

MSOS Member Briefing

July 2025

MSOS Member Briefing July 2025

Moderated by: E. Robert Feroli, PharmD, FASHP



The Fellowship of the Pumps: Pump Integration System-Wide

1

2

Presenters



STACY CARSON
Medication Safety Officer
~Pharmacist~



ERICA BROCK
Senior ClinDoc Analyst
~Nurse~



MICHAEL ELDUFF
Senior Willow Analyst
~Pharmacist~



NICOLE HUBER
Senior Nurse Informatics
Advocate / ClinDoc
Analyst
~Nurse~



3

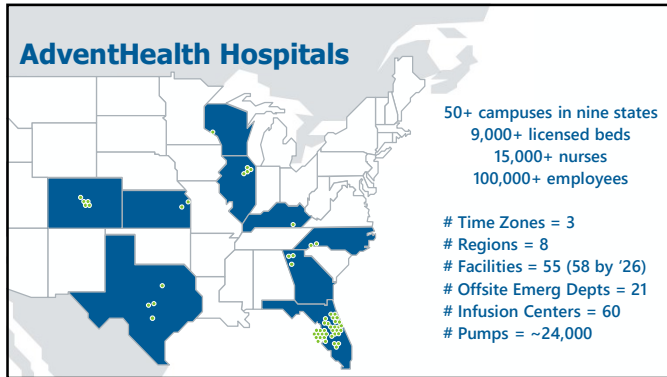
You have my sword...and my pump pole



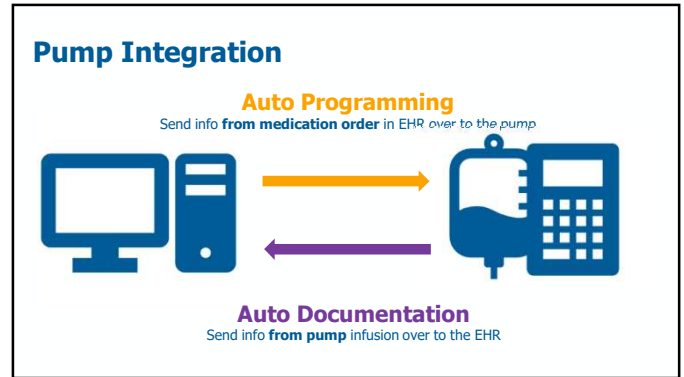
4

MSOS Member Briefing

July 2025



5



6

Pump Brain Trust

- **Nurse Informatics** (covers nurse pump workflows; education; training; liaison between nurse clinicians and IT)
- **IT Clinical Documentation (Clin Doc) Team** (covers MAR & I&O flowsheet documentation)
- **IT Pharmacy (Willow)** (covers medication builds)
- **Medication Safety** (covers meeting facilitation; runs corporate smart pump committee; advocates pump things to higher ups)



