

Slide 1

**Health Management  
Information Systems**

Unit 4  
Computerized Provider Order  
Entry (CPOE)

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Slide 2

**Objectives**

- Discuss the major value to CPOE adoption
- Identify common barriers to CPOE adoption
- Identify how CPOE can affect patient care safety, quality and efficiency, as well as patient outcomes

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Slide 3

**Advantages of CPOE Over  
Paper-Based Systems**

- Free of handwriting identification problems
- Faster to reach pharmacy
- Less subject to error associated with similar drug names
- More easily integrated into medical records and decision-support systems

Koppel, R., et al Role of Computerized Physician Order Entry Systems in Facilitating Medication Errors. <http://jama.ama-assn.org/cgi/content/full/293/10/1197?jkey=83e2c4349737ab8b717ca9f12ccdc4a1de9f26a>

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Slide 4

**Advantages of CPOE Over Paper-Based Systems**

- Less subject to errors caused by use of apothecary measures
- Easily linked to drug-drug interaction warnings
- More likely to identify the prescribing physician
- Able to link to ADE reporting systems

Koppel, R., et al Role of Computerized Physician Order Entry Systems in Facilitating Medication Errors . <http://jama.ama-assn.org/cgi/content/full/293/10/1197?ikey=83e2c4349737ab8b717ca9f12ccdc4a1de9f26a>

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Slide 5

**Advantages of CPOE Over Paper-Based Systems**

- Able to avoid specification errors
- Available and appropriate for training and education
- Available for immediate data analysis
- Claimed to generate significant economic savings

Koppel, R., et al Role of Computerized Physician Order Entry Systems in Facilitating Medication Errors . <http://jama.ama-assn.org/cgi/content/full/293/10/1197?ikey=83e2c4349737ab8b717ca9f12ccdc4a1de9f26a>

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Slide 6

**Advantages of CPOE Over Paper-Based Systems**

- With online prompts, CPOE systems can
  - Link to algorithms to emphasize cost-effective medications
  - Reduce underprescribing and overprescribing
  - Reduce incorrect drug choices

Koppel, R., et al Role of Computerized Physician Order Entry Systems in Facilitating Medication Errors . <http://jama.ama-assn.org/cgi/content/full/293/10/1197?ikey=83e2c4349737ab8b717ca9f12ccdc4a1de9f26a>

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Slide 7

**Major Value of CPOE**

- Enhanced patient safety
- Reduced costs
- Reduced variations in care by encouraging best practices

HIMSS CPOE Fact Sheet . [http://www.himss.org/content/files/CPOE\\_Factsheet.pdf](http://www.himss.org/content/files/CPOE_Factsheet.pdf)

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Slide 8

**Major Barriers**

- Belief that physicians will not use computerized ordering
- Not a small or easy task
- Impact on workflow
- Risk
- Cost

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Slide 9

**e-iatrogenesis**

- "Patient harm caused at least in part by the application of health information technology"

Weiner, J. et al. "e-iatrogenesis": The Most Critical Unintended Consequence of CPOE and other HIT <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC244888/>

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Slide 10

**Medication Error Risks**

- Information errors
  - Medication discontinuation failures
  - Procedure-linked medication discontinuation faults
  - Immediate order and give-as-needed medication discontinuation faults
  - Antibiotic renewal failure
  - Diluent options and errors
  - Allergy information delay
  - Conflicting or duplicative medications

Koppel, R., et al Role of Computerized Physician Order Entry Systems in Facilitating Medication Errors . <http://jama.ama-assn.org/cgi/content/full/293/10/1197?key=8362c4349737ab8b717ca9f12ccdc4a1de926a>

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Slide 11

**Medication Error Risks**  
Human-Machine interface flaws

Patient selection	Loss of data, time, and focus when CPOE is nonfunctional
Wrong medication selection	Late-in-day orders lost for 24 hours
Unclear log on/log off	Failure to provide medications after surgery
Role of charting difficulties in inaccurate and delayed medication administration	Sending medications to wrong rooms when the computer system has shut down
Postsurgery "suspended" medications	Inflexible ordering screens, incorrect medications

Koppel, R., et al Role of Computerized Physician Order Entry Systems in Facilitating Medication Errors . <http://jama.ama-assn.org/cgi/content/full/293/10/1197?key=8362c4349737ab8b717ca9f12ccdc4a1de926a>

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Slide 12

**Major Support for CPOE Adoption**

- HITECH Act
  - Use of health information technology in
    - Improving the quality of health care
    - Reducing medical errors
    - Reducing health disparities
    - Increasing prevention
    - Improving the continuity of care among health care settings

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Slide 13

**Electronic Health Record  
Incentive Program Final Rule**

- Stage 1
  - CPOE included in the core set of measures
  - Only medication orders
    - 30% threshold (60% for Stage 2)
  - Transmission of the order is not included in the objective or the associated measure
- Any licensed healthcare professional can enter orders into the medical record per state, local and professional guidelines

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Slide 14

**CPOE's Impact**

- CPOE can with CDS
  - Improve medication safety and quality of care
  - Reduce costs of care
  - Improve compliance with provider guidelines
  - Improve the efficiency of hospital workflow

Inpatient Computerized Provider Order Entry (CPOE): Findings from the AHRQ Health IT Portfolio.  
[http://healthit.ahrq.gov/portal/server.pt/gateway/PTARGS\\_0\\_1248\\_846328\\_0\\_0\\_18/09-0031-EF\\_cpoe.pdf](http://healthit.ahrq.gov/portal/server.pt/gateway/PTARGS_0_1248_846328_0_0_18/09-0031-EF_cpoe.pdf)

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Slide 15

**CPOE's Impact**

- Improve the efficiency
- Improve compliance with evidenced-base practices

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Slide 16

**Summary**

- Major values
- Common barriers
- Positive and negative affect on patient care safety, quality and efficiency, as well as patient outcomes
- Not a technology implementation
  - A redesign of a complex clinical process

California HealthCare Foundation <http://www.chcf.org/publications/2009/10/computerized-physician-order-entry-fact-sheet>

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