



# MSOS Member Briefing

## March 2019

MSOS Member Briefings  
March 2019  
*Moderated by: E. Robert Feroli, PharmD, FASHP*



Supported by an educational grant from Novartis.



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Opiates  
From Oversedation to OIVI

Michael Van Ornum RPh, BCPS, CPPS  
[mtvanorum@sentara.com](mailto:mtvanorum@sentara.com)  
Co-Chair, Medication Use Safety Improvement Committee (MUSIC)

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Sentara Martha  
Jefferson Hospital (SMJH)

- Sentara Healthcare System
  - 12 hospital system in Virginia
  - Sentara Martha Jefferson Hospital
    - Community Hospital
    - 175 beds



SENTARA®



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### Opiate Induced Ventilatory Inhibition (OIVI)

- More comprehensive descriptor than oversedation
- Encompasses three mechanisms
  - Decreased respiratory drive
  - Decreased level of consciousness
  - Upper airway obstruction
- Result = decreased ventilation

Anaesthesia Intensive Care 2011; 39: 545-558



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### Reversal Review

- Patients receiving naloxone reversals
  - Did not receive doses outside the normal dose range
  - Often had tolerated similar doses in the past
  - Fell across the usage spectrum from first dose to days of doses



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### OIVI: Where to look

- Significant contributory factor in:
  - Unwitnessed cardiopulmonary event
  - Comorbidities affecting LOC
    - Stroke
    - Sepsis
    - Respiratory disease
    - Hypotension
  - Events with plausible explanations

OIVI behaves like an opportunistic ADE



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### Meet the Elephant

- The patient's pain scale is subjectively accurate
  - Patient's have widely variant references for comparison
    - For pain quality, intensity, and duration
    - For analgesic quality, intensity, and duration
  - To what is the patient comparing "worst pain imaginable"?
  - How does the patient define efficacy from analgesics?



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### A Bigger Elephant

- Higher pain score = more drug
  - Mild, moderate, severe are linear
  - Implicitly assumes goal is ZERO pain

Are we using the pain scales  
in the right way?



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### Pain Assessment

- **Initial (For Ordering)**
  - Tolerant vs Naïve
  - Past medical history
  - Acute Pain vs Chronic Pain
  - Chief Complaint/Initial Diagnosis
  - Anticipated Medical Plan
- **Ongoing (For Dose Adjustments)**
  - Level of Consciousness (LOC)
  - Pain Scores (mild, mod, severe)
  - Oxygen Saturation
  - Respiratory Quality

Keep Functions Focused!



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Are we using the best assessment scales for pain management?

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### Different Tools

- Indiana Polyclinic Combined Scales
  - Pain
    - 2 = Small bruise
    - 5 = Headache for days
    - 10 = Being torn apart while still alive
  - Functional
  - Depression
  - Anxiety



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### The Herd (of fallacies)

- Never give an extra dose before the next dose is due.
- The dose is okay if the patient has been tolerating it for days.
- IV narcotics don't last as long as their oral counterparts so they can be given more frequently.
- Dosing in anticipation of future pain is always a good practice. Stay ahead.



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### Lessons from Review

- The pain scale we have could be more effective and patient centric
- Other pain scales suggest broader pain management interventions
- Education and culture require a plan for sustainability



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### Considerations

- What if:
  - We treated OIVI like an adverse drug event?
    - How do we manage heparin-induced thrombocytopenia or contrast-induced nephropathy?
  - We had a daily review/discussion of patients receiving parenteral opiates or high doses?
    - Assess for changes in condition



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### Considerations

- What if
  - Dose stacking was a friend?
    - Low dose parenteral “Rescue” doses
  - Our level of concern for risk increased with duration of opiate use?
  - Monitoring increased at transitions of care?
  - Patient’s baseline functional pain scores were recorded and referenced?
  - Realistic analgesia expectations were discussed BEFORE medication administration?



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### Summary

- Reducing risk of OIVI still has a long way to go
  - Capital investments in monitoring
    - Capnography
  - Orderset and order build revisions
  - Patient education expectations
  - Clinician education
  - Placement and timing of monitoring activities
    - Define expected monitoring



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### Great Resources

- “Opioids, ventilation and acute pain management” Anaesth Intensive Care 2011; **39**: 545-558
- [www.hospitalmedicine.org/MI](http://www.hospitalmedicine.org/MI)
  - Reducing Adverse Drug Events Related to Opioids Implementation Guide
- San Diego Patient Safety Council
  - Respiratory Monitoring of Patients Outside the ICU: Guidelines of Care Tool Kit 2014



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### Questions??