AdventHealth

7

Standardization Work

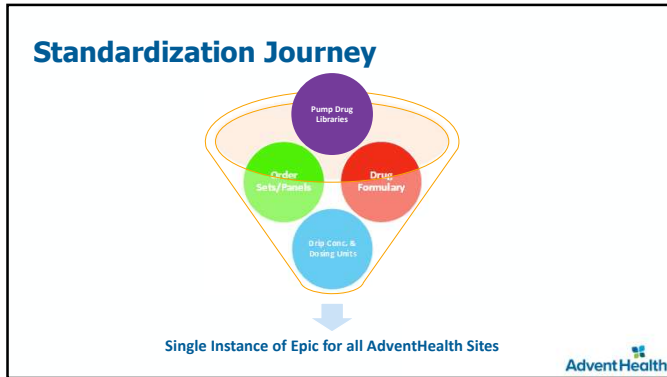
Stacy Carson

AdventHealth

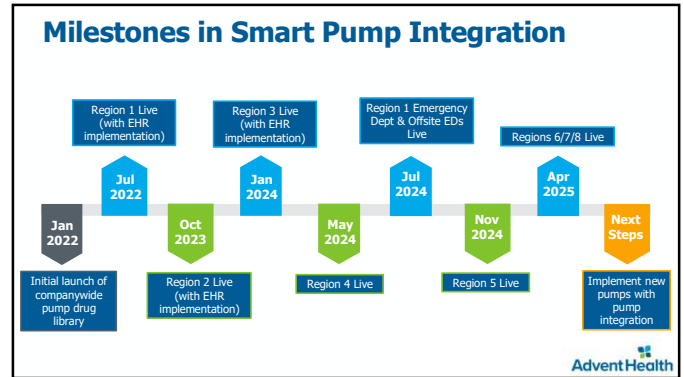
8

MSOS Member Briefing

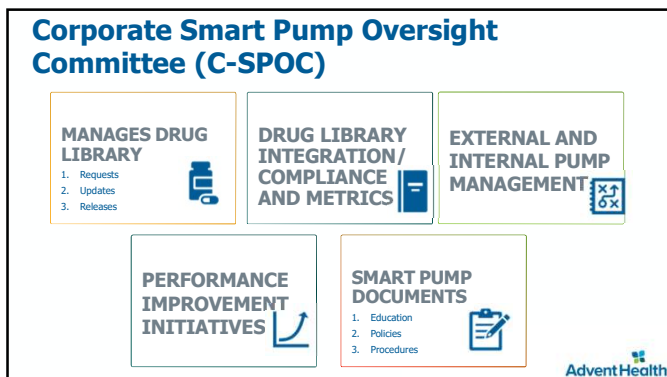
July 2025



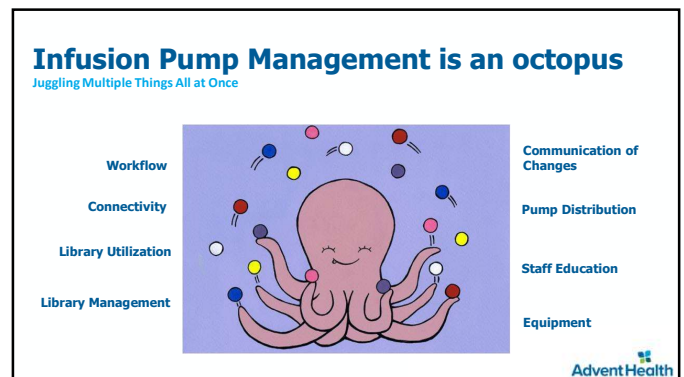
9



10



11



12

MSOS Member Briefing

July 2025

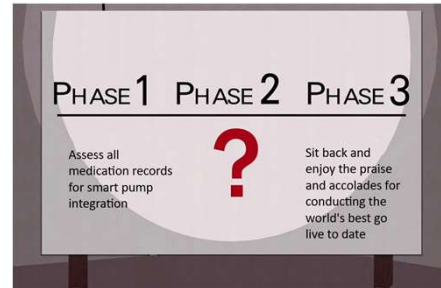
Drug Configuration Set-Up

Michael Elduff



13

Steps for Success



14

Medication Record Preparation

AKA: WHAT YOU NEED TO TELL PHARMACY TO DO

- Phase 1 = Optimization and Standardization
 - Things you've been meaning to do anyway
 - SOPs, Workflow Assessment, Committee Review
- Consider the source of all medication orders
 - Ad Hoc Medication Lists versus Order Set/Order Panels, Power Plans, etc.
 - Exclusive to Order Sets / Panels SOP (e.g., High Risk Meds, Critical Care Drips, Antineoplastic Agents)

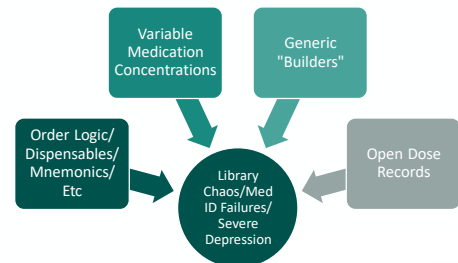
SOP = Standard Operating Procedure



15

Medication Record Preparation

AKA: WHAT YOU NEED TO TELL PHARMACY TO DO



16

MSOS Member Briefing

July 2025

More Pharmacy Homework

Define scope of medications we want to include

- PCA, Epidurals, CRRT fluids, bladder irrigations
- Build out (and maintain!) relevant groupers for integration and blacklists

Define additive/overfill approach

Does 5 mL of additive plus 100 mL of diluent equal 100 mL or 105 mL?

Medication	Concentration	Volume	Rate	Flow	Rate	Flow
50% Dextrose	50%	100 mL	100 mL	100 mL	100 mL	100 mL
5% Sodium Chloride	5% NaCl	100 mL	100 mL	100 mL	100 mL	100 mL

Define the maximum smart pump rate

- NS Bolus 1 Liter over 1 hour?
- >999 = 999!

