

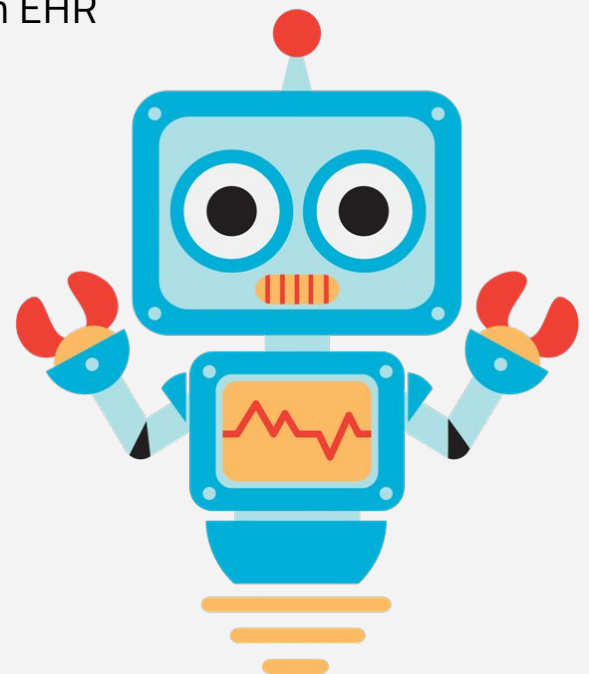


Paper & Electronic medical Record

- ❑ **Team leaders:** Afnan Almustafa & Saif Almeshari
- ❑ **Done by:** Abdullah Alzahrani Reema Aldihan
Anas Alsaif Aseel Badukhon
yazeed alshathry Alanoud Almansour
- ❑ **Revised by:** Aseel Badukhon

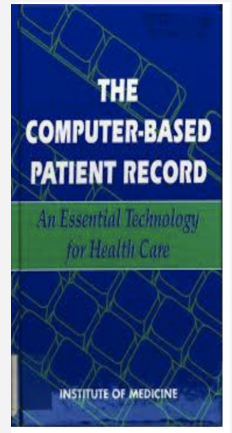
Objectives

1. State the definition of electronic health records (EHRs)
2. Describe the limitations of paper-based health records
3. Identify the benefits of electronic health records
4. List the key components of an electronic health record
5. Describe the benefits and challenges of computerized order entry and clinical decision support systems
6. State the obstacles to purchasing, adopting and implementing an electronic health record
7. Enumerate the steps to adopt and implement an EHR



Introduction

- 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, IOM recommended EHR as a solution for many problems. The Computer-Based Patient Record: An Essential Technology for Health Care.



- The features of EHR as mentioned in that report:
- Evidence based decision and support
 - Result management
 - Computer management
 - Patient support
 - Reporting support

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.**"

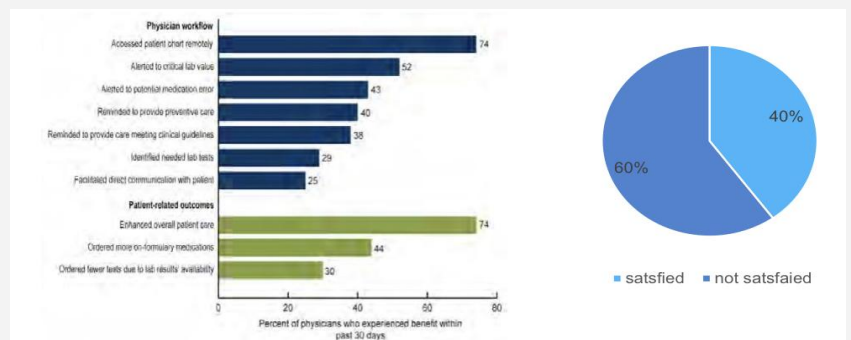
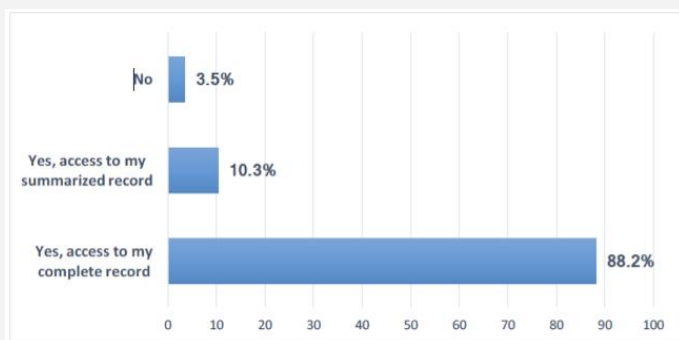
- Doctor said: "There is no a universal accepted definition of EHR"
- EHR will handle information of both patients and healthy people
- **EHR is NOT a digital copy of a paper record**
- PHR will be controlled by the individual instead of hospitals or healthcare organizations



Electronic Health Record

Why do we need EHRs?

