

Nurses Transforming Healthcare Through Informatics

## NENIC Member Highlights 2022

1. Danielle Perley, MSN, RN-BC, CPHON and Rose Mintor, MSN, RN-BC, CPN

Reducing Specimen Mislabeling Errors Using Lean Six Sigma

2. Ingrid Rush, MHA, BSN, RN

Implementation of an Enhanced Staffing Grid for Operating Room Daily Assignments

3. Donalynn Roberts, MSN, RN-BC

Implementation of a Process for Sending Patients Home with Take Home Meds in the Emergency Department



Nurses Transforming Healthcare Through Informatics

# Reducing Specimen Mislabeling Errors Using Lean Six Sigma

Danielle Perley, MSN, RN-BC, CPHON & Rose Mintor, MSN, RN-BC, CPN

April, 22, 2022



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## Introduction

Improving specimen collection improves patient satisfaction and safety due to the reduced need to have additional labs drawn, decreasing painful procedures and infections related to line accessing.<sup>1</sup>

- Lab specimens are rejected due to mislabeling
- Laboratory results direct patient care

### Mislabeled specimens can:

- Delay patient care
- Require recollection
- Result in a patient safety event.<sup>2</sup>

The project goal was to improve the mislabeling rate from 3.5% to 2.6% (25% reduction) post-implementation.





### Assessment/Improvement

## Lean Six Sigma Methods

- Workflow Analysis
- Fishbone Diagram
- Cause and Effect
- PICK Matrix
- Development of SOP
- Data Analysis
- Development of Control Plan

## Solution Ideas

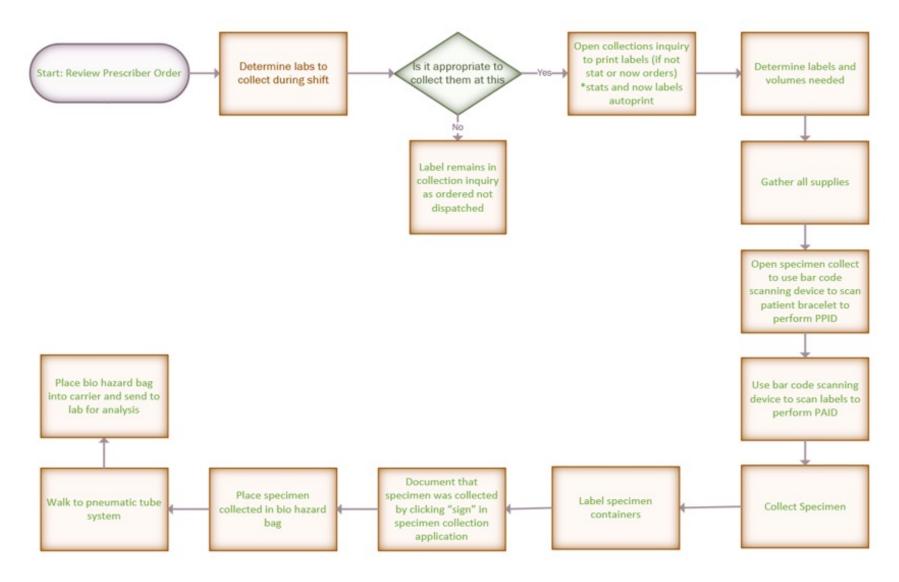
- Pilot Auto-Accessioning Specimens with Plan to Implement in Inpatient Areas
- Implement visual reminders on units and in the system (Poster)
- Standardized operational definitions





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### Workflow Analysis: BEFORE



