MSOS Member Briefings March 2017

Moderated by:
E. Robert Feroli, PharmD, FASHP

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Error Reduction Strategies to Prevent Inadvertent IV Administration of Inhaled Medications

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Northwell Health

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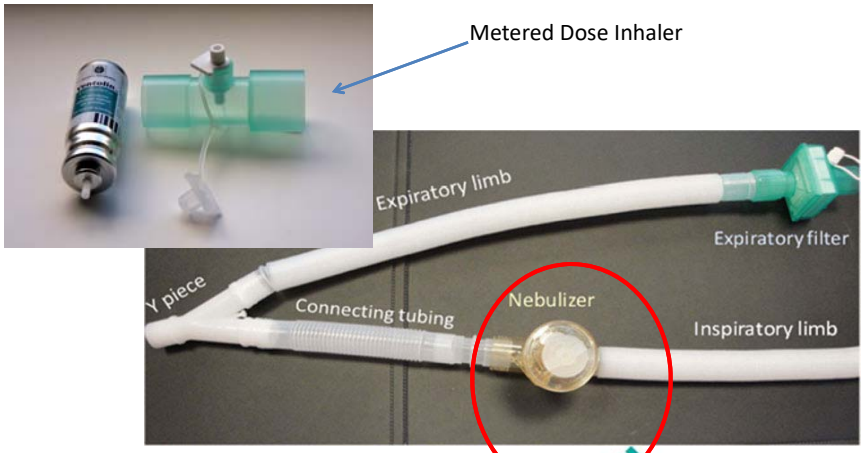
Inhaled medications in mechanically ventilated patients



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Continuous inhaled aerosolized medications: The Aeroneb

Albuterol:
Concentration: 2.5 mg/ mL
Dose: 0.3 - 1 mg/kg/hour (max 30 mg/hour)

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Background

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Determination of use

- Maintenance of competency
- Limitation to pediatric tertiary care centers

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Prescribing challenges

- Continuous albuterol via face mask versus ventilator
- Limiting to two hospitals

ALBUTerol Continuous Nebulization - Peds - 2.5 mG/Hr for patients 5 kG to less than 10 kG
ALBUTerol Continuous Nebulization - Peds - 5 mG/Hr for patients 10 kG to less than 15 kG
ALBUTerol Continuous Nebulization - Peds - 7.5 mG/Hr for patients 15 kG to less than 20 kG
ALBUTerol Continuous Nebulization - Peds - 10 mG/Hr for patients 20 kG to less than 30 kG
ALBUTerol Continuous Nebulization - Peds - 15 mG/Hr for patients 30 kG to less than 40 kG
ALBUTerol Continuous Nebulization - Peds - 20 mG/Hr for patients 40 kG and over

ALBUTerol Continuous Nebulization for Ventilator – Peds

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Dispensing Challenges

- Use proper Aerogen syringe and NOT an IV syringe
  - Label similar to oral medications
  - Label clearly state to USE BLUE AEROGEN SYRINGE
  - Walked to IV room and prepared in hood.
    - IV room used to seeing yellow labels, white label
    - Is also a reminder to use a different syringe
- Package within different type bag than IV meds

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Administration Challenges

- Tubing for syringe
- Pump usage
  - Same or different than the IV pump used
  - Pump location
  - Pump programming

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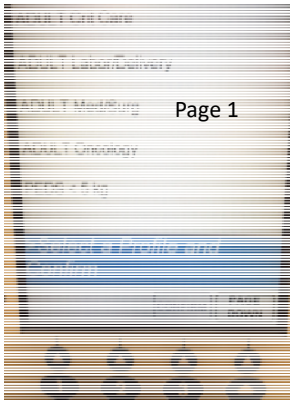
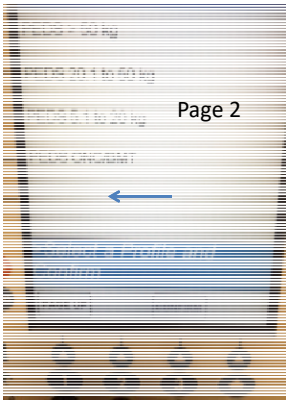
Pump Programming: To Wifi or not to Wifi???