1. Paper records are severely limited
2. Need for improved efficiency and productivity ¹
3. Quality of care and patient safety
4. Public expectations
5. Financial savings
6. Technological advances
7. Need for aggregated data
8. EHR as a transformational tool *because it uses standardized health care (guidelines)*
9. Need for coordinated care



1) You can have rate of productivity in your organization by viewing it in a dashboard; outcome parameters.

- EHR will provide all the informations you need in one screen, it will be available for everyone need it and over 24h.
- EHR provides us with problem summary list which shows us all major issues such surgeries and allergies and also diagnoses in one screen.
- EHR will prevent duplication of tests and prescriptions.
- **EHR helps us to improve level of coding which enhances documentation of data by using guidelines and EBM.**
- EHR helps physicians to see more patients in the same day so this help in financial saving.
- **Having such advances in technology directs us to use technology in medical field. Internet makes this process easier.**
- All the information can be stored, analyzed and also you can share it with other healthcare organizations.
- You don't have to employ more people for managing papers, all things will be in computers.
- It allows patient to see their records and help them in their appointments, and also for medication reminder.
- It allows you to record the result of personal devices that came with the patient .
- It is also important for decision support by allowing alerts and reminders.
- It is also helpful in research because it provides you with coded and structured data of patients in one place. Data mining and integration also is something we can do with EHR
- Proper communications with other healthcare organizations that provide care for the same patient while paper based record is an isolated data that can not be used in other places.
- Paper records are easily destroyed so it is safer to use EHR; it is better option for security than paper based records.

• How can EHR improve patient safety?

- 1-Improve the eligibility of clinical notes
- 2-Improve the access any time and where
- 3-Reduce duplication
- 4-Reminder to clinical alerts
- 5-Decision support system for example in drug-drug interaction
- 6-Problem list summary

EHRs Key Components

<p>Clinical decision support (Guidelines, reminders and alerts)</p>	<p>Results retrieval</p>	<p>Access via mobile technology</p>	<p>Integration with physician and patient education</p>	<p>Ability to create patient lists</p>
<p>Secure messaging between health care provider and patient</p>	<p>Prior encounter retrieval</p>	<p>Remote access from home</p>	<p>Public health reporting</p>	<p>Ability to create registries</p>
<p>Computerized physician order entry</p>	<p>Patient reminders</p>	<p>Electronic prescribing</p>	<p>Problem summary lists</p>	<p>Privacy/security compliance</p>
<p>Practice management software such as scheduling</p>	<p>Electronic encounter notes</p>	<p>Integration with images</p>	<p>Ability to scan in data An example of software that convert different type of documents into searchable and editable documents is OCR</p>	<p>Support for client server or application service provider (ASP) modes</p>
<p>Referral management</p>	<p>Multiple input methods</p>	<p>Robust backup systems</p>	<p>Ability to graph and track results</p>	



● Computerized Physician Order Entry (CPOE)

CPOE is an EHR feature that processes orders for medications, lab tests, imaging, consults and other diagnostic tests. This differentiates it from Electronic prescription system which is related to medications only

CPOE has many potential benefits:

1.Reduce Medication Errors

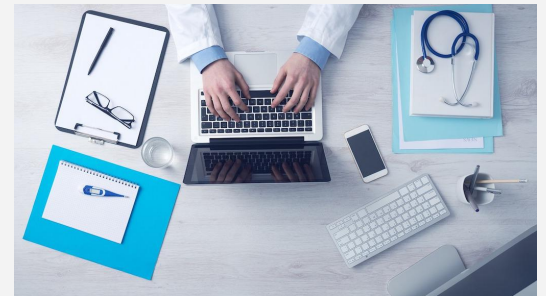
We will not be using handwriting so everyone can read it clearly and also this makes it easier to share in the CDSS

2. Reduce costs

3. Reduce Variation of Care

Specific guidelines that you follow to deliver standardized care

4.Unintended adverse consequences



● Clinical Decision Support Systems (CDSSs)

Clinical Decision Support : “any electronic or non- electronic 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:

1. **Knowledge support**: UpToDate, diagnostic (ICD-10) codes, and infobuttons. Provides educational material for clinicians according to patient case
2. **Calculators**: appropriate antibiotic dosing. Example, eCalcs.
3. **Flow charts and graphs** (Trending/Patient tracking): to look at lab or vital sign trends over Time
4. **Medication order support** to detect any allergies or drug-drug interaction and also proper dosing
5. **Reminders**: remind clinician or patient about pending tests, etc. Example, Mammogram due.
6. **Order sets**: inpatient clinical practice guidelines for specific scenarios. For example, if you have a case of pneumonia, it will help me to know which test should i order to make a diagnosis
7. **Differential diagnosis**: software exists that helps clinicians analyze symptoms and signs, to arrive at a diagnosis
8. **Lab and Imaging decision support** for example, which criteria i should follow to decide ordering CT scan or MRI
9. **Public health alerts**: primarily infectious disease alerts for new outbreaks, e.g. MERS virus



EHR Registries

One of the possible way to do a registry is to integrate it with EHR to avoid any mistakes

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, or policy purposes". "For example, you will collect data about diabetes so you can find the best way to treat your patients (clinical) but if you used this data to know how many patients are there so you can increase your staff to provide equal care for all then this (policy purpose)"

Types:

Categories	Functions It can help us to manage resources
Chronic Disease Management	Natural History of Disease
Research Registries	Effectiveness
Safety Registries Reporting system	Safety
Public Health Registries registries for immunization and cancer	Quality
Quality Registries Performance	

- Why do we need or use this registries?

