Integration of a Mixed Central Fill, Mail Order, and Specialty Pharmacy: Automation at its Finest!

Marissa Langefeld, PharmD
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University of Chicago Medicine

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Conflicts of Interest

- The speakers do not have any conflicts of interest to disclose

Learning Objectives

- Explain the integration of interdisciplinary teams in planning for a central fill/mail order facility
- Describe automation in a technology-forward pharmacy integrated in a mixed pharmacy practice model
- Discuss implementation and optimization of workflow between a remote pharmacy team and a central fill/mail order facility

Planning and Opening a Central Fill/Mail Order Pharmacy

Marissa Langefeld, PharmD

Assistant Director of Ambulatory Pharmacy, Retail, Central Fill, and Mail Order

University of Chicago Medicine

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Central Fill Pharmacy vs. Mail Order Pharmacy

Central fill prescription processing

- Central fill pharmacy prepares medication order from originating pharmacy
- Medication packaged by central fill pharmacy is dispensed by originating pharmacy

Mail order pharmacy

- Mails medication directly to patient

Ontario College of Pharmacists. Centralized Prescription Processing (Central Fill). Available at: https://www.ocpinfo.com/regulations-standards/practice-policies-guidelines/central-fill/. Accessed August 16, 2023.
Kruczek, N. What is the Role of Mail-Order Pharmacy? Available at: https://www.pharmacytimes.com/view/what-is-the-role-of-the-mail-order-pharmacy. Accessed August 16, 2023.

Advantages of Central Fill

- Support growth
- Efficiently deploy labor and capital
- Improve efficiency
- Reduce risk of errors
- Expand patient services
- Shift pharmacist focus to patient care and professional services

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Lockwood, W. The Evolution of Central Fill. Available at: https://www.computertalk.com/the-evolution-of-central-fill/. Accessed August 16, 2023.

Advantages to Mail Order

- Patient convenience
- Service patients with access limitations
  - Pharmacy deserts
  - Mobility
- Continuity of care via prescription retention within health-system
- On-line ordering
- Automatic refills
- Auto-shipment of medications

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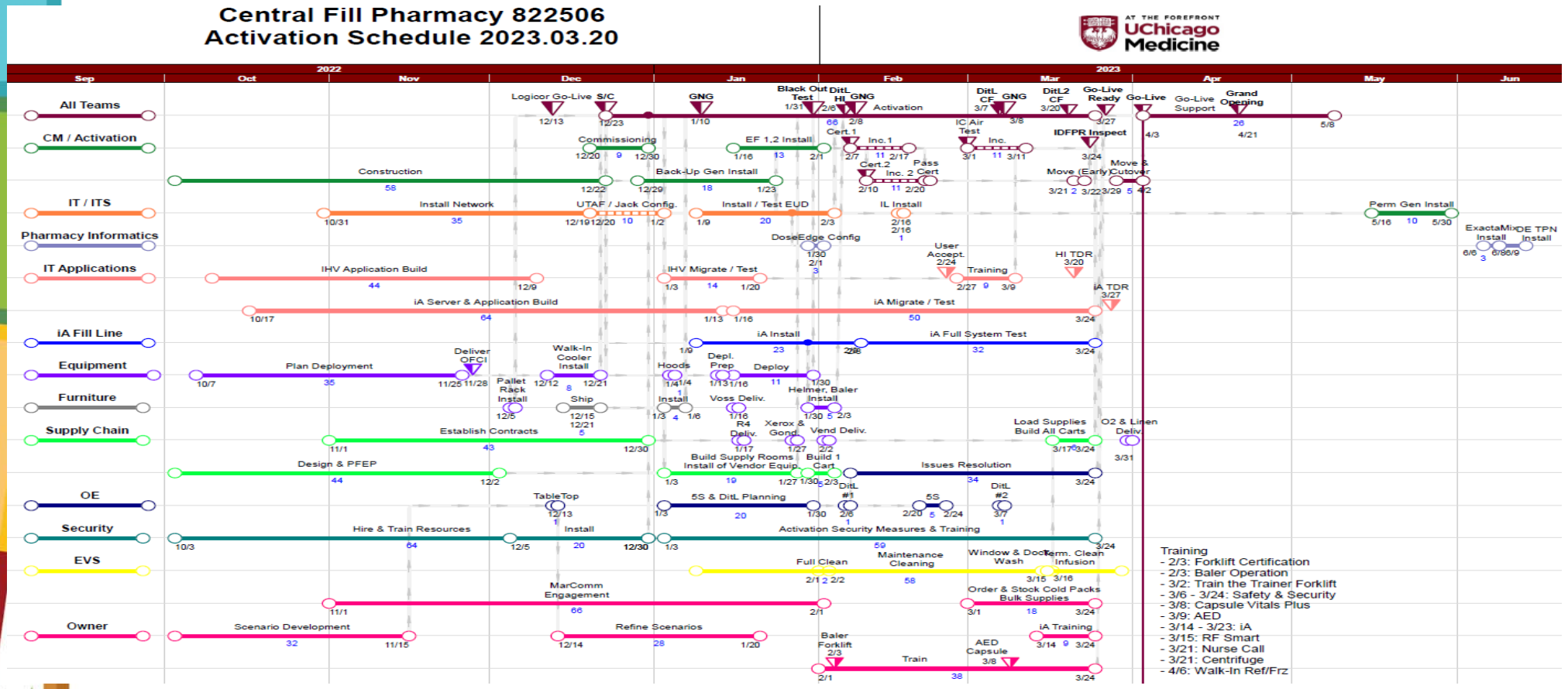
Kruczek, N. What is the Role of Mail-Order Pharmacy? Available at: https://www.pharmacytimes.com/view/what-is-the-role-of-the-mail-order-pharmacy. Accessed August 16, 2023.
Lockwood, W. The Evolution of Central Fill. Available at: https://www.computertalk.com/the-evolution-of-central-fill/. Accessed August 16, 2023.

