

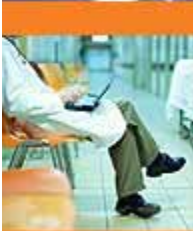


# The Massachusetts Hospital CPOE Initiative



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**Wendy Everett, ScD**



# Overview

- The benefits of CPOE
  - Safety
  - Financial
- The Massachusetts Hospital CPOE Initiative
- Conclusions



# Handwriting Example

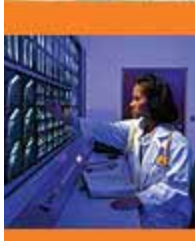
Arundin 4 mg po qd



# Inpatient Computerized Physician Order Entry

An application that allows providers with order-writing privileges (mostly physicians) to write all orders

- Most things that happen in hospitals occur as a result of orders
- Computerizing process structures, allows contact at key times



# Current and Planned CPOE Adoption

<b>Source</b>	<b>Inpatient CPOE Use Current</b>	<b>Inpt CPOE Use Planned</b>
HIMSS Hot Topics Survey, 2002	21%	67%
Leapfrog, 2001-2002	3.3%	30% next 2 yrs
Kaushal and Bates, 2001	13%	27%
Ringold, Santell and Schneider, 2000	13%	--
Ash, Gorman and Hersch, 1998	15% (17% partial)	--



# Improving the Quality of Drug Ordering with Order Entry

- **Streamline, structure process**
  - Doses from menus
  - Decreased transcription
  - Complete orders required
- **Give information at the time needed**
  - Show relevant laboratories
  - Guidelines
  - Guided dose algorithms
- **Perform checks in background**

