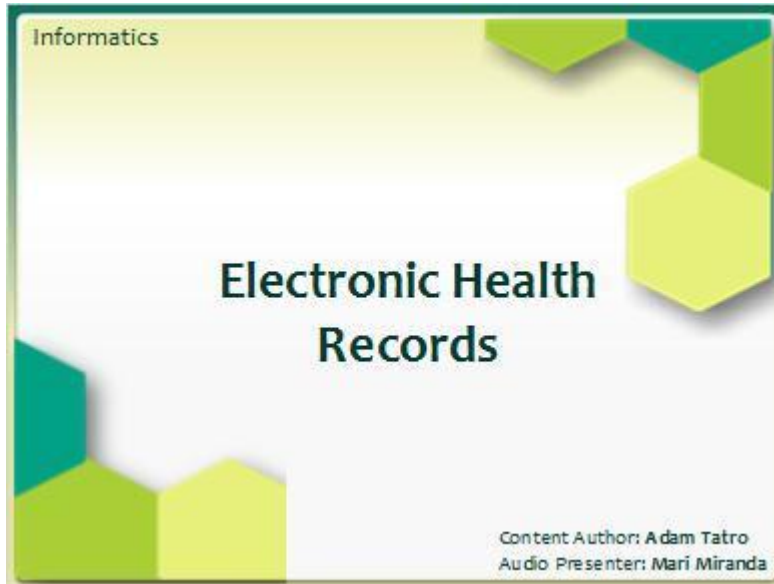


Informatics: Electronic Health Records

1.1 Electronic Health Records



1.2 Introduction

The slide has a light green and yellow background. The title 'Introduction' is in the top right corner, accompanied by a small hexagonal graphic. On the left, there is a photograph of a doctor in a white coat and glasses talking to a patient at a desk with a laptop. On the right, there is a bulleted list of topics to be covered.

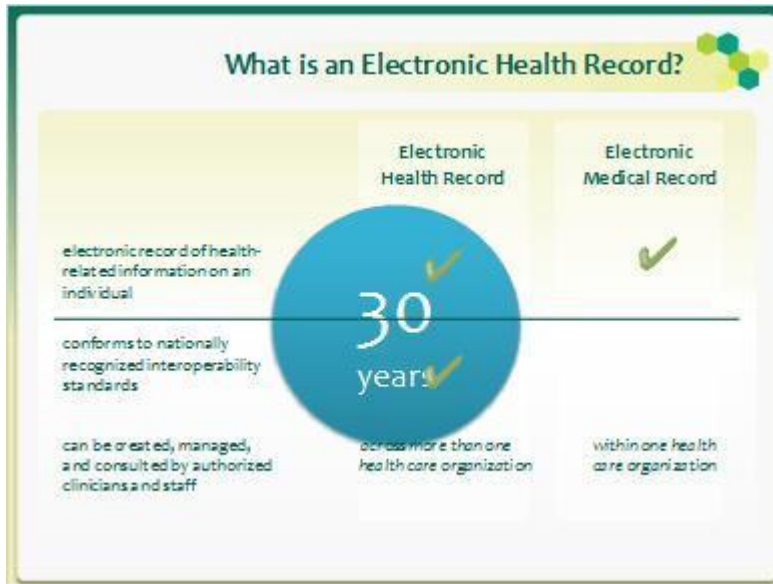
- Define Electronic Health Records
- Describe and discuss the goal and benefits of Electronic Health records
- Identify concerns
- Explore the link to Personal Health Records

Notes:

Welcome to the Electronic Health Records module. In the Clinical Decision Support System module

you learned what Clinical Decision Support Systems are and about some of their features. You learned why they are important to nurses and how they are integrated into Electronic Health Records. In this module you will learn about Electronic Health Records. You will be able to define Electronic Health Records and describe and discuss the goal and benefits of these systems. In addition, concerns and their link to Personal Health Records are also explored. Let's begin by discussing what Electronic Health Records are.

