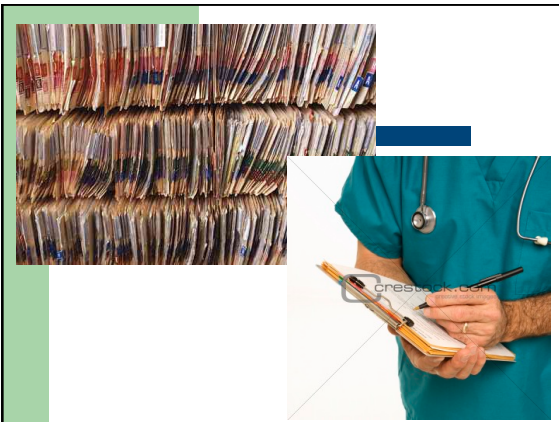


Integrating EHR into Your Practice: implications for Healthcare Reform and improved patient outcomes

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Learning Objectives

- Identify the importance of technology in healthcare
- Discuss the role of technology and EHR in Healthcare reform as identified by the Affordable Care Act
- Compare paper vs. electronic charting
- Identify the advantages and disadvantages to EHR
- Discuss the leadership role of the APN in integrating technology and informatics in the current healthcare environment
- Understand the process of integrating EHR into one's practice to assure optimal patient outcomes and fiscal
- Discuss the future implications and recommendations to actualize EHR as the standard for patient care



Purpose of Patient Records

- create the basis for the historical data
- support communication among providers
- anticipate future health problems
- record standard preventive measures
- identify deviation from expected trends
- provide a legal record
- support clinical research and public health

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Data, Information, and Knowledge

- Level of conception.
- Data – factual
- Information – meaning of data
- Knowledge – model for information

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Example

- Data – Body temperature 103
- Information – The patient is having a fever
- Knowledge -- The knowledge used to generate the information: if a patient temperature is > 100 F, he might a fever (or hyperthermia).

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Ownership of the Medical Record

Property of the individual who created it

- Provider's office owns the physical record
- Patient owns the medical information
 - May obtain a copy by signing a records release
 - May be charged an administrative fee



Weakness of the Paper Record System

- Pragmatic and Logistical issues.
 - Can I find the data I need when I need them?
 - Can I find the medical record in which they are recorded?
 - Can I find the data within the record
 - Can I find what I need quickly?
 - Can I read and interpret the data once I find them?
 - Can I update the data reliably with new observations in a form consistent with the requirements for future access by me or other people?
- Redundancy and Inefficiency
- Influence on Clinical Research

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Paper, paper, and more paper !

- HELP !



Current applications of information systems in health care

- Clinical information systems – serving clinical activities
 - Hospital information system
 - Patient monitoring system
 - Nursing information system
 - Laboratory information system
 - Pharmacy information system
 - Computer based patient record
 - Others

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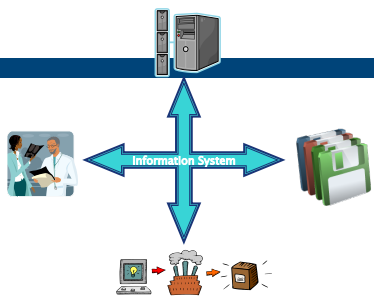
Computer based patient record

- IOM 1991 report first proposed the concept
- Other names include electronic health record (EHR), electronic medical record (EMR).
- It is not a single computer product or program
- Based on a changed model of managing patient data
- Computer and information technology is necessary but not sufficient factor.

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Components



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Where is the information system located?

- In-house – developed and managed in the health care organization
- Shared – developed and managed at the vendor site
- Turnkey system – developed by vendor, installed and managed by health care organization
- Stand-alone – lack of information sharing. Legacy system.

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Technology and Healthcare



Technology and Health care reform

- EHR and Obama/ Biden plan
- Affordable Care Act
- The Health Information Technology for Economic and Clinical Health Act (HITECH) Act 2009

Institute of Medicine- 1991 position statement

- 1991 recommended the adoption of EHR as the standard for all patient care.
- Key features of EHR:
 - Complete and accurate data
 - Provider alerts and reminders
 - Ability to study patient outcomes
 - Standardized reporting and coding system
 - 24 access to patient records
 - Integration of data and information from multiple disciplines and sites
 - Easy access for patients, families and providers

Obama-Biden Plan-2008

- Institute Health Care Initiatives to lower health care costs and ensure affordable accessible health coverage to all
- Adopt state of the art health care technology systems
- Paper insurance claims take twice as long to process as electronic claims
- EHR will reduce medical errors, allow ability to measure quality and coordinate care
- Projected that hospitals and private practice that adopt EHR an annual \$77 billion will be saved by:
 - Avoiding duplicate billing
 - Avoiding improper drug utilization
 - Monitoring standards and inefficiencies of care

