MSOS Member Briefing
November 2021

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November 2021

Moderated by: E. Robert Feroli, PharmD, FASHP

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MEDICATION SAFETY OFFICERS SOCIETY

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The Power of Advanced Medicine

Human Factor Engineering (HFE) of Heparin Nurse-Managed Protocol

Mark Wolf Jr, PharmD
PGY2 Medication-Use Safety and Policy Pharmacy Resident

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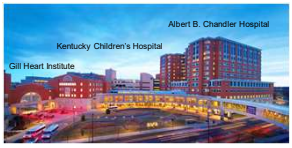
UK HealthCare

- Academic, Tertiary Care Center
  - Comprehensive Stroke Center
  - NCI Designated Cancer Center
- 2 Hospital System
- 1040 licensed beds
  - 225 ICU
- Level 1 Trauma Center
- Level IV Neonatal ICU
- Level 3 PICU



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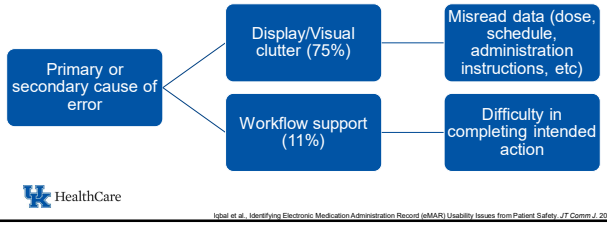
Human Factor Engineering Considerations

The Joint Commission Journal on Quality and Patient Safety 2021; 000:1–9

Identifying Electronic Medication Administration Record (eMAR) Usability Issues from Patient Safety Event Reports

Adeel R. Iqbal, MSc; Codrin A. Panzu; Sadaf Kazi, PhD; Katharine T. Adams; Long La, PharmD; A. Zachary Hettinger, MD, MS; Raj M. Ratwani, PhD



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Iqbal et al., Identifying Electronic Medication Administration Record (eMAR) Usability Issues from Patient Safety. *JT Comm J.* 2021;000:1-9

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Major Electronic Medical Record Change

Allscripts® → Epic

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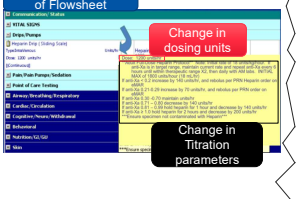
Change in Nursing Heparin Work Flow

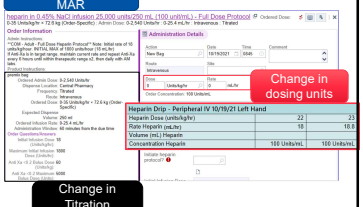
Allscripts®

Nursing worked out of Flowsheet



Epic

Nursing works out of MAR



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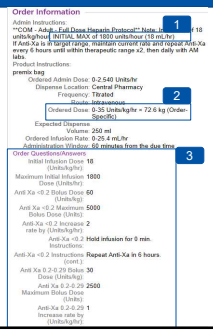
Increased Amount of Reported Errors

- Bedside rounding in response to reported errors has identified more errors then what's being reported
- Most commonly reported errors
  1. **Initiating above max initial rate stated in order**
  2. **Wrong dosing units (i.e. flat dosing instead of weight based)**
  3. **Incorrect titration of drip**



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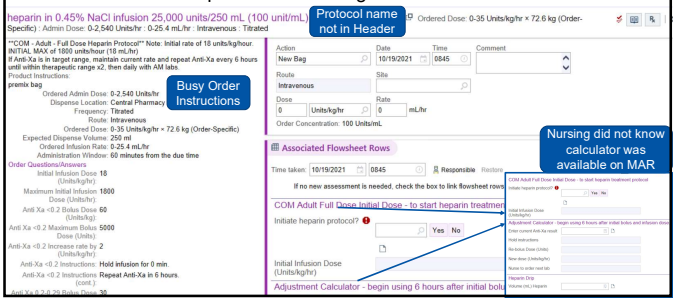
Root Cause Analysis - Epic