1.3 What is an Electronic Health Record?



Notes:

The use of Electronic Health Records has been around for over 30 years. In that time, there has been an evolution in what these systems do and their definition. In today's informatics world, there are two main terms that are used: Electronic Health Record and Electronic Medical Record. According to the National Alliance for Health Information Technology Electronic Health Record (EHR) is 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 health care organization. Electronic Medical Record (EMR) is 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 health care organization.

1.4 Example: The Difference between EMRs and EHRs

Difference between EMR and EHR

Alexander

California's Doctor

NY Doctor

What type of system is being used in California?
EMR or EHR? (Enter your response below)

type your text here

Check Response

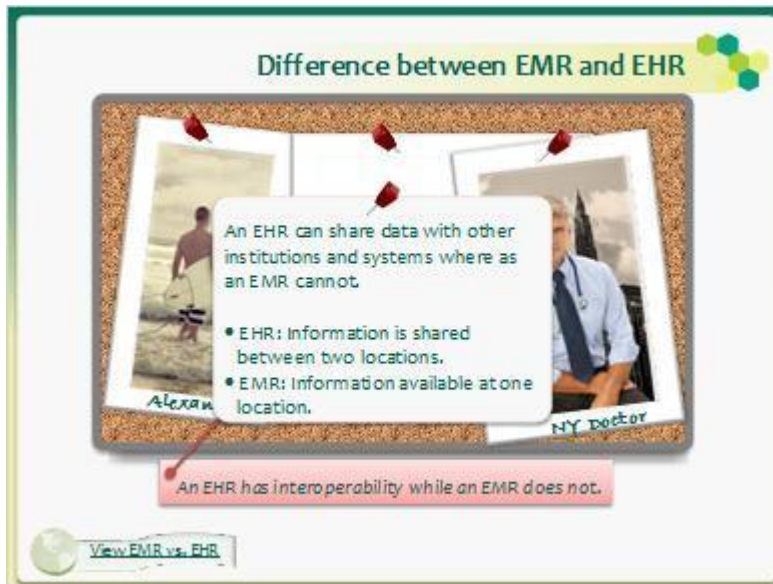
Notes:

Difference between EMR and EHR

There is a subtle difference between the definition of EMR and EHR.

Consider the following scenario: Alexander is from New York. While on vacation in California and he was hospitalized. The hospital in California is using an Electronic records system, however Alexander's primary care provider in New York is not able to access the information. Alexander is told that the system does not have interoperability. Only physicians who have direct access to that system in California can retrieve his records. What type of system is being used in California? Is an EMR or an EHR?/emr-vs-her-difference/.

1.5 The Difference between EMRs and EHRs



Notes:

An EHR has interoperability while an EMR does not. In other words, an EHR can share data with other institutions and systems where as an EMR cannot. Data from an EMR can only be seen within the organization. For example, with an EHR a person could be seen in a hospital in California while on vacation then have that information shared electronically with their Primary Care Provider in their home state of New York. With an EMR, the patient's information would only stay in California and not be available electronically to their Primary Care Provider in New York.

For a more in depth explanation of the difference between an EHR and an EMR click on the link [View EMR versus EHR](#).

(Reference: <http://www.healthit.gov/buzz-blog/electronic-health-and-medical-records/emr-vs-ehr-difference/>.)

1.6 Federal Strategic Goals for EHRs



Notes:

Now that we have an understanding of what EHRs are, what are the goals of EHRs? In 2011, The Office of the National Coordinator for Health Information Technology laid forth a strategic plan for the country concerning the future of Healthcare Information Technology.

Five goals were put forth:

