

MSOS Member Briefing March 2026

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1



2nd Independent Double Check Criteria


Dean A Bennett RPh, CPHQ, LSSGB
Medication Safety Officer (Enterprise-Wide)
Clinical Effectiveness Department
ChristianaCare Health System



2

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Serving Delaware, Maryland, Pennsylvania and New Jersey

- Newark Campus
- Wilmington Campus
- Cecil County Campus
- Middletown Campus
- Concord Health Center
- Greenville Campus
- Smyrna Campus
- West Grove Campus (coming soon)

12
ChristianaCare | GoHealth
Urgent Care Centers

180+
Practices & Locations



3




ChristianaCare

Nonprofit academic health system, serving Delaware, Maryland, Pennsylvania and New Jersey. Delaware's largest private employer and a Top 10 Philadelphia area employer.

➤ **Acute Care**

- Three hospitals and a freestanding emergency department.
- Level I trauma center.
- Level III neonatal intensive care unit.
- Comprehensive stroke center.
- Regional centers of excellence: heart & vascular care, cancer care and women's health.

➤ **Research and Innovation**

- Gene Editing Institute.
- Health & Technology Innovation Center.
- CareVio virtual care platform.
- Institute for Research on Equity and Community Health (I-REACH).

➤ **Community Care**

- Primary and specialty care.
- Home health care.
- Urgent care centers.
- Community health.
- Center for Virtual Health.

More than
13,000
Caregivers

More than
300
Residents & Fellows














4

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Or Current Tool


ChristianaCare Criteria for Consideration of a 2 nd Independent Double Check (Adult Patients)	<input checked="" type="checkbox"/>	Point Value	
Errors in administration of this medication have resulted in NCC MERP Harm Index category E through I [Harm Levels]		3	Score Range: ≥ 12: strongly consider 8 – 11 consider 1 – 8 recommend not considering
Recommendation for a 2 nd check from an RCA, Intensive Review, Departmental Review/Debrief Team		2	
This medication is administered in a manner that increases the potential for error (eg.- weight based dosing, titrated to effect, titrated in response to lab results, dosed in micrograms or nanograms, etc).		2	
This medication is available on the floor in a multiple-dose form or as a continuous infusion volume that would normally last ≥ 12 hours		2	
Historic Christiana Care experience with this or similar medications suggests additional safety strategies are needed during medication administration (e.g. – repetitive errors reported.)		3	
There is potential for a look-alike/sound-alike medication error either by medication name or by physical appearance of the packaging and manufacturer labeling and /or the medication is listed in the Christiana Care Look-Alike-Sound-Alike Policy and Procedure.		1	
This medication is listed in the Christiana Care High Alert Medication Policy and Procedure.		1	
Infusion Management does not program <u>all</u> elements of the order such as the dose, strength or concentration (for example titrate orders, or medications where a "wild-card" entry for concentration, volume, or dose is used).		2	
The Smart Pump Library does not have narrow Guardrails limits with a soft high limit alert and a hard high limit alert.		1	
Restricted to Level 1, or Level 2 use requirements		-2	
Score Total		17	



5

Several iterations – with tests

Criteria	<input checked="" type="checkbox"/>				Point Value
	H	T	F	M	
H= heparin, T = tPA, F = Fentanyl, M = Midazolam (currently not on the list)					
Errors in administration of this medication have resulted in NCC MERP Harm Index category E through I [Harm Levels]	X	X	X	X	3
Recommendation from a RCA, Intensive Review, Departmental Review/Debrief Team	X		X		2
This medication is administered in a manner that increases the potential for error (ex. <u>weight based</u> dosing, titrated to effect, titrated in response to lab results, dosed in micrograms or nanograms, etc).	X	X	X	X	2
This medication is available on the floor in a multiple-dose form or as a continuous infusion volume that would normally last ≥ 12 hours	X			X	2
Historic Christiana Care experience with similar medications suggests additional safety strategies are needed during medication administration.	X	X	X	X	1
This Medication has a wide dose range.					1
There is potential for a look-alike/sound-alike medication error either by medication name or by physical appearance of the packaging and manufacturer labeling and /or the medication is listed in the Christiana Care Look-Alike-Sound-Alike Policy and Procedure.				X	1
This medication is listed in the Christiana Care High Alert Medication Policy and Procedure.	X	X	X		1
Score	11	8	11	9	



6

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How Do We Use it...

