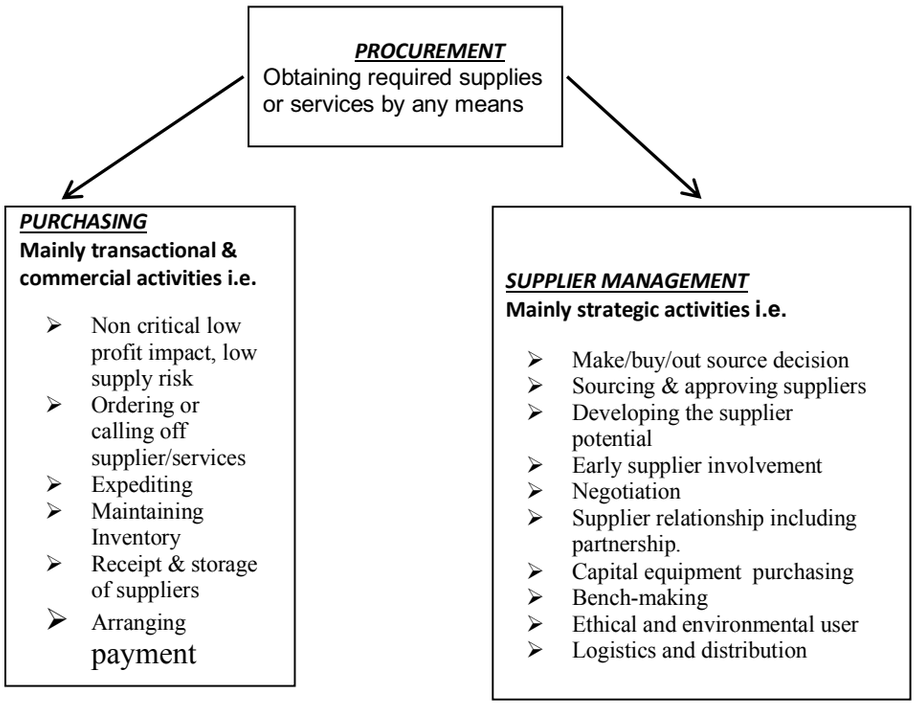
Definition of procurement

According to *Chopra and Meindl (2004:388), procurement is "the process in which the supplier sends products in response to orders placed by the buyer. The goal of procurement is to enable the orders to be placed and delivered on schedule at the lowest possible overall cost."*

Lysons, & Farrington (2006:6) have also defined procurement as *"the process of obtaining goods or services in any way, including borrowing, leasing and even force or pillage."*

Similarly, *Ulkalkar (2000:2) defined procurement as "the means by which a company acquires needed products, services and resources to produce its own products and services."*

Therefore, for the purpose of this module, procurement is the process of obtaining goods and services to the organization (Lysons and Farrington, 2006). Sometimes procurement is equated to purchasing, however, from the definitions, procurement is a wider than purchasing as it includes supplier management as illustrated in Figure 1.1. Purchasing is a sub process of procurement, to purchase is to buy and may even not involve supplier management.



Source: Lyons and Farrington (2006)

Figure 1.1: Procurement, purchasing and supplier management

Categories of procurements

As highlighted earlier in the definition of procurement, all goods and services must be procured into the organization. Thus, procurement takes any of the following categories;

- Goods/Supplies e.g. medicines, medical sundries, medical Stationery, Furniture, patient linen, medical equipment etc.
- Services e.g. Consultancies, Catering, and Auditing etc.
- Works e.g. Road works, Construction of health unit buildings, repairs and maintenance of buildings etc

Laws, regulations and policies regulate procurement and supply chain management. The purpose of regulating procurement is to ensure application of fair, competitive, transparent, and non-discriminatory and value for money procurement and disposal standards and practice.

Acts of parliament of different countries regulate the public procurement and disposal of goods, services and works. Examples of such acts are illustrated in Table 1.1. The Act of parliament stipulates the institutional framework for procurement and clearly defines the roles and responsibilities of key stakeholders in the procurement cycle as presented in section 1.4.

Table 1.1: Examples of the Procurement Act in some African countries

Country	Procurement law	Year of enactment
Uganda	Public Procurement & Disposal Act	2003
Ghana	Public Procurement Act (Act 663)	2003
Rwanda	Rwanda public procurement Act (No. 63 0	2007
Kenya	The Public Procurement & Disposal Act (cap 412 C)	2005, Revised ,2010

Activity:

1. Write down the procurement law in your country

1.4 Key players in the procurement and disposal process

The procurement process has a number of participants who play an important role. The key players in the procurement process include:

- The procurement authority/ board/ commission.
- The procurement entity/institution /accounting officer.
- Contract /tender committees.
- Procurement and disposal units (PDU)/department.
- Evaluation panels/ teams.
- User departments/ end users.

Each of the players is discussed in the following subsections

1.4.1 The Procurement Authority/ Board/ commission.

The mandate of the authority is to harmonize the process of public procurement in government to secure judicious, economic and efficient use of resources in public procurement and ensure that procurement is carried out in a fair, transparent and non -discriminatory manner.

1.4.2 Procurement entity

This is an institution mandated to carry out procurement in public service. It is usually headed by or has designated accounting officer who performs the following functions;

- Approval of procurement plans; the procurement plans usually cover a fiscal year of government. The plans originate from the user departments. For example, procurement plans from the radiology department, ICT, pharmacy and other departments constitute the procurement plan for a district healthcare facility.
- Confirmation of availability of procurement funds. Note that all procurement should be within budget.
- Advertisement of bid documents: this happens when the entity is sourcing for particular goods or services and invites suppliers to bid.
- Signing of all procurement and disposal related correspondences. The accounting officer/procurement officer should ensure that all procurement activities are carried out according to the applicable laws.
- Ensuring that the PDU is adequately staffed at all times. For example, procurement officers, store clerks, transport staff, relevant ICT staff.
- Coordinating administrative review in the procurement process.

1.4.3 Contract /tender committees.

This refers to standing committees within the buying organization that are in charge of making procurement and disposal decisions. They also make decisions on

- Approval of bid documents
- Approval of procurement method, e.g. tendering, or direct procurement
- Approval of bid evaluation report
- Approval of bid evaluation criteria to be used

1.4.4 Procurement and disposal units/department.

This is a department/unit in the procuring entity (buying organization) where technical procurement staff reside. It undertakes the following roles;

- Coordinating all procurement and disposal processes
- Development of bid documents
- Participating in bid evaluation
- Acting as a secretariat for all procurement and disposal activities
- Advice on a procurement method to be used
- Advice on development of specifications
- Drafting all procurement and disposal activity correspondences
- Participation in contract management.

1.4.5 Evaluation panels/ teams.

This panel constitutes of members that are assigned a role of evaluating bids submitted to the procurement entity. The focus of the panel is selecting the best bidder. It is a ad hoc panel whose selection is normally based on the nature of the procurement to be conducted. The main roles of this panel are;

- Evaluates bids using criteria prescribed in the bid documents
- Development and submission of an evaluation report to the contracts committee for approval.

1.4.6 User departments/end users.

These departments refer to the users of goods, services or works procured by the buying organization. Their roles include;

- Notification of procurement and disposal needs
- Develop specifications
- Participate in bid evaluation
- Participate in procurement planning process
- Manage contract performance

1.5 Other laws, regulations and Policies.

In addition to the parliamentary Act, there are other laws, regulations and policies that regulate procurement. Regulations are meant to harmonize procurement and disposal systems and practices in public service through setting standards and guidelines.

Policies on the hand are set by different government bodies to cover the gaps in the regulations or guidelines. There are related laws that regulate public procurement and disposal, they include public finance and management laws, leadership code and legislations regulating health supplies.

International laws /treaties also regulate procurement of some health supplies such as the procurement of nuclear materials, which is regulated by the International Atomic Energy Agency.

Activity:

2. Identify the procurement laws, regulations and policies in your country.
3. Who are the key stakeholders in the procurement process in your country?

Having learnt about the procurement laws, regulations and policies, it is important for you to note that these laws provide for ethical code of conduct to be followed by the stakeholder in the procurement process. The following section 1.6 presents the ethical code of conduct.

1.6 Ethics in procurement

It is important that the procurement staff and suppliers observe the ethical code so as to deliver value for money not only to the users but also all stakeholders.

Question:
What is ethics in the context of procurement?

1.6.1 Definition for ethics

Ethics can be defined as:

- The moral principles governing or influencing conduct of business.

The branch of knowledge concerned with moral principles as well as application to business so as to avoid ills such as bribery, discrimination, use of child labour among others.

Generally, business ethics is defined as an examination of ones moral standards versus the moral standards of a society, and how the standards apply to business environment (Velasquez, 1998).

Ethics is the basis on which most of the procurement related principles, such as fairness, integrity, and transparency, are based.

Professional standards of ethical conduct, no matter what the organization, contain typical characteristics, including commitments to:

- Behave honorably in all aspects of work and professional activity.
- Conduct oneself in such a manner as to maintain trust and confidence in the integrity of the acquisition process.
- Avoid practices intended to take undue advantage of others or the system.
- Uphold the organization's standards and policies and all relevant legislation.

Take Note:
All stakeholders including officers engaged in procurement as well providers of goods, services and works must abide by the ethical code of conduct in business as provided for in the laws, regulations and policies of different countries.

1.6.2 Principles of Ethics

The following are some of the principles of ethics:

- Maintain integrity and independence in their professional judgement and conduct
- Loyalty and respect for rules and regulations i.e. stand by decisions that are in the organization's interest even if they are unpopular; understand the rules and regulations pertaining to his or her profession and organization.
- Integrity i.e. demonstrating the values of the organization, including impartiality, fairness, honesty, and truthfulness, in daily activities and behaviors, acting without consideration of personal gain, resisting undue political pressure in decision making and not abusing power or authority.
- Impartiality and fairness i.e. set aside all personal and organizational biases, and apply the same standards of evaluation to all the suppliers (equal treatment).
- Transparency means unimpeded visibility. Because public procurement involves the use of and accountability for public funds, transparency is, paramount in all procurement activities. Therefore, procurement should be conducted in such a way that any scrutiny would not damage the organization or its leaders, member organizations, staff, or programs.
- Confidentiality i.e. officers and bidders shall not communicate to any Government, entity, person or any other source of information known to them that they know or ought to have known has not been made public except as appropriate in the normal course of their duties or by authorization by the accounting officer. These obligations do not cease upon separation from service.
- Avoidance of appearance of impropriety – in all organizations, officers should have proper conduct. However proper conduct may vary from one organization to another.
- Due diligence – this requires that all activities by procurement officers be pursued in a manner that goes beyond the minimum effort. For example, diligent officers should check the references of potential suppliers, develop impartial evaluation criteria, carefully analyze the offers received, not cut corners for the sake of convenience.
- Avoid associations with businesses and organizations which are in conflict with the law

1.6.3 Code of conduct and ethics in public procurement

The procurement officers should work within the principles of ethics as well as the various ethical standards. Some of the ethical standards include:

1. **Quality**

   Ethical standards in procurement require that

   - Bidders shall provide goods, services and works of high quality and take full responsibility of what they supply.
   - Bidders shall comply with the professional standards of their industry or for any professional body for which they belong.

2. **Conflict of interest**

   This requires that bidders should not accept contracts that would constitute conflict of interest with prior or current contract with the organization and should disclose to all concerned parties such interest if it cannot be avoided.

3. **Confidentiality and Accuracy of information**

   The information given by bidders in the course of the procurement process or in performance of contracts shall be true, fair and not designed to mislead.

   Further, the bidders shall respect the confidentiality of information given in the course of procurement or performance of the contract and shall not use the information for personal gain.

4. Gifts and Hospitality

Bidders or providers should not offer gifts or hospitality directly or indirectly to staff of the procuring entity that may be viewed by others as having an influence on a procurement decision.

5. Inducements

Bidders should not offer or give anything of value to influence the action of a public official in the process of procurement or contract execution.

This standard requires that bidders should not ask public official to do anything that is against the law or the code of conduct in business.

6. Fraudulent practices

This standard requires that when observed by both parties:

- Bidders shall not collude with other businesses or organizations with intention of depriving the procurement of the benefits of open competition.
- Bidders should not enter into business arrangements that might prevent effective operation of open and free competition.
- Engage in deceptive financial practices such as bribery, double billing, or any improper financial practices.
- Providers should not misrepresent facts in order to influence a procurement process or execution of a contract or submit false documents.
- Potential bidders should not unlawfully obtain withhold information relating to a procurement process in order to influence the procurement process.

	**Activity:** List the principles and standards of ethics in procurement.

1.7 Unit Summary

Well done! You have just completed Unit 1 in this module. ……

	In this unit we have learnt about the following: 1. Defined procurement as a process of acquiring goods and services that aid in the delivery of healthcare services. 2. Highlighted the procurement laws, regulations and policies that regulate the procurement process. 3. Identified key players in procurement and supply chain 4. The need for ethics in procurement

UNIT 2: PROCUREMENT AND DISPOSAL PROCESS

This unit equips you with the skills to implement the procurement process efficiently to meet the needs of practitioners, patients and other stakeholders. You will further learn how to plan and implement the disposal process effectively. The unit explains the meaning of procurement in section 2.1 and describes the stages in the procurement cycle under section 2.6.

2.1 Introduction to procurement

All organizations exist for a purpose. The basic reason is to produce outputs which are measurable in order to achieve specific objectives. In production of outputs, certain inputs/resources are required (financial, material & human resource). All these must be acquired through procurement, hence being at the center of all functions of an organization.

2.2. Unit Outcome

By the end of this unit you should be able to:

1) Implement the procurement and disposal process in the health care

Healthcare practitioners require various items (inputs) which are essential when delivering the healthcare service. The items include malaria drugs, computers, radiology machines and microscopes.

Question:

What are some of the inputs to a health care system?

2.3 Rights of procurement

Under public procurement there are six universal *rights* which each purchase should strive to achieve. The 6R's include purchasing:

i) The right product/service
ii) From the right source or supplier
iii) In the right quantities
iv) Right quality
v) At the right time
vi Within the right cost or price

However, the word *right* is situational meaning that what is right to one individual may not be right to another

2.4 Objectives of procurement

Procurement has many objectives including:

- Supplying the organization with steady flow of materials and services to meet desired needs. This is particularly critical where there is need for steady supply of supplies especially medicines and medical sundries.
- Ensuring continuity of supply relationships with providers to meet planned needs.
- Buying wisely, efficiently, effectively, economically and ethically.
- Manage inventory and giving best service to users at lowest cost but not compromising quality.
- Maintaining sound cooperative relationships with other departments of the organization (information and service).
- Develop staff, policies, procedures and the organization to achieve planned goals.
- Help to generate effective development of new products (NPD)
- Protect organization's cost structure

- Monitor supply market trends
- Maintain correct quality/value balance (inventory management).
- Negotiate effectively in order to work with suppliers who will seek mutual benefit through economically supplier performance.
- Select best suppliers in the market.

2.5 Principles of procurement

An effective procurement function should observe the following principles in every purchase;

- Value for money (Worth): each procurement should offer value for tax payers funds spent. This implies that any procurement in which funds are likely to be lost through over pricing, corruption or any other means should be discouraged.
- Efficiency, Effectiveness and Economy: this requires each procurement process to be timely and at minimum cost as well as economic in spending tax payers' funds.
- Transparency: the procurement process should be open to scrutiny at every stage.
- Open competition: this requires the procurement process should allow for free competition among the suppliers so as to achieve quality healthcare services.
- Fairness (to all, at all stages): this principle highlights that all the players in the procurement process should be treated equally at every stage.
- Accountability: the procurement officers and especially those with authority to incur expenses should be liable for all funds spent.
- Confidentiality: this principle requires that the procurement officers should maintain high secrecy especially during bidding process to avoid bid fixing. They should also not disclose confidential information about their suppliers to the competition.
- Elements of non-discrimination (Equity): the principle requires that the procurement process should not discriminate suppliers and users in terms of religion, race or sex.

Question

From your own experience as a stakeholder in procurement, are the principles of procurement fully observed in your organization?

2.6 The Procurement process

The process of procurement usually begins when the procurer is brought to his or her attention the need to acquire goods or services. The procurer starts to search the market for bidders. After identifying the suppliers, a request for bids, proposals, quotes, and information can be made. However, direct contact with bidders can also be made instead of advertising the above requests. Generally, procurement is carried through a number of stages as illustrated in Figure 2.1.

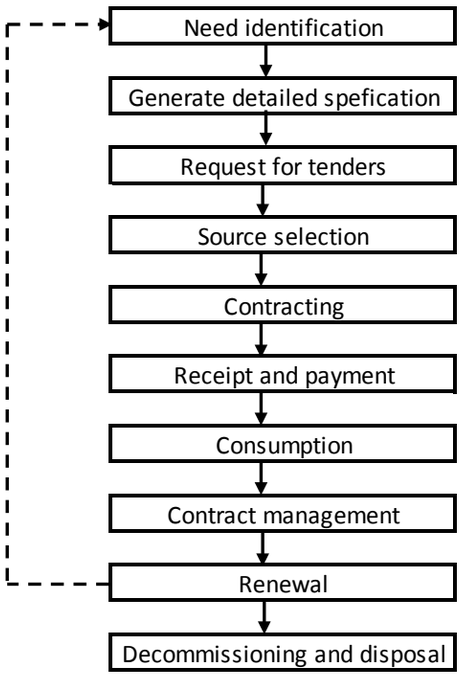


Figure 2.1: Generic stages in the procurement process

Each of the stages illustrated in Figure 2 is discussed in details under the following sections.

