THE HUMAN SIDE OF HEALTH INFORMATICS

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• “...one of the most fundamental and pervasive problems of health care delivery; the paper-based medical record. From prescriptions to medical histories and life-critical hospital charts, patient care today relies on an increasingly antiquated, costly, and error-prone system of pen-and-paper notations.”
Potential of Information Technology

• At the same time “the potential of information technology to reduce the number of medical errors, reduce costs, and improve patient care is enormous.”
Implementation of Information Technology
Patient Care Tools

• Electronic Medical Records
• Clinical Decision Support
• Electronic Prescribing
• Online Communication with Patients
• Remote Disease Monitoring
Use of Electronic Medical Records
Primary Care and Specialists
Harris Interactive, Oct. 1, 2001

USA  Canada  Australia  New Zealand  UK

- USA: 12% Primary Care, 12% Specialists
- Canada: 14% Primary Care, 16% Specialists
- Australia: 25% Primary Care, 13% Specialists
- New Zealand: 52% Primary Care, 14% Specialists
- UK: 59% Primary Care, 22% Specialists

Legend:
- White: Primary Care
- Purple: Specialists
Use Electronic Medical Records
Harris Interactive, Aug. 8, 2002

- EU: 29%
- USA: 17%
- Belgium: 42%
- Italy: 37%
- Denmark: 62%
- Spain: 9%
- Ireland: 28%
- Austria: 55%
- France: 6%
- UK: 58%
- Germany: 48%
- Sweden: 90%
- Netherlands: 88%
- Finland: 56%
Hospital Implementation of EMRs

• Less than 10% of U.S. Hospitals have adopted EMRs
• Only 2.5% of U.S. Hospitals have adopted Computerized Physician Order Entry (CPOE) with Clinical Decision Support
• Only 2.2% of European Hospitals have adopted CPOE with Clinical Decision Support
Use of Electronic Prescribing
Primary Care and Specialists
Harris Interactive, Oct. 1, 2001

USA | Canada | Australia | New Zealand | UK
---|---|---|---|---
Primary Care | 9% | 8% | 44% | 52% | 87%
Specialists | 6% | 11% | 12% | 14% | 16%

Legend:
- Primary Care
- Specialists
Use of Practice Website
Harris Interactive, Aug. 8, 2002

- EU: 13%
- USA: 39%
- Belgium: 9%
- Italy: 6%
- Denmark: 13%
- Spain: 6%
- Ireland: 6%
- Austria: 18%
- France: 11%
- UK: 27%
- Germany: 26%
- Sweden: 42%
- Netherlands: 47%
- Finland: 63%
Use of Online Communication with Patients
Harris Interactive, Nov. 13, 2001

Currently Use: 26%
Plan to Use: 13%
Use of Remote Disease Monitoring
Harris Interactive, Nov. 13, 2001

Currently Use: 5%
Plan to Use: 9%
OK.....NOW TAKE A DEEP BREATH...
Reasons for Using Information Technology
Reasons for Using EMRs
Harris Interactive, Nov. 13, 2001

- 52% Efficiency
- 21% Better Care
Reasons for Electronic Prescribing
Harris Interactive, Nov. 13, 2001

- Efficiency: 35%
- Better Care: 23%
- Formulary Compliance: 9%
Reasons for Online Communication with Patients
Harris Interactive, Nov. 13, 2001

- Efficiency: 30%
- Better Care: 16%
- Patient Satisfaction: 41%
Reasons for Remote Disease Monitoring
Harris Interactive, Nov. 13, 2001

- Efficiency: 37%
- Better Care: 47%
Consumer Interest in Using Patient Care Tools
Anderson, 2002

- Communication with Providers: 56%
- Online Medical Records: 22%
- Remote Disease Monitoring: 62%
Barriers to Implementation
Barriers to Information Technology in Health care

• Lack of access to capital.
• Lack of standards.
• Lack of interoperability.
• Privacy concerns.
• Health care provider resistance.
Perceived Barriers to Internet Use

Anderson, 2002

![Bar chart showing perceived barriers to Internet use.]

- Threats to Privacy: 39%
- Unreliability: 13%
- Inaccuracy: 18%
- Problem Evaluating Quality: 29%
- Physician Disapproval: 26%
Reasons for Not Using EMRs

Harris Interactive, Nov. 13, 2001

- 51% for Cost
- 13% for MD-Patient Relation
Costs of Implementing EMRs

- $30 million for large hospitals.
- $1.7 million for 200-bed hospitals.
- $15,000 - $50,000 per physician for physician practices.
Reasons for Not Using Electronic Prescribing

Harris Interactive, Nov. 13, 2001

- Cost: 31%
- MD-Patient Relation: 19%
Case: Unanticipated Consequences

- A computerized physician order entry (CPOE) system used between 1997 and 2004 at the University of Pennsylvania, identified 22 types of persistent errors in computerized drug delivery. Twenty-seven percent of doctors reported that antibiotic administration was delayed because of system-related lapses in getting such drugs re-approved; 12 percent reported trouble telling which patients they were ordering drugs for, .
“Well, www.what’swrongwithme?.com says it’s just a virus, but I came to you for a second opinion.”