To apply Learning Healthcare system/theory which has THREE component:

1. Afferent (Blue) side:
 - o Assemble the data from various sources
 - o Analyse the data by various means
 - o Interpret the findings
 2. Efferent (Red) side:
 - o Feeding findings back into the system in various formats
 - o Changing practice
 3. Scale: Can be institutional, national, international"
- *There is a nice diagram in internet illustrating this system*

- How does EHR registries work? There is two ways:

- A) Electronically
- B) Manually when we have multiple systems (not sufficient method)

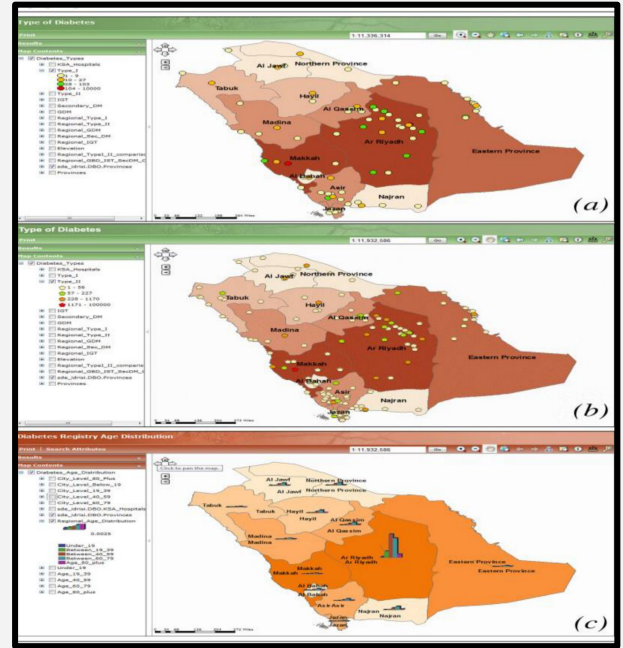


Geographic information system (GIS) maps demonstrating the diabetic patient distribution for

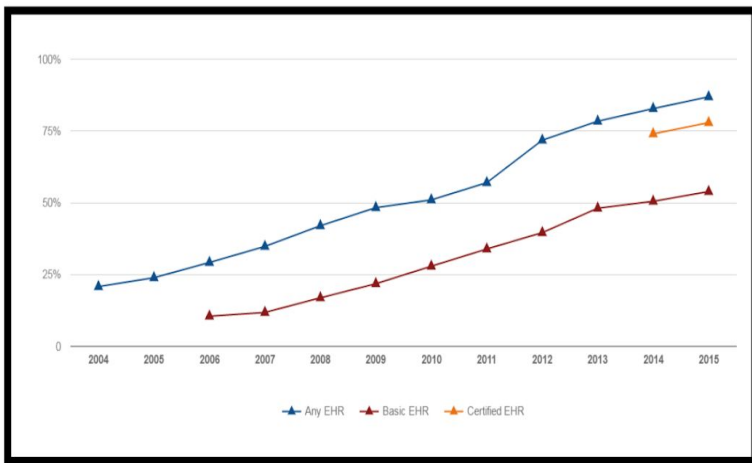
(a) type 1 diabetes

(b) type 2 diabetes at the country level

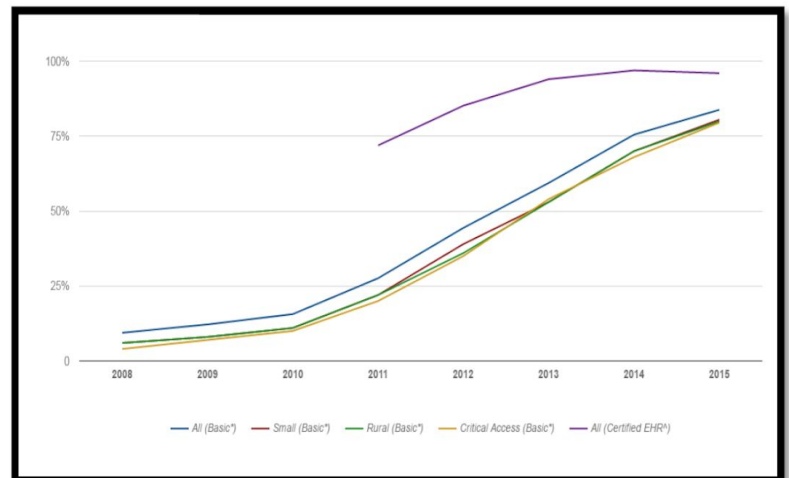
(c) the distribution of different age groups in all health sectors.