Medication	Concentration	Volume	Rate	Flow	Rate	Flow
0.9% Sodium Chloride	0.9% NaCl	1000 mL	1000 mL	1000 mL	1000 mL	1000 mL

Design and build sequence of Infusion ID numbers for all records to be included in Scope

- Example: MM000001, MM000002
- Add it to your team's build documentation in perpetuity

EXTRA CREDIT

AdventHealth

17

EHR Configuration

Erica Brock

AdventHealth

18

Pump Integration Configuration



AdventHealth

19

Department Configuration

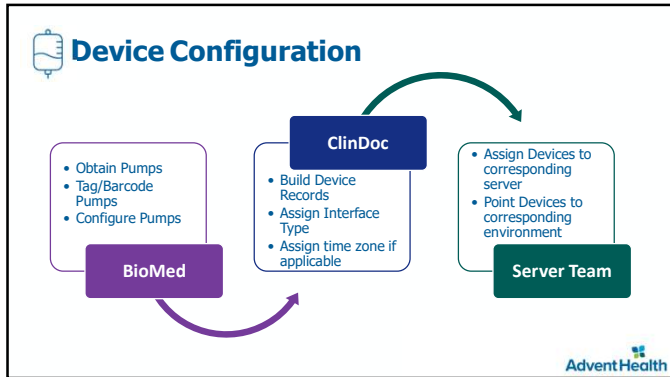


AdventHealth

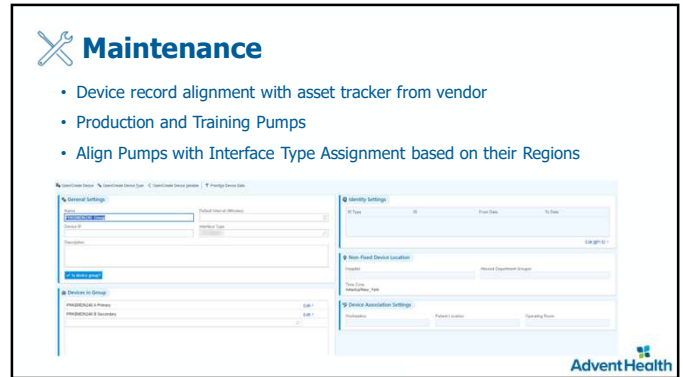
20

MSOS Member Briefing

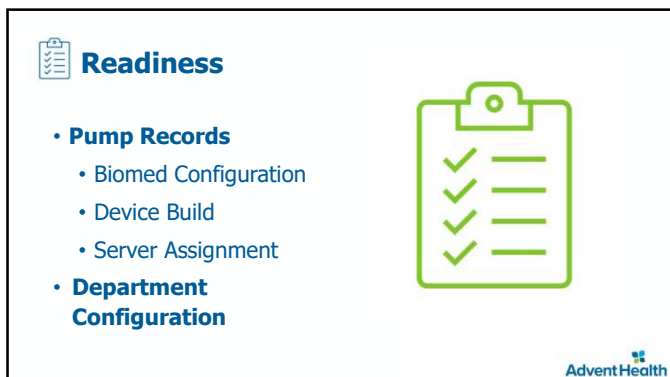
July 2025



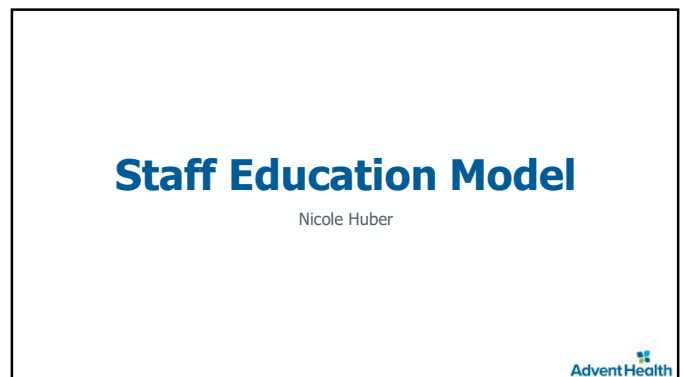
21



22



23



24

MSOS Member Briefing

July 2025

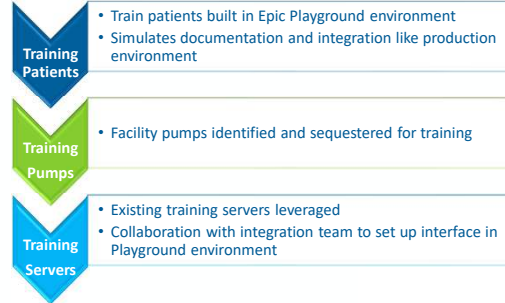
Education & Training



AdventHealth

25

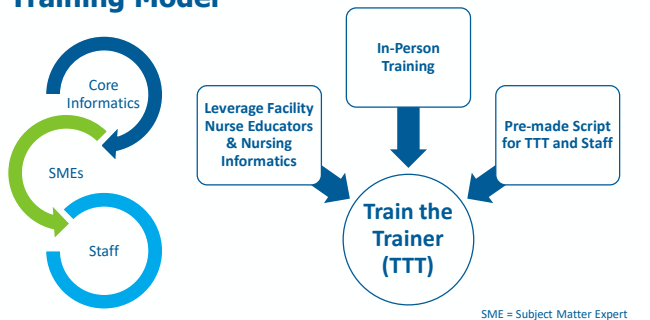
Set-Up & Use of Training Environment



AdventHealth

26

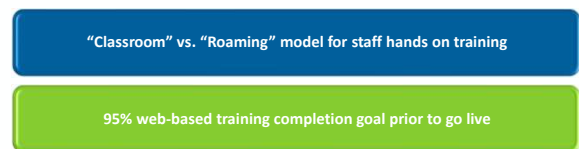
Training Model



SME = Subject Matter Expert

27

Staff Training Model



AdventHealth

28

MSOS Member Briefing

July 2025

Training Timeline



AdventHealth

29

Pump Integration Training

9,837

Certification Completions
(as of 4.11.2025)

AdventHealth

30

Go-Live Support

Nicole Huber

AdventHealth

31

Go-Live Support



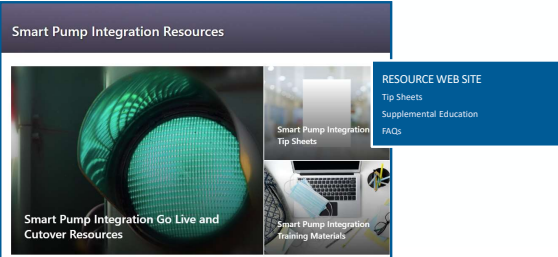
AdventHealth

32

MSOS Member Briefing

July 2025

Resources