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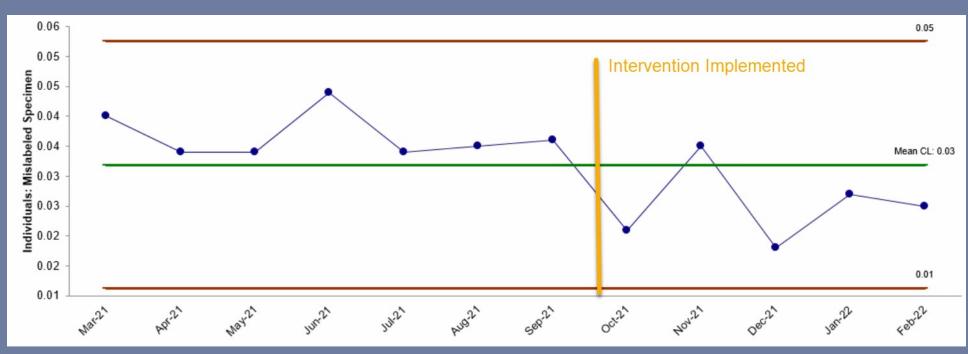
#### Workflow Analysis: AFTER pen collections in Open specimen collect to print labels (if not Determine labs to Is it appropriate to and print labels. Start: Review Prescriber Order stat or now orders) collect them at this collect during shift Determine container \*stats and now labe and volumes needed autoprint l rema collection inquiry as ordered not Gather all supplies Process simplified by patche eliminating two steps as indicated by the Open specimen collect to use bar code red X scanning device to scan patient bracelet to perform PPID Place bio hazard bag Use bar code scanning into carrier and send to device to scan labels to lab for analysis perform PAID Document that Place specimen specimen was collected Label specimen Walk to pneumatic tube **Collect Specimen** by clicking "sign" in collected in bio hazard containers system specimen collection bag application



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Control Chart of mislabeled specimen rate pre and post intervention implementation.



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### Results, cont.

	BEFORE	AFTER
Total number of specimens cancelled due to mislabeling March 2021 – September 2021	147	76
Rate of specimens cancelled due to mislabeling October 2021 – February 2022	3.6%	2.5%





### Discussion

# Made process easier and more streamlined

- Eliminated duplicative steps in the workflow
- Automated the accessioning of labs to facilitate label printing

### Clarified institutional definitions regarding lab mislabel cancellations

- Clinical staff and Laboratory staff had different definitions of mislabel
- Updated protocols across departments with institutional definition

### Encouraged use of mobile technology to facilitate patient safety and satisfaction

 Allowed staff to print specimen labels on the go from their Spectralink smartphones

# Keep it simple – technology can't fix everything

• Re-education and visual signage were also used as part our overall change



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## Acknowledgement

The authors would like to extend our gratitude to our Green Belt team for their dedication and effort for implementing a successful change. Thank you to Lee Williams, Brianna Zins, Princewill Oruma, Tajbanu Thobani-Lakhani, Jill Joerger, Jowell Sabino, Erik Martinez and Yandiris Baez.





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## References

- Saathoff, AM, MacDonald, R, Krenzischek, E. Effectiveness of Specimen Collection Technology in the Reduction of Collection Turnaround Time and Mislabeled Specimens in Emergency, Medical-Surgical, Critical Care, and Maternal Child Health Departments. CIN: Computers, Informatics, Nursing, 2018 Mar; 36(3):133-139.
- 2. Rees, S, Stevens, L, Mikelsons, D, Darcy, T. Reducing Specimen Identification Errors. J Nurse Care Qual, Jul-Sept 2012; 27(3):253-257.









# Implementation of an Enhanced Staffing Grid NENIC 2022

Ingrid Rush, MHA, BSN, RN Nancy Giacomozzi, MEd, RN-BC, CNOR Adrienne O'Brien, MSN, RN, CNOR

### **Disclosure**

No disclosures



Boston Medical Center consolidating campuses







# Who we are

#### • 1996

• Two independent hospitals (Campus 1 & Campus 2) merged to become Boston Medical Center

