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FACULTY OF HEALTH SCIENCES

Department of Public Health

COURSE CODE: PHS 301

COURSE TITLE:

HEALTH MANAGEMENT INFORMATION SYSTEMS

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PHS 301: HEALTH MANAGEMENT INFORMATION SYSTEMS
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6.0 Self Assessed Exerceises
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Introduction
Introduction to Health Management Information System a three-credit course available to all students offering Bachelor of Science (BSc.) in Public Health. Health Management Information System is a special field of Health Sciences. The health worker must be trained in the same way and work with the same methods as his colleagues who specialize in other areas of Health Sciences.
The concept of Health Management Information System has dramatically influence health delivery through a more efficient data collection that inform a more productive health decision. The main concern of Health Management Information System and the purpose underlying the study of Health Management Information System is to develop requisite skill for delivering of health care delivery services.

What You will Learn in this Course
The course consists of twelve chapters grouped into twenty-eight (28) units and a Course Guide. This course guide tells you briefly what the course is about, what course materials you will be using and how you can work with these materials. In addition, it advocates some general guidelines for the amount of time you are likely to spend on each unit of the course in order to complete it successfully.
It gives you guidance in respect of your Tutor-Marked Assignment which will be made available in the assignment file. There will be regular tutorial classes that are related to the course. It is advisable for you to attend these tutorial sessions. The course will prepare you for the challenges you will meet in the field of Community Health.

Course Aims
The aim of the course is not complex. The course aims to provide you with an understanding of Health Management Information System; it also aims to provide you with solutions to health challenges in the communities.

Course Objectives
To achieve the aims set out; the course has a set of objectives. Each unit has specific objectives which are included at the beginning of the unit. You should read these objectives before you study the unit. You may which to refer to them during your study to check on your progress. You should always look at the unit objectives after completion of each unit. By doing so, you would have followed the instructions in the unit.
Below are the comprehensive objectives of the course as a whole. By meeting these objectives, you should have achieved the aims of the course as a whole. In addition to the aims above, this course sets to achieve some objectives. Thus, after going through the course, you should be able to:
  ➢ Describe the Expanded definitions of the Concepts and Terminologies of Health Management Information System.
  ➢ Undertake Health Data Management to provide great health information capable of guiding the planners and stakeholders in health care delivery system.
  ➢ Understand the foundational basis for the National Health Management Information System Policy and

➢ Describe Project cycle, Monitoring tools and Evaluation of health projects and programmes

Working through this Course

To complete this course, you are required to read each study unit, read the textbooks and read other materials which may be provided by the National Open University of Nigeria.

Each unit contains self-assessment exercise and at certain points in the course you would be required to submit assignments for assessment purposes. At the end of the course there is a final examination. The course should take you about a total of 17 weeks to complete. Below you will find listed all the components of the course, what you have to do and how you should allocate your time to each unit in order to complete the course on time and successfully.

This course entails that you spend a lot of time to read. I would advice that you avail yourself the opportunity of attending the tutorial sessions where you have the opportunity of comparing your knowledge with that of other people.

The Course Materials

The main components of the course are
1. The course Guide
2. Study Units
3. References/Further Readings
4. Assignments
5. Presentation Schedule

Study Units

The study units in this course are as follows:

Chapter One- Global History of HMIS

Unit 1 Global Perspective and History of Heath Management Information System

Chapter Two- Nigeria History of HMIS

Unit 2 Nigeria Perspective and History of The Heath Management Information

Chapter Three- Terminologies Used in Health Management Information Systems

Unit 3 Definitions of Terminologies Used in Health Management Information System

Unit 4 Expanded Definition and Concept of Health

Unit 5 Expanded Concept and Definition of Management

Unit 6 Expanded Concept and Definition of Information

Unit 7 Expanded Concept and Definition of Systems

Chapter Four- Health Data Types and Sources

Unit 8 Instruments for Measuring Health Data

Unit 9 Types and Sources of Health Data

Unit 10 Health Services-Based Data Sources

Unit 11 Methods of Data Collection and Tools for Routine

Unit 12 Population-Based Data Sources

Chapter Five- Steps in Conducting and Processing Health Data

Unit 13 Steps in Conducting Survey/Censuses

Unit 14 Steps in Processing Health Data

Chapter Six- Health Data Quality Assurance

Unit 15 Health Data Quality Assurance Strategies

Chapter- Seven- Health Data Inventory and Documentation

Unit 16 Health Data Inventory and Documentation: Meaning and Processes
Chapter Eight- HMIS and Ethical Issue
Unit 17 Ethics In Health Information
Chapter Nine- Health Systems in HMIS
Unit 18 HMIS Leadership and Governance In Health Systems
Unit 19 Steps in Establishing Health Information System
Unit 20 Structure and Roles & Responsibilities of Tiers of Government In HMIS In Nigeria
Chapter Tan- Health and Communication
Unit 21 Communicating Health Information for Action
Unit 22 Methods of Health Information Communication
Unit 23 Traditional Methods of Health Information Communication
Unit 24 Health Information Communication Tools/Media
Chapter Eleven- Managing Health Information Units in the Hospital Stetting
Unit 25 Managing Health Information Units; The Models and Types
Unit 26 Issues In Establishing A Health Information Unit And Basic Concepts In Management Of Health Information Units
Unit 27 The Health Management Information Unit Minimum Package
Chapter Twelve HMIS Monitoring and Evaluation
Unit 28 Monitoring and Evaluation

As above, there are twelve chapters in this course. The first and second chapter contain history of HMS at global and Nigeria. The third and fourth Chapters contains 5 study units each, while chapter five contain 2 unit. Chapter 6 to 8 contain very detail one study unit. Chapter Nine with three study units while chapter ten contain four study unit with chapter eleven, contain three study unit and the last chapter contain only a study unit.

Each unit consists of one or two weeks" work and include an introduction, objectives, reading materials, exercises, conclusion, summary Tutor Marked Assignments (TMAs), **Self Assessed Exerceises** references and other resources. The unit directs you to work on exercises related to the required reading. In general, these exercises test you on the materials you have just covered or require you to apply it in some way and thereby assist you to evaluate your progress and to reinforce your comprehension of the material. Together with TMAs and SAEs these exercises will help you in achieving the stated learning objectives of the individual units and of the course as a whole.

Presentation Schedule
Your course materials have important dates for the early and timely completion and submission of your TMAs and attending tutorials. You should remember that you are required to submit all your assignments by the stipulated time and date. You should guard against falling behind in your work.

Assessment
There are three aspects to the assessment of the course. First is made up of self-assessment exercises, second consists of the tutor-marked assignments and third is the written examination/end of course examination.

You are advised to do the exercises. In tackling the assignments, you are expected to apply information, knowledge and techniques you gathered during the course. The assignments must be submitted to your facilitator for formal assessment in accordance with the deadlines stated in the presentation schedule and the assignment file. The work you submit to your tutor for assessment will count for 30% of your total course work. At the end of the course you will need to sit for a final or end of course examination of about a three-hour duration. This examination will count for 70% of your total course mark.

Tutor Marked Assignment
The TMA is a continuous assessment component of your course. It accounts for 30% of the total score. You will be given for (4) TMAs to answer. Three of these must be answered before you are allowed to sit for the end of course examination. The TMAs would be given to you by your facilitator and returned after you have done the assignment. Assignment questions for the units in this course are contained in the assignment file. You will be able to complete your assignment from the information and material contained in your reading, references and study units. However, it is desirable in all degree level of education to demonstrate that you have read and researched more into your references, which will give you a wider view point and may provide you with a deeper understanding of the subject.

Make sure that each assignment reaches your facilitator on or before the deadline given in the presentation schedule and assignment file. If for any reason you can not complete your work on time, contact your facilitator before the assignment is due to discuss the possibility of an extension. Extension will not be granted after the due date unless there are exceptional circumstances.

Final Examination and Grading
The end of course examination for Health Management Information System will equal to or less than 3 hours and it has a value of 70% of the total course work. The examination will consist of questions, which will reflect the type of self-testing, practice exercise and tutor-marked assignment problems you have previously encountered. All areas of the course will be assessed.

Use the time between finishing the last unit and sitting for the examination to revise the whole course. You might find it useful to review your self-test, TMAs and comments on them before the examination. The end of course examination covers information from all parts of the course.

Course Marking Scheme

Assignment	Marks
Assignment 1 – 4	Four assignments, best three marks of the four count at 10% each – 30% of course marks
End of Course Examination	70% of overall course marks
Total	100% of course materials

Facilitators/Tutors and Tutorials

There are 16 hours of tutorials provided in support of this course. You will be notified of the dates, times and location of these tutorials as well as the name and phone number of your facilitators, as soon as you are allocated a tutorial group.

Your facilitator will mark and comment on your assignments, keep a close watch on your progress and any difficulties you might face and provide assistance to you during the course. You are expected to mail your Tutor Marked Assignment to your facilitator before the schedule date (at least two working days are required). They will be marked by your tutor and returned to you as soon as possible. Do not delay to contact your facilitator by telephone or e-mail if you need assistance.

The following might be circumstances in which you would find assistance necessary, hence you would have to contact your facilitator if:

➢ You do not understand any part of the study or the assigned readings
➢ You have difficulty with the self-tests
➢ You have a question or problem with an assignment or with the grading of an assignment.

You should endeavour to attend the tutorials. This is the only chance to have face to face contact with your course facilitator and to ask questions which are answered instantly. You can raise any problem encountered in the course of your study.

To gain much benefit from course tutorials prepare a question list before attending them. You will learn a lot from participating actively in discussions.

Summary

Health Management Information System is a course that intends to provide concept of the principles of data generation and the processes of getting health information that can help future planning of health care delivery. Upon completing this course, you will be equipped with the basic knowledge of data management, health terminologies, systems operations, basic computer application in health, programme monitoring and evaluation. In addition, you will be able to answer the following:

- What does health means?
- What is the expanded definition of management, information and systems?
- Identify two types of data
- What different health indicators needed at each level?
- What are the main sources of health information?
- Methods of data collection
- Challenges of health data collection
- Basic data processing and analysis
- Stakeholders in Health

The list of questions that you would be able to answer is not limited to the above list. To gain the most from this course you should endeavor to apply the principles you have learnt to your understanding of Community health.

I wish you success in the course and I hope you will find it both interesting and useful.

CHAPTER ONE UNIT 1
GLOBAL PERSPECTIVE AND HISTORY OF HEATH MANAGEMENT INFORMATION SYSTEM –FROM THEN TO NOW

1.0 Introduction
Today, longitudinal patient records that capture a patient's medical information from a variety of physicians, labs, clinics, hospitals and treatment sites not only provides a holistic view of the patient's health history, but also provides a wealth of information that can be used to improve care and outcomes.

Health information management is defined as the collection and analysis of healthcare data to provide information for health care decisions involving patient care, institutional management, health care policies, planning and research. The name of the function changed from medical records management to health information management as enhancements in technology expanded responsibilities from managing paper records to managing the full scope of the process of collecting and sharing electronically-captured information among disparate entities.

The history of health information management begins with the simplest form of recording a patient's symptoms, complaints and treatment for the use of one provider, to a comprehensive aggregation, integration and harmonization of data to support collaboration among providers, researchers and administrators.

2.0 Objectives of the units are to:- '

1. Discuss the Beginning from Health Record to Health Management Information
2. Explain how HMIS emerge from health record
3. Discuss global perspective of HMIS from 1900 to 2015
4. The Organization of Patient Information
5. From hardware to software

3.0 Main content
The Beginning from Health Record To Health Management Information
The First Medical Records
The earliest forms of medical records were narratives written by ancient Greeks to document successful cures, share observations about symptoms and outcomes, and teach others who provided medical advice through these case studies. While written reports describing patients' complaints and diagnoses predate the records of Simon Forman and Richard Napier – astrologers who documented clients' medical questions and treatment – their records from 1596 to 1634 form the earliest complete collection of medical records in existence.

1900s; - The History of Health Information Management
Health information management is the process of acquiring, analyzing, and protecting medical information (commonly called medical records) on patients each time they are seen by a healthcare provider.

In the early **1900s**, very little patient information was recorded. Toward the end of the second decade, healthcare professionals realized that their patients would benefit by keeping more accurate records, as well as obtaining a complete medical history of their patients. Prior to the computer age, maintaining health information was very labor intensive. All medical information was prepared and stored manually. Imagine the paper used and hours of work involved to store and maintain all of this information. What's more, it was quite difficult to retrieve past medical information quickly, and accuracy and timeliness was a continual problem. Ultimately, patient care suffered. Eventually all of the medical information that had been stored manually had to be transferred to an electronic format, a new era in healthcare management information began.

The 1920s and health records
The HIM industry can trace its roots back to the 1920s, when healthcare professionals realized that documenting patient care benefited both providers and patients. Patient records established the details, complications and outcomes of patient care. Documentation became wildly popular and was used throughout the nation after healthcare providers realized that they were better able to treat patients with complete and accurate medical history. Health records were soon recognized as being critical to the safety and quality of the patient experience. The ACOS standardized these clinical records by establishing the American Association of Record Librarians, a professional association that exists today under the name American Health Information Management Association (AHIMA). These early medical records were documented on paper, which explains the name "record librarians."

Medical records in the information age
Paper medical records were steadily maintained from the 1920s onward, but the advancing technology of the '60s and '70s introduced the beginnings of a new system. The development of computers encouraged pioneering American universities to explore the marriage of computers and medical records.

"The volume of data healthcare organizations are now collecting pales in comparison to the amount of data that will be generated in a year."

These universities often partnered with large healthcare facilities. Patient information would be generated and electronically recorded at a specific facility—and it was accessible only at that healthcare location. This obviously restricted the software's usefulness and viability on the market. Other hindrances to early electronic heath records included computer performance limitations and exorbitant pricing. However, interest in computers continued to increase. Individual departments of the healthcare industry—such as patient registration—recognized the usefulness of keeping electronic records. Early EHR software began to be adopted within certain departments. Healthcare software development continued to focus on these single application uses into the early 1980s.

The 1920s
As healthcare advanced, physicians realized that the best way to continue improving diagnosing and treating illnesses was to carefully document observations and actions while treating patients – and share this information as a way to teach other health professionals. As early as 1600, physicians offered advice on how to present information in a medical record, but it wasn't until 1928 that the [American College of Surgeons](#) (ACOS) took steps to standardize the growing number of medical records by establishing the American Association of Record Librarians (AARL) – known today as the [American Health Information Management Association (AHIMA)](#). "Record librarians" was the term used because early medical records were

documented on paper. Standardization of medical records and growth of complete record-keeping continued from the 1920s through the 1960s, but records were paper-based.

1928; - The Organization of Patient Information

In 1928, the first official association relating to patient medical records was established by the American College of Surgeons. It was originally called the Association of Record Librarians of North America. Its primary goal was to "elevate the standards of clinical records in hospitals and other medical institutions."

Over the years, the organization has evolved and changed into what is now AHIMA, or the American Health Information Management Association. The association in its current form is a strong group that affects the quality of patient information and patient care. Leaders of AHIMA also serve as political liaisons and advise legislatures and lobbyists regarding healthcare issues.

The 1960s

The development of computers presented the opportunity to maintain records electronically, but the expense of purchasing and maintaining a mainframe, and the expense associated with storage of data, meant that only the largest organizations could use technology to handle medical records. The field of health informatics, as it is known today, emerged when computer technology became sophisticated enough to manage large amounts of data. One of the earliest efforts took place under the jurisdiction of the American Society for Testing and Materials (ASTM). These first standards addressed laboratory message exchange, properties for electronic health record systems, data content, and health information system security. **The 1960s** also saw the introduction of Medicare and Medicaid, which required nurses to collect data to document care for reimbursement. While computers were increasingly used for accounting and billing functions, the use of computers to collect and manage medical records was not common.

In 1964, El Camino Hospital in Mountain View, CA worked with Lockheed Corporation to develop a hospital information system that included medical records, but generally computer manufacturers did not understand the healthcare industry's needs.Organizations that did opt for a computer system that handled medical records offered limited access to records –access only available at the site it was created. Records often only contained information about the hospital stay and tests or treatments provided within the walls of the hospital.

Even though implementation of technology was slow, the need to standardize was recognized by several organizations, with SNOP by the American College of Pathology developing what would eventually become Systematized Nomenclature of Medicine (SNOMED) to systematize the language of pathology. Also, the concept of a Uniform Minimum Health Data Set (UMHDS) was formulated in an effort to develop national health data standards and guidelines.

The 1970s

As computers became smaller, software designed to support clinical functions for pharmacy, clinical laboratory, patient registration and billing began to proliferate. The disadvantage of these health information systems was their department-specific functions – they were not accessible by

other departments. The first attempt at a total, integrated health records system was implemented in a gynecology unit at the University Medical Center in Burlington, Vermont in 1971. Based on the problem-oriented medical record, the system was patient oriented – all disciplines included in care made notes in the record to provide an overview of care to see the relationship between conditions, treatments, costs and outcomes. Acceptance of the Problem Oriented Medical Information System was not widespread due to resistance to share information across disciplines. Although the idea for collaborative care was presented in the 1970s, the acceptance of collaboration and enhanced communication supported by a holistic health record system did not take place until the 1990s — with the advent of managed care.

The 1980s

The introduction of diagnosis related groups (DRGs) and data required for reimbursement increased the need for hospitals to pull detailed information from clinical systems as well as financial systems to ensure claims payment. Because personal computers and widespread health-related software applications had grown in popularity, hospital information technology (IT) staff were tasked with the responsibility to integrate multiple, disparate systems. As network solutions were developed, IT departments were able to connect financial and clinical systems – for limited functions. But as technology advanced, in most cases, hospital departments still could not access information outside their own silos – preventing data-sharing from disparate system.

The 1990s

The introduction of the master patient index (MPI), a database of patient information used across all the departments of a healthcare organization in the 1980s laid the groundwork for initiatives such as The Indiana Network for Patient Care (INPC), the foundation for today's Indiana Health Information Exchange. In 2017, the health information exchange (HIE) leverages an internally developed MPI that includes 100 hospitals, representing 38 health systems; 12,000 practices with over 20,000 providers; 1,100 Veterans Administration sites and 12 million patients.

As competition in healthcare created consolidation of individual hospitals to form health systems, the need for integration grew. Technology advances gave hospitals access to computing systems that could share information across disparate systems to set the stage for data-sharing. In recognition of the expanded scope of its members' role in health informatics and data management, the organization that began in 1928 as AARL underwent its fourth name change – to AHIMA. Health information professionals' responsibility now expanded beyond the data included in a single hospital medical record to health information comprising the entire continuum of care.

Using healthcare software in the 1980s and '90s
The '80s produced huge leaps in healthcare software development. The advent of computerized registration meant patients were able to benefit from a more efficient electronic check-in process for the first time ever. The introduction of the master patient index (MPI), a database of patient information used across all the departments of a healthcare organization, was also a massive success.

These wins encouraged software developers to continue creating with a new focus on individual hospital departments. Departments like Radiology and Laboratory adapted well to the new software, and computer healthcare applications began appearing on the market. However, these applications still faced limitations. Computer applications were being used within healthcare walls, but none of them could communicate with each other or be viewed by neighboring departments. While technology flourished outside of the healthcare industry, computerization within healthcare had hit a roadblock. Healthcare was without a communicative, cross-departmental electronic record system. But the new millennium was about to change all that.

The 2000s

As hospitals continued to merge into larger health systems and to acquire individual physician practices, the increased need for interoperability that supported data-sharing grew. The importance of integrated electronic health records (EHRs) to enable providers to make better decisions grew, and more hospitals and physicians implemented them to reduce the incidence of medical error by improving the accuracy and clarity of medical records. In his 2004 State of the Union Address, President George W. Bush called for computerized health records – the beginning of the electronic health record (EHR) revolution. Adoption of fully-functional EHRs grew more significantly with the passage of the American Recovery and Reinvestment Act (ARRA) in 2009. One of the measures included in ARRA was the Health Information Technology for Economic and Clinical Health (HITECH) Act. The HITECH Act promoted the concept of meaningful use of EHRs and supported financial incentives to encourage the adoption of EHRs and the interoperability necessary to share data among providers.