2.6.1 Identify Need/ Need identification stage

This is the first step in the procurement process. The process usually starts internally as follows:

- The user department or unit identifies a need for a product. For example, laboratory department (user department) informs Finance and Administration department about their need and provides any supporting information / data.
- Data and supporting evidence is passed back to the user department for completion of a procurement / business plan.
- A fully detailed procurement plan /business plan is forwarded to the Planning /Business Unit Manager / Directors for approval. Procurement planning is a comprehensive process covering a specific period and includes details on what to buy, when and from what sources as well as the specific processes to be followed.
- Once the approval is done it is forwarded to the procurement/purchasing department who compare the need against the budget plan, or seeks budgetary approval if the need was not factored on the budget

2.6.1.1 Procurement planning

Under this first stage (needs identification), procurement planning is critical to both the buyer, the user as well as top management of the health facility. Procurement planning is a process of determining the procurement needs of an entity/organization and the timing of their acquisition and their funding. In fact, it should be the first item in procurement/needs assessment stage (planning purchases and acquisitions).

Common questions answered by procurement planning

- Which output/outcome will the procurement contribute to?
- Why do you want to procure?
- What do you want to procure?
- When do you want to procure it?

- Where do you want to procure?
- How do you want to procure?
- Who does the procurement?
- Are the resources available and from where?
- When are you to use the procurement? (time to procure)
- When will resources be available?
- How can you be more efficient in the procurement process?

Factors to consider in procurement planning

There are a number of factors you should consider at the procurement planning level. These factors include:

- Organizational annual or multi annual work programmes (strategic or corporate plan)
- Organizational/department objectives
- Activities to meet Organizational/Department objectives
- Resources required for the above activities
- Procurement requirements/ inputs
- Procurement funding and cash flow
- Procurement methods
- Procurement time frames
- Legal requirements and Entity procurement procedures

Who formulates procurement plans?

There are key players in preparation and implementation of procurement plans. They include:

- Users of the respective departments
- Heads of Departments/sections
- Finance/Accounts Department
- Procurement and Disposal Unit
- Accounting Officer/Project Manager

Steps in preparation of a procurement plan

There are a number of steps followed in the preparation of a procurement plan. These steps include:

- Establish objectives, expected results, where to place emphasis, policies, procedures etc.
- Determine your present stand against desired accomplishments
- Determine organization work plans/ programmes
- Make clear assignment of individual responsibility for preparation of a Procurement plan
- Carry out a Needs Assessment/Review to determine the procurement requirements
- Determine purpose of the procurement and its timing
- Involve and consult key stakeholders
- Carry out market research for prices, source of supply, type of supply market, etc.
- Make clear specifications/TOR/SOW of requirements
- Write down the procurement plan
- Forward the procurement plan to User department
- Consolidate procurement plans (Into a master plan)
- Match procurements to funds/cash flow
- Prepare combined work plans
- Obtain approval of the procurement plan (by funder/project's headquarters /accounting officer) and funding
- Circulate approved procurement plan to users
- Review and update of the Procurement Plan

Contents of a Procurement plan

A procurement plan should include the following items.

i) Serial number
ii) Description of the items to procure.
iii) Nature and breakdown of procurements to be undertaken in order of priority
iv) Type/method of procurement to use
v) The quantities of requirements
vi) Unit cost
vii) Total cost
viii) The unit of measurement.
ix) The procurement value
x) Confirmed source of funding for the procurements
xi) Time the procurement is needed (Quarter)
xii) Total time the procurement process will take (lead time)
xii) Realistic time (date) when each procurement will be required by the user
xiii) Latest date when each procurement will be initiated by the user
xiv) Financial year of initiation of the procurement
xvi) Responsible party
xvii) Levels of authorization.

A sample procurement plan table is illustrated in Figure 2.2.

Sample of a user Department Procurement Plan

Financial Year 2017/2018

S/N	Description of the item	Name of Procurement	Quantity in units	Unit cost	Total cost	Unit of measure	Confirmed Source of Funding	Method of procurement	Time Frame	Responsible party	Time of delivery	Place of Delivery
1												
2												
3												
4												
5												

Prepared by user: **Received by Head/PDU**

Approval by Accounting Officer

Name..... … Name.....
Signature: ..... Signature: .....
Date..... Date.....

Figure 2.2: Sample procurement plan tableau

From what you have learnt in this unit and your own experience, what is your role in procurement planning in your organization?

Challenges in procurement planning

Many organizations including healthcare sector face a number challenges in procurement planning:

i) Bureaucracy and red tape (Approval stages are many)
ii) Lack of skilled manpower
iii) Inability to link plans with budgets
iv) High expectations from user depts.
v) Undue influence from top managers
vi) Over centralization of the budget
vii) Lack of top management support

2.6.2 Generating a Detailed Specification

After the need has been identified, the next step is generation of a detailed specification of the item to be procured. Generation of the specification starts after the procurement has been approved in line with the procurement plan.

After approval by the business directors the plan is passed back to the analysts/end users to determine the characteristics required in the product. at this stage issues such as quantity, quality, functionality, package, and make are clearly outlined. Specifications are normally in three forms:

- Functional specifications – these take into account the functional requirements such as purpose of the good, inputs e.g. the formula, processes, outputs such as form, volume, time etc.
- Performance specifications – these may include processing capability, accuracy, and availabity (such as time to be used).
- Technical specifications – the expert looks at characteristics such as quality, appearance, size, grade, class, style, color, weight, packaging, model, quantity etc.

The detailed specifications are forwarded to procurement department to plan the purchase and delivery of the goods to the organization. However, in certain cases, a specific supplier may be designated based on patent rights held by that supplier, compatibility with the existing facilities, whether they are the sole supplier of a given item, or similar situations.

	Case study Your health unit is in the process of procuring hospital beds to replace the old ones in the wards. As a stakeholder in the procurement process, you are expected to make specifications. Hereunder is the sample of the specifications.

Basic hospital bed	• Two-sectioned bed, with mattress.
	• Mild steel tubular frame
	• Epoxy coated finishing
	• Height adjustable approx. 50 to 80cm
	• Back section adjustment (from the horizontal to 70° at least)
	• 2 independent adjustment mechanisms for High-low and Backrest
	• Removable head and foot frames and panels without sharp edges.
	• Mattress platform steel mesh may be detachable.
	• Approx. mattress platform dimensions 200cm x 90cm.
	• Provision to enable positioning of infusion pole at each corner,
	• Castors: 4 swivel, antistatic castors, one of them guiding, diameter approx. 125mm min, wall protecting buffered, diagonal 2 with brake system.
	• Bed sections articulated joints especially designed for linen protection.
	• The whole construction to be washable and disinfectable in special washing and disinfecting machines.
	• Accessories:
	• Additional 4 wheels
	  • Infusion pole, with at least two hooks, in chrome-plated steel.
	  • Stainless steel chart holder, with spring clip for documents.
	  • 2 pairs of white cotton bed sheets: Flat sheet approx. W180 x L220cm and Fitted sheet approx. W90xL200xD20cm
	  • 1 bed spread approx. 180cm x 260cm

2.6.3 Source Identification (Request For and Submission of Tenders)

As provided in the Procurement law, tenders should be by competitive bidding between selected suppliers except under exceptional circumstances. There are various methods of source identification. The factors considered when selecting a procurement method are presented in the next paragraph.

Considerations in selection of procurement method

In selecting an appropriate procurement method, there are several considerations to be made

- Value of items – the procurement law or regulations provide for the threshold for different procurement method.
- Costs involved – the costs involved in procurement viz aviz the value of the item.
- Nature of items - the nature of items to be procured also matters. For example, if you are procuring patients' food, you don't have to use international bidding.
- Usage time of the items to procure – if the items are required urgently, you may consider direct procurement to reduce on the lead time.
- Purpose of procurement – the purpose for which the item is needed
- Delivery period upon order (Lead time) – if the lead time is short, then a method with a short lead time is preferred.
- Past experience – if an organization has had good experience with the previous suppliers and the supply is to compliment already supplied items.
- Nature of specifications (Design, Performance and Descriptive) – in some instances, where the specifications of a brand or model are inevitable, then direct procurement may be used.

The following are some of the methods of procurement:

- Open national (domestic) bidding
- Open international bidding
- Selective/Restrictive National bidding
- Selective/Restrictive International bidding
- Request for Quotations /Request for Proposals.
- Direct procurement
- Micro procurement

a) Open domestic bidding

This is a procurement method which is open to participation on equal terms by all providers through advertisement of the procurement or disposal activity within the country in newspapers and website of wide circulation.

b) Open International bidding

The procurement method is open to participation on equal terms by all providers, through advertisement of the procurement opportunity and which specifically seeks to attract foreign providers. This type of procurement allows any firm as long as it is legally registered to participate in the procurement process.

Since it is open to all bidders, the advertisement must appear in at least one foreign newspaper.

Open international bidding is used to obtain the maximum possible competition and value for money, where national providers may not necessarily make this achievable.

c) Restricted domestic bidding

Restricted Domestic bidding is the procurement method where bids are obtained by direct invitation without open advertisement.

This method is used to obtain competition and value for money to the extent possible, where the value or circumstances do not justify or permit the open bidding procedure. With this method, only invited bidders are eligible to participate in the procurement.

Bidders are invited based on a pre-qualification exercise or they are selected based on past performance with no pre-qualification exercise and it is advisable that the invited bidders should not be less than five.

d) Restricted international bidding

This is the procurement procedure where bids are obtained by direct invitation without open advertisement and the invited bidders include foreign providers.

Restricted International Bidding shall be used to obtain competition and value for money to the extent possible where the value or circumstances do not justify or permit an open bidding method and the short-listed bidders include foreign providers.

e) Request for quotations /request for proposals(RFQ/RFP)

These are simplified procurement and disposal methods which compare price quotations obtained from a number of providers. These should at least be from three suppliers to allow for comparison of price.

The Quotations and Proposal methods are used to obtain competition and value for money to the extent possible, where the value or circumstances do not justify or permit open or restricted bidding procedures. Quotations are used for works and supplies while proposals are used for services.

f) Direct procurement

Direct procurement is used for procurement where exceptional circumstances prevent the use of competition.

Under this method, the client simply invites the provider of the required service or supply and the provider submits a quotation at which they consider they can execute the assignment to satisfactory completion. This method is used under the following conditions:

- There is insufficient time for any other procurement procedure such as in an emergency situation where the normal tendering process will result in further delays.
- An existing contract could be extended for additional works, services or supplies of a similar nature and no advantage would be obtained by further competition. This happens if the price on the extended contract is reasonable
- If it is essential or preferable to purchase additional works, services or supplies from the original provider to ensure:
- continuity for downstream work, including continuity in technical approach,
- use of experience acquired or continued professional liability, compatibility
- It is also used in circumstances where classified information is involved for example in Procurement of certain items for the security.
- Intellectual property/property rights.
- If there are patent rights on the goods and services.
- If the supplier has monopoly powers through legislation. For example, in some countries, the law requires that health facilities procure medicines and sundries from a central government stores to ensure quality of the products.
- Where there is government policy to develop local capacity
- There are standards required on the product
- Warranty to use same supplier in the contract
- Purchase of spare parts/Repairs

g) Micro-procurement

Micro procurement is a simple direct procurement method, usually used for very low value procurement requirements.

Micro procurement or disposal shall be used to achieve efficient and timely procurement where the value does not justify a competitive procedure.

Activity:

As a health facility manager, you are required to procure supplies for your organization, recommend the most appropriate method for procuring;

1. Supplies to treat a patient suspected of Ebola fever?
2. Two x-ray machines, one MRI machine and one PET scan machine?
3. One packet of gloves urgently required in Emergency department?
4. Refilling of oxygen cylinders in a country with one plant?
5. A consultant to design and supervise construction on a new ward?
6. 20 reams of paper?

2.6.4 Source selection

It is the responsibility of the buyer to ensure all bids are an accurate reflection of the work to be performed or service provided and include all applicable taxes and shipping charges. This way, the total cost is known before the purchase order is placed. It is also necessary to understand the lead time and expected quantities to be delivered.

Based on the actual need date, any accepted quote should meet the required date. Source evaluation in most instances is based on a pre-determined evaluation criteria. The most competitive bidder both technically and sometimes financially is recommended for award of tender. Thus, source selection starts with evaluation of the bids submitted by all the invited suppliers. Bid evaluation is discussed in the next paragraph.

Evaluation of bids

This is commonly referred to as supplier appraisal and vendor rating. Evaluation of bid documents falls in the award phase of the procurement process/cycle. Evaluation entails application of the evaluation criteria for assessing various bids/proposals. The process of evaluation starts as soon as the bids have been opened.

Principles governing evaluation

The following principles govern bid evaluation:

- Fairness
- Transparency
- Confidentiality
- Non-discrimination
- Equity
- Assessment of bids against the same criteria
- Evaluation criteria to be made known to all bidders in the solicitation document.
- Only information contained in the bid can be considered in the evaluation

Evaluation methodologies

When evaluating vendors' bids, there are a number of methodologies that are applied to select the most suitable supplier. The methodologies include:

b) Quality and cost based selection

In this method, the supplier provides two separately sealed envelopes that are evaluated separately one after the other. It is used where quality is significant especially in works and services. This method has 3 stages (Preliminary, Technical and Financial). A minimum mark is set for technical, then open financials which also have mark e.g.20/100.

Minimum quote of the technically evaluated becomes numerator.e.g.100/100x20 and apply to all. This may differ from one procurement to another.

c) Quality based selection

Under this procurement, Quality is of primary significance.

- The bidder submits 2 envelopes
- There is no price mentioned at bid opening
- It also has 3 stages of evaluation i.e. Preliminary, Technical and Financial
- Award marks at a Technical stage
- Open financials for best technically evaluated bid only.

d) Technical compliance

This require the bidder to submit one (1) envelope

- Price is mentioned at bid opening
- It also has 3 stages of evaluation
- Preliminary & Technical is on Pass or Fail
- Open financials and lowest financially evaluated bidder is recommended for award.

e) Fixed budget - (Limited funds available)

The buyer announces budget available in invitation to bidders. Upon receipt of bids;

- Award marks at technical stage
- lowest financially evaluated bidder is recommended for award.

f) Stages in bid evaluation

Evaluation of bids goes through the following four stages:

- preliminary evaluation
- technical evaluation
- financial evaluation
- technical financial evaluation

Each of the stages are explained in the following sections.

1. Preliminary evaluation

It is conducted to determine:

- Eligibility,
- Bidders' qualifications (legal capacity, tax obligations)
- Administrative compliance
- Responsiveness.

Evaluation is done on pass/fail basis (Responsive/Non responsive or compliant/non-compliant). Only those that meet all the preliminary requirements are considered for the next stage.

What is responsiveness?

Responsiveness during evaluation refers to compliance with the terms or instructions of the bid document. Responsiveness criteria usually include:

- Delivery period within required time
- Validity of the bid for the required period
- Warranty at least for the required period

What are Eligibility requirements

Eligibility requirements should be stated in the Solicitation Document. A bidder must have legal capacity to contract.

A bidder should not be insolvent, in receivership, bankrupt, winding up, under suspension, having conflict of interest, suspended by procuring authority. Therefore, administrative compliance check is necessary.

Administrative compliance checks include:

- Conformity to the basic instructions, bid security if required,
- Submission of correct number of copies.
- Signature and authorization of CV.
- Correct bid Validity.
- Administrative Compliance is evaluated on a pass or fail basis.
- A bidder who is not substantially complaint shall be rejected.
- Bids which pass this stage are subjected to detailed evaluation.

Once a bidder has passed the preliminary evaluation stage, they are subjected to technical evaluation.

2. Technical /detailed evaluation

The purpose of a technical evaluation includes:

- To determine technical compliance with the specification in the bid document
- The bids must pass a minimum score to proceed to the next stage e.g. 70%
- The minimum score must be stated in the solicitation documents, and adhered to.

Detailed evaluation shall only be carried on bids that passed preliminary examination.

3. Financial evaluation

Financial comparison shall be conducted for eligible and administratively compliant and technically responsive bids.

Issues to consider in financial evaluation

- Correct any arithmetic errors
- Convert all bids to a single currency
- Incoterms used
- Check bid security
- Check the price/cost

4. Technical-financial evaluation

To ascertain the best evaluated bid, both technical and financial scores must be combined;

- The combination ratio is one that was stated in the solicitation documents e.g. 70:30, 80:20 or 90:10, depending upon the level of quality or technical competence required;
- The best value bid is one that gets the highest combined (weighted) score.

Question:
Why is it important to subject a bid to post qualification after preliminary, technical, financial evaluation has been done?

5. Post qualification

This is done to determine whether the bidder whose bid emerged as the best evaluated has the capability and resources to effectively carry out the contract. It is generally a verification exercise on the capability of the best evaluated bidder

The following issues are considered in post qualification evaluation

- Experience of work, region, country
- Past Performance
- Capabilities to deliver
- Staff qualifications and experience
- Financial situation
- Facilities available locally
- Capacity to undertake the work
- Litigation record
- Any relevant data

Challenges in evaluation

It is challenging for the healthcare managers to carry out the evaluation exercise. Some of the challenges include:

- Maintaining confidentiality by members of the evaluation committee
- Issues of conflict of interest and favoritism
- Awarding of marks/scoring may be subjective.
- Influence peddling and compromise

Once the supply source has been identified and selected, the buyer and the vendor negotiate and enter a contract.