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Case: Doctor-Patient Conflict over Therapy

• A woman with ovarian cancer was being treated at a major medical center. The woman and her husband concluded after searching the Web that intensive therapy with a combination drugs would be a more appropriate therapy than the one she was currently receiving. Her doctors felt the current treatment was more appropriate.
Reasons for Not Using Online Communication with Patients

Harris Interactive, Nov. 13, 2001

- Security and Privacy: 26%
- Non-reimbursable: 21%
Smile — you're on computer.

Medical records
Financial records
Subscriptions
Purchases
Social security number
Rentals
Phone calls

Washington Post 8/16/97 p. C6
Case: Security Breaches

• San Jose Medical Group in California is notifying 185,000 current and former patients that their personal information may have been stored on two computers recently stolen from the group’s administrative offices. The computers contained billing records and sensitive information in the form of billing codes.
Case: Privacy and Confidentiality - Data Mining

- A woman in Texas received a letter containing personal details about her and threatening her with rape. A convicted rapist who was serving time in a Texas prison had written the letter. He was entering data for a data mining company that had obtained the information from a product questionnaire that the woman had filled out and sent back to the company.
Case: Conflicts of Interest drkoop.com

• The drkoop.com Web site provides information on medical conditions and advice on topics such as purchasing health products and services. In return for listing products and services, Dr. Koop was originally entitled to receive 2% of the revenues derived from sales of products, a fact that was not revealed on the Web site.
Reasons for Not Using Remote Disease Monitoring with Patients

Harris Interactive, Nov. 13, 2001

Cost: 28%
MD-Patient Relation: 13%
“Rapid pulse, sweating, shallow breathing ... according to the computer, you've got gallstones.”
Case: Interoperability of Information Systems

• A 35-year old woman was admitted to the ER of a medical center with a high fever. She was subsequently admitted to the ICU with a presumed diagnosis of sepsis when her blood pressure dropped. The ordering systems in the ER and ICU were independent and, although a physician ordered an antibacterial medication (ampicillin), the pharmacy filled the prescription with an antiviral medication (acyclovir). The patient suffered irreversible brain damage before the error was detected.
"I give up. Where's the patient?"

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Case: Health Care Provider Resistance

- A full-blown staff rebellion in the fall of 2002 forced Cedars-Sinai in California to shelve its $34 million computer system after three months. Only a fraction of the 2,000 doctors with privileges at the hospital were involved in developing the system even though it resulted in dramatic changes in how they practiced medicine. Staff complained that tasks that once took 3 minutes to complete now required 30-40 minutes. The most complaints involved automatic alerts that flashed every time a doctor made an out-of-the-ordinary request.
Strategies for Implementation

• Broad physician involvement in the selection and implementation of the informatics application is essential.
• Sponsors are needed when introducing a new clinical information system application.
• Consider in advance how the application will affect routine practice patterns.
• Implement the application in stages that provide demonstrated benefits to providers.
• Be prepared to manage a host of behavioral and organizational changes caused by the introduction of the application.
U.S. Federal Efforts

- Consolidated Health Informatics Initiative (2003) Effort to standardize clinical record coding schemes across federal departments using HL7, DICOM and SNOMED.
- Make VistA, the VA EMR, and an EMR developed by the American Academy of Family Physicians (AAFP) available on an open-source basis to physicians and hospitals.
Future Federal Health Information Policy

• Establish as an objective the adoption by health care providers of EMRs that meet standards for collecting and exchanging clinical information.

• Establish and endorse standards for record structure, messaging format, and medical vocabulary.

• Establish a forum to notify vendors and users of EMRs of new mandates.
Future Federal Health Information Policy

• Provide financial support to the work of standards groups.

• Remove barriers to hospitals’ propagation of their EMR systems to physicians’ office practices by amending fraud-and-abuse statutes to provide a legislative safe harbor for cooperative IT activities.
Future Federal Health Information Policy

• Provide financial assistance for selected hospitals and physicians who lack resources to purchase and implement approved EMR systems.

• Extend the current HIPAA mandate to provide uniform assurance and prompt payment for standard electronic claims and standardize claims justifications required by health plans.