EHR Adoption



Outpatient EHR adoption



Inpatient EHR adoption

In the US, the use of EHR in inpatient was higher than outpatient

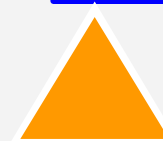
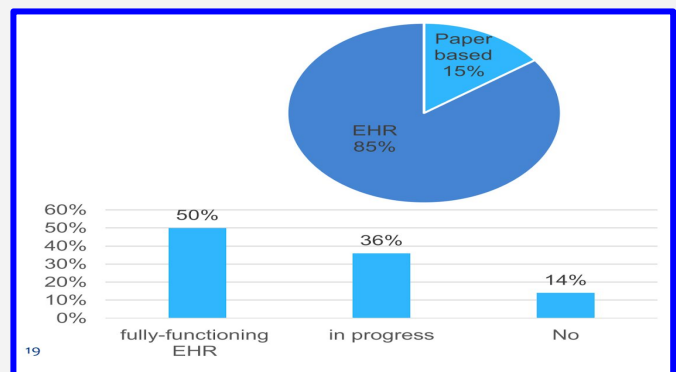
EHR Adoption in Saudi Arabia :

- Eastern Province study (Bah, Alharthi, El Mhalli, 2011): Only 3 of 19 hospitals adopted EHR. They implemented the same EHR system which includes three main modules; laboratory, radiology, and pharmacy.

Electronic Health Record Adoption

1. Outpatient (Ambulatory) EHR Adoption
2. Inpatient EHR Adoption
3. International EHR Adoption

Riyadh (Aldosari, 2014).



EHR Challenges

<p>Financial Barriers</p>	<ul style="list-style-type: none"> ❖ EHRs are expensive to implement, particularly for smaller or solo practices. Multiple surveys report that lack of funding is the number one barrier to EHR adoption. ❖ most common one, small healthcare organizations may face some problems
<p>Physician Resistance</p>	<ul style="list-style-type: none"> ❖ Lack of support by medical staff was consistently the second most commonly perceived obstacle to adoption ❖ because everything done by physician will be changed
<p>Loss of Productivity</p>	<ul style="list-style-type: none"> ❖ Loss of productivity is, in part, due to the change in workflow ❖ Also, physician resistance causes reduction in productivity ❖ A good method to deal with this challenge is what we call (Champion Physician) who helps to increase morals and positive attitudes
<p>Reduced Physician-Patient Interaction</p>	<ul style="list-style-type: none"> ❖ The addition of the computer in the exam room has heralded a paradigm shift in clinician-patient communication ❖ No eye contact, so you can use tablet instead of PC and also you have to balance between physician-patient interaction and using PC
<p>Usability issues: Important</p>	<ul style="list-style-type: none"> ❖ "Effectiveness, efficiency and satisfaction with which specific users can achieve a specific set of tasks in a particular environment". ❖ Effectiveness vs Efficiency: <ol style="list-style-type: none"> 1. Effectiveness is the ability to do things. 2. Efficiency doing things with minimal resource waste. ❖ Commercial EHRs might be different that healthcare environment.
<p>Integration and interoperability issues:</p>	<ul style="list-style-type: none"> ❖ Data standards such as HL7. ❖ Best solutions require close attention to integration of individual components, and even commercial EHR products require integration with existing software, or with external connections that are required to continue business as usual.
<p>Privacy concerns:</p>	<ul style="list-style-type: none"> ❖ Hacking into EHRs could result in loss of privacy for thousands, rather than a single paper chart. an important solution of security concern is using *database or transmission encryption*
<p>Legal:</p>	<ul style="list-style-type: none"> ❖ The automated way that EHRs carry information forward from one note to the next can also promote errors, for example if a piece of data is recorded incorrectly from the start, yet never corrected. ❖ It is not known if EHRs will increase or decrease malpractice over the long haul. ❖ e-iatrogenesis. ❖ Clinical documentation. If your data documentation was done properly by using EHR this will decrease malpractice, and vice versa. ❖ Clinical decision support. It can give a lot of alerts and that can cause 'overridden' by physicians
<p>Inadequate proof of benefit:</p>	<ul style="list-style-type: none"> ❖ In spite on many published studies, there is not adequate proof that EHRs improve quality of care.
<p>Patient safety and unintended consequences:</p>	<ul style="list-style-type: none"> ❖ Not only are studies suggesting improved patient safety mixed, there is evidence that new medical errors may occur (at least in the short term) with EHR use. ❖ "E-iatrogenesis" : medical errors due to technology. Overdependent on technology can be challenging specially if we had system shutdown. ❖ Reliability issues. You should have a backup plan when the system is shut down; paper based records for example.