2.6.5 Contracting

The next stage in the procurement process is the Contracting stage. Here the procuring entity is concerned with the award of the contract. Contract is awarded to the supplier whose bid offers best value for money' and also meets the set criteria. We define 'best value for money' as the optimum combination of whole-life costs and quality to meet the customer's requirements.

This stage involves selecting a supplier, determining the price to be paid, and agreeing to the lead time and quantity for delivery. It is also at this stage that the suppliers who were unsuccessful are given feedback.

The bidder who will have the most advantage to a firm and who meets the specified technical and financial conditions is the one that will have an agreement with the firm.

Negotiations over the contract price and other conditions, is done at this stage. Suppliers receive orders for product and there is agreement on dates.

In some cases – the supplier is instructed on Carriers approved by the business to transport the goods to the firms' site. In some cases, contacting is done by issue of purchase orders which specifies the agreed term as per contract.

2.6.6 Receipt of goods/services

Upon delivery of the goods and confirmation that the goods delivered are of the right quality and quantity a delivery note is signed by the procuring entity and a Goods Received Note (GRN) is generated.

The preparation of the GRN marks the beginning of the payment process. Products are to be delivered as agreed to in the contract. A firm reserves the right to claim liquidated damages if delivery is delayed beyond the specified delivery deadline.

2.6.7 Payments for the goods and services

In principle, payment methods may be considered based on mutual discussions in cases where a long period is required to effect payments or where other special circumstances exist.

2.6.8 Consumption of goods and services.

During this stage, the firm evaluates the performance of the procured goods or services and any accompanying service support, as they are consumed. Consumption stage greatly influences long term relationships with suppliers as the buyer will know if he is getting value for money on procured items.

It's upon the firm to inspect all products delivered by the supplier to ensure that they meet the requirements and conditions stipulated by it. Products which pass such inspections will be accepted. When necessary, inspections may also be carried out during the production process and / or when the product is in the market.

2.5.9 Contract management

During this stage, evaluation of performance of the supplier is done by the user. The terms of warranty are examined at this stage and in case of any contractual obligations by either party, they are discharged.

2.6.10 Renewal

When the stock has now been used the user department generates a request for new stock. The re-order process generates a request to the purchasing department to place new orders with the suppliers

When the procured goods or service have been consumed and/or disposed off, the contract expires. The product or service has to be re-ordered; hence the company experience with the procured goods or services is reviewed. If the procured good or service is to be re-ordered, the company determines whether to consider other suppliers or to continue with the same supplier.

2.7 Disposal process

Disposal refers to the act or means of getting rid of unserviceable, obsolete or surplus materials or equipment. It should be conducted in a manner that maximizes competition and achieve economy, efficiency and value of money.

For a public entity, a disposal committee is established for the purpose of recommending the best method of disposing unserviceable or obsolete or surplus materials or equipment from the public entity.

The disposal committee will then recommend to the accounting officer the best method used to dispose which may include any of the following;

i. Transfer to other agencies.
ii. Sale by public tender/ bidding
iii. Sale by public auction
iv. Destruction, dumping or burying
v. Donation
vi. Direct negotiation
vii. Conversion of another asset into another form
viii. Trade in
ix. Sale to public officials

a. Transfer to other agencies

Transfer to another procuring and disposing entity shall be used where the procuring and disposing entity to which a transfer of the public asset is made shall make further use of the public asset. This does not involve financial adjustments.

b. Sale by public tender/ bidding

Public bidding is used as a method of disposal where—

- the asset is located in a remote area;
- the asset has a geographically dispersed potential market;
- the sale has end-user or export restrictions;
- conditions need to be attached to the sale of the asset; or
- Post-bid negotiations may be required.

c. Sale by public auction

A public auction is used where—

- there is a large number of potential bidders for the public asset;
- the value of the asset is low;
- more than one public assets are to be disposed of and the
- assets are at one location; or
- An onsite auction is arranged to avoid transport costs.

Where the public auction method is used, the sale shall be at a reserve price.

d. Destruction, dumping or burying

Destruction of a public asset shall be used where—

1. National security, public interest, health and safety issues, legal and human rights issues environmental considerations are to be served if the public asset is destroyed; or
2. the public asset has no residual value and it cannot be transferred to another procuring and disposing entity,
3. the asset cannot be converted or classified into another form with any value or disposed of by donation.

e. Donation

Donation of a public asset is used where—

- The procuring and disposing entity cannot obtain payment for the public assets using any of the relevant methods of disposal;
- The public asset cannot be transferred to another procuring and disposing entity.

f. Direct negotiation

Direct negotiation method is used where a sale is made to a particular bidder. It is used where national security, public interest, health and safety issues, legal and human rights issues or environmental considerations are to be served

g. Conversion of another asset into another form

Conversion or classification of a public asset into another form for disposal by sale is used as a method of disposal—

- where national security, public interest, health and safety issues, legal and human rights issues or environmental considerations will be served if the public asset is converted or classified into another form; or
- Where the public asset has no residual value in its current form, but where some sale value can be obtained through conversion or classification of the public asset into another form.

h. Trade-in

Trade-in shall be used where a public asset of a procuring and disposing entity will be upgraded in a convenient, economic and efficient way, by trading-in a surplus public asset of the procuring and disposing entity, to offset the purchase price of a new asset.

- Trade-in should not be used where competition and value for money will not be achieved in the procurement process.

i. Sale to public officials

Sale to a public officer is used for the disposal of a public asset where—

- the public assets for disposal are a small number or are of a low value and sale to the public would not achieve value for money for the procuring and disposing entity; or
- The use of the public asset by the public officer would directly enhance the performance of the public officer in the execution of his or her duties within a procuring and disposing entity.
- A public asset shall be sold to a public officer for the personal use and not for business or commercial use.

	**Activity:** As a health facility manager recommend the most appropriate method for disposing off the following items: 1. Expired medicines 2. Expired laboratory reagents 3. Unserviceable beds 4. Unserviceable vehicles 5. An ultra sound machine that has been replaced with the latest model.

2.8 Unit Summary

Well done! You have just completed Unit 2 in this module. ……

	In this unit we have covered the generic procurement processes that applied in health facilities. The processes discussed are: need identification and procurement planning, detailed specification, request for tenders, source selection, contracting, receipt and payments, consumption, contract management, renewal and decommissioning and disposal.

UNIT 3: SUPPLY CHAIN MANAGEMENT

3.1 Introduction

In the last unit, you learnt about procurement and disposal processes, which is part of the supply chain management function. This unit introduces you to supply chain management in the healthcare sector. You will further learn how to analyze supply chain networks and players as well as the challenges facing healthcare supply chains. Let us start by an over view of supply chain management.

3.2. Unit Outcome

	By the end of this unit you should be able to: • Analyse the health care supply chain

3.3 Introduction to supply chain management

	**Question**: What is supply chain management?

Supply chain management (SCM) refers to the management of the flow of goods, services, works and information across a network of partners including buyers, suppliers and regulators with a goal to deliver customer value.

Therefore, supply chain management is:

- a set of synchronised decisions and activities utilised to efficiently integrate suppliers, manufacturers, warehouses, transporters, retailers and customers?
- all the tasks involved in deciding what to buy, where, when and how much and how to manage the stock
- the process of ensuring the delivery of the right product at the right time in the right place
- entails regularly ascertaining customers' satisfaction as to the services offered

What is a supply chain?

Having defined SCM, we note that a supply chain is a logistics network consisting of suppliers, manufacturers, warehouses, distribution centers and retail outlets – "facilities", which include raw materials, work-in-process (WIP) and finished products that flow between the facilities.

What are the benefits of supply chain management

Supply chain management offers a number of benefits to the health care systems. These benefits include:

- Cost savings in purchases
- Quality improvements
- High dependability of health care supply chain
- Leanness and agility of supply chains
- Greater responsiveness in servicing customer needs
- Developed and sustained relationships with stakeholders

To understand the supply chain management better, let us examine the components of supply chain management.

3.4 Components of supply chain management

There are various components of supply chain management which should work together for the benefit of the health care facility as well as the consumers of health care services. These components include:

1. *Materials handling:* materials management refers to the planning and control of healthcare supplies from the source to the final destination.
2. *Inventory management:* refers to management of the process of acquiring and maintaining stocks at various levels of the healthcare supply chain with an objective of holding optimal inventory levels to deliver high service levels.
3. *Demand forecasting:* refers to the prediction of future inventory requirements within the healthcare supply chain using both qualitative and quantitative methods
4. *Supplier relationship management:* refers to identification of partners within the healthcare supply chains and developing relationships to enhance service delivery.
5. *Packaging:* refers to the protection of medical supplies during transportation as well as during usage for the benefit of all healthcare stakeholders.
6. *Distribution:* refers to development of appropriate channels through which medical supplies as well as other healthcare supplies can flow so as to reach all the clients at the tail end of the supply chain.
7. *Linking customers to buyers:* this refers to the development of appropriate relationship between the healthcare facilities and the patients to enhance service delivery.
8. *Supply tiering:* this refers to the categorisation of suppliers into suppliers of parts, subcomponents, components and finished goods.
9. *Standardisation:* refers to setting of standards that will guide the performance of various activities along the supply chain. The standards include compliance to quality as well as industry and government regulations.

These components should be managed to meet the objectives of the health care supply chain.

What are the objectives of supply chain management?

According to Li (2007) the objectives of healthcare SCM include:

- To keep the prices at a reasonable level so as to increase access to healthcare services
- Efficient ordering, receiving, handling and storage to avoid losses and waste
- To supply goods and services of a type and quality which are to the best advantage of the customers
- To empower healthcare managers with tools to effectively manage inputs for the benefit of patients
- Shortening the supply chain and lead times through close collaboration with all partners

3.5 Stages in supply network

Supply chain includes four stages:

- Supply network (material flow)
- The internal flow (service flow)
- Distribution systems (information and funds flow)
- The end users

Figure 3.1 is an illustration of the healthcare drug supply chain network and the associated processes. Manufacturers of pharmaceutical products are the first in the supply network. They may supply directly to government central stores or through suppliers/agents or repackages. The central government stores supply the hospitals, which finally dispense the drugs to the patients.

Internal flows within the health facility involves movement of supplies from the stores/pharmacy to departments who in turn supply to units that dispense directly to patients.

The distribution systems across the health facilities differ. Most facilities in Africa use a manual information systems while others have embraced the use of information technology tools.

The end users refer to the final consumers who include patients and hospital departments. For example, reagents are consumed by laboratories who become end users

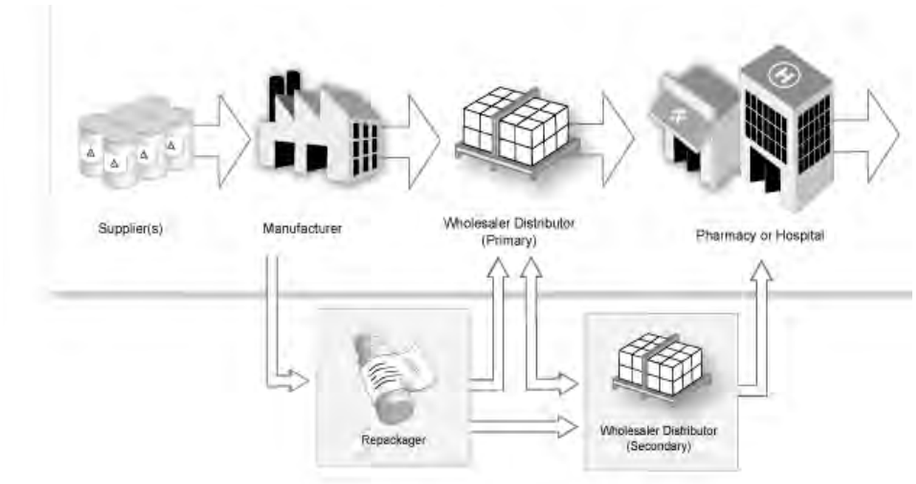


Figure 3.1: Drug supply chain network
Source: **U.S. Food and Drug Administration (2016)**

The integration of manufacturers, suppliers, warehouses, and distribution centres is critical to the efficiencies of the healthcare supply chain and service delivery to the patients. Integration of the players across the supply chain ensures that the medical supplies are produced and distributed

- In the right quantities
- To the right locations
- And at the right time

Question:
Identify players in healthcare supply chain network in your organisation?

Once the processes are efficiently managed, supply chain management will achieve the free flow of information, money and medical supplies. This will aid in making decisions about the type of supplies required, the critical supply chain activities to focus on and the manner of distributing the supplies to the end consumer of health care service. The supply chain decisions are made using two important tool i.e. information technology and operational analysis tools.

3.6 Supply chain designs

As healthcare managers, you should view the supply chain as a strategic asset and a differentiator in service delivery. For example; some health facilities can be linked directly to the supplier/manufacturer automatic replenishment medical supplies to unnecessary shortages. Others health facilities may build their supply networks based on outsourcing designs. The general supply chain designs include push/pull, efficient/responsive and e-business designs.

	**Question**: Identify some supply chain designs for healthcare systems.

3.6.1 Push and pull supply chain design

Push supply chain design is best suited for medical supplies whose demand can be predicted over a long period. Suppliers operating in the push supply chain design usually make-to-stock (produce in large quantities to achieve economies of scale). While, in situations where actual customer demand can be observed at near real time or the customer needs customised products, the pull supply chain design is the most appropriate. This means that the end users trigger final demand and suppliers usually make-to-order/assemble-to-order or build-to-order (Li, 2007).

Choosing between push/pull designs

To choose the appropriate strategy between push and pull to apply in managing the flow of various health care supplies, managers consider the demand uncertainty of the item and the economies of scale. The two factors are illustrated in a push-pull matrix in Figure 3.2. Generally, standardized supplies with high economies of scale are well managed through a push supply chain design, while customized goods with low economies are best managed by a pull design.

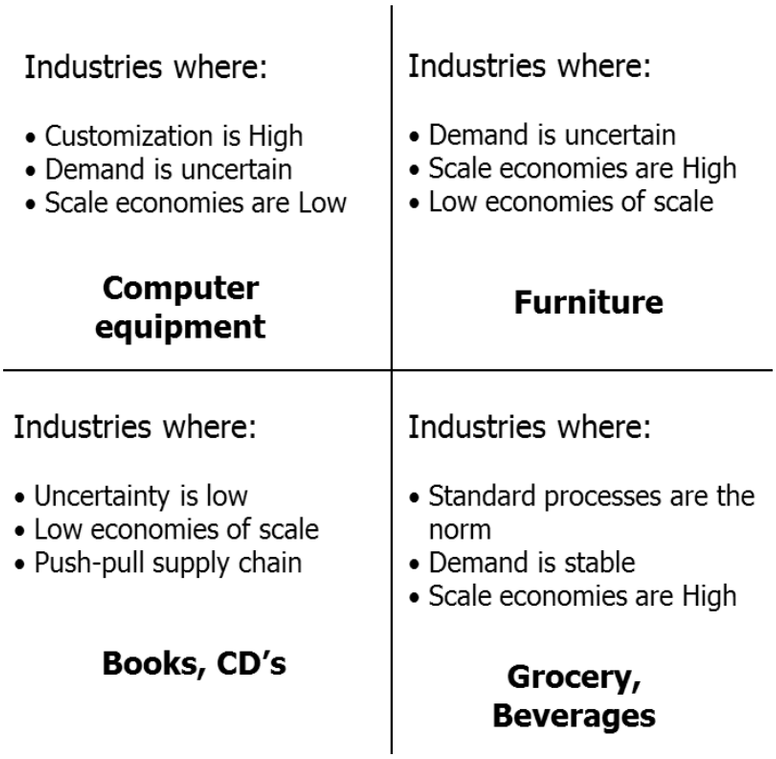


Figure 3.2: Push-pull matrix

Source: Simchi-Levi, Simchi-Levi & Kaminsky (1999)

Activity:

Where do the following items fit in the push-pull matrix in figure 3.2:

1. Malaria drugs?
2. Diabetes drugs?
3. Supplies for Ebola outbreak?

Solutions

1. Push
2. Push
3. Pull

3.6.2 Efficient versus responsive supply chain designs

A responsive supply chain refers to the ability to meet the needs of customers along the supply chain. It includes a supply chain's ability to:

- Cater to wide demand fluctuations in the market.
- Deliver with short lead times
- Handle a large variety of products
- Provide a variety of products
- Provide a very high service level
- Handle supply chain uncertainties promptly

Supply chain efficiency – refers to making and delivering a product to the customer at minimum possible cost. Increases in supply chain costs reflect a lower efficiency of the supply chain. A comparison of the efficient and responsive supply chain designs is presented in Figure 3.3.

	Efficient supply chain	Responsive supply chain
Demand	Constant, based on forecasting	Fluctuate, based on customer orders
Product life cycle	Long	Short
Product variety	Low	High
Contribution margin	Low	High
Order fulfill lead time	Allowed longer fulfillment lead time	Short or based on quoted due date
Supplier	Long-term	According to product life cycle
Production	Make-to-stock	Assemble-to-order Make-to-order Build-to-order
Capacity cushion	Low	High
Inventory	Finished goods inventory	Parts, components, subassembly
Supply selection	Low cost, consistent quality, and on-time delivery	Flexibility, fast-delivery, high-performance design quality

Figure 3.3: Efficient and responsive supply chains

3.6.3 E-business supply chain design

Health care managers should embrace the use of ICT in supply chain management. To achieve ICT incorporation especially in healthcare supply chains, it is critical that the supply chain design should incorporate electronic procurement and electronic transfer of data and documents. Key to electronic supply chain management is adoption of enterprise resource planning (ERP) systems by the supply chain partners. ERP refers to an application software divided in to modules representing each of the departments in the organization. The ERPs provide a platform for integrating all the organization departments.

