

CPOE

Computerized
Provider Order Entry

Khadafy Yahiya
Nursing Informatics Coordinator

Objectives

Be able to

- Describe what CPOE is
- Describe proven advantages of CPOE

Outline

- Definition
- Benefits of CPOE
- Functions and Features of CPOE

Paper based prescription

~~XXXXXXXXXXXX~~ DATE 4/2
Zendit 20mg \$ 120.
20mg P.O. Q6h

Haldol. 5mg #270

7 AM, 11⁰⁰hs


CPOE

Computerized
Provider Order Entry

Definition:

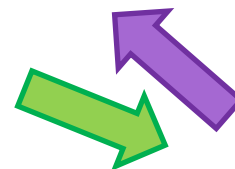
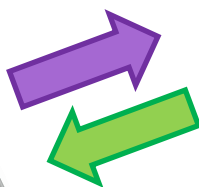
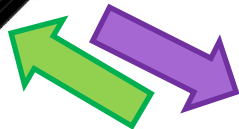
An application that enables providers to enter medical orders into a computer system rather than on paper.

CPOE systems allow providers to electronically specify **medication orders** as well as **laboratory, admission, radiology, referral** and procedure orders.

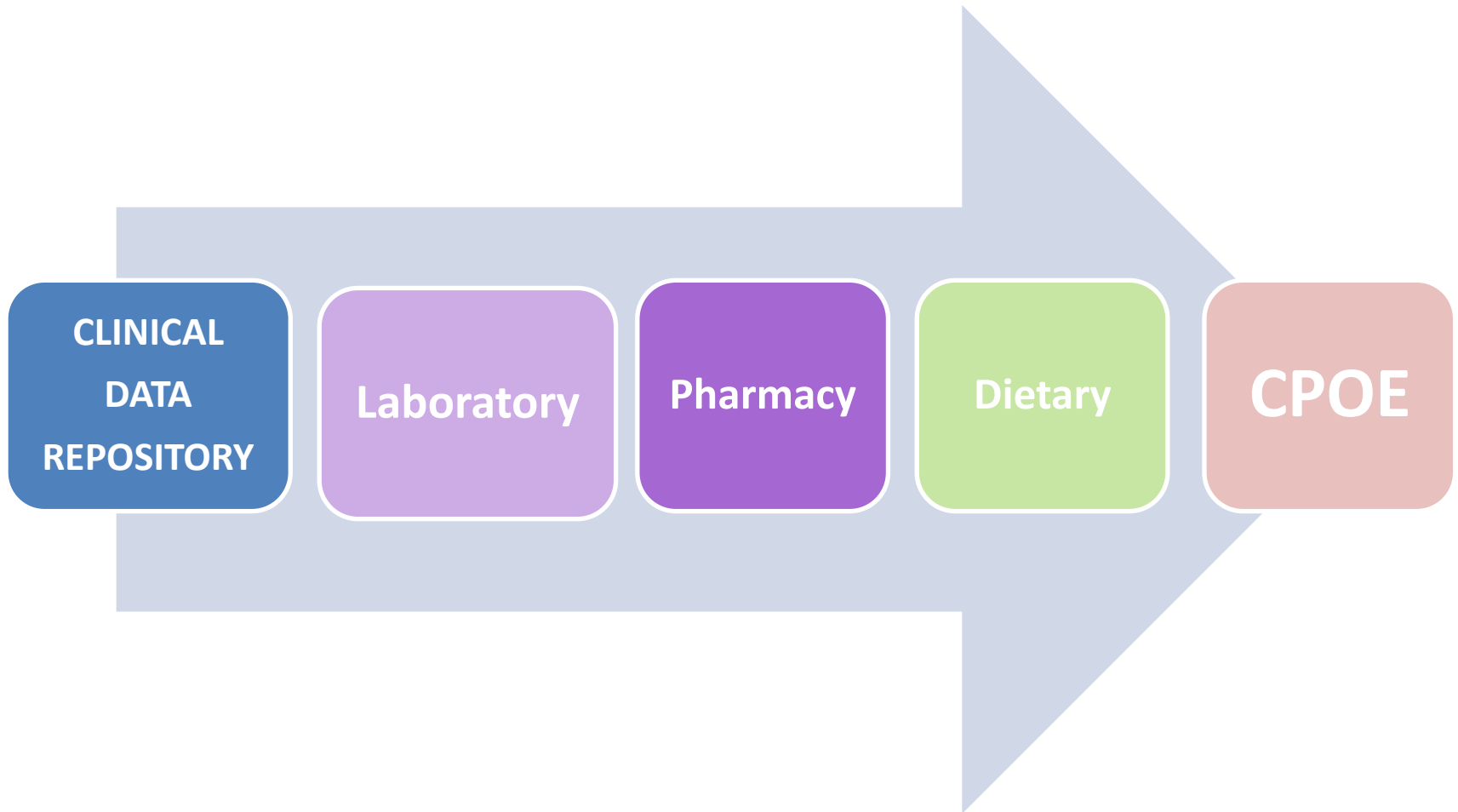
The bottom of the slide features three horizontal bars: a thin light green bar, a thin light blue bar, and a thick dark blue bar.



