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**MT 14 – I**

**Health Information Systems**

* any system that captures, stores, manages or transmits information related to the health of individuals or the activities of organizations that work within the health sector.

Health information systems play a vital role in improving the quality and efficiency of healthcare by Ensuring access to essential information Delivery of essential information. Health Information Systems can be a powerful tool to make healthcare delivery more effective and far more efficient.

**Background**

From the early 1960s through the 1970s, a new era of computing in healthcare emerged. A large group of hospitals in the western world agreed on the necessity to advance a patient information management system. These hospitals heavily invested money, time, and effort to move toward computerization Seeing the sudden surge of interest among the hospitals, some commercial companies also joined in an effort to support patient information systems. During the late 1970s and early 1980s, computerization began to be seen as a magic bullet for controlling and managing the large medical and other administrative data processed on a daily basis.

Nowadays, it is hard to imagine healthcare without Information and Communication Technology (ICT). Medical data range from demographics of patients to clinical and health services data to epidemiological and health population statistics.

incorporates things such as:

* district level routine information systems,
* disease surveillance systems, and
* also includes laboratory information systems,
* hospital patient administration systems (PAS) and
* human resource management information systems (HRMIS).

Must consider all areas of a hospital:

* Wards
* Outpatient units
* Service units (diagnostic, therapy and others)
* Administrative departments
* Management/executive units

Must consider all groups of persons:

* Physicians
* Nurses administrative staff
* Technical staff
* Health informaticians/health information managers
* Patients
* Visitors
* suppliers

**OBJECTIVES OF HIS**

1. RAPIDLY DETECT AND RESPOND TO HEALTH PROBLEMS AND EPIDEMICS
2. MONITOR TRENDS IN HEALTH STATUS AND CONTINUALLY ADDRESS HEALTH-CARE PRIORITIES
3. EVALUATE THE EFFECTIVENESS OF INTERVENTIONS AND SERVICE COVERAGE
4. ENSURE THAT RESOURCES ARE CORRECTLY TARGETED TO THE AREAS AND GROUPS OF GREATEST NEED
5. EVALUATE THE QUALITY OF HEALTH INTERVENTIONS

**1. RAPIDLY DETECT AND RESPOND TO HEALTH PROBLEMS AND EPIDEMICS**

To ensure that each health agency is rapidly alerted to a suspected outbreak, it is necessary to set up an early warning and response system (EWARS) from the onset of an emergency. As soon as the situation permits this function should be integrated within the broader objectives of an HIS. This is one of the most immediate and specialized functions of the HIS

**2. MONITOR TRENDS IN HEALTH STATUS AND CONTINUALLY ADDRESS HEALTH-CARE PRIORITIES**

Monitoring health status allows health managers to observe trends in the health profile of a population, detect the emergence of new health problems and continually address public health priorities. This is closely integrated with timely dissemination and sharing of information with field partners, UN agencies, Ministries of Health (MoH) and donors. Mortality data are collected from health facilities, community health programs, and referral hospitals.

Morbidity data on injuries, health conditions and diseases are collected from health facilities providing outpatient services, inpatient wards, nutrition centers, mother-child health (MCH) clinics, and community health workers. Age, sex and cause-specific data allow planners to identify priority areas and groups within the population and determine whether programmes are equitable and resources effectively allocated.

**3. EVALUATE THE EFFECTIVENESS OF INTERVENTIONS AND SERVICE COVERAGE**

If the utilization rate is lower than expected, it may indicate inadequate access to health facilities (e.g. due to insecurity or poor capacity of health services).If the rate is higher, it may suggest over-utilisation due to a specific public health problem (e.g. infectious disease outbreak) or under- estimation of the target population.

Coverage can be affected by the acceptability of the programme, location of delivery points, security for staff and those requiring treatment, waiting times, service quality and the extent of home visiting. E.g., prevalence of acute malnutrition and vaccination coverage. The HIS also allows health planners to monitor the impact of specific health interventions, by comparing health indicators in the population before and after the intervention was started. For example, monitoring a reduction in malaria incidence after implementation of vector control programme, or increase in vaccination coverage after a targeted community campaign.

**4. ENSURE THAT RESOURCES ARE CORRECTLY TARGETED TO THE AREAS AND GROUPS OF GREATEST NEED**

Key stratifies such as age, sex, refugee or host national status, and geographical location are used to describe trends and grant visibility to vulnerable groups. Special efforts should be made to ensure balanced male and female representation across all health service. Special consideration is also given to the refugees because they are important contributions to numerators such as consultation rates, bed occupancy, and drugs and usage of other consumables.

Appropriate disaggregation is also important to prioritise high-risk groups within specific health programmes. For example, the under 18 age group is given particular attention within Reproductive Health and HIV/AIDS programmes to emphasize the unique reproductive and sexual health needs of young people.

**5. EVALUATE THE QUALITY OF HEALTH INTERVENTIONS**

Health programmes should continually monitor service quality through measures of community participation, programme acceptability (e.g. the rate of defaulting) and programme coverage.

Rates of hospitalisation, outpatient service utilisation and admission and discharge can also provide useful indicators of the appropriateness of health seeking behaviour in a community

**An information system is described as having five components.**

* Computer hardware.
* Computer software. The hardware needs to know what to do, and that is the role of software
* Telecommunications
* Databases and data warehouses
* Human resources and procedure

**Types of Health Information Systems**

Decisions support systems, simulation systems, financial forecasting, performance assessment

**Strategic information systems**

Management information systems

**Tactical information systems**

Electronic patient records, payroll, invoicing systems, patient administration systems, purchasing/inventory, office automation

**Operational information systems**

**Components of a HIS**

* **Inputs**
* HIS resources
* **Processes**
* Indicators
* Data sources
* Data Management
* **Output**
* Information products
* Dissemination and use

**Assessment of a HIS**

**Health Metrics Network tool**

* Use to assess components of HIS on a scale of 0-100%
* 0-24% = not adequate
* 25-49% = present but not adequate
* 50-74% = adequate
* 75-100% = highly adequate

**Cameroons HIS**

* Assessment outcome 2007 place His at 45% i.e...
* Characterized by:
* Personnel with inadequate knowledge on HIS.
* Untimely and failure to report data
* Inadequate resources

**Benefits of HIS**

Investment in HIS may result in many benefits (WHO):

* Helping decision makers to detect and control emerging and endemic health problems, monitor progress towards health goals, and promote equity
* Empowering individuals and communities with timely and understandable health-related information, and drive improvements in quality of services
* Strengthening the evidence base for effective health policies, permitting evaluation of scale-up efforts, and enabling innovation through research;
* Improving governance, mobilizing new resources, and ensuring accountability in the way they are used.

**HIS have the ability to link the following major players:**

* Laboratories
* Pharmacies
* Researchers
* Doctors and consultants
* Banks and financial institutions
* Administrators
* And knowledge managers

**HIS should provide:**

* information, primarily about patients, in a way that it is correct, pertinent and up to date, in time, accessible by the right persons at the right site in a usable format
* knowledge, primarily about diseases, but also, for example, about the effects of drug interaction, to support diagnosis and therapy
* information about the quality of patient care, hospital performance and costs

**Characteristics**

1. Patient centered information systems

Manage comprehensive patient care information such as medical records, appointment scheduling, theatre management.

1. Clinical information systems (CIS)

Perform specific tasks including collection of specific data for patient care, research, management, planning and maintenance of national data repositories

CIS are used for administrative support, patient data collection, decision support, image analysis, monitoring, reporting, assessment and research

1. Laboratory information systems

In high demand when a large number of tests generate large data. Samples are analyzed fully automatically, and the results are computer generated

Support clinician to analyze trends to assess treatment effects.

1. Pharmacy information systems

Include functions such as keeping patients’ medication records, checking prescriptions, and providing drug prescriptions and administration to physicians and nurses.

1. Hospital information systems

Support healthcare activities at the operational, tactical and strategic levels. Encompass patient management, administration, facilities management and medical applications. Contain database systems, data communication facilities.

1. Telemedicine

Facilitates exchange between primary care physicians and specialists as well as patients from disperse locations. Allows physicians to practice medicine at a distance.

Sources:

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