An RCA was performed at UK given the amount of errors



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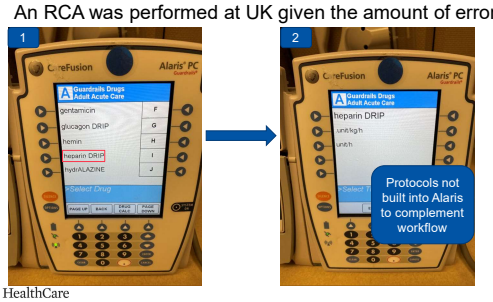
Root Cause Analysis – Alaris Pumps

An RCA was performed at UK given the amount of errors



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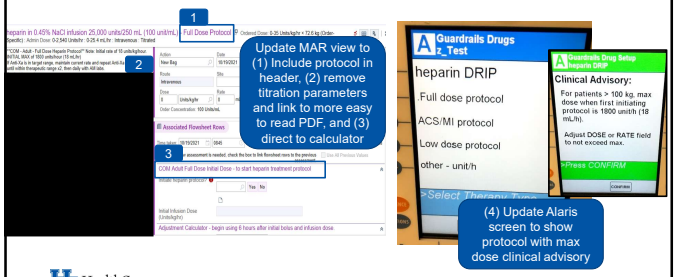
The Changes?



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Summary of Changes Made

1. Add protocol name to MAR header
   i. HFE – Cognitive Engineering Principle
2. Remove titration parameters from MAR and link easier to read PDF
   i. HFE – Universal Usability (8 Golden Rules)
3. Adjusted Alaris Pump menu to include protocol name and clinical advisories
   i. HFE – Cognitive engineering principle
4. Rework calculator to make more obvious to end-user
   1. HFE – Heuristic Principle (Minimize cognitive load)
5. Extensive education on new pump entries, re-worked calculator, and heparin protocol through nursing blitz and WBTs

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Monitoring Plan

Still in the beginning stages. The enterprise is working on implementation

Now with better Alaris functionality, we are planning to track which protocol is being selected and compare with the rates that were initiated on the pump

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Closing Remarks

Extensive process when creating new recommendations

- Received examples from outside institutions and colleagues
- Continually monitoring forums for information

As a interim response, pharmacy services are providing support to nursing to confirm initial dose of heparin

What have you all implemented? Has it worked or not worked?

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The Power of Advanced Medicine

Questions?

Mark Wolf Jr, PharmD
PGY2 Medication-Use Safety and Policy Pharmacy Resident

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The Power of Advanced Medicine

Medication Events Related to Cancelled Labs

Magdalena Mastalerz, PharmD
PGY2 Health-Systems Pharmacy Administration & Leadership Resident
November 18, 2021

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Overview

- Describe medication events related to cancelled labs
- Discuss collaboration between Epic support team, pharmacy department, and laboratory department to identify and resolve issue
- Provide our institution's temporary solution to the issue and identify next steps

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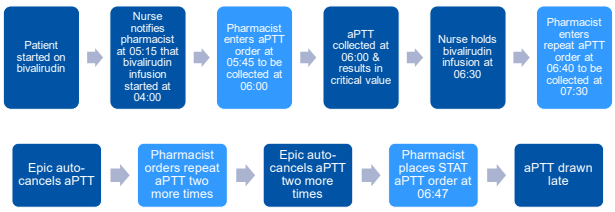
Medication Event Example

Bivalirudin & aPTT Lab Orders



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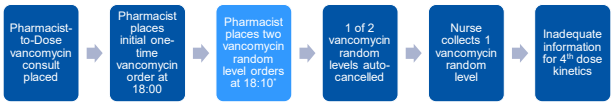
Medication Event Example

Vancomycin Initiation



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Interdisciplinary Collaboration

Epic Support Team, Pharmacists, Lab Technicians

Sources of Lab Auto-Cancellation:

Order Entry (Duplicate)
- No unique identifiers for labs being ordered
- Example: two random vancomycin levels