**CPOE
INFRASTRUCTURE**



SUPPORTING INFRASTRUCTURE




Why CPOE?

Improve Quality of Care



CPOE Benefits

- Timely delivery of patient care
 - Support efficient workflow
 - Reduce medication errors
- 
- The slide features three horizontal decorative bars at the bottom: a green bar, a light blue bar, and a dark blue bar.

FUNCTIONS

- Orders
- Rules and Alerts
- Clinical Decision Support

ORDERS

Standardized

Legible

Complete

Prevents Duplication of Orders

Checks for Drug Dosing, Interaction &
Allergies

New Save Save + New Clear Preferred Pharmacies Eligibility Status Medication History

Type

☒ Create Rx ☐ Record Rx ☐ Administer Med

Drug: AMOXICILLIN 500 MG CAPSULE 1 CAPSULE(S) PO TID QTY:30 CAP (generic, prescription required)

Type of Sig.: ☒ Structured (Alt+U) *(Use to enter patient instructions with pick lists.)*
☐ Freehand (Alt+E) *(Use for complicated patient instructions such as tapered dosings.)*

Sig.

Dose: 1 capsule Route: oral Freq: TID

Instructions: Take 4 capsules the first day then 2 per day afterward.

Duration: 10 day Start: 12/09/10

Dispense

Quantity: 30 capsule Refills: 0 ☒ May Substitute Generic

Instructions: Pharmacy:

Misc

☒ Show on CPP

Compliant: Unknown

Diagnosis: 041.9

BACTERIAL INFECTION UNSPEC

☐ Long Term

Percipio - Microsoft Internet Explorer provided by

BW **Ordering Physician:** Dr. Test **Site:** Primary Care Assoc of Norwood [Logoff](#)

Welcome to the Percipio training server!

Exam Selection **Order Placement**

To place an order select an **exam** from one of the following methods.

Patient Name: Test, Patient		ND MRN: ND234500	
Birth Date: August 9, 1972	Age: 32 years	Gender: Male	Phone Number: 6177325500
Ordering Provider: Dr. Test		Payer: QAT HEALTH PLAN	
Created By: N/A		Ordering Site: N/A	

Exam Selection:

X-ray	CT	MR	US	Nuclear Medicine
Interventional Radiology	Head		GI/GI Fluoro	Screening
	Facial			
	Neck			
	Chest	Standard		
My Custom Orders	Abdomen/Pelvis	Pulmonary Embolism		
Bone Dens. - P	Chest/Abdomen/Pelvis	Mammo - Screening		
	Musculoskeletal			
My Exam Shortcuts:	Spine			
CT Chest St	Vascular	Gray Chest PA and Lat		Diagnostic Mammography
CT Abd/Pelvis	Other	CT Chest Standard		GI Video swallow
		Chest PA and lateral		MRI Open

Done

Local intranet

Start Inbox - Microsoft Outlook C:\Documents and Sett... http://ftp.rsna.org/IHE/... http://ftp.rsna.org/IHE/... Percipio - Microsoft ... 3:07 PM

Percipio - Microsoft Internet Explorer provided by

Patient

Search for New Patient

Create Order

Search for Orders/Reports

Batch Order

Schedule Order

Preview Schedule

Result View

Create Letter

Print

Logoff

Worklist

Custom

Help

MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	SUNDAY
Nov 8, 2004	Nov 9, 2004	Nov 10, 2004	Nov 11, 2004	Nov 12, 2004	Nov 13, 2004	Nov 14, 2004
Unavailable.	Fully booked or closed.	Fully booked or closed.	Fully booked or closed.	10:00 AM	Fully booked or closed.	Fully booked or closed.

