 Michigan Osteopathic Association  
Fifth Annual Fall CME Seminar

Electronic Medical Records:  
*The Good, The Bad and The Ugly*

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## Learning Objectives

- Describe how computer technology can enhance a physician's clinical practice through the use of electronic health records.
- Discuss the risks associated with computer use in clinical practice, including breach of confidentiality, and inappropriate documentation.
- Identify steps physicians can take to minimize risks associated with computer use in patient care.

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## Computer Error

- To err is human  
— *Institute of Medicine*
- To really screw things up  
takes a computer  
— *Anonymous*



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## Making the Case for National Implementation

- Existing health care system:
  - Expensive
  - Difficult to coordinate between hospital, healthcare providers
  - More difficult and time-consuming to measure quality

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## Rand Corporation Study

- 81 Billion per year in savings
- 77 Billion from improved efficiency (reduced inpatient stays, avoidance of redundant care)
- 4 Billion from reduced medication errors and side effects

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## Initiatives to Date

- January 20, 2004
  - State of the Union Address
- April 27, 2004
  - Executive Order 13335 signed
- September 13, 2005
  - American Health Information Community (AHIC)

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## Electronic Stimulus

- 20 Billion in healthcare IT over the next decade
- Continued debate
- Increased emphasis on privacy protection
  - Will it inhibit the flow of information

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## Perceived Benefits of EMR

- More patient information
- Notification of completed studies
- Reminders
- Alerts
- Messaging and orders
- Storage
- No hard copy filing
- Exchange of info between health care entities
- Legibility

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## Additional Benefits

- Multiple records Access:
  - Allows other personnel to work on aspects of patient records concurrently with the physician
- Remote Access:
  - Log in over a secure internet connection to access data from anywhere
- Renew and crosscheck prescriptions:
  - Ensures prescription matches patient symptoms appropriately and checks for allergies

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## Additional Benefits (cont'd)

- Receive lab and diagnostic study results
- Rich reporting capabilities:
  - Generate useful reports for patient data, prescription inventory, appointment history
- Secure access:
  - Technology available to protect sensitive and confidential patient information and comply with HIPAA

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## EMR Software

When shopping for the right EMR software, here are five key things you want to be able to do:

1. Use the codes and terminologies that your office is familiar with
2. Handle multiple offices for several physicians
3. Create the chart templates that are most familiar to you
4. Find different ways to sort and manipulate the data
5. Manage other patient information such as test results, x-rays, and medical history
6. HIPAA compliant
7. [www.himss.org](http://www.himss.org)

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## EMR Options

- **KEYBOARD AND MOUSE** – Features a simple user interface that allows medical personnel to type in the data and select certain information about a patient.
- **TOUCH SCREENS** – Navigate the on-screen menus to select the options you want to work with.
- **SPEECH RECOGNITION** – Allows doctors and staff on the go to record patient data into a portable recording device.
- **HANDWRITING DETECTION** – Lets doctors jot down notes that the software will decipher into an electronic format.

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## Additional Considerations

- Standard desktop vs. laptop PC for each room
- Table PC
- Personal digital assistance (PDAs)

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**Bottom Line**

- **You need an EMR system that is:**
  - Highly available 24/7 and redundant
  - Back up access within 30 minutes
  - Does not need paper back up

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**Physician-Patient Communication Skills – Do EMRS Help Or Hurt?**

- Physicians with poor communication skills get dramatically worse
- Physicians with good communication skills usually get better
- Transparency issues of providing access to patients for their medical records

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**Risk: Interpersonal Distance**

*The executive fort...*



*Pay no attention to the man behind the curtain...*

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### In the Exam Room

- Where does that thing sit?
- What happens if it gets wet?
- Is it an entertainment center?
- People never to leave alone with a computer
  - Children
  - Lawyers
  - Programmers



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### Emergency Department EMR Benefits

- More extensive information
- Helps with a poor historian
- Access to records and tests quicker
- Ability to compare files
- Tracker screens
- Able to track trends

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## Emergency Department Risks

- Maneuvering between screens takes time
- Audit trail will see what accessed
- Tendency to use the information post visit for charting purposes
- Templates and billing driving care

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## Radiology Benefits

- Digital imaging through a PACS system makes reports/images simultaneously available to multiple physicians in multiple locations
- Provides consistent image quality
- Offsets film expenses
- Provides access to previous or complementary images along with current images
- Eliminates physical storage space required for film images

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## Potential Downsides



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## Information Displacement

- Information where it shouldn't be
  - Loss of privacy, confidentiality (HIPAA)
  - Physical loss (laptops, media)
  - Copies, networks
- Information not where it should be
  - Warnings, alerts, results, etc.
  - Save, delete, overwrite
  - Downtime
- Cost



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## The "Blended" Record

- Most medical records contain information on persons *besides* the patient...
  - Behavioral health
  - Family history
  - Occupation
  - Trauma
  - Genetics...



