

Component 6 - Health Management Information Systems

Unit 4-1 Computerized Provider Order Entry (CPOE)

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Objectives

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

Definition of CPOE

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

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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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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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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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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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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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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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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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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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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CPOE and Clinical Decision Support System(CDSS)

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

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

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Clinical Decision Support System (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

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CPOE Users

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

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CPOE Uses

- Applies to both the inpatient and 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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