King Saud University
College of Business Administration
Department of Health Administration
Executive Master in Health Administration

EHHA 506 – Health Insurance Administration
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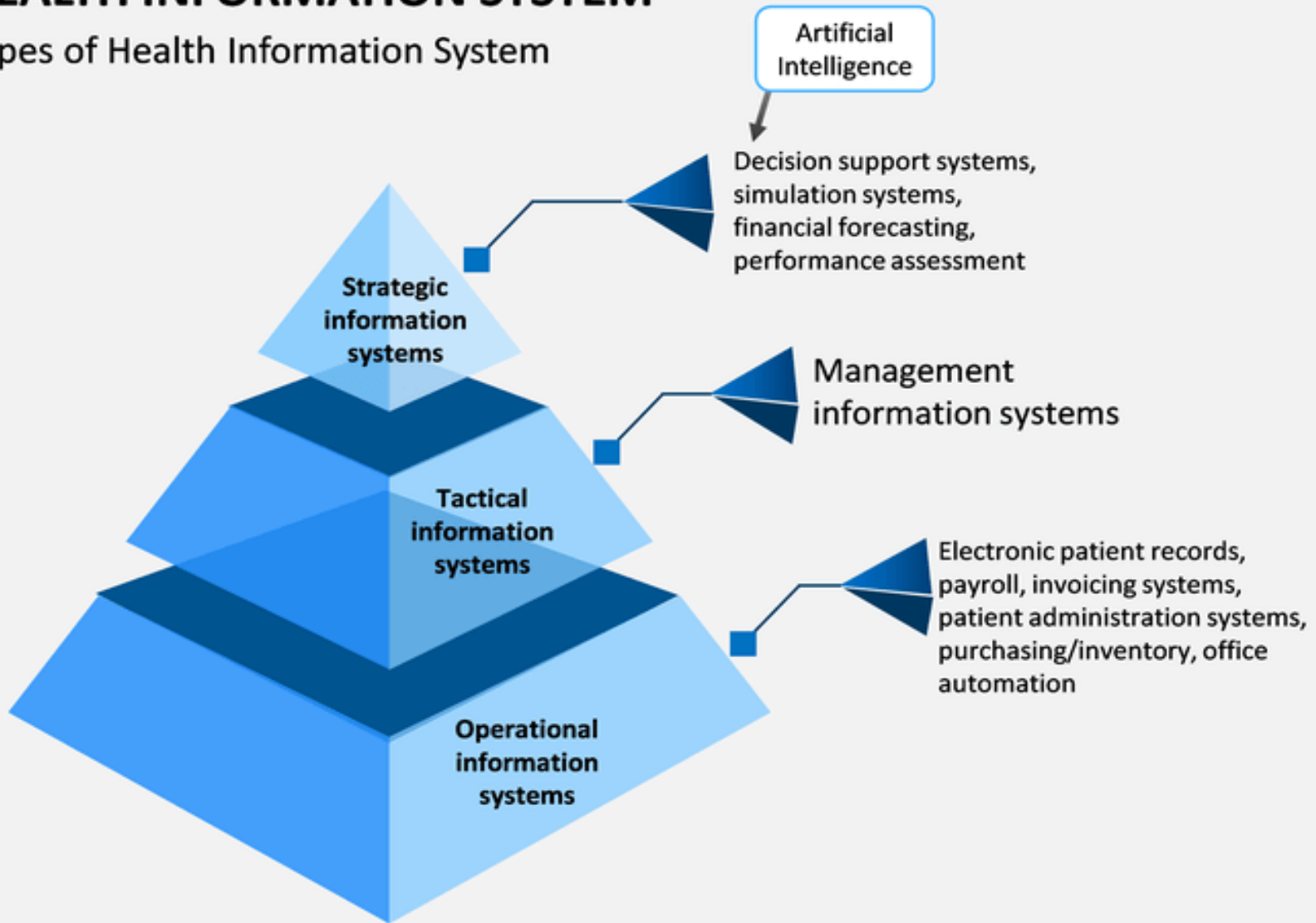
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ELECTRONIC HEALTH RECORD

Learning objectives

- **Define the term** electronic health record (**EHR**).
- Understand the key capabilities of an active **EHR**.
- Articulate the benefits of an active **EHR**.
- **Understand the concept** of meaningful use of an **EHR.**
- **Describe how the ethical principles are challenged** by the capabilities of **EHR** systems to combine many sources of patient data and to make more information available to many more users.