Order Entry (Timing)
- Same lab order being placed within 60 minutes of previous lab resulting

Printing Lab Labels Simultaneously
- Epic thinks you are collecting specimen you just printed labels for

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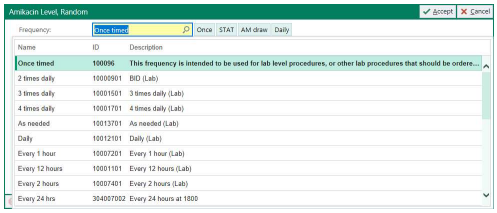
How to Prevent Auto-Cancellation of Labs

Order Entry Process

Example: Amikacin Initiation



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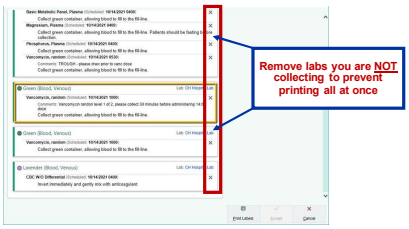
How to Prevent Auto-Cancellation of Labs

Nursing Workflow – Printing Labels & Collecting Specimens

Print lab label → Collect lab specimen → Scan patient → Scan labeled specimen



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Next Steps

- Education provided to Pharmacy Department at monthly meeting
- Reinforce nursing education about appropriate lab label printing
- Incorporate “Once timed” button to appear by default on ordering screen

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The Power of Advanced Medicine

Questions?

Magdalena Mastalerz, PharmD
PGY2 Health-Systems Pharmacy Administration & Leadership Resident
November 18, 2021

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Strategies to reduce risks associated with epidurals and antithrombotic agents

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Lexington, KY

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Background

- The use of epidurals for pain management after major surgery is becoming more common.
- The use of epidural catheters comes with specific considerations for patients that require antithrombotic agents.
- American Society of Regional Anesthesia and Pain Medicine (ASRA) publishes guidelines related to the use of antithrombotic agents and epidural catheters.

Horlocker TT, Vandermeuelen E, Kopp SL, Gogarten W, Leffert LR, Benzon HT. Regional anesthesia in the patient receiving antithrombotic or thrombolytic therapy: American Society of Regional Anesthesia and Pain Medicine Evidence-Based Guidelines (Fourth Edition). Reg Anesth Pain Med 2018;43:263-309.

Narouze S, Benzon HT, Provenzano DA, Buvanendran A, De Andres J, Deer TR, Rauck R, Huntoon MA. Interventional spine and pain procedures in patients on antiplatelet and anticoagulant medications: guidelines from the American Society of Regional Anesthesia and Pain Medicine, the European Society of Regional Anesthesia and Pain Therapy, the American Academy of Pain Medicine, the International Neuromodulation Society, the North American Neuromodulation Society, and the World Institute of Pain. Reg Anesth Pain Med. 2015 May-Jun;40(3):182-212. PMID: 25809466.

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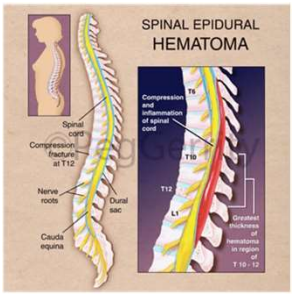
Why it matters



Chien C. Core EM. https://coreem.net/core/spinal-epidural-hematoma. Accessed 11/16/21.

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It's all about balance.

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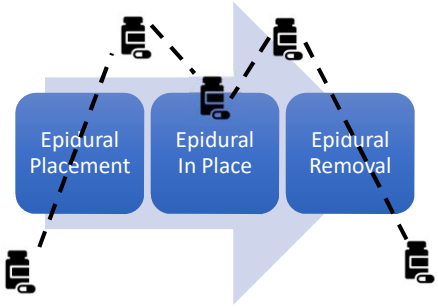
Implementation of ASRA Guidelines requires consideration of multiple time points.



