Al-Mustaqbal University College
Intelligent medical systems department
Class: First
Subject: Introduction to Medical Informatics
Lecturer: Dr. Ali Kareem Abbas
Lecture: (3)

Electronic Health Record (EHR)

Introduction

EHRs are software that can securely document, store, retrieve, share, and analyze information about an individual patient's care, which is hosted either locally or remotely, with remote systems being "cloud based" or "Internet based."

- There is no topic in health informatics as important, yet controversial, as the electronic health record (EHR).

- In spite of fledgling EHRs being around for the past 35-40 years they are still controversial in the eyes of many.

- In 1991, Institute of Medicine (IOM) recommended EHR as a solution for many problems.

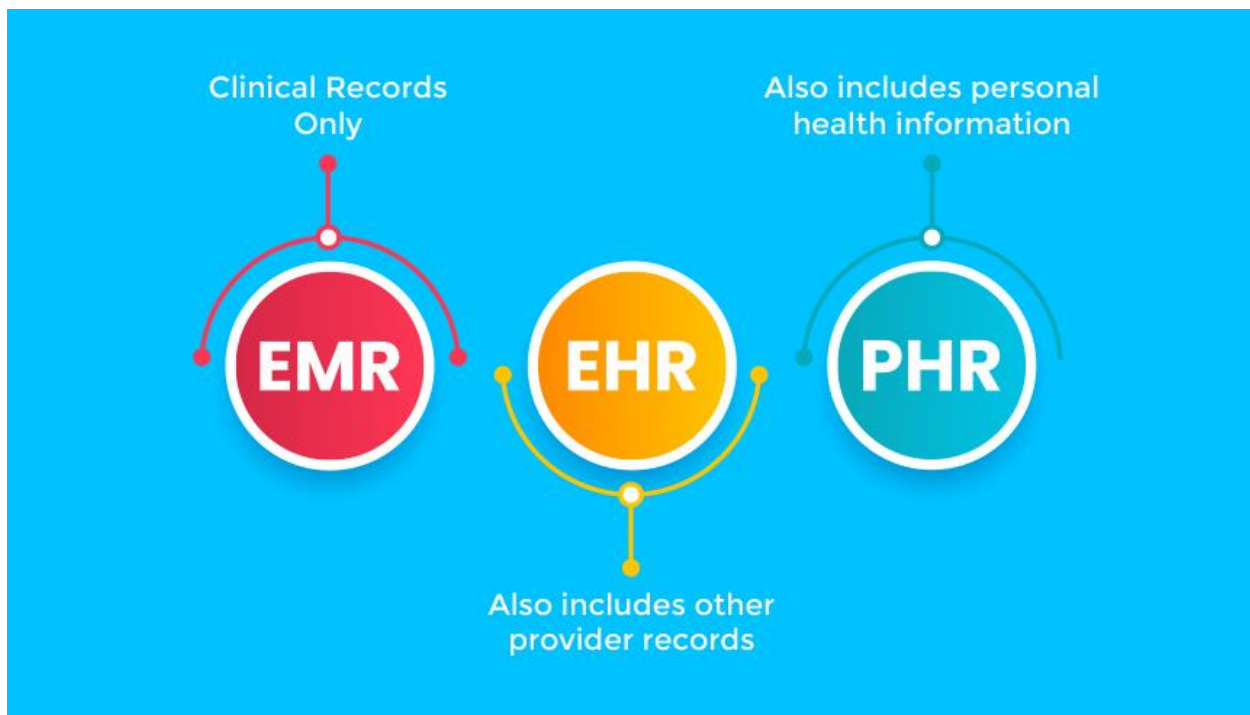- The Computer-Based Patient Record: An Essential Technology for Health Care.

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Definitions

Electronic Health Record: "An electronic record of health-related information on an individual that conforms to nationally recognized interoperability standards and that can be created, managed and consulted by authorized clinicians and staff across more than one healthcare organization"

Electronic Medical Record: "An electronic record of health-related information on an individual that can be created, gathered, managed and consulted by authorized clinicians and staff within one healthcare organization."

