

Zaytouna International University

Faculty of Information Engineering

Distributed programming

Seminar on:

Storage of and access to medicines, patient information and a difference between the Health Information Management System (HMIS) and electronic medical records (EMR)

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Second year

Distributed Systems and Health Information System (HIS)

Introduction

Distributed systems play a crucial role in improving the quality and efficient delivery of healthcare services. They help enhance coordination among healthcare providers and promote patient safety.

Definition of Distributed Systems

Distributed systems are networks composed of multiple connected computers that work together to achieve a common goal. Data and tasks are distributed across these devices to enhance performance, flexibility, and availability.

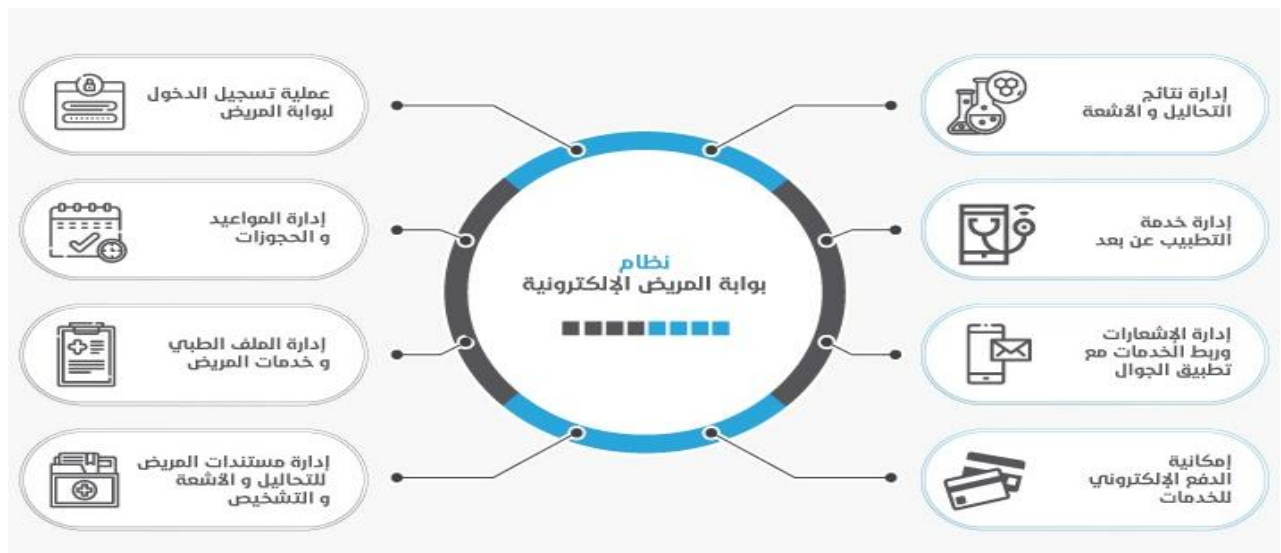
Use of Distributed Systems in Healthcare

Medication Storage and Management

- Distributed Database: Store medication information in distributed databases across hospitals and pharmacies, facilitating tracking and management of medications.
- Tracking Systems: Monitor medications from production to distribution using advanced tracking systems that provide real-time updates.
- Automated Inventory Systems: Use technologies like RFID and the Internet of Things (IoT) to automatically track the movement of medications within warehouses.

Patient Information Management

- Electronic Medical Records (EMR): Store patients' digital records in distributed databases that can be accessed from any network-connected hospital or clinic.
- Integrated Care Systems: Allow the healthcare team simultaneous access to patient information, enhancing the quality of care and coordination.
- Teleconsultation Services: Enable doctors to provide remote medical consultations by sharing reports and radiographic images.