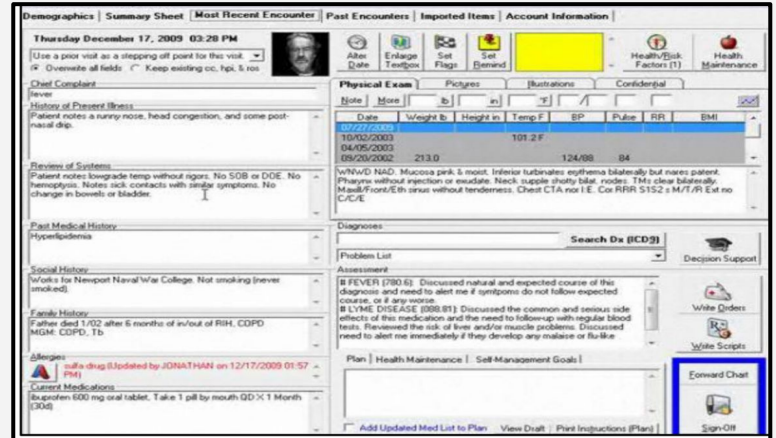
EHR Examples

These examples are based on *size* of the organization

Small EHR Example Amazing Charts:

For primary healthcare centres

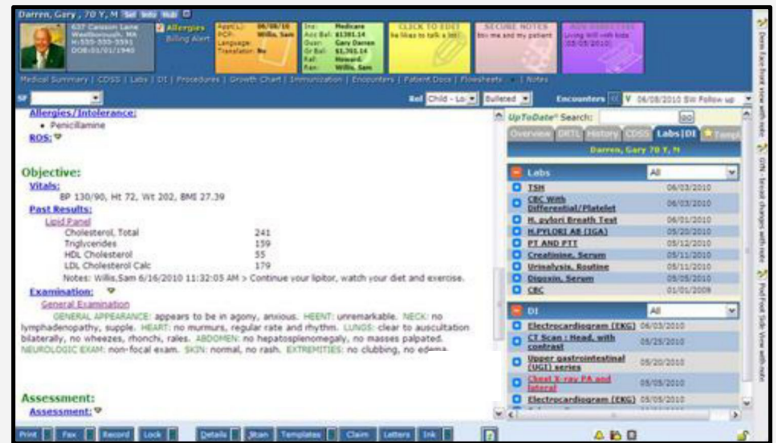
- ❖ Low cost that includes 3 month free trial.
- ❖ Fully featured.
- ❖ #1 EHR for Ease of Use and #1 EHR for Satisfaction.
- ❖ Available as a client or web based (ASP) model.
- ❖ Appeals to small practices, particularly primary care.



Medium EHR Example eClinicalWorks:

For healthcare organizations

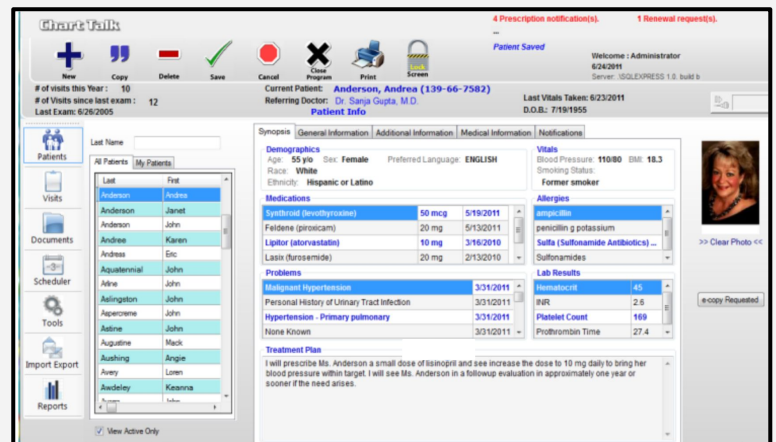
- ❖ Medium priced for medium sized practices of multiple specialty types.
- ❖ More clinician and patient features to include mobile and a health information exchange (HIE) solution.



Large EHR Example Epic:

For bigger healthcare organizations

- ❖ Intended for very large practices such as Kaiser-Permanente.
- ❖ Includes numerous innovations such as a comprehensive patient portal and several mobile solutions.



Implementing an EHR Steps :

- ❖ **Pre-implementation:**
 - Decision of purchasing EHR.
 - Workflow mapping.
- ❖ **Implementation:**
 - **Team:** clinical champion (enhances positive attitude), project manager, a senior administrative sponsor.
 - Tactics.
 - Technology
- ❖ **Post-implementation**

Pre-implementation: (Consider challenges before starting)

- It is very complex process, a lot of document will be generated to be adding to the system
- How i will document the vital signs, make orders for medications? (facilitate the implementation)

Implementation:

A lots of decisions, timeline, stakeholders so you need a project manager. I need a senior administrative sponsor because patient care is not done in one section but in multiple departments

Tactics : who will do that and that?

Post- implementation: improvement, increase capacity b/c it is a continuous project



Book Summary

Paper Records

- illegible and they severely limits the ability of other clinicians to extract and use information from the document
- cannot be electronically shared, stored or analyzed.
- expensive to copy, transport and store
- easy to destroy;
- difficult to analyze and determine who has seen it
- exert a negative impact on the environment.