Rationale of Opening A Central Fill / Mail Order Pharmacy

- Support mail order growth for patients in pharmacy deserts
- Shift prescription fulfillment from on-campus outpatient pharmacy
- Bolster transitions of care program growth
- Streamline processes across outpatient pharmacy programs
- Improve efficiency through automation

MB[32

Central Fill / Mail Order Planning

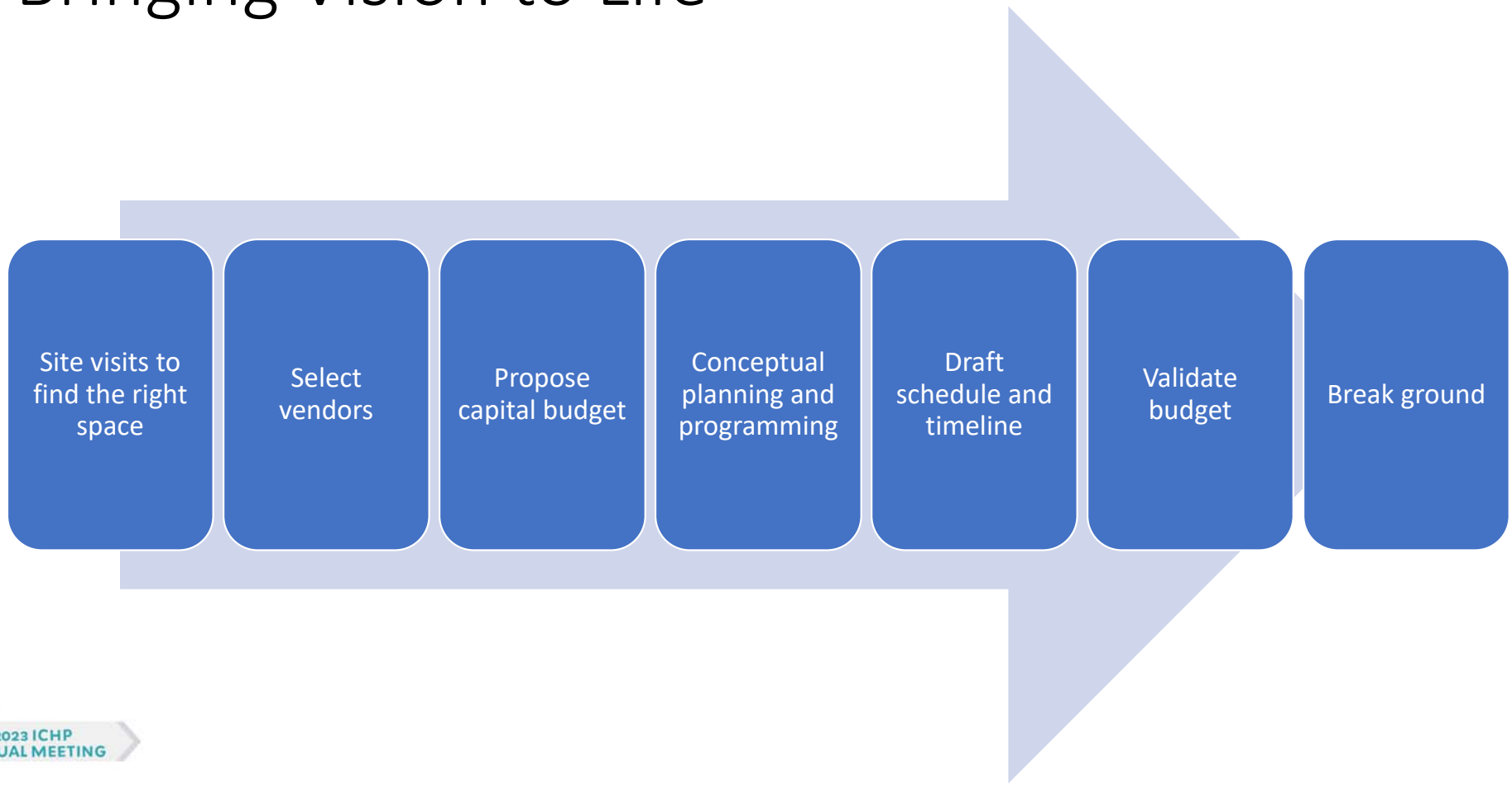


Slide 9

MB[32 If you plan on walking through the diagram, you'll want to slice it into pieces because no one will be able to follow this - if you only plan on reviewing 1 part, then you could show this initially but then put the cropped part on the next slide that you talk through

