MSOS Member Briefing
November 2024

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November 2024

Moderated by: E. Robert Feroli, PharmD, FASHP

MSOS
MEDICATION SAFETY OFFICERS SOCIETY

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SCHOOL of MEDICINE

Electronic Communication of Prescription Discontinuation using CancelRx to Improve Medication Safety

Samantha Pitts, M.D., M.P.H.
Assistant Professor, Department of Medicine
Johns Hopkins University School of Medicine

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Gap in Communication of Medication Discontinuation

- Estimated 1.5% to up to 5% medications are dispensed after discontinuation in the EHR. [1,2]
- Electronic prescribing, or e-prescribing, has been widely adopted. [3]
  - 1.9 billion e-prescriptions on a major network in 2020 [3]
- Electronic cancellation, or CancelRx, had a slower uptake despite availability of the transaction > 10 years. [3]
- Fortunately, CancelRx adoption is increasing:[3]
  - Prescribers: 87%
  - Pharmacies: 90%

[1]Allen AS, Sequist TD. *Ann Intern Med*. 2012 Nov 20;157(10):700–5. [2]Copi EJ, Kelley LR, Fisher KK. *J Am Pharm Assoc (2003)*. 2018 Jul-Aug;58(4S):S46–S50. [3]Data from Surescripts internal analysis; Shervani S, Madden W, Gleason LJ. *JAMA Intern Med*. 2021;181(10):1383–1384

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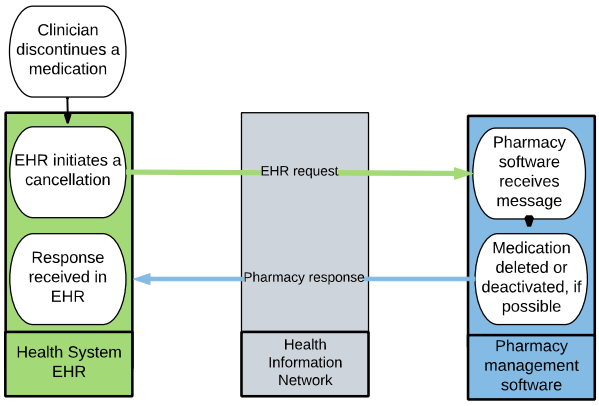
CancelRx Transaction

- The prescriber EHR sends a CancelRx message through the health information network to the pharmacy.
- The prescription is deleted or deactivated at the pharmacy, if possible.
- The pharmacy management software sends a response back through the health information network to the EHR.



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Evaluation of Electronic Prescription Discontinuation at Johns Hopkins

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Before 2019 Pre-CancelRx
- Johns Hopkins internal pharmacies used separate pharmacy management software.
- No electronic communication of prescription discontinuation to *internal* or *external* (e.g., chain) pharmacies.

Jan 2019 CancelRx Implementation
- Electronic communication of prescription discontinuation using CancelRx to all enabled pharmacies.
- Included *internal* and *external* pharmacies.

June 2022 Post-CancelRx
- Johns Hopkins internal pharmacies now use the electronic health record software.
- CancelRx now used for *external* pharmacies only.

End-to-end testing
Proactive risk assessment
Pilot implementation [1]

Quantitative assessment of impact on medication dispensing [2]
Qualitative evaluation of pharmacy information needs [2]

Functional analysis of dose change workflows [3]

Supported by [1]NCPDP Foundation; [2]AHRQ, with pilot by the NCPDP Foundation; [3]AHRQ

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Dispensing After Discontinuation – Interrupted Time Series Results

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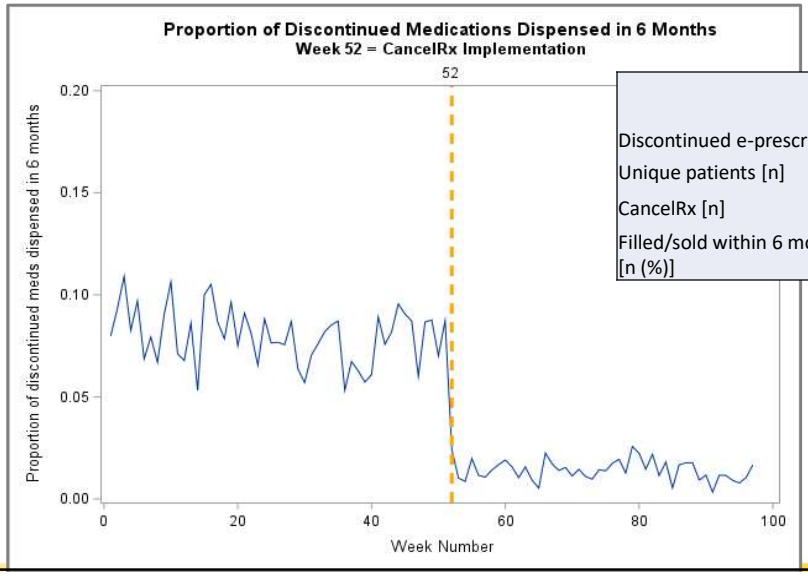

	Pre-CancelRx	Post-CancelRx	p-value
Discontinued e-prescriptions [n]	27171	26127	-
Unique patients [n]	10533	11518	-
CancelRx [n]	0	22443	-
Filled/sold within 6 months [n (%)]	2162 (7.96)	369 (1.41)	<.0001

Most remaining dispenses occurred when a CancelRx was not sent due to system settings

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Dispensing After Discontinuation by Medication Class