The ERPs are then integrated to enable sharing of relevant information and documents. Figure 3.4 presents an illustration of an electronic supply chain. The internal supply chain is connected to the supply network and to the distribution network to meet the end customer requirements.

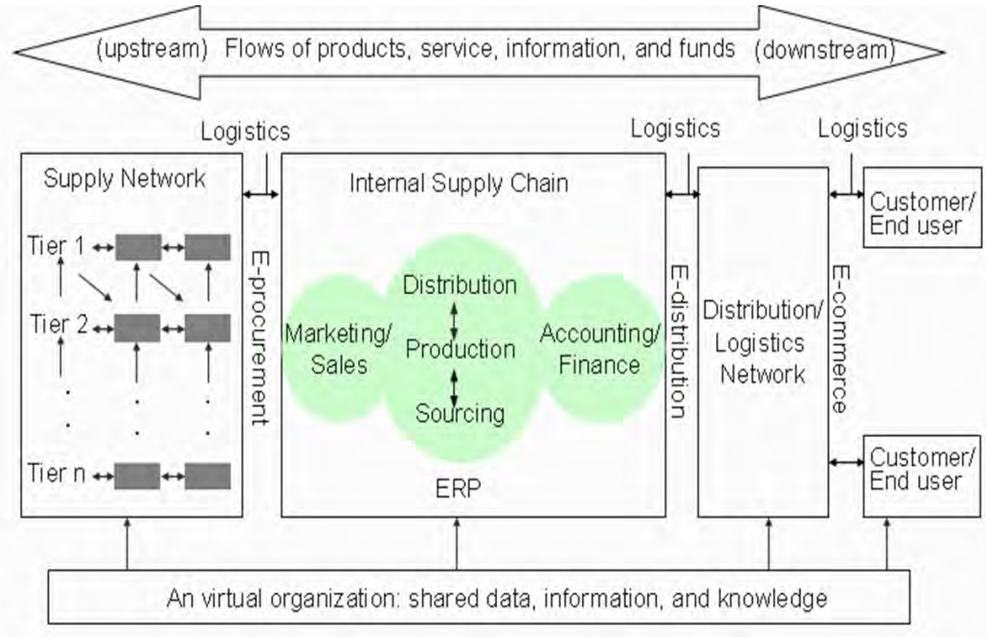


Figure 3.4: Electronic supply chain
Source: Simchi-Levi, Simchi-Levi & Kaminsky (1999)

	**Take Note:** The push-pull and efficient-responsive supply chain designs can incorporate an e-business design for quick transfer of information.

	**Activity:** List the three types of supply chain designs and describe the medical supplies that are best suited for each of the listed designs

3.7 Supply chain management challenges

Managing a health care supply chain is a challenging task given the criticality of medical supplies to human life. There are a number of challenges that come with managing the health care supply chain. They include

1. Bullwhip effect
2. Managing fragmented sources of supplies
3. Reduced government subsidies
4. Supply chain inefficiencies
5. Managing core competencies
6. Lack of standardisation
7. Need to adopt internet based procurement

3.7.1 Bullwhip effect

Bullwhip effect refers to demand amplification of demand upstream which results to holding excess inventories across the supply chain relative to actual demand at the hospitals' level (Sethuraman & Tirupati, 2008). Bullwhip has the following characteristics:

- Inventory and back-order levels fluctuate considerably across the supply chain even when customer demand doesn't vary
- The variability worsens as we travel upstream the supply chain
- Forecasting doesn't help

What are the factors contributing to bullwhip effect?

- Demand forecasting practices
  - Min-max inventory management (reorder points to bring inventory up to predicted levels)
- Lead time
  - Longer lead times lead to greater variability in estimates of average demand, thus increasing variability and safety stock costs
- Batch ordering
  - Peaks and valleys in orders
  - Fixed ordering costs
  - Impact of transportation costs (e.g. fuel costs)
  - Sales quotas
- Price fluctuations
  - Promotion and discount policies
- Lack of centralised information

Apart from bullwhip effect which is generally caused by supply chain uncertainty, there are other challenges faced by health care supply chains. These challenges are discussed in the following sections

3.7.2 Fragmented supply sources of supplies

The higher the number of suppliers engaged by the health care managers the higher the costs of managing the supplier relationships. The goal is to consolidate the supplier base so that the number of sources are optimized. The health care managers can also make use of group purchasing organizations to reduce the cost of purchases.

3.7.3 Reduced government subsidies

Governments across the world have introduced cost sharing with citizens in the area of health care. Cost sharing means that the hospitals will not be fully funded by the government. Therefore, they should adopt best supply chain practices to reduce cost and deliver high customer service in health care.

3.7.4 Supply chain inefficiencies

The inefficiencies in health care supply chains account for the high cost of services and drugs. The inefficiencies should be eliminated to reduce the cost. The inefficiencies include poor order management, limited warehousing capabilities, limited distribution capabilities and lack of flow of relevant information across the supply chain.

3.7.5 Managing core competencies

The health care partners should identify their core competencies i.e. to provide excellent patient care. Efficient healthcare supply chains will present opportunities for the patients to get the best care when they demand for service.

3.7.6 Lack of standardization

Health care supply chains should identify, develop and promote common standards. This will enhance efficiency and responsiveness. Standardization can also be in terms of products, purchase quantities, sources of supply and use of purchase organisations.

3.7.7 Limited internet based procurement

Most healthcare facilities in Africa are using manual procurement processes which lead to supply chain inefficiencies including long lead times. Most governments are now advocating for the use of e-procurement to reduce the inefficiencies and corruption. The health care supply chain should adopt e-procurement to deliver efficient services.

Activity:
Explain how each of the challenges affect health care supply chain in which your facility is a member.

3.8 Unit Summary

Well done! You have just completed Unit 3 in this module. ……

In this Unit 3, we have learnt about healthcare supply chain management. Specifically, we identified the components of SCM, supply chain networks and designs. In this unit we have also identified healthcare supply chain challenges.

UNIT 4: INVENTORY MANAGEMENT

4.1 Introduction

This unit introduces you to inventory control systems appropriate for healthcare sector. You will further be equipped with skills to enable you design inventory management systems. You will be equipped with skills to design internal inventory management tools from receipt to the point of issue of supplies

4.2. Unit Outcome

At the end of this unit you should be able to:

- Design appropriate inventory management systems in health care

4.3 Introduction to inventory management

Inventory refers to the stock of goods held in the organization for immediate use, distribution to end users or for future use.

Inventory management refers to the planning and controlling of the receipt, movement, storage and issuance of inventories within the healthcare facility with an objective to reduce associated costs and improve service levels.

4.3.1 Types of inventories

Question:

List some types of healthcare inventories.

There are various types of inventories within the healthcare supply chain:

- Medicines
- Vaccines
- Materials, repairs and operations (stationeries,
- Capital medical equipment (Radiology equipment, cancer, vehicles)
- Client samples/specimen

The type of inventories held in the health facility should add value to the clients. However, some health facilities hold large inventories that are non-value adding. For example, large stocks of broken furniture, medical waste, expired medicines, unroadworthy motor vehicles and other unserviceable equipment.

The managers of health facilities should plan for appropriate storage of inventories and maintenance of the equipment used in the medical facilities to achieve quality service delivery.

Management of health facilities should strike a balance between inventory investments and the expected service levels. Matching demand and supply will avoid overstocking and understocking. If optimal quantities of inventories are not maintained within the facility, inventory costs will be high. therefore, the inventory management system used by the facilities should ensure optimal inventory levels so as to meet the requirements of clients as well as organizational goals.

4.4 Inventory costs

According to Mageto, Chirchir and Ombati (2012), inventory costs are divided into:

1. ***Ordering costs:*** the costs associated with acquiring the inventories into to the healthcare facility. For instance,

   i) communication costs,
   ii) transportation cost,
   iii) insurance on transit,
   iv) salaries and wages of ordering staff,
   v) exchange rate differentials,
   vi) clearing and forwarding costs

2. ***Holding costs:*** the costs associated with maintaining the inventories within the healthcare facility. For example,

   i) *Opportunity cost* of capital i.e. money tied up in stock is not available to be used or invested elsewhere e.g. interest foregone.
   ii) *Storage/warehouse costs* such as personnel, equipment and cost of running the warehouse
   iii) *Insurance* against fire, theft.
   iv) *Security costs* such as security personnel, alarm systems, electric fencing
   v) *Perishability costs*; these are for perishable items such as drug solvents, specimens, milk, fruits, vegetables
   vi) *Obsolescence costs*: These are usually due to being overtaken by technology or expiry. This is quite prevalent in the electronics industry e.g. computers, mobile phones.
   vii) *Pilferages*
   viii) *Spillages* for liquids and gases etc.
   ix) *Damages* e.g. breakages (fragile items like glass, tiles etc.)

3. ***Shortage costs:*** These are incurred because of the item not being in stock.

   Examples:

   i) Loss of goodwill; could lead to loss of customers.
   ii) Contribution lost, due to not making a sale.
   iii) Back order costs - these are costs of dealing with disappointed customers.
   iv) Costs of idle resources e.g. service providers being paid when there's no operational inventories.
   v) Cost of having to speed up orders e.g. personnel working overtime, using a faster transportation mode which is likely to be costlier.

Take Note:

Note that there three types of inventory costs viz.

- Holding/carrying costs
- Ordering costs
- Shortage costs

4.5 Inventory control systems

Having known the inventory costs, it is important that you know how to control these costs. The costs can be controlled by using an appropriate inventory control system. Inventory control systems helps you as the healthcare manager to answer the *inventory question* i.e.

i) When to order?
ii) How much to order

An inventory control system can be manual, automated or a combination of both manual and automatic (automatic – is the use of technology to manage inventories).

There are two inventory control systems

I) Fixed quantity review system

This system is also known as (fixed quantity system). Its characteristics are as follows:

- A predetermine re-order level is set for each item, When the stock level is set for each item.
- The replenishment order quantity is invariably the economic order quantity (EOQ).
- Stock records should be maintained with calculated re-order levels which trigger off the required replenishment order.
- The system must have predetermined maximum, minimum and re-order quantities for each item based on the rate of use and EOQ.

ii) Periodic review system

According to Mageto *et al.* (2012), for the periodic review system inventory is reviewed after a predetermined period (for example after every two weeks, one month, quarterly…). The period after every review is constant.

The features of this system include:

- Inventory levels for all items are reviewed at fixed intervals e.g. every fortnight.
- Inventory replenishment is advised after the review is done.
- The replenishment quantity is determined by the likely demand until the next review, the present stock level and the lead time.
- Inventory replenishments cannot exceed the previously predetermined level.
- The periodic review system orders a different number of unit at every review.

Activity:

State the most appropriate inventory control system for the following items

- Medicines
- Patient beddings
- Furniture

Solutions:

- Fixed-quantity
- Periodic review
- Periodic review

4.6 Inventory control models

Inventory control models provide tools that managers use to minimise inventory costs as well as improve service levels. Inventory control models can broadly be categorized as:

i) Deterministic models such as the economic order quantity (EOQ)
ii) Probabilistic models such as the safety stock management
iii) Always better control (ABC) analysis

A discussion for each of the models is presented in the following subsections.

4.6.1 Economic order quantity

This model is suitable for single item as opposed to multiple items. The items under consideration must be durable goods and not perishable goods. The model works under the following assumptions.

Assumptions of Basic EOQ Model

1. Demand is constant and known with certainty.
2. Lead-time is constant and known with certainty
3. There are no shortages - hence no shortage cost (no stock-outs). This is implied by assumptions 1 & 2.
4. All items for a given order arrive in one batch or at the same time. i.e. simultaneous or instantaneous arrival. In particular, they do not arrive gradually.
5. Purchase cost is constant i.e. no discounts, hence for the basic EOQ model, purchase cost is irrelevant since total purchase cost is the same regardless of the quantity ordered.
6. Holding cost per unit p.a. is constant. This implies that total holding cost is an increasing linear function of quantity of stock in the year.
7. Ordering cost per order is constant irrespective of size of order.

The EOQ model assumes that only two costs are important in considering 'how much to order and when to order'. The EOQ is set at minimum total cost. The minimum inventory cost is at the point where holding cost equals ordering cost. The inventory costs are presented graphically as illustrated in Figure 4.1.

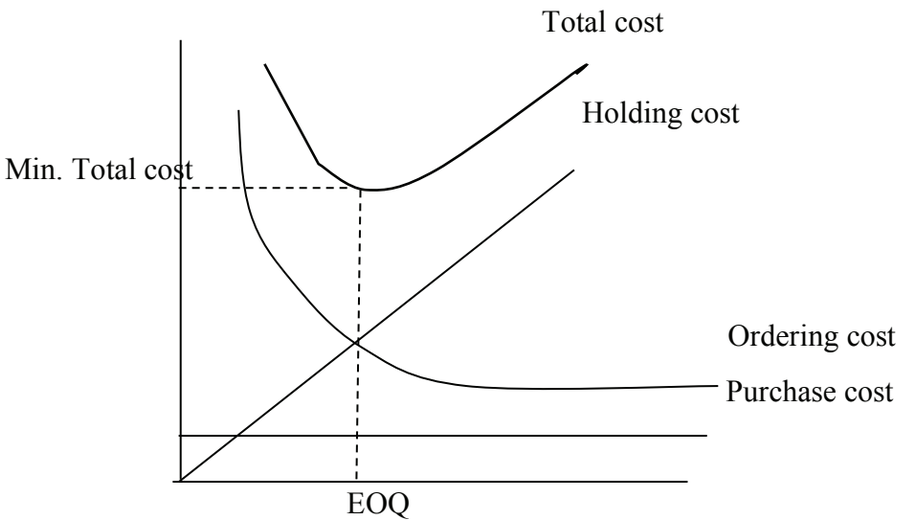


Figure 4.1: Graphical presentation of inventory costs

Annual holding cost = Average inventory level (Q/2) x Holding cost per unit per annum (C_h).

Annual ordering cost = Number of orders per annum (Annual demand/Q) x cost per order (C_o).

Thus,

At minimum total cost; $\frac{Q}{2} C_h = \frac{D}{Q} C_o$

Hence, EOQ $= \sqrt{\frac{2DC_o}{C_h}}$

Where;

Q = Optimal number of pieces per order (EOQ)

D = Annual demand in units for the inventory item

C_o = Ordering cost for each order

C_h = Holding or carrying cost per unit per year

Example 1

Determine optimal number of gloves to order that will minimize total cost.

D = 1,000 gloves

C_o = $10 per order

C_h = $.50 per unit per year

EOQ $= \sqrt{\frac{2x1000x10}{0.5}}$

= 200 gloves

Minimum total cost = holding cost + ordering cost

$$= \frac{Q}{2} C_h + \frac{D}{Q} C_o$$
$$= \frac{200}{2} x0.5 + \frac{1000}{200} x10$$
$$= \$100$$

Example 2

Activity:
Using the data in example 1, find the total cost when Q= (i)100, (ii)150, (iii)250 and (iv)300 gloves. How does the total cost change?

Solution:
(i)$125 (ii)104.2 (iii)102.5 (iv)108.33

Re-order point

The two examples above help managers to determine the 'how much to order' question to minimize total annual inventory costs. Inventory managers in healthcare facilities are also faced with the 'when to order' inventory question. This question is answered by determining the reorder point (ROP).

Re-order Point (ROP) = Daily demand (d) x Lead time in days (L)

Example 3

Suppose the annual demand for syringes is 8000 for 250 days' year and 3 days lead time. What will be the reorder point for the syringes?

Solution:

$$\text{ROP} = \frac{8000}{250} x3$$

= 96 syringes

Make a new order every time the quantities fall to 96 units.

4.6.2 Safety stock

The EOQ model discussed in section 4.6.1 works in an ideal situation where all the stated assumptions are fulfilled. However, in real life situations all the assumptions will not hold. Thus, demand and lead time will not be determined accurately.

Medical facilities in real life situations are likely to experience fluctuations in demand for the various items they use. Some medical supplies held in stores are life-saving drugs, whose shortage can lead to loss of life. The loss of life cannot be quantified in terms of shortage cost; hence the drugs should be in stock at all cost. However, it will not be prudent to hold so much stock to avoid shortage. Managers are expected to hold an optimal safety stock that minimise shortages during lead-time. The size of the safety stock should be determined over a particular period using probabilistic techniques. Safety stock is usually considered during lead time, which is the period when a stock out is likely to occur.

The significance of lead-time consumption in optimal safety stock determination is based on the holding cost per unit. An optimal safety stock should always yield minimum inventory cost.

4.6.3 Always better control (ABC) Analysis
Divides inventory into three classes based on annual dollar volume

- Class A - high annual dollar volume
- Class B - medium annual dollar volume
- Class C - low annual dollar volume

Used to establish policies that focus on the few critical items and not the many trivial ones.

Illustration:

Table 1 presents ABC analysis of ten items. The items have been classified into A, B and C categories based on the annual usage value. Class A items have the highest annual usage value and constitute up to 80 percent of the total annual usage value. Class B on the other hand account for about 20 percent of the total annual usage. Finally, class C represent the lowest annual usage value accounting for less than 5 percent and about 50 percent of the total number of items.

