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## Not only are your doctors killing you - now their computers are too.

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### What do you need to know?

Healthcare delivery is being revolutionized by technology as providers transition from paper to computer based systems. Computerized Physician Order Entry (CPOE) systems improve patient safety by reducing errors, especially prescription errors which injure or kill over 770,000 people annually.

### What is this research about?

The healthcare sector has supported CPOE systems because they are known to reduce human errors that stem from paper based systems, reduce work loads, and can potentially save hundreds of billions of dollars annually. Studies have shown that CPOEs can bring an 81% reduction in

medication errors, which can cause unnecessary harm to patients called adverse drug events (ADE). Unfortunately, few have looked into errors facilitated by CPOEs. This research attempts to fill in these potentially deadly gaps in knowledge surrounding CPOEs.

### What did the researchers do?

The researchers conducted a quantitative and qualitative study where they surveyed staff at a tertiary-care teaching hospital about their interaction with a CPOE system.

They used numerous types of strategies for data collection which are listed below.

#### One-on-One House Staff Interviews

Initial questions to 14 staff in intensive open-ended interviews about errors.

#### Focus Groups

House staff were given 40\$ to participate in one of five focus groups which looked into sources of stress and medication errors

#### Expert Interviews

Various experts were consulted privately.

#### Shadowing and Observations

Over 4-months they shadowed staff who use the CPOE systems.

#### Survey

Questionnaires contained 71 items and focused on working conditions and source of errors and stress. Participants were given 5\$ coupons for a local coffee shop. They

were able to interview two-hundred sixty two (88% of their target population).

## What did the researchers find?

Their research found 22 CPOE facilitated medication errors. Several are listed below.

### Information Errors:

#### Fragmentation and System Integration Failure

- Assumed Dose Information
- Medication Discontinuation Failures
- Allergy Information Delay
- Conflicting or Duplicative Medications

### Human-Machine Interface Flaws:

#### Machine Rules that do not Correspond to Work Organization or Usual Behaviors

- Patient Selection
- Wrong Medication Selection
- Loss of Data, Time, and Focus When CPOE Is Nonfunctional
- Sending Medications to Wrong Rooms When the Computer System has Shut Down

### Recommendations for Future CPOEs

Following these five recommendations written below can reduce CPOE facilitated errors.

1. Focus on organization of work and not technology
2. Examine technology in use for problems
3. Fix technology when its counter productive
4. Pursue errors to the fullest extent
5. Plan for continuous revisions and quality improvement

## How can you use this?

This research highlights problematic areas of CPOEs that jeopardize patient safety. If you work within the healthcare sector, this research will help you develop a stronger

understanding of the benefits and weaknesses that exist with the technology your organization is currently using. Following their five recommendations will benefit future CPOE development and implementation by addressing CPOE facilitated errors. These findings should set an example for future research on CPOEs because it demonstrates the gaps in our knowledge about this cutting edge technology.

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## About the researcher 50 words

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