HEALTH INFORMATION SYSTEM

Types of Health Information System

Artificial Intelligence

Decision support systems, simulation systems, financial forecasting, performance assessment

Strategic information systems

Management information systems

Tactical information systems

Electronic patient records, payroll, invoicing systems, patient administration systems, purchasing/inventory, office automation

Operational information systems

ELECTRONIC HEALTH RECORD

- *Medical Record* **Implies that physicians participate in and supervise the medical care provided to patients in healthcare institutions.**

- *Health Record* **is a term that encompasses not only the record of medical care provided but also a listing of services provided by nonphysician health care practitioners.**

ELECTRONIC HEALTH RECORD

- **An electronic medical record (EMR)** is a digital snapshot of a patient's chart as it is maintained by a single healthcare provider.
- **It contains a patient history**, but it focuses on the activities of a particular primary care provider (physician or nurse practitioner), specialist, dentist, surgeon, or clinic.
- **EMRs** make it easier for health care providers to track the progress of a patient over time.
- **They facilitate timely reminders of appointments** and periodic checkups. Many providers agree that they make better care possible.

ELECTRONIC HEALTH RECORD

- **An electronic health record (EHR)** is a digital snapshot of a patient's entire medical history.
- **It includes a patient's current chart**, but it is designed for medical practitioners in different healthcare facilities to share.
- **EHRs include everything doctors need to know** about the health history of a patient, from family history to immunization history to allergies and procedures.
- **EHRs contain** radiological imaging and lab reports.

ELECTRONIC HEALTH RECORD

- **Electronic health records** are intended to be shared by numerous providers at multiple points of service.
- **Electronic medical records** are intended to be used by providers at a single point of service.
- **Electronic health records** enable a patient's medical history to travel with them across specialty practices, labs, pharmacies, emergency rooms, radiological facilities, and state lines.

ELECTRONIC HEALTH RECORD

ELECTRONIC HEALTH RECORD

- **There has been an evolution of the terms used** to describe a digital version of a medical record.
- **Currently, electronic health record (EHR)** is the most commonly used term to describe "a longitudinal electronic record of patient health information generated by one or more encounters in any care delivery setting.
- **Included in this information are patient demographics**, progress notes, problems, medications, vital signs, past medical history, immunizations, laboratory data and radiology reports.

ELECTRONIC HEALTH RECORD

ELECTRONIC HEALTH RECORD

- **The EHR automates and (with appropriate operations management) can streamline the clinician's workflow.**
- **The EHR has the ability to generate a complete record of a clinical patient encounter—as well as supporting other care-related activities directly or indirectly via an interface—including evidence-based decision support, quality management, and outcomes reporting".**

ELECTRONIC HEALTH RECORD

ELECTRONIC HEALTH RECORD

- **A key component of this definition** from the Healthcare Information and Management Systems Society (**HIMSS**) is the ability to record patient information that is generated in any care delivery setting.

- In other words, the **EHR** should provide caregivers with the ability to communicate patient information collected from across organizational boundaries.

- Regardless of where care was delivered, the **EHR** is designed to gather that information for a full, longitudinal detailed view of a patient's medical history.