2009 Affordable Care Act

- Seeks to increase access to high-quality health care and improved outcomes
- Established the National Strategy for Quality Improvement in Health Care
- The goal is to:
 - Promote quality health care
 - Incorporate evidence-based research and scientific advances
 - Foster a delivery system to reduce administrative burden and support collaborative care (www.ahrq.gov/workingforquality)

HITECH Act 2009

- Addresses the obstacles to the adoption of EHR technology
- Provides substantial financial incentives for adoption and meaningful use of EHR over the next several years
- Supports clinical research to improve public health
- Focused on engaging the private sector including vendors, service companies, and insurers to develop a realistic system
- Works with health care providers to help to expand the use of EHR by providing both financial support and training

HITECH Incentives

- Medicare EHR Incentive Program
 - Starting 2011, eligible providers receive up to \$40,000 over 5 years
 - Eligible hospitals can receive \$2 million
- Medicaid EHR Incentive Program
 - Starting 2011, eligible professional can receive up to \$63,750 over 6 years
 - Eligible hospitals can receive \$2 million

Difference between Paper and Electronic Health Records

- Accessibility
- Legibility
- Adaptive
- Structure
- Reusability
- Flexibility

EHR is the paper health record in electronic format.

- Electronic Health Record



Influences on EHR

- Disease Pattern Change
- Health Care Delivery System Change
- Specialization of Medicine
- Advances of Computer and Information Technology

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Contents of the Electronic Health Record

- Each patient has their own record
- Documentation is a vital component of the EHR
- Contains:
 - Health information
 - Administrative information
 - Legal documents

Practice Management Software

- Administrative software used for:
 - Patient demographics
 - Billing and insurance information
 - Appointment scheduling
 - Advanced accounting practices

Primary and Secondary Uses of an EHR

- Primary Uses
 - Patient Care Delivery
 - Patient Care Management
 - Patient Care Support Processes
 - Financial and Other Administrative Processes
 - Patient Self-Management
- Second Uses
 - Education
 - Regulation
 - Research
 - Public Health and Homeland Security
 - Policy Support

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Health Information

- Medication lists
- Allergy lists
- Immunization records
- Laboratory reports
- Pathology reports
- Surgical reports
- Hospital records
- H&P
- Progress notes
- Radiology reports

Health Information and Data

- Narrative (clinical and patient narrative)
 - Free text
 - Template based
 - Deriving structures from unstructured text
 - NLP
 - Structured and coded
 - Signs and symptoms
 - Diagnoses
 - Procedures
 - Level of service
 - Treatment plan
 - Single discipline
 - interdisciplinary

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Results Management

- Results Reporting
 - Laboratory
 - Microbiology
 - Pathology
 - Radiology
 - Consult
- Results notification
- Multiple views of data/presentations
- Multimedia support

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Order Entry/Management

- Computerized provider order entry
 - Electronic prescribing
 - Laboratory
 - Microbiology
 - Pathology
 - Radiology
 - Ancillary
 - Nursing
 - Supplies
 - Consults

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Decision Support

- Access to knowledge sources
 - Domain knowledge
 - Patient education
- Drug alert
 - Drug dose defaults
 - Drug dose checking
 - Allergy checking
 - Drug interaction checking
 - Drug-lab checking
 - Drug-condition checking
 - Drug-diet checking

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Decision Support

- Other rule-based alert (e.g., significant lab trends, lab test)
- Reminders
 - Preventive services
- Clinical guidelines and pathways
 - Passive
 - Context-sensitive passive
 - Integrated
- Chronic Disease Management

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Electronic Communication and Connectivity

- Provider to provider
- Team coordination
- Patient-provider
 - Email
 - Secure web messaging
- Medical Devices
- Trading partners (external)
 - Outside pharmacy
 - Insurer
 - Laboratory
 - Radiology
- Integrated medical record
 - Within setting
 - Cross-setting
 - Inpatient-outpatient
 - Other cross-setting
 - Cross-organizational

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Administrative Information

- Patient information form
- Referral letters
- Consultation letters
- Insurance information
- Billing information
- Appointment history
- Diagnostic and procedure codes
- Emergency contact information

Administrative Processes

- Scheduling management
 - Appointments
 - Admissions
 - Surgery/procedure schedule
- Eligibility determination
 - Insurance eligibility
 - Clinical trial recruitment
 - Drug recall
 - Chronic disease management

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Billing and Coding Duties

- Creation of billing statements
- Assignment of procedural and diagnostic codes
- Link codes for reimbursement
- Auditing
- Filing patient statements

Reporting and Population Health Management

- Patient safety and quality reporting
 - Clinical dashboard
 - External accountability reporting
 - Ad hoc reporting
- Public health reporting
 - Reportable diseases
 - Immunizations
- De-identifying data
- Disease registry