33

Go Live Touchpoints

Every other day during go live

Core team, NI leadership, site nursing leadership

Review tickets

Hot Topics

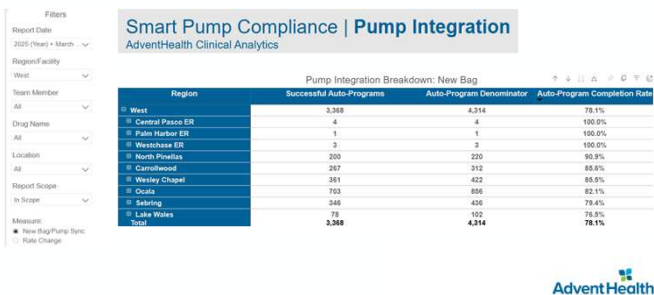
Compliance

- Drug Library = maintain 95%
- Pump Integration compliance (New bag) = 75%
- Filtered by region, facility, nurse, top meds, and location (department)



34

Dashboard



35

On-Going Support

Michael Elduff



36

MSOS Member Briefing

July 2025

Who you Gonna Call?



AdventHealth

37

Pumpasaurus rex? (AKA The Fellowship!)

Tickets triaged by core group of interdisciplinary CMEs

 Pump Brain Trust- Cross Functi... 6:11 PM
You: You guys...HELPPPPPPPP!!!!

Pharmacy
Medication build and related records,
Interface Liaison

Clin Doc
Workflow, Device build and related
records

Nursing Informatics
Training, Metrics, Emotional Support

Medication Safety
Define and implement policy, Best
practice

AdventHealth

38

Wrap-Up

Erica Brock

AdventHealth

39

Lessons Learned

- Initially, virtual go-live support only
- Initially, web-based training only (no hands-on)
- Time zone issues with pump devices
- Med configuration for syringe infusions
- Biomed pump tagging issues
- Record compare with vendor device info vs. our info
- Department configurations (missed units)
- Added pharmacist pump integration training

AdventHealth

40

MSOS Member Briefing

July 2025

Summary

WE MADE IT TO THE END!