- Respiratory profile
- Dedicated pumps off network





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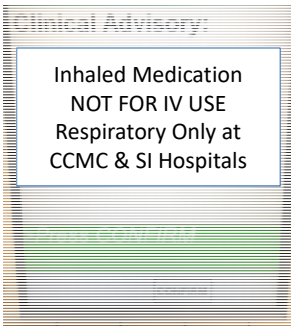


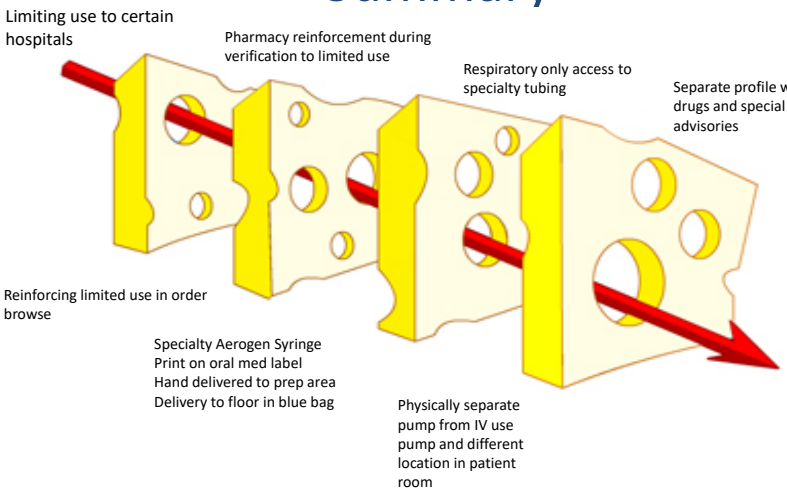
Continuous/Bolus - Non-Anesthesia Drugs

Drug Name Therapy Concentrations	Profile	Module		Conc. Limits	Dosing Units	Continuous				Bolus				Bolus Dose Administration Rate				Clinical Ads. Name
	Action	P	S			Soft Min	Soft Max	Hard Max	Initial Value	Soft Min	Soft Max	Hard Max	Initial Value	Soft Min	Soft Max	Hard Max	Initial Value	
ALBUTEROL INHALATION 2.5 mg / 1 mL	**RESP**		**X**	**n/a**	**Continuous**	**0.3**		**1**										**Resp**
	<30kg				**mg/kg/hour**													
	>30kg		**X**		**>30 kg: mg/hour**	**5**		**30**										

Alternative options to continuous nebulization

- Why risk the possibility of inadvertent IV administration?
  - Intermittent nebulization
    - Heavy workload for respiratory staff
    - Can not give higher doses over longer than 20 minutes
    - Higher likelihood of late or missing doses
  - Intravenous options
    - Terbutaline
    - Aminophylline

Summary



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References

Slide 2:
1. http://anesthesiology.pubs.asahq.org/article.aspx?articleid=1934460
2. http://www.respond2articles.com/ANA/forums/thread/741.aspx

Slide 3:
1. http://www.medicalexpo.com/prod/aerogen/product-85303-553333.html
2. https://www.hamilton-medical.com/Products/Mechanical-ventilators/HAMILTON-G5/HAMILTON-G5-features.html

Slide 7:
1. https://www.tri-anim.com/syringes-for-aerogen-solo-group-33415-3864.aspx

Slide 8
1. https://www.tri-anim.com/tube-set-aerogen-solo-continuous-nebulization-pharm-34021-3741.aspx
2. https://www.youtube.com/watch?v=EgEFLM0QjWI

Slide 12:
1. https://stratog.rcog.org.uk/tutorial/human-factors/the-swiss-cheese-model-8888

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Questions?