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Institutional Approach

- Guidelines developed and approved by Enterprise P&T
- Multidisciplinary Review
  - Anesthesia, Nursing, Pharmacy
- **Hardwire, where able, into EHR** (Allscripts→EPIC)

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Antithrombotic	PRIOR TO PROCEDURE Minimum time between last dose of anticoagulant and neuraxial catheter placement	WHILE CATHETER IN PLACE Restrictions on use of anticoagulants while neuraxial catheters are in place	PRIOR TO CATHETER REMOVAL Minimum time after last dose prior to catheter removal (If anticoagulant could not be avoided while catheter was in place)	AFTER REMOVAL OF CATHETER Minimum time between neuraxial catheter removal and next anticoagulant dose	COMMENTS
Anticoagulants for VTE Prophylaxis					
unfractionated heparin LOW dose 5000 units SQ q8hrs or q12hrs	4 hours Earlier administration <4 hours NOT absolute contraindication but requires Pain Attending approval	May be administered; no time restrictions	4 hours Earlier administration <4 hours NOT absolute contraindication but requires Pain Attending approval	May be administered; no time restrictions	
unfractionated heparin HIGH dose 7500 units SQ q8hrs	12 hours AND anti-Xa < 0.2 units/mL	May be administered; no time restrictions [*]	12 hours AND anti-Xa < 0.2 units/mL [*]	May be administered; no time restrictions	[*]: ASRA: There is an unknown risk to use this therapy with an indwelling catheter in place. There is unknown risk in catheter removal and risk/benefit Assessment should be performed when removing catheter. The time noted is extrapolated from time required prior to catheter insertion.
enoxaparin (Lovenox) ONCE daily LOW dose 30mg or 40mg SQ q24hrs	12 hours*	May be administered BUT: Must wait 12 hrs after catheter PLACEMENT before giving dose	12 hours*	4 hours	
enoxaparin (Lovenox) TWICE daily HIGH dose 30mg or 40mg SQ q12hrs	12 hours*	CONTRAINDICATED while catheter in place unless approved by Pain Service	12 hours*[^]	4 hours	*ASRA: NO recommendations provided for timing of last dose of therapy prior to catheter removal. ASRA states that indwelling catheters should be removed prior to the initiation of low molecular weight heparin (LMWH). The time noted is extrapolated from time required prior to catheter insertion.

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Challenges with Implementation

- Electronic Health Record
- Multiple Professionals
- Patient Specific Factors

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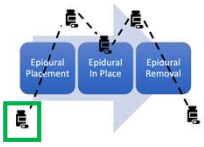
Failure Mode 1: Antithrombotic prior to catheter placement



EHR Strategy:
Alert will fire if epidural medication is ordered and there is an active antithrombotic agent that is not permitted with an epidural catheter.

Possible Failures:
1. Patients present from home taking antithrombotic agents which may not be *active* orders in the medical record.
2. Procedure *may* be performed prior to an epidural medication being ordered.

Mitigation: Procedure is proceeded by a time out during which proceduralist discusses antithrombotic agents. Patient is consented for procedure and home meds are documented in record for review.

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Failure Mode 2: Antithrombotic after catheter placement and while catheter in place

EHR Strategy:
A set of second sign rules that prevent ordering of contraindicated antithrombotic in the presence of epidural catheter or medication orders.

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Second Sign Rules

- Rules that dictates how specific orders, users, or circumstances in which a second signature, co-signature, dual verification, or prevention of signing occurs.
- You can make second sign an available option for clinicians when placing orders.
- Allows us to display an error text in-line, so providers get immediate knowledge of the contraindication without clicking "Sign" or addressing a pop-up

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Epic Build Pieces

Patient-context (CER) – Patient based rule for each contraindication • LDA/med based rules; hard stops based	Grouper Editor (VCG) – to identify the relevant medications	Second Sign-context (LRC) – rule properties for the second sign rule
Second Sign rule (LOR)	Provider (SER) – provider record to represent In Basket message pool	Category List Maintenance (ECT) – value to represent the users for our pool
Registries (HIP) – to designate the registry as a pool	User (EMP) – to assign In Basket pools to specific end-users	Profiles (LPR) – to assign In Basket pools to specific profiles