ELECTRONIC HEALTH RECORD

ELECTRONIC HEALTH RECORD (EHR)

- **The increasing implementation of EHR systems have raised new ethical issues with regard to the potential for compromising data integrity and confidentiality for the sake of greater business efficiency, better system performance, or more convenient and timely access to data.**

- **Although EHR systems include security features, technological solutions alone are not adequate to protect the integrity and confidentiality of patient information.**

ELECTRONIC HEALTH RECORD

ELECTRONIC HEALTH RECORD (EHR)

- **EHR,** *A health record* **housed in an information system designed to provide users with access to complete and accurate clinical data, practitioner alerts and reminders, clinical support systems, and links to medical knowledge;** *also called computer-based patient record.*

ELECTRONIC HEALTH RECORD

ELECTRONIC HEALTH RECORD (EHR)

- **EHR,** *Is any information relating to the past*, *present, or future physical/mental health or condition of an individual that resides in electronic systems used to capture, transmit, receive, store, retrieve, link, and manipulate multimedia data for the primary purpose of providing health care and health related services.*

ELECTRONIC HEALTH RECORD

ELECTRONIC HEALTH RECORD (EHR)

- **This definition specifically includes** individual health status and condition to encompass preventive medicine, illness, and patient-contributed information.

- **It intends inclusion** of information from birth (or prebirth) to death *(From the cradle to the grave).*

ELECTRONIC HEALTH RECORD

ELECTRONIC HEALTH RECORD (EHR)

- **It lists system functions** **to denote the broadest capability for using and linking information available through technology and communications.**

- **It uses the term** *multimedia* **to cover the scope of electronic tools currently available.**

- **Text, coded data, voice, wave forms, and video** **may all be delivered through a multimedia workstation or other devices.**

ELECTRONIC HEALTH RECORD

ELECTRONIC HEALTH RECORD (EHR)

Described as having multiple integral components:

- **The master patient index (MPI)**
- **Documentation and feeder systems**
- **Clinical decision support**
- **Clinical data repository**

ELECTRONIC HEALTH RECORD

ELECTRONIC HEALTH RECORD (EHR)

- **One of the core elements is a unique identifying number** that links to subsequent patient information captured during care events, resulting in the development of the **EHR** over time

ELECTRONIC HEALTH RECORD

ELECTRONIC HEALTH RECORD (EHR)

Four goals were identified:

1. **Inform clinical practice** through access to quality clinical information

2. **Interconnect clinicians** so patient information and health records can be accessed as needed

3. **Personalize care** by encouraging individuals to maintain their own records

4. **Improve population health** efforts through more and better data

ELECTRONIC HEALTH RECORD

ELECTRONIC HEALTH RECORD (EHR)

Requirements for an EHR set forth by the Institute of Medicine

- **Record Content**
- **Intelligence**
- **Record Format**
- **Reporting Capabilities**
- **Control and Access**
- **System Performance**
- **Training and Implementation**
- **Linkages**

ELECTRONIC HEALTH RECORD

ELECTRONIC HEALTH RECORD (EHR)

- **HIMSS** Analytics developed the seven-stages EMR Adoption Model (EMRAM), depicted in Exhibit 9.1.

- These seven stages not only have become the de facto standard description of the key components of a complete EHR but also, with the addition of the stages of adoption of these key components/ features, have provided a means of tracking the degree of EHR adoption throughout the industry.

Exhibit 9.1. HIMSS seven-stages EMR Adoption Model (EMRAM)

Stage	Cumulative Capabilities
Stage 7	Complete EMR; CCD transactions to share data; Data warehousing; Data continuity with ED, ambulatory, OP
Stage 6	Physician documentation (structured templates), full CDSS (variance & compliance), full R-PACS
Stage 5	Closed loop medication administration
Stage 4	CPOE, Clinical Decision Support (clinical protocols)
Stage 3	Nursing/clinical documentation (flow sheets), CDSS (error checking), PACS available outside Radiology
Stage 2	CDR, Controlled Medical Vocabulary, CDS, may have Document Imaging; HIE capable
Stage 1	Ancillaries—Lab, Rad, Pharmacy—All Installed Stage 0 All Three Ancillaries Not Installed

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Controlled Medical Vocabulary (CMV) include the following:

- **Systematized Nomenclature of Medicine-Clinical Terms (SNOMED-CT).** "SNOMED CT provides the core general terminology for the electronic health record . . . and [as of 2012] contains more than 311,000 active concepts with unique meanings and formal logic-based definitions organized into hierarchies.

