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A Validated Strategy to Reduce Error in Electronic Orders

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Zane Last, PharmD, MBA
Director - Healthcare Analytics & BI
SBH Health System

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Conflict of Interest

Zane Last, PharmD, MBA

Has no real or apparent conflicts of interest to report.

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Agenda

- Objectives – Decrease Near-Miss Orders
- Methods – CPOE Hard Stop
  - Process Review
  - Assessing Error Rates
- Results
- Intervention
- Outcomes
- Implementation Considerations
- References

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Learning Objectives

- Diagnose number of near-miss wrong patient orders in a CPOE system with a Hard-Wired EHR process
- Develop strategies to implement a CPOE Double ID system alert
- Use strategy to assess wrong patient, right order near-miss

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Objective

Decrease the number of near-miss wrong-patient orders in a computerized physician order entry (CPOE) system

- CPOE systems are commonly used to place orders[1-4]
  - Prevention of medication errors and medication safety
  - Production or exacerbation of new medication errors[5-7]
- Wrong Patient CPOE Errors:
  - Significant morbidity and mortality[8-10]
- Efforts to reduce Wrong Patient CPOE errors in our health system led us to the development of an alert
  - Verification of the patients identity by the ordering physician at the time of CPOE

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SBH Health System - Overview

- SBH is the Oldest Continuing Healthcare Facility in the NY City Area
  - Located in the Bronx, Celebrating its 153rd Anniversary
  - A Not-for-profit, Nonsectarian teaching hospital
  - Payer Mix of 90% Medicaid/Medicare

- Acute Care:
  - 422 certified hospital beds
  - Level 2 trauma center
  - NY State-designated stroke and AIDS center
  - Over 88,000 emergency room visits annually
  - Over 17,000 hospital discharges

Ambulatory Care:
  - Over 400,000 outpatient visits annually
  - NCQA Patient-Centered Medical Home designation
  - One of largest providers of Mental Health services in the Bronx
  - 19 programs with more than 160,000 visits annually

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Methods

- A CPOE, hard stop, alert was built and implemented:
  - Ordering clinicians were prompted to reaffirm the patients identity
    - Entering the patient's initials and year of birth prior to placing an order became mandatory

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Process Review for CPOE ordering

- Multidisciplinary Stakeholder Team
  - Senior Leadership
  - ED Leadership
  - Front-Line Staff
  - Representation from all disciplines involved with the CPOE Process
    - Nursing
    - Pharmacy
    - Radiology
    - Clinical Laboratory
    - Information Technology
    - Analytics