Man, Bernice [UCH], 8/29/2023

Bringing Vision to Life



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Visual settings | Edit

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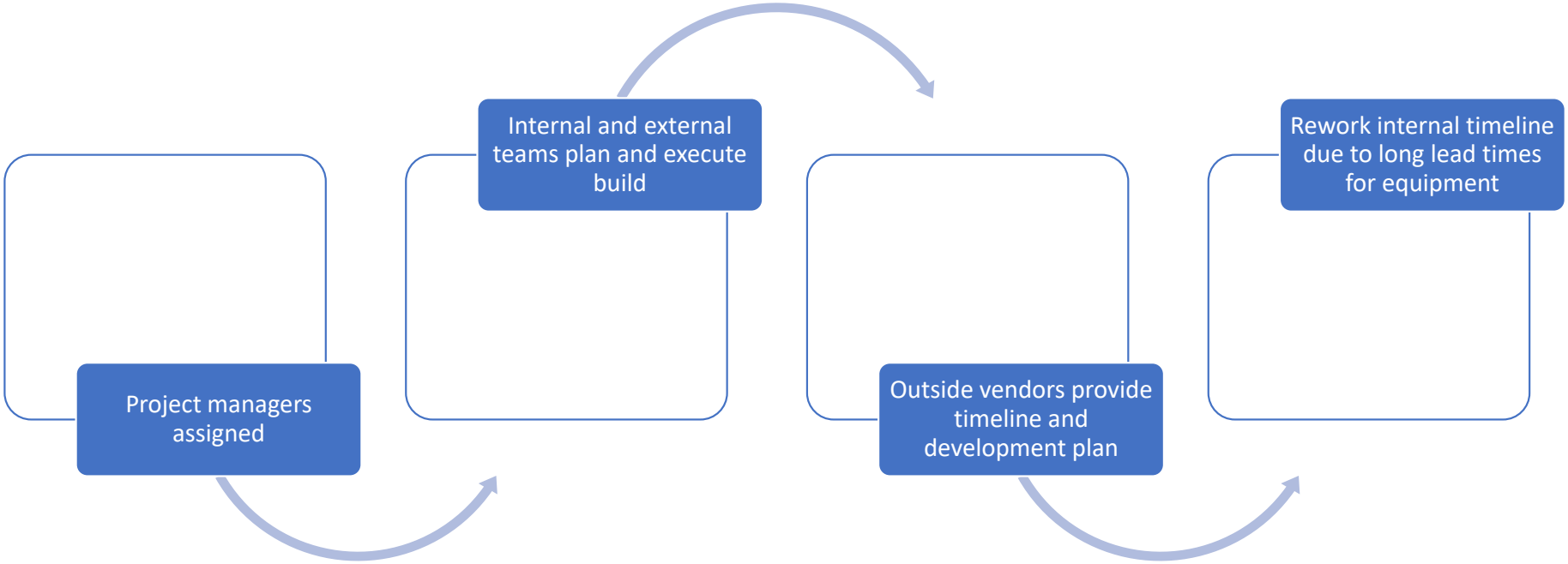
1. How many teams are involved in planning and opening of a central fill / mail order fulfillment center?