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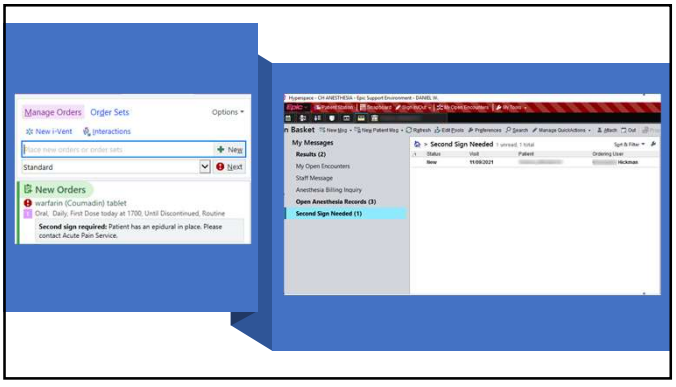

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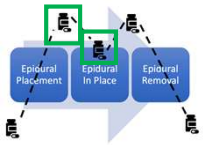
Failure Mode 2: Antithrombotic after catheter placement and while catheter in place



Possible Failures:
1. Delay in care if patient requires antithrombotic for emergent indication.
2. In-basket acknowledgement by Acute Pain Service provider could be delayed.
3. Failure to document epidural catheter procedure would prevent optimal firing of second-sign rule.

Mitigation: Acute Pain Service providers will be educated on process and importance of catheter documentation at time of placement and removal.

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Failure Mode 3: Antithrombotic prior to catheter removal

EHR Strategy:
Nothing is hardwired. Timing is at the discretion of the Acute Pain Service provider based on time of last dose of antithrombotic agent.

Possible Failures:
1. Nurse fails to document time of last antithrombotic dose or documents incorrectly.
2. Acute Pain Service provider fails to review time of last dose of antithrombotic agent.

Mitigation: Catheter removal procedure is performed only by a limited number of providers and nurses who are specifically educated to perform chart review prior to catheter removal.

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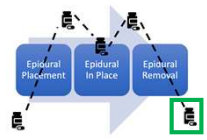
Failure Mode 4: Antithrombotic after catheter removal



EHR Strategy:
As with Failure mode 2, the medication will require a second sign by the Acute Pain Service if not appropriate to give based on timing of catheter removal.

Possible Failure:
Primary team that is requesting the antithrombotic must remember to enter the dose after the appropriate amount of time has elapsed. There are no 'reminders' in the EHR or ability to 'future schedule'.

Mitigation: Providers are encouraged to use the handoff tools to remember to place order at appropriate time.

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Closing Thoughts

- Management of patients with epidural catheters is complex and requires consideration of multiple workflows, timepoints, and antithrombotic agents.
- Clinical decision support within the EHR tool can be leveraged to mitigate multiple risk points; however, there are still areas of concern.
- Ultimately, end users have a key role in this process to ensure that patients with epidurals are appropriately managed.
- Based on ongoing feedback, we look to continue to optimize the EHR and associated workflows.

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Questions?

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UK HealthCare

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Institute for Safe Medication Practices
An ECRI Affiliate

ISMP Update
MSOS Briefing November 2021

Michael R. Cohen, RPh, MS, ScD (hon.), DPS (hon.), FASHP
President, Institute for Safe Medication Practices

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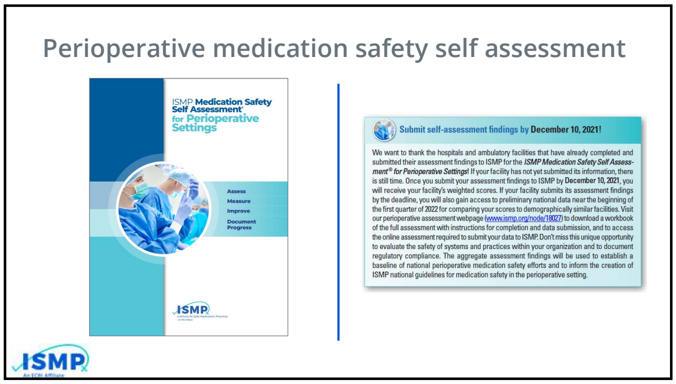