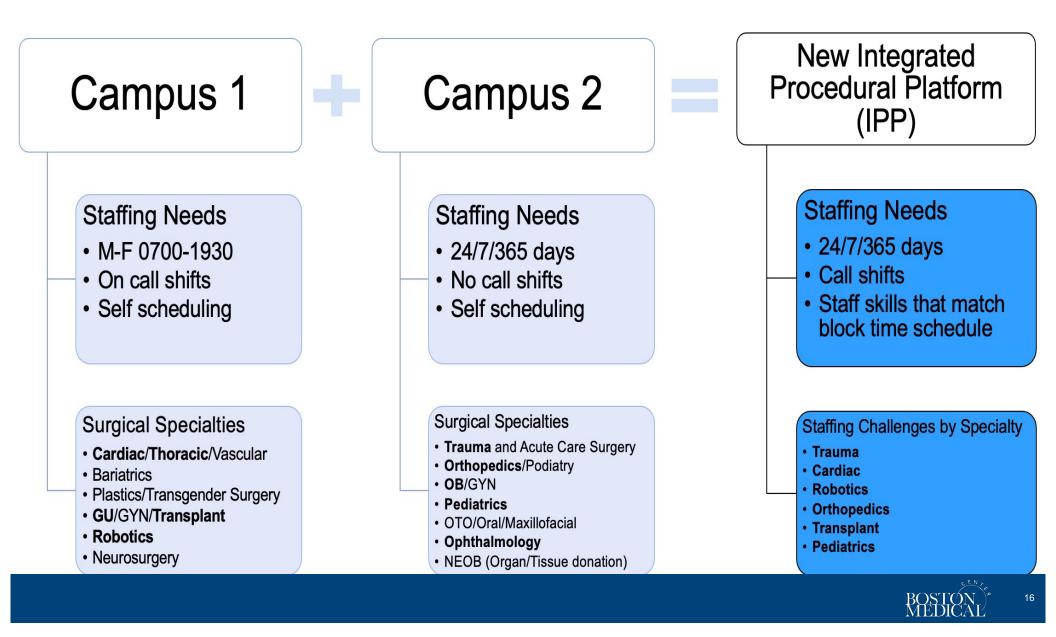
- 2018
- •
- Consolidated into 1 building
  - New perioperative space renamed Integrated Procedural Platform (IPP)
  - All surgical specialties and staff together



15



EXCEPTIONAL CARE. WITHOUT EXCEPTION.



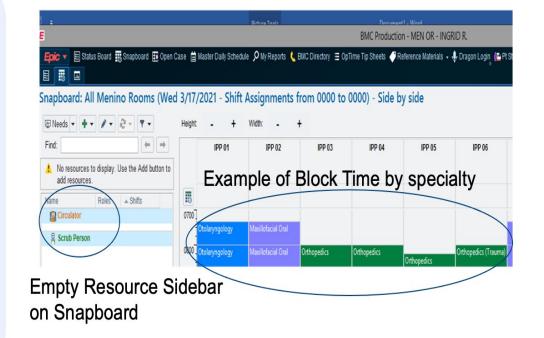
### **Post-consolidation Challenges to Address**

### **OR Schedule**

- Difficult to match skills to cases
  - 5 Week Surgical Block Time Schedule
  - Surgeon owns room for allotted time
  - 4 Week Staffing Schedule
- Add-on Cases
- Unpredictable
- Needed skillsets may not be available

#### **Staffing Assignments**

- Charge nurses assign staff
- Manually input takes <3 hours
- Use recall for staff assignments
- Don't know all staff's abilities or <u>high performance</u> teams (HPT)
- Staff reassigned to correctly match skills to case load
- Staff self-schedule does not match surgical specialty days







Create a tool to identify and track staff skills (staff complete a self-assessment)



Build import from HR software to OpTime OR Schedule (EPIC)



Populate names, schedule and skills into OpTime





### Goals





Decrease time to complete assignments to <180 min



>60%

Improve patient outcomes related to staff knowledge and skills



Staff satisfaction

Work at highest level of ability

Y

Physician satisfaction



# $\checkmark$

## **Two Phase Project**

Phase 1	Integration of staffing software export files into OR schedule
Phase 2	HR software as a resource for staff skills and skill level



### Prior to start of Phase 1

### Goals

- Eliminate manual entry of names
- Reduce steps in assigning staff
- List staff scheduled by shift (including call)

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- mg.	
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No resource resources.	s to display. Use the Add button to add
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resources.	Assig Assig

