

Slide 1

**Health Management  
Information Systems**

Unit 4  
Computerized Provider Order  
Entry (CPOE)

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Slide 2

**Objectives**

- Describe the purpose, attributes and functions of CPOE
- Explain ways in which CPOE is currently being used in health care

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Slide 3

**Definition of CPOE**

- Computerized practitioner order entry (CPOE)
  - Order entry application
    - Assists practitioners with the creation and management of orders for services and medications

HIMSS Dictionary of Healthcare Information Technology Terms, Acronyms and Organizations , 2010

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Slide 4

**CPOE**

- Is part of an integrated clinical information system
- Is a computer application
- Not just an electronic prescribing system
- Use of computer assistance by a provider to directly enter medical orders from a computer or mobile device for further processing

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Slide 5

**CPOE**

- Coupled with clinical decision support systems
  - Applies rules-based logic
  - Supplies real-time feedback
  - Example
    - Alert of a drug allergy with a suggested alternative medication

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Slide 6

**Purpose of CPOE**

- Automate the patient ordering process in order to manage patient care more effectively and efficiently and as a result improve patient safety and outcomes

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Slide 7

**Purpose of CPOE**

- Prevent, reduce, or eliminate medical errors and adverse drug events (ADEs)
- Improve patient safety
- Reduce unnecessary variation in health care
- Improve efficiency of health care delivery

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Slide 8

**Prevent, reduce, or eliminate medical errors and ADEs**

- IOM reports
  - 98,000 patients die each year in U.S. hospitals due to medical errors
  - Advised rapid adoption of electronic medication ordering to support clinical decisions
- CPOE seen as a solution

IOM, <http://www.iom.edu/Reports.aspx>  
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Slide 9

**Improve Patient Safety**

- Leapfrog Group
  - Consortium of major companies and other large private and public healthcare purchasers
  - One of its key patient safety standards
- CPOE seen as a way to “leap” forward
  - “leap” is a recommended hospital quality and safety practice

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Slide 10

**Reduce Unnecessary Variation  
in Health Care**

- Help the physician make optimal ordering decisions and improve adherence to evidence- based practice
- Requires configuration of orders and order sets

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Slide 11

**Improve Efficiency of Health  
Care Delivery**

- Reduction in order verification and processing times
  - Electronic communication both directions
    - Order entered electronically
    - Order sent electronically
    - Order received electronically
    - Status returned electronically
- Requires interfaces with existing information systems

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**Attributes of CPOE**

- Patient ordering
- Patient-centered decision support
- Patient safety features
- Optimally the human computer interface is intuitive

<http://en.wikipedia.org/wiki/CPOE>

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Slide 13

**Attributes of CPOE**

- Regulatory compliance and security
- Portability
- Management
- Billing

<http://en.wikipedia.org/wiki/CPOE>

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**Attributes of CPOE**

- Responsiveness - users are not left hanging
- Response time – prompt response to input
- Reliable – probability of failure-free operation

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**Functions of CPOE**

- Basic: electronic order communication
  - Accepts (captures) the provider's orders for services
  - Transmits the order to the appropriate location
  - Returns status of order
  - Returns results of order execution

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**Functions of CPOE**

- **Advanced:** includes clinical decision support
  - Simple: drug-drug interaction checks, medication dose calculators
  - Complex: Alert of a drug allergy along with an alternative medication

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Slide 17

**CPOE and Clinical Decision Support (CDSS)**

- **Clinical Decision Support System (CDSS)**
  - Uses pre-established rules and guidelines
  - Integrates clinical data from several sources
  - Generates alerts and treatment suggestions
- CPOE needs clinical decision support to reach its full value

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**Clinical Decision Support Systems (CDSS)**

- **Three parts to CDSS**
  - Knowledge base, aka the “rules-engine”
  - Inference engine
  - Mechanism to communicate

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**CPOE and Clinical Decision Support Systems (CDSS)**

- No single approach to integration
- Questions to ask
  - “What kind and how much clinical support?”
  - “What about medication alerts, allergies, routine preventive diagnostics?”
  - “How many alerts will users tolerate before ignoring them?”
  - “How difficult should it be for the practitioners to override the alerts?”

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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**CPOE Users**

- Physicians
- Nurses
- Physician assistants
- Nurse practitioners
- Therapists
- Pharmacists
- Others

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Slide 21

**CPOE Uses**

- Applies to both the inpatient or ambulatory setting
- Order types
  - Medications
  - Tests, e.g., laboratory
  - Procedures
  - Other clinical processes such as admissions, referrals

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**Summary**

- Part of a clinical information system
- Computer application
- Automates the ordering process
- Has an assortment of attributes
- Lots of different users
- Applies to all types of orders
- Has ties to clinical decision support systems

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