Perioperative medication safety self assessment
ISMP Medication Safety Self Assessment for Perioperative Settings
Assess
Measure
Improve
Document Progress
Submit self-assessment findings by December 10, 2021!
We want to thank the hospitals and ambulatory facilities that have already completed and submitted their assessment findings to ISMP for the ISMP Medication Safety Self Assessment® for Perioperative Settings! If your facility has not yet submitted its information, there is still time. Once you submit your assessment findings to ISMP by December 10, 2021, you will receive your facility's weighted scores. If your facility submits its assessment findings by the deadline, you will also gain access to preliminary national data near the beginning of the first quarter of 2022 for comparing your scores to demographically similar facilities. Visit our perioperative assessment webpage (www.ismp.org/node/18027) to download a workbook of the full assessment with instructions for completion and data submission, and to access the online assessment required to submit your data to ISMP. Don't miss this unique opportunity to evaluate the safety of systems and practices within your organization and to document regulatory compliance. The aggregate assessment findings will be used to establish a baseline of national perioperative medication safety efforts and to inform the creation of ISMP national guidelines for medication safety in the perioperative setting.
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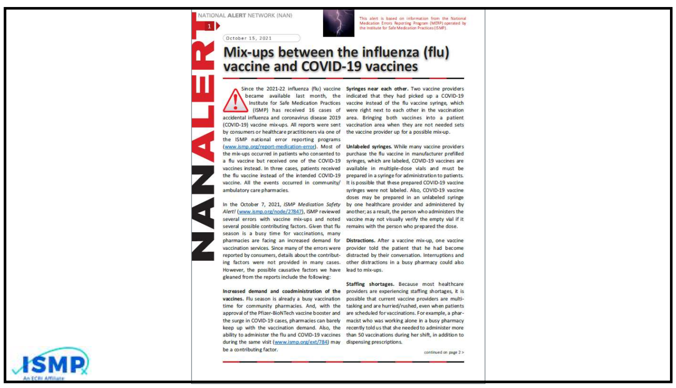

NATIONAL ALERT NETWORK (NAN)

This alert is based on information from the National Medication Errors Reporting Program (MERP) operated by the Institute for Safe Medication Practices (ISMP).

NAN ALERT 1

October 15, 2021

Mix-ups between the influenza (flu) vaccine and COVID-19 vaccines

Since the 2021-22 influenza (flu) vaccine became available last month, the Institute for Safe Medication Practices (ISMP) has received 16 cases of accidental influenza and coronavirus disease 2019 (COVID-19) vaccine mix-ups. All reports were sent by consumers or healthcare practitioners via one of the ISMP national error reporting programs (www.ismp.org/report-medication-error). Most of the mix-ups occurred in patients who consented to a flu vaccine but received one of the COVID-19 vaccines instead. In three cases, patients received the flu vaccine instead of the intended COVID-19 vaccine. All the events occurred in community/ambulatory care pharmacies.

In the October 7, 2021, *ISMP Medication Safety Alert!* (www.ismp.org/node/27847), ISMP reviewed several errors with vaccine mix-ups and noted several possible contributing factors. Given that flu season is a busy time for vaccinations, many pharmacies are facing an increased demand for vaccination services. Since many of the errors were reported by consumers, details about the contributing factors were not provided in many cases. However, the possible causative factors we have gleaned from the reports include the following:

Increased demand and coadministration of the vaccines. Flu season is already a busy vaccination time for community pharmacies. And, with the approval of the Pfizer-BioNTech vaccine booster and the surge in COVID-19 cases, pharmacies can barely keep up with the vaccination demand. Also, the ability to administer the flu and COVID-19 vaccines during the same visit (www.ismp.org/ext/784) may be a contributing factor.