Figure 1: Pre-implementation view of Resource Sidebar

### Following completion of Phase 1

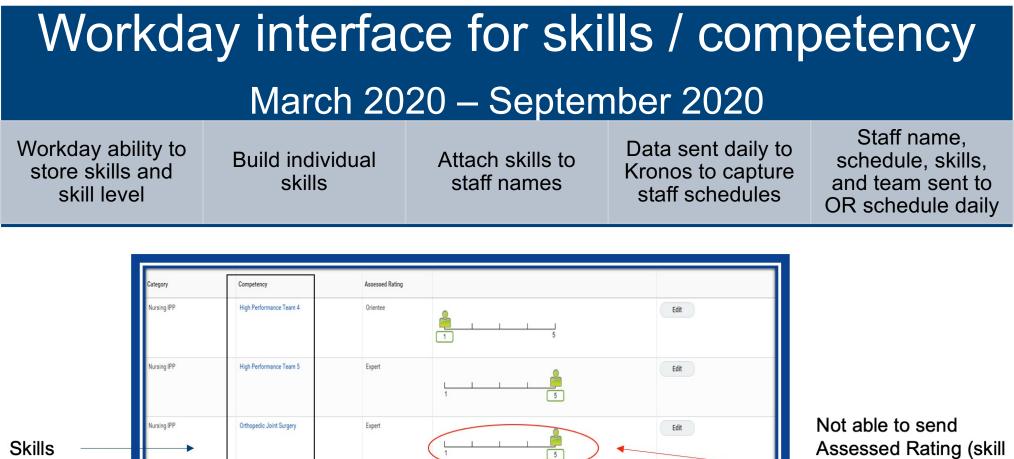
Resource Sidebar on OR schedule shows names, but not skills

Name	Assignments	▲ Shifts	
V 🔤 Circulator			
✓ None			<b></b>
Armyday, Dana-Circ, RN		0700 - 1530	×
Ascensionday, Dana-Circ, RN		0700 - 1530	×
Ashwednesday, Dana-Circ,		0700 - 1900	×

Figure 2: Resource Sidebar view following completion of Phase 1



### Phase 2: Competency and Skills in HR Software



Edit

Nursing IPP

Orthonedic Trauma

Expert

level) to OR schedule at completion of Phase 2



### Final View: Resource Sidebar with Staff Names, Skill and Shift Auto Populated

🖾 Needs 👻 🛧 🖌 🖋	- 2 - 7 -			Height	: - + Width	n: - +		
Find:			⊢ →		IPP 01	IPP 02	IPP 03	
Name	Roles	A Shifts			-08:00	-08:00	-08:00	
Circulator			<b></b>	-				
v IPP 01 (Shift assignmen	nt)		4	10	Allsaints, Dana-Circ, RN 0000 - 2359	Arborday, Dana-Circ, RN 0000 - 2359	Anzacday, Dana-Circ, RN 0000 - 2359	Assigned
Allsaints, Dana-Circ, RN	HPT1, CARD, GEN	0500 - 1515	->		Armistace, Dana-Circ, RN 0000 - 2359	Ashwednesday, Dana-Cir 0000 - 2359	Armyday, Dana-Circ, RN 0000 - 2359	staff
✓ IPP 02 (Shift assignment)	nt)		<b></b>	1500	(Eggr y)			
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🗸 🛱 Scrub Person			4	-	OR VIRTUAL (MEN OR); M.	Exploratory Laparotom Armyday,B; F; 20 yrs	Exploratory Laparotom Banglanyd,B ; F; 20 yrs	
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Armyday, Dana-Circ, RN	HPT5, OTO	0700 - 1730	->	-	Aegea, B; F; 20 yrs	Ascensionday, B; F; 20 yrs	Myrina, B; F; 20 yrs	L.C. C. M.
					Exploratory Laparotom	OR VIRTUAL (MEN OR); M.	Lanaroscopic Repair He	C. n.