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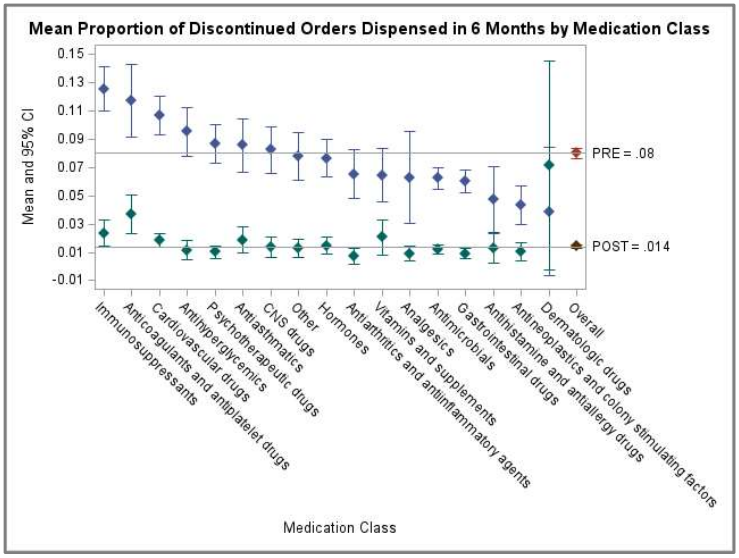

CancelRx implementation reduced variation by medication class

Greatest reductions in classes with high-risk (and chronic) medications

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Dispensing After Discontinuation by Pharmacy

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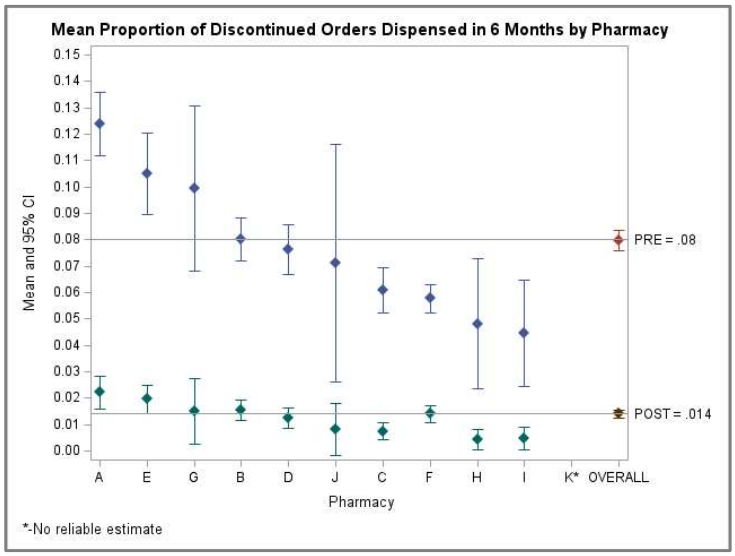

CancelRx implementation also reduced variation by pharmacy

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Implementation Questions and Challenges

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Pharmacy Information Needs

Prescriber intent	the intended outcome for a medication (e.g., discontinue, adjust dose, alternate therapy)	*"Are we inpatient and we're just clearing the med list to reorder, or are we really cancelling it?"*
Intended medication regimen	the intended regimen after the CancelRx message	*""Are you sending another medication for them or will you be taking them off [this] medication."*
Clinical rationale	clinical rationale for the medication change, such as an adverse drug reaction, or dose adjustment to improve blood pressure control	*"...they're going to ask us and if we don't have that information at our fingertips, we're going to struggle, waste their time, not understand, and then the end result could be....'I'm not sure why the physician changed your dose.'"*

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EHR Implementation within the current standard

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Reordered medications	CancelRx status
• To send or not send a CancelRx? • Question for health system implementation	• How does the system show the user the status of a CancelRx? • Question for EHR vendors

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Additional use cases

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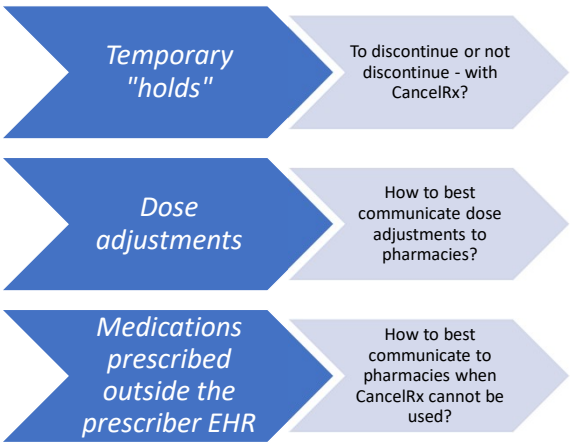

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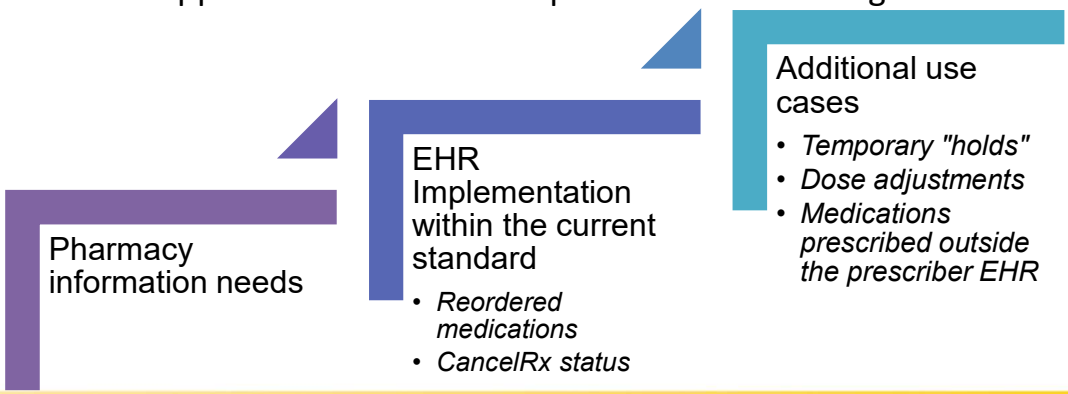
Conclusions

- Cancel Rx implementation was associated with reduced pharmacy dispensing of medications after discontinuation in the EHR -- an important tool for medication safety
- There are opportunities to address questions and challenges