Enter a date (mm/dd/yyyy)

BWH - CT/MRI Online Schedule off line

MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	SUNDAY
Nov 8, 2004	Nov 9, 2004	Nov 10, 2004	Nov 11, 2004	Nov 12, 2004	Nov 13, 2004	Nov 14, 2004
Unavailable.	11:15 AM 11:45 AM 2:45 PM 3:00 PM 3:30 PM	7:00 AM 7:15 AM 7:45 AM 8:00 AM 8:15 AM	7:00 AM 7:15 AM 7:30 AM 7:45 AM 8:00 AM	7:00 AM 7:15 AM 7:30 AM 7:45 AM 8:00 AM	9:10 AM 10:10 AM 2:10 PM 3:10 PM	9:10 AM 10:10 AM 2:10 PM 3:10 PM

Enter a date (mm/dd/yyyy)

BWH - Pike Online Schedule off line

MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	SUNDAY
Nov 8, 2004	Nov 9, 2004	Nov 10, 2004	Nov 11, 2004	Nov 12, 2004	Nov 13, 2004	Nov 14, 2004
Unavailable.	12:00 PM 12:30 PM 1:00 PM 1:15 PM 1:30 PM	7:30 AM 7:45 AM 8:00 AM 8:15 AM 8:30 AM	7:30 AM 7:45 AM 8:15 AM 8:45 AM 9:00 AM	7:30 AM 7:45 AM 8:00 AM 8:15 AM 8:30 AM	Fully booked or closed.	Fully booked or closed.

Enter a date (mm/dd/yyyy)

Start | Inbox - Microsoft Outlook | Percipio - Microsoft In... | C:\Documents and Settin... | Local Internet | 11:28 AM

Percipio - Microsoft Internet Explorer provided by

Created By: N/A Ordering Site: Primary Care Assoc

Submit

Signs and Symptoms: (Select one or more)

<input type="checkbox"/> Weight loss	<input type="checkbox"/> Asymptomatic
<input type="checkbox"/> Hemoptysis	<input type="checkbox"/> Facial/upper extremity edema
<input type="checkbox"/> Fever	<input type="checkbox"/> Hypotension
<input type="checkbox"/> Shortness of breath	<input type="checkbox"/> Cough
<input type="checkbox"/> Hypoxia/Cyanosis	

Other: chest pain

Relevant History: (Select one or more)

<input type="checkbox"/> Abnormal chest x-ray ▶
<input type="checkbox"/> Abnormal CT ▶
<input checked="" type="checkbox"/> Trauma
<input type="checkbox"/> Known Malignancy ▶
<input type="checkbox"/> Recurrent pneumonia
<input type="checkbox"/> Known Metastasis ▶
<input type="checkbox"/> Emphysema
Smoking history ▶
<input type="checkbox"/> Asbestos exposure
<input type="checkbox"/> Chest wall mass

Other: 1 wk sp MVA

Differential Diagnosis: (Select one or more)

<input type="checkbox"/> Lung cancer
<input type="checkbox"/> Metastatic disease
<input type="checkbox"/> Lymphoma
<input type="checkbox"/> Bronchiectasis
<input type="checkbox"/> Empyema/Abscess
<input checked="" type="checkbox"/> Aortic dissection/Aneurysm/laceration
<input type="checkbox"/> SVC obstruction
<input type="checkbox"/> Stage/Assess change

Other:

Additional Comments (optional):

Logoff

Taskbar: Start, Inbox - Microsoft Outlook, Percipio - Microsoft In..., C:\Documents and Sett..., Local intranet, 11:30 AM