### **Results**



Time assigning staff <90 min



Accurately assign skills to case load







Patient outcomes data not available



Staff satisfaction data not available Y

Physician satisfaction

data not available

	October <b>2021</b>			
Skills	% of Cases with matching skills (1 or More Staff)	Total Case		
Neuro/OTO/Oral	82%	160		
Gyn/Uro	90%	135		
Ortho	80%	190		



### **Contact Information**

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- Mike Salvi, Team Lead OpTime, Anesthesia & ASAP Mike.Salvi@bmc.org 617-414-0748



## **Implementation of a Process for Sending Patients Home with Take Home Medications in the Emergency Department**

Donalynn Roberts MSN, RN-BC Clinical Informaticist Lifespan Providence, RI



# Lifespan Health System Details

- Rhode Island's largest health system-state's largest employer with 14,000+ employees
- Four acute care facilities-full spectrum from level one trauma to community hospitals, children's hospital, and pediatric BH
- 1155 inpatient beds across all facilities
- 100+ outpatient clinics and labs
- AMC primary affiliation-Warren Alpert School of Medicine, Brown University



# Why Implement the Process?

- To provide a mechanism for distribution of doses remaining in a multi-use package to our patients in a manner compliant with Rhode Island Department of Health regulations and hospital policy.
- Reduce waste, save dollars, potential prevent readmission to ED



# Requirements of the Project

- The ED orders will appear on the Medication Administration Record (MAR) as expected.
- Take home orders will auto verify and generate a label from a centrally located printer in the ED.
- These labels must be affixed to the product by the prescriber before distributing to the patient to take home. Regulation: "*Medication dispensing, and labeling shall be limited to prescribers only and may not be delegated to other personnel.*"



- Ophthalmic and otic preparations
- Respiratory inhalation medications available in an inhaler device
- Topical ointments, creams, lotions and solutions

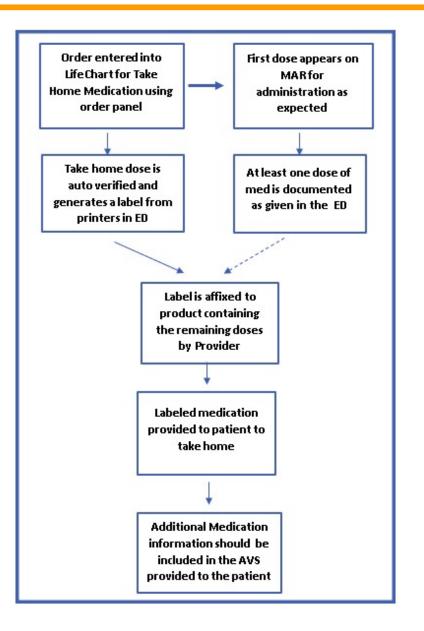


# Fifteen medications

- ALBUTEROL SULFATE HFA 90 MCG/ACTUATION AEROSOL INH
- BACITRACIN ZINC 500 UNIT/GRAM TOPICAL OINTMENT
- CARBAMIDE PEROXIDE 6.5 % EAR DROPS
- CIPROFLOXACIN 0.2 %-HYDROCORTISONE 1 % EAR DROPS, SUSPENSION
- CIPROFLOXACIN 0.3 % EYE DROPS
- CIPROFLOXACIN 0.3 %-DEXAMETHASONE 0.1 % EAR DROPS, SUSPENSION
- ERYTHROMYCIN 5 MG/GRAM (0.5 %) EYE OINTMENT
- FLUTICASONE 110 MCG/ACTUATION HFA AEROSOL INHALER
- FLUTICASONE 220 MCG/ACTUATION HFA AEROSOL INHALER
- FLUTICASONE 44 MCG/ACTUATION HFA AEROSOL INHALER
- NEOMYCIN-POLYMYXIN-HYDROCORT 3.5 MG/ML-10,000 UNIT/ML-1 % EAR SOLUTION
- OFLOXACIN 0.3 % EAR DROPS
- OFLOXACIN 0.3 % EYE DROPS
- POLYMYXIN B SULFATE 10,000 UNIT-TRIMETHOPRIM 1 MG/ML EYE DROPS
- SILVER SULFADIAZINE 1 % TOPICAL CREAM



# Workflow Identified





# Order panel

- Set of three orders provider can place at once
- Order dose and frequency are defaulted in orders
- Route may be required to be entered (hard stops !)