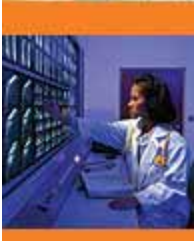
Drug-allergy

Dose ceiling

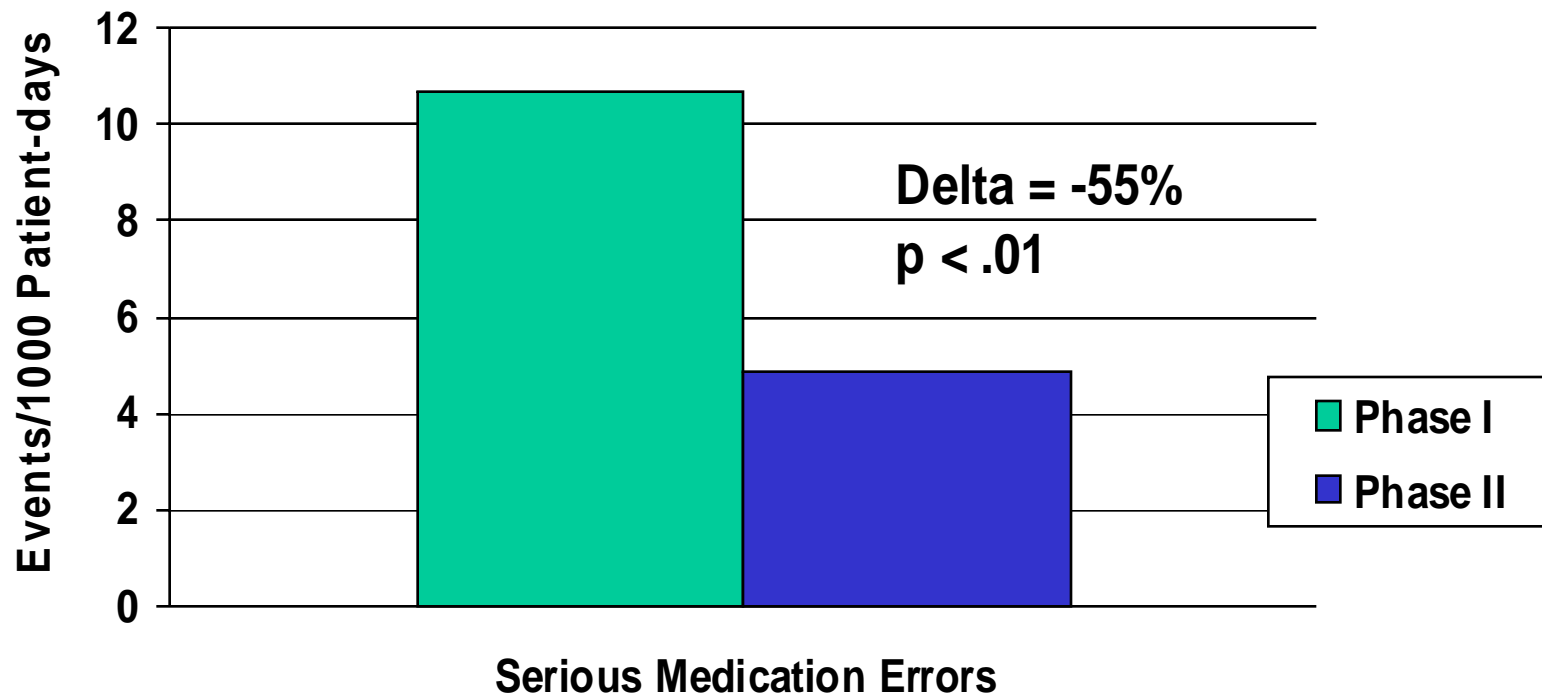
Drug-lab

Drug-drug

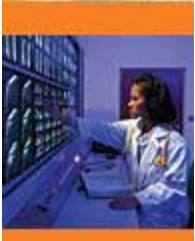
Drug-patient



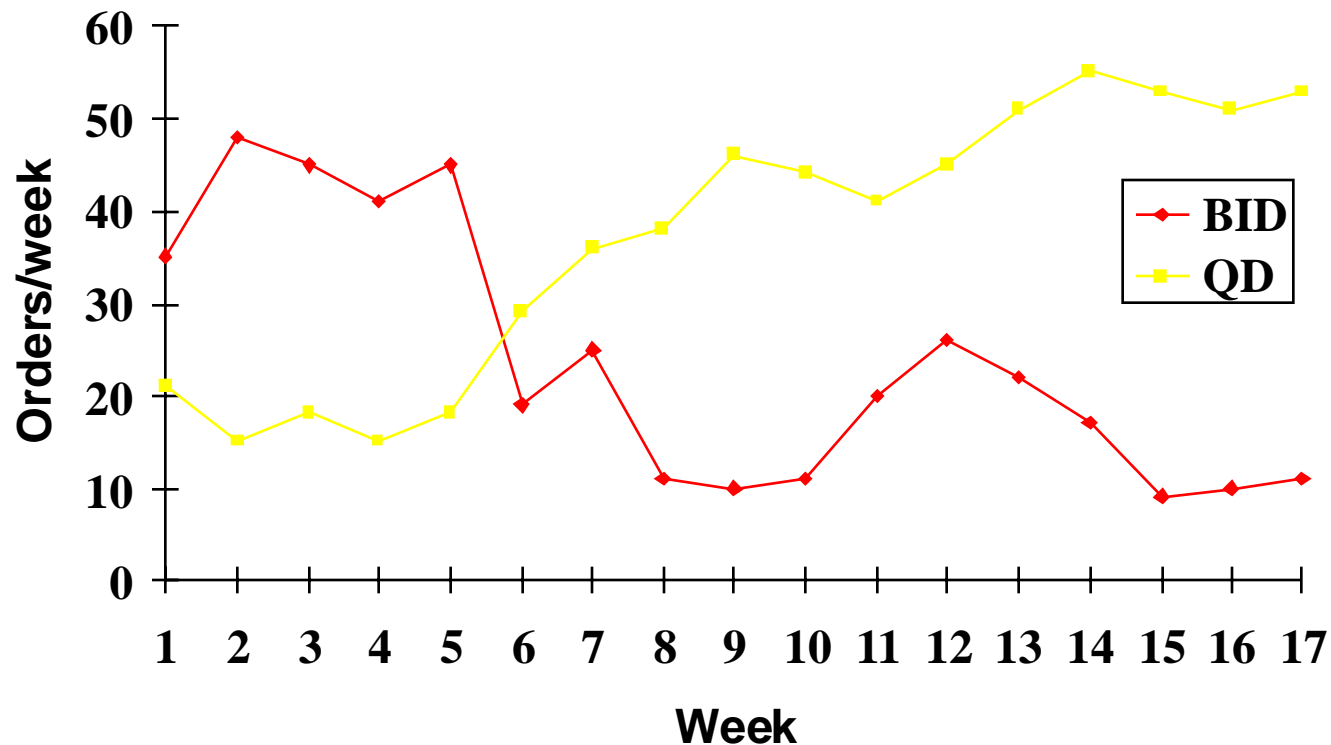
# Serious Medication Error Rates Before and After CPOE



Bates et. al. Effect of Computerized Physician Order Entry and a Team Intervention on Prevention of Serious Medication Errors, JAMA 1998.



# Effect of Changing Default Dosing Frequency for Ceftriaxone

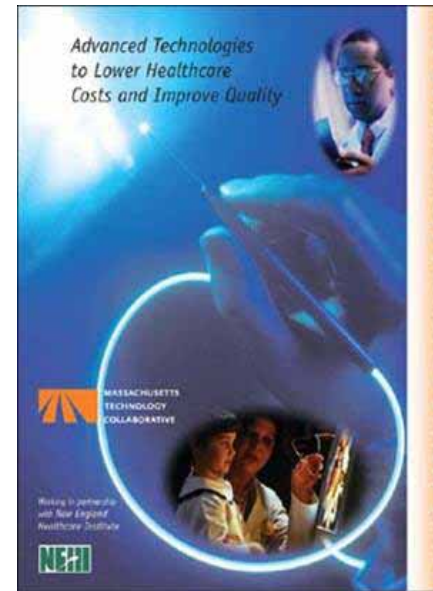




# Return on Investment for Inpatient CPOE

- Analysis completed, not yet published
  - Major improvement in medication safety
  - Drug and test cost savings among others
- Rough analyses suggest **very positive returns**, on order of 5:1 to 7:1
- Major capital investment
  - \$2-30 million depending on hospital size
- Hospitals recover about half
- Is tricky because have to go with your main vendor, and not all vendors have good CPOE