ELECTRONIC HEALTH RECORD

Controlled Medical Vocabulary (CMV) include the following:

- **When implemented in software applications, SNOMED CT can be used to represent clinically relevant information consistently, reliably and comprehensively as an integral part of producing electronic health records".**

- **Logical Observation Identifiers Names and Codes (LOINC). LOINC is a universal code system for identifying laboratory and clinical observations.**

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Controlled Medical Vocabulary (CMV) include the following:

- **Unified Medical Language System (UMLS).**
- **"The UMLS integrates and distributes key terminology, classification and coding standards, and associated resources to promote creation of more effective and interoperable biomedical information systems and services, including electronic health records".**

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Alert and reminder features

- " by applying automated rules to data gathered in EHRs, providers can be reminded or prompted to take appropriate actions for those who need it"

- Hospital systems today may include treatment notes, problem lists, medication, allergies, vital signs, advance directives, health maintenance information, flowsheets for specific problems, "to do" items, and discharge summaries and offer access to all other online information.

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EHR Systems in the Twenty-First Century

- **HIM professionals'** expectations have evolved to include use of the internet and secure Web technology to facilitate electronic mail among and between providers and patients;

- **patients' access to their own health information** and their ability to schedule appointments, renew prescriptions, and view educational materials via their providers Web site;

ELECTRONIC HEALTH RECORD

EHR Systems in the Twenty-First Century

- **More advanced applications of telemedicine** that encompass not only textual data and text but also sound, still video, and motion video;
- **Information management tools that organize and summarize health record content** to suit unique data needs (e.g., users can view trend data to track blood glucose levels or monitor high blood pressure and input their own data from home to add to the monitoring database.

ELECTRONIC HEALTH RECORD

EHR Systems in the Twenty-First Century

- **Risk of confidentiality breaches increase** exponentially with expansion of the number of users who may access an individual's information in EHR systems.

- **Technology challenges human behavior and values** to apply resources in ways that maintain universal and institutional values