Michael Van Orman RPh, BCPS, CPFS  
[mvanor@sentara.com](mailto:mvanor@sentara.com)  
Co-Chair, Medication Use Safety Improvement Committee (MUSIC)



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# MSOS Member Briefing

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**Decreasing Vaccine Administration Errors**

**UW Medicine**  
VALLEY  
MEDICAL CENTER

Sheila Lukito, PharmD CPPS  
Medication Safety Officer  
Clinical Assistant Professor, UW School of Pharmacy

The slide features a photograph of the UW Medicine Valley Medical Center building and its surrounding grounds.

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### Valley Medical Center

- The oldest and largest public district hospital in Washington State (located south of Seattle)
- Acute Care (321 beds):
  - Medical, surgical, emergency (Level III Trauma Center), birthing, Level II Neonatal ICU, pediatrics, oncology, and other specialties
- **Clinic Network:**
  - Over 60 primary care, urgent care, and specialty care clinics
  - Sees over 400,000 patients every year
  - **Administered over 56,000 vaccines in 2017** (all vaccines for patients < 18 years old are provided free of charge from the WA State Vaccine for Children's program)

**WE ARE valley**

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### Decreasing Vaccination Errors

- The clinic network focused its efforts to redesign the vaccination workflow process over a period of time by:
  - Implementing evidence-based practices
    - utilization of the online state-based immunization registry for vaccine history verification
    - optimization of clinical decision support in the EHR by creating a *Vaccine SmartSet* keying on the patient's age
    - documentation of vaccines in the EHR prior to administration
  - Improving staff engagement
- This initiative resulted in 134 fewer vaccination errors in 2017 compared to 2013 (one of the 21<sup>st</sup> Annual ISMP CHEERS award recipients)

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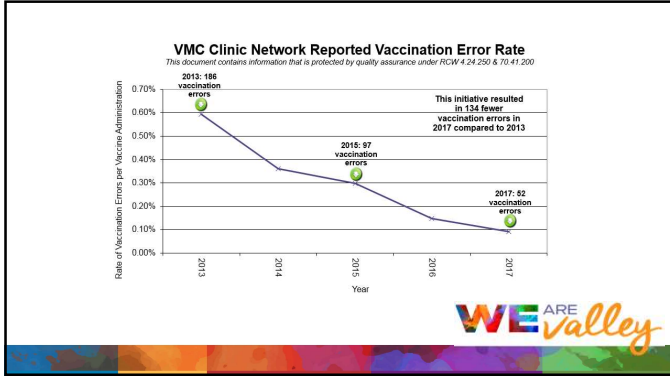
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# MSOS Member Briefing

## March 2019



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## Vaccine Administration Safeguards

Utilizing Evidence-Based Practices and Clinical Decision Support in the EHR

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**Step 1:** prior to all appointments, medical assistant reviews immunization history utilizing the online state-based immunization registry (WAIIS) forecast and EPIC history to determine which vaccines are due

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Step 2: during appointment, medical assistant or authorized prescriber interviews patient for additional immunization history

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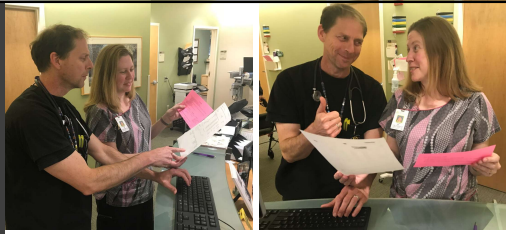
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Step 3: both authorized prescriber and medical assistant perform **Vaccine Time Out** (to share accountability) based on the information obtained from WAIS, EPIC, and the patient or patient's family