In the 2010s

Increased focus on value-based care as opposed to fee-based care and a drive to improve patient outcomes propel the growing accumulation of data to support clinical as well as operational decisions in health care. Just as clinicians in the 1920s understood the importance of previous health records as learning tools that would improve outcomes, healthcare professionals leverage data to enhance care on a larger scale — using tools that analyze population health data. New delivery models, such as accountable care organizations (ACOs), are implemented to contain costs, promote collaboration and improve patient health care. While ACOs, HIEs and growing health system networks have EHR and other systems to collect data, there is still a gap in aggregating and harmonizing the information from various systems to produce data that can be easily analyzed.

As of **2015**;- 96 percent of hospitals and 87 percent of office-based physician practices were using electronic health records (EHRs). Also, the introduction of cloud computing for a wide range of industry, including healthcare, supported expanded networks that went beyond specific sites and locations to tie all entities in a health system or HIE together without a significant investment in new technology. The increased volume of data, ease of access to data and the need for health information professionals to guide the management of health data has led to an increasing reliance on health informatics, which is defined by the American Medical Informatics Association (AMIA) as a field of information science concerned with the management of all aspects of health data and information through the application of computers and computer technology.

4.0 Conclusion

The chapter and unit discuss the global perspective and background development of HMIS from health record paper form to software electronic package

5.0 Summary

Global efforts especially American Medical Informatics Association (AMIA) as a field of information science concerned with the management of all aspects of health data and information through the application of computers and computer technology. Over 90% of health practitioners are using electronic data systems due to volume of data

6.0 Self Assessed Exerceises

1. How does health record develop from the health record systems word wide?
2. What are the unique features in the History of Health Information Management in 1900

7.0 Tutor Marked Assignment

1. Explain the achievement of Using healthcare software in the 1980s and '90s
2.Whhat are the achievements of 2015 HMIS

8.0 Reference/Further Reading

1. Ball, M. J., & Hannah, K. J. (2011). *Nursing informatics: Where technology and caring meet (4th ed.).* London: Springer. Department of Health and Human Services. (2001). Medicare hospital prospective payment system: How DRG rates are calculated and updated. Retrieved from https://oig.hhs.gov/oei/reports/oei-09-00-00200.pdf

2. Hebda, T. L., & Czar, P. (2012). *Handbook of informatics for nurses & healthcare professionals* (5 edition.). Boston: Prentice Hall. Institute of Medicine. (2001). *Crossing the Quality Chasm: A New Health System for the 21st Century.* Washington, D.C.: National Academy Press.

3. Kohn, L. T., Corrigan, J., & Donaldson, M. S. (2015). *To err is human: Building a safer health system.* Washington, D.C: National Academy Press.

4. Poterba, J. M. (2018). *Tax policy and the economy* (Vol.12). Cambridge MA: MIT Press. Retrieved from http://www.nber.org/chapters/c10911.pdf

5. Saba, V., & McCormick, K. (2015). *Essentials of nursing informatics* (4 ed.). New York: McGraw-Hill Professional.

6. Waegeman, P. (2013). EHR vs. CPR vs. EMR. Health Informatics Online, 1–4.Retrieved from http://www.providersedge.com/ehdocs/ehr_articles/EHR_vs_CPR_vs_EMR.pdf.

7. Monitoring Health information Systems a tool kit for strengthening health systems accessed 25th September 2019. Available online at https://www.who.int › EN_PDF_Toolkit_HSS_InformationSystems

CHAPTER TWO UNIT 2
NIGERIA PERSPECTIVE AND HISTORY OF THE HEATH MANAGEMENT INFORMATION FROM THEN TO NOW

1.0 Introduction

With the global perspective on development of health management information systems HMIS. The emerging trend and rapid grow in the field of HMIS from health record systems to software package and e record systems. It therefore important to have an understanding of Nigeria situation of how HMIS of yesterday different from today practices.

2.0 Objectives

The chapter will discuss among other things
1. Review emergence of HMIS from health record
2. Highlight the future of HMIS in Nigeria

3.0 Main Content

From Health Record to HMIS

Efforts were made by a handful of Medical Records Officers in the Country prior to the first historic meeting in 1966. The meeting was held on the 8th June 1966 at Lagos University Teaching Hospital. Those present at the memorable meeting were Messrs. Onasanya, Jagun, Omigie, Okpala and Miss Shadare now Mrs. Adenubi. Mr. Omigie was asked to act as Secretary/treasurer. The second meeting was held on 6th July 1966 when Mr. Akpabio joined his colleagues mentioned above. The approved name of the Association was Nigeria Association of Medical Records Officers which was in line with our British orientation. Unfortunately, there were no further official meetings due to the Nigerian Crisis of 1966. However, a new effort was made at a meeting of 3rd May 1969. The draft constitution prepared in 1966 but was not ratified then, was tabled for discussion at a meeting held on the 12th July 1969. Those present at that meeting were Messrs. Onasanya, Jagun, Omigie, Shoge and Mrs. Adenubi. It was decided that another meeting be called for the purpose of taking final decision on the constitution. The memorable meeting was held at University College Hospital, Ibadan on the 11th October 1969 which was attended by Messrs. Onasanya, Jagun, Omigie, Shoge and Akanji.

The main purpose of that meeting was to approve the constitution and set in motion necessary machinery that would ensure effectiveness and to create the much-needed awareness generally in Nigeria to train medical records personnel. Medical/Health Records/Health Information is as old as medicine and obviously it should be as old as evolution of orthodox medicine globally. Before the advent of colonial rule, traditional medicine was the main medical practice in Nigeria but painfully, there was no written document (records) about the practice to a great extent. The missionary organizations made meaningful contribution to the growth of medical work in Nigeria. Indeed, they were the first to establish organized medical care in West Africa. For example, the Roman Catholic Mission established the Sacred Health Hospital in Abeokuta which was completed in 1875. We should also remember that some military hospitals were established to cater for sailors, naval squadrons and colonial officers. There was also a tiny make shift temporary civil hospital built in Asaba in 1888. In all these hospitals, medical records were initiated by the hospital nursing sister or medical social officer (almoner) as they were called and kept haphazardly. By the last decade or century, medical pioneers of the Anglicans, Sudan Interior and Sudan United Missions started a well-organized medical work in Nigeria. Health services including the building of both government and missionary hospitals continued to expand progressively including some notable private hospitals. Then introduction of health record

system in University College, Ibadan as an establishment on the affiliate of the University of London

The Future Prediction of HMIS in Nigeria

While there is no crystal ball to predict the future, it is safe to say that as health systems grow and expand to include other hospitals, physician practices and outpatient clinics, and as the volume of data grows with expansion, the need to integrate and harmonize data to make it available to all users is critical. Finding the right platform to support and enable access to structured and unstructured data across disparate systems is the first step to better preparing for a value-based future. Interoperability, data-sharing and access to information will continue to be a critical requirement for process improvement, accountable care organizations (ACO) enablement, information exchange and development of population-specific care that improve outcomes. Health information management is a critical role in healthcare today. To see how effective management of patient data – clinical and financial – can help healthcare organizations improve patient care and safety as well as operational processes, it will also improve clinical data management on best practices and other ways on health informatics in transforming healthcare.

The Future of Health Information Management

Today's health information management industry is still based on the founding goal of the first medical record librarians: to increase and improve the clinical documentation standards. The industry has come a long way from keeping hard copies of health records, but the ultimate goal of fully functional electronic health record (EHR) systems has yet to be realized. More changes are in the works for the health information management industry even as they work toward fine-tuning the EHR system. More important than the data itself is the ability to learn "actionable insights from the data," says Geyfman. "Traditional organizations will have to understand not only how to collect data, but also to quickly and reliably process, analyze and deliver the data to those who need it, to any device."

4.0 Conclusion

The chapter discussed from health record to HMIS and the future management of HMIS in Nigeria

5.0 Summary

What use to be medical record systems evolved to HMIS in Nigeria. All started in 1966 at Lagos University Teaching Hospital. The Medical Doctors and specialist felt it is important to captured patients record systems. The Then Chief medical director established unit within the hospital and later metamorphosized to Department. Which later gave rise to School of Health Record. Today School of Health Management Information Systems is fully established and Degreed awarding institutions in Nigeria.

6.0 Self Assessed Exerceises

1. How does health record develop from the health record systems word wide?
2. What are the unique features in the History of Health Information Management in 1900

7.0 Tutor Marked Assignment

1. Explain the achievement of Using healthcare software in the 1980s and '90s
2.Whhat are the achievements of 2015 HMIS

8.0 Reference/Further Reading

1. Health Records officers Registration Board of Nigeria http://www.hrorbn.org.ng/our-history

accessed in August 23, 2019
2. National Health Information Policy 2014.

CHAPTER THREE UNIT 3
DEFINITIONS OF TERMINOLOGIES USED IN HEALTH MANAGEMENT INFORMATION SYSTEM

1.0 Introduction

Since you have gone through the course guide, you are probably familiar with what this unit is about. In this unit, you will acquire understanding of the definition of basic concepts of Health Management information System. First let"s has a view of what you should learn in this unit as outlined in the objectives below

2.0 Objectives

At the end of this unit, you should be able to:
Define the main terms used in Health Management Information System.

3.0 Definitions of Terminologies used in Health Management Information System

1. **Health: World Health Organization** defined Health as a state of complete physical mental and social well-being and not merely the absence of disease or infirmity.
2. Management: The process through rules, regulations and procedures by which goals are set and achieved.
3. Information: The outcome of processed health data which increases knowledge about health
4. System: A system can be defined as a complex whole formed from many parts that are made to relate with each other or a combination of related parts organized into a complex whole in order to achieve objectives.
5. Health Information System is defined as a set of components and procedures organized with the objective of generating information which will improve health care management decisions at all levels of the health system.
6. **Data**: Data can be defined as items, quantities and characters used as a basic for making inferences.
7. Data collection: the process of gathering data. Many methods are available for doing this effectively eg Forms, Interviews, Focal group discussion etc
8. Data source: the origin of health data
9. Data type: Primary data are those used for the primary reason they were collected and Secondary data if used for reasons other than that they were collected
10. Monitoring is a systematic process of collection and analysis of data to track project implementation and use of the information in project management and decision making.
11. Evaluation on the other hand is a systematic process of collecting and analyzing information to assess the *effectiveness* of the programme organization in the achievement of its stated goals.
12. Disease surveillance: The ongoing systematic collection and analysis of data and the provision of information which leads to action being taken to prevent and control a disease, usually one of an infectious nature.
13. Result: the final outcome or conclusion of a search, research, programme or activity.

14. Reporting: Making results of activities, programmes or research available to limited audience who are probably part of or sponsor of or stakeholders.

15.Dissemination: Making outcome of activities, programmes or research available to a larger audience. This may involve having an expanded theme meeting or a seminar or scientific meetings.

4.0 Conclusion
In this Unit you have learnt the basic and functional definition of Health, Management, Information, System, Health information System, Data, Data collection, Data source, Data type, Monitoring, Evaluation, Disease surveillance, Result, Reporting and Dissemination.
You should at this point be able to define these basic concept of Health Management Information System (HMIS)

5.0 Summary

This unit has focused on the definition of the conceptual terminologies in HMIS. Subsequent units will build on them and show their relevance in the operations of HMIS.

6.0   Tutor Marked Assignment
Without looking back on these definitions, take a sheet of
paper and write down the basic terminologies in this unit. Repeat this until you get at least 10 correctly.

7.0 Self Assessed Exerceise
Attempt   at   writing   down   the   definition   for   each.   Review   and repeat until you have at least correct definition to at least 10 of the terminologies.

8.0 References
1. World Health Organization (1948) Official Records of the World Health Organization Geneval no. 2 pp.100
2. Basic   Tool   for   Process   Improvement
   http://www.balancedscorecard.org/Portals/0/PDF/datacoll.pdf
3. Araoye MO 2003 Research Methodology with statistics for Health and Social Sciences pp 1 - 286

CHAPTER THRREE UNIT 4
EXPANDED DEFINITION AND CONCEPT OF HEALTH

1.0 Introductions

Since you have gone through the course guide and successfully learnt the definitions in the last chapter, you have acquired the requisite foundation on which we can build in the next couple of units. This unit will help you acquire basic understanding of what health is about and the use of the definition in different circumstances. Before we get into that let''s look at the unit objectives.

2.0 Objectives

At the end of this unit, you will be able to:

a. Accurately define what Health is.
b. Mention the use of that definition in various circumstances.
c. Differentiate the various situations that affect Health status of a given population and
d. List Health needs and Forces that influence health

3.0 Main Content

World Health Organization defined Health as a state of complete physical mental and social well-being and not merely the absence of disease or infirmity. This is the definition contained in the preamble to the Constitution of the World Health Organization as adopted by the International Health. Conference, New York 19-22 June, 1946; signed on 22 July 1946 by the representatives of 61 States and entered into force on 7t^h April, 1948. This definition has not been changed since 1948 and it is applicable to individuals and his affiliations. The import of this definition can easily be seen in linking what ordinarily is not a health issue to health so long as they may affect the physical, mental and social wellbeing of the individuals. A man without social support is not healthy, A man without adequate food and clothing is also not healthy. People living under fear of war or attacks of natural or man-made events are not healthy and so virtually everything that affect human life could then be capturable as health information which are important in Health
Management Information System.

Application and intervention needs

When it comes to general application, one may apply this definition to personal, family, community, National Regional and Global Health situation. Both from the Gross Global Situation to a micro-level of personal circumstances, critical appraisal will enable one to understand the wide-scope of the catchments of National Health

Management Information System (NHMIS). The following are very central to the achievement of Health.

  a. Socio-economic Situations
  b. Demographic Situation
  c. Epidemiological Situation
  d. Health Resources
  e. Human Capital
  f. Health Services
  g. Sectoral Situations: Education, Agriculture, Mineral Resources, Water Resources, Transport, etc.

Force that influence Health

To achieve health involves the interplay of several forces which include Governance, Social Cohesion, Integrity, Resource generation and distribution.

a. Social-Economy Situation:

Printing specific population group like infant, women of childbearing age, workers, rural poor, the physically challenged and the unemployed young adults. Also priority certain health challenges like malaria, measles, malnutrition, meningitis.

b. Demographic Situation

Population estimation and projection by Ages & Sex Estimating vital rates such as Births and Deaths and differential distribution of these births & deaths between both rural and urban population.

c. Epidemiological Situation

To identify and analyse public health problems, their distribution, prevalence's and Trends. There will generate the following indicators:

- Nutritional indicators: Weight for-age, weight for height or Body Mass Index (BMI)

- Infant Mortality Rate in both Urban versus Rural

- Child Mortality Rate

- Life expectancy at a given age

- Age specific death rate

- Morbidity and Mortality rates.

d. Health Resources,

Health Human Capital and Health Facilities directly affect service delivery to the appropriate person of the right place and right time.

Health Intervention need to Health is a complex issue so also intervention is similarly complex. The strategy must integrate efforts of many other disciplines and professionals like Medicine, Nursing, Psychology, Sociology, Anthropology, Engineering, Economics, Political Science, Biology, History, Law, Demography and others as relevant.

Intervention need to:

1. Focus on generic social & behavioral determinants of disease, injury and disability.
2. Use multiple approaches (e.g. Education, Social Support, Laws, incentives, Behavior Change Programme) and address multiple level of influence simultaneously (i.e. Individuals, families, Communities, Nations.
3. Take account of the special needs of target groups (i.e based on age, gender, race, ethnicity, social class)
4. Take the "long view" of health outcomes, as changes often take many years to become established and
5. Involve a variety of sectors in our society that have not traditionally been associated with health promotion efforts, these will include Law, business, education, social services and the media.

4.0. Conclusion
In this unit you have learned what health is and it application in several situations. You have also found out that there are mult-disciplinary approach to health intervention. At this point you should be able to without mistake define health and list various intervention approaches.

5.0. Summary
This unit is a build up for the last one and it has expanciated on the initial definition of health in the last unit.

6.0 Tutor Marked Assignments
List the various disciplines involved in health interventions

7.0   Self Assessed Exerceises
List the different types of health listuations

8.0   Refrences
1. Smedley BD & Syme SL (1997) Promoting Health Intervention Strategies from social & behavioural research pg. 1-472.
2. Park K Park''s Textbook of Preventive and Social Medicine, eds. M/s Banasidas Bhanot; India 2000
3. Federal Republic of Nigeria, National Health Policy, 2016
4. World Health Organization (WHO) www.whoint.org

CHAPTER THRREE UNIT 5
EXPANDED CONCEPT AND DEFINITION OF MANAGEMENT

1.0 Introductions

Most things have limitations. Either limitation in quantity, quality, time-usefulness, resources etc. Hence the need for management. Also, everything good or successful require good logistics and therefore demand effective management. HMIS is not different. No good health information just happens or become available without management support system. Therefore, in this unit you will look at application and impact of management. However, it will be desirable to look at the objectives as set out below.

2.0 Objectives

At the end of this unit, you should be able to
Define Management and
List the expected achievement of good management

3.0 Main Content

Definition of Management

Management can be defined as follows:

a. The process, rules, regulations and procedures by which goals are set and achieved.
b. A set of functions such as planning, organizing, staffing, directing and controlling. Management requires specific skill and know-how for effective utilization of scarce resources and leading the direction for achieving a common or corporate goal. In the content of HMIS, it's the process of managing health information to improve service delivery and achieve set health policy.
c. Efficient management of the health information is necessary. This can be service delivery, service utilization, outcome measures or input indicators etc. Nigeria has a National Health Policy to create an administrative framework for a universal access to comprehensive Health Services. This will focus on achieving optimal service delivery and utilization that is progressively improving the physical and mental health of the people and incorporating both preventive, curative and rehabilitative components.

3.2 What Management is expected to achieve

Within the context of HMIS, Management achieves the following:

a. Conduct survey to determine a community's health challenges.
b. Determine in partnership with community leaders, the priority ranking of health challenges
c. Assess demographic characteristics and decide which of the priority health challenges can be realistically solved.
d. Select intervention programmes directed at these health challenges.
e. Set objectives for intervention programmes with the participation of the community.

f. Secure and utilize the resources needed to implement programmes.
g. Decide the types and numbers of staff needed for effective implementation of the programmes.
h. Set job description and targets for staff
i. Organize appropriate trainings, either in-house or external facility.
j. Set the necessary indicators of achievement to be used in evaluating intervention programmes.
k. Decide the frequency, regularity and priority areas for operation Research.

4.0 Conclusion

In this unit you have learned that good management will conduct survey, encourage partnership with community leaders, help assess demographic characteristics, select intervention programmes,set objectives for intervention programmes, secure and utilize the resources needed, decide the types and numbers of staff needed, set targets for staff, organize appropriate trainings, either in-house or external facility. The unit also explained the need to evaluate intervention programmes and the frequency, regularity and priority areas for operation Research for continuous service improvement.

5.0 Summary

This unit main thrust is defining management and expected achievement of effective management. The next unit will build on another concept.

6.0 Tutor Marked Assignments

List 7 major expected outcome of good management in Health Management Information System

7.0 Self Assessed Exerceises

How will youu explain managmnt in context of HMIS

8.0 References

1. Federal Ministry of Health 2000, Manual for certificate in Health Planning and Management P. 1- 40
2. Osibogun A. Operation Research as a tool for the management of Health services. Nigerian Journal of Pharmacy Practice and Continuing Education, 1,1:27-30, 1998
3. Federal Republic of Nigeria, national Health Policy, 1996

CHAPTER THREE UNIT 6
EXPANDED CONCEPT AND DEFINITION OF INFORMATION

1.0 Introductions

Information is power. That is what we need to plan, to forecast, to effect behavioural change. We therefore in this unit take a more critical look at information and what is real information. You will also learn what is the relationship between Data and health information as stated in the objective below.

2.0 Objectives

At the end of this unit, you will be able to
> ➢ Define Information, the retrieval and Health Information System
> ➢ Describe how to generate health information
> ➢ Explain the relationship between Data and health information

3.0 Main Content

3.1 Definition of Information and Health Information System

Information can be defined as the communication or reception of knowledge or intelligence. Such knowledge as obtained from research, investigation or study or instruction.