Syringes near each other. Two vaccine providers indicated that they had picked up a COVID-19 vaccine instead of the flu vaccine syringe, which were right next to each other in the vaccination area. Bringing both vaccines into a patient vaccination area when they are not needed sets the vaccine provider up for a possible mix-up.

Unlabeled syringes. While many vaccine providers purchase the flu vaccine in manufacturer prefilled syringes, which are labeled, COVID-19 vaccines are available in multiple-dose vials and must be prepared in a syringe for administration to patients. It is possible that these prepared COVID-19 vaccine syringes were not labeled. Also, COVID-19 vaccine doses may be prepared in an unlabeled syringe by one healthcare provider and administered by another; as a result, the person who administers the vaccine may not visually verify the empty vial if it remains with the person who prepared the dose.

Distractions. After a vaccine mix-up, one vaccine provider told the patient that he had become distracted by their conversation. Interruptions and other distractions in a busy pharmacy could also lead to mix-ups.

Staffing shortages. Because most healthcare providers are experiencing staffing shortages, it is possible that current vaccine providers are multi-tasking and are hurried/rushed, even when patients are scheduled for vaccinations. For example, a pharmacist who was working alone in a busy pharmacy recently told us that she needed to administer more than 50 vaccinations during her shift, in addition to dispensing prescriptions.

continued on page 2 >

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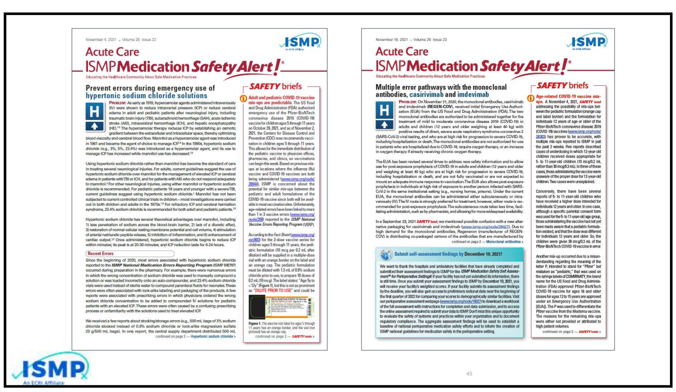

November 4, 2021 Volume 26 Issue 22
Acute Care
ISMP Medication Safety Alert!
Educating the Healthcare Community About Safe Medication Practices
Prevent errors during emergency use of hypertonic sodium chloride solutions
SAFETY briefs
Adult and pediatric COVID-19 vaccine mix-ups are predictable.
November 18, 2021 Volume 26 Issue 23
Acute Care
ISMP Medication Safety Alert!
Educating the Healthcare Community About Safe Medication Practices
Multiple error pathways with the monoclonal antibodies, casirivimab and imdevimab
SAFETY briefs
Age-related COVID-19 vaccine mix-ups.
Submit self-assessment findings by December 10, 2021!
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COVID-19 vaccine error types

- Ages 12-up receiving vaccine appropriate for ages 5-11 (10 mcg/0.2 mL rather than 30 mcg/0.3 mL).
  - Some have been mix-ups between unlabeled syringes intended for one age group but mixed-up with the other
  - Some have involved vaccinators not aware of proper dose
- 5- to 11-year-old receiving 30 mcg/0.3 mL instead of 10 mcg/0.2 mL.
  - Some have been with diluted 30 mcg/0.3 mL thought to be proper use
  - Some are 0.1 mL doses
  - Some due to vaccinator not being aware of dose difference for 5-11 y

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FACT SHEET FOR HEALTHCARE PROVIDERS ADMINISTERING VACCINE (VACCINATION PROVIDERS)

EMERGENCY USE AUTHORIZATION (EUA) OF THE PFIZER-BIONTECH COVID-19 VACCINE TO PREVENT CORONAVIRUS DISEASE 2019 (COVID-19)

FOR 12 YEARS OF AGE AND OLDER
DO NOT DILUTE

The U.S. Food and Drug Administration (FDA) has issued an Emergency Use Authorization (EUA) to permit the emergency use of the unapproved product, Pfizer-BioNTech COVID-19 Vaccine, for active immunization to prevent COVID-19 in individuals 5 years of age and older.