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### Vaccine Time-Out Sheet

Vaccine Time-Out		Patient's Label with name & MRN/DOB
1. Review ALL records available (WAIS, Epic, prior patient records, etc) <input type="checkbox"/> NO WAIS record (print search window to show no record available) <i>Disclaimer: If WAIS records were not available during anticipatory work, please check again prior to administration and re-print summary.</i> <input type="checkbox"/> NO prior records If no records available, no need to continue with steps 2-5. Proceed with administration based on provider's orders and CDC/ACIP guidelines.		
2. Print out WAIS Vaccination Summary.		
3. Enter any historical vaccines in Epic.		
4. Highlight vaccines that are "past due", "optional", and/or "due now".		
5. Circle vaccines to be pending. ***Haltab indicate both provider and MA are in agreement for vaccines ordered***		
MA: _____	Provider: _____	MA/EPIC/ RN Coordinator or RN Care Manager Initials: _____ OPTIONAL: Add for the initials if collaboration was done.
<b>Tips</b> DTaP-IPV-HepB (Pediaris) <input type="checkbox"/> Age: 6wks through 6 years <input type="checkbox"/> Dose #1, #2 and/or #3 of DTaP and IPV <input type="checkbox"/> Approved for the 3-dose primary series. CANNOT be used for the 4 <sup>th</sup> and 5 <sup>th</sup> series.	DTaP-IPV (Kivrik) <input type="checkbox"/> Age: 4 through 6 years <input type="checkbox"/> Dose #5 DTaP AND Dose #4 IPV <input type="checkbox"/> Kindergarten doses. Do NOT use for doses 1-4 DTaP or 1-3 IPV	MMR/V (Proquest) <input type="checkbox"/> Age: 12 months through 12 years <input type="checkbox"/> Dose: any in series
		Tdap (Boostrix) <input type="checkbox"/> Give 1 dose to any pregnant patient during each pregnancy regardless of time since prior Td or Tdap <input type="checkbox"/> Preferred during 27 thru 36 weeks gestation.

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**Step 4:** prescriber enters the vaccine order using EPIC Vaccine SmartSet (only age-appropriate orders are visible based on the patient's age)

Standard Immunizations: 4-5 yrs

- DTap (DTaP) 4-5 yrs (30-32w & 4th-5y)
- MMR (MMR) 4-5 yrs (15-18m & 4th-5y)
- Hib (Hib) 4-5 yrs (15-18m & 4th-5y)
- Polio (Polio) 4-5 yrs (15-18m & 4th-5y)
- HepA (HepA) 4-5 yrs (12-23m & 4th-5y)
- Mening (Mening) 4-5 yrs (15-18m & 4th-5y)
- Pneum (Pneum) 4-5 yrs (15-18m & 4th-5y)
- Varicella (Varicella) 4-5 yrs (15-18m & 4th-5y)
- Hib (Hib) 4-5 yrs (15-18m & 4th-5y)
- Polio (Polio) 4-5 yrs (15-18m & 4th-5y)
- HepA (HepA) 4-5 yrs (12-23m & 4th-5y)
- Mening (Mening) 4-5 yrs (15-18m & 4th-5y)
- Pneum (Pneum) 4-5 yrs (15-18m & 4th-5y)
- Varicella (Varicella) 4-5 yrs (15-18m & 4th-5y)

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**Step 5:** medical assistant verifies name and date of birth prior to administration

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**Step 6:** medical assistant reviews the order and documents administration by selecting the correct lot number PRIOR to administration (EPIC utilizes the Lot Manager which will alert the user if an expired lot is selected for documentation)

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# MSOS Member Briefing

## March 2019

### Vaccination Documentation Page in EHR

Immunizations - All Types | All Admin Types | Immunizable Admins | Immunizable Admins | Immunization Report | Immun Report

Administered Immunization

Name: HPV Bivalent | Given: [dropdown]

Date: 10/25/2018 | Time: 08:00 | Given by: BYRD, TIFFANY L | VIG date: 5/3/11

Lot #: [dropdown] | Dose: 0.5 | Site: [dropdown] | Comment: [text area]

Mfg: GlaxoSmithKline | Route: Intramuscular | Location: [text area]

NDC: [dropdown] | Product: [dropdown] | External: [checkbox]

Expires: [checkbox] | Next due: [text area]

Is the vaccine State Supplied?  Yes  No  Yes - American Indian/Alaskan Native  Yes - CHP

Is the patient getting vaccinated as part of the Vaccines For Children (VFC) program?  Yes - Medicaid  Yes - Private Insurance  Yes - Under Insured  Yes - Uninsured