Information retrieval: the techniques of storing and recovering and often disseminating recorded data especially through the use of computerized system. *Health Information System* is defined as a set of components and procedures organized with the objective of generating information which will improve health care management decisions at all levels of the health system. *Data* can be defined as items, quantities and characters used as a basic for making inferences. Data usually occur as raw materials (Fact) that require processing. Data becomes information when processed and gets to the right person, in an appropriate form in a timely manner and in a form that can be utilized. Examples of data are as follows:

a. Mira weighed 12kg when the Nurse saw her in the well-baby clinic yesterday.
b. James had a length of 65cm in the last clinic attendance.
c. Mira attended the well-baby clinic at the age of 12months and weighed 12kg, his last diarrhoea episodes were 4months ago and mother said she feeds well.

Explanation: a and b contain Data, c information

a. provided the Name, the weight of Mira and the fact that a well-baby clinic
b. opens. It is difficult to make use of such "data" b. also tell us that James" length was 65cm and also the clinic opens. These cannot be used to infer
c. anything about the health of these children (Mira and James).

However, c, gives utilizable data (Information) Mira at the age of 12 months weighs 12kg. This is good information. Why?

To estimate the normal weigh for any infant use this formula

N plus Eight divided by Two, That is

$$= N \underline{+ 8}$$
$$ \quad 2$$

N = Age in months.Mira who is Twelve months old should weigh Twelve plus
Eight divided by Two, that is $= \underline{12 + 8}$
$$ 2$$

$$= \underline{20}$$
$$ \quad 2$$

$= 10$kg.

Therefore, should have a weight of Ten Kilogram. The fact that we know that Mira has passed the expected weight for age is a good information of good health status. Also, the fact that she had the last diarrhoea episodes 4 months ago and eats well were information about contributing factor for the health status achievement.

Relationship between Data and Health Information

1. Data becomes information if it is in a useable form and is used appropriately
2. Data forms the basis for information. Data is raw fact about an entity.
3. Data are quantitative or characters while information (processed data) pursues decision making process directed at identifying problems, evaluating outcomes and getting ready for improvement in service delivery.

4.0 Conclusion

In this unit you have acquire necessary understanding of the definition of information, information retrieval and health information system. You have also learned how to generate health information from material available to you. The unit also stress the relationship between data and health information. You should by now be comfortable with defining information terminologies and generate health information from the observations in the community.

5.0 Summary

This unit has focused on Information, its retrieval and generating health information. The unit stressed that information is as good and reliable as the data set that produce it. The next unit will further build on this.

6.0 Tutor Marked Assignments

In Egbejila Village of Ilorin Kawra State Nigeria, school children were clinically examined for evidence of malnutrition and oral health staus in a UNICEF supported project. It was found that 80% of the primary school children were underweight, 20% had angular stomatitis and 40 % were stunted. Oral examination shows that 75% had poor oral hygiene and 20 % had dental caries. What is the health information you could draw from the above?

7.0 Self Assessed Exerceise

What are the relationship between Data and Health Information?

8.0 References

1. The Merriam-Webster dictionary 2010
2. Mercedes de O. The WHO Child Growth Standards. In Koletzko B. Eds. Pediatric Nutrition in Practice. Basel, Karger, 2008. Pp 254-269
3. Park K Park''s Textbook of Preventive and Social Medicine, eds. M/s

Banasidas Bhanot; India 2000

4. Federal Republic of Nigeria, national Health Policy, 1996
5. World Health Organization (WHO) www.whoint.org
   Further reading
6. WHO Multicentre Growth Reference Study Group: WHO Child Growth Standards based on length/height, weight and age. Acta Paediatr Suppl 2006;450: 76- 85.

CHAPTER THREEE UNIT 7
EXPANDED CONCEPT AND DEFINITION OF SYSTEMS

1.0 Introductions

Achieving most things in life requires more than one step. So also, the health care services delivery required. The working together at such steps for a wholesome service delivery is what is referred to as a system. Even the making of a household lunch for a family require multiple steps to complete. A system is as good as the functionality of the components. This is what you will learn in this unit. However, it will be better for you to review the unit objectives as set out below.

2.0 Objectives

At the end of this unit, you will be able to

a. Define what a System is
b. Explain the types of System
c. Explain how vaccine delivery qualify as a System
d. List the elements of the health information system

3.0 Main Content

3.1 Definition of System

A system can be defined as a complex whole formed from many parts that are made to relate with each other or a combination of related parts organized into a complex whole in order to achieve objectives. Health Management Information is a complex whole that are integrated to function as a system. Health Service provision is a system that works together as whole to deliver the necessary services to a community.

3.2 Example of System In Vaccine Delivery

Look at the Immunization Programme: To deliver an antigen e.g. Tetanus Toxoid, to a child requires the following: -

a. The Producing factory
b. The Packaging Company
c. The Cold-Chain Department
d. The Shipment
e. The Storage (National Cold Stores, State Cold Stores, Zonal Cold Stores, L.G.A or Community Cold Stores
f. Transport for pick-up to the community
g. Vaccinating Team to deliver the antigen to the child

The interlinking and effective working together just defines what a system is. All the

component parts must be working optimally. An organization is said to have open system if it exchanges information, energy or material with the environment.

Open Systems

       ▼ **To**

Information & Energy & Materials

       ▼ **To**

Environment

The chart above shows continuous flow of information, Energy and material from the system to and fro the environment based on interaction between components. Remember that the Environment is the sum total of the condition within which organisms live. We can also have closed or semiclosed systems which either does not exchange information at all with the outside or exchanges information at limited volume or time.

The Elements of any Health Management Information System Includes:

a. Health data – Information or data on patients and their complaints, drug supplies, hospital facilities, budget, epidemiological and demographic data etc.

b. Personnel: Staff who collect or process health data, usually medical records officer, doctors who attend to patient's health planning officers, Nurses or Community Health Officer etc.

c. Tools for collecting, processing and presenting health data – forms, Registers, Admission cards Tally Sheets, Ledgers etc or Data processing machines such as hand-calculators, computers search engines, intranet and internet.

4.0 Conclusion

In this unit you have learned what a system is and what an open system does by allowing free exchange of information with the environment. You have also appreciated the various elements of the health information system. By now you should have no major challenges with how a system operates.

5.0 Summary

The unit has focused on the definition of system, open system, and essential elements of health information system which includes health data, personnel and tools needed for collecting the data. You will be able to build you knowledge further in the next unit.

6.0 Tutor Marked Assignments

Within the community, think out 2 major systems that delivers good services to the people.

7.0 Self Assessed Exercise

What are the components of this systems?

8.0 References

1. Health Management Information System www.distance.jhsph.edu/hmis/
2. T M Akande and J O Monehin Health Management Information System in private clinics in Ilorin Nigerian Medical Practitioner vol 46 No *5.* 2004 (103 - 107)
3. Federal Ministry of Health 2000, Manual for Certificate in Health Planning and Management Course.

CHAPTER FOUR UNIT 8
INSTRUMENTS FOR MEASURING HEALTH DATA

1.0 Introduction
Health data may be collected on a regular basis and on ad hoc systems, the sources of theis data may be primary sources or secondary from Federal agencies such as (FMOH, FOS, Teaching Hospitals, etc:). International agencies that provide health data (WHO, UNICEF. UNFPA, etc.)

2.0 Objectives
The unit seek to
1. Describe regular routine health information systems
2. describe instrument used for measuring health data
3. describe the validity and consistence of data systems

3.0 Main Content
A regular or routine health information system; of data collection usually consists of a mechanism (a registration procedure) for collecting the data as they become available.

Examples
- a vital statistics registration system to collect data on births, deaths, marriages and divorces;
- a disease notification system to collect data on cholera, yellow fever, whooping cough, etc.;
- a reporting system for cancer cases (cancer registry);
- registration systems in health care facilities, to collect data on patients attending the various clinics.

Ad Hoc
collection of data is usually in the form of a survey of collect data that is not available on regular basis. The data collected may be for research or administrative purposes.

Examples
a. a national health manpower survey;
b. a survey to estimate the proportion of children with malnutrition in a defined population;
c. a study to investigate whether or not the use of hormonal contraceptives affects the nutritional status of the user; an investigation of breast-feeding practices among women who registered a birth in the previous year.

Instruments for measuring health data and Type
There are three main types:
a. Apparatus: Measurement is done with a purely mechanical device, e.g. weighing scales, thermometers, spectrophotometers and sphygmomanometers.
b. Human: Measurement is done by persons, with little or no involvement of apparatus, e.g.

oscillating a heart, grading spleen enlargement, taking a patient's history;

c. Mixed: Combination of human and apparatus, e.g. reading of X-ray film, reading of blood films.

Two Desirable Characteristics of Instruments for Measuring Data are: -

1. Reliability And
2. Validity.

1. Reliability deals with the inherent performance of the instruments. A reliable instrument is one, that gives consistent results when it is applied more than once on the same unit under similar conditions.

Major factors affecting consistency are:

I. Inherent variation of the instrument itself, e.g. fluctuating zero mark in a weighing scale, non-stability of reagents used to construct a mechanical instrument;

II. Fluctuations in the substance being measured, e.g. patients answer depending on their understanding of the questions;

III. Observer error: a single observer may get different results in repeated measurement on the same unit. e.g. repeated blood measurement, age determination (when date of birth is not known), repeat microfilaria count on a stained slide;

IV. Inter-observer error (observer variation): differences between observers, e.g. blood pressure measurements, reading of X-rays, reading of blood films.

2. **VALIDITY**: - A measurement has validity if it is indicative of the, condition that it is supposed to measure. Example

Fever may not be valid (sufficient) indicator for malaria in areas with low malaria transmission levels; answers obtained from oral interviews in some societies may not be indicative of local abortion practices; childlessness may not be valid indicator of infertility.

Sensitivity and specificity are two important components of validity.

Sensitivity

Sensitivity of a test is ability of test to be positive when the disease is present. The sensitivity of a test, a procedure, or a measuring instrument, is in general the quotient of the change in an observed measure and the corresponding change in the value of the quantity or the factor that is being measured. The larger the value of the quotient the grater the sensitivity. For example, if concentration is being measured, and if a small change in concentration produces a large change in the measurement given by a test then the test is said to be sensitive.

Sensitivity in this sense, does I1Qt refer to the smallest amount or value that a given procedure will detect (which is correctly referred to as the limit of detection of the procedure). In epidemiology, sensitivity is defined as the proportion of true positives correctly identified by a test and is given by the formula $a/(a+c)$, where a = no of positives correctly identified, and c = no of false negatives given by the test.

Specificity is defined as the extent to which a test a procedure, or a measuring instrument, gives a response for the presence of a given variable and is "dead" to the presence of all other variables. In epidemiology, specificity is defined as the proportion of true negatives correctly identified by a test, and is given by the formula $d/(b+d)$ where d = no of true negatives correctly

identified, and b = no of the false positives given by the test.

4.0 Conclusion; -
There is different type of Instrument for measuring data. Such instrument should be reliable and valid to measure the presence or absence of disease entity

3.0 Summary-
Health data may be collected on routine or ad-hoc method. On the routine data collected through registration of birth, vital statistics, cancer registration. While the ad-hoc may be survey carried out. There is different type of instrument used in measuring health data e.g weighing scale. B.P apparatus. All of the instrument is not free from error which include inherent factors, observers and inter-observer errors. Majorly, such instrument factors measured are the reliability and validity. An instrument is reliable when it same results is obtain at different time under same conditions. While an instrument is valid in term of sensitivity and specify. A sensitive instrument or test is positive when the disease or health condition is present while a Specify is a test is negative if diseases or health condition is not present.

6.0 Tutor marked
1. What are the different between routine and ad-hoc data
2. Enumerate instrument used in measuring health data.
3. What are the major factors affecting consistency are:

7.0 Self-assessment Exercise
1. Differentiate between Sensitivity and Specificity

8.0 References
1. Parrish RG. Measuring population health outcomes. *Prev Chronic Dis* 2010;7:A71.
2. Mokkink LB, Terwee CB, Patrick DL, *et al*. The COSMIN checklist for assessing the methodological quality of studies on measurement
properties of health status measurement instruments: an international Delphi study. *Qual Life Res* 2010;19:539–49.
3. Bottomley A, Pe M, Sloan J, *et al*. Moving forward toward standardizing analysis of quality of life data in randomized cancer
clinical trials. *Clin Trials* 2018;15:624–30.
4. Kovic B, Jin X, Kennedy SA, *et al*. Evaluating progression-free survival as a surrogate outcome for health-related quality of life in
oncology: a systematic review and quantitative analysis. *JAMA Intern Med* 2018;178:1586–96.
5. Dodge R, Daly A, Huyton J, *et al*. The challenge of defining wellbeing *International Journal of Wellbeing* 2012;2:222–35.

CHAPTER FOUR UNIT 9
TYPES AND SOURCES OF HEALTH DATA

1.0 Introduction

There are two main types of health data:

1) those from health services-based sources and

2) those from population-based sources.

Data from health services-based sources are of three types:

(a) data that are collected routinely in the course of services delivery,

(b)data collected via periodic assessment of the health services delivery systems, and

(c) data collected disease monitoring and surveillances.

Data from these sources are usable for assess the context, inputs, process and outputs of health services delivery.

Population-based data are data that are obtained routinely or periodically from communities. The specific types are surveys, censuses and vital registration. Information from these sources are useful for assessing outcomes and impacts of heath service delivery. In addition to the above, various ministries such as education, agriculture, water resource, information, and housing contribute to health. Data generated from these sources must be integrated to give a total picture of health situation in the community, and enhance the quality of information derived from the health community

2.0 Objectives; -The unit seek to

1. Explain different type of health data
2. Discuss various sources of health data
3. Specifically explain census of population, Registration of births and deaths. Morbidity and mortality data.
4. Enumerate limitation associated with the sources of data collection

3.0 Main Content- Sources of health data

3.1 Census of Population

Before we can assess the magnitude of the public health problem posed by a specific disease or the impact of an intervention programme, we must have an idea of the size of the community we are dealing with, its composition with respect to various demographic characteristics, and the magnitude of population changes in relation to vital events (e.g. births and deaths). From the census (total enumeration) of a population, data may be collected about the following characteristics of members of the population: age, sex, marital status, place of residence (address), literacy, occupation, economic activity, relationship within a household, etc. The composition or distribution of the population affects the need for, and utilization of, the various

health facilities in the country.

3.2. Registration of Births and Deaths

It is important to report and register births and deaths:

- for individual (personal) documentation;
- for legal and civic purposes (e.g. establishing citizenship, evidence of which may be needed for social and welfare services);
- to maintain a balance sheet for the population.

There may be problems with registration of births and deaths.

- in applying the definition of a live birth (especially in connection with severe congenital malformations).
- in applying the definition of the foetal death especially in connection with determining correctly the period of gestation);
- early neonatal deaths may not be reported and registered as births (although they may be recorded as such); there may be lack of motivation in the general public to register an event such as a birth or death.

3.3. Morbidity and Disability Data

1. Routine health services records (e.g. medical records) provide general morbidity and disability data, by diagnosis or symptomatology, in accordance with the sophistication of the institution compiling the records.
2. Routine data collection and notification systems of government and private institutions provide, among other things, data on new cases of communicable diseases through their notification.
3. Occupational health institutions provide occupation related morbidity and disability data.
4. Patients' Groups (e.g. diabetics) provide detailed disease - or condition-specific data on individual patients.
5. Disease Registries (e.g. for cancer or mental disorders) provide detailed information on the group of diseases or conditions covered by the registry.
6. Surveillance Records of selected diseases (primarily for detection of outbreaks) provide, for instance, data on time course of diseases under surveillance.
7. Reports from Volunteer workers contain secondary and generally crude data on morbidity and disability.
8. Reports to Ministries of Health and International Organizations contain summary data on morbidity and disability, usually also with demographic data on the reference populations.

3.4 Mortality Data

1. Vital registration system
2. National sample surveys
3. Special health surveys - Hospital records
4. Notification of infections diseases
5. Government health institutions
6. Voluntary (or private) health institutions
7. Revenue agencies
8. Police
9. Village/Community Councils
10. Reports of national and international organisations.

4.0 Conclusion; -

There are different sources of data form of collection. Which vary from routine to population based. The vital events are measure through registration of birth, census and morbidity and mortality data. There is uniqueness with sources in term of advantages and limitations.

3.1 Summary-
Before we can assess the magnitude of the public health problem posed by a specific disease or the impact of an intervention programme, we must have an idea of the size of the community we are dealing with, its composition with respect to various demographic characteristics, and the magnitude of population changes in relation to vital events (e.g. births and deaths)It is important to carry out census for for individual (personal) documentation; for legal and civic purposes (e.g. establishing citizenship, evidence of which may be needed for social and welfare services);

6.0 Tutor marked Assignment
1. Question: What are the limitations of census data?

7.0 Self-Assessment Exercise
1. Differentiate between Morbidity and mortality data

8.0 References

1. Lorente S, Vives J, Viladrich C, *et al*. Tools to assess the measurement properties of quality of life instruments: a meta-review
protocol. *BMJ Open* 2018;8:e022829.

2. VanderZee KI, Sanderman R, Heyink J. A comparison of two multidimensional measures of health status: the Nottingham health
profile and the RAND 36-Item health survey 1.0. *Qual Life Res* 1996;5:165–74.

3. **Saka, M.J.** Jimoh A.G. Saka, A.O. & Latinwo, A.W.O. **(2011):** Menopause Perception and Care of Menopausal Women in Nigeria. *The Nigeria Journal of Guidance and Counseling*. 16(1); 28-37, Published by Faculty of Education, University of Ilorin, Nigeria. Available online at https://www.ajol.info/index.php/njgc/about

4. **Saka, M.J.** Akande, T.M. Saka, A.O. Odusolu, P.O. Olatinwo, A.W.O. Jimoh A.A.G. & Raji, H.O. **(2011):** Assessment of Expectation, Knowledge and Adjustment Behaviours of Menopausal Women, North Central Nigeria. *The Tropical Journal of Health Sciences.* 18 (2); 59 – 64, Published by College of Medicine University of Ilorin, Nigeria. Available online at https://www.ajol.info/index.php/tjhc/about

CHAPTER FOUR UNIT 10
HEALTH SERVICES-BASED DATA SOURCES

1.0 INTRODUCTION

Health services-based data sources are varied from primary health facility treatment records, hospital-based treatment records

2.0 Objectives

the unit seek to
1. Describe health services-based data sources. the record system within the hospital
2. List Examples of the types of data produced from routine health services-based data
3. Describe health and disease surveillance
4. Health facility Assessment (HFA)

3.0 Main Content

Primary Health Facility Treatment Records

Data generated from the primary health care dispensaries, clinics, comprehensive health centres, traditional birth attendants, village *health* workers provide information on health situation in the community, and help in determining the effectiveness of PHC services. Records of clients and services are kept at every primary health care facility, and properly kept overtime. PHC facility-based data provides information on:

Hospital-Based Treatment Records

Treatment records from both government and private hospitals are important sources of health information. However, because of difficulties of collecting information from private clinics, information collection is often limited to government-based hospitals or, at most, to government and the large NGO hospitals. However, including all private clinics will ensure the completeness of data. Hospital records are important in health services monitoring and evaluation. Adindu (1996) noted that hospital data provide insights into the effectiveness of health interventions in the community.

Examples of the types of data produced from routine health services-based data

I.   health and disease pattern in the community;
II. health services utilization; drug consumption;
III. types of drugs frequently dispensed;
IV. effectiveness of primary health interventions;
V.   cost of interventions and revenue generated;

VI.   human resource requirement;
VII.   materials and equipment utilized and needed

Health and Disease Surveillance

Health and disease surveillance are the routine collection of epidemiological data to track trends in disease incidence or prevalence over time. Data are collected through seroprevalence surveys or through the routine reporting of cases seen by health facilities. Surveillance data collected from health facilities or community level are aggregated through the administrative units to arrive at national or sub-national estimates. Surveillance data set is an important source of data for M&E but it should not be confused with, or substituted for, actual program monitoring, rather surveillance data should be linked with other sources of programmatic data in a monitoring system.

Health Facility Assessment (HFA)

Health facility assessment is the systematic investigation conducted in health facilities to ascertain health service capacity, availability and quality. HFA, are of different types: surveys, censuses and qualitative assessments. Within each type, HFA, may differ in:

(1) the level of investigation (national, district or health facility level);

(2) extensiveness/ depth of data collected (e.g. integration: single *versus* multiple subject surveys); and

(3) types of people conducting it (e.g internal, health workers *versus* external, experts).