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Acknowledgments

Patient Safety	Pharmacy	IT/Epic	Faculty, staff, and learners
• Yushi Yang • Allen Chen • Nicole Mollenkopf • Sadaf Kazi • Noah Barasch	• Bridgette Thomas • Taylor Woodroof • Matthew Lengel	• Andrew Maslen • Leo Dorissaint • Peter Greene • Howard Levy • Danny Lee	• Jessica Schwartz • Vanessa Hurley • Elaine Giletta • Rabia Jalazai • Nae-Yuh Wang

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November 2024

Safe Administration of Medications via Enteral Feeding Tube

Erica Fredette, PharmD, BCPS, CPPS – Medication Safety Officer

November 2024

South Shore Health

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Introductions

South Shore Health

- Single-hospital community health system located in Weymouth, MA (30 minutes south of Boston)
- 384 licensed beds
- 3rd busiest Emergency Department in the state
- 24 bed Critical Care Unit
- Epic EHR

Erica Fredette
Medication Safety Officer

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Recognizing the Problem

South Shore Health

- In late 2022, our Medication Safety Committee reviewed this ISMP Alert:

Preventing errors when preparing and administering medications via enteral feeding tubes

PROBLEM: Due to the complex nature of preparing and administering medications via enteral feeding tubes, reports of occluded tubes, reduced therapeutic effects, and toxicity leading to patient harm are prevalent. It has been over 12 years since we warned of feeding tube challenges that practitioners and patients often face. Unfortunately, we continue to receive reports related to a variety of issues, including the lack of readily accessible information, gaps in training/experience, unknown feeding tube status, incorrect or inappropriate route or tube size, improper preparation, and wrong administration techniques.

- While we had already converted to 100% ENFit products, the Committee identified multiple other enteral feeding tube practices that needed improvements

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Specific Gaps Identified

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- Medication orders in Epic often have a route of "oral" when in reality the medications are being given via feeding tube
- Nurses often mix multiple crushed medications together and administer them at once (determined through voluntary reports and direct observations)
- There is no Policy / Procedure at SSH for managing enteral feedings or how to safely administer medications via feeding tube

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Provider-focused Improvements

1. Epic warning (BPA)
2. Review of medications with feeding tube routes
3. Education

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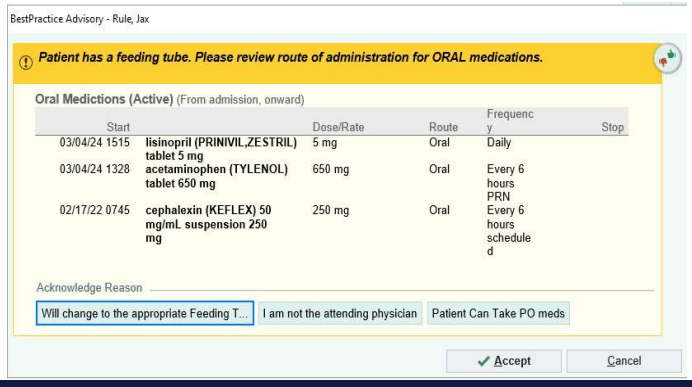
Ordering Meds Via Correct Route

South Shore Health

- Collaborated with Epic analysts to create a new BPA (pop-up warning) in Epic that will trigger when a patient:
  - **Has a feeding tube** documented under LDA activity (lines, drains, airways)

    AND

  - Has any **medication ordered with a route of "oral"**



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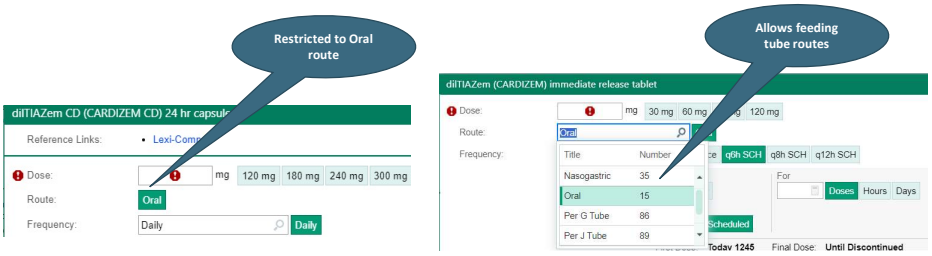
Allowed Medication Routes in Epic

South Shore Health

- Medications with Feeding Tube routes were reviewed and many corrections were made to add or remove routes
  - Quite a few medications may be given via G-tube but not via J-tube
- *Provider educational point:* If a feeding tube route is not available in the order composer, this is a good indication that the route is not appropriate – Please check with Pharmacy for guidance.



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Provider Education

South Shore Health

Why is this important?

- Not all medications are safe or effective when given via enteral feeding tube
  - Long-acting dosage forms can be released all at once causing a dangerous spike in levels.
  - Depending on the destination of the tube (J-tube, for example), some medications may not be well absorbed.
  - Some meds can clog the enteral feeding tube.
  - Medications can have unintended physical or chemical reactions when crushed and administered all together rather then separately.

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Provider Education

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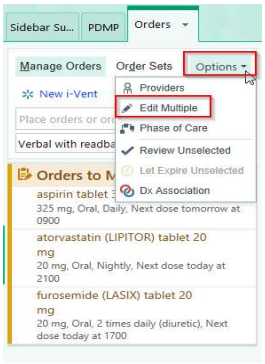
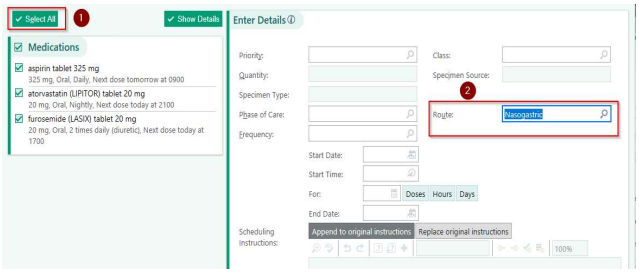
- Use of the "Edit Multiple" feature in Epic can streamline the process of switching routes.