0

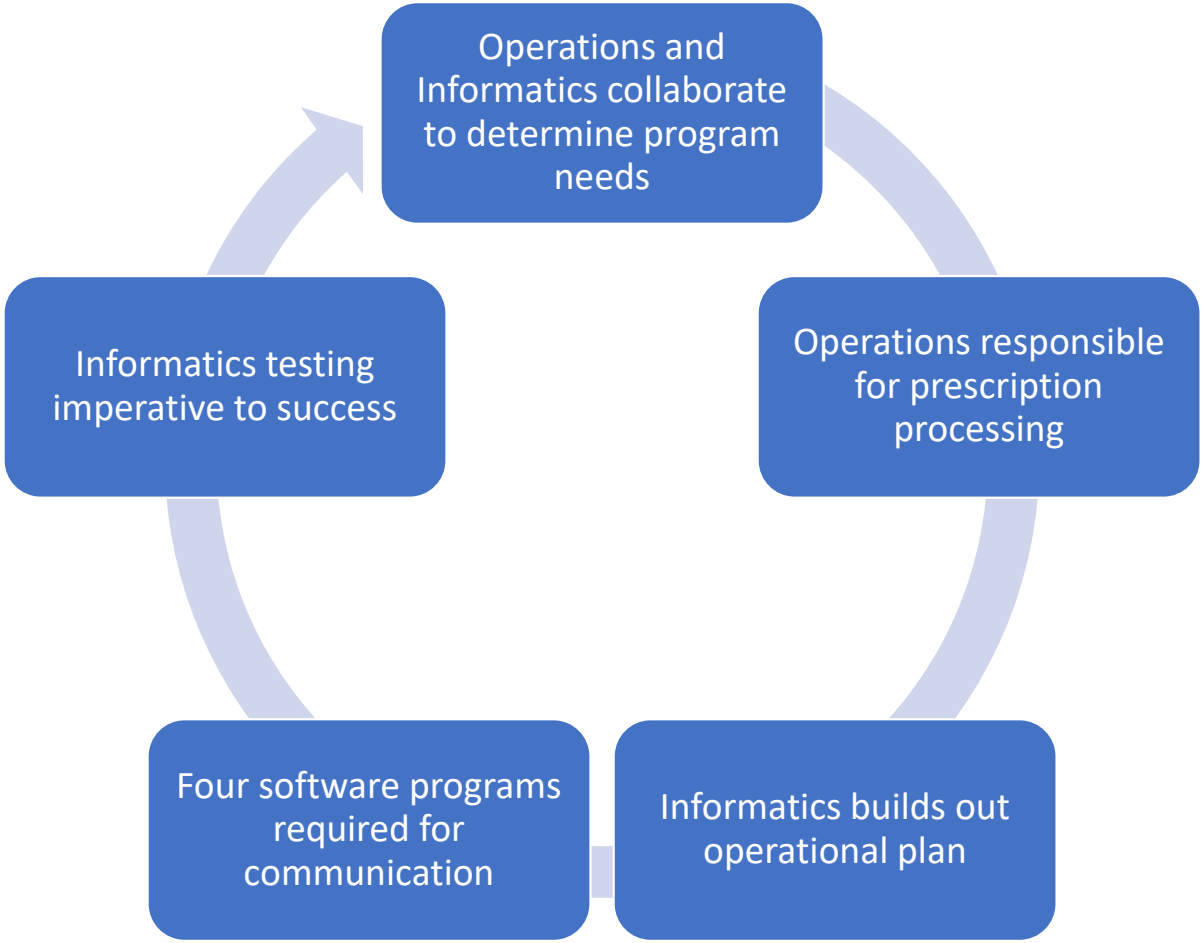
5	7	10	>10
0%	0%	0%	0%

Breaking Ground

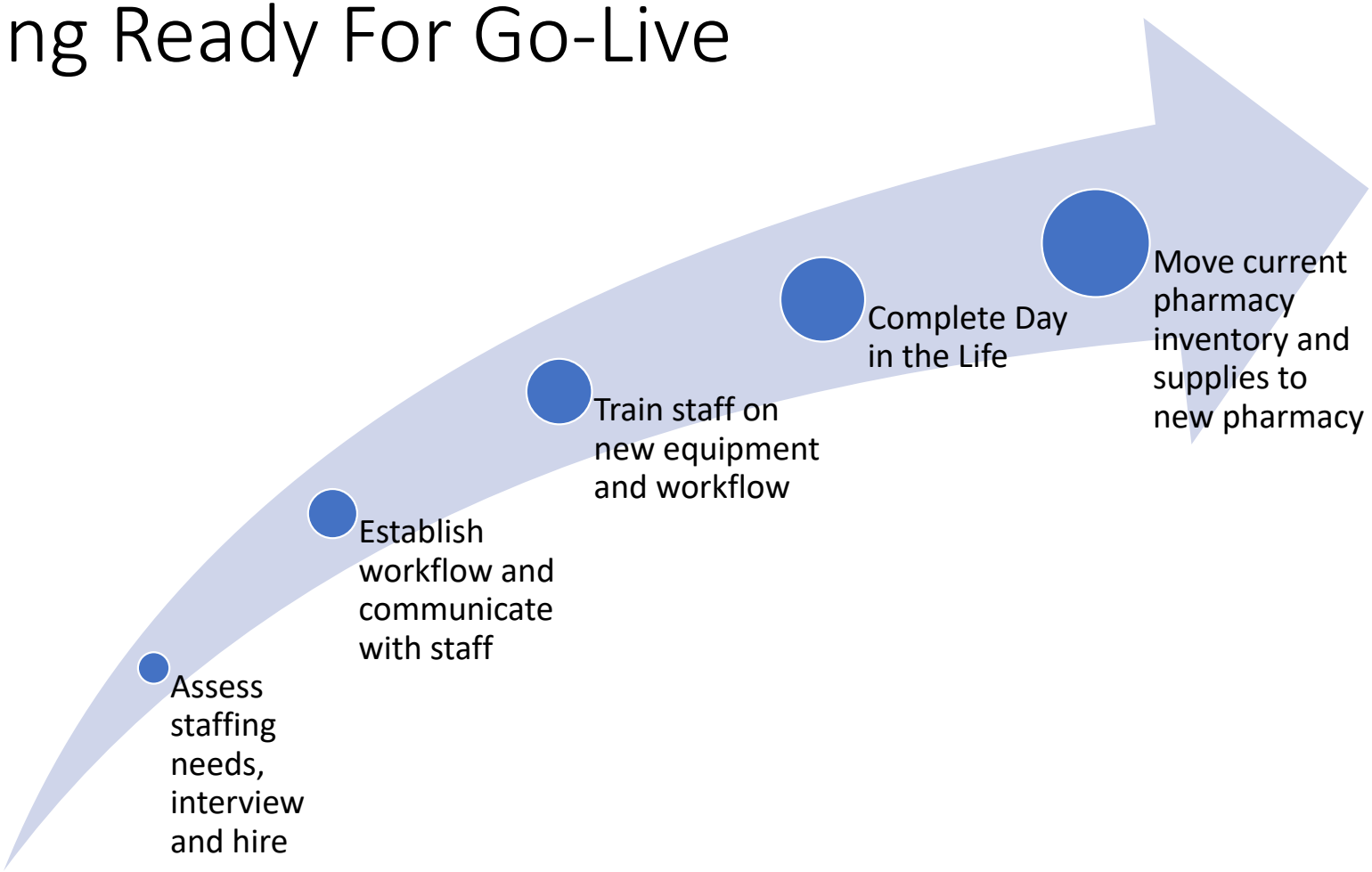


Physical Space – Key Stakeholders

Behind the Scenes – Operations & Informatics



Getting Ready For Go-Live



MB[14

Go-Live

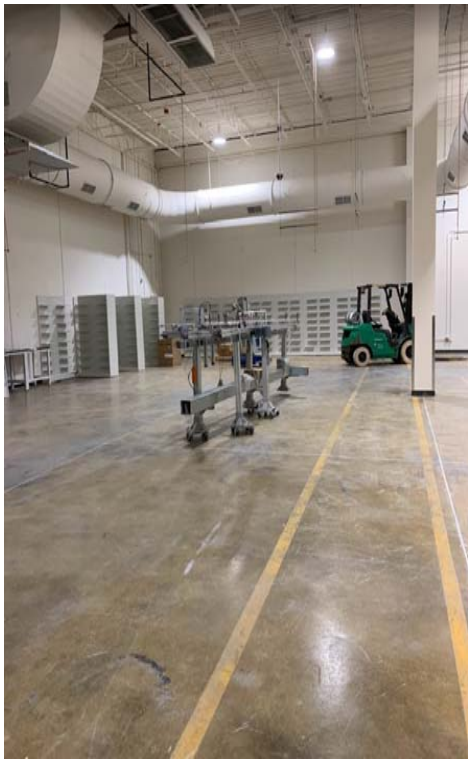
- All hands on deck support
- Continuous monitoring of workflows and systems
- Assist staff and troubleshoot equipment issues
- Daily debrief with teams

Slide 16

MB[14 Considering changing title to It's Go Time! - might be fun to have each title be a little lighthearted? Would reduce # of words here also

Man, Bernice [UCH], 8/25/2023

Before & During Construction



After Construction

Opportunities and Lessons Learned

Roles, responsibilities and expectations are clear	Collaboration of all teams is needed for success	Important to run through all the details
Take time to involve various stakeholders	Build trust in the project team	Ending where you started does not define project success

AT THE FOREFRONT
UChicago Medicine

Pharmacy Automation

Annie MacKerell, PharmD

Pharmacy Manager, UCMC Pharmacy Services

University of Chicago Medicine

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What is Pharmacy Automation?

- **Automation**: "Automatically controlled operation of an apparatus, process, or system by mechanical or electronic devices that take the place of human labor"[1]
- **Robot**: "A robot is an autonomous machine capable of sensing its environment, carrying out computations to make decisions, and performing actions in the real world"[2]

Definition of AUTOMATION. Merriam-Webster website. Published 2019. Available at: https://www.merriam-webster.com/dictionary/automation. Accessed August 16, 2023.
Guizzo E. What Is a Robot? ROBOTS: Your Guide to the World of Robotics. Published August 2, 2018. Available at: https://robotsguide.com/learn/what-is-a-robot. Accessed August 16, 2023.

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2. Have you worked with automation in the pharmacy setting?