neomycin-polymyxin-hydr	ocortisone (CORTISPORIN) otic solution - ED first dose and take I	home 🗸 Accep	pt	
🗹 🛹 neomycin 3.5 mg/m	L-polymyxin 10,000 units/mL-hydrocortisone 1% (CORTISPORIN) ot	ic solution 4 drop	^	
Reference Links:	• Lexicomp	neomycin-polymyxin-hydrocortisone (CORTISPORIN) otic sol	Jution - ED first dose and take home	✓ Accep
Dose:	4 drop 4 drop	A neomycin 3.5 mg/mL-polymyxin 10,000 units/mL-hydrod 4 drop, Both Ears, Once, today at 1100, 1 dose Otic SUSPENSION is the preferred otic preparation. Otic SOLUTION is		
Frequency:	Once $ ho$ 3 times daily 4 times daily At 4/13/2022 🚵 Today Tomorrow	<ul> <li>Recompcin 3.5 mg/mL-polymyxin 10,000 units/mL-hydrod 4 drop, Both Ears, 3 times daily, First dose today at 1600, 30 doses, L Otic SUSPENSION is the preferred otic preparation. Otic SOLUTION is</li> <li>in ecomycin -polymyxin -hydrocortisone 1% 3.5-10,000-1 You have been provided with a medication to continue taking at hor No Print, R-0</li> </ul>	is used ONLY for bacterial infections of external auditory canal.	
Admin Instructions: Priority: Indications:	Otic SUSPENSION is the preferred otic preparation. Otic SOLUTION   STAT   Contine       C		Synonym built to facilitate orderin	ıg
♦ Additional Order Deta	Indications (Free Text):		Manage Orders     Order Sets     Options       first dose     + Neg	_
4 drop, 3 times daily, First Otic SUSPENSION is the pr ✓ ☆ neomycin -polymyx	g/mL-polymyxin 10,000 units/mL-hydrocortisone 1% (CORTISPORIN dose today at 1600, 30 doses, Last dose on Sat 4/23 at 0800 referred otic preparation. Otic SOLUTION is used ONLY for bacterial infections o in -hydrocortisone 1% 3.5-10,000-1 mg/mL-unit/mL-% otic solution rith a medication to continue taking at home. Take this medication as indicated	of external auditory canal.	Manage Orders Orger Sets Options          take home <ul> <li>Ne</li> <li>Lifespan</li> </ul>	20
			🛛 🛃 🧞 🗧 Lifespan	L

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# Second order generates Medication Label

- Label prints when med ordered from the second order in the panel
- Printed label was approved by pharmacy to insure it met all requirements

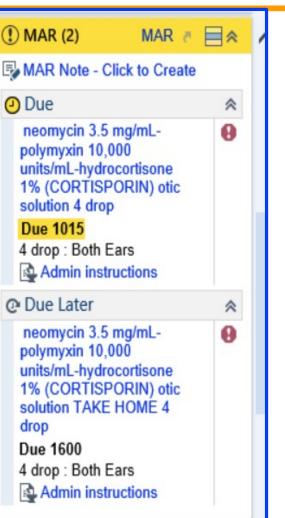
Rhode Island Hospital 593 Eddy Street, PROVIDENCE RI 02903-4923 Phone number: 401-444-4000
RIH Anderson - Ord#2269992
50 yrs[5/18/198] CSN:
bacitracin zinc topical ointment TAKE HOME
Apply topically 2 (two) times a day.
Dispense Gty. 14.2 g Tube No Refills
Date Dispensed: 10/31 0928



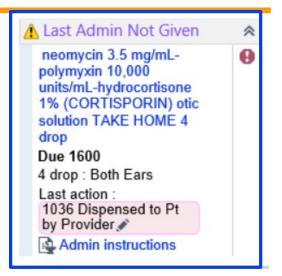
# Medication Administration

Acknowledge Orders (2) ☆ New Orders Acknowledge All 4 neomycin 3.5 mg/mLpolymyxin 10,000 units/mL-hydrocortisone 1% (CORTISPORIN) otic solution 4 drop neomycin 3.5 mg/mLpolymyxin 10,000 units/mL-hydrocortisone 1% (CORTISPORIN) otic solution TAKE HOME 4 drop

- Nurse acknowledges the orders
- Two tasks appear in the MAR toolbox of the ED Narrator: the first-dose and the take home medication



 Nurse documents the administration of the first dose



 Nurse documents the take home med was dispensed by provider



# Third order places Medication info on AVS

Third order contains the text "You have been provided with a medication to continue taking at home. Take this medication as indicated on the affixed label."