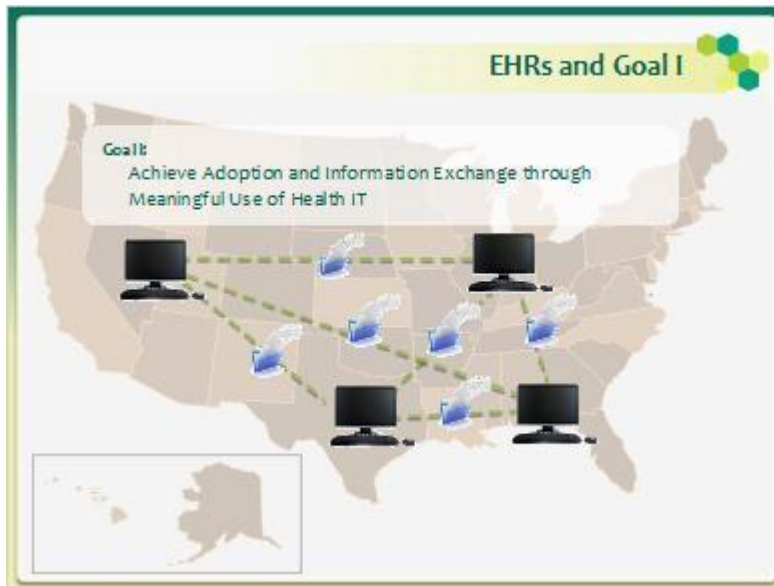
- Goal I: Achieve Adoption and Information Exchange through Meaningful Use of Health IT
- Goal II: Improve Care, Improve Population Health, and Reduce Health Care Costs through the Use of Health IT
- Goal III: Inspire Confidence and Trust in Health IT
- Goal IV: Empower Individuals with Health IT to Improve their Health and the Health Care System
- Goal V: Achieve Rapid Learning and Technological Advancement

Click on View the full report for more information.

We will now take a closer look at the role of EHRs. EHRs play an integral role in the first two goals.

Reference: Full Report <<http://www.healthit.gov/sites/default/files/utility/final-federal-health-it-strategic-plan-0911.pdf>>

1.7 EHRs and Goal I



Notes:

The first goal of achieving adoption and information exchange includes accelerating the implementation and use of EHRs for the exchange of information. The use of EHRs will allow for national interoperability and exchange of information. This exchange of information will allow clinicians to provide more accurate, comprehensive, and timely care to patients independent of location.

1.8 EHRs and Goal II



Notes:

The second goal strives to improve care and reduce costs. EHRs will provide the infrastructure to make this possible. Information from a patient's interaction with the healthcare system will be the cornerstone of improving patient care and outcomes. Information on patient conditions, medications ordered, care delivered, length of stay and other information will provide the data needed to help improve care and the healthcare system. However, to achieve this, the information must be tracked, aggregated, and reported on in a meaningfully useful way. EHRs provide the tools necessary to do this.

Along with patient outcome improvements, cost savings can be achieved as well. It is estimated that EHRs can save the economy \$142 - \$371 billion dollars (Hillstad et al, 2005). These savings come through decreasing ordering redundancies of laboratory tests, procedures, and medications, reduction in administrative costs, and an increase in billing accuracy. Interoperability plays a pivotal role in this cost reduction. The information needed to achieve these savings is made possible through the sharing of information to various areas within healthcare.

1.9 Benefits of an EHR



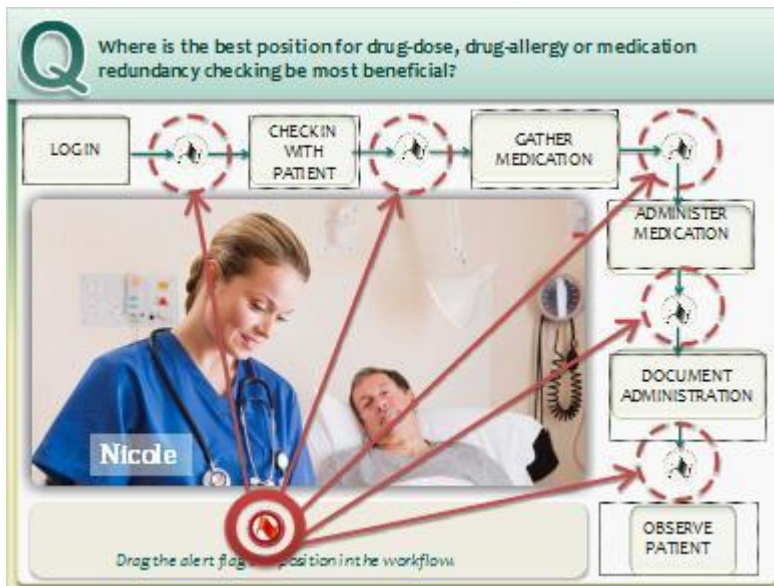
The infographic is titled "Benefits of an EHR" and features a green and yellow color scheme. On the left, a photograph shows a healthcare professional in a white lab coat using a handheld barcode scanner on a medication box. Below the photo is the text "Bar Code Medication Administration" and a green button labeled "Complete Activity". On the right, the text "Electronic Health Records" is followed by a box containing "Components: Clinical Decision Systems". Below this, it lists "Clinical Decision Support Systems include:" followed by a bulleted list: "drug-drug checking", "drug-allergy checking", "documentation reminders", and "diagnosis checking". At the bottom right, it states "Benefit:" followed by a bulleted list: "Improve patient safety".