There are 2 formulations of Pfizer-BioNTech COVID-19 Vaccine authorized for use in individuals 12 years of age and older:

The formulation supplied in a multiple dose vial with a gray cap and label with a gray border IS NOT DILUTED PRIOR TO USE.

The formulation supplied in a multiple dose vial with a purple cap MUST BE DILUTED PRIOR TO USE.

This Fact Sheet pertains only to Pfizer-BioNTech COVID-19 Vaccine supplied in a multiple dose vial with a gray cap and a label with a gray border which is authorized for use in individuals 12 years of age and older and MUST NOT BE DILUTED PRIOR TO USE.

Pfizer-BioNTech COVID-19 Vaccine supplied in a multiple dose vial with a gray cap and a label with a gray border is authorized for use to provide:

- a 2-dose primary series to individuals 12 years of age and older;
- a third primary series dose to individuals 12 years of age and older who have been determined to have certain kinds of immunocompromise; and
- a single booster dose to the following individuals who have completed a primary series with Pfizer-BioNTech COVID-19 Vaccine or COMIRNATY:
  - 65 years of age and older
  - 18 through 64 years of age at high risk of severe COVID-19
  - 18 through 64 years of age with frequent institutional or occupational exposure to SARS-CoV-2
- a single booster dose to eligible individuals who have completed primary vaccination with a different authorized COVID-19 vaccine. The eligible population(s) and dosing interval for the heterologous booster

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MSOS Member Briefing
November 2021

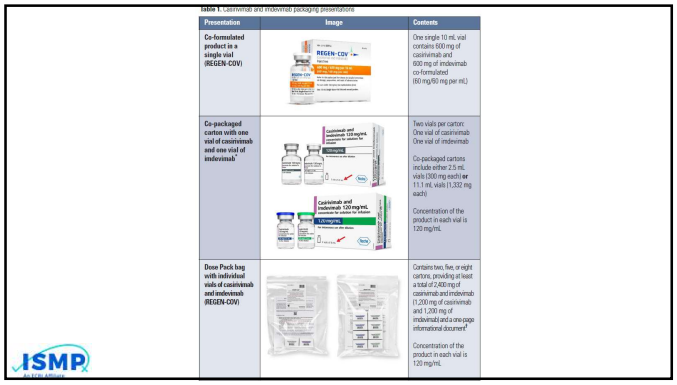

Table 1. Casirivimab and imdevimab packaging presentations

Presentation	Image	Contents
Co-formulated product in a single vial (REGEN-COV)		One single 10 mL vial contains 600 mg of casirivimab and 600 mg of imdevimab co-formulated (60 mg/60 mg per mL)
Co-packaged carton with one vial of casirivimab and one vial of imdevimab*		Two vials per carton: One vial of casirivimab One vial of imdevimab Co-packaged cartons include either 2.5 mL vials (300 mg each) **or** 11.1 mL vials (1,332 mg each) Concentration of the product in each vial is 120 mg/mL
Dose Pack bag with individual vials of casirivimab and imdevimab (REGEN-COV)		Contains two, five, or eight cartons, providing at least a total of 2,400 mg of casirivimab and imdevimab (1,200 mg of casirivimab and 1,200 mg of imdevimab) and a one-page informational document[†] Concentration of the product in each vial is 120 mg/mL

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Questions?

- A copy of today's slides will be posted on our website
- Next MSOS Briefing date – January 27, 2022.
  Register:
  https://ecri.zoom.us/webinar/register/WN_yXOM9MJGTCuZj_XasIjAAg

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