Electronic Health Records

- Improved legibility of clinical notes,
- Improved access anytime and anywhere
- Reduced duplication
- Reminders and clinical alerts (for example a reminder that announces if relevant tests or preventive services are overdue)
- Clinical decision support that reminds clinicians about drug-drug interactions, known medication allergies, cost and correct dosage of drugs, etc.
- Electronic problem summary lists (PSLs) provide diagnoses, allergies and surgeries at a glance
- Much easier to retrieve and track patient data
- EHRs allow for faster retrieval of lab or x-ray results
- EHRs allow easy navigation through the entire medical history of a patient that is available 24/7
- Accessible to multiple healthcare workers at the same time, at multiple locations.
- EHRs improve the level of coding. For example, templates may help remind clinicians to add specific details of the history or physical exam they have performed to justify an appropriate level of coding for the work that they have performed
- Reduce redundant administrative paperwork; for example, they can interface with a billing program that submits claims electronically.
- EHR, lab results can be forwarded via secure messaging or made available to the patient for viewing via a portal.
- EHR dashboards allow clinicians to quickly get a sense of where they stand (for example a dashboard that displays the number of patients seen each day) but also with patient outcome related parameters (for example a dashboard that displays to the clinician the degree of control that the diabetic patients in their panel have achieved in comparison to their clinician peers).

Quality of Care & Patient Safety

- Electronic clinical quality measure (eCQM) reports are far easier to generate with an EHR compared to a paper chart that requires a chart review. Quality reports can also be generated from a data warehouse or health information organization (HIO) that receives data from an EHR and other sources.²³ Quality reports are the backbone for healthcare

Patient Expectations

- EHR adoption results in better customer satisfaction through fewer lost charts, faster refills and improved delivery of patient educational material.²
- They allow patients access to their records with multiple other functionalities such as online appointing, secure messaging, medication renewals, etc.

Government Expectations

- EHRs are considered by the federal government to be transformational and integral to healthcare reform.





Book Summary

Financial Savings

- Reduction in the need for transcriptionists with the advent of point- and-click templating and voice recognition software, and electronic prescribing has indeed led to fewer callbacks from pharmacists requiring help to decipher physician handwriting. The labor costs of chart pulls are reduced with EHRs, thus saving full time equivalents (FTEs).
- However, medicolegal risks may be increased during implementation of EHRs – there is an increased risk of errors during the “implementation chasm” as clinicians transition from one system to another.²⁷ These risks include documentation and training gaps, and issues due to software “bugs” and failures. Further, as systems mature the use of email messaging, copy-and-paste models of documentation, and
- information overload could increase risk.
- EHR software and patient data reside on a remote web server that can be remotely accessed.
- Wireless and mobile technologies permit untethered access to the hospital information system and the electronic health record

Need for Integrated & Aggregated Data

- Digital healthcare information can be integrated with multiple internal and external applications:
- Integrate with health information organizations (HIOs)
- Integrate with analytical software for data mining to examine optimal treatments
- Integrate genomic data with the electronic health record.
- Integrate with local, state and federal government information systems for quality reporting and public health issues
- Integrate with algorithms and artificial intelligence.
- Integrate with personal devices, such as activity monitors, glucose monitors, etc.

EHR as a Transformational Tool

- The integration of data analytics with care has resulted in the improvement in standardization of care, care coordination and population health for these and other similar organizations.

Need for Coordinated Care

- Having more than one physician mandates good communication between the primary care physician, the specialist and the patient. This becomes even more of an issue when different healthcare systems are involved.
- Electronic health records are being integrated with health information organizations (HIOs) so that inpatient and outpatient patient-related information can be accessed and shared, thus improving communication between disparate healthcare entities. Home monitoring (telehomecare) can transmit patient data from home to an office’s EHR also assisting in the coordination of care.

National Academy of Medicine’s Vision for EHRs

- EHRs are considered by the federal government to be transformational and integral to healthcare reform.
 - Eight core functions all EHRs should have:
1. Health information and data: For the medical profession to make evidence-based decisions, you need a lot of accurate data and this is accomplished much better with EHRs than paper charts; if you can’t measure it, you can’t manage it.
 2. Result management: Physicians should not have to search for lab, x-ray and consult results. Quick access saves time and money and prevents redundancy and improves care coordination.
 3. Order management: CPOE should reduce order errors from illegibility for medications, lab tests and ancillary services and standardize care.
 4. Decision support: Should improve overall medical care quality by providing alerts and reminders
 5. Electronic communication and connectivity: Communication among disparate partners is essential and should include all tools such as secure messaging, text messaging, web portals, health information exchange, etc.
 6. Patient support: Recognizes the growing role of the Internet for patient education as well as home telemonitoring.
 7. Administrative processes and reporting: Electronic scheduling, electronic claims submission, eligibility verification, automated drug recall messages, automated identification of patients for research and artificial intelligence can speed administrative processes.
 8. Reporting and population health: We need to move from paper-based reporting of immunization status and biosurveillance data to an electronic format to improve speed and accuracy.