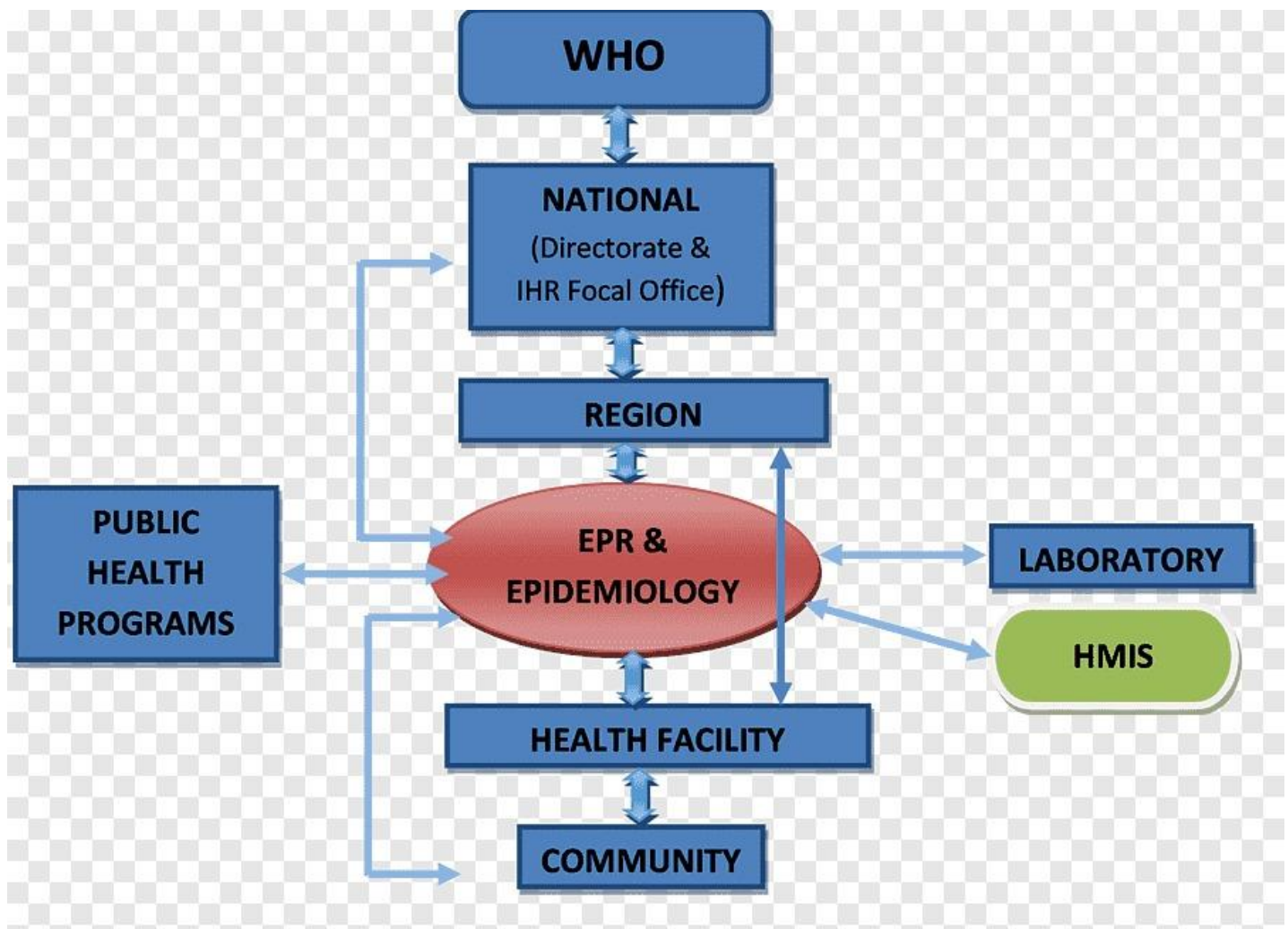
Health Information System (HIS)

Definition of Health Information System

A Health Information System is a collection of systems and applications for gathering, storing, managing, and transmitting data related to healthcare, including clinical, administrative, and financial data.

Components of Health Information System

1. Electronic Medical Records (EMR)
2. Hospital Information System (HIS)
3. Laboratory Information System (LIS)
4. Pharmacy Information System (PIS)
5. Radiology Information System (RIS)
6. Public Health Information System (PHIS)



Benefits of Health Information System

1. Improved Quality of Healthcare: Provides quick and accurate access to data.
2. Cost Reduction: Enhances operational efficiency and reduces the need for paperwork.
3. Enhanced Communication: Facilitates communication among healthcare providers.
4. Data Analysis: Assists in medical research and strategic planning.

Comparison between Health Information System and Electronic Medical Record

Scope

- Health Information System: Includes health and administrative data across the healthcare institution.
- Electronic Medical Record: Focuses on individual patients' medical records.