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Provider Education

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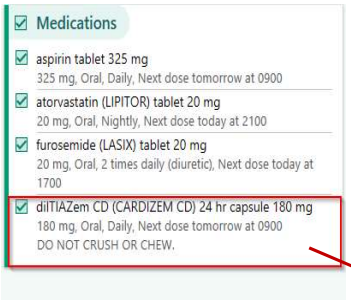
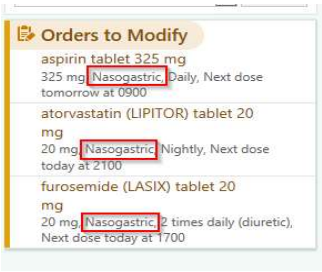
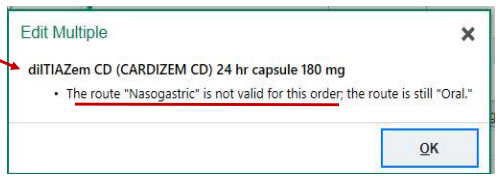
If any of the medications selected does not allow the new route, Epic will generate a warning:







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Nurse-focused Improvements

1. Policy / Procedure Development
2. Tube Feed holding instructions on MAR
3. Education

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Standardize Nursing Practice

South Shore Health

- Worked closely with the Manager of Clinical Nutrition and nursing educators
- New Procedure document addresses management of patients with Enteral Feeding Tubes
  - Specifies that medications must be given one at a time.
  - Requires feeding tube to be flushed before and after each medication.
  - Includes a section on how to safely unclog feeding tubes
  - References provided for medication-specific details
- Instructions included in Epic MAR regarding when to hold the tube feeds for specific medications

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Enteral Feeding Procedure

South Shore Health

13. Medication Administration:
    a. Ensure medication order reflects accurate med route
    b. Follow the proceeding steps for general guidance on medication administration for tube feed patients. Refer to appendix for drug specific administration directions.

        i. Administer each medication separately. Liquid dosage forms should be used when available and if appropriate.
        ii. Prepare tablets as follows:
            1. Grind tablets to a fine powder and mix with water. (Enteric coated or modified release medications are not to be crushed or administered via feeding tubes.
            2. Open capsules and mix contents with water
            3. Dilute Liquid medications with water
        iii. Stop the feeding and flush the tube with at least 15mL water prior to administering medication. Flush the tube again with at least 15mL of water and repeat with each medication.
        iv. Restart the feeding after medication administration at previous rate. Only hold tube feeding for medications as specified in the medication order to avoid altered drug bioavailability.

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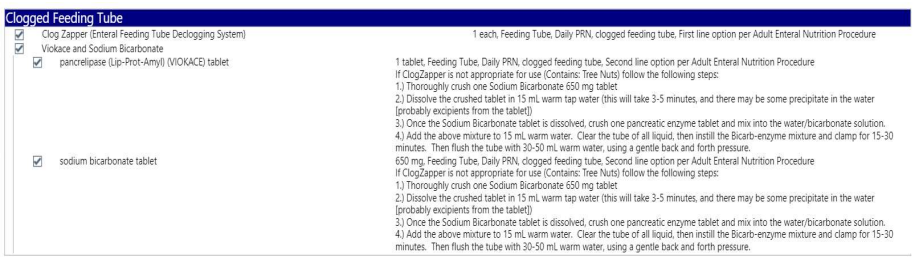
Unclogging Feeding Tubes

South Shore Health

- Procedure document establishes a standard process
  1. First line: use Clog Zapper device
  2. Second line: Viokace + sodium bicarbonate tablet

- Available as an order panel in Epic and within feeding tube order sets
  - PRN orders that nurses can access whenever needed without reaching out to the provider



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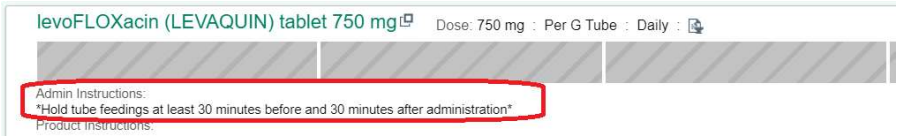
Holding Tube Feeds

South Shore Health

- Administration Instructions in Epic have been updated for products that should be separated from tube feeds
- We adopted the ASPEN recommendation to hold for 30 minutes before and after med administration – this differs from some previous recommendations to hold TF for several hours
  - The goal is to allow for safe medication administration without depriving patients of too much nutrition



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Pharmacist-focused Improvements

1. Establish standard references
2. Education

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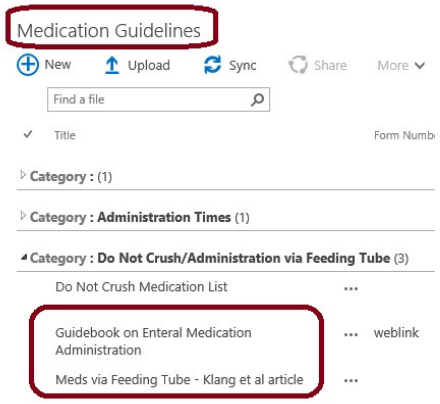
Easy Access to References

South Shore Health

Two new resources were added to the on the SSH intranet near the Do Not Crush list



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Klang article (ASPEN Journal) Drug Table

South Shore Health

Forms listed in *italics* are not appropriate for FT

G-tube and J-tube routes listed separately

TABLE 1 (Continued)