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MedStar Health

Knowledge and Compassion
Focused on You

D-Free in the ED

Removing HYDROmorphone from the ED to Improve Patient Safety

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MedStar Health

- Ten hospitals in Maryland and Washington, D.C.
- 30,000 Associates
  - 7,000 RNs
  - 1,100 Residents
- 4,300 Physicians, including 2,000 employed by MedStar
- More than 150 ambulatory sites
- Private, Not-for-Profit organization with 20 health-related organizations besides hospitals
- $5B in revenues

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Background

- Three adverse events noted by ED leadership with IV HYDROmorphone
  - Two different facilities
- RCA: common themes identified
  - Lack of knowledge of 1:7 morphine dosing equivalent
  - Stacking (doses given too close together)
  - Escalating (giving increasing doses)
  - Use in high risk patients
  - Appropriate dosing for narcotic naïve patients

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Background

- **RCA Recommendations:**
  - Remove HYDROmorphone from ED Pyxis
  - Revise ED pain order sets:
    - remove q15 minute IV opioid dosing. Restrict to q 1 hour dosing x 1
    - show lower starting doses for morphine and warnings to reduce dose for at risk patients
  - Revise nursing policy from 60 minutes to 30 minutes reassessment post IV opioid administration
  - Create a training module for physicians to educate about safer narcotic dosing and at risk patient types
  - Recommend capnography when available for monitoring high risk patients who receive IV opioids

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Intervention Timeline

- **April/May 2014:**
  - Email alerts
  - Education
  - Safety Moments in EDs, Emergency Medicine Leadership Council- all 9 MSH EDs
- **August 2014**:
  - Continued education
  - >= 2mg HYDROmorphone order statements removed from CPOE
  - HYDROmorphone (IV) removed from two EDs' Pyxis machines
  - Available from pharmacy - creates "speed bump" (~30-60min)
- **October2014**:
  - 3rd ED went D-Free

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Methods

Data types:

- Clinical Data (EMR)
  - Orders
  - Pyxis withdrawals
  - eMAR documentation
  - Naloxone usage
- HCAHPS Survey
- Patient Safety Event Reports
- Staff survey for acceptance and unintended consequences (i.e. increased workload, other safety events, etc.)

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Results

- EMR Data
  - 6 Emergency Departments
    - 3 Pilot sites (P1-P3), 170 – 867 beds
    - 3 Controls (C1-C3), 301 - 380 beds
  - 6/30/13 – 12/31/14
  - 48,046 orders
    - Excluded -PRN, non-IV/IM, pediatric, duplicate, non-ED
    - Morphine 21,615
    - HYDROmorphone 19,493
    - Naloxone 389
    - **Final count: 41,497 orders**

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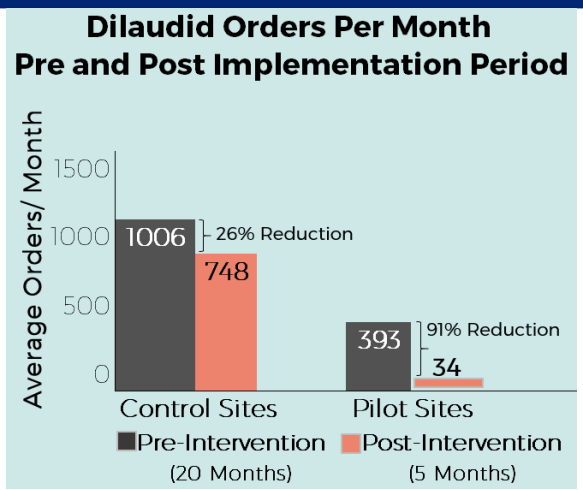
Orders



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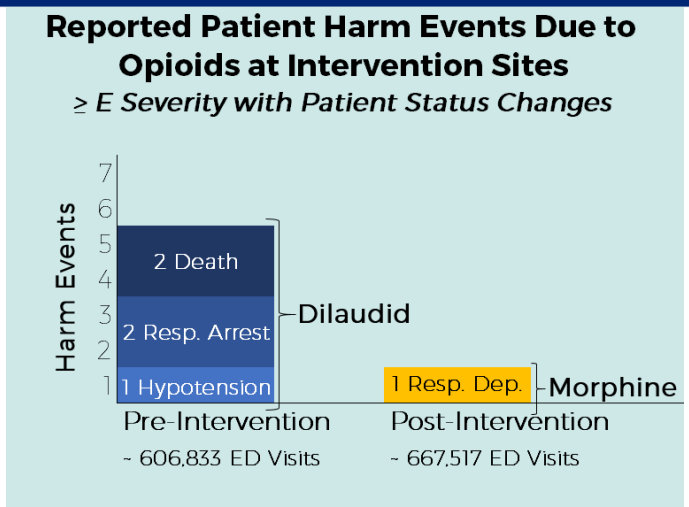
Harm Events



