MSOS Member Briefing
May 2019

MSOS Member Briefings
May 2019

Moderated by: E. Robert Feroli, PharmD, FASHP

Supported by an educational grant from Novartis.

NOVARTIS PHARMACEUTICALS

MSOS MEDICATION SAFETY OFFICERS SOCIETY

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A Campus Medication Safety Committee

Dan Sheridan, MS, RPh
Medication Safety Pharmacist
OhioHealth Marion General Hospital & Hardin Memorial Hospital

Jessica Thorburn, PharmD
PGY1 Pharmacy Practice Resident

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OhioHealth Marion General Hospital

- 250-bed, not-for-profit, community hospital
- Level II Trauma Center
- Level II Special Care Nursery
- Marion Medical Campus
  - Oncology

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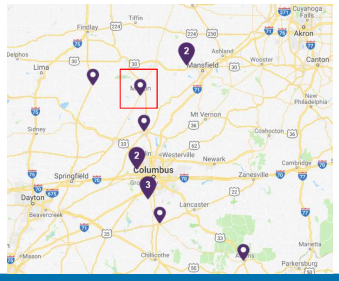
The OhioHealth Corporation



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MGH Medication Safety Program

- 0.5 FTE protected medication safety pharmacist allocated to lead program at 2 sites
- Campus medication safety team
- 10 pharmacy students annually
- 2 PGY1 pharmacy residents annually
  - Chair Medication Safety Meeting x1

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Campus Med Safety Committee

- Started 18 years ago at MGH
- Goal: Continuously improve patient safety by reviewing and acting upon internal and external good catches, events, and best practices
- Multidisciplinary in nature
- Meets monthly

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Medication Safety Committee

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Committee Members

- Medication Safety Pharmacist (Chair)
- Nurse educators
- Pharmacy technicians (inpatient and med rec)
- Pharmacy residents
- Staff nurses
- Nursing leaders
- Quality Specialist

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Committee Members

- System Medication Safety Officer
- Nursing Informaticist
- Electronic Medical Record physician coach
- Hospital administration representative
- Risk manager
- Physician peer review liaison

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Typical Agenda

- Introductions & minutes
- Review of key metrics
  - BCMA rate for site and by nursing unit (drill down by drug if unit struggling)
  - Smart pump use & good catches
  - Errors intercepted by scanning in pharmacy
    - Objectively collected by EPIC

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Typical Agenda

- Errors that have happened elsewhere
  - ISMP newsletter
  - Google news alerts
  - Joint Commission Sentinel Event Alerts
  - Events in other facilities in our organization
- Self Reports of internal errors and good catches
- ISMP self-assessments

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Choosing Events to Discuss

- Is it a trend? (i.e. heparin errors)
- Would a recurrence harm patients?
- Is it a new drug or process?
- Would a multidisciplinary discussion add insight?
- Can we make an impact?
- Is it especially interesting?

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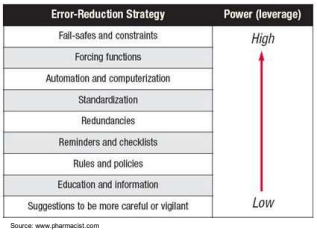
Common Strategies

- Computer changes
- Smart pump changes
- New processes
- Individual coaching
- Education
- Labels



Source: www.pharmacist.com

Some Success Stories

- Made the case for medication reconciliation technicians
- Started committee at a critical access hospital
- Profiled an ED medication dispensing cabinet at a critical access hospital
- Partnered with ISMP to publish:
  - risk stratified PCA dosing
  - safety strategies with Parkinson's patients

Sharing Lessons Learned

- Collaboration across OhioHealth
- Sharing with ISMP
- Publishing
- Training pharmacy residents and students
- Teaching at pharmacy schools
- Involving hospital leadership

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Lessons Learned

- Don't discuss every event
- Encourage staff nurses to speak up
- Emphasize and practice "Just Culture"
- Encourage and value every member
- Close the loop on improvements

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Questions?