Notes:

From the strategic plan, we can see what the benefits of EHRs are at a national level. But what are the benefits at an individual institution or practice level? One of the benefits has already been discussed in detail: Clinical Decision Support Systems. EHRs are embedded with Clinical Decision Support tools such as drug-drug and drug-allergy checking, documentation reminders, and diagnosis checking, to name a few. When these systems are used in conjunction with other technology, patient safety can be improved. The comprehensive nature of EHRs allow for these tools to be used across multiple areas and across multiple disciplines.

Click Complete Activity to for an activity based on Bar code Medication Administration and its role in reducing medication errors as information is integrated into a clinician's workflow.

1.10 EHR & Clinician's Workflow

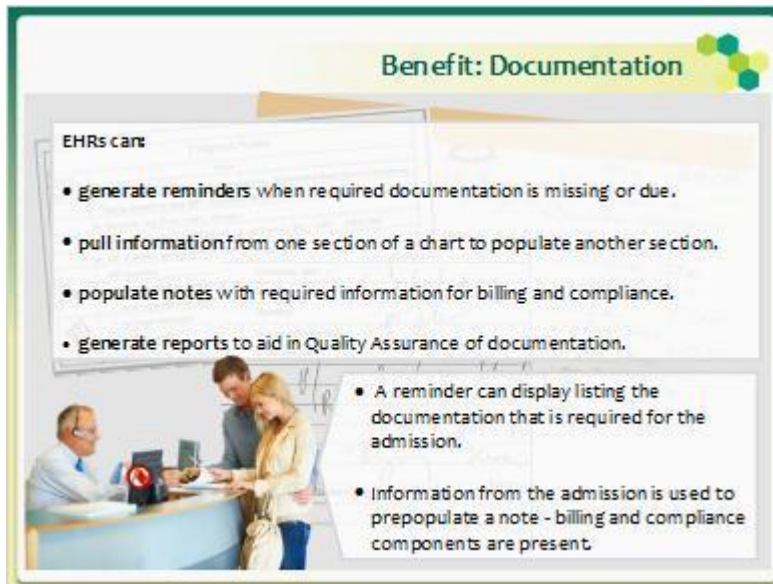


Notes:

Medication errors can be reduced through the use of Bar Code Medication Administration, medication redundancy checking, drug-dose checking, and drug-allergy checking. These systems become integrated into the workflow of clinicians at the point where it is most needed. Consider the workflow of a nurse, Nicole. When she arrives on the floor, she logs into an electronic system. She then checks in with her first patient. She logs into the electronic system in the patient's room reviews his information and enters additional pertinent data. Nicole sees that her patient needs medication and leaves to gather the medication. Nicole then returns to the room to administer the medication. She documents the administration of the medication using an electronic system before leaving the room. Occasionally Nicole returns to the patient's room to observe the effects of the medication.

Where in Nicole's workflow would the alerts from drug-dose checking, drug-allergy checking or medication redundancy checking be most beneficial? Drag the image of the flag to the selected position in the workflow.