Figure B. Sample Electronic Order Set

QatHosp	Adult Acute Pain Management Advisor	Name: @@patient.name@@ Age: @@patient.ageInYears@@ Weight: @@patient.weightInKg@@ Height: @@patient.heightInCm@@
Mild Pain Analgesic Options (Pain Scale 1-3)		
<input type="radio"/> Acetaminophen (Tylenol) 650 mg <input type="button" value="v"/> oral <input type="button" value="v"/> every 4 hours PRN mild pain (Max dose/day=4gm for adults and 2gm for patients above 70)		
<input type="radio"/> Ibuprofen (Motrin) 400 mg <input type="button" value="v"/> orally every 4 hours PRN <input type="button" value="v"/> mild pain (Max dose/day=3200 mg)		
<input type="radio"/> Celecoxib (CeleBREX) 100 mg <input type="button" value="v"/> orally every 12 hours PRN mild pain (Max dose/day=400 mg for elderly patients)		
If NPO or inadequate analgesia:		
<input type="radio"/> Hydromorphone (Dilaudid) Choose... <input type="button" value="v"/> IV every Choose... <input type="button" value="v"/> mild pain		
<input type="radio"/> Morphine Choose... <input type="button" value="v"/> IV every Choose... <input type="button" value="v"/> mild pain		
Moderate Pain Analgesic Options (Pain Scale 4-6)		
<input type="radio"/> HYDROcodone 5mg/Acetaminophen 325mg (Norco) 1 tab <input type="button" value="v"/> orally every 4 hours PRN <input type="button" value="v"/> moderate pain (Max acetaminophen dose/day=4gm for adults and 2gm for patients above 70)		
<input type="radio"/> HYDROcodone (2.5mg/5ml)/Acetaminophen (167mg/5ml) Solution (Lortab) 15 ml orally every 4 hours PRN <input type="button" value="v"/> moderate pain		
<input type="radio"/> OxyCODONE 5mg/Acetaminophen 325mg (Percocet) 1 tab <input type="button" value="v"/> orally every 4 hours PRN moderate pain		
<input type="radio"/> OxyCODONE (5mg/5ml)/Acetaminophen (325mg/5ml) Solution (Roxicet) 5 ml <input type="button" value="v"/> orally every 4 hours PRN <input type="button" value="v"/> moderate pain		
<input type="radio"/> TraMADol (Ultram) 50 mg <input type="button" value="v"/> orally every 6 hours PRN moderate pain		
If NPO or inadequate analgesia:		
<input type="radio"/> Hydromorphone (Dilaudid) Choose... <input type="button" value="v"/> IV every Choose... <input type="button" value="v"/> moderate pain		
<input type="radio"/> Morphine Choose... <input type="button" value="v"/> IV every Choose... <input type="button" value="v"/> moderate pain		
Severe Pain Analgesic Options (Pain Scale 7-10)		
<input type="radio"/> Hydromorphone (Dilaudid) Choose... <input type="button" value="v"/> IV every Choose... <input type="button" value="v"/> severe pain		
<input type="radio"/> Hydromorphone (Dilaudid) Choose... <input type="button" value="v"/> orally every Choose... <input type="button" value="v"/> severe pain		
<input type="radio"/> Morphine Choose... <input type="button" value="v"/> IV every Choose... <input type="button" value="v"/> severe pain		
<input type="radio"/> Morphine Choose... <input type="button" value="v"/> orally every 4 hours PRN severe pain		
<input type="radio"/> OxyCODONE immediate release (OxyIR) 5 mg <input type="button" value="v"/> orally every 6 hours PRN <input type="button" value="v"/> for severe pain		

CPOE FUNCTIONS

Rules and Alerts



- Real time prompting alerting at the time of order entry

Ex. Warning a clinician before ordering a nephrotoxic medication in a patient with elevated creatinine.

Prescription


Type

☒ Create Rx ☐ Record Rx ☐ Administer Med

Drug:  

Type of Sig.: ☒ Structured (Alt+U) (Use to enter patient instructions with pick lists.)
☐ Freehand (Alt+E) (Use for complicated patient instructions such as tapered dosings.)

Sig.