0

Yes	No
0%	0%

Types of Pharmacy Automation

- Automated dispensing cabinets
- Automated carousels
- Automated dispensing robots
  - Pill packs
  - Robot pod
  - Robot cabinet
- Automated pick up robots
- Automated phone prompts
- Automated storage shelves
- Online ordering/Web ordering
- Delivery robots
- Automated inventory
- Automated compounding
- Automated medication counters

Quinn JP. Pharmacy Automation: The Ultimate Guide to Automating Your Pharmacy. www.pharmacymentor.com. Published December 17, 2021. Available at: https://www.pharmacymentor.com/pharmacy-automation-ultimate-guide/. Accessed August 16, 2023.
Chilcott M. Council Post: The Growing Trend Of Pharmacy Automation. Forbes. Published November 7, 2018. Avaialble at: https://www.forbes.com/sites/forbestechcouncil/2018/11/07/the-growing-trend-of-pharmacy-automation/?sh=2f8345c067ca. Accessed August 17, 2023.

Benefits of Using Automation in Pharmacy

- Barcode technology
  - 36% reduction in dispensing errors
  - 63% reduction in potential adverse effects
- Reduced labor time
  - Robotics can run 24 hours
  - Reduced manpower by 0.3-1.4 FTEs
  - Productivity increased by 4 items per hour
  - Patient wait time and filling time decreased by 17-20 seconds

Poon E.G., Cina J.L., Churchill W.et al. Medication dispensing errors and potential adverse drug events before and after implementing bar code technology in the pharmacy. *Ann Intern Med*. 2006; 145(6): 426–434.
Glowa TW, Weber RJ. Establishing a Plan for Central Pharmacy Automation. *Hosp Pharm*. 2009;44(5):431-438. doi:https://doi.org/10.1310/hpj4405-431
7Sng Y, Ong CK, Lai YF. Approaches to outpatient pharmacy automation: a systematic review. *Eur J Hosp Pharm*. 2018;26(3):157-162. doi:https://doi.org/10.1136/ejhpharm-2017-001424

Benefits of Using Automation in Pharmacy

More time for other activities	Inventory management	Decreased work stress	Cost savings	Medication security
• Pharmacist clinical review	• Maintain and automatically reorder medications	• Does not affect job satisfaction though	• Less staff needed to operate • Less errors	• Medications are placed into robot and sealed, prevents tampering • HIPAA errors

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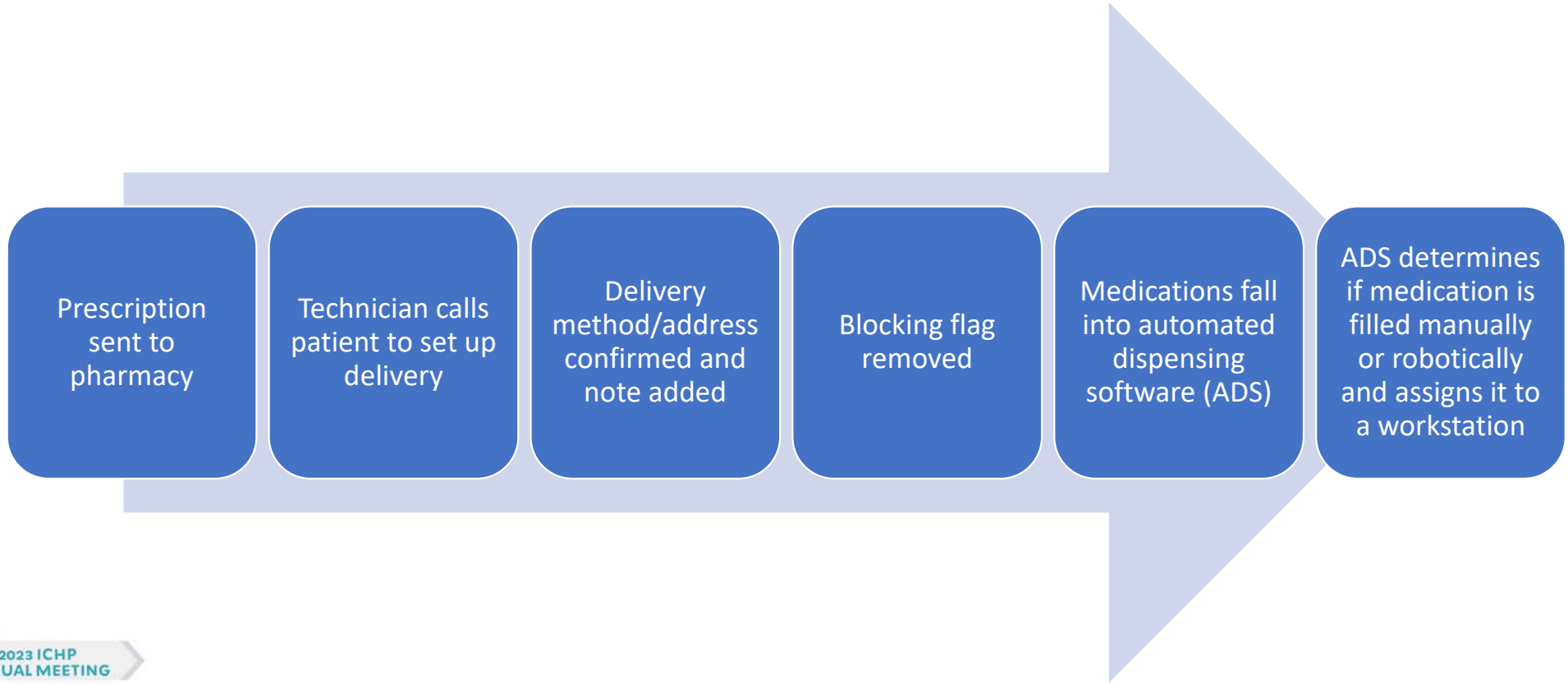
Alahmari AR, Alrabghi KK, Dighriri IM. An Overview of the Current State and Perspectives of Pharmacy Robot and Medication Dispensing Technology. Cureus. 2022;14(8). doi:https://doi.org/10.7759/cureus.28642