1.11 Benefit: Documentation



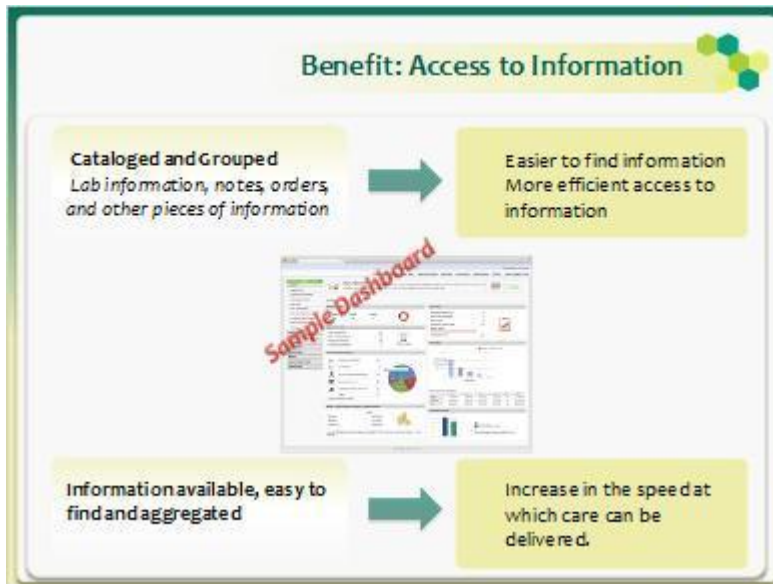
Notes:

Along with Clinical Decision Support Systems, EHRs can facilitate more complete documentation. In the paper world, documentation can be incomplete, poor, or missing. EHRs can correct for this by:

- Generating reminders when required documentation is missing or due
- Pulling information from one section of a chart to populate another section
- Populating notes with required information for billing and compliance purposes
- Generate reports to aid in Quality Assurance of documentation

For example, when a patient is admitted, a reminder can display listing the documentation that is required for the admission. Once the documentation has been completed, the list is updated to reflect this. The information from the admission is then used to prepopulate a note to make sure that all the necessary billing and compliance components are present.

1.12 Benefit: Access to Information



Notes:

The improved documentation provides more information for clinicians in real time. This information can be accessed easily from any terminal at any time. There is no longer any competition for the chart. In addition, the information is organized and clearly legible. Lab information, notes, orders, and other pieces of information are cataloged and grouped to make finding this information easier and more efficient. Clinicians can see more relevant information at one time through the use of Dashboards and reports. This can increase the speed at which care can be delivered since the information is always available, easy to find, and aggregated in one place.

1.13 Benefit: Patient Tracking



Notes:

The improved documentation also makes patient tracking easier. Longitudinal monitoring of patients can be done through EHRs since information is aggregated in one place. Information about the patient's condition, treatments utilized and the effects of those treatments provide a more complete picture of the patient. , To augment the picture of the patient other patient information such as geographical and environmental factors, can be captured.. With this increase in the amount of information and knowledge, clinicians can better manage their patients over time. An EHR allows this to be possible by capturing, storing, aggregating, and displaying this information.

1.14 Benefit: Standardization of Care



Notes:

Let us examine, the final benefit, Standardization of care. We will review a scenario to learn how an EHR can help with the standardization of care.

Let us assume that a patient is diagnosed with pneumonia and is about to be admitted to a hospital. Follow the on screen directions to see what role the EHR can have in this patient's care.

Orders:

In addition to providing needed information to monitor patients over time, EHRs can help standardize care by suggesting best practice guidelines. Here the doctor receives recommendations for orders to treat his patient. The doctor may accept or reject the recommended line of treatment.

Treatment:

By following the recommended orders the doctor can move ahead with treatment. If these orders were not used, the EHR could have forced the doctor to complete documentation to justify the deviation from the recommended orders.

Paperwork

The doctor has decided not place the recommended orders. The doctor is now required to complete documentation to justify his deviation from placing the recommended orders.

For more information on the benefits of Electronic Health Records, see the HealthIT.gov website at <http://www.healthit.gov/providers-professionals/benefits-electronic-health-records-ehrs>

1.15 EHR Concerns



Notes:

Introduction

While the use of Electronic Health Records can provide many benefits, there are concerns related to their use. These concerns range from clinician- patient interaction, to the inputting, use and access of data.