Computerized Physician Order Entry (CPOE)

- CPOE has the potential to reduce medication errors through a variety of mechanisms.
 - It can be easily linked to drug-drug interaction warning, is more likely to identify the prescribing physician, is able to link to adverse drug event (ADE) reporting systems, can avoid medication errors like trailing zeroes, creates data that is available for analysis, can point out treatment and drugs of choice, can reduce under and over-prescribing, and allows prescriptions to reach the pharmacy quicker.
1. **Reduce Medication Errors:**
 - **Inpatient CPOE:**
 - Unintended Adverse Consequences (UACs) is falling within nine types (in order of decreasing frequency):
 1. more/new work for clinicians/ 2. unfavorable workflow issues/ 3. never ending system demands/ 4. problems related to paper persistence/ 5. untoward changes in communication patterns & practices/ 6. negative emotions/ 7. generation of new kinds of errors/ 8. unexpected changes in the power structure/ 9. overdependence on the technology
 - a. **Outpatient CPOE:**
 - i. There is more of a chance for a medication error written for outpatients, because there are far more prescriptions written in the ambulatory setting than in acute care facilities.
 2. **Reduce Costs**
 3. **Reduce Variation of Care**

Clinical Decision Support Systems (CDSS)

Levels of CDSS
(level 1) all decisions by humans
(level 2) computer offers many alternatives
(level 3) computer restricts alternatives
(level 4) computer offers only one alternative
(level 5) computer executes the alternative if the human approves
(level 6) human has a timeline before computer executes
(level 7) computer executes automatically, then notifies human
(level 8) computer informs human only if requested
(level 9) computer informs human but is up to computer
(level 10) computer makes all decisions

Type of CDSS	Examples
Medications	CPOE and drug alerts
Order sets/protocols	CPGs and order sets
Differential diagnosis	DxPlain
Radiology CDSS	ACR Select
Laboratory CDSS	What lab tests to order
Public health alerts	Infection disease alerts, SMART apps





Book Summary

Practice Management (PM) Integration

- Why PM systems have become so prevalent?
 - Because of the ability of practice management systems to generate more rapid claims submission and adjudication.
- A PM system is designed to capture all the data from a patient encounter necessary to obtain reimbursement for the services provided. This data is then used to:
 - Generate claims to seek reimbursement from healthcare payers
 - Apply payments and denials
 - Generate patient statements for any balance that is the patient's responsibility
 - Generate business correspondence
 - Build databases for practice and referring physicians, payers, patient demographics and patient encounter transactions
- A PM system provides routine and ad hoc reports so that an administrator can analyze the trends for a given practice and implement performance improvement strategies based on the findings.
- A PM system offer patient scheduling software that further increases the efficiency of the business aspects of a medical practice.
- Some PM systems offer an encoder to assist the coder in selecting and sequencing the correct diagnosis

Electronic Health Records Challenges

Quality Reporting Issues	Quality reports have been tied to physician reimbursement in several situations, however, obstacles associated with linking physician compensation to the quality of care they provide remain.
Lack of Interoperability	Data standards are necessary for interoperability, and reimbursement for Meaningful Use mandates that EHRs demonstrate the ability to exchange information.
Workflow Changes	Documentation, the way that patient information is routed between clinicians & ancillary staff. Communication patterns both between clinicians and with the patient, new procedures and policy for electronic

The Hectic Act & Meaningful Use

For clinicians to participate in this program they had to:

1. Eligible Professionals (EPs)
 - a. **Medicare:** Medicare defined EPs as doctors of medicine or osteopathy, doctors of dental surgery or dental medicine, doctors of podiatric medicine, doctors of optometry and chiropractors.
 - b. **Medicaid:** Medicaid EPs are defined as physicians, nurse practitioners, certified nurse midwives, dentists and physician assistants (physician assistants must provide services in a federally qualified health center or rural health clinic that is led by a physician assistant)
 - c. **Registration**
 - d. **Certified EHRs:** An EHR had to be certified by a recognized certifying organization for a physician or hospital to receive reimbursement
 - e. **Meaningful Use (MU):** The goals of MU are the same as the national goals for HIT: (a) improve quality, safety, efficiency and reduce health disparities; (b) engage patients and families; (c) improve care coordination; (d) ensure adequate privacy and security of personal health information; (e) improve population and public health.
 - i. Three processes stressed by ARRA to accomplish this are: e-prescribing, health information exchange and the production of quality reports. Meaningful Use consists of three stages: stage 1 would begin the basic process of data capturing and sharing; stage 2 would require advanced data processes and sharing and stage 3 would aim at improving patient outcomes.





Book Summary

Logical Steps to Selecting & Implementing an EHR

Implementation of an EHR can be divided into three separate, yet intertwined phases: Pre-implementation, implementation and post-implementation.