- Whenever there is a proposal for inclusion or removal
- Regular used to evaluate current 2nd check meds to see if anything has changed that would prompt reconsideration of status
- Scored in the Med Safety Committee Meeting
- Scoring Suggests to consider or not.
 - Non-Binding
 - Conversation Starter



7



INTERVENTION TO IMPROVE SAFETY BY OPTIMIZING ORAL CONTRAST DISPENSING AT A LARGE ACADEMIC MEDICAL CENTER

Kecia Missos, PharmD, MSPH

Pharmacist Program Coordinator – Medication-Use Safety
and Quality, Adult Services

University of Kentucky HealthCare

8

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Faculty Disclosure

I have no relevant financial relationships to disclose.



University of Kentucky HealthCare

- Academic, Tertiary Care Center
 - Comprehensive Stroke Center
 - NCI Designated Cancer Center
- 3 Hospital System
 - 1040 licensed beds, 225 ICU
- Level I Trauma Center
- Level IV Neonatal ICU
- Level III PICU



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Acronyms & Abbreviations

- ADC = Automated Dispensing Cabinet
- EHR = Electronic Health Record
- ISMP = Institute for Safe Medication Practices
- Pharm Tech = Pharmacy Technician
- Rad Tech = Radiology Technologist
- RN = Registered Nurse
- RCA = Root Cause Analysis
- SOP = Standard Operating Procedure



4

11



IDENTIFYING THE ISSUE

5

12

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What Happened?

A nurse called Central Pharmacy stating Patient A (**JS, room 12-133**) was accidentally given Patient B's (**SJ, room 12-113**) oral contrast solution, iohexol.

The bottle had a hand-written label and generic typed instructions to administer to patient prior to CT scan.

Patient Name: S---J---

Room Number: 12-133

Please start contrast now and save 100mL for arrival in CT. Once reaching the 100mL line, please call 3-9730 to inform them



6

13

What Happened?

The pharmacist could see in the EHR that Patient **JS (Room 12-133)** was ordered a CT scan, but this scan did not require oral contrast solution. The Pharmacist confirmed that Patient **SJ (Room 12-113)** was also ordered a CT scan and did require the oral contrast solution to be administered before the scan.

Patient Name: S---J---

Room Number: 12-133

Please start contrast now and save 100mL for arrival in CT. Once reaching the 100mL line, please call 3-9730 to inform them




7

14

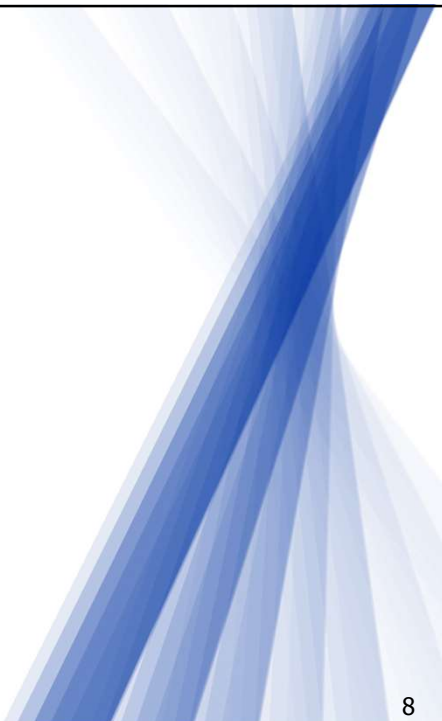
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RCA OF CONTRAST CASE



8

15


Apply Risk Identification

ISMP Key Element #1: Patient Information

- Using Room Number as a patient identifier
 - Per institutional policy, we should use two patient identifiers, and they can be Patient Name, Medical Record Number, Date of Birth, and/or Address

ISMP Key Element #4: Drug Labeling, Packaging, & Nomenclature

- Using a non-standard label with blanks to write-in patient name and room number