Clinician-Patient Interaction

In order to document in real time, clinicians must be inputting data while interacting with the patient. This has the potential of decreasing the personalized interaction between the clinician and the patient. Less eye contact, poor clinician body language, and decreased conversation can result from the use of EHRs.

Documentation in EHRs

In addition to altered clinician-patient interaction, documentation has been raised as a concern. Many EHRs allow for easy generation and copying of notes to save time. However, this can result in inaccurate notes. There have been examples of notes that have been copied for several days without the information being updated. For example, a note written on the 14th day of hospitalization still had information from the first day of hospitalization, such as labs, vitals, medications, and imaging results. This is also true for nursing documentation. Assessments can be copied forward without being updated to reflect the current status of the patient.

Note Bloat

While one of the benefits of EHRs is the collection of vast amounts of information, this information can be used to generate notes that contains too much information. This is called note bloat. Note Bloat is the addition of large amount of information that makes it difficult for a clinician to identify the essential information necessary for treating the patient. For example, a hand written paper progress note may typically be one page or less in length. With the use of electronically generated

notes, it is simple to make choices that pull in days worth of data, such as lab data, that “waters down” the note making it difficult to identify the most relevant information. This could result in critical data being missed because it is lost among non-essential data. Suggested solutions for this have been a move toward an APSO note format as opposed to a SOAP format, bringing the assessment and plan to the top of the note to be more easily identified and apparent.

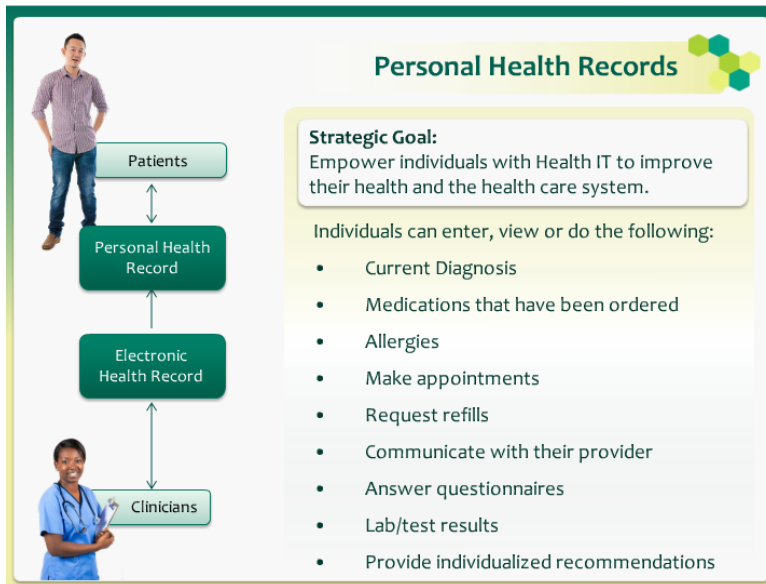
Privacy and Security

As with all health information technology, the use and access to protected health information is a concern. With EHRs, information can be readily available to any clinician who has access to the system. Most clinicians have access to view any patient’s information, including themselves, family members, coworkers, and VIPs. While accessing this information can be monitored and audited, the breach is identified after the fact when the information could have already been used. With this information being electronic, it is easy to save, store and transport protected health information. There have been security breaches through the theft or loss of laptops and flash drives containing protected health information. In addition, increasing amount of information is being stored and transmitted via the internet. This poses its own security and privacy concerns. New and existing laws and policies concerning the use, storage, transmission, and access to protected health information are being developed and modified. Until there are comprehensive laws and policies, it remains unclear what the best practices are concerning the privacy and security of electronic protected health information.

Technology Failure

Despite all the advancements in technology and networking, there are still technological issues that can pose safety concerns. Patient safety concerns have arisen from EHR failures and miscommunication (Sittig & Singh, 2012). Due to the comprehensive nature of EHRs, a failure can have widespread effects. A recent EHR failure from a software update in Rhode Island caused a third of the hospitals in the state to cancel elective surgeries and divert all life threatening surgeries to other hospitals. Safety concerns can also occur due to miscommunication between the various components of the EHR itself. For example, an order can be placed for a medication and then be altered slightly when it moves from the ordering component to the pharmacy component. A 30 mg Oxycodone Sustained Release tab could be ordered, but is then altered to 30 mg Oxycodone Immediate Release tab by the pharmacy system. These system failures and errors can have catastrophic effects.