Dose:  mL Route: Freq: /

Instructions:


Duration: - Start:

Dispense

Quantity: Refills: ☒ May Substitute Generic

Instructions:


Misc


☒ Show on CPP Compliant: Diagnosis: 






☐ Long Term

Provider Notes:

Drug Utilization Review Alerts

☐ Override (Alt+O) 

Show  Make these my Defaults

Severity 	Type 	Alert Description 
	Drug Allergy	Allergy: The use of AMOXICILLIN TRIHYDRATE may result in an allergic reaction based on a reported history of allergy to AMOXICILLIN TRIHYDRATE.
 Moderate	Drug-Drug	WARFARIN SODIUM and AMOXICILLIN TRIHYDRATE may interact based on the potential interaction between ANTICOAGULANTS and SELECTED PENICILLINS.



CPOE FUNCTIONS

CDS Clinical Decision Support

- Provides guidance and knowledge to assist the clinician in entering complete, accurate and evidenced based patient care orders.
- *Ex. “you have ordered vancomycin; would you like to order serum vancomycin level after the third dose”*
- *“The admitting diagnosis is hip fracture; would you like to order enoxaprxin for DVT prophylaxis?”*

Inpatient/Admission



Manage Order Sets

Emergency Evaluation

Outpatient

Discharge

Care Plans

Rules and Alerts

Reporting Tools

Utilities

Exit

ProVation® Order Sets

powered by UpToDate® Decision Support

Evidence Updates

✓ FDA MedWatch: Clostridium Difficile-Associated Diarrhea Can be Associated with Proton Pump Inhibitors	February, 2012
✓ UpToDate Suggests Bedtime Dosing of Antihypertensive Medications	January, 2012
✓ UpToDate Suggests Three Months of Weekly Isoniazid and Rifapentine for Latent TB Infection in HIV-Negative Adults	December, 2011
✓ Tumor Necrosis Factor (TNF) blockers, Azathioprine and/or Mercaptopurine: Update on Reports of Hepatosplenic T-Cell Lymphoma in Adolescents and Young Adults	November 4, 2011
✓ FDA Modifies/Adds Boxed Warnings for Selzentry (Marivoc), Evamist (Estradiol Transdermal Spray), and Definity Vial (Perflutren Lipid Microsphere) Injectable Suspension	October 2011
✓ UpToDate Suggests Trivalent Inactivated Influenza Vaccine for Pediatric Patients with Egg Allergy	October 2011
✓ UpToDate Suggests Acyclovir Suppression for Neonatal Herpes Simplex Virus	October 2011
✓ UpToDate Recommends Voiding Cystourethrogram Following Febrile Urinary Tract Infection	October 2011
✓ Xigris [drotrecogin alfa (activated)]: Market Withdrawal - Failure to Show Survival Benefit	October 25, 2011
✓ UpToDate recommends direct thrombin inhibitor or a factor Xa inhibitor as antithrombotic therapy for patients with atrial fibrillation	October 2011
✓ UpToDate Recommends Immunotherapy and Molecularly Targeted Therapy for Certain Metastatic Melanoma Patients	September, 2011

Pathogenesis of type 2 diabetes mellitus - Windows Internet Explorer

http://www.uptoda... Pathogenesis of type 2 diab...

UpToDate 19.3

New Search All Topics Search ToDate Help

New Search Patient Info What's New Calculators CME 3.0 My Account Feedback Log Out

Pathogenesis of type 2 diabetes mellitus Find Patient Print Email

TOPIC OUTLINE

INTRODUCTION

PATHOPHYSIOLOGY

- Impaired insulin secretion and insulin resistance
 - Insulin secretion
 - Insulin resistance
- Impaired insulin processing
- Role of islet amyloid polypeptide

GENETIC SUSCEPTIBILITY

- Pancreatic development and beta cell function
- Insulin release
 - Transcription factor genes

Robertson, MD

Disclosures

Last literature review version 19.3:
January 2012 | **This topic last updated:**
October 20, 2011 **(More)**

INTRODUCTION — Type 2 diabetes mellitus is characterized by hyperglycemia, insulin resistance, and relative impairment in insulin secretion. It is a common disorder with a prevalence that rises markedly with increasing degrees of obesity ([figure 1](#)) [1]. The prevalence of type 2 diabetes has risen alarmingly in the past decade [2], in large part linked to the trends in obesity and sedentary

Help improve UpToDate. Did UpToDate answer your

http://www.uptodate.com/contents/pathogenesis-of-type-2-diabetes-mellitus?...