Table 4.1: ABC analysis

Item Stock Number (A)	Percent of Number of Items Stocked (B)	Annual Volume (units) (C)	Unit Cost (D)	Annual Dollar Volume (C*D)	Percent of Annual Dollar Volume	Class
101	20%	1,000	$90.00	$90,000	38.80%	A
107		500	154	77,000	33.20%	A
104		1,550	17	26,350	11.30%	B
102	30%	350	42.86	15,001	6.40%	B
110		1,000	12.5	12,500	5.40%	B
108		600	$14.17	$8,502	3.70%	C
103		2,000	0.6	1,200	0.50%	C
105	50%	100	8.5	850	0.40%	C
106		1,200	0.42	504	0.20%	C
109		250	0.6	150	0.10%	C
		8,550		$232,057	100.00%	

Source: Adapted from Lysons and Farrington (2006)

The ABC analysis allows managers to develop policies such as

- Emphasis on supplier development for A items
- Tighter physical inventory control for A items
- More care in forecasting A items

4.7 Inventory control tools from receipt to issuance

Critical to the management of medical supplies held within the healthcare supply chain is accuracy of records. Accurate records offer a number of benefits, such as:

- Accurate records are a critical ingredient in production and inventory systems
- Allows organization to focus on what is needed
- Necessary to make precise decisions about ordering, scheduling, and shipping
- Incoming and outgoing record keeping must be accurate
- Stockrooms should be secure

To achieve accurate records, the managers should carry out scheduled stock-taking activities. Stocking taking has the following benefits to the health care facility

- Eliminates shutdowns and service interruptions
- Enforces regulations that prevents loss and wastage
- Ensure adequate security measures are in place
- Opportunity to identify expired, obsolete and surplus stock.
- Opportunity to audit the storage conditions, layout and stock management procedures for improvement
- Allows causes of errors to be identified and corrected
- Maintains accurate inventory records

4.7.1 Guideline for stock taking

According to the World Health Organization (WHO) (2016) the following steps can suffice for a stock taking exercise;

- Plan: Assign the date and time of stock taking
- Assign staff
- Preparation
    - Organize the store room according to FEFO,
    - make sure all goods are visible for inspection and
    - separate damaged or expired stocks
- Count: count stocks in the units they are issued. E.g. tablets and not by box. Estimate the quantities in open cartons
- Update the stock records as per date and actual quantities counted
- Take action based on the findings
    - If there are discrepancies – update accordingly
    - Dispose appropriately damaged or obsolete stocks
    - Identify, document and correct the problem for the discrepancies
- Discuss the findings with staff and administration. Take appropriate action.

4.8 Stock management

To maintain a smooth flow of goods and associated information within a health care facility the following six steps should be observed in the management of stocks.

4.8.1 Receiving

Goods delivered by supplier must have been procured earlier through an appropriate method. The goods should be inspected to ensure they meet the expected quality standards and are of the right quantity. Upon satisfaction that the goods are in the right condition, they are registered into the stores records. The inspection checklist should be compared with the invoice and purchase order and any discrepancies noted in the receiving report.

Once the inspection is complete, the accepted goods can be entered electronically or manually into the stores database. Electronically; bar code scanners can be used to capture the details of the goods. Ideally, collecting data manually is a poor warehouse practise that leads to errors. Advocate for electronic data collection. The benefits are high productivity, lower labour costs and high accuracy. If possible at this point attach asset tracking devices to the items received.

4.8.2 Storage

The accepted goods are stored in an appropriate location within the store. The store records are adjusted appropriately. The goods are stored using first in first out (FIFO) or first expiry first out (FEFO) methods.

In general, terms the storage area for medical supplies should meet certain standards. For instance, it should have

- proper cleanliness and hygiene practices
- dry (relative humidity not more than 60%)
- right temperature, within acceptable limits for the drugs.
- Shelfs to avoid storing drugs on the floor
- Appropriately spaced shelfs to allow cleaning, access and inspection.
- pallets that are clean and intact

4.8.3 Space allocation

The management should plan for space where the procured supplies will be stored. The planning should be done in collaboration with the user departments to reduce the cost of movement and also to allow for proper storage. The storage area should be zoned to allow for storage of various goods. Some of the zoning criteria can be:

- Packaging material
- Transhipments
- Quarantined substances
- Fast moving drug
- Rejected product
- Recalled products
- Returned products
- Dangerous material
- inflammable substances

4.8.4 Order picking

The order picking list is usually prepared and given to the workers in the storehouse. The picking list indicates the number of units, description of the units and the location within the store room. The goods should be picked using the FIFO or FEFO methods.

4.8.5 Order assembly

All the picked goods are arranged at the assembly space previously allocated in the order in which they appear in the picking list. The goods are usually counter checked and packed appropriately and sealed for dispatch. Goods requiring cold storage especially vaccines should be packed appropriately to retain their normal status.

4.8.6 Dispatch and delivery

An appropriate distribution system is used to dispatch the goods. For instance, there could be a fixed delivery schedule or in some cases the representatives from various health facilities collect the goods in person. In both cases the delivery note is prepared indicating the number of units, description and final destination. The delivery note must be signed by the officer in the receiving health facilities upon inspection and returned to the store for record keeping.

The stock management process can be designed to work in a manual or automated system. However, it is highly recommended that health facilities adopt information communication technology tools to manage the stock. ICT will help to identify the location to ease the picking process and all the other processes. ICT also makes sure that the managers have relevant information for quick decision making. Examples of ICT tools to be used include bar code readers, scanners, RFID, inventory management system.

	**Activity:** Examine the above steps on stock management in relation to your organization; identify the areas of weakness and improvement.

4.9 Unit Summary

	In this unit, we have learnt about inventory management. We identified fixed quantity and periodic review inventory control systems. Various types of inventories in healthcare facilities are also identified. Inventory costs and control models that help minimise inventory costs were also discussed. Finally, in stock management guidelines for an healthcare facility were highlighted.

UNIT 5: SUPPLY CHAIN MANAGEMENT RELATIONSHIP

5.1 Introduction

This unit equips you with skills to identify various stakeholders in healthcare supply chains and their roles. You will further learn to identify, develop and manage supply chain relationships. Once you complete this unit you will acquire skills on how to involve community participation in healthcare supply chain.

5.2. Unit Outcome

	At the end of this unit you should be able to: • Develop supply chain relationships with all stakeholders

	**In-text question**: What is supply chain management relationship?

5.3 Introduction to supply chain management relationship

Supplier relationships refer to the long-term commitment between a buyer and a supplier to share information, risks and rewards for the benefit of all parties. For the relationship to be successful, there must be free exchange of information in a timely manner, high levels of trust and shared interests into the future (Wisner, Tan & Leong, 2008).

In a healthcare context, it is prudent that relationships are developed and maintained not only with suppliers but also patients (consumers of healthcare services), user departments (users of healthcare supplies), donors, government agencies and the community where the facility is located.

Thus, relationship management creates an interdependent and long-term relationship with an objective to improve the quality of interaction of partners. Developing relationships with all the stakeholders helps to mutually form the right governance structures that are necessary to contribute to efficiency of the supply chain.

The relationships can result in various benefits including

- delivery flexibility,
- better quality of supplies and services,
- efficient transmission of relevant information and
- efficient flow of supplies along the supply chain.

5.4 Stakeholders in healthcare supply chains

The healthcare supply chain has many stakeholders who are required to work harmoniously to deliver high quality services. Disconnection of any of the players from the supply chain creates serious issues that impact negatively on service delivery. For instance, poor communication between the healthcare facilities (hospitals) and suppliers will result in drug shortages which will affect the patients and the hospital's reputation in the community. Thus, the players should forge a way of working together for smooth flow of services and supplies. Table 5.1 presents some of the stakeholders and their roles.

Table 5.1: Stakeholders in healthcare supply chains

Stakeholders	Examples	Role
Health facilities	hospitals, dispensaries, clinics	Service providers
Suppliers	Pharmaceuticals companies, medical equipment, food, detergents, logistics companies and other service vendors	Source of supplies, IT service providers, logistics service providers
Government agencies	Ministry of health, medical practitioners and dentist board, nursing board emergency medical services	Regulation
Donors	Amref, JICA, USAid, WHO	Funding
Patients/customers/clients	Clients to the health facilities requesting for various services	Consumers of healthcare services
Community	Local region, division, district, county, province or country	Monitoring quality of service at the facility and offer support to improve services. To disseminate information about the various services available and create awareness.

5.5 Elements of a good supply chain relationship

To achieve a successful SC relationship requires the effort of all the partners (healthcare facilities, patients, government, donors and suppliers of healthcare supplies) focused on achieving the expected goals. Wisner *et al.* (2008) identified some of the ingredients of a good supply chain relationship as:

- High trust levels between the parties
- Shared vision and goals
- Interpersonal relationships among the participating parties
- Identification of mutual needs and benefits
- Top management support from all the parties
- Commitment to change management
- Free flow of relevant information among the parties
- Commitment to develop relationship capabilities e.g. technologies, quality standards, cost control, flexibility
- Develop the right performance metrics. Some of the metrics include:
    - cost/price,
    - quality,
    - delivery,
    - responsiveness and flexibility,
    - environment,
    - technology (manufacturing, design, improvement),
    - total cost of ownership- efficiency in transport, avoiding defects/rework, reduce cost of special handling, reduce cost of purchasing

5.6 Types of supply chain management relationships

Supply chain relationships can be categorized as:

- Internal supply chain management
- Buyer-supplier relationship
- Customer relationship management
- Community participation

5.7 Internal Supply Chain Management (ISCM)

Internal supply chain management (ISCM) refers to coordination works through coordination of different functional departments.

- The efforts include the planning on internal production and storage capacity, preparation of demand and plans and internal fulfilment of actual orders.
- Organizational design has a strong influence on the success or failure of the ISCM integration effort.
- Organizational design refers to many different aspects of the organization. These include
    - Organizational structure
    - Systems of communication
    - Division of labour
    - Coordination and control and
    - Authority
- Functional groups (e.g. engineering/R&D manufacturing and sales and marketing) are all instrumental in designing building and selling products most efficiently for the supply chain.
- This cooperation helps improve the supply chain's ability to match supply and demand effectively.
- The effort of ISCM is to fulfill the demand generated by the CRM processes in a timely manner and at the lowest possible cost.
-
- It has to enter into collaborative activities and work in order to show superior performance.
- Firms enter into inter-firm integrative and collaborative arrangements through the supply chain. This helps in securing higher performance through the linkages that would not be possible by firms operating individually.

Firms establish ties with each other on the basis of mutual belief (exchange personnel)

- Share technology and information and in effect
- Sharing both risks and rewards of the relationship.

5.8 Supplier-buyer relationships

This aims to arrange for and manage supply sources for various goods and services. It is important that relationships between the procuring entities (healthcare service providers) are well managed for the benefit of all the stakeholders. The objective of good supplier relationships include:

- to streamline and make more effective the flow of supplies along the healthcare supply chain
- integrating the entire supply chain to achieve flexibility through innovations and use of available expertise or acquiring new capabilities

The buyer- supply relationship management processes include:

- Evaluation and selection of suppliers
- Negotiation of supply terms
- Communication regarding new products and orders with suppliers.
- Integrating buyer and supplier capabilities e.g. technology

According to Lysons and Farrington (2006) there are three types of supplier-buyer relationships

i) Transactional
ii) Collaborative
iii) Alliance

The relationship continuum for the three relationships can be illustrated as shown in Figure 5.1.

Figure 5.1: Buyer-supplier relationship continuum
Source: Burt, Dobler and Starling (2003:80); Lysons and Farrington (2006)

Question:
Identify suppliers you have used for the last one year. What type of relationship do you maintain with them?

The characteristics, advantages and disadvantages of each of the supplier-buyer relationships are presented in subsections (i), (ii) and (iii).

5.8.1 Transactional relationship

Characteristics

1. The relationship is formal and inflexible: It is characterized by an absence of concern by both the buyer and the seller about the other party's well-being. They see the relationship as a zero-sum game i.e. what one party wins, the other loses.
2. Transactions are seen as a series of independent deals. Each transaction is entered into on its own merit. There is limited contact between the buyer and the seller. There is also little or no basis for collaboration and learning from each other.
3. Basic data relating to technical data, special features, costs and forecasts etc are not shared.
   - The focus is on price e.g. use of open tenders for transactions.
   - Both the buyer and the seller try to get the best price.
   - There is no openness in such a relationship.
4. The buyer and seller do not share data. Since the prices are determined by market forces neither the buyer nor the supplier will rush to the other's assistance in bad times or when problems arise.
5. Most of the procurement effort is in establishing rules, regulations and procedures governing such transactions. Therefore, purchasing time and energy are required to establish prices as market forces establish prices in transactional relationships.

5.8.2 Collaborative relationships

- Awareness of the interdependence and necessity of cooperation is the key difference between collaborative and transactional relationships.
- Organizations perform a series of value-adding interdependency and need of cooperation to provide benefits to both parties.
- These include:-
  a. cost reduction
  b. Improved quality
  c. Reduced time to market
  d. Leveraging on supplier technology
- There are three important factors required for a successful collaborative relationship between a buyer and a supplier. These are:
  - Two way communication
  - Responsiveness to supply management's needs
  - Clear product specification

Characteristics of collaborative relationships

1. Both parties are aware that money enters their supply chain only if the chains end products are cost competitive
2. Collaborative relations replaces the market forces leading to overall improvements in many areas.
3. There is – controlled competition
    - Benchmarking
    - Advanced supply management pricing practices

The end result is:

- Lower total costs
- Higher quality
- Reduced time to market
- Reduced risk of supply disruptions

4. The criterion of supplier selection is not price but the value delivery of the seller such as
    - Quality
    - R&D
    - Timeliness of supply
    - Process capability
    - After sales service ability

    The buyer rewards strategic partners with a larger proportion of the total orders. This acts as an incentive to perform better than others.

5. The relationship is long-term therefore their interdependence and need for cooperation is reflected in their continual effort to mutually work together towards cost reduction and improved quality.

5.8.3 Supply Alliances

These relationships are based when there is institutional trust between the buyer and the seller. Supply alliances have the following characteristics;

There is a visible atmosphere of cooperation.

- The buyer and seller address potential conflicts and resolve them openly.
- Alliances are not legal entities but mutually beneficial and open relationships, wherein the needs of both the buyers and the seller are satisfied.
- Sellers are willing to invest in customized machinery, tools, information systems, delivery processes etc due to long term relationship to the buyer.
- It leads to improved overall quality as the product integrity increases.
- Sellers accumulate specific know-how of the buyer's market and requirements by working together. This allows them to communicate and coordinate effectively.
- They are less likely to have communication breakdowns that results in errors which results into higher quality, faster developments, times and lower costs for the customer.
- The focus of supplier alliance is continuous improvements along with squeezing cost out.
- Negotiations occur in a win win manner.

An alliance is a living system that progressively evolves with the objective of creating new benefits for both parties.

- Ethics take precedence over expediency.
- The relationship is adaptable in the face of changing economics, competition, technology and environmental issues.
- By improving the process, the manufacturing quality is raised, which reduces requirements to inspect for errors. The result is improved quality at lower total cost.

A summary of the transactional and collaborative and alliance supplier relationships is presented in Table 5.2 as per

the characteristics shown. Table 5.2 shows that communication is enhanced in collaborative and alliance relationships, the duration is short for transactional relationships while it is long for the collaborative and alliance relationships as shown in table 3.

Table 5.2: Characteristics of transactional, collaborative and alliance supplier relationships

Characteristic	Transactional	Collaborative and Alliance
Communication	High potential for problems	Systematic approach to enhance communication
Competitive advantage	Low	High
Connectedness	Independence	Interdependence
Continuous improvement	Little	A focus
Contributions to new product development	Few	Many–early supplier involvement
Difficulty of exit	Low	Difficult–high impact
Duration	Short	Long
Expediting	Reactive	Proactive
Focus	Price	Total cost
Level of integration	Little or none	High or total
Level of trust	Low	High
Number of suppliers	Many	One or few
Open books	No	Yes
Quality	Incoming inspection	Design quality into system
Relations	Inward looking	Concern with each other's well- being
Resources	Few–low skill level	Professional
Service	Minimal	Greatly improved
Shared forecasts	No	Yes
Supply disruptions	Possible	Unlikely
Technology inflows	No	Yes
Type of interaction	Tactical	Strategic synergy

Source: Burt, Dobler & Starling (2003:80)

5.9 Customer Relationship Management (CRM)

Healthcare managers should use this strategy to analyse customers' needs and behaviors in order to meet their requirements and in the process better relationships are developed. CRM process includes processes that will bring together lots of pieces of information about:

- Customers/ consumers of healthcare services
- Responsiveness
- Market trends
- Order management systems
- Demand management

The objective of CRM is to collect information about customer demand trends of various medical supplies and facilitate the placement and tracking of orders to the point where the ultimate consumer receives the good or service.

5.10 Community Participation (Group Activity)

The community in which the health facility is located should be incorporated as a stakeholder in the healthcare supply chain.

Scenario/Case study:

You are the manager in charge of a district healthcare facility. The facility has been facing rampant shortages of supplies in the recent past and this has been blamed on poor supply chain practices by the local chief. Sometimes the drugs are available but end up being destroyed because of expiration. In some cases, the community is not aware about new supplies. As the manager you would like the community to fully participate in supply chain activities.

Questions

1. In which ways can the community participate?
2. Is community participation necessary?
3. How can the community be a risk to the flow of healthcare supplies? How can it be of help?
4. How does the community determine the location of healthcare facilities in the supply chain? Why should it be involved?