Electronic Health Record Systems in Health Care organizations
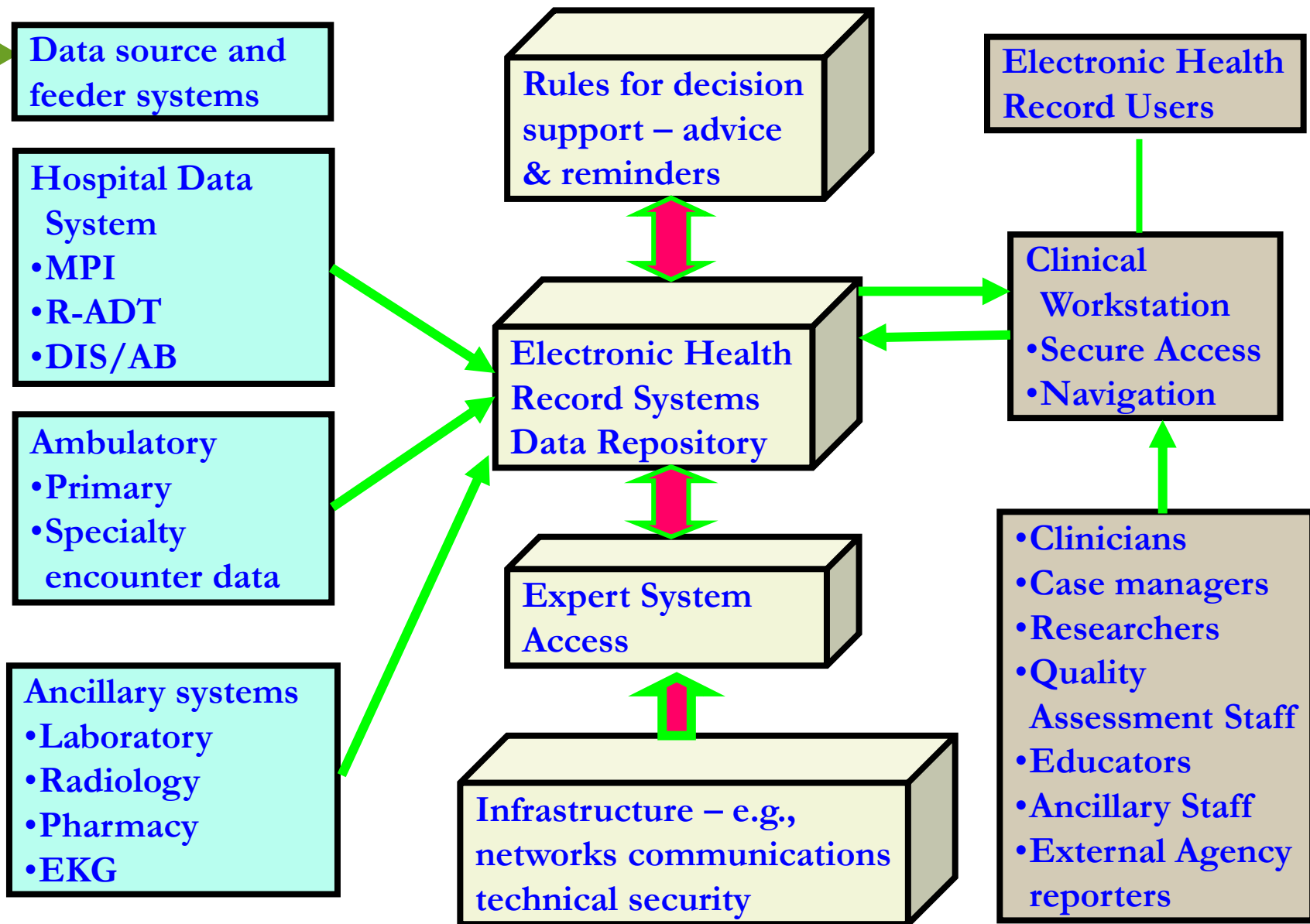
Data source and feeder systems

Hospital Data System
- MPI
- R-ADT
- DIS/AB

Ambulatory
- Primary
- Specialty encounter data

Ancillary systems
- Laboratory
- Radiology
- Pharmacy
- EKG

Rules for decision support – advice & reminders

Electronic Health Record Systems Data Repository

Expert System Access

Infrastructure – e.g., networks communications technical security

Electronic Health Record Users

Clinical Workstation
- Secure Access
- Navigation

- Clinicians
- Case managers
- Researchers
- Quality Assessment Staff
- Educators
- Ancillary Staff
- External Agency reporters

ELECTRONIC HEALTH RECORD

EHR TECHNOLOGY AND ETHICAL ISSUES
Patient Privacy

- **Privacy** is the **right " to be let alone"** and is "the right of individuals to keep information about themselves from being disclosed to others".

- **Confidentiality** the responsibility for **limiting disclosure of private matters** it include the responsibility to use, disclose, or release such information on with the knowledge and consent of the individual.

ELECTRONIC HEALTH RECORD

EHR TECHNOLOGY AND ETHICAL ISSUES
Patient Privacy

- **Security** is the means to control access to and protect information from accidental or intentional disclosure.

- **Achieving unqualified Privacy protection remains an unmet goal.**

ELECTRONIC HEALTH RECORD

EHR TECHNOLOGY AND ETHICAL ISSUES

Data Quality

- **When selecting an information system, it is ethically sound to insist that the selection process include a review and certification of data editing, validation, and interfacing requirements so that data integrity is not compromise.**

ELECTRONIC HEALTH RECORD

EHR TECHNOLOGY AND ETHICAL ISSUES

Patient Interest

- **Placing the patient's interest first is another key value in making ethical decisions.**

- **This may require that choices be made among competing principles to select the one that best meets the needs of patients.**

ELECTRONIC HEALTH RECORD

EHR TECHNOLOGY AND ETHICAL ISSUES

Institutional Values

- **Loyalty to institutional values** means advocating and representing them in business dealings.