Personal Health Record: "An electronic record of health-related information on an individual that conforms to nationally recognized interoperability standards and that can be drawn from multiple sources while being managed, shared and controlled by the individual.
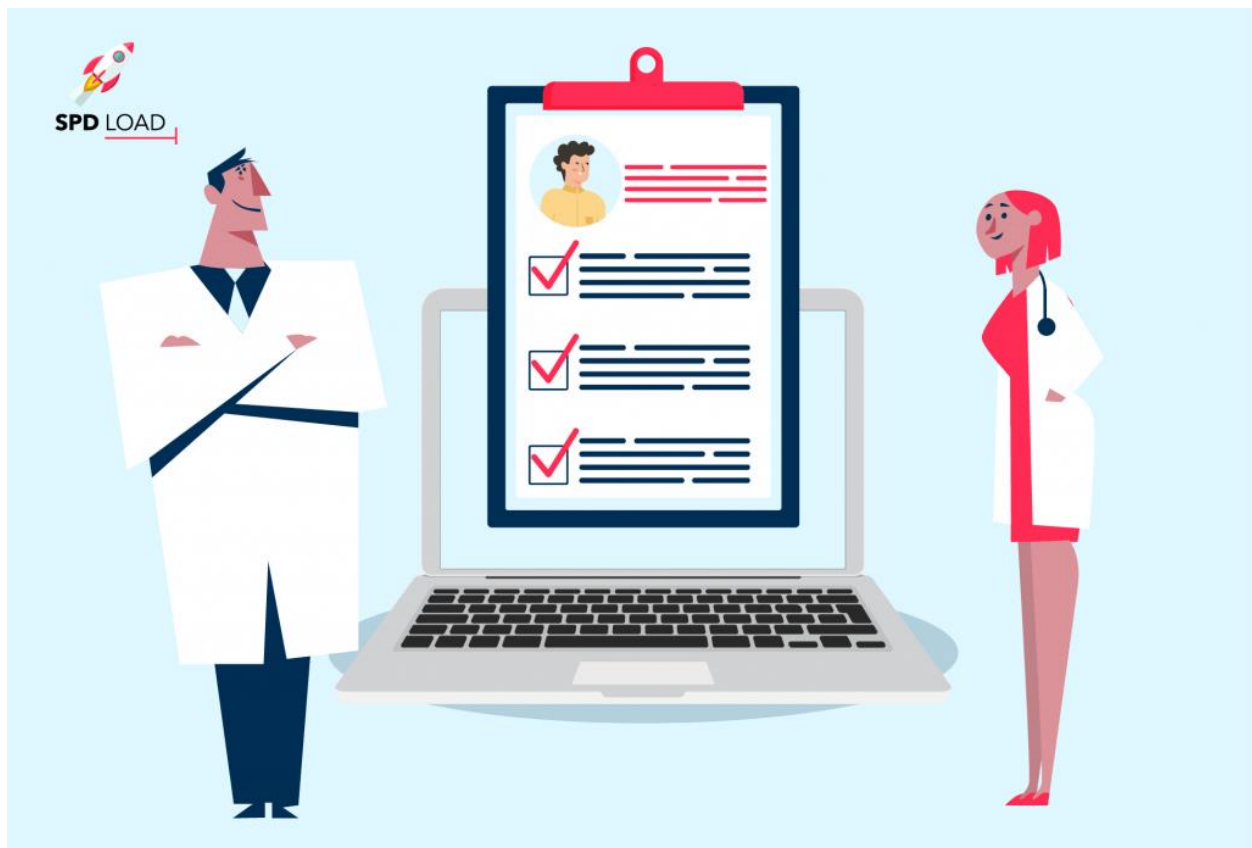

Why do we need EHRs?

The following are the most significant reasons why our healthcare system would benefit from the widespread transition from paper to electronic health records

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- Paper records are severely limited.

- Need for improved efficiency and productivity.

- Quality of care and patient safety.

- Public expectations.

- Financial savings

- Technological advances

- Need for aggregated data

- EHR as a transformational tool

- Need for coordinated care

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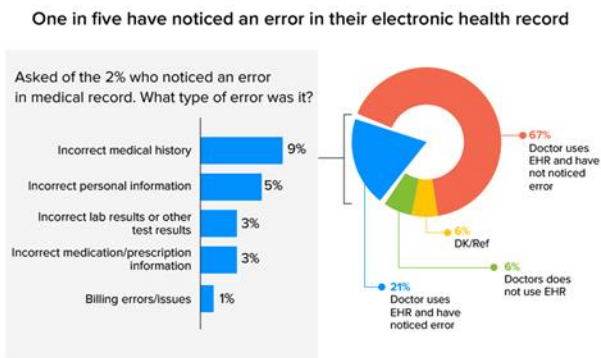Lecturer: Dr. Ali Kareem Abbas
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Advantages of EHRs

❖ EHRs have many advantages compared to EMRs, which can include:

1. Viewing a more complete patient medical history, diagnoses, medications, treatment plans, immunization dates, allergies, radiology images, and laboratory test results from one or multiple clinicians or health systems.

2. Accessing to evidence-based tools that can help clinical decision making.

3. Automating and streamlining provider workflows

4. Allowing a patient's medical information to move with them and enable physicians to stay apprised of their care with other physicians

Electronic Health Record Key Components

- Clinical decision support system (CDSS)
- Secure messaging (e-mail)
- Computerized physician order entry (CPOE)
- Practice management
- Referral management
- Results retrieval
- Prior encounter retrieval
- Patient reminders
- Electronic encounter notes
- Multiple input methods
- Access via mobile technology
- Remote access from home
- Electronic prescribing
- Integration with images
- Integration with physician and patient education
- Public health reporting
- Problem summary lists
- Ability to scan in data
- Ability to graph and track results
- Ability to create patient lists
- Ability to create registries
- Privacy/security compliance
- Robust backup systems
- Support for client server or
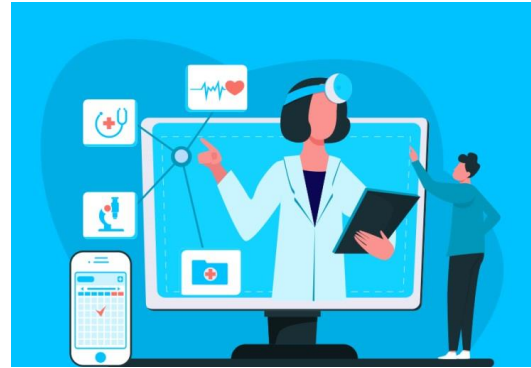- application service provider (ASP) modes

Computerized Physician Order Entry (CPOE)

CPOE is an EHR feature that processes orders for medications, lab tests, imaging, consults and other diagnostic tests.

  ➢ CPOE has many potential benefits:

- Reduce Medication Errors

- Reduce costs

- Reduce Variation of Care

- Unintended adverse consequences

- Clinical Decision Support system (CDSS) : "any electronic or nonelectronic system designed to aid directly in clinical decision making, in which characteristics of individual patients are used to generate patient-specific assessments or recommendations that are then presented to clinicians for consideration.

- *Types of CDSS:*
  * **Knowledge support**: Up To Date, diagnostic (ICD- 9,10, and others) codes, and *infobuttons*.
  ∗ **Calculators**: appropriate antibiotic dosing

- **Flow charts and graphs**: to look at lab or vital sign trends over time

- **Medication order support**

- **Reminders**: remind clinician or patient about pending tests, etc.

- **Order sets**: inpatient clinical practice guidelines for specific scenarios.

- **Differential diagnosis**: software exists that helps clinicians analyze symptoms and signs, to arrive at a diagnosis

- **Lab and Imaging decision support**

- **Public health alerts**: primarily infectious disease alerts for new outbreaks, e.g. Middle East respiratory syndrome (MERS) virus.

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EHR Registries

Definition: "an organized system that uses observational study methods to collect uniform data (clinical and other) to evaluate specified outcomes for a population defined by a particular disease, condition, or exposure, and that serves one or more predetermined scientific, clinical".

➢ Types:

1. Chronic disease management registries

2. Research registries

3. Safety registries

4. Public health registries

5. Quality registries

- Geographic information system (GIS) maps demonstrating the diabetic patient distribution for

- (a) type 1 diabetes and (b) type 2 diabetes at the country level, and (c) the distribution of different age groups in all health sectors.