A large-scale pump integration roll-out is best supported by:

- Standardization of the drug formulary, order sets, and pump library
- Instituting drug and EHR integration configuration standards
- Developing a standardized training and education bundle that supports all facilities
- Establishing a go live support model as well as a post-implementation support model
- Forming a core pump integration team to support the journey

41

Questions??

CONTACT INFO

Stacy Carson | Stacy.Carson@AdventHealth.com

Erica Brock | Erica.Brock1@AdventHealth.com

Michael Elduff | Michael.Elduff@AdventHealth.com

Nicole Huber | Nicole.Huber@AdventHealth.com

Article #1: Create a Corporate Smart Pump Committee. Dec 2022. <https://www.pppmag.com/article/3019>

Article #2: Implement System-Wide Smart Pump Interoperability. Sep 2024. <https://www.pppmag.com/article/3320>

AdventHealth

42



PALS Copilot:

A Pharmacist's Experience Co-Developing an App

Brad Schwartz, BSPharm, BCPS

43

ABOUT



- Brad Schwartz, BSPharm, BCPS
 - Pharmacy Clinical Services Manager
 - Avita Health System – North Central Ohio
- Areas of responsibility include
 - Inpatient and ambulatory care pharmacy practice
 - Pharmacy informatics
 - Student and intern experiences
- Lead multiple health-system teams and committees such as the system medication safety team, pharmacy and therapeutics committee, and antimicrobial stewardship team

PALS Copilot

44

MSOS Member Briefing

July 2025

PALS Copilot



- Pharmacist-designed app for use in pediatric emergencies that allows for easy access to medication, equipment, and shock info
- Pediatric code response can be a high stress situation and having a "copilot" to support quick decisions helps eliminate moments of uncertainty
- Teams that are not routinely experiencing pediatric codes need easy to use tools that work but also offer a sense of reliability
- "Who has the Broselow tape???"



45

BACKGROUND



- Pediatrics Committee request for a pharmacist prepared "resuscitation card" on the chart of any pediatric patient
- Development of an Excel worksheet that did not add excessive workload and ensured accurately calculated dosages using a patient specific weight
- Very well received and used beyond the original intent in multiple care areas

WEIGHT BASED RESUSCITATION CARD

PATIENT WEIGHT: 8 kg (arrow pointing to 8 in SELECTING TREATING)

PATIENT STORIES

TREATING	WEIGHT	DOSE	CONCENTRATION
1st dose (1mg/kg) rapid IV push	8.0	8.0 mg	0.5 mg / mL
2nd dose (0.2mg/kg) rapid IV push	8.0	1.6 mg	0.2 mg / mL
3rd dose (0.1mg/kg) rapid IV push	8.0	0.8 mg	0.1 mg / mL
4th dose (0.05mg/kg) rapid IV push	8.0	0.4 mg	0.05 mg / mL
5th dose (0.025mg/kg) rapid IV push	8.0	0.2 mg	0.025 mg / mL
6th dose (0.0125mg/kg) rapid IV push	8.0	0.1 mg	0.0125 mg / mL
7th dose (0.00625mg/kg) rapid IV push	8.0	0.05 mg	0.00625 mg / mL
8th dose (0.003125mg/kg) rapid IV push	8.0	0.025 mg	0.003125 mg / mL
9th dose (0.0015625mg/kg) rapid IV push	8.0	0.0125 mg	0.0015625 mg / mL
10th dose (0.00078125mg/kg) rapid IV push	8.0	0.00625 mg	0.00078125 mg / mL
11th dose (0.000390625mg/kg) rapid IV push	8.0	0.003125 mg	0.000390625 mg / mL
12th dose (0.0001953125mg/kg) rapid IV push	8.0	0.0015625 mg	0.0001953125 mg / mL
13th dose (0.00009765625mg/kg) rapid IV push	8.0	0.00078125 mg	0.00009765625 mg / mL
14th dose (0.000048828125mg/kg) rapid IV push	8.0	0.000390625 mg	0.000048828125 mg / mL
15th dose (0.0000244140625mg/kg) rapid IV push	8.0	0.0001953125 mg	0.0000244140625 mg / mL
16th dose (0.00001220703125mg/kg) rapid IV push	8.0	0.00009765625 mg	0.00001220703125 mg / mL
17th dose (0.000006103515625mg/kg) rapid IV push	8.0	0.000048828125 mg	0.000006103515625 mg / mL
18th dose (0.0000030517578125mg/kg) rapid IV push	8.0	0.0000244140625 mg	0.0000030517578125 mg / mL
19th dose (0.00000152587890625mg/kg) rapid IV push	8.0	0.00001220703125 mg	0.00000152587890625 mg / mL
20th dose (0.000000762939453125mg/kg) rapid IV push	8.0	0.000006103515625 mg	0.000000762939453125 mg / mL



46

PROBLEM



- Inherent difference between the bedside length based pediatric emergency tape and a weight based patient specific dose
- Pharmacists that infrequently experienced pediatric codes felt very unsure without it but preferred it over a Broselow tape
- When it was urgently needed it was uncomfortable how long it took to get to a computer and get a copy ready to use
- "How do I get this on my phone?"