- **It includes upholding principles** with customers (Patients and other internal and external individuals and groups who use the services of the institution).

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EHR TECHNOLOGY AND ETHICAL ISSUES
Making Ethical Decisions

- **Responsible HIM Professionals** will assemble information from legal, accreditation, policy, and professional practice sources to assist in formulating recommendations and strategies to participate in assessing, planning, and implementing information technology.

ELECTRONIC HEALTH RECORD

EHR TECHNOLOGY AND ETHICAL ISSUES

Making Ethical Decisions

- **HIM Professionals** will draw on a variety of sources to answer the following basic questions:
  - What is in the best interest of the patient?
  - How does a proposed action support my organization's principles and values?
  - Are regulatory and accrediting requirements accounted for?
  - Are personal and professional values upheld?

ELECTRONIC HEALTH RECORD

Both electronic health records and electronic medical records have resulted in measurable improvements in medical care.

- **Complete information** means more accurate diagnoses.
- **Medical information** can be updated quickly and accurately.
- **Doctors do not have to do** as many addendums to records.
- **Patient records are clear** and complete. The doctor's handwriting no longer limits them.
- **Shared information** can eliminate duplicate tests to save time and money and help doctors make timely diagnoses.
- **Broader access to patient** records reduces the risk of inappropriate prescriptions and drug interactions.
- **Electronic record systems** can be used to encourage patient participation in care.

ELECTRONIC HEALTH RECORD

Benefits and goals

- **An EHR can increase the efficiency of the clinical care processes** not only by getting rid of inefficient paper-based documentation but also by reducing the need to search for lost charts, lab data, or other pieces of patient information.

- **An EHR can potentially increase the efficiency of claims processing** by using the actual clinical data to provide documentation for claims.

ELECTRONIC HEALTH RECORD

Benefits and goals

- **Having the data on care processes in electronic form** can also help in monitoring what is happening in the patient care settings at the individual level and in using analytical techniques for identifying patterns in that care process.

- **The monitoring can involve both** cost-effectiveness and quality.

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Benefits and goals

- **Many parts of the clinical processes, the claims processes, and monitoring the patient care setting were accomplished primarily with paper medical records.**

- **While bills were generated**, risk assessments were conducted, and quality assurance and quality improvement activities were performed, they all relied primarily on painstaking chart abstraction—the manual process of reviewing paper-based medical records and extracting the pieces of information needed for the particular task at hand.

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Benefit 1: Access to information

- **One of the most obvious benefits of an EHR** is access to information—that is, getting the clinical information when and where it is needed.
- Goals such as 24-hours-a-day, 7-days-a-week accessibility are common expectations for an EHR.
- Access and communication go hand in hand, because easy access not only makes it convenient for individual clinicians to get the information, they need but also improves communication among providers.

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Benefit 2: Better organization of Data

- **This benefit includes** having basic patient data located in a central place so that the data have to be entered only one time.

- Other efficiency goals include improving the quality of the data in the record by avoiding illegible handwriting and getting an assurance that the data are complete and accurate.

ELECTRONIC HEALTH RECORD

Benefit 3: Claims Processing efficiency

- **Even though the record is a clinical record**, the clinical data can improve claims processing efficiency if this information drove the billing process.

- **Data that are accessible in electronic form can ease the process** of gathering and providing documentation for claims purposes.

- **In addition**, linking the clinical indications to laboratory test orders can improve the accuracy and efficiency of that process.

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Benefit 4: improved monitoring of Performance

- **An EHR allows** for individual provider profiles of performance as well as aggregate profiles of all providers, something most of the insurance carriers and managed care organizations are already doing.

- **These data can be used** within the organization to target quality improvement initiatives.

- **As noted,** manual chart audits are difficult and labor intensive.

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Benefit 4: improved monitoring of Performance

- **One important point to emphasize**, however, is that while microfiche, optical scanning, and other document imaging procedures may provide a better means of storage and may make accessing information easier than was possible with the paper-based medical record system, they will not make the profiling and auditing any easier.