🖌 🟠 neomycin -polymy	tin -hydrocortisone 1% 3.5-10,000-1 mg/mL-unit/mL-% otic solution						
Reference Links:	• Lexicomp						
Order Instructions:	CAUTION: Due to limitations of dispensing, rounding may occur for this product. You MUST check the patient sig to conf						
Product:	NEOMYCIN-POLYMYXIN-HYDROCORT 3.5 MG/ML-10,000 UNIT/ML-1 % EAR SOLUTION						
Sig Method:	Specify Dose, Route, Frequency Taper/Ramp Combination Dosage Use Free Text						
Start Date:	4/13/2022 志 End Date: 志						
Dispense:	mL Refill: 0						
	Dispense As Written						
Renewal Provider:	Provider: Do not send renewal requests to me						
Mark long-term:							
Patient Sig:	Patient Sig: You have been provided with a medication to continue taking at home. Take this medication as indicated on the affixed label.						
	✓ Edit the patient sig						
Report:	Common sizes: DROP BTL: 10 mL						
Class:	No Print O Normal Print Phone In No Print						



# After Visit Summary (AVS)

AFT	ER VISIT SUMMARY	3.5	The Miriam Hospital Lifepon Deferring built with care
	1 🗔 3/31/2022 🔮 The	Miriam Hospital Emergen	cy Department 401-793-3000
B	Your medications have changed  START taking: neomycin 3.5 mg/mL-polymyxin 10,000 units/mL-i	hydrocortisone 1% (CORT	ISPORIN)
	Review your updated medication list below.		
Today	/s Visit		
	dications Given mycin 3.5 mg/mL-połymyxin 10,000 units/mL-hydrocortiso	ne 1% (CORTISPORIN) Last	given 4/13/2022 10:19 AM
What	's Next	L.	
You cur	mently have no upcoming appointments scheduled.	19	
Cha	inges to Your Medication List		
	I taking these medications		
-	neomycin 3.5 mg/mL-polymyxin 10,000 units/mL-hydrocortisone 1% 3.5-10,000-1 mg/mL-	You have been provided	with a medication to Take this medication as

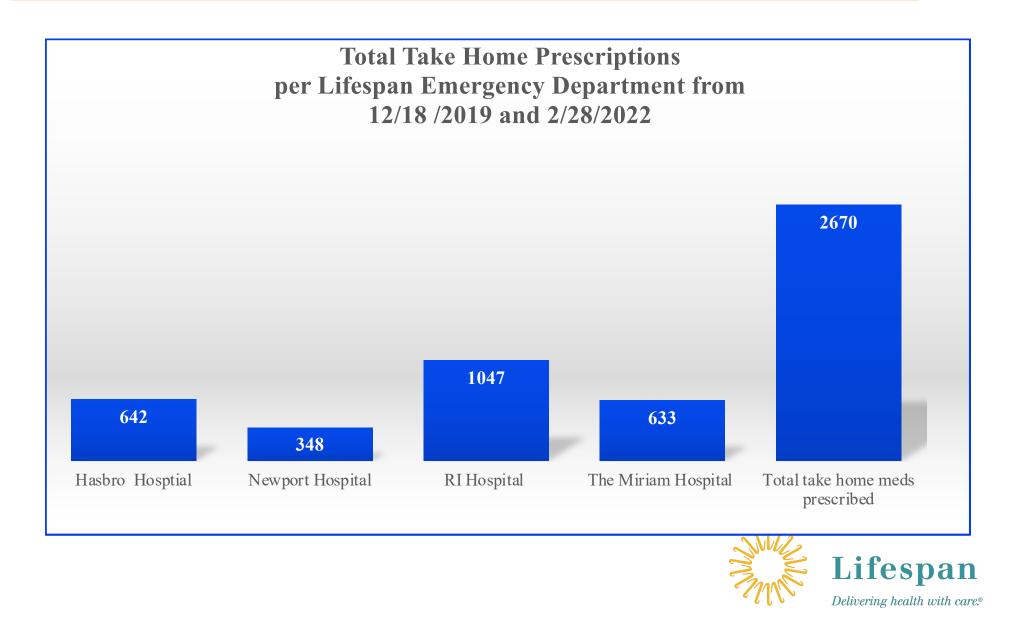
- Rules built to generate accurate clinical reference
- English and Spanish available