Usually a combination of these is best for producing credible and valid data. The most important usefulness of data produce in the health facility are used for determination of quality and availability of services. The quality of services been rendered and support mechanism.

Usefulness of Data Produced From (HFA). Examples

I.   **Quantity and availability of services**
  a. Location of service delivery points
  b. Types of services available
  c. Quantity and frequency of services
  d. Staffing (numbers/qualifications/staffmg patterns)

II.   **Quality of services**
  a. Are there guidelines for standards of care?
  b. Are health workers adhering to the guidelines?
  c. Are needed diagnostics and client records available and maintained?

III.   **Support mechanisms**

Condition of building and infrastructure (water, sanitation, electricity). Availability and condition of equipment
  a) Availability of supplies and medications
  b) Management systems and practices
  c) Existence of coordinating mechanisms among key services and
       programs: outreach services, community workers, linkages with community

4.0   Conclusion

Combination of health data record systems in the hospital are very useful and is best for producing credible and valid data. The most important usefulness of data produce in the health facility are used for determination of quality and availability of services. The quality of services been rendered and support mechanism

5. Summary

The unit describe health services-based data sources. Primarily the record system within the hospital. Various examples of the types of data produced from routine health services-based data. Issues on health and disease surveillance was also described and the importance of health facility assessment (HFA).

6. Tutor marked Assignment

What are the Usefulness of data produced from (HFA). Examples

7. Self-Assessment Exercise

Describe how hospital record can help in supportive services with quality and quantity of services and

8. References

1. Faria CD, Teixeira-Salmela LF, Nascimento VB, *et al*. Comparisons between the Nottingham health profile and the Short Form-36 for assessing the quality of life of community-dwelling elderly. *Rev Bras Fisioter* 2011;15:399–405.

2. Saka, M.J. Abdul, F.I. Saka, A.O. Odusolu, P.O. Okesina, B.S. & Bako, I.A. **(2012):** Assessment of Infrastructure and Community Supply in Nigeria Private Health Facilities: Implication on the implementation for Maternal and Child health Care Policies. ***The Tropical Journal of Health Sciences.*** 19 (1); 31-34, Published by College of Health Sciences University of Ilorin. Available online at https://www.ajol.info/index.php/tjhc/about

3. Saka, M.J. Akande, T.M. Saka, A.O. Musa, O.I. & Abdulrahim, A. **(2015):** Marketing Anti Malaria Drugs by CTC-MS in Kwara State Nigeria. ***Ilorin Journal of Marketing***. 2(2); 35-48**,** Published by Faculty of Management Sciences University of Ilorin Available online at http://www.unilorin.edu.ng/ejournals/index.php/ijm

CHAPTER FOUR UNIT 11
FACILITY AUDIT AND TOOLS IN ROUTINE HEALTH DATA

1.0 Introduction

Data collection and tool are at varying section in the hospital for data collection which is very much in sed in facility audit

2.0 Objectives

The unit seek to

1. Explain what facility audit is all about

2. explain tools in routine health data collection and reporting

3.0 Main Content

Facility Audit: This method consists of the utilization of structured questionnaire to obtain information on infrastructure, staffing levels, services offered, management and support systems in place.

Health data collection occurs in two stages; -

1. First, health facility' representatives, particularly the in charge, are first interviewed regarding whether resources: infrastructure, equipment, staffing, etc, are actually present in functional capacity. The information obtained is then crosschecked by actually checking the presence of those resources physically.

2. This visual inspection constitutes the second stage in facility audit. Information collected is usable for assessing health facility readiness to provide services.

      I.   Patient medical record review

     II.   Provider interview

This method is similar to the interview method in population-based sample surveys. It consists of the use of structured questionnaire to obtain information on provider attitude, knowledge, and behavior as regards health service delivery. Information obtained using this technique is important for improving health worker motivation and performance.

     III.   Observation of provider-client interaction

Compliance with recommended treatment guidelines is important to health service delivery and outcomes. Observation of provider-client interaction entails the use of observation methods to assess health provider competence vis-à-vis the norm in service delivery.

     IV.   Exit interviews

Exit interviews is interview conducted at the health gate as clients are exiting the facility

premises. The interview can be conducted with open or close ended questions. In general, the information is qualitative; inferences based on data are, however, not applicable beyond the sample context studied, unless under controlled rigorous study and sampling design. Data obtained from exit interviews are relevant for assessing client satisfaction with the services they are provided.

Tools in Routine Health Data Collection And Reporting

I. Community Based Summary Form, includes NHMIS Forms 000.
II. Health Facility Community Outreach Forms.
III. NHMIS Summary Form 001A and B.
IV. Health Facility Based Forms.
V. NHMIS Summary Form 001.
VI. NHMIS Summary Form 002 for LGA.
VII. NHMIS Summary Form 003

These forms capture data on antenatal care and pregnancy outcomes; immunisation; family planning services and commodity utilisation; growth monitoring and child health promotion. Others are in-patient cases; in-patient deaths; outpatient cases; disease surveillance and notification; pharmaceutical services and drug inventory/ utilization; laboratory services; and occupational health services.

Tools In Health Disease Surveillances

I. ANC HIV Sero-Prevailenc Surveys,
II. Integrated Bio Behavioral Surveys (IBBS),
III. Behavioral Surveillance Survey (BSS), etc

Selected Tools In Health Facility Assessments:

I. Services Provision Assessment (SPA) MEASURE DHS
II. Service Availability Mapping (SAM) WHO
III. HF based Human Resource for Health (HRH) assessment Abt Associates
IV. Rapid-Health Facility Assessment (R-HFA) CSTS+/MEASURE Evaluation
V. Assessing Integration Methodology (AIM) (used mostly in operational research settings)
VI. Population Council

4.0 Conclusion; -

There is various tool for facility audit, which are used in health diseases surveillance and in health facility assessments

5.0 Summary; -

Facility audit is mean of collection of data on activities or services within the hospital good measure of Two method are First, health facility' representatives and visual inspection. The later are further broken down into

I. Patient medical record review
II. Provider interview
III. Observation of provider-client interaction
IV. Mystery client approaches TBD

6.0 Tutor Marked Assignment

1. What are the two methods used in facility audit?
2. Discuses in details visual inspection used in facility audit

7.0 Self Assignment Exercise

Differentiate between **Tools in routine health data collection and reporting**

8.0 References

1. Wiklund I. The Nottingham Health Profile-a measure of health-related quality of life. *Scand J Prim Health Care Suppl* 1990;1:15–18.
2. McDowell I. *Measuring Health: a guide to rating scales and questionnaires*. 3rd ed. New York: Oxford University Press, 2006.
3. **Saka, M.J.** Adisa, T.S. Saka, A.O. & Abdulraheem, I.S. **(2016):** Close to Community Health Care Providers; The Operation and Performance of Patent Medicine Vendors in Management of Malaria in Kwara State, Nigeria. *Centrepoint Journal (Science Edition).* 22(2);91-101, Published by The Library and Publication Committee University of Ilorin, Ilorin. Nigeria. Available online http://www.unilorin.edu.ng/centrepoint e-jour

CHAPTER FOUR UNIT 12
POPULATION-BASED DATA SOURCES

1,0 Introduction

This is a methods of data collection within the population. Population census is the official process of systematically using standardized tools and procedures to collect, compile, and disseminate demographic, social, and economic data on people in a country at a particular time

2.0 Objectives

The unit describe population-based data with the ultimate aim to; -
1.discuss population census
2. explain resident population
3. describe sample survey

3.0 Main Content

Vital Registration

Routinely collected data on birth, death, marriage, and migration are essential sources of demographic information. The quality of tools, procedures, and consistency in data collection require serious attention to ensure accuracy and usefulness. Births, and deaths outside the primary health care system must also be captured.

Population Census

Population census is the official process of systematically using standardised tools and procedures to collect, compile, and disseminate demographic, social, and economic data on people in a country at a particular time. Countries conduct population census periodically to determine size, composition, and spread of the population in order to effectively plan for them; and serves as indices for understanding health situation.

Enumerators are properly trained to use standardised national data collection instruments to collect data for population census from every household, and individuals living in the household, and data aggregated at village, community, local government, state, and national levels.

Enumerated population census captures the actual people present in an area on census day, and does not distinguish temporary from permanent residence. This may give false picture of the population if people moved into the specific area just to be counted.

Resident population census captures all permanent residents who live in the area of census.

1. Population census provides data for understanding: population structure; size, and age structure shows proportion of people in each age group within the population;
2. sex distribution, proportion of males to females in the population, and in each age group;
3. geographic distribution, number of people in an area, and population density; and
4. housing, health status, literacy level, occupation, and economic and social status of households.
5. Census figures provide denominators for calculating rates for a population at risk; the denominator captures all people with or without a disease or problem, while the numerator captures those with the disease or problem.
6. Population data are used to calculate population density, population growth, fertility rate, crude birth rate, crude death rate, infant mortality rate, and child mortality rate.
7. Population size refers to all people who live in a country or specified geographical area at a specific time. Population density is expressed as the average number of people per square kilometres. Population density in a country varies from one area to another city, rural area, low-income area, industries, soil fertility, human fertility, cheap housing, and jobs.

Sample Surveys

Population based surveys are sample surveys conducted in the community Examples of population-based surveys include Demographic and Health Surveys.

Methods for collecting data collections
  a. Self-administered Questionnaire
  b. Individual Interview
  c. Group Interview (focus group)
  d. Observation

Self-Administered Questionnaire

Questionnaire is simply a list of questions to be asked by the researcher to elicit responses. The questionnaire is administered by mail, hand delivered to respondents, or respondents are brought together at one point to complete the questionnaire. The critical distinction is that the questionnaire is completed by the respondent with no assistance from the investigator beyond the instruction given on the questionnaire. Clear instructions are also required on the purpose of data collection: who is collecting data, how to complete the questionnaire, and level of confidentiality involved.

The questionnaire may be structured or unstructured. Structured questionnaires have close-ended questions, restricting responses to selected options. Ustructured questionnaire consists of open ended questions, and allows free responses. An open-ended question allows the respondents to give all the possible options. A questionnaire that restricts the responses of some questions while allowing free responses of others is semi-structured. Usually, a good questionnaire should contain elements of both open- and close-ended questions.

Individual Interview

Interviews: structured and unstructured are important qualitative research data collection technique. Unstructured interviews involve probing, with open-ended questions. Key informant interview involves the use of experts to obtain critical information, which gives deeper insight to the issue at hand.

Focus group discussion (FGD) or group in-depth interview is used because group interaction stimulates richer responses; researcher is able to observe discussion for primary insight into respondents' behaviour, attitude, language, and feelings. FGD promotes idea generation, problem identification and definition, generates rich qualitative data, inexpensive and fast. Although the number of groups is determined by topic and hypotheses being tested, conduct at least two groups for each variable being tested, and in each geographic region where meaningful differences seem to exist.

Group Formation

Focus groups are generally conducted among homogenous target population, variables for consideration are social class, life cycle, level of expertise and experience, education, age, marital status, cultural differences, and sex.

Observation

Observation provides clearer picture of social life more than obtainable by other methods. Researcher purposefully selects and examines phenomena, people, and objects, systematically observing and recording according to procedures, which allows for replication. Social science classifies systematic observation into participant, and nonparticipant. Investigators engaged in participant observation typically become part of the natural setting observing, interviewing, and actively involving in what goes on in the environment.

In non-participant observation, the researcher observes behaviour of others in a natural setting and records without participating in the behaviour under scrutiny, sometimes done.

without the people knowing they are being observed. The use of qualitative methods is necessary in the study of all aspects of health care. Examining the process of health care through participant and non-participant observation as services are delivered; the interaction between health workers and patients, the effectiveness of such relationships, which questionnaire cannot capture should be considered alongside quantitative methods.

Types of Surveys

The types described below apply to both population and facility-based surveys:

Analytical surveys attempt to test theory, and causal relationships by applying the logic of experimentation outside the laboratory, dependent, independent, and extraneous variables are specified. The control of extraneous variable is achieved through reliability in data collection and the use of statistical techniques.

Cross sectional surveys study people at one point in time (weeks or months) and provide prevalence data, and important that incidence of what is being investigated does not change during the period.

Descriptive survey is a type of cross-section survey concerned with particular characteristics of a specific population of subjects, at a fixed time or at varying times for comparative purposes, secures a representative sample of the population from which accurate assessment and generalisation is possible.

Longitudinal surveys collect data about all the new cases or events happening over a period to provide incidence data.

Examples of the main tools and resources for conducting household surveys and censuses in the Nation

I.   Demographic and health Surveys: Sample survey conducted among women 15-49

years old and their spouses to ascertain fertility, sexual and reproductive health and their determinants. DHS is led by the NBS with support from Macro Internation, Beltsville, MD, USA.

II.   MICS Surveys: Sample survey conducted among children under five years to assess health & nutrition status. MICS is led by National Population Commission with support from UNICEF.

III.   National AIDS and Reproductive Health Surveys (NARHS)

4.0 Conclusion

Population based data is a form of data collection that provide insight into respondents' behaviour, attitude, language, and feelings. FGD promotes idea generation, problem identification and definition, generates rich qualitative data, inexpensive and fast.

5.0 Summary

Population based data does not limited to vital registration, it also includes population-based surveys which are sample surveys conducted in the community Examples of population-based surveys include Demographic and Health Surveys. The data can be collected through Self-administered Questionnaire, Individual Interview, Group Interview (focus group) and Observation

6.0 Tutor Marked Assignment

1. How does population census carry out?
2. What important s attach to Resident population census?

7.0 Self Assignment Exercise

What do you understand by sample survey?
What are the methods of data collection in a sample survey?

8.0 References

1. Lee S. Self-Rated Health in Health Surveys. Johnson TP, *Handbook of health survey methods*. 1st edn. Hoboken, New Jersey: John Wiley and Sons, Inc, 2015.

2. Idler EL, Benyamini Y. Self-rated health and mortality: a review of twenty-seven community studies. *J Health Soc Behav* 1997;38:21–37.

3. Saka, M.J. Salman A. & Saka, A.O. **(2017):** Health Care Financing For Victims Of Child Trafficking In Nigeria: Trends And Analysis Of the Cost Of medical Treatment Per Victim Per Year. ***Ilorin Journal of Administration and Development***. 3(2):114-123. Published by Faculty of Management Sciences, University of Ilorin. Available online at http://www.unilorin.edu.ng/Ijad

4. Saka M.J. (2017): Governance and Corrupt Practices in Healthcare Systems in Nigeria. ***Ilorin Journal of Administration and Development*** 3(1):112-122. Published by Faculty of Management Sciences, University of Ilorin. Available online at http://www.unilorin.edu.ng/Ijad

5. Saka, M.J. Akande, T.M, Olarinoye, A.O. Raji, H.O. & Saka, A.O. **(2018):** Comparative Assessment of Health Workers Performance and The Performance Factors at Primary,

Secondary and Tertiary Hospitals in Kwara State, Nigeria**.** *The Tropical Journal of Health Sciences.* 24(4);30-35. Published by College of Medicine, University of Ilorin, Ilorin, Nigeria, Accessible at https://www.google.com/search?client=firefox-b-d&q=Comparative+Assessment+of+Health+Workers+Performance+and+The+Per%C2%ACformance+Factors+at+Primary%2C+Secondary+and+Tertiary+Hospitals+in+Kwara+State%2C+Nigeria

CHAPTER FIVE UNIT 13
STEPS IN CONDUCTING SURVEY/CENSUSES

1,0 Introduction

A public health officer must should be able to carry out survey census and other form of research inn data collection. The unit is a form of primary data collection method.

2.0 Objectives

The goal of the unit to improve knowledge on how primary data are derived and specifically to;
1. Define the problem
2. Delineate Objective of The Survey
3. State the Hypothesis
4. Review Current Knowledge
5. Select Sample For Health Survey
6. Methods for Selecting the Sample

3.0 Main Content

a. Define the problem

Clearly defining and stating the problem is the first important step in the survey because a clear statement of problem is basis for delineating objectives, methodology, survey plan, and budget. Think about the aim of the survey, the health issue, the population, skills, time, and cost. The statement of problem briefly and concisely covers health status and the health system in the context, socio-economic and cultural characteristics of the people. Brief description of the nature of the problem, scope, distribution, and severity, convincing analysis of factors contributing to the problem, solutions tried in the past, and results of such attempts.

b. Delineate Objectives of the Survey

Objectives flow from statement of problem, provide direction, help in organizing the study, and collecting only necessary data. Survey objectives are therefore statements of measurable results, derived from the problem statement, and must be clearly stated, specific, measurable, appropriate, realistic, and time bound (SMART). Objectives are coherent and sequentially address different aspects of the problem; operationally phrased,

saying exactly what is to be done, and use action verbs (to compare, to describe, to calculate, to identify, to establish etc). Once objectives are clearly defined, data to be collected for each item and procedure for data collection are easily determined.

c. State Hypothesis

Hypothesis is an informed guess about what the researcher thinks may be happening, based on previous reading, research, and observation. A statement of expected relationships between variables from which conclusions could be drawn. Hypothesis is not a must, but thinking and having hunches helps in deciding the research approach (analytical or descriptive) and in framing research questions.

d. Review Current Knowledge

Before conducting the survey or indeed any scientific study, read up what others have written on the problem. Systematic library search provides ideas about research design, key issues, instruments, and methods of data collection. Literature review summarizes results of previous studies carried out on the topic, and those closely related, stating the name of the researchers, problem studied and date, population, sample and methodology, results and conclusions. Literature review helps: in defining and fine-tuning the scope of the survey; in generating good hypothesis; phrasing research questions; and helps us not to repeat mistakes made by others.

e. Select Sample for Health Survey
   i. Population sample is a subset of the reference population.
   ii. Clear statement of the problem and objectives help in defining the reference population, and basis for sampling, developing sampling frame and sampling procedure.
   iii. Sampling frame establishes the complete population for sampling.
   iv. Sampling makes it possible to study representative of the population rather than everyone in the population, but in a way that each person in the population has equal chance of being part of the survey.
   v. Sample size and sampling methods are then determined using tested scientific approaches.
   vi. Typically, the sample size depends on the prevalence of the problem under survey and the level of accuracy desired in the results.

Methods for Selecting the Sample
Probability Sampling
Random or probability sampling means selecting survey sample such that each unit in the sample frame be it village, community, household, or individual has equal chance of being selected and included in the sample.
Simple random sampling, establish
   I.   the sampling unit,
   II.   the sampling frame, and
   III.   the sample size.
Randomly pick the desired number of units from the sampling frame using a method that ensures each unit equal chance of being selected for the survey. Ballot or use a table of random numbers. Calculation of estimates is easy, and assures representative sample because every unit in the reference population has equal chance of being selected for the survey.

Systematic random sampling, after the first level of random selection of units, the next units are systematically selected. For instance, select every third house, or person. This method has great advantage in the sense that sample is evenly spread over the reference population, which assures representation. It is easy to establish sample frame, and to select the sample.

Stratified random sampling, first, divide the reference population into groups or strata based on a chosen characteristic (age, sex, educational level, location etc). Then, select a simple random sample from each stratum using the same sampling fraction. This allows every unit in each stratum equal chance of being selected, and proportionate representation of characteristic stratified. However, the sampling fraction could be varied between strata for special reasons, for instance to ensure sufficient numbers of critical subgroups, an advantage that could also introduce some bias.

In **cluster sampling,** each unit selected consists of a group of villages, households, or persons rather than individuals. The population is first divided into clusters of homogenous groups, a sample of each cluster is then selected, and all units in selected clusters are studied. This cuts down cost but introduces higher sampling error.

Multistage sampling is done in three or four stages until final sampling unit is arrived at for study. Cuts cost with higher sampling error.

Non-probability Sampling Methods
Convenience sampling is when sampling units available at time of data collection are included in the study sample for the sake of convenience. For example, a public health student wants to study the prevalence of leg deformity among leprosy patients in a community, and decides to include all patients admitted in the hospital for three months due to limited number of patients. The main disadvantage is not having representative sample of the population.

Quota sampling ensures certain number of sample units from different categories, with specific desired characteristics are in the sample. The health student suspects that fewer females have leprosy, and even fewer want to visit the leprosy centre. The student decides to include more females than males by 5%. The sample is not representative of the reference population.