Benefit 4: improved monitoring of Performance

- **To do that, the clinical information must be stored in such a computer-readable/searchable manner that the information can be easily retrieved in multiple different ways.**
- **With an EHR, clinical and financial outcomes can be more easily monitored and linked to quality improvement processes; this is extremely difficult to do with traditional paper records.**

ELECTRONIC HEALTH RECORD

Benefit 4: improved monitoring of Performance

- **Individual caregivers can also develop their own profiles** of behavior so that they can monitor and modify that behavior.
- **Furthermore**, individual profiles of behavior can provide insight into needed, targeted continuing education.
- **Educational activities** can be more easily targeted to real clinical needs, not just the practitioner's interests.
- **Finally, a robust EHR's ability to aggregate data across patients provides** a means for population-based monitoring and specific disease management.

ELECTRONIC HEALTH RECORD

Ethical Issues in Implementation Planning

- **Patient Record Integrity**
- **Security**
- **Consider how EHR system change basic** information collection, validation, processing, updating, and retrieval functions.
- **Recognize that the EHR provides** capabilities that the paper record does not have.

ELECTRONIC HEALTH RECORD

Ethical Issues in Implementation Planning

- **Multiple users can view the EHR.**
- **The EHR is a database that can be presented in multiple formats or view.**
- **The EHR offers consistent data collection for encounters, which aids in the acquisition of essential data elements.**
- **The EHR can display data in a single graph.**
- **The EHR provides notification to physicians and other clinicians automatically**

ELECTRONIC HEALTH RECORD

Ethical Issues in Implementation Planning

Clinical Care Process

- **The EHR system records each transaction and timestamps the transaction.**
- **The level of detail raises potential questions about the use of this data.**

Data Correction and Editing Process

- **Other capabilities, such as the ability to move data and the ability to "cut and paste" have great potential, but they also present potential problems.**

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Ethical Issues in Implementation Planning System Problems

- **When data and/or technical problems arise in the EHR system, how are they addressed?**
- **What access should IT staff have to "fix" problems?**
- **What facts are needed to address these questions?**

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Ethical Issues in Implementation Planning System Problems

- **The IT security provisions for the organization should address standards for accessing, transmitting, updating, and auditing data in a secure fashion.**

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Ethical Issues in Implementation Planning
Health Information Access Capabilities

- **Does the system decisions include the capability to access data over time?**
- **Is some data more valuable than other data?**
- **Will the system used today become outmoded and the data become more inaccessible?**

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Ethical Issues in Implementation Planning Health Information Access Capabilities

- **Will the need to maintain or update access capabilities be a financial rather than a clinical decision?**
- **What are the ethical implications when patients trust that the healthcare provider is maintaining important health information on their behalf?**
- **How are principles and values be used to explore this topic?**

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Ethical Issues in Implementation Planning

Expand Use of Health Information

- **EHR** allow a more fine-grained approach to the release of information.

- **It** is possible to release only what is needed to answer a specific question or to receive payment for a specific service

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Ethical Issues in Implementation Planning Infrastructure Strengths and Weaknesses

- **The pressure to make the EHR widely available will compete with the need to create the infrastructure needed to manage appropriately in an electronic environment.**

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Ethical Issues in Implementation Planning
New Opportunity for Vendors and Healthcare Organizations

- **Vendors provide adjunct services that may require access to patient information. Ethical problems arise because the provider cannot control how the vendor uses the patient information.**

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Ethical Issues in Implementation Planning
New Opportunity for Vendors and Healthcare Organizations

- **When individual organizations ally with other organizations to share business processes, patient services, patient data, and information on EHR initiatives, they frequently discover that their partner organization has divergent standards and policies.**

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Ethical Issues in Implementation Planning When Linking EHR Systems

- **User Access**
- **Security Practices**
- **Data Quality/Integrity**
- **Confidentiality Agreements**
- **Notifying Patients About Information Practices**
- **Audit Trails and E-Mail**

THANK YOU