1. Pre-implementation begins with deciding whether to purchase an EHR and ends with signing a contract with a vendor for a specific EHR.
 - a. The main activity is choosing the EHR that will be used
2. Implementation of the EHR starts with the signing of the contract and ends with the go-live date.
3. post-implementation phase which remains in effect for the duration of EHR use.
 - a. This phase involves maintaining, optimizing, reassessing and improving the EHR's content and capabilities, facility workflows/processes, and staff training with a focus on continuous improvement and patient safety.

KEY POINTS

- Electronic health records are central to a modern healthcare system
- Paper-based systems are fraught with multiple shortcomings
- Reimbursement for electronic health records by the federal government dramatically increased EHR adoption
- Despite the potential benefits of electronic health records, obstacles and controversies persist
- Clinical decision support systems are still immature and will likely improve in the future with artificial intelligence
- Advance planning and training is mandatory for successful EHR implementation



Questions

Q1: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.?

- A-personal health Record.
- B-E health.
- C-Electronic Medical Record.
- D-Electronic health record .

Q2: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”?

- A-Electronic health record.
- B-Electronic medical record.
- C-Ehealth.
- D-personal health record.

Q3:Electronic medical record (EMR) is the main application of which of the following health informatics area?

- A-Administration.
- B-Clinical.
- C-Research.
- D-Education.

Q4:Why do we need export system in CDSS?

- A-preservation of knowledge.
- B-sharing of knowledge between clinicians.
- C-Aid decision making.
- D-Range checks.

Q5:It provides the right information to the right person in the right format through the right channel at the right point in workflow to improve health care decision and outcome “ which one of the following describe the above statement?

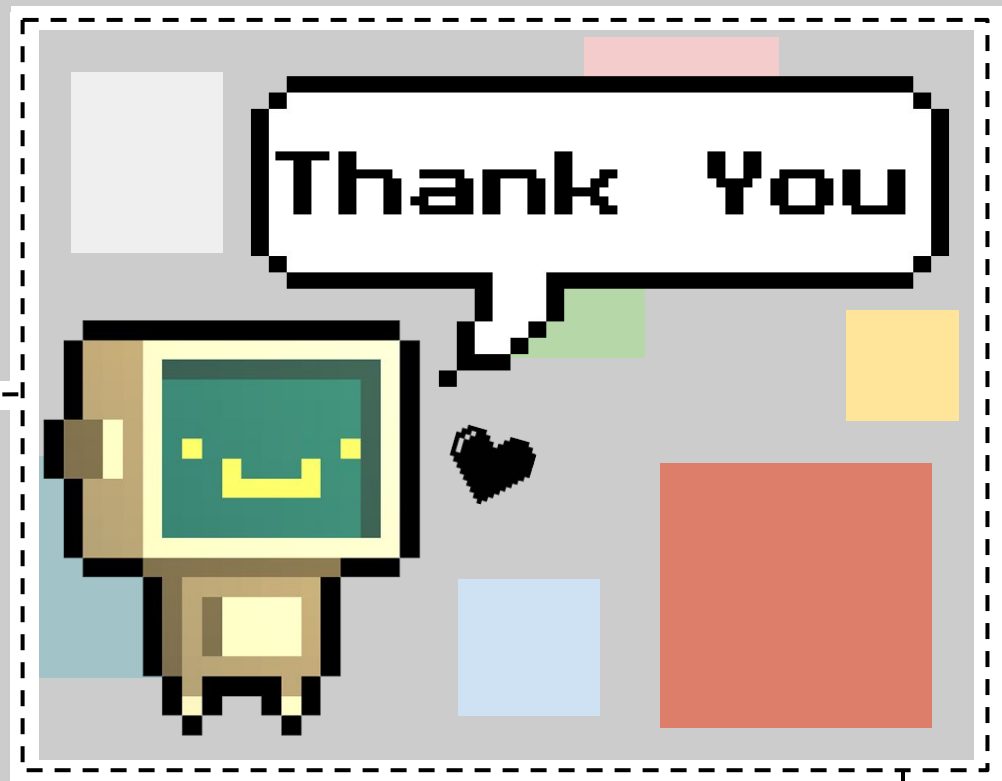
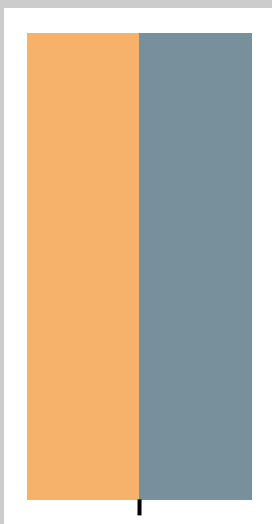
- A-CDSS.
- B-PACS.
- C-ICD10.
- D-RIS.

Q6:Improving patient safety,quality and efficiency and reduce operating cost”are benefit of which of the following?

- A-Big data.
- B-CPOE.
- C-Barcode technology.
- D-Patient portal



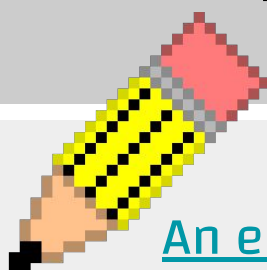
1:C
2:A
3:B
4:C
5:A
6:B



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