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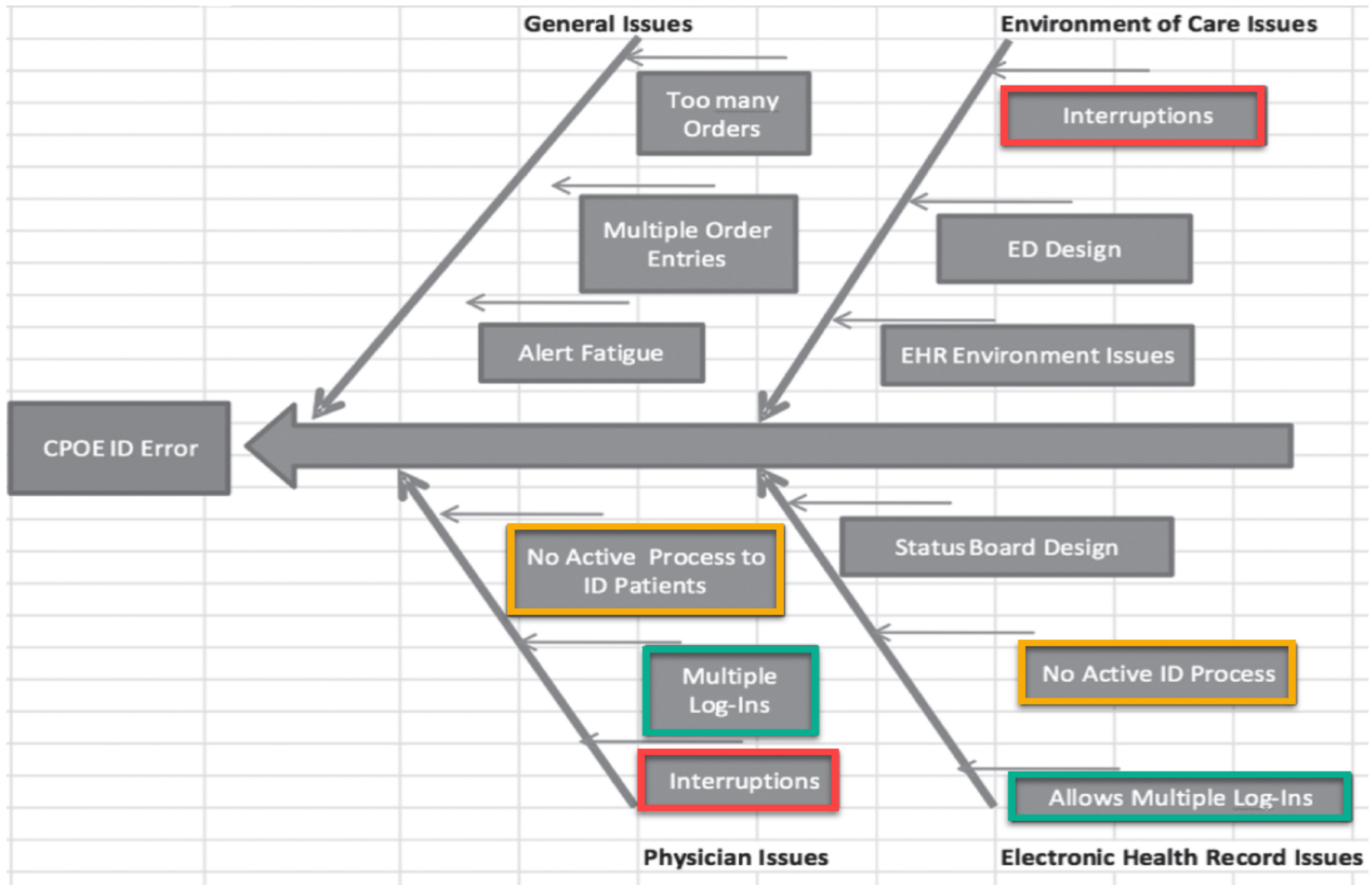
Factors Contributing to CPOE Patient ID Errors



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Assessing Error Rates

- We utilized a **Retract and Reorder tool** developed by Adelman et al[8]
  - Measures the frequency of near-miss wrong-patient order errors before and after implementation of the alert
- Flags orders placed for one patient, erased, then added to another patient's file by the same clinician[8] within a 10 minute time frame
  - Identifies near-miss errors self caught by the provider before causing harm to the patient
  - Closely related to other errors that may reach the patient

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Results

- The ID re-entry function decreased near-miss wrong-patient orders in our ED by 35% during the 8-week pilot period. The system was also successful in helping to decrease the percentage of all CPOE near-miss events by 49%.
- October – December 2014
  - 231 near-miss, wrong-patient orders throughout the health system
    - 37% occurring in the Emergency Department
    - Approximately 1 near-miss per day in the ED

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Intervention

- Mandatory ID re-entry functionality:
  - Prescriber required to enter the patient's initials and year of birth at the beginning of order entry
  - In line with TJC's National Patient Safety Goal
    - Two patient identifiers when providing care, treatment, and services

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1st Alert: Initiating a New Order

Alert Detail -

Alert Summary

Ack ...	Viewed	Doc ...	Alert	Priority	Type	Comment	Scope
✓	✓		Verify Patient	HIGH	WARNING	!	Chart

Alert: Verify Patient

Message:

Expand

Please verify that you are placing orders for

Patient, John

In the comment box below, please confirm the patient's initials in the following format: **last initial, first initial & birth year**

In this format **[XX2000]** with no spaces.