Attributes of good questionnaire
Good survey research depends on the structuring, focusing, and phrasing understandable questions, which minimize bias, and provide analyzable data. Important issues in questionnaire design are focus, phraseology, form of response, question sequencing, and presentation.
  I.   **Questionnaire focus** ensures that questions cover the various aspects of the research problem adequately and in sufficient detail, and that all questions are relevant.
  II. **Phraseology** is a term that describes the extent to which questions are clear, and understandable to respondents without variation in interpretation. Phraseology ensures questions are free from jargon, ambiguity, esoteric terminology, and inappropriate assumptions. Phrase question such that they are free of offensive, embarrassing, and insensitive language.

III. **Question sequencing** ensures questions do not lead to bias, start with general less sensitive questions before going to more sensitive ones. Ask the right questions in order to measure research variables; appropriate for intended statistical analysis,

IV. **data from the questionnaire must be analysable. It helps to ask questions** systematically, with flow in logical order, using research questions and objectives as guide.

V. **Present the questionnaire** for easy completion, as if you were the respondent, be concise, ask only necessary questions; have suitable introductory statement, state purpose of the research, confidentiality, time, and how grateful you are.

Conclusion

In survey method in collection of primary data, which can come in form of census. The problem for this is define with hypothesis well stated. Then the sample size and techniques inn form of probability and non-probability.

Summary

The unit clarified the steps needed in data collection most especially in define the problem, delineate objective of the survey, state the hypothesis, review current knowledge, select sample for health survey and methods for selecting the sample. The census can proceed on probability and non-probability method of data collection. Which in the first case in probability everybody has qual chance of being selected which may be inform of random, systematic, stratified, cluster and multi-stage sampling technique.

6.0 Tutor Marked Assignment

1. Write short note on random sampling techniques
2. What are the main ingredient of Select Sample for Health Survey

7.0 Self Assignment Exercise

What are the difference between probability and non- probability sampling technique

References

1. Ishaq, F.A. Olayinka, R. B. Momoh, A. Yusuf, M.K. & **Saka, M.J. (2002):** Effectiveness of Information Education and Communication (IEC) On Public Acceptability of Unsafe Abortion Solution. *Trop j. Obstet Gynaecul.* 19(1); 12-16, Published by Society of Gynecology and Obstetrics of Nigeria (SOGON). Available online at http://www.ajol.info/index.php/tjog/article/view/14361

2. **Saka, M.J.** & Aremu, M.A. **(2006):** Marketing Communication Mix as a Means of Enhancing HIV/AIDS Education in Nigeria. *Journal of Administration.* 1(3); 14-24, Published by Nasarawa State University Keffi. https://nsuk.edu.ng/administration/.

3. Adepoju, F.G. Omolase, C.O. & **Saka, M.J. (2006):** Applanation Biometry in Ilorin, Nigeria. *Nigeria Journal of Ophthalmology.* 14(1); 18-21, Published by Ophthalmological Society of Nigeria. Available online at www.ajol.info/index.php/njo/article/view/116

4. Bernhard J, Sullivan M, Hürny C, *et al*. Clinical relevance of single item quality of life indicators in cancer clinical trials. *Br J Cancer* 2001;84:1156–65.

CHAPTER FIVE UNIT 14
STEPS IN PROCESSING HEALTH DATA

1.0 Introduction

Major steps in processing data collected at any level of the health system to produce information involve planning for data collection, collecting data, inputting, processing, storing, and outputting. These steps are applicable to manual and computerised systems.

2.0 Objectives

The unit aim at looking at the steps in processing of health data, with specific objectives to
1. describe the planning what health data depend on
2. discuss data processing methods and
3. describe the reporting method

3.0 Main Content
1. Planning

Every health data collection process starts with proper planning. It is necessary to decide what data are required for particular programme planning, assessment, or evaluation; for management of the unit or organisation to avoid collecting massive data that are not utilised, wasting money, and time.

Health data depends on defined objectives, and proper planning helps .in determining:
i.   number of people, educational level, and skills required;
ii. materials, equipment, and data collection tools needed;
iii. procedures t6 be followed in data collection;
iv. money needed to buy materials and equipment, produce documents, and data collection
tools, train and, pay personnel, transportation, accommodation, subsistence, allowance; and
v.   time required for training, data collection, processing and reporting.
In developing data collection plan, attach summary plan with activities, time, and budget. Data collection requires appropriate techniques, tools, and procedures, informed by the intended purpose and use of data.

2. Data Processing

When inputting and editing, health data are captured in form suitable for processing, organized systematically in files for manual systems or fed systematically into the electronic device for

computerized systems. Data given by client are edited to eliminate error. Data editing is a continuous process but must start early in the process in order to ensure that all possible errors are eliminated.

The following are the specific operations involved in the processing of health data: classifying, calculating, summarizing, storage, and comparing.

I. Classifying involves categorising health data collected from client as male or female, according to problem, medical, surgical, respiratory, and cardiovascular. Appropriate variables are used to classify the community, or client such as population, age, sex distribution, diseases, affected population, and so on.

II. Calculating involves all standard arithmetic operations that are deemed necessary, addition, subtraction, multiplication, and division, in order to arrive at meaningful summary of data.

III. Data are summarised by condensing calculated data into totals that give more meaning and easier to understand. Logical comparison is carried out on two sets of data to determine their differences and similarities.

IV. Health data must be properly stored to prevent damage, loss, or unauthorised access, involves protecting, indexing, and updating. A computer, card file, file drawers, or folder may *be* used to store health data, and measures taken to protect data from unauthorised retrieval, erasure, or modification. This is important in the health system where sensitive personal data are stored either in a computer or in paper files.

V. Indexing is used to create and maintain systems that show physical storage location of a particular piece of data, and facilitates the retrieval process. Card files are normally used in manually operated information systems. Updating involves adding, deleting or changing stored data to reflect new events. For easy retrieval, a system is established to move data to the central processing unit for use when needed.

3.Data Reporting:
Data processing culminates in the production of health information, which can be reported or displayed, and made available to management. A report is typically produced on paper or other media often summary of processed data, which provides management with information for decision-making. In presenting health information and reports, consider the audience or users and tailor the report contents, format, and style to suit them. Organize report methodically, logically, and ensure accuracy of information

4.0 Conclusion
Health data processing begins with proper planning which helps in determining the number of people, educational level, and skills required among others. Then the data processing and reporting.

5.0 Summary
In health data processing there is need to describe the planning what health data depend on,

discuss data processing methods and describe the reporting method

6.0 Tutor Marked Assignment
1. Discuss parameter for health data proper planning
2. Describe data reporting

7.0 Self Assignment Exercise
What are the steps in data processing?

8.0 References
1. Zengin N, Ören B, Gül A, *et al*. Assessment of quality of life in haemodialysis patients: a comparison of the Nottingham Health Profile and the Short Form 36. *Int J Nurs Pract* 2014;20:115–25.
2. Saka, M.J. Saka, A.O. Latinwo, A.W.O. & Raji, H.O. (2011): The therapeutic value of adjustment practices and coping with grandchildren for menopausal women in Nigeria. *Publication of Gender and Behavior*. 9(2); 3916-3924, Published by International Society of Psychological Studies OAU Ile Ife Nigeria. Available online at http://www.ajol.info/index.php/gab/article/view/72119.
3. Salaudeen, A.G. Ojotule, A. Durowade, K.A. Musa, O.I. & Saka, M.J. (2013): Condom use among HIV sero-concordant couples attending a secondary health facility in North-Central Nigeria. *Nigeria Journal of Basic and Clinical Sciences*. 10(2);51-56, Published by College of Health Sciences, Bayero University Kano. Available online at http://www.njbcs.net/article.asp?issn=0331-8540;year=2013;volume=10;issue=2;spage=51;epage=56;aulast=Salaudeen

CHAPTER SIX UNIT 15
HEALTH DATA QUALITY ASSURANCE STRATEGIES

1.0 Introduction

Quality information is vital for effective planning, management, and decision-making in health care. Poor coordination of information structure affects the quality of information management process and outcomes. The purpose of information system must be consistent with the goals, and information needs of the health organization. Assessing the quality of health information system requires careful planning informed by agreed criteria.

2.0 Objectives

The unit aim is to describe the importance of data quality and assurance strategies. Specifically, to
1. Explain the characteristics of quality health information
2. Enumerate Factors that Contribute to Good Quality Health Data
3. Itemize suggestions that will improve the quality of data collected:
4. Explain Assuring Quality Health Information

3.0 Main Content
Characteristics of Quality Health Information

The characteristics in data quality assurance are the following: (**RAT C**)
I. Relevance,
II. Accuracy
III. Reliability,
IV. Timeliness,
V. Complete, Clarity and Cost Effectiveness, and
VI. Utilization

Relevance is ability of the information system to provide required information relative to the information needs of health managers. Health organizations are dynamic therefore, available information must reflect current and long-term needs of decision makers and managers at all levels of the organization. Sound principles and techniques in data gathering and processing are necessary, and those involved in data collection and analyses trained to do the right things.

Accuracy in data and information is the ratio of correct information to the total amount of

information over time (Dixon, 1990). The degree information is free from error, the more accurate the higher the quality of information, fit for purpose and relied upon by users. Management level affects data collection process, and desired information accuracy related to decision at hand. Operational health managers need to make decisions based on accurate, detailed, comprehensive information with high degree of accuracy. At the strategic level, insight, creativity, and judgement are essential in decision-making, and health managers require quality information for this purpose.

Reliability connotes confidence in the information. Effective decision-making, planning, and management depend on the use of reliable information. Reliability depends on the capacity of data collectors, appropriateness of instruments, application of sound principles and techniques in data gathering and processing, recording and reporting should be consistent at all points with no variation. This means that instruments and procedures for data collection give consistent results. Observer error affects reliability leading to inconsistent results from one person using the same instruments for repeated measurement.

Timely information for health care decision-making. It is important to provide the right information to the right person, and at the right time. Delay at any point in data collection, processing and reporting could transform vital information into worthless figures. Indeed, information has life cycle, it is produced, refined, communicated, stored, organized, used, reused, and eventually discarded. Information arriving after the decision for which it is needed has been made is of no use to the health manager. Prompt production of needed information is, therefore, an important attribute of quality information.

Information must be understandable.

The understanding facilitates transformation of data to information. Data become information when recipient is able to understand and use the knowledge derived. Presentation, language, knowledge are factors that affect the ability to understand and interpret information which is key to decision making. Complex reports often mask rather than reveal important information, limiting use. In addition, tools should be meaningful and simple. The attributes of good questionnaire are presented below:

Complete information

Complete information is always required for important tasks, or a problem to make appropriate decision, missing parts reduces value of the information. Generating information is expensive involves human, material resources, and time; the value gained should not be less than cost. In certain situations, it is difficult to determine the cost and value of information, as much as possible ensure that cost does not outweigh benefit. Information supports all operational and managerial functions; use the most appropriate and effective approach that ensures effective flow of information in the organisation, enabling prompt access to essential data and information at all times. At the end of each patient encounter information is documented, stored, and accessible to others. Health professionals' reluctance to document care provided, and client folders often misplaced or destroyed are abstruse?

Cost effectiveness, collection and processing of data costs money and a piece of information has its relative value. When information costs far much more than the value derived from its use, it is not cost effective. In certain situations, it is difficult to determine the cost and value of information, in general, information should be processed to ensure that cost does not outweigh benefit.

Effect of Quality Health Information

Quality information	Leads to improved	Results in
Sample Reliable	Planning Decision Making Management	Better Care
Relevant	Resource Use	Quality Service
Accurate		Patient Satisfaction
Understandable		Employee Satisfaction
Relevant Accurate		

These quality attributes are attainable where organizational objectives and those for the information system are clearly defined, and understood. Martin and Powell (1992) suggest the need to select desired characteristics most relevant to each situation, because information systems do not stand alone, but are designed to fit organizational structure and objectives.

Factors that Contribute to Good Quality Health Data
Health data may be of good quality if informed by the following:
I. good planning;
ii. data collectors properly trained;
iii. resources and tools for data collection are adequate;
iv. appropriate data collection instruments;
v. complete routine health service records;
vi. well organized facility data collection systems;
vii. selective capturing of client information; and removing inconsistencies in data collection processes

Assuring Quality Health Information
Characteristics of quality health information discussed earlier relevance, accuracy, reliability, timeliness, clarity, and completeness, are not achievable all the time. Information producers and users must agree information attributes essential for particular needs and local decision-making. Training of health workers must address the adverse effect of inaccurate and unreliable data or organizational performance and health outcomes. Assuring quality means every health worker is responsible and accountable for data generated in providing services. Solution starts by local stakeholders acting collectively to:
i. define local information objectives, indicators, and information needs;
ii. restructure the information system in view of needs;
iii. plan effectively, developing appropriate tools for data collection;
iv. address and setting up quality systems for the information system;
v. develop realistic quality standards that guide all health workers;
vi. train health workers on quality measures, and personal accountability;
vii. train politicians, related agencies, tertiary, and secondary health facility workers on the integrated community health information system, their contributions, and how to utilise data generated for local decision making;
viii. establish mechanisms for monitoring and tracking data;
ix. ensure effective feedback systems;
x. provide needed equipment, materials, and transportation; and
xi. encourage, and support frontline staff until the right attitudes are nurtured.

The following suggestions will improve the quality of data collected:

a. Strengthen hospital medical records departments through training programmes.
b. Create awareness among primary health data generators of their important role as contributors of primary data.
c. Encourage all health workers to use health-related information in support of their activities.
d. Feedback information to health institutions, thus showing to those involved in generating the data the results of their contributions.
e. Make reports more comprehensive, so that the summary information is complete, meaningful, and useful.

Conclusion; - quality data is an essential ingredient in improving health information systems. In fulfilling the criteria, the data must be relevance, completed, and collected with minimal cost, reliable and with accuracy.

Summary

The criteria generally used to assess the quality of data include. (**RAT CU**);- ie **R**eliability , **R**elevant, **A**ccuracy, **T**imeliness, **C**larity, **C**ompleteness, **C**ost and **U**tilization. *Relevance:* the data should be organised in such a way as to be relevant to the types of decisions to be made. *Usefulness:* the data should be presented in a form which enables it to be used directly. *Accuracy:* as far as possible, the data must be free of errors. *Necessity:* the data should contain only what is required. **Sufficiency**: the data should contain all that is required, as far as possible. *Timing:* the data should be up-to-date and should be available at the right time and the *Costs:* produces; the data should not cost more to obtain than the benefit its knowledge Health data may be of poor quality for a number of reasons, including the following:

6.0 Tutor Marked Assignment

1. Write in detail characteristics of Characteristics of Quality Health Information
2. Factors that Contribute to Good Quality Health Data

7.0 Self Assignment Exercise
Discuss how you will improve the quality of data collected

References

1. Saidu, R. Euna, M. Amina, P. Saka, M.J. & Jimoh, A.A. G. (2013): An assessment of essential maternal health services in Kwara state, Nigeria. *African Journal of Reproductive Health.* 17(1); 41-48, Published by the Women's Health and Action Research Center University of Benin, Benin City Nigeria. Available online at www.jstor.org/stable/23486136?seq=1#page_scan_tab_contents
2. Saka, M.J. Saka, A.O. & Akinwale, A.S. (2017): Quality of Life of Children with Cerebral Palsy: Accumulative Effect of Physiotherapy Intervention in North Central and South West Nigeria. *African Journal of Physiotherapy and Rehabilitation Sciences.* 9(6);28-34, Published by College of Medicine University of Ibadan Nigeria. Available online at https://www.ajol.info/index.php/ajprs/article/download/181281/170677

CHAPTER SEVEN UNIT 16
HEALTH DATA INVENTORY AND DOCUMENTATION: MEANING, PROCESSES AND TOOLS

1.0 Introduction

Meaning of data inventory and documentation

Health data inventory is the process of listing, profiling, and cataloguing data using standards tools. The process ensures the preservation of data attributes are preserved overtime and dissemination via both electronic and print media so that data are available for widespread use.

2.0 Objectives; -the unit seek to explain the meaning of data inventory and documentation process and to**;-**

   I.   Enumerate the main rationale for data inventory
   II. Explain data documentation process
   III. Describe Cataloguing the data
   IV. Data Profiling and documentation
   V.   Describe Anonymization
   VI. Describe documentation and utilization of data
   VII. Discuss the Tools in health data inventory and documentation
   VIII. Discuss the benefit of data inventory

3.0 Main content

The specific objectives of the data inventory and documentation are to:

   I.   Facilitate use of information to improve planning, policy making, and programs execution by the MOH and its partners; availability tends to spur utilization
   II. Facilitate the ability of the MOH or the National Statistical Agency (NSO)and its partners to respond to requests for information from national and global sources.
   III. Management control over data by centralizing information in one location
   IV. Forster coordination; data is an important platform around which to coordinate partner's efforts.
   V.   Help FMOH, associated agencies, the partners involved in this effort, and the donors coordinate investment in data development and reduce duplication.

VI. Facilitate integration or interoperability of information, achieved when data from different sources collected using different approaches and tools are documented and archived using same methodology.

VII. Promote the use of data for decision making

Data Documentation Processes

Inventory of completed surveys/censuses/assessments: - The inventory consists of a simple listing and profiling of all surveys that have been conducted in specific agencies. Using our phased plan, these will be agencies in Phase 1. Inventory and profiling are conducted using a simple tool that has been developed for this purpose. To learn more about this tool visit MEASURE Evaluation web site.

Cataloguing the Data

This involves documenting basic information about each survey inventory. Information recorded at this stage includes name, the producing organization, a simple description of the data, and contact addresses for follow up. The profiles are prepared using simple excel programs developed for this purpose. The result is disseminated as metadata catalogue for use by all classes of data users.

Data Profiling and Documentation

This is the extensive documentation of survey and data attributes for ease of preservation and archbiving. Types of data documented include any households, institutions, or community surveys such as:

➢ Service Provision Assessment (SPA); Service Availability Mapping (SAM); RCA; HRH Assessment Abt Associates; Evaluation of Long Acting and Permanent Methods Services Suite (ELMS) Engenderhealth (ACQUIRE Project) (HF readiness to deliver LAPM); Rapid-Health Facility Assessment (R-HFA) MEASURE Evaluation/ICF Macro; Assessing Integration Methodology (AIM).

➢ DHS, NARHS, IBBSS, ANC Sero-Prevalences survey

Anonymization

Anonymization simply consists of removing identifiers and attributes that makes it easy for users to identify the units, be they persons and facilities, from which the information was obtained. The operation should not make the data of less value for analysis but users need to apply caution when interpreting modified variables. Anonymization may also be achived by restricting physical access to data that *which* presents a potential disclosure risk to scrutinized users only; restriction guidelines are stated in the data access guidelines. Anonymization is recommended to protect the national statistical agencies and their respondents particularly when data are disseminated for widespread use. For standards in data anonymization, students' participants are encouraged to contact WHO recommendations.

Dissemination & Utilization

Data documented are disseminated to:
I. those who plan public health programmes;
II. those who develop local, regional, national and even international policies;
III. those who implement intervention and carry out public health action;
IV. public, who need to have information in order to evaluate public health practice;
V. those who need the information for personal action for their health and well-being
VI. Academic professionals, students and researchers for teaching and research.

Data dissemination increases the quality, access to, and use of data by:

I. Creating awareness of available data and potential ways for utilization
II. Increasing the potential to use data to inform policy and programs.
III. Reducing the costs of data collection and the burden on respondents; awareness created by dissemination should reduce duplication of efforts by avoiding the need for researchers to undertake their own surveys;
IV. Demonstrating transparency and credibility 'n data production, which are at the heart of good governance; and
V. Permitting the incorporation of users' feedback to future data collection; by so doing data quality is improved

Data dissemination could expose data producers to criticism, violates respondent confidentiality or increase the potential for such violations. However, the impact on data quality and data use of making data accessible to users outweighs those risks. Access to microdata is a right but guidelines should exist that defines boundaries of what users can do wth the data. For instance, such a policy can emphasize that the data is to be used for statistical and research purposes only.