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Other Results

- 55% overall reduction in HYDROmorphone (pilot and control)
- Consistent number of pain doses
- Significant drop in HYDROmorphone doses ≥ 2 mg
- Increased use of PO opioids and APAP/ibuprofen
- Carry-over effect on inpatient: 10% reduction of HYDROmorphone use
- PSEs:
  - 1.4 PSEs/10,000 Morphine Orders
  - 7.7 PSEs/10,000 HYDROmorphone Orders

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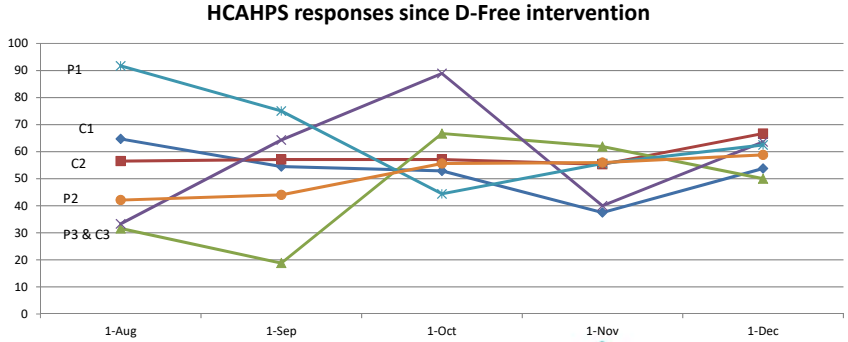
HCAHPS Survey Results

- ED Survey question #13, "How often was your pain well controlled?"
- Limitation: selection bias



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Staff Survey-Preliminary Results

- 47 responses from initial two pilot sites
- 12 RN, 28 Attending, 7 Physician Assistant
- Since the removal of HYDROmorphone from the ED Pyxis…..
  - 91.3% HYDROmorphone is never ordered on a shift
  - 69% have 1-4 patients request HYDROmorphone per shift
  - 85% easier/no change in treating morphine allergies
  - 80% easier/no change in treating severe pain
  - 71% easier/no change in treating opioid tolerance
  - 81% increased/no change in prescribing consistency

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Overall Results

- Doses of IV HYDROmorphone declined at all sites
- Doses of IV HYDROmorphone declined more substantially at pilot sites
- Reduced utilization of high dose strength
- No clear change on patient experience
- Overall reduced risk by using more morphine
  - ~4.1 PSEs may have been prevented

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HYDROmorphone – Additional Recommendations

- Remove HYDROmorphone IV stock from ED
- Add lower dose one-off order sentences, viewable in ED, to include 0.2mg dose , and 0.5mg dose
- Take HYDROmorphone IV off over-ride on all nursing units
- Discern alert to fire when prescriber orders HYDROmorphone IV in patient with any of the following risk factors: age >55, COPD, OSA, asthma, etc.
- Add alerts to "Special Instructions" and Pyxis: IV HYDROmorphone equivalent in potency to 7mg IV morphine.

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Questions?

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Is there fat in that SALAD?

Preventing errors between conventional and alternative dosage forms

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Drug Policy Coordinator, Sr.
February 2017

Aurora Health Care

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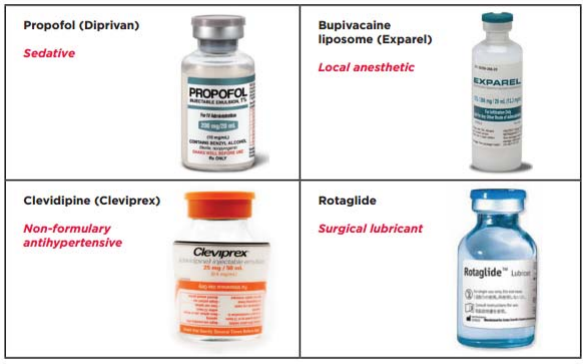
Beware of look-alike formulations

... all that's white is not propofol!