47

DEVELOPMENT



- Chance conversation with a member of a software development team that wanted to build an independent portfolio
- Advise the software developers of current market for similar apps, pros / cons, pricing, and allow for additional market research
- Co-development agreement offer to provide all medical consultation, logo design, store descriptions, references, end user testing, etc. to help keep the app free
- Scoping discussions to lay out areas of responsibility, time commitments, and desired end user experience



48

MSOS Member Briefing

July 2025

DEVELOPMENT



- Like any project, there are many aspects to the development process
 - Explaining medical terms, workflows, and what actually happens in a code
 - Design elements, logo, user experience enhancements
 - Tools and features
 - Ensuring flexibility and being ok with critiques
 - EULA, medical disclaimer, references, and stringent “medical app” requirements
 - Beta testing through Google and Apple test platforms in addition to developer tools



49

PRE LAUNCH



- Develop a list of specifics to test and record your results (pass / fail) to ensure consistency
- My approach to testing for end users
 - Use it as intended to make sure it meets expectations
 - Try to break it, push all the buttons, think of common issues that come up
 - Use features in an unintended way, do things that would seem ridiculous, do odd sequences
- When issues arise, repeat steps to recreate it, and report bugs with how to recreate the issue
- For us it was also extensively checking math



50

DEMO



- Primary Feature overview
 - Weight based dosing options for patient specific medication dosing or color zones related to standard pediatric length-based tapes
 - Automatically calculate medication doses and volumes for administration
 - Timers with alerts to help track when additional medication doses or shocks are due
 - Customizable drip concentrations to match your organizational standards
 - Customizable notes for every medication or intervention to allow for your own key points and topics to remember
 - Quick pounds to kilograms converter
 - Additional content for RSI, post-ROSC fluids, and medicated drips