Tools in health data inventory and documentation
Inventory checklist: a simple checklist developed for listing completed data and tracking news ones. The inventory checklist is available in both hard and electronic copies
Note: Demonstrate the inventory checklist
Data profiling program: this is the simple excel program developed for the profiling and cataloguing data.
Note: Demonstrate the excel prog ram
Microdata Management Toolkit (MMTK) : this is a suite of tools developed for writing survey and data attributes into forms that are then available for widespread dissemination. MMTK is an international best practice developed by several organizations, led by the World Bank. The approach consists of two standard Frameworks: the data documentation initiative (DDI) and the Dublin Core Metadata documentation Initiative (DCMI). The DCMI is an organization dedicated to promoting the widespread adoption of interoperable metadata standards and standard metadata vocabularies for describing resources that enable more intelligent information discovery systems. The DDI is an inter rational XML-based standard for content, presentation, transportation, and preservation of documented datasets. In addition, DDI:

I. provides a straightforward means to record and communicate to others all the sa'lent characteristic of Micro-datasets;
II. facilitates the sharing of structured data across different information systems, particularly via the Internet.

Components of MMTK

a) Metadata Editor Allows the user to add survey metadata and create the ddi.xml and as a nester study document. Data are documented using standard templates
output files are produced in several formats: NESSTAR, XML (using DDI), and PDF. NESSTAR allows the browsing and accessing of data in a user-friendly manner.
b) CD-ROM Builder Allows the user to generate HTML outputs from the study that can be published on a CD or on the Internet for dissemination.
c) NADA Standalone- Standalone search engine that allows the user to import the

ddi.xml and search for variables and view metadata on the desktop.
d) NADA Server- Server-based search engine that allows the user to import the ddi.xml and search for variables and view metadata on the internet
e) Statistical tool: An associated toolkit that allows the production of basic statistics on the fly, if micro data is available MMTK is supported by FMOH, NBS, and MEASURE Evaluation.

Benefits of Data Inventory and Documentation

I.   Data availability; accessible from your pc; availability will spur utilization
II.   Enables data to take advantage of ICT
III. Data interoperability
IV.   Better data management practices
V.   Enhances performance monitoring and evaluation
VI.   Facilitates data sharing/exchange with government and other users/researchers
VII. Reduces fragmentation & duplication in data collection
VIII. Enables data mining, further analysis, comparability/ coordination
IX.   Increases Credibility for the NSO

Challenges to Data Documentation

I.   Poor political will and support
II. Lack of funds
III. Difficulties reaching organizations data.

Conclusion

Most organization and data collection agencies simply do not want to let go off their data. So just acquiring the data for inventory and documentation is very difficult and require protracted negotiationg

Summary

The unit discussed the main rationale for data inventory with documentation process. Cataloguing of the data was describe which also include profiling and documentation of data. The anonymization and utilization of data. The tool in health data inventory and documentation along with the benefit of data inventory

6.0 Tutor Marked Assignment

1. What are the main rationale for the data inventory and documentation
2. What is MMTK

7.0 Self Assignment Exercise

Explain the Benefits and challenges of Data Inventory and Documentation

References

1.National Bureau of Statistics NBS data access policy 2019.

2. Klevsgård R, Fröberg BL, Risberg B, *et al*. Nottingham health profile and short-form 36 health survey questionnaires in patients with chronic lower limb ischemia: before and after revascularization. *J Vasc Surg* 2002;36:310–7.

3. Meyer-Rosberg K, Burckhardt CS, Huizar K, *et al*. A comparison of the SF-36 and

nottingham health profile in patients with chronic neuropathic pain. *Eur J Pain* 2001;5:391–403.

CHAPTER EIGHT UNIT 17
ETHICS IN HEALTH INFORMATION

1.0 Introduction
All health disciplines medical, nursing, pharmacy, laboratory technology, medical records, health service management, and others have code of ethics and principles that guide practice. Ethics is a study of ideas about right and wrong (Beckner, 2004). Computerised information systems are yet to permeate health systems in Nigeria, nonetheless, health managers must ensure adherence to ethics in the running of manually operated health information systems at all levels.

2.0 Objectives
To discuss the three fundamental issues on ethics in health information

3.0 Main Content
Three fundamental issues that are applicable to all health care practitioners and health care consumers are confidentiality, access, and accuracy of information.

1. Health professions advocate confidentiality, and privacy of patients' medical.;- Professionals, and other health workers are expected, and bound by moral, ethics, and code of practice to protect information about patients, treatment procedures, and results of diagnostic interventions. Poor enforcement of professional codes on confidentiality results in public discussion of patient problems with people outside the health care team, and immediate family without client's consent. Maintaining confidentiality in a health institution appeals greatly to the moral conscience of health care practitioners, and understandably, in some cases information on patients are reported to family members in order to protect the family and the community at large.

2. Easy access to patient files in manually operated systems makes enforcement difficult. Unless health managers regard privacy, and confidentiality as important part of quality health care, and put systems in place for enforcement, and sanction.

3. Managers and health professionals using computerized health information systems are often unaware that health information stored in national databases are accessible to organizations and groups outside the health organization. Increasing demand for accurate information for decision-

making, and the level of competition for survival compel health organizations to use all means to access health information.

4. Access to and confidentiality of health information are closely related. Once health information is obtained and stored in files and filing cabinets or in mechanical systems, health care organizations are ethically bound to protect such information from unauthorized access, and patients assured that information are utilized for medical purposes only. This is particularly important in Nigeria where people are stigmatized and ostracized for contracting certain diseases.

4.0 Conclusion
Ethical issue in health is an important criterion in health systems. When adequately considered it bring in confidence and continuous utilization of health care facilities in Nigeria.

5.0 Summary
There are many identities to ethical issues in health information some which include confidentiality, and privacy of patients' medical, and health information.

6.0 Tutor Marked Assignment

1. What do understand by ethical issues in health care services

7.0 Self Assignment Exercise
1. Explain the Autonomy in data management
2. Explain confidentiality
3. What are the importance of complying with ethical standard of HMIS.

8.0 References
1. Saka, A.O. **Saka, M.J.** Odunewu, M.A. & Akinwale, S.G. **(2017):** Cost Analysis and Policy Implication of Physiotherapy Management of Cerebral Palsy in Nigeria. ***Bayero Journal of Evidenced -Based Physiotherapy***. 3 (2); 1-6, Published by **Faculty of Allied Health Sciences, Department of Physiotherapy,** Bayero University Kano, Nigeria. www.college.buk.edu.ngq=node4
2. Saka, A.O. **Saka, M.J. &** Sa'aidu, L.O. **(2018):** Evaluation of Children With Protein Energy Malnutrition And Level of Malaria Parasitemia in Kwara State, Nigeria. ***Annals of Africa Medical Research (AAMR)***. *1(33);54-57,* Published *by College of Medical Sciences, Abubakar Tafawa Balewa University, Bauchi, Nigeria.* Accessible at **https://www.aamronline.org/index.php/aamr/article/view/33**
3. Prieto L, Alonso J, Ferrer M, *et al*. Are results of the SF-36 health survey and the Nottingham Health Profile similar? A comparison in COPD patients. Quality of Life in COPD Study Group. *J Clin Epidemiol* 1997;50:463–73.
4. von Elm E, Altman DG, Egger M, *et al*. The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) Statement: guidelines for reporting observational studies. *Int J Surg* 2014;12:1495–9.

CHAPTER NINE UNIT 18
HMIS LEADERSHIP AND GOVERNANCE IN HEALTH SYSTEMS

1.0 Introduction
What is a health system?

A health system consists of all organizations, people and actions whose *primary intent* is to promote, restore or maintain health. This includes efforts to influence determinants of health as well as more direct health-improving activities.

2.0 Objectives:
At the end of this module, participants should be able to:
1. explains health system as a concept
2. describe the goals of health systems
3. identify where health management information system is situated within the health system building blocks

3.0 Main Content
A health system is therefore more than the pyramid of publicly owned facilities that deliver personal health services. It includes, for example, a mother caring for a sick child at home; private providers; behaviour change programmes; vector-control campaigns; health insurance organizations; occupational health and safety legislation. It include inter-sectoral action by health staff, for example, encouraging the ministry of education to **promote** &tr education, a well-known determinant of better health.' (Source- WHO 2007)

Health system goals

Health systems have multiple goals. The World health report 2000 defined overall health system outcomes or goals as: improving health and health equity, in ways that are responsive, financially fair, and make the best, or most efficient, use of available resources. There are also important intermediate goals: the route from inputs to health outcomes is through achieving greater access to and coverage for effective health interventions, without compromising efforts to ensure provider quality and safety.

The six building blocks of a health system are:
1. Leadership and Governance for Health.
2. Health Financing
3. Health Human Resources.
4. Health Services.
5. Health Information System.
6. Medical Products, Vaccine and Technology.

Leadership and Governance involve ensuring strategic policy frameworks exist and are combined with effective oversight, coalition building, the provision of appropriate regulations and incentives, attention to system-design, and accountability.

A good **Health Financing** system raises 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.

A well-performing **Health Workforce** is one which works in ways that are responsive, fair and efficient to achieve the best health outcomes possible, given available resources and circumstances. i.e. There are sufficient numbers and mix of staff, fairly distributed; they are competent, responsive and productive.

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

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 systems performance and health status.

A well-functioning health system ensures equitable access to essential **medical products, vaccines and technologies** of assured quality, safety, efficacy and cost-effectiveness, and their scientifically sound and cost-effective use.

4.0 Conclusion
Health Management information systems need to function in an environment of functional health system which consists of all organizations, people and actions whose *primary intent* is to promote, restore or maintain health

5.0 Summary
The environment needed for the functional health systems include all the six-building block from leadership/governance to the services. It major component include health management information systems

6.0 Tutor Marked Assignment
1. explains health system as a concept
2. describe the goals of health systems

7.0 Self Assignment Exercise
identify where health management information system is situated within the health system building blocks

8.0 References

1. Polit D. *Nursing research: principles and methods*. 7th edn.Philadelphia: Lippincott Williams and Wilkins, 2014.
2. van der Molen T, Postma DS, Schreurs AJ, *et al*. Discriminative aspects of two generic and two asthma-specific instruments: relation with symptoms, bronchodilator use and lung and lung function in patients with mild asthma. *Qual Life Res* 2017; 6:353–61.
3. Saka, M.J. (2008): Development partner and achieving the goal of primary health care. In *Primary Health Care 30 Years After Alma Atta Declaration* Adetokubo Lucas, Azuzu, M.C., and Obionu C.N (ed.) 270- 280. Nigeria: Published by Health Reform Foundation of Nigeria. http://www.herfon.org.ng.
4. Saka, M.J. (2008): Policy and practice of water supply in Nigeria: An Element of Primary Health Care. In *Primary Health Care 30 Years After Alma Atta Declaration* Adetokubo Lucas, Azuzu, M.C., and Obionu, C.N(ed.) 136- 156. Nigeria: Published by Health Reform Foundation of Nigeria. https://www.herfon.org.ng.

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CHAPTER NINE UNIT 19
STEPS IN ESTABLISHING HEALTH INFORMATION SYSTEM
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1.0 Introduction

The operational, strategic, specific purpose, and data modeling are four basic approaches to developing health management information systems. Often organisations tend to apply more than one approach.

2.0 Objectives

To discuss the steps needed in establishment of HMIS and specifically describe the;-
1. operational approach
2. specific purpose approaches
3. strategic approach
4. file approach and
5. database approach

3.0 Main Content

OPERATIONAL APPROACH

A health care organization that develops information systems for transaction processing such as personnel, payroll, order entry, accounts receivable and accounts payable, has adopted an operational or bottom-up approach, several independent systems are designed to meet needs of different users. The health information system can be built up gradually from this basic level if necessary. The main advantage is in the gradual development of the health management information system, and fundamental weakness is the lack of data integration as the system evolves. Different systems that are not integrated, and do not communicate with each other tend to emerge.

SPECIFIC PURPOSE APPROACH

This approach also known as the adhoc approach focuses on solution of specific problems of the health care organization. In planning for the health management information system, analysis is carried out only on specific identified trouble areas rather than considering information needs of the entire health care organization. Such piecemeal approach leads to data redundancy, inefficiency, and non-integrated database.

STRATEGIC APPROACH

Top managers in the health organization are actively involved in the health management information system strategy planning, and ensure that system design is consistent with strategic plans of the health organization. Factors that guide planning for the health Information system are objectives, data requirement, and information technology necessary for implementing the system. The health care organization that adopts this approach must have clear organizational policies, goals, and strategies along which to develop the information system. Analysis may reveal deficiencies, waste, and inefficiencies that could lead to restructuring the health care organization or changing operations, which cannot be carried out without top management involvement.

FILE APPROACH

The file or manual approach to information processing and management is the traditional approach widely used in Nigeria. With this approach, each application has a master file and transactions. For instance, the Admission, the Obstetrics and Gynaecology, and Surgery Departments collect and store the same information separately on one patient with no mechanism for integrating or sharing data. A health organization using this approach faces data redundancy, high cost, and difficulty in data management. Collecting and storing the same health data at so many points overload the system and increases cost of data storage and maintenance.

DATABASE APPROACH

Data modeling develops a common database that pulls data from different sources to accommodate information needed in the health care organization. Data are stored in different locations in the health care organizations, mechanisms for integration built into the system, allowing communication, common update, retrieval, and manipulation of data. A health system database is therefore collection of data or stored information organized independent of any particular application, organized to serve more than one user. Information from different sources are stored in a data bank from which employees and managers access information needed for decision-making. Database for a health care organization can be built gradually and may even comprise several databases that are interrelated and communicate with one another. It is a dynamic system controlled and managed by the health database management System (HDBMS), which eliminates data redundancy by storing data from different sources at one point, accessible to different users. This helps patients' managers, and employees, reduces confusion, and cost, enhances communication among users and the system; makes information's retrieval easy; and increase security of data.

4.0 Conclusion

The combination of strategic approach and data base approach were used in designing the National Health Management Information System.

5.0 Summary

The establishment of HIMIS unit will achieve among other things the policy and Management Planning Issues, the HIS assessment or Statistical Analysis (needs assessment, application, data documents, design and testing. The Computing System development and implementation. And project Plan Preparation. The HMIS project Implementation (training, information and funding. The Maintenance, review and enhancement (settling down the new Health Care Activity Information system, continuing support of field and system staff. initiating routine reporting programme, newsletter, post implementation review and Strategic

Work-Plan

6.0 Tutor Marked Assignment
You are, required to set up HIS unit in your organization. How do you go about it?

7.0 Self Assignment Exercise
1. What are the steps in establishing HMIS unit?
2. What are the issues involved in maintenance, review and enhancement.

8.0 References
1. NHP and Strategy Document 2018 Federal Ministry of Health, Lagos, October
2. Two-way Information Support in the Local Health System, WHO WP SHS/EC/85/WHO/11A.
3. NPA document on Child Survival, Protection and Development 2019.
4. NHMIS Policy, Programme and Strategic Action Plan (2018)
5. HMIS Working documents for Kaduna, Rivers, Yobe and Edo States 2017.
6. Guidelines for establishing HMIS PHC M & E Manual 2019

CHAPTER NINE UNIT 20
STRUCTURE, ROLES & RESPONSIBILITIES OF GOVERNMENT IN HMIS

1.0 Introduction
The philosophy, background, goal(s) and objectives of a health information system (using the National Heat1h Management Information System programme as a case study). The development of national management information system and national health indicators. Discussion of the national health policy indicators, health status indicators, socio-economic indicators, provision and utilization of health care indicators.

2.0 Objectives
The unit seek to review structure along with the role and responsibilities of different tiers of government in the establishment of HMIS in Nigeria and specifically to;-
1. Describe the structure and elements of HMIS
2. Hierarchical Structure of HMIS
3. Review the relationship and data flow including the procedures
4. Discribe roles and responsibilities of tiers of government in HMIS

3.0 Main Content
STRUCTURE OF HMIS
Reviewing the structure of the National Health Management Information System is Nigeria.

It shows the institutional framework of hierarchical levels from which health data and information are to be obtained. At the apex of the structure is the NHMIS branch of the Department of Health Planning, Research & Statistics. The branch relates horizontally with the National Bureau of Statistics (NBS), the National Population Commission (NPopC), other ministries, international health organizations and other key health data generating agencies in the public health sector, such as the National Primary Health Care Development Agency (NPHCDA), National Agency for Food, Drug Administration and Control (NAFDAC), the National Health Insurance Scheme (NHIS), etc. The relationships with these bodies are illustrated in the expanded operational diagram of the NHMIS

above. Similarly, the NHMIS branch relates and co-ordinates health information related-activities of FMOH departments, parastatals, agencies and professional bodies.

The NHMIS branch interfaces through established protocols with health information related activities of SMOHs, LGAs and all health facilities, public and private. Health data from communities is collected and streamlined into the structure through health facilities rendering services to communities. This structure indicates that the hub of health information at the state level is the State HMIS unit located in the Department of Health Planning, Research & Statistics while the LGA Department of PHC M&E serve the same function at the LGAs. These Departments coordinate data from different sources at their levels. In doing so, they have to collaborate with the different health programmes and even with other departments outside health generating health related data e.g. education.

Roles & responsibilities of tiers of government; - Federal Responsibilities
1. Data storage, analysis, publication and presentation
2. Documentation and publication services
3. User services
4. Clearing house for health information
5. Survey operations
   On-line services
1. Technical assistance
2. Database development
3. Informatics services
4. HMIS Forms reproduction
5. Computerization
6. Training.

State Responsibilities
1. Data storage, analysis, publication and presentation
2. Documentation and publication services
3. User services
4. Clearing house for health information
5. State Health Profile
6. HMIS Forms reproduction
7. Training

LGA responsibilities
1. Data storage,
2. Analysis, presentation
3. Data forwarding
4. User services LGA Health Profile
5. HMIS Forms reproduction
6. Training

Health facility responsibilities
1. Data collection daily in registers and monthly in facility summary forms
2. Data storage
3. Data forwarding
4. Data sharing

5. Data usage
6. Training

4.0 Conclusion
The structure of HMS followed same pattern at both federal, state and LGAs level. However, the function at the federal level include policy formulation. the service and training which are also part of State and LGAs function for HMIS

5.0 Summary
The institutional framework of hierarchical levels of HMIS from which health data and information are to be obtained. At the apex of the structure is the NHMIS branch of the Department of Health Planning, Research & Statistics. At both the federal and State level

6.0 Tutor Marked Assignment
1. Critically review the HMIS Structure in your organization
2. Draw a typical organizational chart of HMIS and explain the in-built relationship.
3. Structure is a sequence of procedures. Relate this to data flow and procedures of HMIS.

7.0 Self Assignment Exercise
1. With an illustrated Figure, describe the structure of HHMS
 1. At the Federal level, is the structure of HMIS adequate? Give reasons for your answer.
 2. Draw an organizational chart of any HMIS Structure and explain its working system.

8.0 References
1. Desroches CM, Charles D, Furukawa MF, Joshi MS, Kralovec P, Mostashari F, Worzala, C., Jha, AK. Adoption of electronic health records grows rapidly, but fewer than half of US hospitals had at Least a basic system in 2012. Health Affairs (Project Hope) 2013; 32 (8): 1478-1485. Epub 2013/07/11.
2. Furukawa MF, Patel V, Charles D, Swain M, Mostashari F. Hospital electronic health information exchange grew substantially in 2008–12. Health Affairs (Project Hope) 2013; 32 (8): 1346-1354. Epub 2013/08/07.
3. Patel V, Jamoom E, Hsiao CJ, Furukawa MF, Buntin M. Variation in electronic health record adoption and readiness for meaningful use: 2008–2011. J Gen Intern Med 2013; 28 (7): 957-964. Epub 2013/02/02.
4. Canada Health Infoway. The emerging benefits of electronic medical record use in community-based care. Ontario, Canada: PwC; 2013 [cited 2014 Jun 13]; Available from: http://www.pwc.com/ca/en/healthcare/electronic-medical-record-use-community-based-care.jhtml.

CHAPTER TEN UNIT 21
COMMUNICATING HEALTH INFORMATION FOR ACTION

1.0 INTRODUCTION

The essence of health data collection and processing is to obtain health information. Health information must in turn, be properly communicated to the appropriate quarters in order for health programmes to receive guidance through sound decision making. Health information communication is said to be effective when the recipient understands it, respond to it and able to use it to bring about a positive change. In this module we shall be discussing factors that enhance or inhibit effective health information communication, the nature of health information at the different levels of use and the tools to communicate health information effectively.