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Pediatric Smart Pump Alert Reduction Project

Randi Trope DO, MBA, FAAP
Pediatric Medication Safety Officer

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Alert Fatigue

Desensitization to safety alerts due to their high frequency of alerting resulting in failure to respond to alerts when a true danger exists.

Joint Commission National Patient Safety Goals for 2018/19 calls for reduction in harm associated with clinical alarm systems (goal 6)

While smart pumps alerts are not clinical alarms in the strictest fashion, it is clear that reduction in alerts can influence patient safety.

No benchmark data exists with regard as to what a recommended or normal alert rate is however, our pediatric data is higher when compared to other children's hospitals*

*Bainbridge Health Data

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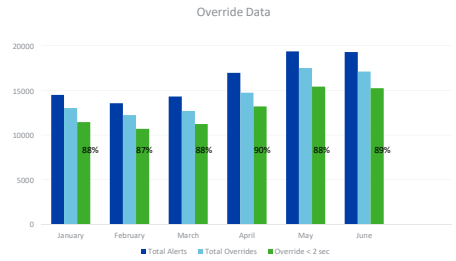
Evidence for Alert Fatigue

Pre-Change Data, 2018



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High Alert Medication Alert Fatigue

- Hydromorphone generated 514 alerts. 90% were overridden in < 2 secs
- Morphine drip generated 95 alerts. 87% were overridden in < 2 secs
- Morphine Intermittent generated 382 alerts. 83% were overridden in < 2 secs
- Cyclophosphamide generated 176 alerts. 85% were overridden in < 2 secs.

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Is it just the programming? ---Yes and No

Hydromorphone generated 514 alerts. 90% were overridden in < 2 secs
- 256 distinct infusions with 70% generating an alert.

Morphine drip generated 95 alerts. 87% were overridden in < 2 secs
- 297 distinct infusions with *18% generating an alert*

Morphine Intermittent generated 382 alerts. 83% were overridden in < 2 secs
- 885 distinct infusions with *24% generating an alert.*

Cyclophosphamide generated 176 alerts. 85% were overridden in < 2 secs.
- 122 distinct infusions with 74% generating an alert

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When programming IS the problem

- Nuisance alerts due to mathematical consequence:

- Example #1:
  - Ceftriaxone concentration: 40 mg per mL.
  - A 7 kg child receiving a 525 mg dose (75 mg/kg) results in a final volume of 13.125 mL.
  - Computer rounds this to 13.1 mL.
  - Mathematically this is a concentration of 40.07 mg/mL. If the pump is built with concentration limits centered around exactly 40 mg/mL (Min/Max values: 39.9 to 40.0) this would fire an alert.
- Example #2:
  - A 8.67 kg child receiving ceftriaxone at 100 mg/kg
  - Mathematically the 867 mg dose is rounded to 870 mg which is 100.3 mg/kg
  - Soft max in pump at 100 mg/kg would cause this to fire an alert

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Solutions

Stage 1
- Reduce nuisance alerts related to rounding and mathematical consequence

Stage 2
- Review high alert medications where the alert rate per infusion is high
- Eliminate unnecessary soft max limits

Stage 3
- Review top 10 medications generating alerts and investigate possible solutions

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Results (sampling)

Drug Name	Alerts per Infusion pre-Change	Alerts per Infusion post-Change	% Reduction	Gross # Alerts Reduction per Month
Ceftriaxone	1.29	0.52	59.37%	624
Pip/Tazo	0.5	0.28	43.51%	263
Cefepime	0.72	0.29	59.34%	421
Clindamycin	0.6	0.32	45.94%	258
Dexamethasone	1.19	1.17	2.04%	25

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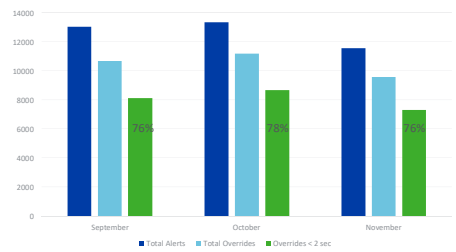
Override Data

(Post-change data, 2018)



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Summary

By examining how our library was built and making simple changes for mathematical consequence that occurs in pediatrics we were able to:

- Reduce our total alert burden by an average of 3,500 alerts/month (23% reduction)
- Reduce the percentage of alerts which had an override in < 2 seconds by 10%

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Questions?