CASE STUDY

A Case Study of Get Better Hospital (GBH) in Kenya

1. Introduction

The turbulent business environment in which firms are currently operating and the general trend of internationalisation, also known as globalisation, has put pressure on management to seek new ways of increasing profitability. On the same note, customers are demanding for better service at a more affordable cost. The demand for better services in the health care industry is no longer a privilege, but a right of the customer. Supply chain management (SCM) remains an area where possible savings can be made and overall services improved to ensure customer satisfaction. Supply chain activities can no longer be considered in isolation, but rather in combination for seamless flow of supplies from the suppliers through manufactures, providers and finally to the customers. Supply chain management refers to an area that "encompasses the planning and management of all activities involved in sourcing and procurement, conversion, and all logistics management activities. More importantly, it also includes the coordination and collaboration with channel partners, which can be suppliers, intermediaries, third party service providers and customers. In essence, supply chain management integrates supply and demand management within and across companies" (CSCMP, 2008).

Health care services in Africa have been growing in the last decade. However, the cost of providing these services has been rising even faster than the rate of penetration to the rural areas. Health care practitioners and other stakeholders are in agreement that the system is "burdened with inefficiencies, excessive administrative expenses, inflated prices, poor management, inappropriate care, waste and fraud" (Toba, Tomasini & Yang, 2008:49). In the African context this could be worse given our poor infrastructural facilities such as road networks, communication and even material handling facilities. The rising number of fraud cases in health care services is also another factor that has exacerbated the situation.

The Get Better Hospital (GBH) case study analyses how efficient and effective supply chain management practices and adoption of technology could minimise supply chain costs. The study covers the following topics: background; health care supply chain management; sourcing medical supplies; purchasing systems and technology; inventory and distribution management.

2. Background of Get Better Hospital

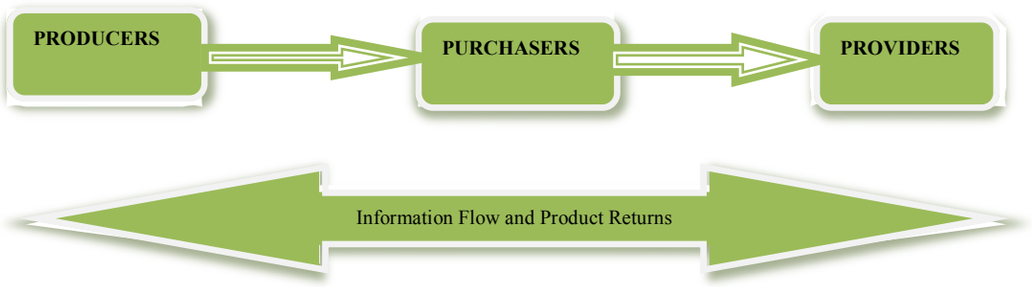
Founded in 1998, Get Better Hospital (GBH) is a non-profit medical care institution, whose main aim is to provide medical services to the general public. The hospital started with 35 beds. There are three other components of the GBH: a university medical school, laboratory service and a medical research centre, all located in East Africa. GBH has grown over the years and is currently the largest referral hospital in East and Central Africa, with approximately 7000 employees, 2000 beds, and 27 outpatient clinics. The hospital's annual operating revenue is in several billions of shillings. Get Better Hospital is unique among health care providers and hospitals because it serves both as a health care organisation and as a referral medical centre. It collects its revenues from patients served per day, grants and donations.

3. Health Care Supply Chain Management

The health care supply chain (HSC) is divided into three categories based on the functions they perform: Producers, Purchasers and Providers. Producers include pharmaceutical companies, medical surgical products companies, device manufacturers and manufacturers of capital equipment and information systems. Purchasers include pharmaceutical wholesalers, medical surgical distributors, independent contracted distributors and group purchasing organisations (GPOs). Providers include hospitals, systems of hospitals, integrated delivery networks (IDNs), pharmacies, nursing homes and alternate site facilities (Burns, 2002). Other key stakeholders include regulatory bodies, insurance companies and the government.

Supply chain activities are identified as a significant cost driver in the health care industry. Mustaffa and Potter (2011) note that availability of medication has an impact on health care service quality and health care supply chain management (HSCM) is a key determinant. The health care industry has been characterised by its failure to meet on-time delivery for both supplies and delivery of medical services. This is partly because each part of the health care supply chain operates independently from the other, leading to misalignment of supply chain activities. In developing countries, health care supply chain presents an even more challenging scenario. For instance, inventory management systems in our hospitals are usually plagued by stock-out syndrome, damages and obsolescence costs, which are on the increase. There are a large number of suppliers and the available hospitals have not embraced the use of enterprise resource planning (ERP) systems to address inefficient information flow across the supply chain. Figure 1 shows the linkages among the producers, purchasers and providers. There is forward flow of goods while information flows are back and forth. There is also reverse flow of product returns due to defects, product expiration and delivery of wrong product. In some cases the defective product may end up to the patients. However, in ideal situations defective products should be identified and disposed off as obsolete inventories. In all these, the supply chains are expected to be green.

Figure 1: Health Care Supply Chain Flows



Source: Author

Hospital supplies could constitute a significant proportion (close to 30%) of a hospital's total operating expense. Over 25% of these expenses can be accounted for: administration, overhead, and logistics (Roark, 2005). The health care industry in Africa is slow in adopting best practices in supply chain management that have had proven success in other industries. The not-so-good performance of health care supply chains can be linked to: poor information management systems and infrastructure, poor system of inventory management, poor distribution systems, inadequate procurement planning and associated systems, minimal top-management involvement, and lack of improvement initiatives in health care supply chain processes (Burns, et al., 2002).

4. Sourcing Medical Supplies

GBH was ordering for goods directly from the producers through its procurement department using a manual system. That posed a lot of challenges given the variety of products required in hospitals and the bureaucratic system of management. The sourcing process was characterised by fragmentation, with each department having its own sourcing procedures. After wide consultation, GBH management sought to make use of Group Purchasing Organisations (GPOs). Hospitals can leverage their purchase power by consolidating their purchases and contracting GPOs to do the purchasing on their behalf. There are several advantages of using GPOs, one of the key ones being their network of global suppliers (Toba et al., 2008).

Get Better Hospital made a decision to adopt the use of GPOs in all its purchases, except for fresh foods

supplies. The hospital contracted Onnet, a GPO, to conduct all of the negotiations with its suppliers. GPOs also facilitate collaboration between their clients and suppliers for access to state-of-the-art equipment. Through this initiative, GBH has benefited directly, especially in the purchase of cancer treatment facilities. The use of GPOs definitely assisted GBH to streamline the purchasing process and improve its cost savings.

In managing its relationship with Onnet, GBH selects the product to be purchased and Onnet negotiates the price. This provides a clear delineation of responsibilities and reduces conflict of interest, hence improving the relationship between the two for the success of both firms. Toba et al. (2008) in a study of health care supply chains confirmed this.

A year later, Onnet had delivered US$25,000 in cost savings to GBH from price improvements, discounts, management fees and general overhead costs. Generally, with proper management of the GPO relationship, hospitals can expect "savings of up to 70% to come from better contract terms through the GPOs, and the remaining 30% to come from higher product utilisation rates" (Toba et al., 2008:51).

5. Purchasing Systems and Technology

In the past, Get Better Hospital used a manual system for procurement and record keeping. This posed a big challenge resulting in huge losses and wastage. Wrong item specification was a normal occurrence. In addition, errors in invoicing, loss of invoices and quotations, and fraudulent and erroneous payments all meant that the GBH supply chain was in a total mess.

In response to this, the hospital invested heavily in an ERP system that integrated all the departments internally, and seamlessly linked to their partners through an Electronic Data Interchange (EDI) platform about three years ago. The system was designed with a procurement module which linked GBH to the contracted GPO. All the departments were required to prepare a budget at the end of the year and project their inventory consumption per quarter for slow moving items and do the same on a monthly basis for the fast moving items.

The GPO receives the forecast demand online through an EDI system and uses this information for sourcing and negotiation. The supplies are usually held in a central mega warehouse that is shared by a number of hospitals that the GPO represents. The warehouse is fully automated and operates to international standards and is also linked to the manufacturers via the same platform so that they can receive real-time inventory demand. Every department orders directly from this warehouse via the EDI platform and goods are delivered by the outsourced transport service provider.

Payments are made directly to the manufacturers' accounts at the end of each quarter. The manufacturers are also connected to the EDI platform and can monitor product consumption in real-time as orders are made to the central warehouse. The remote clinics are also inter-linked and make their orders through the same system. For control purposes, all the orders pass through the heads of departments to the procurement head or chief administrative officer for authentication before being posted to the warehouse. This kind of arrangement offers GBH staff ample time to maximise on patient care, which is their core business.

Toba et al. (2008) highlighted the need for great care to be taken during the transition from the manual

system of operations to the electronic one. The need for a seamless transition to avoid or minimise service disruptions is critical. Hospitals should also seek a system that fits their demand and structure. It is also important to note that these logistical information technology capabilities can be outsourced to expert firms. This can be done while precious time of taking care of patients is not wasted or lost, in addition to also having a visibility of the supply chain.

6. Inventory and Distribution Management

Unlike other industries where an inventory stock-out results in lost revenue, the ramifications of a stock-out in a hospital setting are far more severe. It is necessary for hospitals to maintain a sufficient level of inventory at all times to ensure that the needs of their patients are always met. This is particularly important because the stock-out of essential drugs could result in loss of life. GBH has promised a service level of over 95% to patients seeking services from their drug stores. The stores hold optimal safety stocks that lead to improved service levels while minimising inventory costs.

There is a paradigmatic change in the purchase and supply of medical supplies in GBH. The hospital obtains its drug inventories from the central warehouse through the contracted GPOs who are responsible for procuring these drugs. Previously, procurement was fragmented with each department fully managing their own purchases and budgets. Some drugs were supplied directly by the government agencies which could push the supplies to the system without taking the inventory levels into consideration. Drugs were usually procured by the agencies based on forecast data from hospitals. These drugs were then distributed downstream to the hospital pharmacies. The forecast data obtained from the hospitals was usually not accurate as there was no clear system for data collection. Clinicians' preference for some drugs over others further complicated the inventory issue. Theoretically, the drugs were supposed to be received by GBH's central store on a quarterly basis. Normally it could take even longer lead times for out-of-schedule orders.

A report released three years ago indicated that GBH's drug store department performed poorly in terms of increased inventory costs. The inventory management process used was found to be ineffective. Stock-outs were a normal occurrence, there was a gradual increase in annual inventory costs, inventory expiration was high and unaccounted inventories value was on the increase. The hospital was faced with an inventory management challenge that was beyond the capabilities of its internal management. But with the new ERP system, things began to look up. The system has an inventory management module, which maintains real time data of all the items that are within the hospital. All supplies once received from the central warehouse are captured into the system using RFID and barcoding technologies. The system indicates instantaneous inventory levels and notifies the user when to make a new order and the optimal order size. It also gives alerts on items nearing expiration. Since the implementation of the new system customer service levels at GBH pharmacies have improved by 30% and there has been a 35% reduction in total inventory costs.

(This case study does not make reference to any specific company. Any resemblance to an existing institution is purely coincidental.)

Group Discussion Questions

1. What are the factors that determine success in health care supply chain management?
2. GBH has adopted a new purchasing technology. Is this a strategic decision? What are the disadvantages of such a decision?
3. Assess the use of Group Purchasing Organisations (GPOs) in your country. Can it be applied in medical supplies? Why or why not?
4. How has the adoption of central warehouse affected inventory costs? Is this a good decision for health care supply chains? (Consider a case in your country when responding).
5. Assess the health care supply chain for a government hospital in your country. Do you find any areas that need improvement? Which ones?
6. Why should the health care supply chain be green?

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MODULE 10
MONITORING AND EVALUATION FOR HEALTH SYSTEM

LIST OF TABLES

MODULE 10: MONITORING & EVALUATION FOR HEALTH SYSTEM

Module Introduction

Welcome to the module on Monitoring and Evaluation (M&E) for Health System. Governments and other health stakeholders are increasingly under pressure to ensure health systems are more responsive to populations' demands for accountability, transparency, good governance and timely delivery of health services. M&E is needed to understand whether health interventions are achieving the planned goals; to provide the basis for taking corrective measures during implementation; and to ensure accurate reporting and identification of obstacles and lessons learnt.

M&E is a cross cutting function of the health system and is a key responsibility of a health manager. Health managers need to be equipped with effective M&E tools and approaches to enhance the management, leadership and governance of health systems.

In this module you will learn the role of M&E in Health system, the links between M&E frameworks and systems to strategic and operational plans, how to measure outcomes and impacts of health projects and programmes and translate available M&E knowledge to influence policy and practice in achieving stated health systems roadmaps.

The module is divided into four (4) units and twelve (12) subunits.

Module Purpose

The purpose of this module is to equip participants with skills and knowledge in monitoring and evaluation (M&E) for health system.

Module Duration

The module is estimated to be seven (7) learning hours.

Key Competencies

Learners are expected to;

1) Articulate the role of M&E in the Health System.
2) Link M&E frameworks to strategic and operational plans in the health system.
3) Measure outcomes and impacts of health projects and programmes.
4) Translate available M&E knowledge to influence health policy and practice.

Module outcomes

By the end of this module you should be able to:

1) Articulate the role of M&E in the Health system.
2) Develop M&E frameworks for health strategic and operational plans.
3) Measure outcomes and impacts of health projects and programmes.
4) Use M&E knowledge to influence health policy and practice.

Module Content

The module is divided into the following 4 units.

Unit 1: Overview and Context of Monitoring and Evaluation for Health system

Unit 2 : Linking M&E frameworks to health strategic and operational plans.

Unit 3: Measuring outcomes and impacts of health projects and programmes.

Unit 4: Translating M&E knowledge to influence health policy and practice.

UNIT 1: OVERVIEW AND CONTEXT OF MONITORING AND EVALUATION FOR HEALTH SYSTEM

1.1 Introduction

Welcome to this unit on the overview and context of monitoring and evaluation (M&E) for health system. The unit seeks to provide you with conceptual understanding of M&E and its operationalization context in health systems. The overview is important in understanding the purpose and importance of M&E, the manager's role and skills needed for M&E in the health system.

Monitoring enables health managers to track progress of projects, programmes or policies vis-a-vis the planned objectives. On the other hand, evaluation involves an assessment of strengths and weaknesses of projects, programmes or policy to improve their effectiveness. Evaluation is an important source of evidence on performance of projects, programmes or policy, and the implementing persons and institutions. With the increasing emphasis on managing for results (results-based management), the role of monitoring (M) and evaluation (E) has become central in health management. Hence, the need to integrate M&E into the day-to-day work of health managers to enhance accurate reporting, activity performance, identification of lessons learnt and obstacles.

1.2. Unit Outcome

By the end of this unit, you should be able to:

- Articulate the role of Monitoring and Evaluation in the Health System.

What are your experiences with M&E in health projects, programmes or policy?

State the strengths and weaknesses of M&E in your project, programme or policy.

1.3 Conceptual understanding of Monitoring and Evaluation

1. What is monitoring?
2. What is evaluation?
3. What is the difference between monitoring and evaluation?

Monitoring

Monitoring is a continuous function that uses the systematic collection of data on specific indicators, to provide management and the main stakeholders of an ongoing health intervention with indications of the extent of progress and achievement of objectives and progress in the use of allocated funds (OECD in Gorgen M. *et al.,* 2009). Monitoring tracks *inputs, activities* and *outputs* though at times it can include *outcomes* e.g. tracking progress towards achieving national health objectives.

Evaluation

Evaluation is the systematic and objective assessment of an ongoing or completed project, program, or policy, including its design, implementation, and results (OECD in Gorgen M. *et al.,* 2009). The aim is to determine the relevance and fulfilment of objectives, development efficiency, effectiveness, impact, and sustainability. Evaluations are mainly periodic and addresses three types of questions, (Gertler PJ et al., (2011):

- ***Descriptive questions:*** describes processes, conditions, organizational relationships, and stakeholder views.
- ***Normative questions:*** compares what is taking place to what should be taking place; it assesses activities and whether or not targets are accomplished. Normative questions can apply to inputs, activities, and outputs.
- ***Cause-and-effect questions:*** examines outcomes and tries to assess what difference the intervention makes in outcomes.

Difference between Monitoring and Evaluation

Monitoring and evaluation are distinct yet complementary. Monitoring provides information on where a policy, program, or project is at any given time relative to its targets and outcome goals. Evaluation gives evidence about why targets and outcomes are, or are not, being achieved. Further differences between monitoring and evaluation are as outlined below:

Dimension	Monitoring	Evaluation
Frequency	Continuous, occurs regularly	Periodic, episodic
Function	Tracking	Assessment
Purpose	Improve efficiency, provide informa-tion for reprogramming to improve out-comes	Improve effectiveness, impact, value for money, future programming, strategy and policymak-ing
Focus	Inputs, outputs, processes, workplans (operational implementation)	Effectiveness, relevance, impact, cost-effec-tiveness (population effects)
Methods	Routine review of reports, registers, administrative databases, field observations	Scientific, rigorous research design, complex and intensive
Information sources	Routine or surveillance system, field observation reports, progress reports, rapid assessment, program review meetings	Same sources used for monitoring, plus population-based surveys, vital registration, special studies
Cost	Consistent, recurrent costs spread across implementation period	Episodic, often focused at the midpoint and end of implementation period

Source: Joint United Nations Programme on HIV/AIDS (UNAIDS). 'Three Ones:' key principles. UNAIDS. [cited 2011 Aug. 30]. Available from: http://data.unaids.org/UNA-docs/three-ones_keyprinciples_en.pdf

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worldbank.org/INTHIVAIDS/Resources/375798-1132695455908/GROrganizingFrameworkforHIVMESystem.pdf

	Mention at least three distinctions between monitoring and evaluation

1.4 The Purpose and Importance of M&E

In this sub-unit, you will learn about the purpose and importance of M&E, and the evaluation criteria and focus.