CPOE FEATURES

Ordering

Safety

Intuitive

Portability

Billing and Management

Regulatory compliance

Decision support

CPOE systems can be remarkably effective in reducing the rate of serious medical errors.

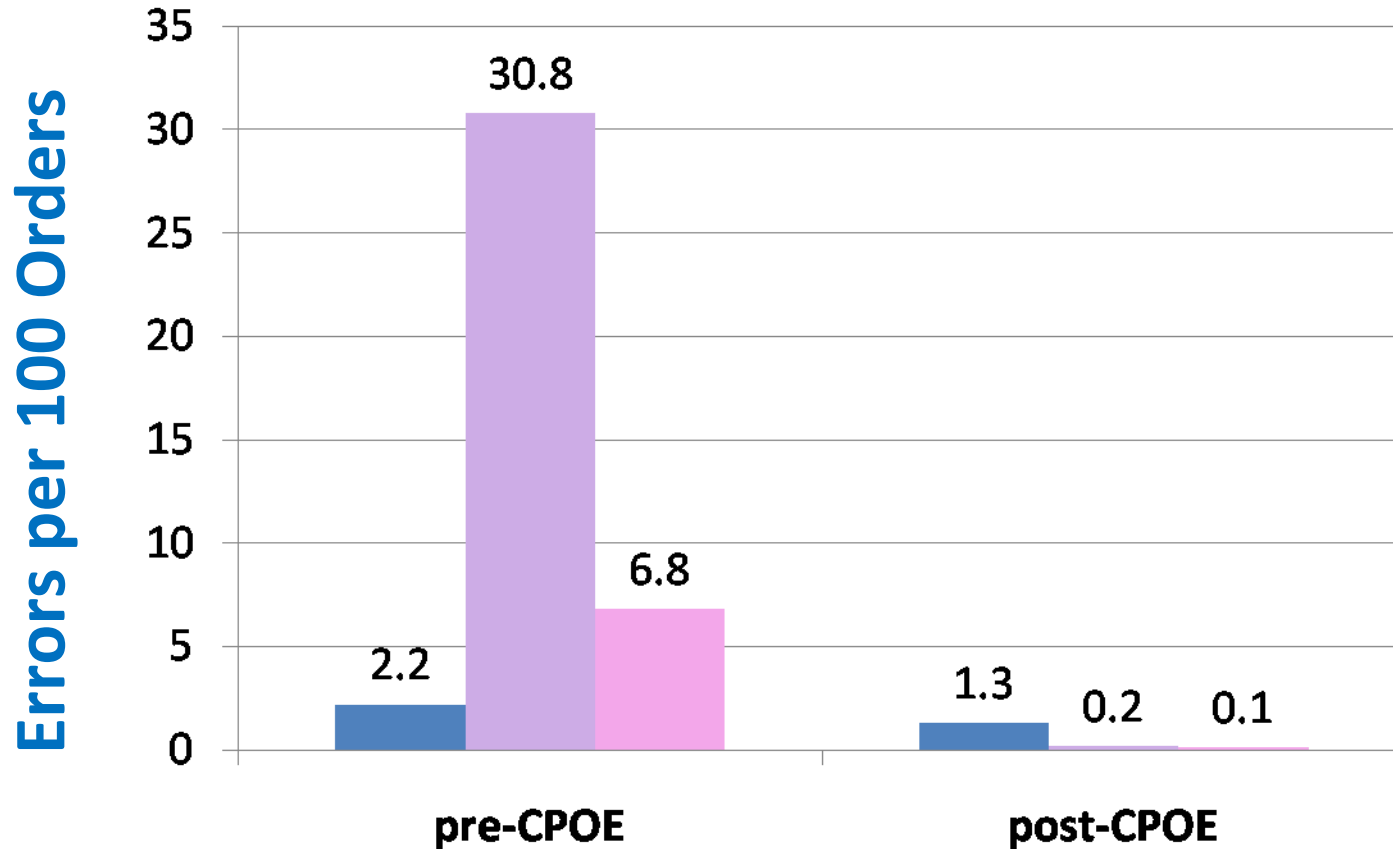
Reduced error rates 55%

70% reduction in antibiotic-related ADEs

Factsheet, LeapFrog Group 2011

The bottom of the slide features three horizontal bars: a green bar, a light blue bar, and a dark blue bar.