Medication	Form *Not for FT*	Recommendations/rationale	pH	Gastric FT	Jejunal FT	Volume to mix	Time (min)	Volume to rinse
Diclofenac EC	*Tablet*	Will clog FT. See discussion 16.		No	No	Not for FT		
Dicloxacillin	Capsule	Dissolved slowly, but completely.	5.8	Ok	Ok	10	1	10
Digoxin	Solution, *tablet*	Use solution, dilute for osmolality 3× (5950 mOsm/kg).[4]	6.5	Ok	Ok			
Diltiazem Immediate Release	Tablet	Easily clogs, use extra water for rinse.	6.2	Ok	Ok			
Dimenhydrinate	Tablet	Dissolves quickly.	6.9	Ok	Ok	10	1	10
Diphenhydramine	Capsule, *tablet*, solution	Capsule dissolves quickly, solution osmolality 3975 mOsm/kg[4].	3.9	Ok	Ok	Use solution		

Solutions with high osmolality should be further diluted with water

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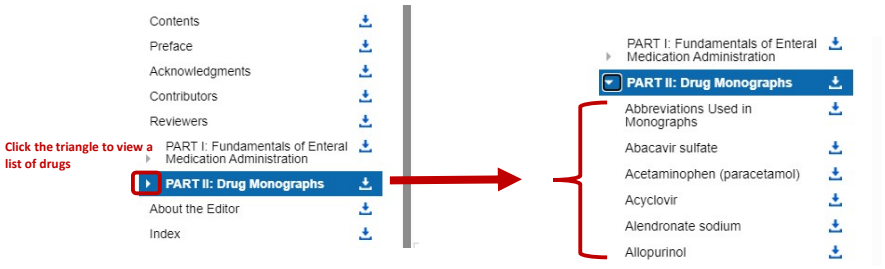
Guidebook on Enteral Medication Administration

South Shore Health

- Provides guidance on whether tube feeds need to be held or not



especially if the juice is calcium-fortified.[9]

Recommendations	
Gastric	• Dilute oral solution with water (at least 1:1) prior to administration. • Consider holding EN for 1 hour before and 2 hours after each drug dose.
Postpyloric	• As above. • Monitor for any unexpected change in effect.
Other	• As with all antimicrobials, consider parenteral alternative for acutely ill patients to ensure therapeutic concentrations.

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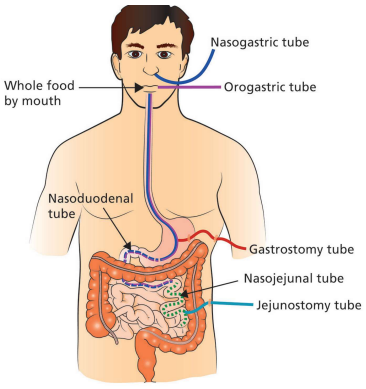
Pharmacist Education: Types of Feeding Tubes

South Shore Health

Feeding tubes are primarily categorized by where they **end** in the GI tract and where they **begin**:

- **Gastric / gastrostomy tubes (G tubes) end in the stomach**
  - **Gastric – inserted through the mouth or nose down esophagus**
  - **Gastrostomy – through the abdominal wall, usually more permanent**
- **Jejunal / Jejunostomy tubes (J tubes) end in the jejunum**
  - **Jejunal – inserted through the mouth or nose down esophagus**
  - **Jejunostomy – through the abdominal wall, usually more permanent**
- **Duodenal tubes (used less commonly) end in the duodenum**



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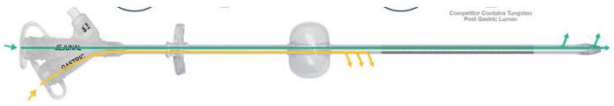
Pharmacist Education: Types of Feeding Tubes

South Shore Health

Various Types of Gastric / Gastrostomy Tubes	
NG tube	*Nasogastric Tube: inserted **through the nares** and passes through the posterior pharynx, through the esophagus and into the stomach*
Dobhoff (NG) tube	***Small diameter** NG tube with a weight on the end. The weight helps with tube placement and may provide an additional barrier to potential aspiration risk. Dobhoff tubes tend to be more comfortable for the patient.*
OG Tube	*Orogastric Tube: similar to NG except it **begins in the mouth** instead of the nasal passages*
G Tube / PEG Tube	*Gastrostomy Tube: feeding tube that passes **through the abdominal wall** and is inserted directly into the stomach* *PEG tube: percutaneous endoscopic gastrostomy tube – placed using endoscopy to be able to guide the tube into the correct place in the stomach, most commonly used in patients who require more permanent enteral feeding*
G-J Tube	*Gastrojejunostomy Tube: enters the stomach in the upper part of the abdomen and is threaded into the small intestine. This one has three ports, the gastric port sits in the stomach and is used for medications, the jejunal port sits in the jejunum and is used for feeding*

Picture of a G-J Tube



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Learning Points for Pharmacists

South Shore Health

- Oral liquids are not always appropriate for feeding tubes
  - Some of these are too viscous for this administration route
- Opening capsules may or may not be acceptable, depending on the powder or beads inside
  - Enteric coated beads often do not dissolve well for administration
- Please do not instruct nurses to extract liquid from closed capsules using a needle (docusate, calcitriol)
  - Use of a parenteral syringe to prepare ENTERAL medications has resulted in serious medication errors
  - ISMP (Institute for Safe Medication Practices) has repeatedly warned against this unsafe practice

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Check and Adjust

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Ongoing Improvements

South Shore Health

- Providers are dismissing the BPA most of the time and not updating ordered routes.
- *Proposal 1:* Change triggering action from Sign Order to Document Note. Providers are likely to be more receptive to advice when they are not in the midst of placing medication orders.
- *Proposal 2:* Develop a BPA that sends an in-basket message to pharmacy for any mismatch of documented feeding tube (on the LDA) and ordered medication route.