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## Templates

"Canned" text can get you canned...

- Can produce *bizarre* and *outrageous* errors
  - Templates
  - Check-offs
  - Paste forward
- "Please read the jury the notes on your last 20 patients with chest pain..."



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## Poor Decisions

- How would you know, if the decision support system *malfunctioned*?
- Where did your guidelines come from?
  - Are they current, valid?
- Has the system been tested?
  - How?



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## Follow up

- Recall failure may account for 35% of malpractice payments
  - Alerts, prompts and reminders
  - Follow up and monitoring
  - Result notification
  - Result response
  - Scheduling
  - Accountability...



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## Failure to Use the Tool

"I think our system has some kind of a recall function, but..."

- ... we never implemented it
- ... we never got trained on it
- ... it's too hard to use
- ... I'm not authorized to use it



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## The Employee-Patient

- Voluntary participation
- Thorough disclosure
- Written disclaimers
- Full documentation
- Thoughtful policy
- HIPAA discipline
- *Informed Consent*
- *Monitoring...*



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## Poorly Articulated Queries

*The "DM" mystery...*

- Problem
  - Search for "Diabetes Mellitus"
  - Terms: "ketoacidosis," "insulin," "DM," "Glucophage," etc...
- Result
  - 1,200 children with undiscovered diabetes!
- *Wait a minute...?*



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## Data Overload

- The volume of raw data strains the human capacity to process it
  - Time pressure
  - Display pressure
  - Multitasking
  - Navigation overload



*Information overload causes error*

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## Logging in...

- How long can a terminal remain active before users must automatically be logged off?
  - "30 seconds...?"



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## Wireless Devices

- "You're on the air..."
  - If not carefully secured, your network can leave you exposed



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## The Employee as Adversary

- Security issues
  - Password discipline
  - Media discipline
- The employee-patient
- Ownership of information
- Piracy, theft and vandalism
- Tinkering, hacking and browsing
- Bypassing/shortcutting system functions
- "STDs" (Software Transmitted Diseases)
- Time wasting, foolishness, humor, pornography



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## What is "Reasonable Prudence?"

- "They should'a known better..."
  - Cell phone cameras
  - Swapping passwords
  - Downloading viruses
  - Businesses-on-the-side
  - Pornography
  - Harassment
  - Stolen laptops



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## CPOE as a Source of Error

- In a tertiary, academic medical center, with a mature, commercial EMR:
  - 22 different types of failures *facilitated* by the system
  - Errors almost daily

*Koppel, et al., 2005, JAMA, 293(10): 1197-1203.*

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## 22 Categories of Failure...

- Information errors
  - Accepting the dose on the screen
  - Duplicating orders
  - Automatic orders linked to procedures
  - Automatic discontinuations
  - Diluent interactions not captured
  - Delayed recognition of contraindications
  - Failure to capture information from all systems

*Koppel, et al., 2005, JAMA, 293(10): 1197-1203.*

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## 22 Categories of Failure...

- Human-machine interface flaws
  - Can't clearly identify the patient
  - Can't view all meds on a single screen
  - Log-in/log-out failures
  - Extra steps required to "activate" orders
  - Automatic cancellation of pre-surgical orders
  - Downtime delays
  - Orders near midnight interpreted as "tomorrow"
  - Cumbersome interface makes charting difficult

*Koppel, et al., 2005, JAMA, 293(10): 1197-1203.*

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## Risk: Backup

"Computers never forget!"

- "I'm positive it was in there yesterday!"
- "We just deleted the Martinez family..."
- "What exactly do you mean by 'backup'...?"

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## 10% of Hardware is Counterfeit



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## Training

- The need for training is proportionate to the complexity of the task
- Train to the lowest denominator
- Learn from the learners
- Demonstrate proficiency
- Document!