# E-Health Series





MASSACHUSETTS  
TECHNOLOGY  
COLLABORATIVE

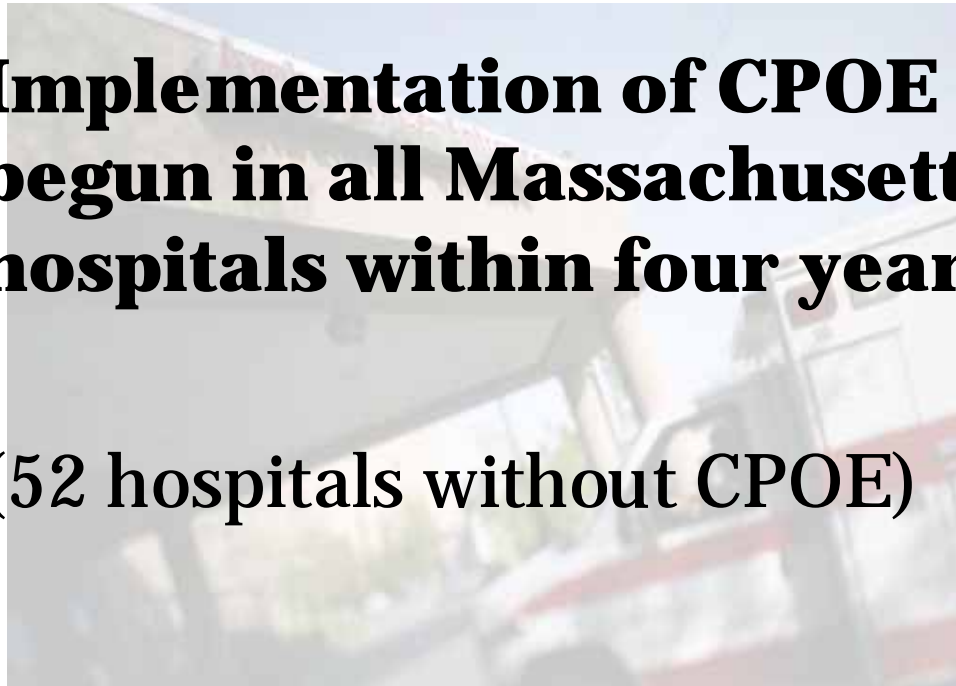


New England  
Healthcare  
Institute

# Massachusetts Hospital CPOE Initiative

**Goal: Implementation of CPOE begun in all Massachusetts hospitals within four years**

(52 hospitals without CPOE)





# Major Collaborative Initiative

## Steering Committee

- Blue Cross
- CareGroup
- CMS
- Exec. Office of Health and Human Services
- Mass. Association of Health Plans
- Mass. Council of Community Hospitals
- MAeHC
- MHA
- Mass. Health Quality Partnership
- MTC
- MassPro
- NEHI
- Umass Memorial Medical Center
- Winchester Hospital

**MAeHC Working Groups** (clinical, data exchange, finance)

# Massachusetts Hospital CPOE Initiative

**\$1 million progress to date:**

**Group 1 hospitals  
identified**

**Vendor standards  
complete**

**Financial value model  
created**

**Performance metrics  
outlined**

**Case study funded**





# Readiness Assessment of All Hospitals

- Comprehensive self-assessment based on detailed on-line survey (86%)

## Question 6:

Has the hospital developed a comprehensive CPOE work plan and detailed schedule of implementation?

- Yes  
 No

[DOWNLOAD RESULTS](#)

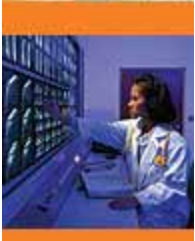
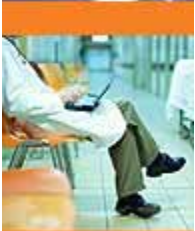




# CPOE Standards

- Clinical and application standards
- Developed over six months with experts and users
- Vetted with vendors
- Stakeholder involvement





# CPOE Statewide ROI

Total Project Cost

**\$210.0 million**

***Annual Financial Benefit:***

Providers

**\$175.0 million**

Payers

**\$100.0 million**

**Total**

**\$275.0 million**

# Hospital Specific ROI





# Develop Funding and Reimbursement Model

- Performance metrics
- Funding model to address capital needs
- Reimbursement incentives based on metrics



# Massachusetts Hospital CPOE Initiative



**\$1 million progress to date:**

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**Performance metrics Outlined**

***REPLICATION***