9

16

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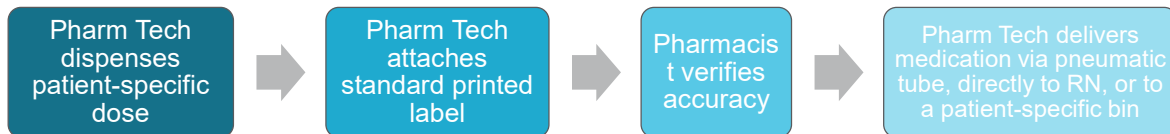
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Apply Risk Identification

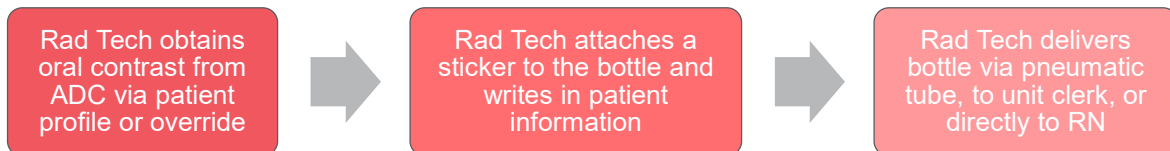
ISMP Key Element #5: Drug Standardization, Storage and Distribution

- Oral contrast workflow is different from any other drug dispensed in the hospital

Normal Medication Workflow



Oral Contrast Workflow



10

17

Apply Risk Identification

ISMP Key Element #7: Environmental Factors, Workflow, & Staffing Patterns

- Using an oral iohexol bottle that historically did not have a usable barcode for BCMA scanning

ISMP Key Element #8: Staff Competency & Education

- Lack of familiarity with oral contrast dispense and administration process

11

18

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What Behaviors Were Present?



SO WHAT DID WE DO?

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Mirrored an Existing Process

When an RN dispenses an insulin dose to be drawn up from a multi-dose vial, a patient-specific label automatically prints at the ADC.

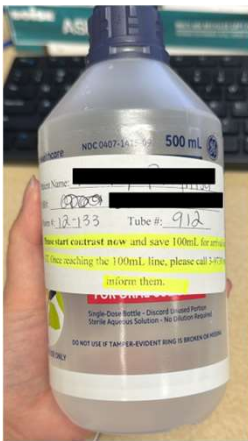
Nursing staff label their patient-specific dose and use the printed barcode for BCMA scanning. The multi-dose vial remains in the ADC.




14

21

1. Introduced a Patient-Specific Oral Contrast Label Printed at the ADC



Test, Contrast
ID: Temporary 6N
Dose: 500 mL
iohexol oral
4.5 g/500 mL (500 mL) Solution



Printed by: Test, Pharmacy
Removed: Oct 10, 2024 08:59 Expires: (___/___/___)



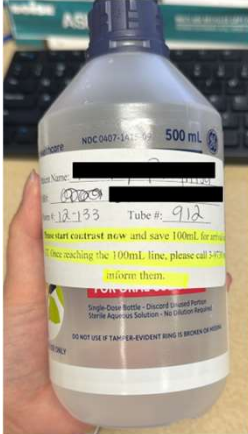
15

22

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2. Re-Designed the “homemade” sticker used by Rad Techs



Technologist: PLACE PYXIS LABEL HERE (DO NOT cover administration instructions with Pyxis Label)

Patient Name: _____

MR#: _____ DOB: _____

Floor/Unit #: _____

Tube #: _____ Expires 8 hours after opened.

RN to BCMA scan and administer contrast now.
 Save 100mL for arrival in CT. Once reaching the 100mL line, please call 3-9730 to inform them.



The Workflow Today



Instructions for administration and phone number left visible.

Test, Contrast
 ID: Temporary 6N
 Dose: 500 mL

iohexol oral
 4.5 g/500 mL (500 mL) Solution

Printed by: Test, Pharmacy
 Removed: Oct 10, 2024 08:59 Expires: (___/___/___)

Tube #: _____ Expires 8 hours after opened.

RN to BCMA scan and administer contrast now.
 Save 100mL for arrival in CT. Once reaching the 100mL line, please call 3-9730 to inform them.



