Hospitals and Health Systems: Negotiating the ROI for CPOE/e-Prescribing

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Strategies for the digital future of healthcare information

- Information management and systems consultant, focusing on EHRs and their value proposition
- Adjunct faculty, College of St. Scholastica; former positions with CPRI, AHIMA, Univ. of Ill., IEEI
- Active participant in standards development; contractor to NCVHS on EHR and e-prescribing standards
- Speaker and author (Silver ASHPE Awards for “HIPAA on the Job” column in Journal of AHIMA)
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Strategies for workflow, productivity, quality and patient satisfaction improvement through health care information

- Business process consultant focusing on electronic health records, and electronic transactions between organizations
- Former positions with MGMA, University of Denver, Dartmouth College; advisor to national associations
- Active leader in the Workgroup for Electronic Data Interchange (WEDI)
- Speaker and author (two books on HIPAA Security and one forthcoming on electronic health record)

- Strategic IT business process planning
- ROI/benefits realization
- Project management and oversight
- Workflow redesign
- Education and training
- Vendor selection and enhanced use of vendor products
- Facilitate collaborations among organizations to share/exchange health care information
Agenda

☐ How do hospitals and health systems apply ROI?

☐ What is CPOE and e-Prescribing?

☐ Negotiating the ROI for CPOE and e-Prescribing
Hospitals and Health Systems: Negotiating the ROI for CPOE/e-Prescribing

Hospital and Health System ROI
Return on Investment (ROI)

- Applies to capital projects
  - Construction/reconstruction
  - Medical equipment
  - Information technology

- Helps answer the questions:
  - Can we afford it?
  - What will it do for us?
  - What do we do first?
Types of ROI Measures

- **Payback period**
  - Compares revenue stream and/or cost savings to cost of project
  - Most commonly used measure
  - Payback periods of 1-3 years desirable

- **Internal rate of return**
  - Compares the value of the investment to others
  - Often calculated by vendors
  - IRRs of 15% or more desirable

- **Net present value**
  - Uses present earnings percentage to determine time value of investment
  - Not often used in health care
Key Ingredients for ROI

- **Accurate cost data**
  - Actual cash outlay
  - Associated costs
  - Unit costs

- **Accurate revenue/savings data**
  - Net reimbursement
  - Other revenue
  - Cost savings: staff reduction, expense elimination
  - **Accurate metrics**
ROI for IT Projects

- Much maligned
  - Much needed
- What are the problems?
  - Pricing is highly variable
  - Law of supply & demand keeps price high
  - Many associated and hidden costs
  - Misplaced incentives:
    - Strong incentive to manage reimbursement
    - Weak incentive to improve performance
  - Many confounding variables in measuring revenue/cost savings
ROI for IT Projects

Cost/Benefit Analysis

- Hardware
- Software
- Support
- Maintenance
- Implementation & Training
- Productivity Improvements
- Cost Savings
- Contribution To Profit
- Cost Avoidance
- Revenue Increases

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Benefits Portfolio

- Mix of financial *and* other benefits
- Other benefits are important and have downstream financial impact
  - Quality of care
  - Patient safety
  - Productivity improvement
  - Patient/provider satisfaction
- Value of benefits portfolio beginning to be recognized
- Many still do not believe any IT system pays for itself
Hospitals and Health Systems: Negotiating the ROI for CPOE/e-Prescribing

CPOE and e-Prescribing
Medication Mgt in Hospitals

13% Medication History

49% Medication Ordering
  Indications/Contraindications/Transcription

11% Incident/ADE Reporting

14% Pharmacy Process
  Evaluate/Select/Prepare/Distribute

26% Medication Administration
  Intervene/Monitor/Administer/Select

11% Formulary/Inventory

Education Patient/Clinician

Source: FCG, CPOE: Costs, Benefits, and Challenges, January 2003

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Computerized Provider Order Entry

- Touted by many as way to improve patient safety, especially medication errors

- Idea is that providers entering their own orders would:
  - Select right patient
  - Make right decision
  - Select right medication
  - Enter right medication
  - Transmit right medication

ADEs
Medication Errors
Challenges of CPOE

☐ In many cases, providers
  ■ Become clerks
  ■ Find entry time-consuming
  ■ Find work flow disruptive

☐ In many cases, systems
  ■ Do not provide ubiquitous and quick data entry
  ■ Are not properly interfaced
    ☐ Laboratory
    ☐ Clinical documentation
  ■ Lack decision support
  ■ Lack integrated knowledge sources
Today’s Prescribing Environment

**Prescriber**
1. Examines patient & reviews chart
2. Writes prescription
3. Gives patient paper copy, or faxes to dispenser

**Dispenser**
- Receives prescription
- Checks PIS for allergies/meds/$
- Calls prescriber if illegible/other
- Transmits claim
- Receives call from dispenser
- Calls prescriber if change needed
- Receives payment
- Fills prescription for patient

**Payer/PBM**
- Receives claim
- Checks formulary and benefits
- Advises dispenser of contraindications, co-pays, prior auth reqmts
- Pays claim
- Potential patient safety/efficiency issue
- Electronic transaction

