Informatics Challenges for the Impending Patient Information Explosion

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Between 44,000 and 98,000 Americans die each year as the result of medical error (IOM)

All seven of the most frequent medical errors cited were due to impaired access to information (accounted for 78% of the total errors uncovered)

Review of 2,353 adverse events in acute care settings revealed that 74.1% of these events were highly preventable if better access to, or transfer of, information was available
The Next Ten Years

- Improved Technology
- Government Support
- Receptivity of Healthcare Professionals
- Receptivity of Patients

= Use of Electronic Records

= Amount of Data
More & More

EMR

PHR

EHR
Data rich and information poor?
Decision Making

- Having all the information increases our ability to make informed decisions.

- Not finding the information needed in a timely manner can force us to make decisions without considering key elements, resulting in error.
Future Information Challenges

- Information Filtering
- Context-Sensitive Decision Support
- Clarifying Legal and Ethical Obligations
- Aligning Patient and Caregiver Expectations
- Assessing and Enhancing Data Accuracy
Information Filtering
Current Information Filtering

- Hand-offs during change of shift
- Medical and Nursing rounds
- Nurses team coordination reports to supervisors, physicians, physical therapy, respiratory therapy, nursing assistants, pharmacy, nutrition
Patient Summary and Event Summary

- Content analysis of unstructured narrative data in otherwise structured documentation
- CICU nurses used narrative documentation to summarize patient condition and patient events
- Summaries were used to inform and coordinate team members
Information Structure

- Tailored patient information summary by specialty
- Tailored patient information summary by context
- Tailored patient information by purpose
Context-Sensitive Decision Support
Decision Support Systems

- Developed over the last 40 years
- Shown to improve patient safety and reduce the cost of care
- Although current information systems have the capability of sophisticated decision support, these capabilities are often not used
Problems with the Use of Decision Support

- Alert Fatigue
- Drug alerts frequently overridden, turned off, or are set at a very high threshold
- Diagnostic decision support ignored, advice is not trusted
Context-Sensitive Decision Support

- Tailoring alerts to patient vulnerability
- Tailoring alerts to medication risk
- Diagnostic support that works in the background and only provides suggestions when significant procedures are omitted
- Making decision support rationale and evidence visible
Clarifying Legal and Ethical Obligations
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- How far back are clinicians obligated to review the record?
- What portions of the record can clinicians have access to?
- Are clinicians required to review all information entered by the patient?
- Are clinicians obligated to report/correct another’s clinician's mistakes?
Aligning Patient and Caregiver Expectations
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- If clinicians have access to all the patient’s information, the patient will expect the clinician to have studied this information.
- Patients and clinicians will need to negotiate on what information is necessary for review.
Creating Patient Minimum Data Set

- Patient minimum data sets will have to be devised that can be integrated with the patient record to create a summary that is up to date and contains information tailored for the specific clinician and purpose.
Assessing and Enhancing Data Accuracy
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- Lifelong medical records will contain information collected in different locations, by people with varying medical expertise, and varying treatment and testing modalities.

- Will clinicians trust previously collected data or diagnoses?
Judging Data Accuracy

- Completeness: the proportion of observations that are documented
- Correctness: the proportion of documented observations in the system that are correct
Patients and Data Accuracy

- Conflicting study results
- Outpatient electronic medical record error by 36%
- Medical record problem list error by 28%
Improving Data Accuracy

- Standardized data definitions
- Direct clinician/patient data entry
- Structured encounter forms
- Anticipatory prompts
- Periodic accuracy monitoring and feedback
- Automated data capture from patient information systems
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