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New York University Faculty Practice Experience with implementing EHR

- Unique Practice Model
 - Primary Care APN faculty run practice located in the Dental School at NYU
- Implemented EHR through a New York City Grant after evaluating several EHR systems
- E-Clinical works system selected by NYC
 - Advantages of the system:
 - program provided screening tools for substance abuse with data electronically reported to NYC DOH
 - Program provided ability to monitor patient outcomes, e-prescribing and lab results to be electronically sent to patient record
 - The NYC DOH was able to provide statistics and outcomes to each provider in the practice on how their outcomes and productivity compared to practice of similar demographics

NYU EHR Planning

- Funding obtained from a geriatric grant from the John Hartford foundation
- DOH, e Clinical works and NYU administrators and providers worked closely to assure that the individual practice needs were met
- Training for each provider and administrative support staff
- Physical space renovations
- Developing Templates with IT support staff
- Developing a plan to convert from paper to electronic records
- Upgrading present computer software to accommodate EHR

NYU EHR experience- “Going Live”

- Time-consuming to convert paper to EHR
 - Six months to go to completely electronic
- 1-2 month adjustment period for provider's to adapt to new charting method
- Continual revision of templates with IT support
- After 6 months, able to interface with LabCorp and Quest for lab results
- E-prescribing- providers had to update medications available for e-prescribing which was labor intensive
- Billing and coding were automatically determined

NYUFP Experience

- Advantages
 - Track labs – directly sent to chart with reminder sent to provider to review the labs
 - E-prescribing
 - CQI tracking- DM, HTN, Lipids
 - Legible

NYUFP Experience

- Pitfalls/Obstacles
 - Developing Templates with IT
 - Medications
 - E- prescribing
 - Converting paper charts to e chart
 - Need to know state requirements

E-prescribing

- Advantages
 - Legible
 - Easy to track
 - Safety and efficient- dosaging/drug-drug interactions
 - Decreased medical records
 - Less medication related call backs from patients
- Disadvantages
 - Continually needs updating and the cost of updates
 - Poor connectivity with pharmacies and mail order companies

Outcomes in the Compete Study

- The Compete Study
 - Recruiting Physicians for EMR Projects
 - Experiences from the COMPETE Study (Computerization of Medical Practices for the Enhancement of Therapeutic Effectiveness)

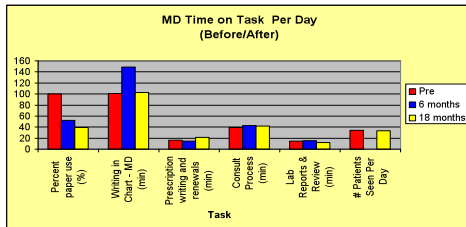
COMPETE

- Computerization of Medical Practices for the Enhancement of Therapeutic Effectiveness
- Network of 33 family physicians who used EMR to support all clinical activities and practice-based research
 - Investigate computer use and influence on health care utilization, efficiency and satisfaction with care
 - Investigate feasibility and methods of providing sophisticated prescribing decision support
- Conducted at the Centre for Evaluation of Medicines, McMaster University
- Principal Investigator: Dr. Anne Holbrook

Details of COMPETE

- 33 physicians signed up for the study
 - 22 physicians still using 3 years after study ended
- Collected data on 200,000 encounters with 40,000 patients
 - 95% of medications are coded
 - 90% of diagnoses are coded


Workflow Change



Self-reported time

Chief Myth of the EMR

- MYTH: If we could only find the 'perfect' EMR, everything would fall into place (the 'killer app' mentality)
- REALITY: EMRs are complex systems requiring multiple services to go right:
 - EMR is a 'mission critical' application required every 10 min in primary care, unlike billing which has a higher tolerance for failure
 - Training is essential
 - Hardware configuration and installation
 - Software and Hardware support
 - Implementation planning - Practice Management consulting and change management
 - A computer lab needed to test new software and hardware -before using it in a production setting in a busy clinic
 - EMR is like Enterprise Resource Planning (ERP) software

Value 

- The provider approach to EMR selection is a telling clue to our approach to EMRs
 - We judge the EMR by its interface and by its features
 - Quite different from IT or administrator approach
- Provider expectations are much, much greater than the technology can deliver today
 - We expect that technology will
 - Improve our productivity and streamline our workflow
 - Support us in good clinical decision-making (i.e., have medical 'common sense')
 - Make information more accessible
 - Save us money


Provider Benefits

#1 Improved Patient Flow

- Charts available at all times, seldom lost
- Lab results available on-line
- Reduction of clerical work (decreased filing/chart pulls)
- Improved cash flow with EDT

#2 A tool for better patient care

- Cumulative Patient Profiles are maintained automatically
- Easily share legible charts with colleagues and call partners