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Patient Safety/Efficiency Issues

1. Medical and medication history is limited to what patient relates to prescriber, which may not include all medications or contraindications due to recall or restriction issues

2. Prescriber’s handwritten prescription may be illegible, incomplete, for a contraindicated drug, or written without knowledge of lower cost or more efficacious alternative

3. Prescriber relies on patient to take the prescription to the dispenser

4. Dispenser’s knowledge of patient’s allergies, medication history, and indications for drug may be limited to that made available from patient and/or retained in the pharmacy information system (PIS)

5. Calling dispenser to clarify prescription intent or discuss a potential lower cost or more efficacious alternative is time consuming for dispenser, prescriber, and patient
Patient Safety/Efficiency Issues

6. Pharmacy may receive information from payer or PBM about contraindications to medications which patient appears to be taking due to claims history, or when there are issues associated with co-pays patient is unable to afford, or when a prior authorization is required

7. Calling dispenser to change prescription, or obtain prior authorization is time consuming for all

8. Prescriber calling payer/PBM for prior authorization is very time consuming, and has been known to result in a prescriber making a change to another potentially less efficacious drug to avoid delay or cost to patient

9. Prescriber calling dispenser with prior authorization is another time waster

10. There is no direct feedback mechanism for the prescriber to know when the prescription is ultimately filled, partially filled, or not filled
1. Basic electronic reference only. Drug information, dosing calculators, and formulary information are available, but not automatically shown with prescribing

2. Standalone Prescription Writer: search by drug name and Create prescription, no long-term data about patient is accessible

3. Supporting patient data is included (Demographics, Allergy, Formulary, and/or Payer Information)

4. Medication Management: Prior Medications are available for renewal, Interaction checks, etc.

5. Connectivity: MDs Office, Pharmacy, PBM and Intermediaries

6. Integration with EHR

Source: eHealth Initiative, Electronic Prescribing: Toward Maximum Value and Rapid Adoption, April 14, 2004
Challenges of e-Prescribing

- Human-computer interface
- Work flow
- Customizable screens
- Ergonomics
- Value proposition
  - Initial cost
  - Subscription fees
  - Transaction fees
  - Functionality
Many Behind-the-Scenes Factors

- Interoperability standards
- Vocabulary
  - Mapping
  - Comparability
- Trading partners
  - Dependencies
  - Transactions
Drug Terminologies

Adapted from U.S. Government Drug Terminology, Randy Levin, MD, Director, Office of Information Management, Center for Drug Evaluation and Research, Food and Drug Administration

The following build upon each other

- UMLS - RxNorm
- VHA NDF RT
- FDA NDC
- NLM-FDA DailyMed
- Structured Labeling Elements

Diagram:

- Active Ingredient (e.g., levodopa)
- Drug Component (e.g., levodopa 100 mg)
- Clinical Drug (e.g., levodopa 100 mg, carbidopa 25 mg tablets)
- Finished Dosage Form
- Drug Product (e.g., Sinemet 25/100)
- Packaged (NDC) Drug (e.g., bottle of 100)

Therapeutic Intent
Clinical Kinetics
Dosage Form
Indication

UNII Codes
Chemical Structure
Strength
Form
Physiologic Effect
Mechanism of Action
Drug Class
Clinical Effects
Inactive ingredients and appearance
CPOE vs. e-Rx

Hospital

Clinical Pharmacy

Provider

Discharge
ED
Outpatient

Retail Pharmacy
Hospitals and Health Systems: Negotiating the ROI for CPOE/ e-Prescribing

Where is the ROI in CPOE and e-Prescribing?
ROI: CPOE

Hospital
- Reduce ADEs leading to
  - Increased LOS
  - Increased services
  - Potential for lawsuit
  - Potential for bad press
- Reduce medication errors
  - Reduces potential for ADE
  - Improves clinician satisfaction

Provider
- Increases time to order
  - More complete order
  - More knowledge, better outcomes
- Changes work flow
  - Requires entry skills
  - Different system at each site
  - Increases pharmacy and medical cooperation
  - Minimize rework and questions
ROI: e-Prescribing

Provider

- Cost
- Work flow
- PMS may not be HL7 compliant
- May require EHR
- Reduce hassle factor
- Reduce errors, improving:
  - opportunity for incentives
  - reduced malpractice premiums
  - provider satisfaction

Patient

- Reduce hassle factor
- Increase opportunity for recovery and wellness
- Children may miss opportunity for parents to buy a toy
Value of CPOE/e-Rx: **Decision Support**

- Patient and order-specific data congruence
  - Drug allergy, drug-drug, drug-lab, drug-food alters
  - Calculators
  - Knowledge sources
- Tailorable order sets
- Customizable rules
- Conditional guidelines and protocols
  - In easy to read and navigate screens
  - On portable, wireless devices
Requirements

- Adoption of standards for interoperability and data comparability
  - MMA
  - NCVHS
- Active engagement of all stakeholders in planning and managing change
- Investment in (the right) technology
- Willingness to work on process improvements
- Continual management of decision support rules
- Acceptance of no dual systems
Contact Information

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