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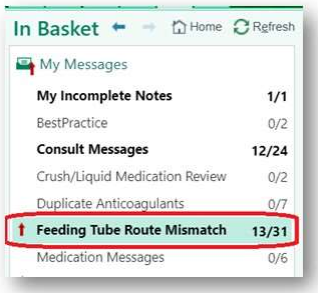
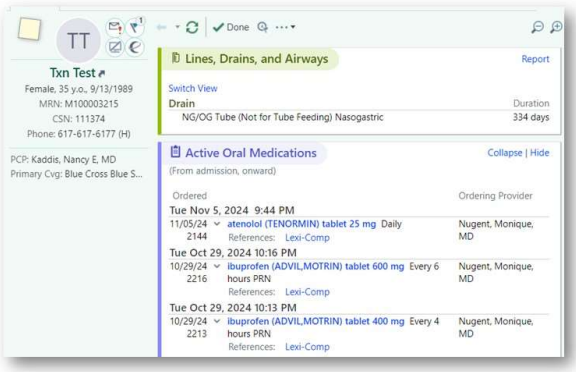
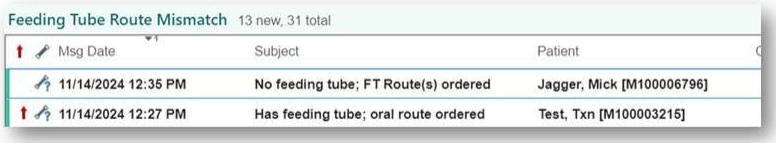
In-Basket Message to Pharmacy

South Shore Health







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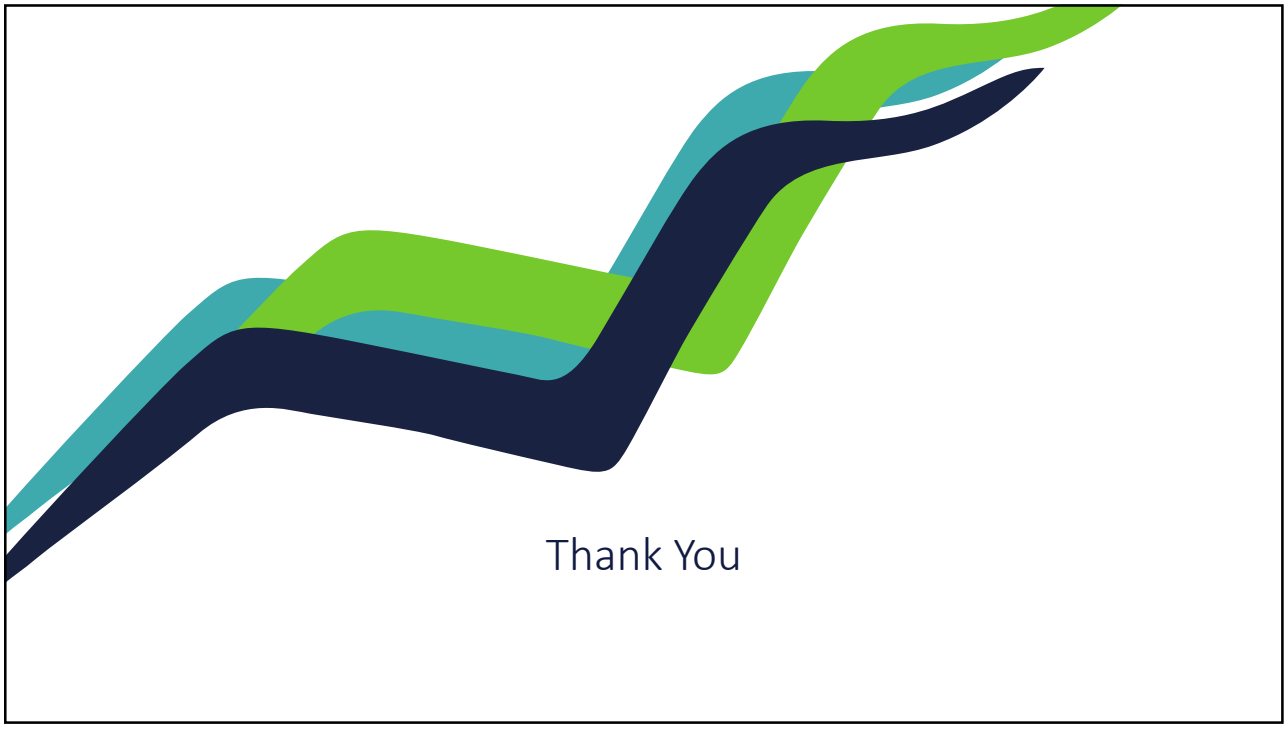

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Outpatient Pharmacy: Dispensing One Medication as Two Different NDCs

Nov 21, 2024

Chris Lindstrom, PharmD, Manager, Tradition Outpatient Pharmacy
Charles Gowans, R.Ph., Florida Director, Outpatient Pharmacy
Nisha Mathew, PharmD, BCPS, MBA, Florida Director, Medication Safety

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Enterprise Locations

23
Hospitals

276
Outpatient Locations

6,690
Beds

30
Outpatient Pharmacies

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Quality Huddles

- Review process
  - Recognize and communicate SERS and “Near Misses”
- Any events with one-offs?
- Any patterns between any sites?
  - Look for technology solutions
  - Are any forcing functions available?
  - Are we using our tools correctly?

Purpose: Community & Specialty Pharmacy Quality Huddle to review safety events

Participants: Directors & Managers

Cadence: Weekly

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Willow Ambulatory

- Benefits of Access to Inpatient Epic
  - Fast access to providers
    - Direct messaging with providers
  - Access to Patient Labs
    - CrCl, Weight, Metabolic Panel
  - Recent Progress Notes
    - Up to date information on patient

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Background

- Two different NDCs in same bottle
  - Label reflects only 1 NDC
  - Patient concerned. Med error?