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## Templates: Billing Can Significantly Drive Charting

- Encourages charting for services that were not performed: the problem with default entries
- Does not allow for focused examinations
- "Exploding notes" and "cloning"

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## Templates: Where's The Meat?

- No personality to the note, no personality to the patient, where's the cognitive thinking? What's really important?
- List of what the patient does not have, but what does the patient have?
- Fragmentation of information without a flow
- Death of the SOAP note

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## The Ugly

- The site of care becomes a recording studio...
  - Copies – authorized and “pirated”
  - Metadata
- No “erase” or “rewind”
- Myth of infallibility



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## Metadata

- A running log of every keystroke, mouse-click, screen or record viewed
- With user ID and timestamp

*Carved in stone*

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## “Master Person Index”

- More people are at risk from *mistaken identity* than *violation of privacy*

*Identify theft is the fastest growing class of crimes in the U.S.*  
-- FBI



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## The Wired Criminal

- Carbon based defenses have not kept pace with silicon
- A universe of mischief
  - ATM fraud didn't exist in 1900
  - Is "hacking" = "speech?"
  - Profiteering, marketing
  - Industrial sabotage
  - Pranks, vandalism
  - *Terrorism?*



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## E-discovery

- 2.3 trillion e-mails per year (U.S.)
  - 75% contain proprietary information
- 90% of information is created and stored electronically
  - And will never be printed

*"The days of paper-created documents are over."*

-- Greg McCurdy, Microsoft Corp.

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## New Federal Rules

- Requirements to discuss electronic discovery issues as to preservation and privileges
- Encourages voluntary agreements re inadvertent disclosures
- Can respond that electronic information is not readily accessible
- Cannot impose sanctions if failure to provide electronically stored information is lost as a result of the routine, good faith destruction of an electronic information system

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### General Legal Definition for Discovery

- Any combination of text, graphics or other information in digital form, created, maintained, modified, retrieved or distributed via computer
- This can include open or deleted emails, data files, program files, temporary files open or deleted, system history files, software, website files, medical research files, word processing, voice mails, chat rooms and blogs.

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### Discovery & Case Presentation Problems

- EMR programs are set up for screen viewing
- Screen presentation and printed data versions are very different in most systems
- Inability to access remotely due to firewalls
- Need to review chart electronically with the client
- Need for physician access to screen format for deposition or trial

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### Preservation of Information & Evidence

- New Federal Rules relating to retention and disclosure of electronic information
- Preservation of letters
- Computer forensic experts
- Metadata issues
- Discovery requests for software
- Stored data destruction, back up tapes for diagnostic tests/films
- Issues of spoliation
- Need for experienced IT team for data preservation
- Consult with EMR vendor

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### New Theories of Liability or Procedures

- Software vendors or manufacturers as co-defendants?
- Lawyer's duty to monitor client's compliance with preservation and production
- Necessity for IT EMR person to testify at trial as to benefits, limitations?
- Failure to utilize EMR system or records?
- Misrepresentations made by EMR vendors?

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### Common Malpractice Theories: Do EMRS Help or Hurt?

- Miscommunication between health care providers
- Failure to review available information
- Failure to obtain information and consider other reasonable diagnoses
- Inaccurate charting
- Failing to rule out reasonable possibilities
- Poor physician/patient communication
- Informed consent
- Technical errors
- Hot buttons (record alteration, fraud, money driven care, etc.)

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### Deleting, Altering or Destruction of EMR Records

- Automatic addendums
- Turn off delete keys
- Audit trail problems
- Closing a practice, inability to provide patient records from an EMR system

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 Failure to Review –  
Signature, Access and Consent Issues

- Signing of notes without reading them
- Development of clarifying language to explain the lack of review
- Canned operative reports
- EMR revealing bad practice patterns

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 Remedies...

- **Backup!**
- Password discipline
- Clear policies
- Physical security
- Training
- Cross-training
- **Backup!**
- Disclosure/consent
- Proficiency testing
- Audit
- Encryption
- Beta testing
- "Fire drills"
- Surveillance
- Situational awareness
- Competent human oversight
- *Did we mention backup?*

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 QUESTIONS??

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THANK YOU FOR YOUR  
ATTENTION!

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