Integration

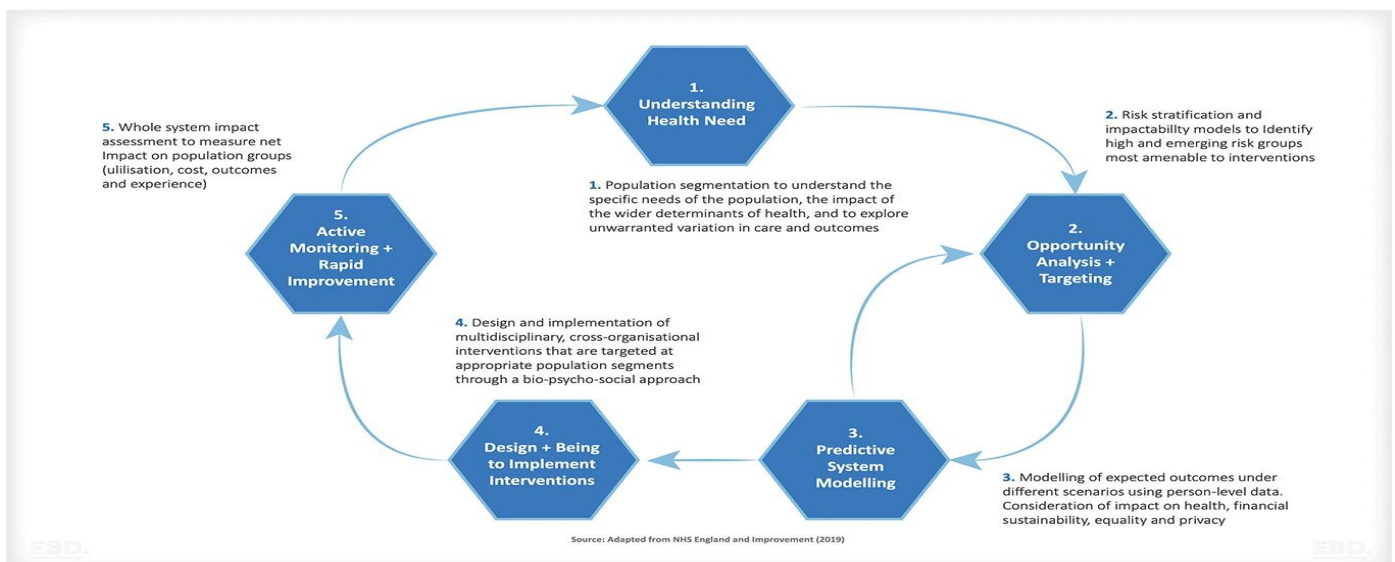
- Health Information System: Requires integration between various systems and applications.
- Electronic Medical Record: Can be a part of the larger Health Information System.

Usage

- Health Information System: Used for managing and analyzing data to improve internal operations.
- Electronic Medical Record: Used for accessing and updating patient information.

Benefits

- Health Information System: Enhances the overall efficiency of the healthcare institution.
- Electronic Medical Record: Improves the quality of healthcare provided to patients.



Technical Diagram of the Health Information System (HIS)

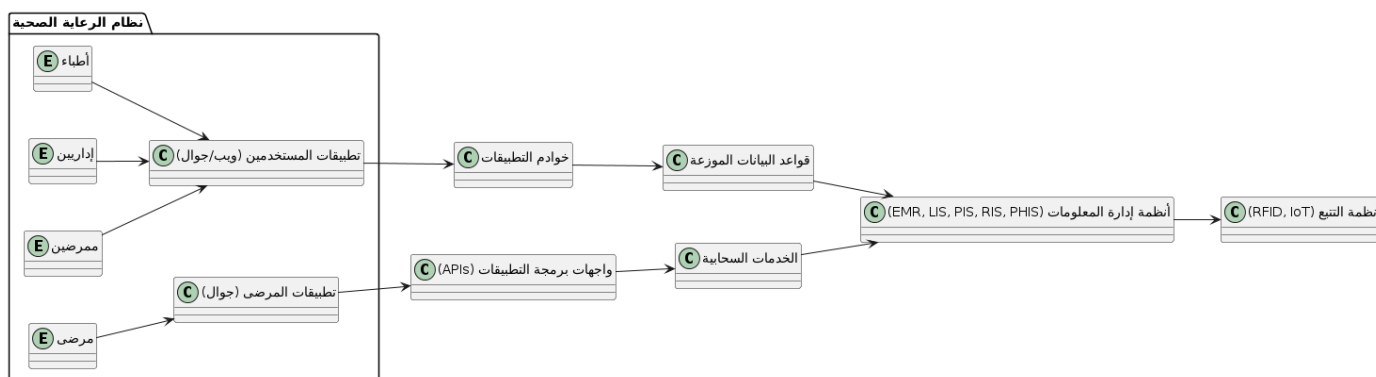
Key Components

- Users: Doctors, nurses, administrators, patients
- Applications: User applications, web applications, mobile applications
- Application Servers
- Distributed Databases
- APIs (Application Programming Interfaces)
- Cloud Services
- Information Management Systems: EMR (Electronic Medical Records), LIS (Laboratory Information System), PIS (Pharmacy Information System), RIS (Radiology Information System), PHIS (Public Health Information System)
- Tracking Systems: RFID (Radio-Frequency Identification), IoT (Internet of Things)

Technologies Used

- Distributed Database
- Cloud Computing
- APIs (Application Programming Interfaces)
- Tracking Technologies: RFID and IoT (Internet of Things)
- Synchronization Protocols: Paxos or Raft

Technical Diagram



Summary

Distributed systems and Health Information Systems (HIS) are crucial tools for improving healthcare. With their ability to efficiently store and exchange information, healthcare institutions can provide better patient care while improving resource management and reducing costs.