2.0 OBJECTIVES

At the time the student completes this unit on communicating health information for action, he or she should be able to:

1. Define or explain health information communication
2. Explain what message is all about
3. List some of the pre-requisites for effective health information communication.
4. List the Challenges to Health Information Communication

3.0 MAIN CONTENTS
MEANING OF HEALTH INFORMATION COMMUNICATION

Communication is the process of transmitting information and understanding between two or more people. Communication is part of every function of management and of health service: Studies have shown that most executives in public and private organizations spend as much as 75 % of their time communicating. Communication is a vast subject. It is much more than words. It includes behaviour, gestures, dress, music, art as well as perceiving and listening. It is a two-way process between people. It may be between two people or between one person and a group. of people. Communication is successful only when there is understanding of the message between the sender and the receiver.

In communication, a message is passed from the sender, through a transmission process to the receiver.

WHAT IS A MESSAGE?

A message is any idea, feelings, information, emotions, facts etc. that an individual or a group wants to convey to another individual or group for an anticipated behaviour. The extent to which that anticipated behaviour is achieved determines the success and effectiveness of the communication. For effective communication to occur, messages must have only one major idea, presented in simple language.

Pre-requisites for Effective Health Communication

a) Make sure that people hear, see and understand the message (ideas, information and feelings) that is being shared with them.
b) Use few words that people will understand (avoid technical words).
c) Use few words as much as possible. A long lecture will bore people. They will forget the message.
d) Use aids that people are familiar with in conveying your message.
e) Give message and listen to responses or ideas or interests expressed by people.
f) Check to know if people heard your message correctly and also if you heard their responses correctly.
g) Encourage people to identify their own problems.
h) Encourage participation.
i) Avoid prejudice and bias.

Challenges to Health Information Communication

a. Biases against people
b. Pre judgement of the sender of the message
c. Inability to listen
d. Habits, values and traditions
e. Arrogation of status or prestige
f. Use of inappropriate language

4.0 Conclusion.

Health communication is effective when it take place between two or more people with feedback. Most executives in public and private organizations spend as much as 75 % of their time communicating. Communication is a vast subject. It is much more than words. It includes behaviour, gestures, dress, music, art as well as perceiving and listening

5.0 Summary

The unit discussed health information communication the meaning of communication, what the message is all about, including the pre-requisite for effective health communication. Health information communication is effective when there is assurance that people hear, see and understand the message (ideas, information and feelings) that is being shared with them. Some of the challenges include arrogation of status or prestige

6.0 Tutor Marked Assignment

1. How is communication different from message

2. Define health information messages with example

7.0 Self Assignment Exercise
1. Explain the pre-requisite for effective health information communication
2. What are the challenges in health information communication?

8.0 References

1. Ishaq, F.A. Olayinka, R. B. Momoh, A. Yusuf, M.K. & Saka, M.J. (2002): Effectiveness of Information Education and Communication (IEC) On Public Acceptability of Unsafe Abortion Solution. *Trop j. Obstet Gynaecul.* 19(1); 12-16, Published by Society of Gynecology and Obstetrics of Nigeria (SOGON). Available online at http://www.ajol.info/index.php/tjog/article/view/14361

2. Saka, M.J. & Aremu, M.A. (2006): Marketing Communication Mix as a Means of Enhancing HIV/AIDS Education in Nigeria. *Journal of Administration.* 1(3); 14-24, Published by Nasarawa State University Keffi. https://nsuk.edu.ng/administration/.

CHAPTER TEN UNIT 22
METHODS OF HEALTH INFORMATION COMMUNICATION

1.0 Introduction

There are different methods of health communication. Whereas, health information is communicated either by modern or natural methods. Any of the method used are important ways of expressing ideas and feelings. They are basically used in giving people health knowledge and facts.

2.0 Objectives

At the end of the unit the students is expected to be able to;-
1. Describe modern method of health information communication
2. Describe natural method of health Information communication

3.0 Main Contents
The Audience

Communication is directed to an audience. The audience could be an individual, a family, small or large group. Whatever the type of audience you are directing a message to, the characteristics of the audience must be known and studied. You must know the following: age, educational level, occupation, Socio-economic class, culture health problems, feelings and so on of the audience. When the health worker becomes aware of the characteristics of the audience, he could package and send appropriate health message that will produce the desired effect to the target audience.

Channels

Channels are media through which messages are sent to target audience. A channel therefore could be defined as the object or thing through which a message is transmitted. Examples of channels are radio, television, newspapers, air, posters, etc. Communication media are channels through which messages are conveyed to individuals or groups, and they usually:

a) support or reinforce message reach audiences that the sender can not reach.

b) it is therefore recommended that multiple channels be used in conveying messages, as this will reinforce the impact of the message.

The extent to which anticipated behaviour is achieved determines the success and effectiveness of the:
(a) audience
(b) Communication/
(c) skill
(d) performance

Skills needed for good communication should be such that it makes sure people hear, see and understand the message. It however, should not include any of the following.
(a) discouraging people to identify their own problems.
(b) along, boring lecture.
(c) give message but not listening to responses or ideas of people.

All these are communication channels include:
(a) radio
(b) Newspapers
(c) Water

To Reinforce the Impact of Conveying A Message, It Is Advisable To Use
(a) multiple channels
(b) As many channels as possible.

4.0 Conclusion
For health information communication the audience must be segmented using appropriate channels to expressing ideas and feelings of the clients or health care providers. To reinforce the impact of conveying a message it is advisable not to use one channel. for the method to be effective only one major idea presented in simple language.

5.0 Summary
Communication media are channels through which messages are conveyed to individuals or groups, and they usually support or reinforce message reach audiences that the sender cannot reach and it is therefore recommended that multiple channels be used in conveying messages, as this will reinforce the impact of the message.

6.0 Tutor Marked Assignment
1. How is method of health information communication channel different from audience communication different from message.
2. List and explain different health communication channel you know.

7.0 Self Assignment Exercise
Explain in detail audience segmentation in health information communication methods

8.0 References

1. Furukawa MF, Poon E. Meaningful use of health information technology: evidence suggests benefits and challenges lie ahead. Am J Manag Care 2015; 17 (12 Spec No.): SP76a-SP.
2. Canada Health Infoway. Progress in Canada. [cited 2014 Jun 13]; Available from: https://www.infoway-inforoute.ca/index.php/progress-in-canada.
3. Whipple EC, Dixon BE, McGowan JJ. Linking health information technology to patient safety and quality outcomes: a bibliometric analysis and review. Inform Health Soc Care 2013; 38 (1): 1–14. Epub
4. Salaudeen, A.G. Ojotule, A. Durowade, K.A. Musa, O.I. & Saka, M.J. (2013): Condom use among HIV sero-concordant couples attending a secondary health facility in North-Central Nigeria. *Nigeria Journal of Basic and Clinical Sciences*. 10(2);51-56, Published by College of Health Sciences, Bayero University Kano. Available online at http://www.njbcs.net/article.asp?issn=0331-8540;year=2013;volume=10;issue=2;spage=51;epage=56;aulast=Salaudeen

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CHAPTER TEN UNIT 23
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TRADITIONAL METHODS OF HEALTH INFORMATION COMMUNICATION
1.0 INTRODUCTION
The methods in this section are based on natural ways of expressing ideas and feelings. They are basically used in giving people health knowledge and facts. The value in using traditional approaches in communication are basically two. First, it is part of people's culture and. secondly, it will be easily understood by people from that particular culture (W.H.O.).

2.0 OBJECTIVES
The unit will explain the traditional method of health information communication and specifically to;-
1. Explain the meaning of health talks
2. Guidelines for preparing a talk
3. Educational use of proverbs educational use of proverbs
4. Dance and song and
5. Characteristics of good story

3.0 MAIN CONTENTS
Health Talks
The most natural way of communicating with people is to talk with them. In health areas, we have many opportunities to talk with people. We can do this with an individual, a small or large group.

Guidelines for Preparing A Talk
The following points must be considered carefully in preparing a talk:
(a) know the group you will meet
(b) select a topic that is appropriate to the group.

(c) Be sure you have correct and up to date information on the topic.
(d) Prepare a list of the points you will make.
(e) Write what you will actually say.
(f) Think of visual aids
(g) Practice your talk.

Proverbs

Proverbs are common sense saying that are handed down from generation to generation. They grow out of experience of people in each culture. They are like advice on how best to behave Proverbs are used to support or illustrate health information or idea that you want to get across.

Educational Use of Proverbs

Proverbs can be combined with talks, demonstrations, stories, dramas or put on posters and flip charts. When you use a proverb correctly, people will be impressed that you understand their culture. They are more likely to follow your advice.

Dance

People communicate ideas through the movement of their bodies. This happens when you move your hands or wink your eyes. In some cultures, traditional dance is used to tell stories. Dance generally, tend to bring people together in fellowship and happiness. It also provides feeling of support in addition to the ideas communicated.

Song

People sing to express ideas and feelings. There are songs about love and sadness. Song may tell the story of famous person or event. Some songs are religious and others are patriotic. Songs are sung to help children fall asleep or celebrate special occasion. They can also help to educate people. Singing comes naturally in certain cultures, but not so in others. Songs can be used to give people ideas about health. If the tune is attractive people will remember the song and the information it contains. Depending on the local culture, songs can be used at the beginning of a health talk, a meeting or any other organised programme, to create enthusiasm and interest. They can also make a meeting end on a happy note.

Stories

Stories may tell about the brave deeds of a village ancestor or heroes. An older person, instead of directly criticizing the behaviour of a youth, may tell; a story to make his points. Story can entertain and make the points. Story can teach history, spread news and information as well as gives lesson about behaviour. Stories can be used to give information and ideas to encourage people to look at their attitudes and values, to help people decide on how to solve their problems.

Characteristics of Good Story

1. The story should be believable
2. The story should be short
3. The story should make a clear point at the end.

Case Study

Case studies are real life experiences. They are based on facts and present events as they really happened. Case studies help people to learn how to solve problems. By reading and listening

to a case (problem) that was faced by another community, people can begin to think of themselves and how to solve their own problems. They will learn from the successes or mistakes of other people in case studies.

How To Use Case Study

Give copies of the case study to the group to read, if they are literate. If the group cannot read. you must read the case study to them. Read slowly and repeat the reading, if there is need. Encourage discussion of the problems raised in the case study by' members. of the group. Encourage everyone to share opinions.

4.0 Conclusion

The traditional methods of health information communication are many some of which include health talks, song, stories, proverbs and case study.

5.0 Summary

Public health students should be able to know explain the meaning of health talks, provide the guidelines for preparing a talk. It is also important to be able to have educational use of proverbs educational use of proverbs. Discussing the dance, song and understand characteristics of good story. Which include but not limited to the story been short, should be believable and the story should make a clear point at the end. One of the factor to considered in preparing a talk should include knowing the group you will meet and select a topic that is appropriate to the group.

6.0 Tutor Marked Assignment

1. Explain how is traditional method of health information communication different from modern method.
2. What are the characteristics of a good story.

7.0 Self Assignment Exercise

List and explain traditional method of health information communication

8.0 References

1. Saidu, R. Euna, M. Amina, P. Saka, M.J. & Jimoh, A.A. G. (2013): An assessment of essential maternal health services in Kwara state, Nigeria. *African Journal of Reproductive Health.* 17(1); 41-48, Published by the Women's Health and Action Research Center University of Benin, Benin City Nigeria. Available online at www.jstor.org/stable/23486136?seq=1#page_scan_tab_contents
2. Saka, M.J. Saka, A.O. & Akinwale, A.S. (2017): Quality of Life of Children with Cerebral Palsy: Accumulative Effect of Physiotherapy Intervention in North Central and South West Nigeria. *African Journal of Physiotherapy and Rehabilitation Sciences*. 9(6);28-34, Published by College of Medicine University of Ibadan Nigeria. Available online at https://www.ajol.info/index.php/ajprs/article/download/181281/170677
3. Saka, A.O. Saka, M.J. Odunewu, M.A. & Akinwale, S.G. (2017): Cost Analysis and Policy Implication of Physiotherapy Management of Cerebral Palsy in Nigeria. *Bayero Journal of Evidenced -Based Physiotherapy*. 3 (2); 1-6, Published by Faculty of Allied

Health Sciences, Department of Physiotherapy, Bayero University Kano, Nigeria. www.college.buk.edu.ngq=node4

CHAPTER TEN UNIT 24
HEALTH INFORMATION COMMUNICATION TOOLS/MEDIA

1.0 Introduction
In health information communication, there are different types of tool or methods used in dissemination of health information

2.0 Objectives
At the time the student completes this unit on health information communicating tools/methods for action, he or she should be able to:
1. Describe appropriate communication methods, media and techniques for presenting various health information and facts etc.
2. Explain methods of presenting health messages to individuals and groups.

3.0 Main Content
Audio Visual Aids
Audio visual aids should be used to reinforce, clarify and give a health talk. or an explanation to clarify relationship and simplify demonstration. They are called AIDS because their role is to support the message.

Flip Charts
Flip chart is a number of posters grouped together that are meant to be shown, one after the other. In this way, several aspects or steps of a central topic can be presented.
Examples of topics that could be put on flip charts include:
(a) prevention of burns

(b) How to dress a small wound.
(c) Human reproduction
(d) Information and instructions.

How to Use Flip Chart
1. Each chart or poster must be discussed completely before you turnup to the next one.
2. Make sure that everyone properly understands each idea.
3. At the end, go back through the charts and review them. Help people remember the talk or information already learnt.

Many types of charts are used to explain relationships.

(a) Anatomical charts, showing basic structure of cells, tissues, organs and systems of organs tha: are available for the use of older students. They enable the class to discuss body structure since structural relationship can be pointed out for all to see.

(b) Organisation charts - show the relationship of the different divisions of health department or other flow of materials, services or functions by means of arrows from one section to another.

Posters
The posters present an idea at a glance. It reminds, it calls attention, it suggests actions very quickly, it arrests attention and presents a sound, true, timely important and appealing message.
A good poster is large enough to be read at the back of the lecture rooms. It has contrasting or striking col ours, clear lettering and wording which is immediately understood. Its message is easy to remember. The health message should be sound and its presentation

Photographs
Photographs are useful educational tools. They produce reality. Photographs can show people new ideas or skills. The following points should be noted in using photographs to communicate messages.
1. The people and the surrounding in the photograph should look similar to the people who are looking at the photograph, except where a contrast is the desired message.
2. The photograph should focus on one clear idea.
3. A series of photographs could be used to show different scenes in a story.
4. Community events such as drama and clean-up campaigns are good subjects for photographs.

Flash Cards
These are usually made on cardboard and consist of words or pictures which can be flashed by hand for quick identification or for memory drills. They are useful in health education in the study of words meaning and for strengthening the immediate recognition of foods with different nutritional values as well as for the study of harmful insects, poison ivy, and other poisonous plants. They can also help to distinguish between poisonous and harmless snakes or mushrooms in situations where this knowledge is important.

Maps
Maps showing limited geographical details may be used to demonstrate many health situations. A spot map of neighbourhood or state can be made to show the distribution of diseases in time of epidemics. A neighbourhood map shows the exact location of an accident. State or national map can be made to show areas of food production, concentrations of population or which states have specific laws or regulations. They bring events from other parts of the world to the classroom. They

present only the things the students should see. They do not confuse important with unimportant details. Projected materials are also useful in underlining the most important points in a talk or lecture, show motion analyses rapid movements, stop motion speeds of an activity like the growth of bacteria which is too slow to watch through the microscope. Dramatic films motivate as well as inform:

Chalkboards

Chalkboards, coloured for effective Contrast with chalk provide the most used medium in presenting visual impressions. They are used for word list diagrams, charts, graphs and sketches. Most classroom and lecture rooms are equipped with chalkboards or other boards that serves the purpose of a chalkboard.

Bulletin-Board Or Tack-Board

This is is usually made of cardboard pressed fibres, soft wood or self-healing cork, Bulletin boards may be devoted to an extensive series of clippings, pictures, charts, maps, and graphs related to current health topic, such as 'Aids". Bulletin boards in the corridors, cafeterias libraries and other rooms may be used for carrying health messages.

Flannel-Boards

Flannel-board is made by covering a sheet of maisonette or similar board with flannel cloth. Cut out flannel figures and pictures mounted on a card with a sand paper back will stick to the surface of the flannel. The ease with which it can be put up and taken down makes the flannel board an interesting device for the presentation of health ideas either directly or connection with class discussion. The flannel board is useful at all levels of instruction and particularly valuable in illustrating series of events or activities in a discussion period. Flannel boards provide a good method for presenting and discussing balanced meals, the basic food groups, the production and distribution of milk, seasonal clothing needs and routes, through which communicable diseases are transmitted.

Magnetic-Board

This is similar in purpose and use to flannel boards. They are metal sets, to which either magnetic pieces or material attached to magnets will adhere.

4.0 Conclusion

The unit describe appropriate communication methods, media and techniques for presenting various health information and facts etc. They include audio Visual Aids, flip chart, the method and types of flip charts. Others are posters, photography, flash card, maps and ranges of boards.

5.0 Summary

Traditionally, in methods of presenting health messages to individuals and groups are many. Depending on circumstances and situation for the presentation of health information messages. In certain condition magnetic board, flannel board, bulletin-board or tack-board, chalkboard may be used.

6.0 Tutor Marked Assignment

1. Classify tool used in health information communication
2. How will you use flip chart to present health information messages to the group of people.

7.0 Self-Assignment Exercise

The was an outbreak of cholera epidemic in your community. You were part of the investigating team How will you present your findings to the LGA council members to support in combating the outbreak?

8.0 References

1. Saka, A.O. Saka, M.J. & Sa'aidu, L.O. (2018): Evaluation of Children With Protein Energy Malnutrition And Level of Malaria Parasitemia in Kwara State, Nigeria. *Annals of Africa Medical Research (AAMR). 1(33);54-57,* Published *by College of Medical Sciences, Abubakar Tafawa Balewa University, Bauchi, Nigeria.* Accessible at https://www.aamronline.org/index.php/aamr/article/view/33
2. Baker, Bert, "How to communicate effectively" California; Kogan Page, 2018 Lewis Roger and John Inglis, "Report writing, the secrets of successful reports", Cambridge National Extension College Trust Ltd, 1992.
3. Tim. Q'Shullivan, "Key concepts in communication" London: Routledge, 2019.
   Wright, Andrew, "How to communicate successfully" Cambridge; University Press. 1987.
4. Saka, M.J. (2008): Development partner and achieving the goal of primary health care. In *Primary Health Care 30 Years After Alma Atta Declaration* Adetokubo Lucas, Azuzu, M.C., and Obionu C.N (ed.) 270- 280. Nigeria: Published by Health Reform Foundation of Nigeria. http://www.herfon.org.ng.
5. Saka, M.J. (2008): Policy and practice of water supply in Nigeria: An Element of Primary Health Care. In *Primary Health Care 30 Years After Alma Atta Declaration* Adetokubo Lucas, Azuzu, M.C., and Obionu, C.N(ed.) 136- 156. Nigeria: Published by Health Reform Foundation of Nigeria. https://www.herfon.org.ng.

CHAPTER ELEVEN UNIT 25
THE MODELS AND TYPES HEALTH INFORMATION UNITS

1.0 Introduction

A health management information unit needs to be well managed if it is to achieve the purpose for which it is established. Such a unit does not stand alone but usually mainstreamed within the structure of an organization. It is therefore affected by the organization's policies and managerial process. Many factors affect the effectiveness and efficiency of a health management information unit. Operators of health management information units are required to observe in-country legislation on protection of classified documents, copy right laws and official secrecy act.

2.0 Objectives

This unit explains the organization of a health management information system unit and specifically to
1. know how HMIS unit operate
2. define HHMIS as a system

3.0 Main Contents

In understanding this, we need to know that an HMIS unit operates as a system which simply can be defined as "a set of units or parts or entities which interact with one another to perpetuate the functional existence of the whole system". It is a set of interrelated elements brought together to achieve a purpose in the environment in which the system exists. It is a group of elements which are related (persons, procedures

organization's, equipment, concepts etc.) in such a way that they influence each other and the behaviour of the elements as a whole. For example, the National Health Information System is a set of people,

Type of Model for HMIS

Procedure and equipment for the purpose of providing information when necessary and required, in a suitable, form for programmes, and international exchanges of health information. Its function is to supply the necessary information for management of the national health programmes at all levels.

In terms of organising the health information system, there are basically two models

a) Decentralised model
b) Centralised model

a. Decentralised model has a hierarchy of levels at which data is collected and information generated for decision making. It has a pyramidal shape from the periphery where much information is collected and used to the apex where less data is generated but strategically used.

Federal Level ……………………………………..

State level ……………………………………

Local Government Areas……………

Health Facilities………………
Communities …………………
Fig 25.1

b. In a decentralised system as above, each level has specified responsibilities.

At central level (the apex of the triangle) duties of the health Information unit include:

1. co-ordinating, centralising, analysing, updating sorting and disseminating health information.
2. designing standard procedures and mechanisms for the notification, recording and use of data.
3. compiling data by special survey meeting national and international commitment concerning health information.

At the intermediate level (state level) duties include:

1. centralising health units reports.
2. analysing, compiling and processing statistical data.
3. notifyingthose concerned of important events which may call for immediate action

At the local levels (LGAs, health facilities, communities)

1. collection of data
2. analysis and information generation
3. use of data

Refer to chapter nine unit 20 on structure, roles & responsibilities of the different levels of government in management of the National Health Management Information System (NHMIS)

5.0 Conclusion

There are different models of HMIS unit. Which may be decentralized and centralized models. The setting up of HMIs unit is a part of systems. That are usually interact with each other.

6.0 Summary
Health management information unit of centralised model does not have such hierarchies of data management. The provision of health information is a central function.

6.0 Tutor Marked Assignment
1. Classify different models of managing HMIS unit
2. What are the main characteristics of decentralized model

7.0 Self-Assignment Exercise
List and explain different level of decentralized model

8.0 References
1. Saka, M.J. (2010): Overview of cancer and cancer registration. In *Non-Communicable Disease in Nigeria*: *The Coming Epidemic* Adetokubo Lucas, Akinkugbe O.O, Onyemelukwe G.C. (ed.) 249-252. Nigeria: Published by Nigeria Health Reform Foundation of Nigeria https://www.herfon.org.ng.
2. Saka, M.J. (2010): Violence Against men. In *Non-Communicable Disease in Nigeria*: *The Coming Epidemic* Akinkugbe O.O. Adetokubo Lucas, & Onyemelukwe G.C. (eds.) 249-252. Nigeria: Published by Nigeria Health Reform Foundation of Nigeria. https://www.herfon.org.ng.

CHAPTER ELEVEN UNIT 26
BASIC CONCEPTS IN MANAGEMENT OF HEALTH INFORMATION UNITS

1.0 Introduction

Health management information systems is an important section of health care delivery services. As such it should be recognize to have a separate unit or department in an hospital set up. This is necessary for optimal function in provision of base line data or evidence-based health information that physician needed to treat the clients.

2.0 Objectives

The unit will discuss basic needs for establishment of HIMIS unit or department and concept of health management information systems. It specifically describes the;

1. Basic requirements needed for set up of HMIS unit or department
2. The form of HMIS operations
3. The basic concept of HMIS

3.0 Main Content

The choice of the type of organization depends on

    i.   Availability of funds;- The decentralized model obviously requires more resource to function than the centralized model.

    ii.   Availability of skilled personnel;- The decentralized model requires that skilled

personnel be placed at different levels of data management for the units to function effectively.

    iii.   Availability of basic equipment to facilitate data management.

    iv.   The structure of the health care system. In a decentralized health care system, the different levels have roles to play to maintain a functional health information unit.

    v.   Roles specified for health management information system within a national health policy.

The Health Management Information System in its operation may be

    i.   Paper based: Here the entire system of data collection, storage, processing will rely on paper- based data collection tools. This is costly to operate as data collection tools have to be continuously available. It is recommended where the IT skills of operators are minimal.

    ii.   Automated: Using computers with specialized software for all the steps in data management. It requires highly skilled personnel and high cost of initiating it.

    iii.   Mixed: This means that some levels rely on use of paper while from other levels processes are automated. The National Health Management Information System practices the mixed type where automation s recommended from LGAs upwards and in big hospitals that have skilled personnel to do this.

> In whatever model we choose, let us bear in mind that approximate information supplied in time is better than exact information supplied too late.

Basic Concepts in Management of Health Information Units

Artificial Intelligence: The concept that computers can be programmed to assume some capabilities normally thought to be like human intelligence, such as learning, adaptation and self-correction.

Compatibility: The ability for computer programs and computer readable data to be transferred from one hardware system to another without losses, changes or programming.

Configuration: The particular choice of hardware and its connection making up a computer system.

Data Base Management System: A set of programs for establishing, sorting, searching and otherwise manipulating the database. It generally permits further calculations and the production of reports.

Data dictionary: The set of standard descriptions of data items and entities which are used in all programs in an organisation. It includes definitions, codes, validation rules, ownership right of access, right of updating.

Decision Support System (DSS): A management information system in which significant analysis is done in order to present reports in a format directly useful for decision.

Distributed data base: A data base which, though conceived as one whole, is held in more the computer. Normally, most of the data files are stored closest to the main user but shared by all.

Duplex: A transmission system allowing data to be transmitted in both directions simultaneously.

Informatics: A comprehensive term covering all aspects of the development and operation of information systems, the supporting computer methodology and technology, and the supporting telecommunication links.

Information Centre: An organization entity charged with providing general support services for

users of information systems.

Information retrieval: The action of recovering information on a given matter from stored data.

Interface: The boundary between two hardware or software system across which data are transferred. An overall term to refer to the physical linkages and procedures, codes and protocols that enable meaningful exchange of programs, commands or data between two computerised systems or devices.

Local area network: A high speed geographically constrained (e.g. office complex) communications arrangement between computing equipment permitting data transfer, sharing of common resources and convenient physical connections to the users.

Network: A set of computers and peripherals connected by communications links.

Office automation: The use of computer-based technology for the purpose of increasing productivity of office workers.

Off-line: Pertaining to the operation of a functional unit when not under the direct control of the computer.

On line processing: Processing performed on equipment directly under the control of the central processor while the user remains in communication with the computer.

Protocol: The formal rules governing the exchange of information in a communication link including format, timing, sequencing and error control.

Secondary Storage: Storage or memory which is not located in the central processor of the computer but is in peripheral media such as tapes, disks, diskettes etc.

Security: The establishment and application of safeguards to protect data, software and computer hardware from accidental or intentional modification, destruction or disclosure.

Telematics: The use of computer-based information processing in telecommunications and the use of telecommunication to allow computers to transfer programs and data to one another.

Telemedicine: The use of Telematics to transmit medical data.

Validation: A process of testing data by applying criteria to them to determine whether they are suitable for entry into a database.

Work station: A specialised terminal with some independent data processing capability.

4.0 Conclusion; -

In establishment of HMIS certain fundamental needs or resources needed for management function include Human (specialized HMIS officer), Money and equipment with another accessory needed.

5.0 Summary

In the section we are able to describe Basic requirements needed for set up of HMIS unit or department. The form of HMIS operations and the basic concept of HMIS

6.0 Tutor Marked Assignment

1. What factors determine the extent of centralisation and/or decentralisation of the health management information system.

2. Explain the following concept in Finagle's Law "The information you have is not what you want; the information you want is not what you need; the information you need is not what you can get; the information you can get costs more than you want to pay

7.0 Self-Assignment Exercise

How will you explain the requirement needed for establishment of HMIS unit in an organization?

8.0 References
1. Saka, M.J., (2019): Financing for Efficient and Qualitative Primary Health Care in Nigeria. *Proceedings of 2nd National Health Conference.* M.C Azuzu, Oshotimehin, B. Obionu, C.N. Okediran W. and I.Y Oloriegbe *(eds)* 2; 80-89, Published by Health Reform Foundation of Nigeria and Department for International Development (DFID). https://www.herfon.org.ng.
2. Bates DW, Gawande AA. Improving safety with information technology. N Engl J Med 2013; 348 (25): 2526-2534.
3. Dixon B, Grannis S. Public Health Informatics Infrastructure. In: Magnuson JA, Fu JPC, editors. Public Health Informatics and Information Systems: Springer London; 2014. p. 69–88.

CHAPTER ELEVEN UNIT 27
THE MINIMUM PACKAGE FOR HMIS UNIT

1.0 Introduction

For the functioning of HMIS units, basic requirements and infrastructure need to be specified as standards. The establishment and management of an effective NHMIS, requires substantial investment by levels of data management or by a central unit in infrastructural development and in technical assistance within and between the levels. Thus, as part of the overall strategy to improve the quality and quantity of health data and information available for decision-making, HMIS units are to be provided with a threshold of minimum package to enable them function effectively.

2.0 Objectives

The ultimate aim of the unit is to provide basic requirements needed for the minimum package for health management information unit with the specific objective are to provide

1. Federal level requirement for setting up HMIS
2. State level requirement for setting up HMIS
3. LGA level requirement for setting up HMIS

3.0 Main Content

 A good example of threshold of minimum package is provided by the National Health

Management Information System programme for the decentralised levels of data management as
shown below.

FEDERAL NHMIS UNIT REQUIREMENTS

1. NHMIS Working Document (plan)
2. NHMIS Operational Manual
3. Adequate office space
4. Office furniture
5. Micro-computers for data processing and storage (10)
6. High capacity printers, photocopiers
7. Full complements of desktop publication (DTP) equipment
8. Appropriate software
9. Telematics: telephone lines (2) with fax, network system, internet, website, VSAT
10. Vehicles: 4-WDR (2), Utility bus (1)
11. Binding machines
12. Digital camera and projectors
13. Power backup and/or Generator
14. GIS Software

HMIS STAFF

1. National Expert/Consultant (1),
2. HMIS specialist (3)
3. Epidemiologist (2),
4. Public Health Specialist (1),
5. Computer Programmer (2),
6. System Manager (1),
7. User-services staff (1),
8. Data Entry and Processing Clerks (6),
9. Office assistance (3)
10. Statistician (2),
11. System Administrator (1).

STATE HMIS UNIT REQUIREMENTS

1. State HMIS Working Document (plan)
2. NH MIS Operational Manual
3. Adequate office space
4. Office furniture
5. Micro-computers for data processing and storage (6)
6. High capacity printers, photocopiers Full complements of DTP equipment
7. Appropriate software
8. Telematics: telephone lines (2) with fax network system, internet, website.
9. Vehicles: 4-WDR (2), Utility bus (1)
10. Binding machines
11. Digital camera and projectors
12. Power backup and/or Generator
13. GIS Software

HMIS STAFF

1. HMI Specialist (2)

2. Epidemiologist (1),
3. Public health specialist (1),
4. Computer Programmer (1),
5. System Manager (1),
6. User- services staff (1),
7. Data Entry and Processing Clerks (3),
8. Office assistance (3)
9. Statistician (2),
10. System Administrator (1).

LGA HMIS UNIT REQUIREMENTS
LGA HMIS Working Document (plan)
1. NHMIS Operational Manual
2. Office space Office furniture
3. Micro-computer (1)
4. Dot Matrix printer (1), photocopier (1)
5. Telematics: telephone lines (1) with fax
6. Motorcycles (2)
7. Binding machines
8. Power backup and/or Generator
9. Geographical Position Machine (GPS)
10. PHE M&E Coordinator

HMIS STAFF.
1. HMIS Specialist (1)
2. PHC Monitoring and Evaluation Coordinator (2),
3. Assistant Monitoring and Evaluation Coordinator (3)
4. System Manager (1).

4.0 Conclusion
In the unit we had discussed a good example of threshold of minimum package is provided by the National Health Management Information System programme for the decentralised levels of data management as shown below

5.0 Summary
Minimum package needed for setting up of HMIS unit at booth Federal, State and LGA levels are very similar. The major resources needed are not only materials, it also included human resources. Importantly, the must be HMIS officers, epidemiologist, systems managers and Mentoring and Evaluation coordinator

6.0 Tutor Marked Assignment
1. For the functioning of HMIS units, basic requirements and infrastructure need to be specified as standards. The establishment and management of an effective NHMIS, requires substantial investment by levels of data management or by a central unit in infrastructural development and in technical assistance within and between the levels

What are the important personnel needed to be functioning at
(a) Federal level
(b) State level
(c) LGA level
2. Explain how HMIs officer make use of infrastructure needed for HMIS minimum package

7.0 Self-Assignment Exercise
List and explain requirements for Federal, State and LGA Level HMIS minimum package

8.0 References
1. Aishatu, B. G. **Saka, M.J**. & Oladayo, B. **(2013):** Co-morbidity Factors Associated with Influenza in Nigeria*: Online Journal of Public Health Informatics***.** 5(1):203-213, Published by School of Public University of **Illinois at Chicago Library** Available online at https://journals.uic.edu/ojs/index.php/ojphi/article/view/4403
2. **Saka, M.J.** Aremu, A.S. & Saka, A.O. **(2014):** Soil-Transmitted Helminthiasis: Prevalence Rate and Risk Factors Among School children in Ilorin, Nigeria. *Journal of Applied Sciences and Environmental Sanitation*. 9(2); 139-145, Published by Department of Environmental Engineering, Sepuluh Nopember Institute of Technology (ITS) University Indonesian, Bogor Available online at www.trisanita.org/jase/index.html

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CHAPTER TWELVE UNIT 28
MONITORING AND EVALUATION

</div>

1.0 Introduction
When you read that the prevalence of low birth weight in a country is 20%, have you ever wondered how this calculation was derived?

Or when you hear that the percentage of married women of reproductive age in a rural area using a modern contraceptive method rose from 52% to 73%, do you wonder how people know this?

These types of statistics and other similar information result from "monitoring and evaluation" or "M&E" efforts. M&E is the process by which data are collected and analyzed in order to provide information to policy makers and others for use in program planning and project management.

2.0 Objectives
The unit will describe and discuss monitoring and evaluation process as it applies to an organization or programme evens. Specifically, to
1. define and describe monitoring and evaluation

2. define and describe evaluation
3. provide examples of programs with monitoring and evaluations interventions

3.0 Main Content
What is Monitoring?
Monitoring* of a program or intervention involves the collection of routine data that measure progress toward achieving program objectives. It is used to track changes in program performance over time. Its purpose is to permit stakeholders to make informed decisions regarding the effectiveness of programs and the efficient use of resources.

Monitoring is sometimes referred to as **process evaluation** because it focuses on the implementation process and asks key questions:
> ➢ How well has the program been implemented?
> ➢ How much does implementation vary from site to site?
> ➢ Did the program benefit the intended people? At what cost?

Monitoring is **counting, tracking, tracing** and **collecting** of clients for examples
1. Counting clients seen or number of health workers trained
2. Trancing condom distributed
3. Tracking programe events
4. Collecting data on clinic clients

Monitoring:
> ➢ is an ongoing, continuous process;
> ➢ requires the collection of data at multiple points throughout the program cycle, including at the beginning to provide a baseline; and
> ➢ can be used to determine if activities need adjustment during the intervention to improve desired outcomes.

What is Evaluation?
Evaluation measures how well the program activities have met expected objectives and/or the extent to which changes in outcomes can be attributed to the program or intervention. The difference in the outcome of interest between having or not having the program or intervention is known as its "impact," and measuring this difference and is commonly referred to as "**impact**

Evaluations require:
> ✓ data collection at the start of a program (to provide a baseline) and again at the end, rather than at repeated intervals during program implementation;
> ✓ a control or comparison group in order to measure whether the changes in outcomes can be attributed to the program; and
> ✓ a well-planned study designs

Monitoring or evaluation?;- Check to see if you know whether the following situations call for "monitoring" or "evaluation."
I. The National Population Commission wants to know if the programs being carried out in district A are reducing unintended pregnancy among adolescents in that district.
II. USAID wants to know how many sex workers have been reached by your program this year.
III. A country director is interested in finding out if the post-abortion care provided in public clinics meets national standards of quality.

HERE ARE THE ANSWERS:

I. The National Population Commission wants to know if the programs being carried out in province A are reducing unintended pregnancy among adolescents in that province.
*This is **evaluation** because it is concerned with the impact of particular programs.*

II. USAID wants to know how many sex workers have been reached by your program
*This is **monitoring** because it is concerned with counting the number of something (sex workers reached).*

III. A country director is interested in finding out if the post-abortion care provided in public clinics meets national standards of quality.

This is **monitoring** because it requires tracking something (quality of care).

Why Is Monitoring and Evaluation Important?

Monitoring and evaluation help program implementers:

a. make informed decisions regarding program operations and service delivery based on objective evidence;

b. ensure the most effective and efficient use of resources;

c. objectively assess the extent to which the program is having or has had the desired impact, in what areas it is effective, and where corrections need to be considered; and meet organizational reporting and other requirements, and convince donors that their investments have been worthwhile or that alternative approaches should be considered.

d. meet organizational reporting and other requirements, and convince donors that their investments have been worthwhile or that alternative approaches should be considered.

When Should Monitoring Evaluation (M&E) Take place?

I. M&E is a continuous process that occurs throughout the life of a program.

II. To be most effective, M&E should be planned at the design stage of a program, with the time, money and personnel that will be required calculated and allocated in advance.

III. Monitoring should be conducted at every stage of the program, with data collected, analyzed and used on a continuous basis.

IV. Evaluations are usually conducted at the end of programs.
However, they should be planned for at the start because they rely on data collected throughout the program, with baseline data being especially important.

Do you know that the rule of thumb is that 5-10% of the total budget should be Monitoring and Evaluation

4.0 Conclusion

Monitoring and evaluation are important components of programe events, while monitoring look at the event that is ongoing the evaluation measure at the end of the events.

5.0 Summary

Monitoring is said to occur when you count, track or trace or measure process programme or events or activity in relation to objectives. However, when how well a program interventions outcome is achieved evaluation is said to have taken place. So also, when observed differences in outcome of programme in relation to intervention is measure evaluation is said to have taken place.

6.0 Tutor Marked Assignment

1. With aid of diagram explain monitoring and evaluation
2. Why is monitoring sometimes call process evaluation

7.0 Self-Assignment Exercise
1. What are the differences between evaluation and Monitoring

8.0 References

1. Monitoring and Evaluation fundamentals a self-guide minicourse MEASURE Evaluation Carolina Population Center University of North Carolina at Chapel Hill 206 W. Franklin St. Chapel Hill, NC 27516 USA. Edition 2019.

2. Bertrand JT, Escudero G. *Compendium of Indicators for Evaluating Reproductive Health Programs*. *MEASURE Evaluation Manual Series No. 6.* Chapel Hill, NC: MEASURE Evaluation project, Carolina Population Center; 2016.

3. Marsh D. Results framework & performance monitoring [online slides]. Save the Children, 1999. Accessed September, 2109 at http://www.childsurvival.com/tools/Marsh/sld001.htm.

4. MEASURE Evaluation. *A Trainer's Guide to the Fundamentals of Monitoring and Evaluation for Population, Health, and Nutrition Programs. MEASURE Evaluation Manual Series No. 5.* Chapel Hill, NC: MEASURE Evaluation project, Carolina Population Center; 2012. Available at: http://www.cpc.unc.edu/measure/publications/html/ms-02-05.html.

5. Mosley WH, Chen LC. An analytical framework for the study of child survival in developing countries. *Popul Devel Rev.* 2019;10(Suppl):25-45.

6. Rossi PH, Freeman HE, Lipsey M. *Evaluation: A Systematic Approach*. Thousand Oaks, CA: Sage Publications; 2019.

7. International Fund for Agricultural Development. Annex A. Glossary of M&E Concepts and Terms. *A Guide for Project M&E.* Available at: http://www.ifad.org/evaluation/guide/annexa/index.htm

8. United Nations Development Programme. Glossary. *Handbook on M&E for Results.* Available at:http://stone.undp.org/undpweb/eo/evalnet/docstore3/yellowbook/glossary/glossary_d_e.htm

9. United Nations Population Fund. Programme Manager's Planning, Monitoring & Evaluation Toolkit. Tool Number 1: Glossary of Planning, M&E Terms. March 2014. Available at: http://www.unfpa.org/monitoring/toolkit/glossary.pdf