51

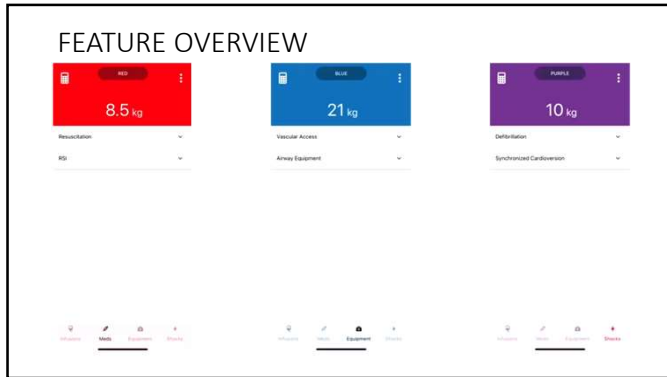
FEATURE OVERVIEW



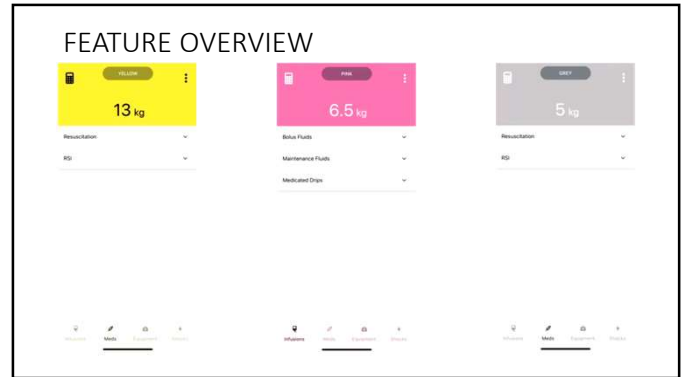
52

MSOS Member Briefing

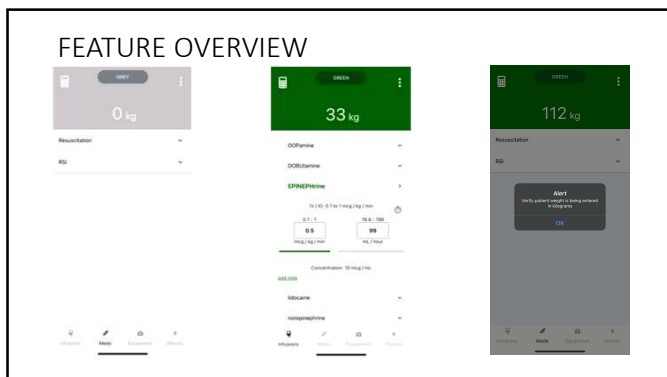
July 2025



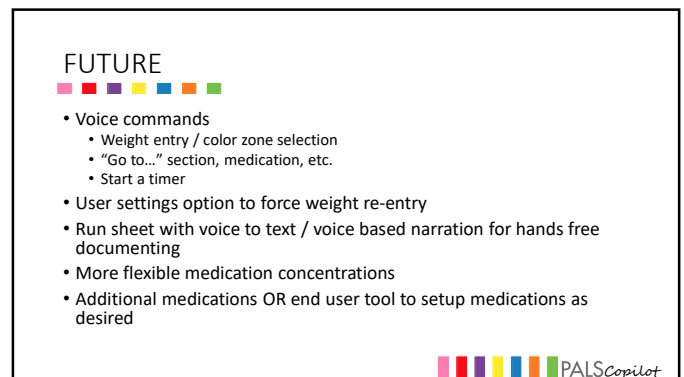
53



54



55



56

MSOS Member Briefing

July 2025

LESSONS

- Medical app review with Apple and Google can be challenging
- Ask developers for style options or input even if you have your own image of what you think you want; give them freedom to style and mock up
- Test consistently as updates have implications in breaking features (new SDK, OS compatibility, etc.); run through all testing sequences before you release an update
- Beta testing thoroughly saves time (or even panic) after launch
- Focus groups can be helpful for feedback
- Scope creep is real



57

QUESTIONS



PALS Copilot ⁽¹⁷⁺⁾
Pediatric Emergency Guide
[Litany Software LLC](#)
Designed for iPhone
★★★★★ 5.0 • 4 Ratings
Free

58



ISMP Update MSOS Briefing July 2025

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

59

In Memoriam: Dr. Lucian Leape

- Harvard Medical Practice Study
- "To Err Is Human: Building a Safer Health System," published in 1999 by the Institute of Medicine
- 1999 ISMP Cheers Award recipient
- 2001 ISMP Lifetime Achievement Award recipient
- *ISMP's Hierarchy of Effectiveness of Risk Reduction Strategies*



November 7, 1930 – June 30, 2025



©2025 ISMP | Confidential

60

MSOS Member Briefing

July 2025

Guidelines for Safe Electronic Communication of Medication Information - Updated

- Developed with input from clinicians; government and standards-setting agencies; professional organizations; and electronic pharmacy information, health information, and prescribing system vendors.
- Updated recommended strategies to present drug information safely in various electronic formats and suggests specific HIT-associated design features intended to mitigate the risk of medication errors.



61 ISMP Institute for Safe Medication Practices
<https://www.ismp.org/ToolsResources/ToolsResources/20250501GuidelinesforSafeElectronicCommunicationofMedicationInformation.pdf>
 ©2025 ISMP | Confidential

61

Broselow Rainbow Tape Contains Incorrect Information

- On May 15, 2025, AirLife released an urgent medical device recall for its branded version of the Broselow Rainbow Tape product code 7700REA.
 - "AirLife brand, 2025 Edition, and 36-23446 Rev 2 Print Version" Broselow Rainbow Tape has been manufactured with incorrect information.
- The following information were incorrect:
 - Joules for the Red zone (6 to 11 months, 8 to 9 kg) in the Cardioversion/ Defibrillation section
 - Sodium bicarbonate concentration in the Orange zone of the tape (7 to 9 years, 24 to 28 kg)
 - Sodium bicarbonate concentration in the Grey zone of the tape (less than 3 months, 3 to 5 kg)
- Conduct a thorough search and check the inventory in all locations where this product may be used. If impacted product is identified, immediately discontinue use and destroy affected product.

62 ISMP Institute for Safe Medication Practices
<https://www.ismp.org/ToolsResources/ToolsResources/20250515BroselowRainbowTapeRecall.pdf>
 ©2025 ISMP | Confidential

62

Is it ceFAZolin or penicillin G potassium?