1.16 Personal Health Records



Notes:

One of the strategic goals discussed earlier from the Federal Strategic Plan was to empower individuals with Health IT to improve their health and the health care system. To foster this empowerment, EHRs have been linked up to Personal Health Records. Personal Health Records (PHR) is 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 (The National Alliance for Health Information Technology). PHRs allows individuals to enter/view the following:

- Current Diagnosis
- Medications that have been ordered
- Allergies
- Make appointments
- Request refills
- Communicate with their provider
- Answer questionnaires
- Lab/test results
- Provide individualized recommendations

1.17 Personal Health Records (continued)

Personal Health Records

- Individuals can make better informed decisions concerning their care.
- PHRs also have the ability to provide decision support to the individual.
- PHRs provide data to make that patient more knowledgeable.

The diagram illustrates a man in a checkered shirt looking thoughtful, with a question mark above his head. To his right, a green box contains the text 'Personal Health Record' and 'Electronic Health Record'. An arrow labeled 'Information' points from this box towards the man, suggesting that the records provide him with the information he needs to make decisions.

Notes:

With the information provided by Personal Health Records, individuals can make better informed decisions concerning their care. They can correct mistaken information, ask questions, and provide the relevant medical information to those that may not have access to it.

Personal Health Records can be either a stand-alone system or combined with an EHR. Microsoft has a free PHR that individuals can use to upload or input health information into. However, most EHRs have a PHR component. The advantage is the direct link between the two components. As lab results are returned they can automatically be made available for the patient to see. As diagnoses are added to the patient's record, the patient can view them at home. Patients can also complete health questionnaires which can be viewed by the clinicians before the patient comes in for a visit, thus saving time.

PHRs also have the ability to provide decision support to the individual. Based upon lab results, diagnoses, and other information entered, lifestyle and other health recommendations can be given for that individual. For example, a diabetic patient with a recent elevated Hg A1C value from the EHR may receive recommendations on a diet that will help lower their blood sugar.

PHRs are decreasing the asymmetry of knowledge that exists in health between the provider and the patient. PHRs provide the data to make that patient more knowledgeable.

1.18 Knowledge Check



1.19 Benefits vs. Concerns

(Drag and Drop, 10 points, 1 attempt permitted)



Notes:

Nicole is a hospital administrator. She has just left a meeting where the pros and cons for installing a new EHR were discussed.

Her notes are a bit jumbled. Help Nicole sort her notes into the concerns and benefits.

Drag and drop each item either to the concerns board or to the Benefits' board.

1.20 Summary

Summary

- EHRs are electronic records of an individual that can be viewed outside the health care organization.
- EHRs differ from EMRs.
- Three Federal Strategic goals for Health Information Technology have EHRs playing a pivotal role.
- EHRs can be directly linked to PHRs empowering individuals to have a more active role in their care.

BENEFITS [show less](#)

- Clinical Decision Support Systems
- Complete documentation
- Access to the information
- Patient tracking
- Standardizing of care

CONCERNS [show less](#)

- Less clinician-patient interaction
- Inaccurate documentation
- Note bloat
- Privacy & security concerns
- Technology failure

Notes:

In summary:

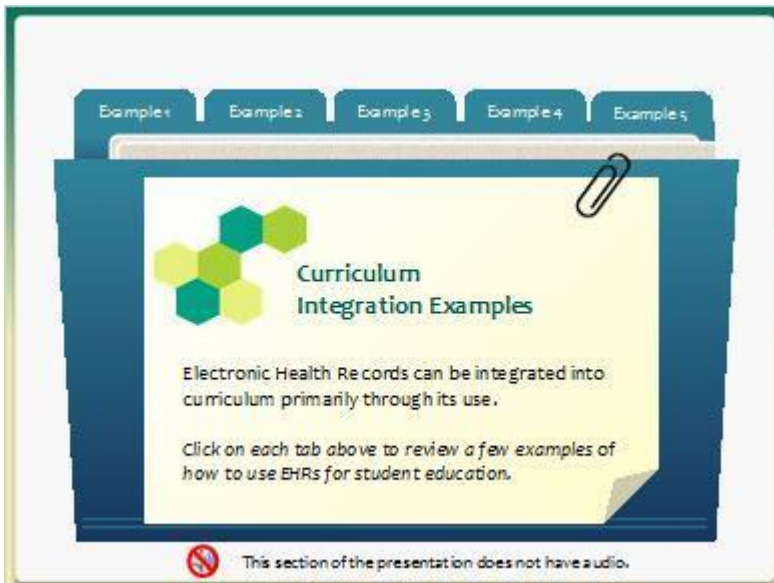
- EHRs are electronic records of an individual that can be viewed outside the health care organization.
- EHRs differ from EMRs in that information in an EHR can be viewed outside the organization whereas EMR information can only be seen within the organization.
- There are five Federal Strategic goals for Health Information Technology with three of those goals having EHRs playing a pivotal role.
- There are many benefits to EHRs including Clinical Decision Support Systems, complete documentation, access to the information, patient tracking, and standardizing of care.
- Concerns with EHR use are less clinician-patient interaction, inaccurate documentation, note bloat, privacy & security concerns, and technology failure.

- EHRs can be directly linked to PHRs thus empowering individuals to have a more active role in their care.

1.21 Curriculum Integration




1.22 Curriculum Integration



Notes:

. Examples of how to use EHRs for student education include

1.23 References



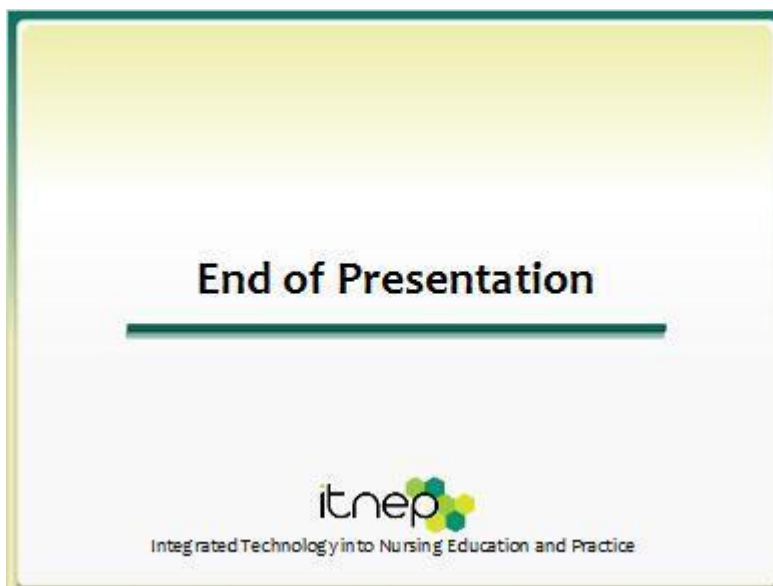
A slide titled "References" with a decorative header and a list of two references. The slide has a light green background with a darker green border. The title "References" is in the top right corner, accompanied by a logo of five colored circles (green, yellow, blue, red, purple). The references are listed in a white box with a light green border.

References

Hilleslad, R., Bigelow, J., Bower, A., Girosi, F., Meili, R. (2005). Benefits, savings, and costs: can electronic medical record systems transform health care? *Health Affairs*, 24(5), 1103-1117.

Sittig, D.F & Hardeep, S. (2012). Electronic Health Records and National Patient-safety goals. *New England Journal of Medicine*, 367(19), 1854-1860.

1.24 End of Presentation



A slide titled "End of Presentation" with a decorative header and the itnep logo. The slide has a light green background with a darker green border. The title "End of Presentation" is centered in a white box with a light green border. Below the title is a horizontal line. At the bottom is the itnep logo and its full name.

End of Presentation

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Notes: