Health information system
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Associate Professor Dr. Eman A. Al-Kamil

Dep. Of Community Medicine

Collage of Medicine

Hashemite University

? What is Healthcare Information System ?

Objectives

➢ Definition

➢ Importance of a Health Information System.

➢ Uses of Health Information.

➢ Sources of Health information system.

➢ Information Quality.

➢ Difficulties in Managing Data

Health information system (HIS)

HIS " a set of interrelated components working together to gather, retrieve, process, store and disseminate information to support the activities of health system planning, control, coordination and decision-making, both in management and service delivery"

Importance of a Health Information System
 Produces information needed by patients, communities, service providers, program managers, policy-makers, providers of funds, global agencies and organizations.

The ultimate objective of health information system is not "to gain information" but "to improve action"

Uses of Health Information

• To measure the health status of a community.

• To identify health problems , and medical and health care needs.

• For comparison

• For planning , administration and evaluation of health care services and programs.

• For research into community health problems.

• Assessing level and attitudes of user's satisfaction with health system.

Information used for:

1. Better management, assess coverage and quality of services; costs and expenditures.

2. Detect and control emerging and endemic health problems

3. Monitor progress towards health goals; and

4. promote equity.

Sources of Health information system

1. **Census**

2. **Vital statistics:** Births, death, marriage, divorce.

3. **Demographic:** age, sex, education, socioeconomic.

4. **Notification of Diseases**

5. **Health institutions and organizations:** hospitals, clinics, specialized register centers, WHO etc……

6. **Epidemiological studies.**

7. **Population (household)surveys.**

8. **Research**

Associate Professor Dr Eman Al-Kamil

Census:

Census is an important source of health information.

- It is the complete count of a country population.

- Taken in most countries of the world at regular intervals, usually of 10 years.

- It consists of collection of data i.e., social, demographic and health related factors.

It's the biggest source of comprehensive data on :

- Demography

- Economic Activity

- Literacy & Education

- Housing & Household facilities

- Urbanization

- Fertility and Mortality

- Language, Religion & Migration

STRENGTHS

• Covers the whole population; small geographic units .

• Equity information .

• Data for mortality and fertility for different levels of geographic areas

• Important source for planning and implementation of various activities and programs at smallest geographic unit

LIMITATIONS

❖ Two types of error :
  - coverage and content error.

❖ Age misreporting.

❖ There is no direct question on deaths.

❖ Unable to give the demographic estimates for the period between two censuses.

Registration of Vital Events and statistics

- It keeps a continuous check on demographic changes

- If registration of vital events is complete and accurate, it can serve as a reliable source of health information.

- Preparing health indicators, such as infant mortality rates, neonatal mortality rates, post-neonatal mortality rates, maternal mortality rates, etc.

- Maternal and child health services for planning and evaluation.

- Fertility data in family planning. Births, death, marriage, divorce

Notification of Diseases

➢ Historically notification of infectious diseases was the first health concern.

➢ The primary purpose of notification is to effect prevention and/or control of the disease.

➢ It is a valuable source of morbidity data i.e., the incidence and distribution of certain specified diseases which are notifiable.

➢ International Health Regulation included: Cholera, Plague , Yellow Fever , relapsing Fever, Polio, Influenza, Malaria, Rabies, Salmonellosis are to be notified to WHO.

Strength:

➢ provides valuable information about fluctuations in disease frequency.

➢ It also provides early warning about new occurrences or outbreaks of disease.

➢ The concept of notification has been extended to many non- communicable diseases and conditions notably cancer, congenital malformations, mental illness, stroke and handicapped persons.

Limitations :

(a) notification covers only a small part of the total sickness in the community .

(b) the system suffers from under-reporting .

(c) many cases especially atypical and subclinical cases escape notification due to non-recognition, e.g., typhoid, rubella, non- paralytic polio, etc

Health institutions and organizations

Hospital Records:
USEFULNESS
 • Geographic sources of patients.
 • Age and sex distribution of different diseases and duration of hospital stay.
• Distribution of diagnosis .
• Association between different diseases.
• The period between disease and hospital admission.
• The distribution of patients according to different social and biological characteristics,
 • The cost of hospital care.

Drawbacks

1. They constitute the "tip of the ICE-BERG."(they provide information on only those patients who seek medical care, but not on a representative sample of the population.)
2. Admission policy varies from hospital to hospital.

3. There are no precise boundaries to the catchment area of the hospital.

4. Population served by a hospital.

Disease Registers "Registration“:

Specialized Centers
i.e. National Cancer Center , National Diabetes Center

• Disease registers allow follow-up of patients and provide a continuous account of the frequency of disease in the community.

• describe the natural course of disease, especially chronic disease in different parts of the world.

STRENGTHS

➢ Used for service management

➢ Yearly data on services rendered, Monthly data possible and in few cases monthly data are being compiled.

➢ Basis for disease surveillance systems to detect outbreaks.

➢ Useful in measuring performance of facilities and its monitoring .

➢Generates data on state specific schemes for local planning and surveillance

LIMITATIONS

➢ Excludes those not accessing the services .

➢ Incompleteness and data quality, Reporting problems, irregularity and Data duplication & inconsistency

➢ Private sector often not included .

Epidemiological Surveillance

• Surveillance systems are often set-up in case where a disease is endemic e.g., Malaria, tuberculosis, leprosy, etc.

• To report

• To know the result of efforts to control the diseases.

These programs have yielded considerable morbidity and mortality data for the specific diseases.

Environmental Health Data

It may be:
- Physical: air, water , noise and radiation pollution.
- Biological: microorganisms
- Chemicals
- Industrial intoxicants

- Inadequate waste disposal and other aspects of the combination of population explosion with increased production and consumption of material goods.

Environmental data can be helpful in the identification and quantification of factors causative of disease.

POPULATION SURVEY

Household survey:

➤A health information system should be population-based.

➤ The routine statistics collected from the above sources do not provide all the information about health and disease in the community.

➤ The term "health surveys" is used for surveys relating to any aspect of health - morbidity, mortality, nutritional status, etc.

Strength:

❖ It can be representative to the larger population.

❖ Represents the heterogeneity of the population regarding :

- living conditions,

- socioeconomic ,

- health status, i.e., fertility , mortality and morbidity.

Weakness

❖Information provided by the respondent is often inaccurate (response error).

❖Information requested is not provided at all (non-response problems).

❖Information incomplete.

❖ Time consuming and costly.

❖ Represents current (temporary) situation.

Computerization and health care:

■Most clinical facilities are looking towards achieving seamless integration of services based on a clinical "intranet" and deployment of full electronic records.

■These developments open a wealth of opportunities and promise benefits; however, they bring with them several important concerns and risks, at the root of which are security issues.
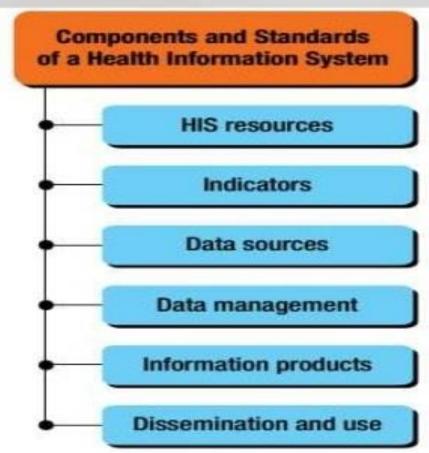
■ Computerized and hard copy information differ in two fundamental ways.

■One difference relates to perception:

■hard copy is something we are all familiar with and feel that we understand.

■By contrast, information that is stored in electronic form is mysterious and therefore a source of anxiety.

■ Professionals and the public are more concerned about the security of electronic records, especially not knowing where they are stored or who controls them.

■This may lead to failure of computerized systems.

Components of a HIS

- **Inputs**
  - ✓ HIS resources

- **Processes**
  - ✓ Indicators
  - ✓ Data sources
  - ✓ Data management

- **Output**
  - ✓ Information products
  - ✓ Dissemination and use

Components and Standards of a Health Information System

- HIS resources
- Indicators
- Data sources
- Data management
- Information products
- Dissemination and use

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Information Quality

Accurate	Is there any incorrect value in the information?
Complete	Is information in agreement with detailed information?
Consistent	Is summary information in agreement with detailed information?
Timely	Is the information current with respect to the needs?
Unique	Is each transaction and event represented only once in the information?

Difficulties in Managing Data

1. Amount of data increases exponentially.

2. Data are collected by many individuals using various methods and devices.

3. Data come from many sources i.e., institutions.

4. Data security, quality and integrity are critical.

5. An ever-increasing amount of data needs to be considered in making organizational decisions.

Recommendations

- **Sensitization** of stakeholders involved with the HIS on its importance and components
- **Assignment** of skilled personnel to the HIS unit accompanied by better remuneration
- The **dissemination** and use of information from the system for decision-making.
- More emphasis on **electronic** than paper-based data reporting

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