How does a prescription get filled in an automated pharmacy?



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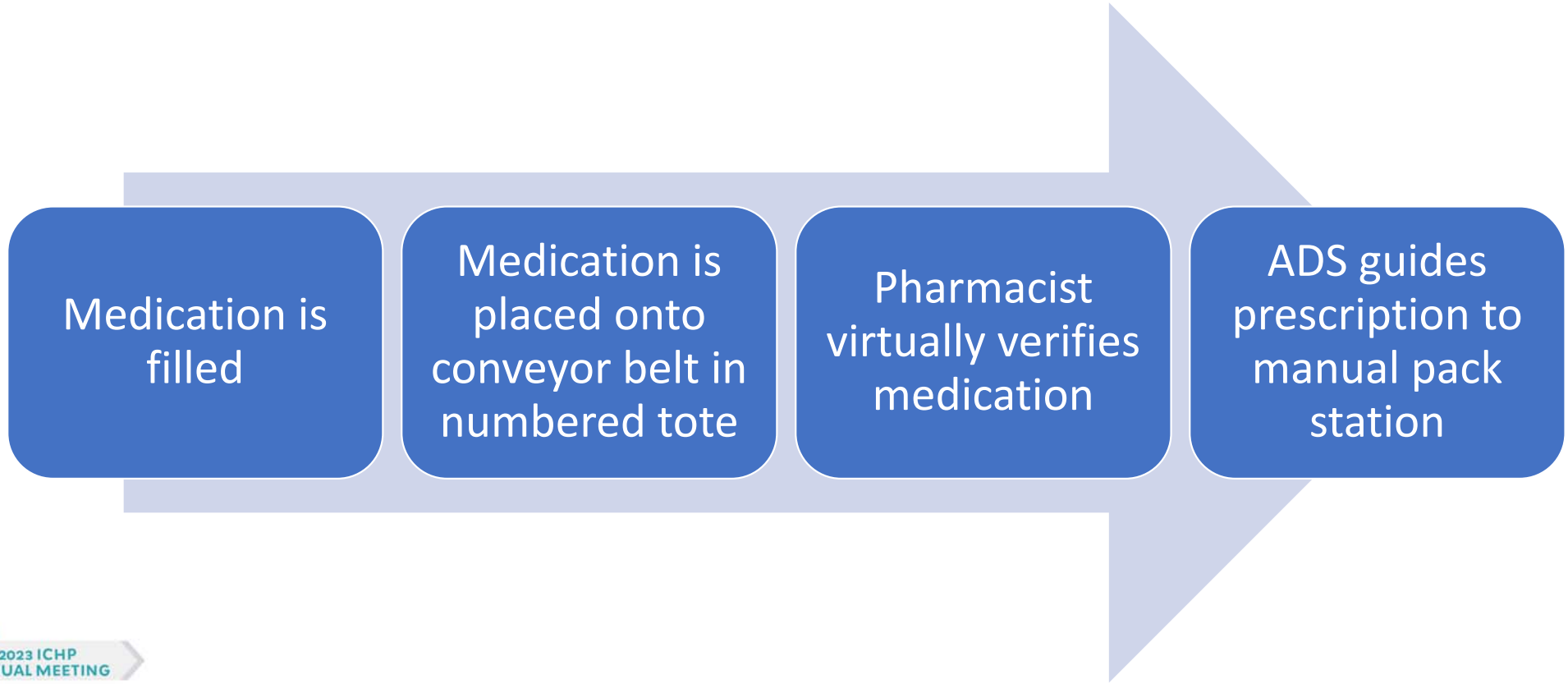