	1. Why is monitoring and evaluation of a project, programme or policy important? 2. How has monitoring and evaluation supported you in your role as a manager? Give examples

Monitoring and evaluation are inseparable management functions useful for improving planning, implementation and decision-making in a project, programme, or policy.The main purpose of M&E is to track implementation and outputs, and measure the effectiveness of projects, programmes or policy. M&E can be used to demonstrate that programme efforts have had a measurable impact on expected outcomes and have been implemented effectively. It is essential in helping managers, planners, implementers, policy makers and donors acquire the information and understanding they need to make informed decisions about programme operations. Monitoring and evaluation provide the necessary data to guide strategic planning, to design and implement programmes and projects, and to allocate, and re-allocate resources in better ways. Specifically, monitoring and evaluation,

1. measures progress during project or programme implementation.
2. helps managers take corrective measures during project or programme implementation.
3. is used to determine whether project or programme objectives are being met.
4. informs the review and re-designing of projects and programmes.
5. provides necessary information for accountability purposes.
6. gives feedback on projects or programmes and document the lessons learnt.
7. informs policy implementation and review.

Importance of M&E

Monitoring and evaluation,

- provides consolidated source of information showcasing project progress;
- allows actors to learn from each other's experiences, building on expertise and knowledge;
- often generates (written) reports that contribute to transparency and accountability, and allows for lessons to be shared more easily;
- reveals mistakes and offers paths for learning and improvements;
- provides a basis for questioning and testing assumptions;
- provides a means for agencies seeking to learn from their experiences and to incorporate them into policy and practice;
- provides a way to assess the crucial link between implementers and beneficiaries on the ground and decision-makers;
- adds to the retention and development of institutional memory;
- provides a more robust basis for raising funds and influencing policy.

Source: https://www.sportanddev.org/en/toolkit/monitoring-and-evaluation/why-monitoring-and-evaluation-me-important

http://www.endvawnow.org/en/articles/331-why-is-monitoring-and-evaluation-important.html

	As a manager, how do I benefit from M&E?

1.5 The Evaluation Criteria and Focus

	What are the fundamental elements of a project or programme that an evaluation should measure?

Evaluation should measure the relevance, efficiency, effectiveness, sustainability and impact of a project or programme objective.

	What will show us when a project or programme objective is achieved?

Indicators

Indicators show when a project or programme objective is achieved. Evaluation questions should be derived from the project or programme indicators. It is from the indicator that questions are formulated!

	What is an indicator? State three examples of indicators. For each indicator, state the questions that should be asked during data collection.

An indicator is a quantitative or qualitative criteria used to measure project or programme performance and change.

Types of indicators

There are three types of indicators: process, outcome and impact indicators.

1. ***Process indicators:*** indicators that are used to measure project processes or activities.
2. ***Outcome Indicators:*** Indicators that measure project outcomes. Outcomes are medium impacts of a project.
3. ***Impact Indicators:*** Indicators that measure the long term impacts of a project, also known as the project impact.

Source: https://evaluateblog.wordpress.com/2013/05/25/selecting-project-indicators/

Evaluation criteria

Evaluations mainly measure relevance, efficiency, effectiveness, sustainability and impact of a project or a programme.

1. ***Relevance***
   The extent to which intended outputs or outcomes are consistent with national and local policies and priorities and the needs of intended beneficiaries. Relevance also considers the extent to which an initiative is responsive to the corporate plan and priorities.

2. ***Efficiency***
   Measures how economically resources or inputs (such as funds, expertise and time) are converted to results. An initiative is efficient when it uses resources appropriately and economically to produce the desired outputs.

3. ***Effectiveness***
   Is a measure of the extent to which the intended results (outputs or outcomes) have been achieved or the extent to which progress toward outputs or outcomes has been achieved in a timely manner.

4. ***Sustainability***
   Measures the extent to which benefits continue after external development assistance has come to an end. Evaluating sustainability involves assessing the extent to which relevant social, economic, political, institutional and other conditions can be continued beyond external assistance.

Impact

Measures changes in people's well-being that are brought about by projects, directly or indirectly, intended or unintended.

1.6 Manager's Roles and Skills in M&E

In the previous sub-unit you learnt the purpose and importance of M&E in a project or a programme. In this sub-unit you will learn why monitoring and evaluation is a key function of a manager and the roles and skills needed to effectively manage M&E activities.

a) Based on your own experience, what should be the manager's role in M&E?
b) What skills should health managers have in M&E?

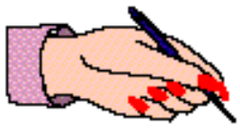
Manager roles in M&E

Health managers should perform interpersonal, informational and decisional roles in M&E.

1) **Interpersonal roles**
   Involves coordination and interaction with employees – *figure-head, leader, liaison, partners*

2) **Informational roles**
   Involves handling, sharing and analysing information – *monitoring, dissemination, sharing*

3) **Decisional roles**
   Require decision making – *entrepreneurial, disturbance handler, resource allocator, and negotiator*



Self -Assessment Question

In the table below, is a list of a managers informational roles and skills, please indicate whether the items indicated are true or false?

Self -Assessment Questions

Item	True	False
Disturbance handler		
Dissemination		
Figure head		
Sharing		
Monitoring		

Answer: True*: Sharing, monitoring and dissemination*
False: *Disturbance handler and Figure head*

So far, you have learned successfully about the manager roles in M&E. You are encouraged to read the next session in this unit. Proceed to understand key managerial skills in M&E.

Managerial Skills in M&E

A health manager needs the following skills to conduct M&E activities successfully.

1 .Technical skills

- Basic technical know-how of M&E
- Clarification of goals and objectives
- Problem solving
- Imagination and creativity

2. Team Approach

- Listening for insights
- Directing and coaching
- Solving problems as teams
- Coordinating and cooperating

3. Drive

- Standards of performance
- Control of details
- Exerting pressure

	• As a manager, your specific managerial roles, skills and knowledge are required to sustain M&E systems.

	• Before you proceed to the next section, summarize the key roles and skills of a manager in M&E. • Give your own experiences in managing M&E

1.6 The Context of M&E

You have so far learned the purpose and importance of M&E, the managerial roles and skills needed to perform M&E activities in the previous sub-units. In this sub-unit you will learn about the context of M&E.

	Why is it important to understand the "Context" in which M&E is operationalized?

It is important to appreciate the fact that M&E is implemented in a constantly changing context of health systems. PESTEL is an acronym of the external factors (Political, Economic, Social-cultural, Technological, Environmental as well as Legislative) that can profoundly change the relationship, behaviours and interactions of the elements in the performance of a health system.

Since health projects and programmes do not have direct control of these factors they have the potential of affecting the relevance, efficiency, resource utilization, effectiveness, and even the interpretation and use of generated information in health. Indeed, M&E has to put into consideration the context of the health system for better results.

M&E systems must be context sensitive because;

- Different contexts of health systems affect implementation of M&E; context of health systems determine the extent of interpretation of M&E results; and, the context of health systems determine the extent to which M&E findings can be generalized.

Context includes factors such as;

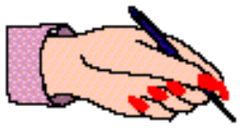
- Political
- Economic
- Social-cultural
- Technological
- Environmental
- Legislative aspects

	How can you contextualize M&E activities?

Contextualizing M&E can happen through;

- Use of participatory approaches to M&E (involving different stakeholders)
- Measuring less known aspects (e.g. governance & empowerment)
- Systems approach (Inputs-Processes, Outputs, Outcomes and Impacts)

	1. Why should organizations perform M&E activities? 2. What are the roles of managers in M&E? 3. What skills are needed to perform adequate M&E for outcome and impact measurement?



Self -Assessment Question

Indicate whether these items are context factors based on PESTEL. True or false

Item	True	False
Processes		
Economic		
Structure		
Environment		
Legislative		
Political		

True- Economic, Environment, Political, Legislative, and Political
False-Processes, structure

Congratulations!!! You have come to the end of this unit!!! I hope you have enjoyed it. We encourage you to move to the next unit on the linkages between M&E and the strategic and operational plans.

Unit 1: Summary

	In this unit we learnt the definition, purpose and importance of monitoring and evaluation; differences between monitoring and evaluation; evaluation criteria and focus; indicators; manager's roles and skills in M&E; and context of M&E.

UNIT 2: LINKING M&E FRAMEWORKS TO STRATEGIC AND OPERATIONAL PLANS

2.1 Introduction

Welcome to unit two (2). In unit 1, we learnt about the purpose and importance of monitoring and evaluation and the role of a health manager, as well as the contexts of M&E in health systems. Clearly formulated frameworks and plans are key prerequisites for effective implementation of projects or programmes.

In this unit we will learn about the M&E frameworks, how to develop them, and their linkage to strategic and operational plans. Project or programme plans should be monitored and evaluated regularly to ascertain progress and measure impact. Information gathered during monitoring and evaluation can help in designing and redesigning the M&E frameworks and reviewing plans or help to make necessary corrections to the activities and as well as making evidence based health managerial decisions.

2.2 Unit Outcome

	By the end of the unit, you should be able to ; Link M&E Frameworks to strategic and operational plans in your organization.

2.3 Developing and Linking M&E frameworks to plans

In this sub-unit you will learn how to develop and link M&E frameworks to plans.

Introduction

Monitoring and evaluation frameworks are in essence the M&E plans. They set out what should be monitored and what to be evaluated in a project or programme. Generally, M&E frameworks present information on project or programme inputs, activities, outputs, outcomes, impacts, indicators, methods and tools for data collection and analysis. M&E frameworks are derived from strategic and operational plans and should present the elements on which data needs to be collected, analysed and documented as evidence.

2.3.1 Planning frameworks

In this module, we will focus on two planning frameworks namely, (1) logical framework and (2) results framework.

1. **Logical framework**

It is common practice to develop M&E framework aligned to a logframe (or logical framework approach-LFA).

	What is a logical framework? What is the purpose of a logical framework?

A logical framework or logframe is a document that provides an overview of the objectives, activities, and resources of a project or programme in a sequential and logical order. Description of each element of a logical framework is as follows;

Table 2.1 Logical framework

Goal High level objective to which the project/ programme is expected to contribute	**Impact Indicators** Measure (direct or indirect) the extent to which the development objective has been achieved	**Means of verification** Sources of information necessary to use impact indicators	**Assumptions/Risks** External factors outside the scope of the project/programme that need to be fulfilled in order to sustain the objectives in the long run
Purpose Effect which is expected to be achieved as a result of the project/ programme (operational purpose)	**Outcome indicators** Measure (direct or indirect) the extent to which the immediate objective has been achieved	**Means of verification** Sources of information necessary to use effect indicators	**Assumptions/Risks** External factors outside the scope of the project/programme that need to be fulfilled to realise the development objective
Outputs Results of activities undertaken by the project/programme	**Output indicators** Measure (direct or indirect) the extent to which outputs have been produced	**Means of verification** Sources of information necessary to use output indicators	**Assumptions/Risks** External factors outside the scope of the project/programme that need to be fulfilled to realise the immediate objective
Activities Activities to be undertaken by the project/programme in order to produce the outputs	**Progress indicators** Measure (direct or indirect) the extent to which activities have been realised	**Means of verification** Sources of information necessary to use progress indicators	**Assumptions/Risks** External factors outside the scope of the project/programme that need to be fulfilled to realise the project/programme outputs
	Inputs Inputs necessary to undertake the activities: • Human resources • Physical resources Financial resources	-	**Assumptions/Risks** Preconditions that need to be fulfilled to realise the project/ programme activities

Choose a project and develop a logical framework using the matrix outlined below

Goals	Indicators	Verification sources	Assumptions
Purpose	**Indicators**	**Verification sources**	**Assumptions**
Outputs	**Indicators**	**Verification sources**	**Assumptions**
Activities	**Resources**	**Means**	**Assumptions**

Table 2.2 Logical framework matrix

2. Results framework

Apart from logical framework, M&E frameworks are aligned to results framework. A results framework is an explicit articulation of different levels, or chains of results expected from a particular intervention.

Table 2.3 A Results Framework template

Objectives	Activities	Outputs	Outcomes	Impacts

	Formulate a Results framework for your project

2.3.2 M&E framework

An M&E framework is derived from the planning framework (e.g. logframe or results framework). The following is a template for developing an M&E framework.

Table 2.4 M&E framework template

RESULTS LEVEL	INDICATOR	INDICATOR DEFINITION How is it calculated?	BASELINE What is the current value?	TARGET What is the target value?	DATA SOURCE How will it be measured?	FREQUENCY How often will it be measured?	RESPOSSIBLE Who will measure it?	REPORTING Where will it be reported?
Impacts (or long term outcomes): (Indicate here)								
Outcomes: (Indicate here)								
Outputs: (Indicate here)								

	Fill in an M&E framework for your project using information from the Results framework developed during the previous lesson.

2.4 Steps in Developing Results-Based M&E System

Introduction

In this sub-unit you will learn the key steps in developing a Results-based M&E system.

	Review what you learnt in the previous sub-unit on developing and linking M&E frameworks to plans.

In the previous sub-unit you learnt how to develop and link M&E frameworks to plans. In this sub-unit, you will learn the key steps in developing a Results-based M&E system.

	Brainstorming On the key steps in developing a Results- based M&E system

The following are the steps involved in developing a Results-based M&E system.

1. Conducting a readiness assessment
2. Agree on performance outcomes to monitor and evaluate
3. Selecting key indicators to monitor outcomes
4. Baseline data on indicators- where are we today?
5. Planning for improvements- selecting results targets
6. Monitoring for results
7. The role of evaluation
8. Reporting findings
9. Using the findings
10. Sustaining the M&E system within the organization

Source: Jody Zall Kusek, Ray C Rist; A Handbook for development practitioners;
Ten steps to a results based M&E system; World Bank 2004.

1. **Conducting a readiness assessment**

   An analytical framework to assess organization's capacity to monitor and evaluate its goals. It assesses technical and managerial skills, the existing data systems and the quality of data, technology available, fiscal resources available and institutional experience.

2. **Agree on performance outcomes to monitor and evaluate**

   Makes clear the intended objectives of programme action ("Know where you are going before you get moving"). Outcomes are what produce benefits. Clearly setting outcomes is key to designing and building results-based M&E system.

   Outcomes must be translated to a set of key indicators. Choosing outcomes should be participatory (Agreement is crucial). Outcome development relies on indicators, baseline and targets.

3. **Selecting key indicators to monitor outcomes**

   A specific measure, that when tracked systematically over time indicates progress (or not) towards a specific target. Indicator must be CREAM- Clear, Relevant, Economic, Adequate and Monitor able.

4. **Baseline data on indicators**

   Baseline data are measurements to find out 'where are we today'? through

   i. Primary source: gathered specifically for the project from the source
   ii. Secondary source: collected for another purpose, but are useful for other purpose
   iii. Possible sources of baseline data ; Written records, individuals involved in the intervention, the general public, trained observers, and so forth.

5. **Planning for improvements –selecting results targets**

   i. The quantifiable levels of the indicators, that a programme or organization wants to achieve at any given period of time.
   ii. Be realistic when setting targets– Avoid promising too much and that will led to the program fail achieve the targets

6. **Monitoring for results**

   To be successful, every monitoring system needs ownership, management, maintenance, credibility and trust, monitoring for results is divide into two categories. Implementation monitoring- which relies on means and strategies and it includes input, activities and output.

6. **The role of evaluation**

   i. Strategy-Whether we are doing the right things; rationale/justification and a clear theory of change
   ii. Operation -Whether we are doing things right ; effectiveness in achieving expected outcomes, efficiency in optimizing resources and client satisfaction.
   iii. Learning -Whether there are better ways of doing it**; a**lternatives and best practices and lessons learned.

8. **Reporting findings**

   Gives information on the status of projects, programs, and policies, provides clues to problems and creates opportunities to consider improvements in the (projects, programs, or policy) implementation strategies ; provides important information over time on trends and directions ; helps to confirm or challenge theory of change and uses visual presentations (charts, graphs, maps) to illustrate and highlights.

9. Using the findings

Responds to project demands for accountability, helps formulate and justify budget requests, helps in making operational resource allocation decisions and triggers in-depth examinations of what performance problems exist and what corrections are needed.

Helps motivate personnel to continue making program improvements ; monitors the performance of implementation against performance targets. Provides data for special, in-depth program evaluations, helps provide services more efficiently and supports strategic and other long-term planning efforts (by providing baseline information and later tracking progress).

It also communicates better with the public to build public trust. It offers strategies for sharing information, empower the media in enacting "freedom of information", legislation and institute E-government, It also adds information on internal and external internet sites.

Other uses include ; publishing annual budget reports, engaging civil society and citizen groups, strengthening parliamentary oversight, strengthening the office of the Auditor General ; it shares and compares results findings with development partners

10. Sustaining the monitoring and evaluation system

M&E system require organizational support, staff and users involvement, stakeholder's willingness to participate .It needs skilled personnel willing to manage the system and collect useful data. Adequate resources should be made available for monitoring and evaluation activities.