Acknowledgement Comment:

A comment must be added before clicking Proceed.

Acknowledge when seen

Acknowledge all on Proceed

Unacknowledge | << Previous | Alert 1 of 1 | Next >>

To continue with the Order Set unchanged click Proceed.

To return to the Order Set and discard alerts click Go Back.

Proceed

Go Back

Help

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2nd Alert: Incorrect Entry

Alert Detail

Alert Summary

Ackn...	Vie...	Doc...	Alert	Priority	Type	Comment	Scope
✓	✓		Wrong Patient	LOW	WARNING		Chart

Alert: Wrong Patient Information Entered

Message:

Expand

You have entered the incorrect information for **Patient, John**
The information you entered: [**ck1989**]. If this is the correct patient but the information was not entered in the correct format as **[XX2000]** or if there was a typo, please reenter the patient info below.
If this is the incorrect patient, please cancel out of order entry.

Acknowledgement Comment:

A comment must be added before clicking Proceed.

- [x] Acknowledge when seen
- [x] Acknowledge all on Proceed

Unacknowledge | << Previous | Alert 1 of 1 | Next >>

To continue with the Order Set unchanged click Proceed.

To return to the Order Set and discard alerts click Go Back.

Proceed | Go Back | Help

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3rd Alert: Repeat Error

Alert Detail

Alert Summary

Ack ...	Vie...	Doc...	Alert	Priority	Type	Comment	Scope
	✓		Patient Verifica	HIGH	WARNING		Chart

Alert: Patient Verification Alert

Message:

Expand

You have entered the incorrect information for **Patient, John**
The information entered: **[ck1989]**
You may not proceed with this order submission.

Acknowledgement Comment:

You may not proceed with this Visit

Acknowledge when seen

Acknowledge all on Proceed

Acknowledge | << Previous | Alert 1 of 1 | Next >>

To continue with the Visit unchanged click Proceed.

To return to the Visit and discard alerts click Go Back.

Proceed

Go Back

Help

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Outcomes

- Implementation in our ED: November 3, 2015
  - Error Rates: 35% reduction
    - Prior to intervention: 6.125 events per week
    - After intervention: 4 events per week
  - Near miss ID Errors in the ED relative to system wide errors
    - Decreased from 37% to 19%
    - Similar to results by Adelman et al[8]
  - Resident and Attending staff corroborate that ID functionality does in fact bring awareness to wrong patient selections
- Time studies indicate:
  - CPOE ID re-entry added **6.2 seconds** to an order entry session – Experience brings this down to **4.0 seconds**

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Implementation Considerations

- Other IT initiatives going live at the same time
- Locations for implementation
  - Pilot location: Emergency Department
  - Additional Location(s): ICU
- Errors during go live
  - No alerts or missing alerts
  - Untrained providers experiencing the alert
  - Providers locked out of the system after incorrectly identifying a patient

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Errors Can Still Occur!

- Work-arounds that can lead to identification errors[9]
  - Providers blindly utilize the patient header to enter patients initials and year of birth by viewing window behind alert screen
- Workplace interruptions a significant factor
  - Create no interruption zones[11-12]
- Multiple sign on sessions
  - Clinicians utilizing multiple EHR sign-on sessions
    - Leading to confusion when toggling between patients on multiple screens

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Conclusion

- An alert that requires the prescriber to enter the patient's initials and birth year is effective in decreasing wrong-patient orders in the SBH Health System's Allscripts CPOE system

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Questions

- Zane Last, PharmD, MBA
    - zlast@sbhny.org
    - linkedin.com/in/zane-last-pharmd-mba

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