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Development of a NICU Emergency Medications Calculator

Joanie Cook, PharmD, BCPS
Clinical Coordinator
Saint Francis Medical Center
Colorado Springs CO

May 21, 2019

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Medication Safety Event

Delayed epinephrine administration during a NICU code blue

- *Printed emergency medication sheet wasn't in patient room*
- *Medication sheet was only printable on one computer in nurse station*
- *NICU dose had not yet been set up in EMR code documentation program*

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Medication Safety Event

Incorrect dose calculation of IV morphine during NICU emergency intubation

- *Verbal order for morphine 0.05 mg/kg IV*
- *Patient received 0.4 mg/kg IV*
- *A 2nd dose ordered; incorrect dose repeated*
- *Naloxone administered*
- *System-wide patient safety alert*

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Pediatric Emergencies
Risk Factors

- Vulnerable population
- Medications infrequently used
- Medications not in ready-to-use form
- Verbal orders, no order entry
- ADC and barcode scan over-rides
- Incomplete independent checks
- Lack of pharmacist presence

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Joint Commission Sentinel Event Alert #39

"Provide a dosage calculation sheet for each pediatric critical care patient, including both emergency and commonly used medications"

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Initial Steps

- Workgroup
- What's already available?
  - Literature, list-serves, online examples
  - Dosing programs (e.g. Safe Dose)
  - Printed reference sheets
  - Excel spreadsheets
  - Broselow tape
  - Pediatric Code Medications report

Fentanyl (50 mcg/mL) 3 mcg(0.06 mL)

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Key Considerations

- Which medications to include?
- What dosing to use?
- Printing
  - Post in patient rooms, computer downtimes
  - Weight changes, wrong patient, missing sheet, formatting issues

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Key Considerations

- Calculated volume
  - Dose/volume mix ups
  - Dilutions
  - Shortages
- Maintenance
  - Committee vs individual ownership
  - How to ensure regular review

"Please contact Willow Leadership Committee with questions regarding this calculator."
Stork ASC/Pharmacy NICU P&T subgroup - Rev 2/2019

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Final Steps

Testing	Approval	Roll Out
• Accuracy • Usability • Access to test environment • Test after go live	• Start early • Buy-in • Is calculator recommended or required?	• Tip sheet • Committee presentations • New hire orientation • Annual skills review

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NICU Emergency Medications Calculator

Drug	Weight Based Dose	Calculated Dose	Calculated Volume (Rounded)	Remarks
Fentanyl ***10 mcg/mL*** *Must be diluted* Analgesia and Sedation **Dilution Instructions:** Start with fentanyl 50 mcg/mL. Add 1 mL (50 mcg) with 4 mL PF NS for a final concentration of 10 mcg/mL.	IV (1 - 2 mcg/kg)	1 mcg/kg: **2.96 mcg** 2 mcg/kg: **5.92 mcg**	**0.3 mL** **0.59 mL**	Initial dose = 1 mcg/kg, may repeat dose q 5 min if dosing not effective to a cumulative **MAX** dose of 4 mcg/kg. Administer over at least 2 min. Some hospitals may have pharmacy-prepared diluted syringes available.

Planned Revisions

- Minimize content, simplify format
- Include references
- Clarify dilution instructions
- Revisit rounding
- Add midazolam, phenobarbital, drips
- Consider use in ED
- Put link in code documentation module
- Auto print

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ISMP Update

Institute for Safe Medication Practices

Michael R. Cohen, RPh, MS, ScD (hon.), DPS (hon), FASHP
President, ISMP

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Questions?

- A copy of today's slides will be posted on our website
- Don't forget to mark you calendar:
  - Our next MSOS Briefings webinar will be held on Thursday July 25, 2019.

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