Ensure your patients' safety by:

- Separating storage of these products
- Verifying drug names
- Labeling all medications, medication containers (syringes, cups, basins, etc.), and other solutions (both on and off the sterile field) unless immediately administered
- Discarding any unlabeled products that are not immediately administered

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Safeguards

1. Formulary considerations and constraints (prospective review)

2. Segregated storage

3. Differentiation

4. Barcode verification on preparation

5. Labeling

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Safeguards

6. Unique dose limits on order entry and smart pump

7. Barcode medication administration

amphotericin B 50 MG SOLR Medications 0.25 mg/kg
dextrose 5 % SOLN Base 250 mL
Weight: 48.1 kg
References: Med Admin Guidelines Micromedex

8. Hyperlink to IV guidelines in eMAR

9. Safety posters, newsletter articles, education

10. Retrospective review

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ISMP INSTITUTE FOR SAFE MEDICATION PRACTICES

Update

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

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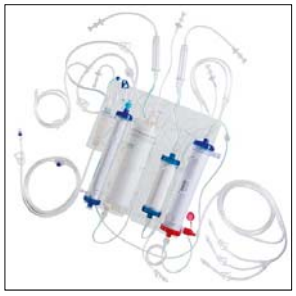
MSOS Member Briefings

3/16/2017

Very high concentration heparin used in error



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Launch of Global Patient Safety Challenge – Medication Safety
Bonn Germany March 29th 2017

- Promote international cooperation to influence guidance for regulators, manufacturers and practitioners to improve safety of labeling, packaging, drug naming.
- Lack of medication error reporting programs globally
- Common for drug preparation by nurses in clinical areas; no good way to report information when errors occur
- Influence global standards for bar coding, use of technology for compounding
- Influence use of prefilled syringes and premixed parenteral solutions of high alert drugs
- Actions for health professionals and patients (med rec., etc)

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MSOS Member Briefings

3/16/2017

Applications for the new

ISMP International Safe Medication Management Fellowship
(2 years full time at Horsham PA Office)

Applications accepted starting on April 3, 2017.

More information coming soon.

ISMP Institute for Safe Medication Practices

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July 30, 2015 . Volume 20 Issue 15

ISMP

Acute Care

ISMP Medication Safety Alert!

Educating the Healthcare Community About Safe Medication Practices

Update on implementation of the new ENFit enteral connectors

Special ALERT

Loss of drug potency

10th ANNUAL ISMP CHEERS AWARDS

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BD stopper issue

- BD in the process of returning to the legacy stopper material for all 3 mL & 5 mL offerings.
- Not yet completed.
- Offering the 3 mL & 5 mL syringe with the Legacy stopper material with alternative SKU (Stock Keeping Unit) numbers (309658 & 309649 respectively) and will have same pricing structure.
- Pharmacy convenience tray package offering, which aligns with batch filling; was converted for 3 and 5 mL and 30 mL syringes in July 2015. The 1 mL, 10 mL, 20 mL and 60 mL had not converted to the alternative stopper source.

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ISMP High Alert Drug Self-Assessment Tool

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TJC considering standard requiring metric weight (Kg or g) for pediatric patients

- Recommendation to weigh pediatric/neonatal patients in kilograms in literature for more than 20 years.
- A patient safety issue since FDA-approved dosing of pediatric/neonatal medications is based on the patient's weight in kilograms.
- Serious medication errors have occurred in these populations because patients are still weighed in pounds throughout the continuum of care, including the emergency department.
- Many organizations recommend weighing the pediatric/neonatal patients in kilograms, including ISMP.
- There has been no formal method to hold organizations accountable for weighing pediatric/neonatal patients in kilograms.
- Stakeholder call focused on barriers to implementation, best practices, and possible actions The Joint Commission can take.

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Questions?

- Don't forget to mark you calendar:
  - LIVE MSOS Member Meeting at the ASHP Medication Safety Collaborative on Sunday, June 4, 2017 from 12:30-1:30pm in Room 101G Minneapolis Convention Center
  - Our next MSOS Briefings webinar on Thursday, June 15, 2017 from 1-2pm EDT.

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