- Two different bottles of the same medication
  - Patient takes it twice

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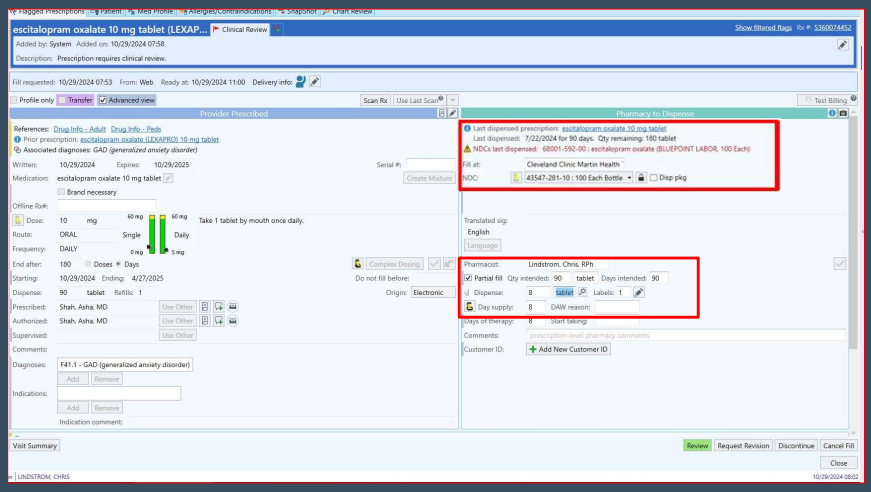
Dispensing Different NDCs



1. Begin by selecting the first NDC to dispense

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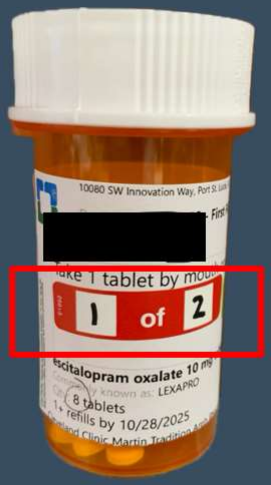
Dispensing Different NDCs



2. Technician fills first part of prescription
3. Medication verified by pharmacist.
4. "1 of 2" sticker added by pharmacist at verification

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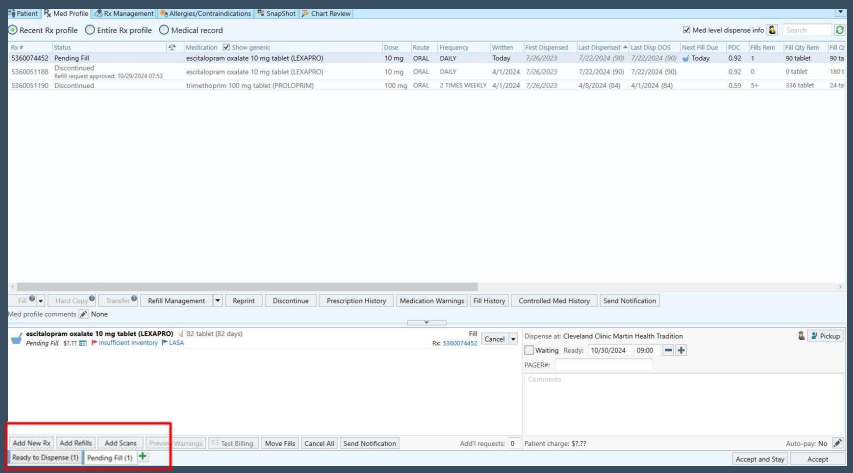
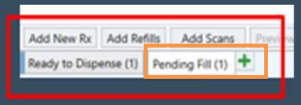
Dispensing Different NDCs



5. Followed by selecting the second NDC to dispense



6. Select "Pending Fill" to begin filling the second NDC

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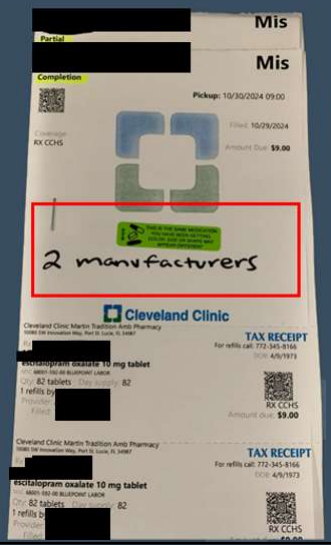
Outpatient Pharmacy Process for Dispensing Different NDCs



7. Verify second NDC
8. Label properly to alert patient to two NDC fill
9. Flag in Willow Ambulatory to counsel patient
10. ALL Done!

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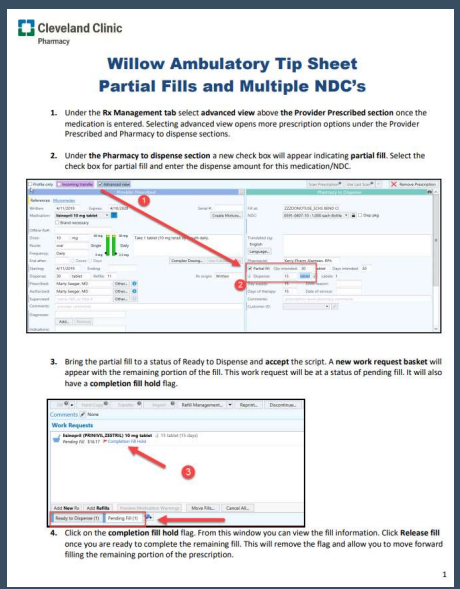
Job Aid



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Pharmacy

Willow Ambulatory Tip Sheet
Partial Fills and Multiple NDC's

1. Under the **Rx Management tab** select **advanced view** above **the Provider Prescribed section** once the medication is entered. Selecting advanced view opens more prescription options under the Provider Prescribed and Pharmacy to dispense sections.
2. Under **the Pharmacy to dispense section** a new check box will appear indicating **partial fill**. Select the check box for partial fill and enter the dispense amount for this medication/NDC.

3. Bring the partial fill to a status of Ready to Dispense and **accept** the script. A **new work request basket** will appear with the remaining portion of the fill. This work request will be at a status of pending fill. It will also have a **completion fill hold** flag.