Date (VFC) vaccine information statement given: [checkbox]

Accept as Complete | Accept | Cancel

One-way direct interface from EPIC to WAIS: all vaccine administrations documented in the EHR is immediately visible in the online state-based immunization registry

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### Selecting Correct Lot# from Lot Manager

Lot Number	NDC	Exp Date	Product	Manufacturer	Expiration Date
0006-498100		07/20/2016		GlaxoSmithKline	

Lot	Manufacturer	Expiration Date	Product	NDC
B1316	GlaxoSmithKline	07/20/2016	ENGERRIX-B	58160-820-11
S2L22	GlaxoSmithKline	3/22/2020	ENGERRIX-B	58160-820-43
B1344	GlaxoSmithKline	10/7/2020	ENGERRIX-B	58160-820-43
CH24	GlaxoSmithKline	7/3/2019	ENGERRIX-B	58160-820-43
GY316	GlaxoSmithKline	5/25/2019	ENGERRIX-B	58160-820-11

Recent optimization (December 2018): the automatic removal of expired lot #s from lot manager. Previously, medical assistant coordinators were required to manually remove expired lot #s from the lot manager.



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Step 7: medical assistant administers vaccine to the patient

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### Improving Staff Engagement

- Required “Just Culture” education to all management team members to implement psychologically safe environment for the staff to allow for any feedback of the process
- Shared accountability is practiced among all staff members in the clinic network and real-time coaching is consistently performed to staff whenever drift occurs
- Data is reported to the clinic network patient safety committee every quarter



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### Future State

Implementation of barcode scanning for all vaccine and medication administrations in the clinic setting (anticipating the creation of updated barcode for all vaccines where the lot # and expiration date are encoded in the barcode)

*ISMP Reference: “ISMP Staff Educational Topics and Teaching Points to Prevent Errors during Vaccine Administration” (Acute Care ISMP Medication Safety Alert, June 28, 2018, Volume 23, Issue 13, Page 1-3)*



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### Questions?



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# MSOS Member Briefing

## March 2019



Steps Towards Eliminating Injectable Promethazine from the Inpatient Formulary  
*UPMC Health System Pharmacy & Therapeutics Committee*

Stacey L. Miske, PharmD, BCPP  
Clinical Pharmacy Specialist  
UPMC Pharmacy Service Center

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### About UPMC

- Integrated Health Care Delivery System
  - Providing acute patient care and multispecialty medical care
- 35 Hospitals
  - Western and Central Pennsylvania
  - Southwestern New York



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Why is UPMC evaluating the removal of Injectable Promethazine from the Inpatient Formulary?

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# MSOS Member Briefing

## March 2019

### ISMP 2018-2019 Targeted Medication Safety Best Practices for Hospitals

*Eliminate injectable promethazine from the hospital*

- **Purpose:** To mobilize widespread, national adoption of consensus-based best practices for specific medication safety issues that continue to cause fatal and harmful errors in patients
- **Rationale:** To eliminate the risk of serious tissue injuries and amputations from the inadvertent arterial injection or IV extravasation of injectable promethazine



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### Are the Alternative Antiemetics Safer?

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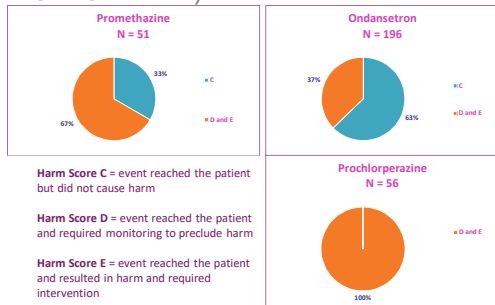
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### Adverse Drug Event Harm Scores

UPMC 2010-2017



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How did UPMC respond?