Critical component to consider for sustaining M&E include;

a) Demand for capacity building never ends and the need to organise things
b) Clear roles and responsibilities
c) Trustworthy and credible and believable information
d) Accountability
e) Capacity ; qualified personels etc
f) Incentives and motivation (both financial and non-financial).

	Individual Assignment Using M&E system from your organization or other organization of choice. Verify whether these steps were followed in designing the M&E system, note down the similarities and differences observed.

M&E system Matrix

	Using information from your project or organization, fill in the M&E system matrix outlined below.

2.5 M&E system matrix

Project Summary	Indicators	Data to collect	Methods of data collection	Tools for data collection	Meth-ods for data analysis	Tools for data analysis	Sources of data	Responsible
Goal	Impact Indicators:							
Purpose	Outcome indicators:							
Outputs	Output Indicators:							
Activities	Progress indicators:							
Inputs	-							

2.5 Linking M&E System to project strategy & operational plan

Using an example from your organization, explain how the M&E system is linked to the strategic and operational plans

Both M&E system and project strategy/or operational plan in a project share same goals, objectives and activities.

1) Project strategy –describes what will be achieved.
2) Operational plan provides information that is consequently used in developing the Monitoring and evaluation system.
3) Operational plan forms basis for producing outputs, outcome and impact.
4) The M&E system data is derived from project outputs, outcomes and impacts.

Explain how the M&E system in your organization is related to your strategic plan and operational plan

You have come to the end of unit 2. I hope you have enjoyed it. We encourage you to move to the next unit on measuring project or programme outcomes and impacts.

2.6 Unit Summary

In this unit we learnt how to develop and link the M&E framework to strategic/or operational plans, planning frameworks-logframe and results framework, M&E framework, steps in developing a Results-based M&E system, link between M&E system and strategic/or operational plans.

UNIT 3: MEASURING PROJECT AND PROGRAMME OUTCOMES AND IMPACTS

3.1 Introduction

Welcome to Unit three (3). In this unit we will learn how to measure and evaluate health projects and programmes.

3.2 Unit Outcome

By the end of the unit, you should be able to:
Measure projects/or programmes outcomes and impacts.

3.3 Methods of Measuring Project/Programme Outcomes and Impact

In this sub-unit you will learn how to measure project and programme outcomes and impacts in your organization. Measurement is the assessment or estimation of progress towards the stated outputs, outcomes and impact of clearly stated objects.

Why is it important to measure the project/or programme outcomes and impact? Give an example whereby you measured a project/or programme outcomes and impacts.

From your example, most likely you used one or a combination of the methods outlined below.

1. **Operations Research:** Is intervention-oriented and uses advanced methods such as simulations and optimization of performance to make better health managerial decisions.
2. **Action Research:** Is problem-oriented participatory approach to 'learning by doing".
3. **Evaluation Research**: Is applied research. It is the systematic application of social research procedures for assessing the conceptualization, design, implementation, and utility of social intervention programmes' (Clarke and Dawson 1999).
4. **Economic evaluation**: Applies analytical techniques to identify, measure, value, and compare the costs and outcomes of alternative interventions. Types of economic evaluations include cost-benefit, cost-effectiveness, and cost-efficiency evaluations.
5. **Evaluation Research**: Systematic, objective assessment of the relevance, effectiveness, and impact of activities in the light of specified objectives.

Selection of the methods is dependent on the objectives and research questions

You have learned so far about the methods you can use to measure the outcomes and impact. It is important to move on and know what to be measured, what kind of instrument is needed, and the methods of data collection, etc. The next unit will provide some information about the types of data to be used for measuring outcomes.

	Distinguish between qualitative and quantitative methods of data collection

***Qualitative methods*:** are mainly exploratory approaches used to gain understanding of underlying reasons, opinions, and motivations.

Quantitative methods: are used to quantify the problem by way of generating numerical data or data that can be transformed into usable statistics. They are used to quantify attitudes, opinions, behavours and other defined variables, and generalize results from a larger sample population.

3.4 Methods of Data Collection

This sub-unit discusses the data collection methods commonly used in M&E.

	What data collection methods do you use in M&E?

The data to collect and the methods for collecting that data are determined by;

i. The evidence needed to address the evaluation questions;
ii. The analyses to be used to translate the data into meaningful findings in response to the evaluation questions; and
iii. The judgements about what data are feasible to collect given constraints of time and resources.

Project performance Indicators as sources of data

i. Evaluations draw heavily on data generated through monitoring during the programme or project implementation.
ii. Performance indicators are a simple and reliable means to document changes in development conditions (outcomes), production, or delivery of products and services (outputs) connected to the health development initiative.

Limitations

i. Indicators only indicate
ii. They do not explain
iii. Will not likely address the full range of questions the evaluation seeks to address.
iv. For example, indicators provide a measure of what progress has been made.
v. They do not explain why that progress was made or what factors contributed to the progress.

Mix of Data

i. Project/Programme evaluations generally make use of a mix of other data sources
ii. Collected through multiple methods, to give meaning to what performance indicators tell us about the initiative.

Primary data

- Consists of information evaluators observe or collect directly from stakeholders about their first-hand experience with the initiative.
- These data generally consist of the reported or observed values, beliefs, attitudes, opinions, behaviours, motivations and knowledge of stakeholders.
- Generally obtained through questionnaires, surveys, interviews, focus groups, key informants, expert panels, direct observation and case studies.
- These methods allow for more in-depth exploration and yield information that can facilitate deeper understanding of observed changes in outcomes and outputs (both intended and unintended) and the factors that contributed by filling out the operational context for outputs and outcomes.

Secondary data

- Is primary data that was collected, compiled and published by other researchers
- Can take many forms but usually consists of documentary evidence that has direct relevance for the purposes of the evaluation.

Sources of documentary evidence include:

- Local, regional or national demographic data; nationally and internationally published reports;
- Social, health and economic indicators;
- project or programme plans; monitoring reports; previous reviews,
- Evaluations and other records; country strategic plans; and research reports that may have relevance for the evaluation.
- Documentary evidence is particularly useful when the project or programme lacks baseline indicators and
- Targets for assessing progress toward outputs and outcome measures. Although not a preferred method, secondary data can be used to help recreate baseline data and targets.
- Secondary information complements and supplements data collected by primary methods but does not replace collecting data from primary sources.
- Given the nature and context of Project/Programme evaluations at the decentralized level, including limitations of time and resources, evaluators are often likely to use a mix of methods, including performance indicators, supplemented relevant documentary evidence from secondary sources, and qualitative data collected by a variety of means.

There are different methods of data collection, and therefore the methods selected should be relevant to the nature of data to research question and methodology.
The following table describes some of them.

Table 3.1: Methods for data collection

SN	Methods for data collection	Description
1	M&E system	Use indicators to measure progress, outcome and results
2	Literature review	Reading existing documentation
3	Questionnaires	Structured according to the objective
4	Interview	Face to face, e-communication
5	On-site observation	To obtain onsite required data through observation
6	Group interview	Small group of persons are interviewed
7	Key Informant Interview	One on one in-depth interview
8	Expert panel /Delphine technique	Group of experts together share ideas
9	Case studies	Comprehensive tool describing certain situation analysed in-depth

3.5 Data Analysis

In this sub-unit, you will learn the methods and processes of analysing M&E data.

	How do you analyse M&E data in your organisation?

Data analysis is an important step in M&E. It requires skills, knowledge and resources.

i. It can be done manually or statistically using specific software such as Excel, Statistical Packages for Social Sciences (SPSS).
ii. Data should be cleaned –Removing unwanted data from the database
iii. Should be coded-Asigning number to variables.
iv. Organized –sort out or arrange data in meaningful way (descriptive statistics: frequency, mean, median, mode, standard deviation and variance).
v. Analysis –data are analysed using appropriate tests for inference.
Manual data analysis is not commonly used nowadays. There are software to perform both qualitative and quantitative data.

Data Analysis Process

In many organizations, lack of data is actually not the problem. The probem is that data are not analyzed to generate useful information for decision making. The following are key steps to help you improve your data analysis skills.

1. **Define your questions**
You must start with the right questions. Questions should be measurable, clear and concise. Design your questions to either qualify or disqualify potential solutions to your specific problem or opportunity.

2. **Set up clear measurement priorities**
Decide what to measure-what kind of data you will need to answer your key questions.
Decide how to measure it- what is your time frame? What is your unit of measure ? what factors should be included ?

3. **Collect data**
Determine what information could be collected from existing databases. Collect this data first.
Determine a file storing and naming system. This saves time.
Keep your collected data organized in a log with collection dates.

4. **Analyze data**
Data analysis tools and software are helpful in this step.

5. **Interpret results**
After analyzing your data and possibly conducting further research, finally you need to interpret your results.
Ask yourself the following questions;
Does the data answer your original questions ? How ?
Does the data help you defend against any objections ? How ?
Are there any limitations on your conclusion, anything you have not considered ?

Case Study
Obtain raw project evaluation data from your Research or M&E unit. Analyze and interpret the data.

Key Note: There are varied data collection methods, the user must take into consideration the type of data to be collected according to study design

1) How do you differentiate qualitative from quantitative data?
2) What methods can you use to collect qualitative data?
3) What are the keys steps for data analysis?

In this unit you learnt the methods for measuring outcomes and impact, qualitative and quantitative methods, methods for data collection, and data analysis process.

You have come to the end of unit 3. We encourage you to proceed to Unit 4, which will deal with translating available M&E knowledge to influence policy and practice.

UNIT 4: TRANSLATING AVAILABLE M&E KNOWLEDGE TO INFLUENCE POLICY AND PRACTICE

4.1 Introduction

Researchers have been producing a tremendous amount of information meant to strengthen health systems through operational, action and evaluative research. The produced information should be used by the health providers and policy makers for appropriate managerial, leadership and governance decisions.

However, most of these knowledge (the evidence) mostly lie in the researchers desk and gather dust in various academic and health institutions, since little effort has been accomplished to share it with the policy maker.

Thus, research results are rarely translated to policy. There is an urgent need to translate the available knowledge generated into innovative health products, services and policy for strengthening health systems. This can only happen when the existing gaps between the researchers and policy makers are bridged.

4.2. Unit outcome

	By the end of the unit, you should be able to: Translate available M&E knowledge to influence health policy and practice.

	Note down at least 3 main reasons why knowledge generated from M&E is not translated into policy and practice.

From Evidence to Practice

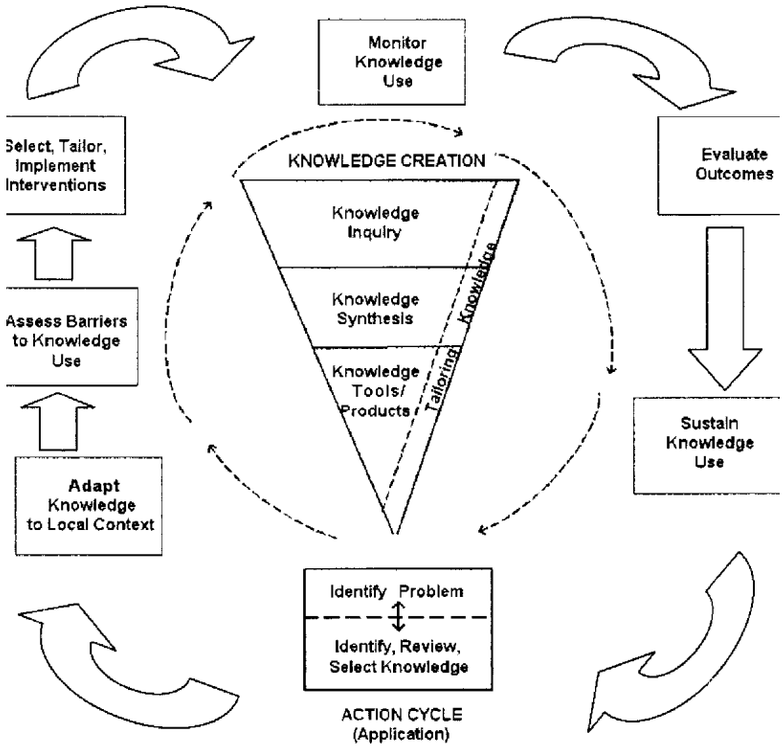
Evidence is generated through the knowledge creation cycle, consisting of the three main activities: **Knowledge Inquiry** where the request for evidence is made; **knowledge synthesis** where the evidence is sort; and finally **knowledge tools/products** where the evidence is produced tailored to specific users.

The evidence that is produced is then used to address the problem that was identified on the action cycle. If the evidence adequately addresses the problem, them it is adapted into local context as new knowledge. Any barriers to its adaptation are then assessed, and if removed, interventions to implement the new knowledge are designed and selected for use.

The Interventions selected should ensure maximum uptake of the new knowledge. Once the new knowledge is in use (action has been taken), it is monitored for use and evaluated for outcomes, which if positive, promote sustained use of the knowledge.

This brings us back to the beginning of the cycle where we either 1) review the current knowledge for effectives or problems arising or 2) identify a new problem, both which feed into the knowledge creation cycle for evidence. Both cycles are continuous and operate both dependently and independently of each other.

	1) Briefly explain the steps used to generate evidence in knowledge creation cycle?



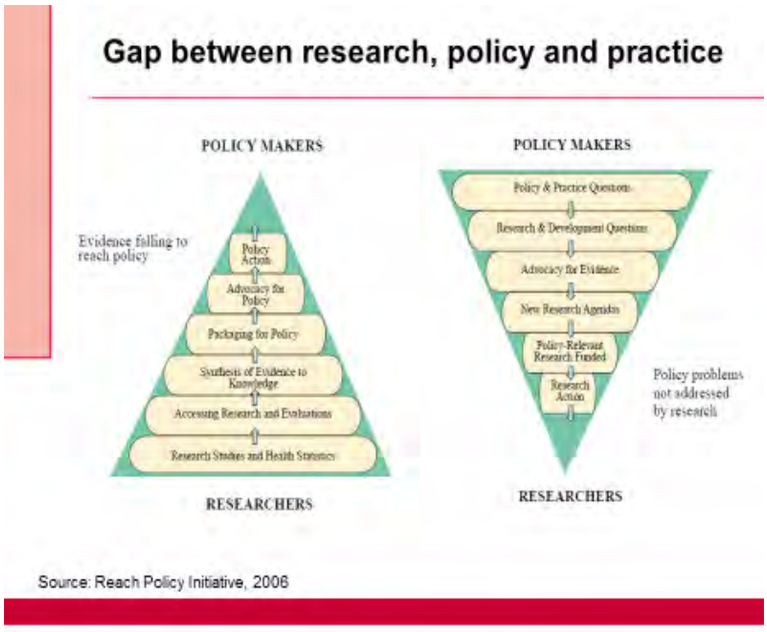
Source: Graham, ID et al. (2006), Lost in Knowledge Translation: Time for a Map?

4.3 The gap between research, policy and practice

Brainstorming

What do you understand by the statement "translating knowledge to policy"?

What are the challenges of translating research knowledge into policy and practice?



- Researchers should harvest, synthesise, re-package, and communicate the policy-relevant evidence of their studies in user-friendly terms that stakeholders at many different levels can interact with and understand.
- Similarly, policymakers and other stakeholders should share information on identified gaps, set priorities, and express their policy needs in the form of questions that can be investigated scientifically.

Give examples of research recommendations that have been translated into policy and practice in your organization.

4.4 Bridging the gap between policy makers and researchers

What did you learn in the previous unit on the gap between policy, research and practice?

Approaches to consider in bridging the gap

- Organizing and managing joint forums for policy makers and researchers
- Building relationship of trust
- Setting agenda and common goals
- Signaling mutual opportunities
- Clarifiying information needs
- Commissioning synthesis of research of high policy relevance
- Packaging research synthesis and facilitating access to evidence
- Strengthening capacity for knowledge translation
- Communicating and sharing advice
- Monitoring impact on the know –do gap

Source –Bulletin World health organization /August 2006, 84(8).

4.5: Steps of translating knowledge to policy

The following steps are useful for translating research information to policy;

Step #1: Researchers do agree about the main message resulted from research findings with tangible evidence, some being extracted from different international literature.

Step #2: Researchers think critically what message would matter for different actors in specific contexts. The researchers conduct a min research/semi structured interview to collect views from different stakeholders, including professional bodies, clients, organization, ministry, insurers and others.

Step #3: Results from step 1 and 2 are packed in the form of scenario to make research findings more accessible to all stakeholders. The report with realistic and feasible policy options should be discussed with the most important

stakeholders in the field.
Next the agreed recommendations should be shared between researchers and policy makers as well as the minister responsible for health, professional boards, organizations, clients and others .The agreed information is set up as **policy brief.**

The minister for health will share the information in the national assembly with the letter of his /her recommendation and the parliament will discuss the matter and come up with the resolution on the findings and what should the government do to improve the situation and this is called **evidence based decision making**.
Important requirement for the knowledge broker/transfer to close the know-do gap nationally, regionally and internationally is to identify health evidence network, national evidence partnership and evidence informed policy networks.

	Individual activity • Briefly explain how you would apply policy briefs and evidence based decision making in your organization?

	You have come to the end of this unit. I hope you have enjoyed it. In this unit, we have focused on introducing knowledge translation, the link between research and policy, the bridge between evidence and action for effective health systems.

	• M&E is considered to be a cross cutting issue in health systems strengthening. • The module has highlighted the importance of monitoring and evaluation in project or programme management process; how to apply M&E system in work place, using appropriate steps, how to measure project /programme outcome and impact. • The module also developed steps to be used for translating research information to policy.

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