4. Click on the **completion fill hold** flag. From this window you can view the fill information. Click **Release fill** once you are ready to complete the remaining fill. This will remove the flag and allow you to move forward filling the remaining portion of the prescription.

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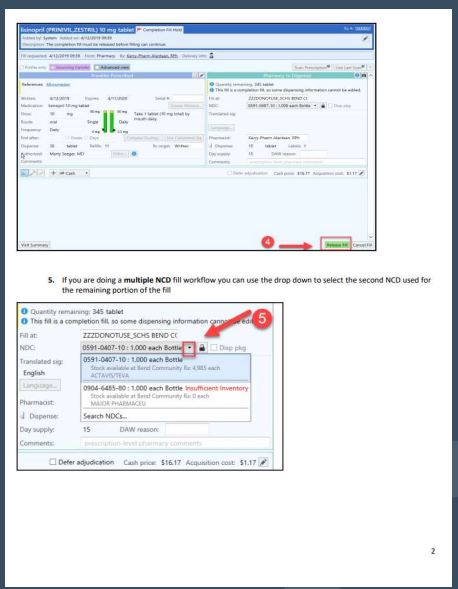

5. If you are doing a **multiple NCD** fill workflow you can use the drop down to select the second NCD used for the remaining portion of the fill

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Take Aways for the Listener

- Listen deeply to your patients and employee's safety concerns
- Ask you vendor for solutions within your system to bridge gaps
- Create job aids to sustain solutions
- Standardizing is important for safety

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Summary/ Take away

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Every life deserves world class care.

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ISMP
Institute for Safe Medication Practices
An ECRI Affiliate

ISMP Update
MSOS Briefing November 2024

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

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Fluid Shortage Update

Free resources on website:

- Imported Fluid Product Checklist
- Fluid shortage update—Safeguard imported products
- Weathering the storm— Safety considerations during fluid shortages

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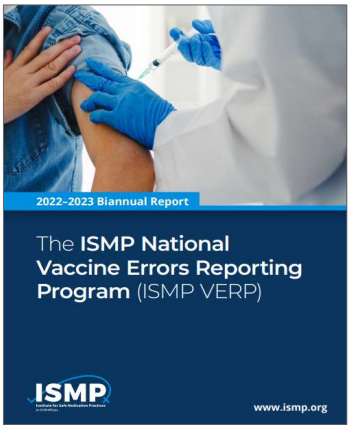
Bi-Annual Report on Vaccination Errors

https://home.ecri.org/blogs/ismp-resources/vaccine-bi-annual-report

- Analysis of 1,987 event reports submitted to the ISMP VERP in 2022 & 2023 shows that most of the reported errors reached the patient
- Most of the reports were submitted by a practitioner working in the outpatient setting and most frequently included the wrong vaccine and expired vaccine
- As vaccination programs seek to achieve high immunization coverage, more needs to be done to reduce the risk of vaccination errors since they can lead to inadequate immunity, increased cost, and reduced confidence in the healthcare delivery system
- Comprehensive risk-reduction strategies included in the report



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2024 Symposium on Public Health Strategies for Combating Substandard and Falsified Drugs

- Per NABP, 97% of online pharmacies do not follow US legislations and regulations
- Substandard and falsified (SF) drugs may contain harmful substances such as opioids, tranquilizers, antifreeze and heavy metals
- SF drugs affects nearly all areas, particularly oncology, mental health, chronic diseases, HIV, infectious diseases, and weight management.
- Common myths include:
  - SF drugs are associated with illicit drug use only
  - SF drugs is a problem of under-resourced countries

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New ISMP/ECRI Membership site

https://www.ecri.org/components/Pages/Coming-Soon-New-ECRI-Member-Website.aspx

- The current site will be migrated to a new platform to provide an enhanced online experience that brings together all ECRI and ISMP's member content and data into one convenient platform.
- The current site will be unavailable beginning November 23, 2025, and the new site will launch by November 25, 2024.
- Your current username and password will continue to work on the new site.
- With the enhanced site, you'll be able to:
  - Easily search and access ISMP newsletter articles directly in the member site, with each article in an issue appearing as its own standalone page.
  - Find what you need faster with fewer clicks and a powerful search function.

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ISMP at the 2024 ASHP Midyear Clinical Meeting

- Tuesday, December 10, 2024
  - **ISMP Medication Safety Update 2024**
    - 8:00 am – 9:30 am CT
    - Room 272 Level 2
  - **Get in Top Form with the 2024 Health Technology and Patient Safety Hazards**
    - 2:00 pm – 3:00 pm CT
    - Room 272 Level 2
  - **The (Not So) Big Easy of Safety: Measuring Meaningfully**
    - 3:30 pm – 4:45 pm CT
    - Room TBD
- Wednesday, December 11, 2024
  - **Executive View: Leaders Discuss Drug Shortage Policy and IV Fluid Updates**
    - 7:45 am – 9:45 am CT
    - Room TBD

Please stop by and see us in booth #1813!

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27th Annual Cheers Awards

https://home.ecri.org/pages/cheers-awards

- Celebrate the amazing accomplishments of individuals & organizations who have advanced medication safety!
- December 10, 2024
- Civic Theatre
  - **510 O'Keefe Ave, New Orleans, LA**

David W. Bates, MD, MSc, Medical Director of Clinical and Quality Analysis, Mass General Brigham; Senior Physician and Director, Center for Patient Safety Research and Practice, Brigham and Women's Hospital; Professor, Harvard Medical School and Harvard T.H. Chan School of Public Health, the *2024 Michael R. Cohen Lifetime Achievement Award Winner*

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We Heard You….

More to come on the hot topic: Medication Error Reduction Plan

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Questions?

- A copy of today's slides will be posted on our website.
  - Next MSOS Briefing date – **January 23rd, 2025.**

MSOS
MEDICATION SAFETY OFFICERS SOCIETY

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