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OTHER NECESSARY STEPS TO CHANGE THIS WORKFLOW




28

25

Other Necessary Steps

- Expanded scope to include additional oral contrast agents such as barium
- Reviewed oral contrast agents for addition to the Autoverification List
- Created an SOP for Rad Techs to dispense and label oral contrast agents in compliance with institutional, state, and federal laws and regulations
- Created an SOP for all staff to change paper at the ADC Printer
- Disseminated education to nursing regarding barcode scanning improvement and compliance expectations
- Future Goals: Removal of oral iohexol from ADC Override List, consider other contrast agents or mixtures for process



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29

26

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Interdisciplinary Collaboration

Departments:

- Pharmacy Leadership
- EHR Analysts
- Pharmacy Automations Team
- Medication Safety
- Radiology
- Nursing
- Neurology/Neurosurgery

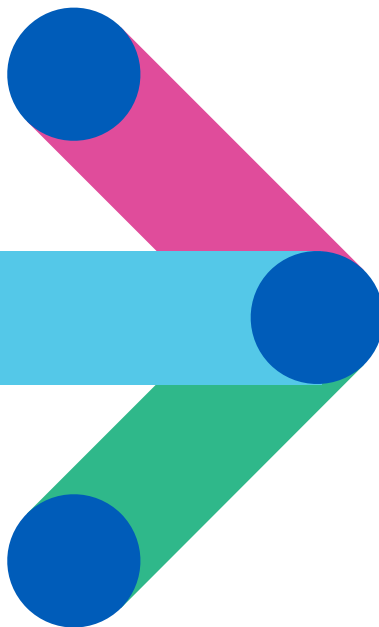
Formal Committees/Meetings:

- Enterprise Pharmacy Operations
- Pyxis Task Force
- Clinical Decision Support Task Force
- Med-Use Safety and Informatics Subcommittee
- Enterprise Pharmacy & Therapeutics Committee
- Enterprise Nursing Advisory Council



30

27



Injectable or Oral? An Active Learning Exercise

Emergency Department

Alice Yeh, PharmD, BCPS, BCPPS, LSSGB
Clinical Pharmacy Coordinator
Cook Children's Medical Center
Fort Worth, TX

28

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The Event

A patient was transferred to the pediatric intensive care unit (PICU) from the emergency department (ED). Upon arrival, a family member handed the receiving nurse an unlabeled, injectable syringe with a purple liquid inside. The family member explained that it was oral acetaminophen and that the PICU nurse was to administer the medication. The dose had already been documented as administered on the electronic medical record.



29

The Aftermath

The medication safety officer rounded on the unit following the event and received the following feedback (paraphrased):

- "I would never mix up the two."
- "I would know what I drew up."
- "It's not that big of a deal."
- "IV meds are clear, and oral medications are colorful."
- "There aren't oral syringes in the supply cart in the patient room."
- "The barcode rips if I draw up the medication in the medication room."

Other staff members reported overhearing the following:

- "Management doesn't get it."
- "All of these e-mails are stupid."



30

30

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The Aftermath (continued)

The following feedback was received from nurses on inpatient units:

- "I would never use an injectable syringe for enteral route because of the risk of a wrong route error."
- "That's so dangerous! Who would do that?"



31

31

The Assessment

Contributing factors

- Lack of ED staff buy-in
- Oral syringes not readily available in supply carts at the point of administration
- Liquid medications dispensed in manufactured cups, not oral syringes

Limiting factors

- Lack of space in supply carts in patient rooms
- Oral syringes
 - Not all liquid medications come in prefilled oral syringes
 - Prefilled oral syringes are space intensive
 - Prefilled oral syringes cost more




32

32

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The Exercise

July 18 – August 31, 2025

- Educational exercise placed in the main ED breakroom with support from the ED Quality Improvement (QI) Council
- Answers submitted online
- Participants were entered into a drawing for gift cards


33

33


The Results

Respondents vs. Number Correct

Number Correct	Number of Respondents
1	0
2	0
3	2
4	9
5	13
6	8
7	2
8	0
9	0
10	0

Participation by Job Role

Job Role	Percentage
Nurse	64.7%
ACT	8.8%
Pharmacy Technician	5.9%
Provider	8.8%
Patient Advocate	2.9%
Scribe	2.9%
Charge Document A...	2.9%
Child Life	2.9%