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### UPMC Recommendations

- Promethazine **25 mg/mL** injection is designated **formulary-restricted**
  - For patients with nausea/vomiting refractory to at least one other antiemetic option
  - Administration via central line with dilution to a large volume (minimum of 25 mL) for infusion via programmable pump outside of emergency situations is strongly recommended
  - If central line administration is not feasible, consider deep intramuscular administration or an alternative antiemetic
- Promethazine **50 mg/mL** injection **Not Available For Use**



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### UPMC Recommendations

- Promethazine injection will be removed from all Ordersets
  - **Exception:** Anesthesia Orderset
- Promethazine injection orders that remain in EHR will default to 6.25 mg or 12.5 mg dose
- Promethazine injection orders that remain in EHR will have default order comment: "Vesicant. Dilution and CENTRAL line recommended."
- Institute Alaris® infusion pump clinical advisory: "Vesicant. Check blood return. CENTRAL line recommended."
- Promethazine injection will be removed from automated dispensing cabinets



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**Did UPMC Practice Change as a Result of these Recommendations?**

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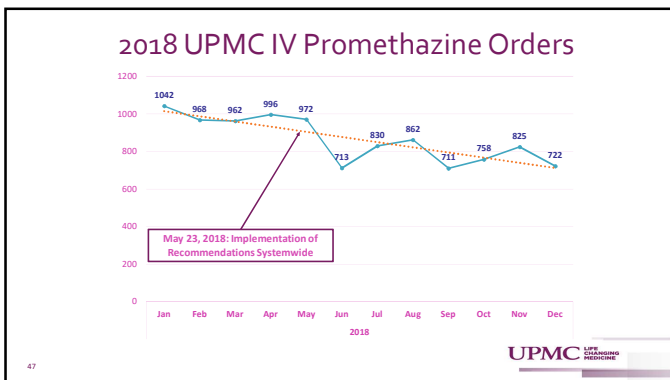
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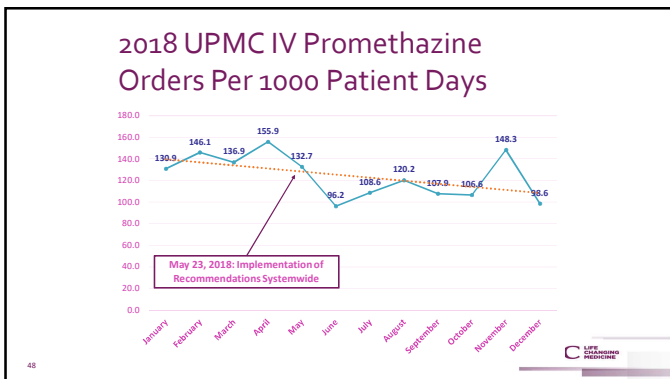
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### 2018 Utilization Statistics

Dose Prescribed	2017† Percent of Total Use	2018* Percent of Total Use
6.25 mg	15%	40%
12.5 mg	60%	46%
25 mg	25%	14%

†July-December 2017  
\*January-October 2018



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Have there been Adverse Events Reported at UPMC?

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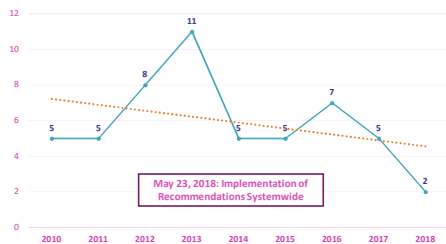
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### UPMC Injectable Promethazine Adverse Events 2010-2018



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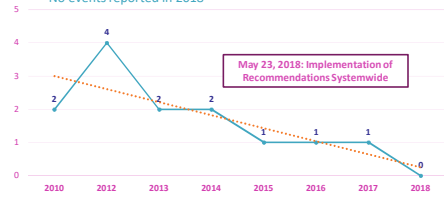
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# MSOS Member Briefing

## March 2019

### UPMC Injectable Promethazine Infiltration/Phlebitis Events 2010-2018

- 13/53 (25%) Infiltration/Phlebitis
  - One event resulting in necrosis/gangrene necessitating Plastics consultation which resolved with antibiotics in 2010
  - No events reported in 2018



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### UPMC Next Steps

- Sharing of results systemwide
  - System Pharmacy & Therapeutics (P&T) Committee
  - Health System Medication Safety Subcommittee
  - Focused discussion with sites/groups having highest utilization to identify barriers
- Re-evaluation in 6 months at July Health System P&T



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Questions??

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# MSOS Member Briefing

## March 2019

 ISMP Update  
Institute for Safe Medication Practices



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



MSOS  
MEDICATION SAFETY OFFICERS SOCIETY

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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 Tuesday May 21, 2019.

Supported by an educational grant from Novartis.



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MEDICATION SAFETY OFFICERS SOCIETY

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