Provider Benefits

#3. Patient Complaint-oriented Templates

- Guided chart writing --point and click. NO Typing!
- Templates are customizable
- Optimal prescribing guidelines
- Immediate access to drug information

#4. Benefits to Long-term Patient Healthcare

Issue: Cost-Value-Price



- Costs are quite high –\$800-1200/month/physician
 - Prices physicians are willing to pay are low –\$255-415/month /physician in Canada –likely slightly higher in the US
- Financing EMR systems is a major challenge to sustainability
 - Not all benefits of EMR accrue to physicians –decreased willingness to pay
 - There are other stakeholders that receive benefits –patients, insurers
- New evidence shows great benefit for insurers and payors –\$86,000 per physician over 3 years
 - Likely to see insurers and payors subsidizing the cost of these technologies
 - Recent Presidential Task Force is recommending treating EMR like medical technologies (MRI and CT) as opposed to administrative technologies (Fax)
- Other jurisdictions (Australia, UK, Europe) have had great success with EMR when payors subsidize the costs

Involving the Community

- EMR implementations are complex and the motivations to implement them are complex
- The provider community needs a forum in which to discuss these motivations and discuss the risks and benefits of this technology
- Any effort to implement EMRs should involve providers in the choice of EMRs and learning about the technology

Involving the Community

- Open houses
- Vendor demonstration days
- Seminars by physicians who have implemented the technology in their practices
- Fax-outs, brochures, etc
- Get opinion leaders on-board with the idea

Educating Providers

- Once providers start hearing about the technology, they will want to know more
- Seminars should be presented on:
 - Software features to look for, software selection process, benefits of EMR
 - EMR implementation process –what to expect, change management, frequently asked questions (common barriers and how to overcome them)
- Seminars should be accredited for Continuing Education Credits

Qualifying Prospects

- Not all providers will benefit from an EMR nor will all providers believe they will benefit
- Some providers are only curious, but have no intention of implementing
- How do you distinguish between providers who are serious and those who are merely curious?
 - Set up 'barriers' for providers to overcome –the more barriers the physicians get over, the more likely they are to be motivated to computerize
 - Barriers could be attendance at seminars, site visits, completion of workbooks, etc

EMR Implementation

- EMR Implementation is risky
- EMR technology is in its early phases
 - There is a high risk of physician-technology mismatch
 - Increased chance of failure because of many unknowns
- Multiple potential points of failure in implementation
 - People, processes and technology
 - Expectations need to be managed carefully
 - Change management needs to be implemented
- Failure of implementation can lead to large sunk costs
 - EMR implementation costs are largely front-loaded
 - Difficult to re-deploy equipment once it has already been deployed

Post-Implementation Support

- Large risk of discontinuation of EMR use
- Providers need constant and on-going support to use the EMR
 - Average of 3 months, with a range of 2 weeks to as much as 18 months
- Return on Information (ROI) is the greatest benefit of EMR
 - Need planning and support to get high quality data for improved patient care

COMPETE Discoveries

- Post-implementation barriers
 - Learning curves are long –opportunity costs are large
 - Wide range of charting tasks –structured v. narrative
 - Data entry is an issue
 - Poor keyboarding skills and voice-recognition still in its infancy
 - On-going training and support
 - Providers are too busy to realize they are stuck –need proactive management and assistance
 - Balancing patient and documentation needs
 - Inability to take advantage of the information handling capability of information technology
 - Gender bias

EHR adoption

- Fewer than 10% of US Hospitals are using EMRs
- Ambulatory (NEJM 2008)
 - 4% fully functional EHR
 - 13% basic system
 - Small and solo practices struggle

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Barriers

- Standardization of Clinical Information
- Cost of implementation and maintenance
- Physicians' readiness to adopt the EHR
- Privacy issues and patients' concerns with information sharing.
- Legal liability

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NLN Position Statement 2008: Preparing the Next Generation of Nurses to Practice in a Technology Rich Environment

- Supports the IOM and Federal Initiatives
- Health Information Technology 4 Strategic Goals for Nursing:
 - Encourage the widespread adoption of EHR
 - Interconnect clinicians so health information can be shared
 - Personalize care through the use of personal health records and telehealth
 - Improve public health through accessible information

NLN 2008:

- TIGER initiative 2007
 - Adopt informatics competencies in all levels of nursing education
 - Encourage faculty to participate in informatics programs
 - Develop a task force at each nursing school to integrate informatics
 - Encourage informatics continuing education
 - Collaborate with industry and service partners to adopt informatics
 - Recruit future nurses in the area of informatics

Recommendations:

- APN/DNP as a technology leader:
 - Advocate for quality patient outcomes
 - Assure patient confidentiality
 - Nursing has historically interpreted and screened all patient data
 - Collaborate with other disciplines
 - Holistic approach patient care

Thank You



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