- A nurse removed a vial of what they thought was 1 g of ceFAZolin from an ADC in an OR.
- After reconstitution, preparation & administration of dose to patient, nurse read vial label and realized it was labeled, **Buffered Penicillin G Potassium for Injection, 20,000,000 units** which looked similar to vials of ceFAZolin (both by Sandoz).
- Nurse reported event to Pharmacy.



Similar-looking vials labeled as 1 g ceFAZolin injection (left) and 20,000,000 units of buffered penicillin G potassium injection (right) by Sandoz.

63 ISMP Institute for Safe Medication Practices
 ©2025 ISMP | Confidential

63

Is it ceFAZolin or penicillin G potassium?

- Upon review of vial labels, it was discovered that the lot number (PG4360) and expiration date (11/2027) on vial labeled as penicillin G potassium were the same as ceFAZolin 1 g vial.
- Another vial of penicillin G potassium was found mixed in with ceFAZolin vials a month ago.
- A review of all storage locations found two additional vials labeled as penicillin G potassium, making it a total of four vials sequestered.
- Sandoz has since issued a Class 1 recall on Jun 27 and an updated recall with an additional affected lot (PG4362) on July 15.



Sandoz vials labeled as 1 g ceFAZolin injection (left) and 20,000,000 units of buffered penicillin G potassium injection (right) have the same lot number (PG4360) and expiration date (11/2027).

64 ISMP Institute for Safe Medication Practices
 ©2025 ISMP | Confidential

64

MSOS Member Briefing

July 2025

ISMP Cheers Awards – Nominations Close August 1

- Medication safety leaders from all healthcare disciplines and all practice areas, including acute, long-term, home care, and community settings, are eligible to submit a nomination and to receive an award.
- Nominations will be accepted through August 1, 2025.
- For details and to submit a nomination, go to: <https://home.ecri.org/pages/cheers-nominations>



65

Podcast: *Safe Medicine, Safe Care: What You Need to Know About IV Push Medications - Smart Healthcare Safety from ECRI*

<https://open.spotify.com/episode/4j1WBVW2kEKWfKejhWsv117si=2d067295769a4088>

66

Upcoming Educational Programs

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

- Medication Safety Intensive Workshops (Virtual)
 - August 14 & 15
 - October 16 & 17*
 - December 4 & 5
- Medication Safety Intensive Workshops for Community & Specialty Pharmacies (Virtual)
 - Sep 26 & Oct 3

67

Ochsner Children's & ISMP Safe Medication Management Fellowship

DEADLINE EXTENDED

- One-year program beginning in summer of 2025
- Unparalleled opportunity to learn from and work with nation's top experts in medication safety, while supporting medication safety initiatives and error prevention strategies in pediatrics
- Requires working on site at Ochsner Health in New Orleans, LA, with additional remote work with ISMP



68

MSOS Member Briefing

July 2025

Med Safety Board Director Job Posting

- Med Safety Board (MSB) is an ISMP company powered by ECRI that provides consulting services to life science organizations to improve the safe use of pharmaceuticals and medical devices
- Position: Full-time, fully remote leadership position
- Responsibilities:
 - Provide leadership and oversight for MSB projects and consultations
 - Subject matter expert in medication safety
 - Participate in collaboratives, summits, and educational programs
 - Help develop new tools and resources
 - Develop strong partnerships with key stakeholders
- Application:
<https://www.paycomonline.net/v4/ats/web.php/jobs/ViewJobDetails?job=135080&clientkey=C58BBB9614530727D8D9D756DDF51F1F>



©2025 ISMP | Confidential

69

Medication Safety Specialist, Education Job Posting

- Position: Full-time, fully remote position
- Responsibilities:
 - Subject matter expert in medication safety
 - Plan, execute and participate in ISMP education programs
 - Webinars, symposia
 - Medication Safety Intensive workshops
 - Didactic lecture at professional schools
 - Clinical rotations for professional schools, residency programs and ISMP fellowship programs
 - Participate in collaboratives, summits and consults
 - Help develop new tools and resources
- Application:
<https://www.paycomonline.net/v4/ats/web.php/jobs/ViewJobDetails?job=147848&clientkey=C58BBB9614530727D8D9D756DDF51F1F>



©2025 ISMP | Confidential

70

Questions?



- A copy of today's slides will be posted on our website.
- Next MSOS Briefing date – **September 25th, 2025.**



71