#### ED After Visit Summary Selected to print Hydrocortisone; Neomycin; Polymyxin B ear solution What is this medicine? HYDROCORTISONE; NEOMYCIN; and POLYMYXIN B (hye droe KOR ti sone; nee oh MYE sin; pol i MIX in B) is used to treat ear infections. This medicine may be used for other purposes; ask your health care provider or pharmacist if you have questions. COMMON BRAND NAME(S): AK-Spore HC, AK-Spore HC Otic, Antibiotic Otic, Cortisporin, Cortomycin, Oti-Sone, Oticin HC, Otimar, Otocidin What should I tell my health care provider before I take this medicine? They need to know if you have any of these conditions: -any other active infections -chronic ear infections or fluid in the ear -perforated ear drum -an unusual or allergic reaction to hydrocortisone, neomycin, polymyxin B, sulfites, other medicines, foods, dyes, or preservatives -pregnant or trying to get pregnant -breast-feeding How should I use this medicine? This medicine is only for use in the ears. Follow the directions on the prescription label. Wash hands before and after use. Clean your ear of any fluid that can be easily removed. Do not insert any object or swab into the ear canal. Gently warm the bottle by holding it in the hand for 1 to 2 minutes. Lie down on your side with the infected ear facing upward. Try not to touch the tip of the dropper to your ear, fingertips, or other surface. Squeeze the bottle gently to put the prescribed number of drops in the ear canal. Stay in this position for 30 to 60 seconds to help the drops soak into the ear. Repeat the steps for the other ear if both ears are infected. Do not use your medicine more often than directed. Finish the full course of medicine prescribed by your doctor or health care professional even if you think your condition is better. Talk to your pediatrician regarding the use of this medicine in children. While this drug may be prescribed for selected conditions, precautions do apply.

Overdosade: If you think you have taken too much of this medicine contact a poison control center or emergency room at

### Medication appears on Home med list

Review Home Meds         Ongoing Comment:         Additional Home Meds         View by:       Rx/Patient Reported         Rx No Pharmacy Selected         Prescribed         Image here provided with a medication to continue taking at home. Take this medication as	t ↓     Check Interactions Informants Eind Medications Needing Review     Mark Unselected Taking Mark Unselected Not Taking     Last Dose Taking?     Taking PRN Not Taking Unknown Taking Differently Last Dose 1 ① ① □ ② ×	JANK AND	Lifespan Delivering health with care.®
You have been provided with a medication to continue taking at home. Take this medication as indicated on the affixed label. No Print, Last Dose: Not Recorded Refills: 0 ordered			



# Potential Savings

Medication	Number of Prescriptions	Average patient \$ copay with Insurance	\$ cost savings
Albuterol inhaler	246	45	1,170
Bacitacin topical ointment	229	31	7,099
Carbamide Ear drops	35	11	385
Ciprofloxacin ear drops 0.2%	39	30	1,170
Ciprofloxacin ear drops 0.3%	427	60	25,620
Ciprofloxacin eye drops	39	13	507
Erythromycin eye ointment	1100	21	23,100
Fluticosone inh 100mcg Inhaler	28	50	1,400
Fluticosone inh 250 mcg Inhaler	5	50	250
Fluticosone inh 50 mcg inhaler	29	50	1,450
Cortisporin ear drops	118	35	4,130
Ofalxacin ear drops	109	20	2,180
Oflaxacin eye drops	50	21	1,050
Polymycin B Sulfate eye drops	38	15	570
Silver Sulfadiazine topical cream	193	20	3,860
Totals	2685		73,941





# Do you have any