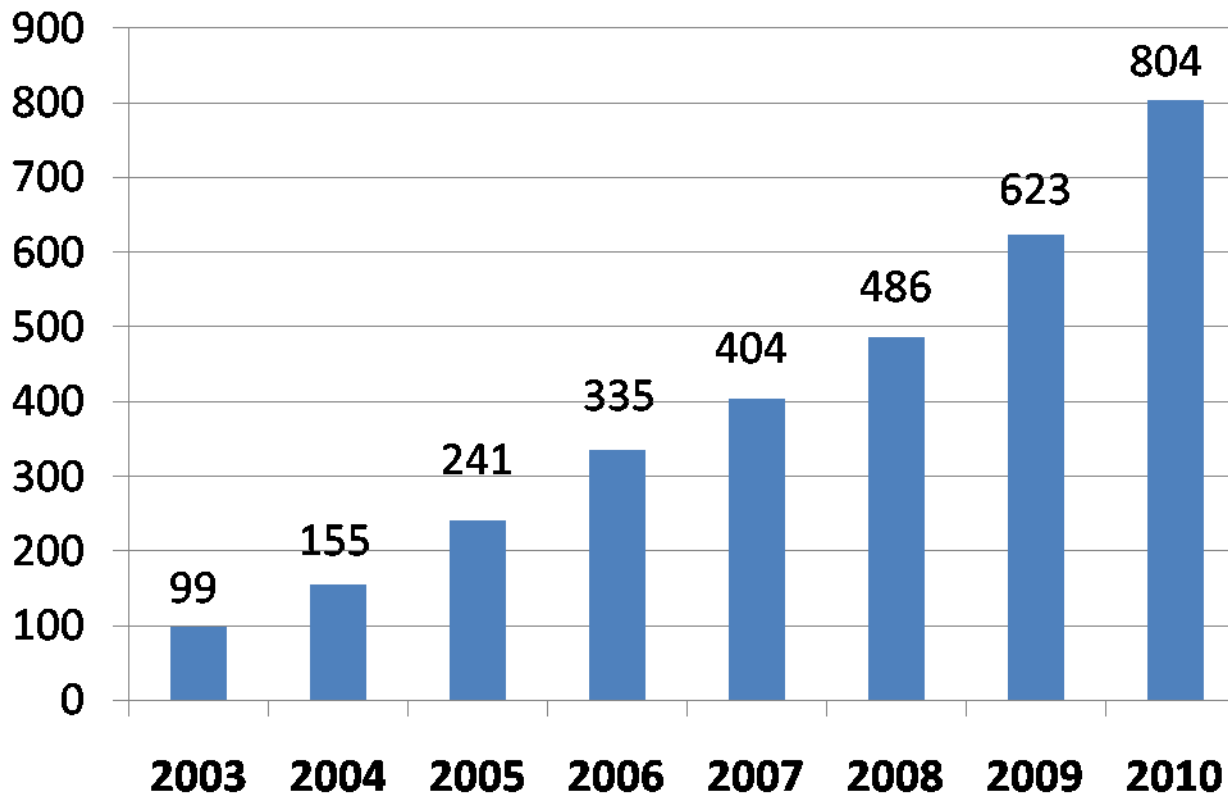
Vanderbilt Children's PICU



■ Potential ADE's ■ Medication Prescribing Errors ■ Rule Violations

Raw Count CPOE Hospitals 2003 - 2010

Number of Hospitals doing CPOE

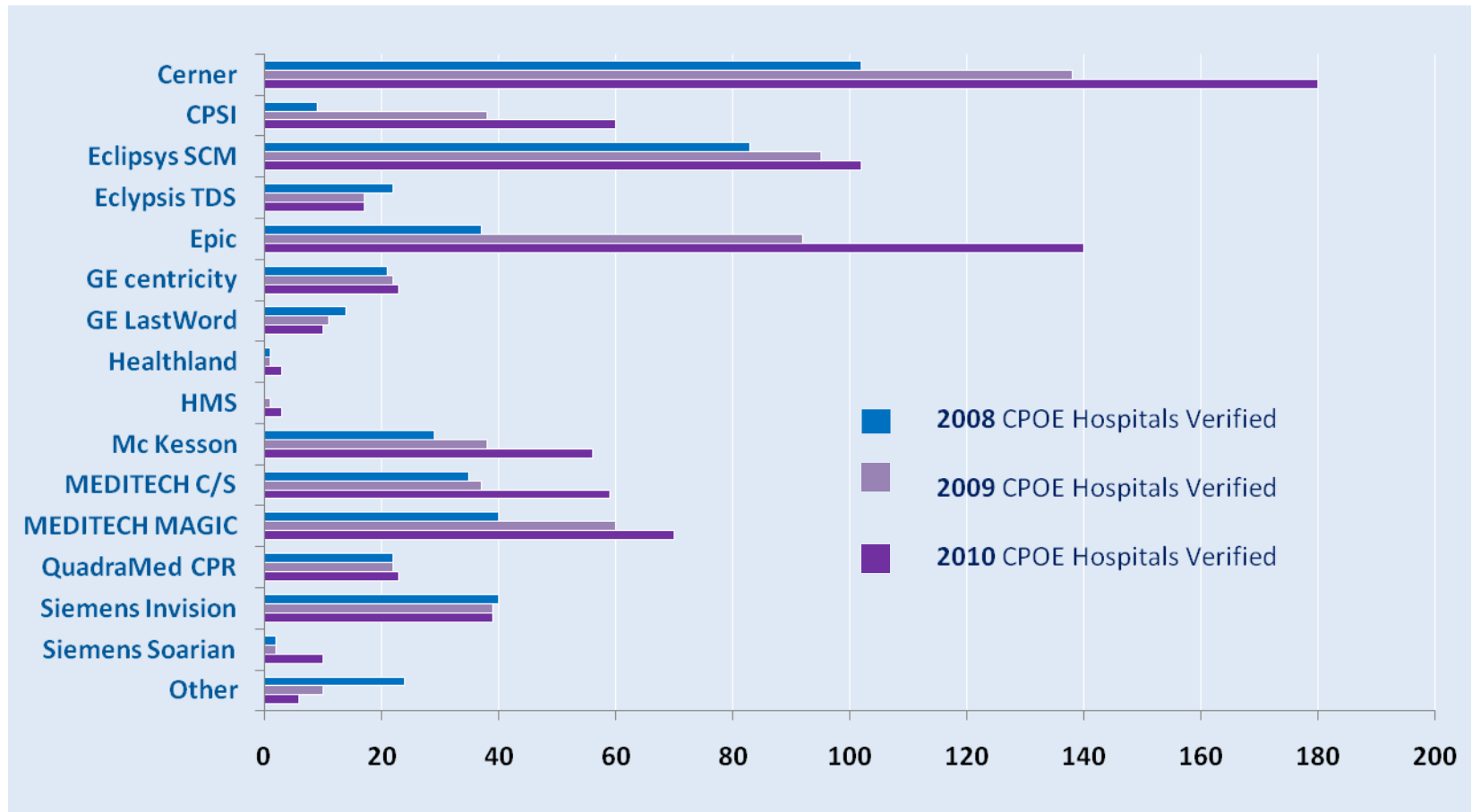


Helping healthcare providers by measuring the performance of technology vendors

www.KLASresearch.com

CPOE Hospitals Verified Live

2008 to 2010



Summary

CPOE facilitates for real time order entry at point of care, trims down errors and delays related with handwritten orders. It brings down healthcare cost and enhances medication safety for patients.

CPOE is recommended by the Agency for Healthcare Research and Quality and the Leapfrog Group for improving safety.

The slide features three horizontal decorative bars at the bottom: a green bar, a light blue bar, and a dark blue bar.

Thank You For Attending

Khadafy Yahiya

Nursing Informatics Coordinator

kyahiya@hmc.org.qa

The slide features three horizontal decorative bars at the bottom: a green bar, a light blue bar, and a dark blue bar.

QUESTIONS