34

34

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The Answers

Syringe #	Medication	Route	Correct Responses	% Total Respondents
1	penicillin G benzathine (Bicillin)	IM	25	74
2	multivitamin with iron (Poly-Vi-Sol with Iron)	PO	23	68
3	levetiracetam (Keppra)	PO	5	15
4	diphenhydramine (Benadryl)	PO	24	69
5	acetaminophen (Ofirmev)	IV	25	74
6	fluorescein (AK-Fluor)	IV	7	21
7	ferrous sulfate (Fer-In-Sol)	PO	6	18
8	coenzyme Q-10 (Co-Q10)	PO	23	68
9	cetirizine (Zyrtec)	PO	3	9
10	rifampin (Rifadin)	IV	4	12



35

35

The Takeaway

Preparing oral medications in injectable syringe is an unsafe practice

- Staff were unable to identify common oral medications when placed in an intravenous syringe

No further events reported

- Oral syringes made more visible in the medication rooms by the automated dispensing cabinets
- Pharmacy staff, charge nurses, and nurse supervisors on the unit instructed to promote safe medication practices



36

36

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CookChildren's.



Questions?
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37

37



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An ECRI Company

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Rita K. Jew, PharmD, MBA, BCPPS, FASHP
President
Institute for Safe Medication Practices

38

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38

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Targeted Medication Safety Best Practices for Hospitals

<https://home.ecri.org/blogs/ismp-resources/targeted-medication-safety-best-practices-for-hospitals>

- Identify, inspire, and mobilize widespread, national adoption of consensus-based strategies to address recurring problems that continue to cause fatal and harmful errors despite repeated warnings in ISMP publications.
- Introduced in 2014 with 6 Best Practices, updated every 2 years.
- Comprise of 25 Best Practices, including 3 new Best Practices



39

39

Targeted Medication Safety Best Practices for Hospitals

<https://home.ecri.org/blogs/ismp-resources/targeted-medication-safety-best-practices-for-hospitals>

- **New Best Practice 23:** Improve safety with use of intravenous (IV) push medications.
- **New Best Practice 24:** Optimize use of scanning machine-readable codes (e.g., barcode, radio-frequency identification [RFID]) on patient identification (ID) bands and products to prevent medication errors.
- **New Best Practice 25:** Improve the culture of safety.

40

40

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Targeted Medication Safety Best Practices for Hospitals

<https://home.ecri.org/blogs/ismp-resources/targeted-medication-safety-best-practices-for-hospitals>

- **Additions to Best Practice 3:** Ensure an accurate patient weight is obtained and used for medication dosing.
- **Updated Best Practice 21:** Establish organizational expectations for complete medication reconciliation at admission, at all changes in the level of care (including transitions to and from the perioperative setting), and at discharge.

- **Take the survey!**



41

White Paper on Optimizing ADC Safety

<https://www.medsafetyboard.com/blogs/white-papers/optimizing-adc-safety>



- This white paper presents findings from a comprehensive, multi-source analysis examining how single-access and multi-access automated dispensing cabinet compartments impact medication safety, access, and patient outcomes.

42

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White Paper on IV Push Practices

<https://www.medsafetyboard.com/blogs/white-papers/iv-push-medication-practices-identifying-persistent-gaps-and-advancing-safety>

- This white paper draws on a national survey of over 400 clinicians and recent error reports to provide a comprehensive, evidence-based perspective on where IV push practices have advanced, where gaps persist, and what organizations can do to drive meaningful safety improvements.



43

Top 10 Health Technology Hazard for 2026

<https://home.ecri.org/blogs/ecri-thought-leadership-resources/top-10-health-technology-hazards-for-2026-executive-brief>



- Emphasizes growing necessity for healthcare organizations to strengthen and enhance technology selection, implementation and monitoring processes
- #5 Tubing misconnections remain a threat amid slow ENFit and NRFit adoption
- #6 Underutilizing medication safety technologies in perioperative settings
- #9 Technology designs or configurations that prompt unsafe clinical workflows

44

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Top 10 Patient Safety Concerns 2026

<https://home.ecri.org/blogs/ecri-thought-leadership-resources/top-10-patient-safety-concerns-2026>

- Identify and address patient safety concerns in your facilities
- 2026 Top 10 reflects a shift toward broad, systemic threats that jeopardize safe, equitable, and reliable care.
- List emphasizes risks that span technology, infrastructure, staffing, culture, and public health issues capable of affecting large numbers of patients and driving preventable harm.



45

45

Top 10 Patient Safety Concerns 2026

<https://home.ecri.org/blogs/ecri-thought-leadership-resources/top-10-patient-safety-concerns-2026>

- #2 Reduced access to rural healthcare increases health risks and disparities
- #3 Increasing rates of preventable acute diseases in communities and healthcare settings
- #4 Effects of federal funding cuts on healthcare operations and patient safety
- #5 Lack of recognition and reporting of harm events
- #6 Structural and systemic barriers inhibit equitable pain management for women
- #7 Persistent workforce shortages continue to burden staff and restrict access to care
- #8 The impact on system improvement when a culture of blame hinder learning
- #10 Persistent gaps in manufacturer packaging and labeling design continue to undermine medication safety efforts

46

46

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Welcome: Gretchen Brummel, PharmD, BCPS

We are pleased to announce that **Gretchen Brummel**, PharmD, BCPS has joined ISMP as the Director of Med Safety Board, an ISMP Company. Gretchen's career spans over three decades and includes leadership roles in clinical, academic, and corporate settings. She most recently served as Director of the Professional Experience Program and Clinical Associate Professor at the University of Iowa College of Pharmacy. Prior to that, Gretchen served as Pharmacy Executive Director at Vizient, Inc. She has also served as Pharmacotherapy Specialist at Wolters Kluwer's Lexicomp division, Medication Management and Safety Consultant for Joint Commission Resources, and was Director of Clinical Pharmacy, Residency Program Director, Clinical Pharmacy Specialist in Pediatrics, and Informatics Pharmacist at Penn State Hershey Medical Center. Please join us in welcoming Gretchen!



47

Welcome: Kimberly Smith-West, MSN-Ed, RN, CHSE



We are pleased to announce that **Kimberly Smith-West**, MSN-Ed, RN, CHSE has joined ISMP as Medication Safety Specialist, Education. Kimberly has over 20 years of experience in Nursing and is a Certified Healthcare Stimulation Educator. Prior to ISMP, she served as Assistant Professor of Nursing and Simulation Champion for Rasmussen University School of Nursing. She has worked in a variety of hospital settings and served in numerous roles, including labor and delivery unit nurse, mother baby unit nurse, NICU nurse, nurse educator, simulation education specialist, EMR nurse coordinator and nurse informatics analyst. Please join us in welcoming Kimberly!

48

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Welcome: Megan McDonell, BA, PMP

We are pleased to announce that **Megan McDonell**, BA, PMP has joined ISMP as Program Manager. Megan assists with the management of the California Medication Error Reporting (CAMER) program and the FDA contract, among other ISMP projects. Megan's professional background began with six years of military service, which shaped how she approach leadership, accountability, and execution. After her service, she transitioned into engineering and eventually into program and delivery management. Over the past decade, she has worked across technology, fintech, and healthcare, supporting executives and leading program and delivery initiatives behind the scenes. Please join us in welcoming Megan!



Ochsner Children's & ISMP Safe Medication Management Fellowships

<https://home.ecri.org/pages/ecri-careers-center>

- Two fellowships available:
 - Onsite position at Ochsner Children's Hospital
 - Remote position with ISMP
- One-year programs
- Unparalleled opportunity to learn from and work with nation's top experts in medication safety



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Coming Soon!! Medication Safety Specialist Job Posting

- Position: Full-time, fully remote position
- Responsibilities:
 - Subject matter expert on medication use processes and safe medication practices
 - Participate in content development, membership activities, consulting activities, educational programs, data analysis, collaboratives, summits, organizational programs, and advocacy efforts
 - Participate in development new tools and resources
- Education:
 - MSN, DNP, PharmD or equivalent
- Keep an eye out for posting at:
 - <https://home.ecri.org/pages/ecri-careers-center>

51

Upcoming Medication Safety Intensive Programs

<https://home.ecri.org/products/medication-safety-intensive-workshop>

- **Acute Care Focused**
 - May 28 & 29, 2026
 - August 13 & 14, 2026
 - October 22 & 23, 2026
 - December 3 & 4, 2026
- **Community & Specialty Pharmacy Focused**
 - May 1 & 8, 2026
 - October 2 & 9, 2026



52

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March 2026

Questions?



- A copy of today's slides will be posted on our website.
- Next MSOS Briefing date – **May 28th, 2026.**