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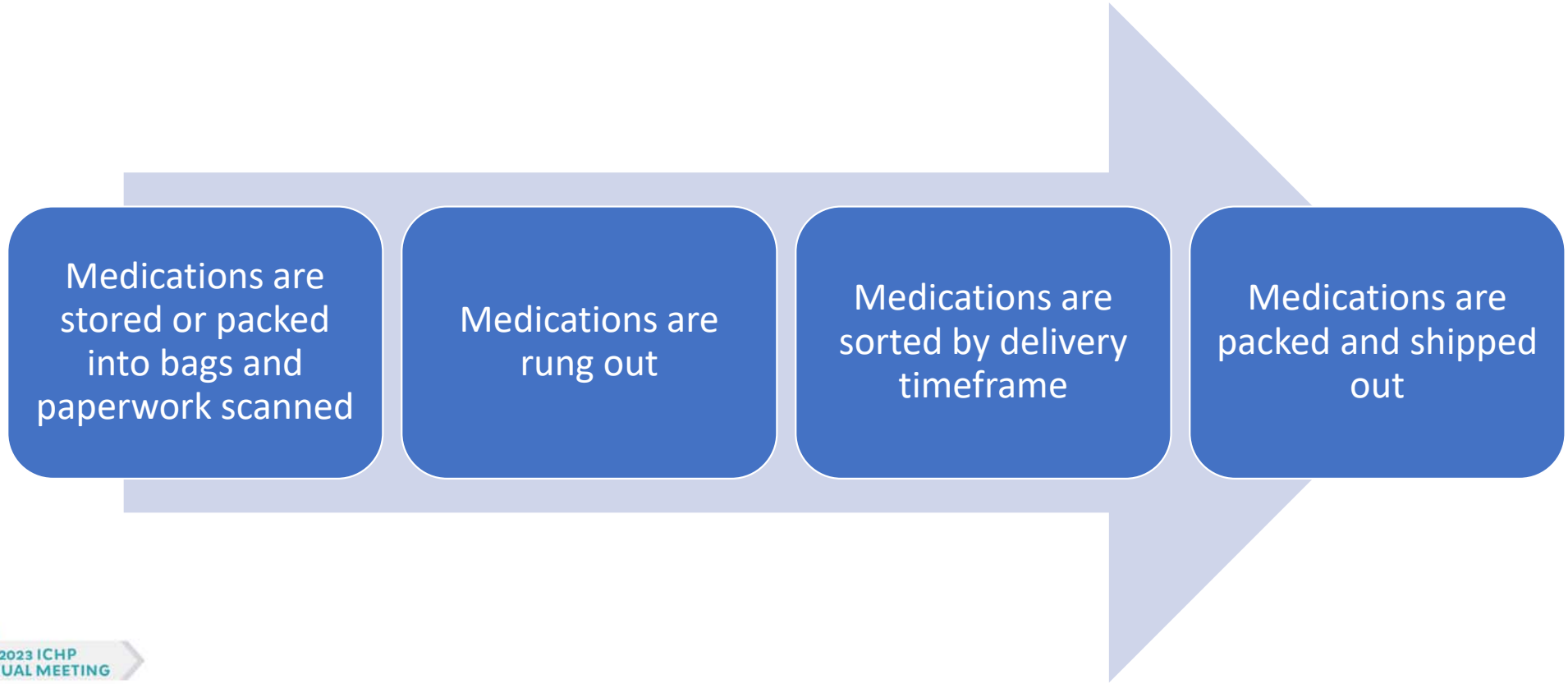

Robotic Filling of Prescriptions

MB[25

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Slide 31

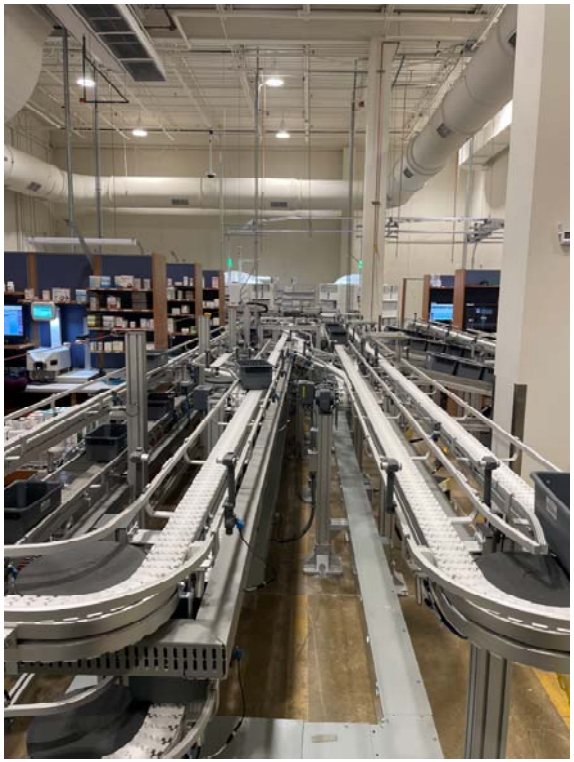
MB[25 love how the video is here!
Man, Bernice [UCH], 8/25/2023

Replenishment of Robots

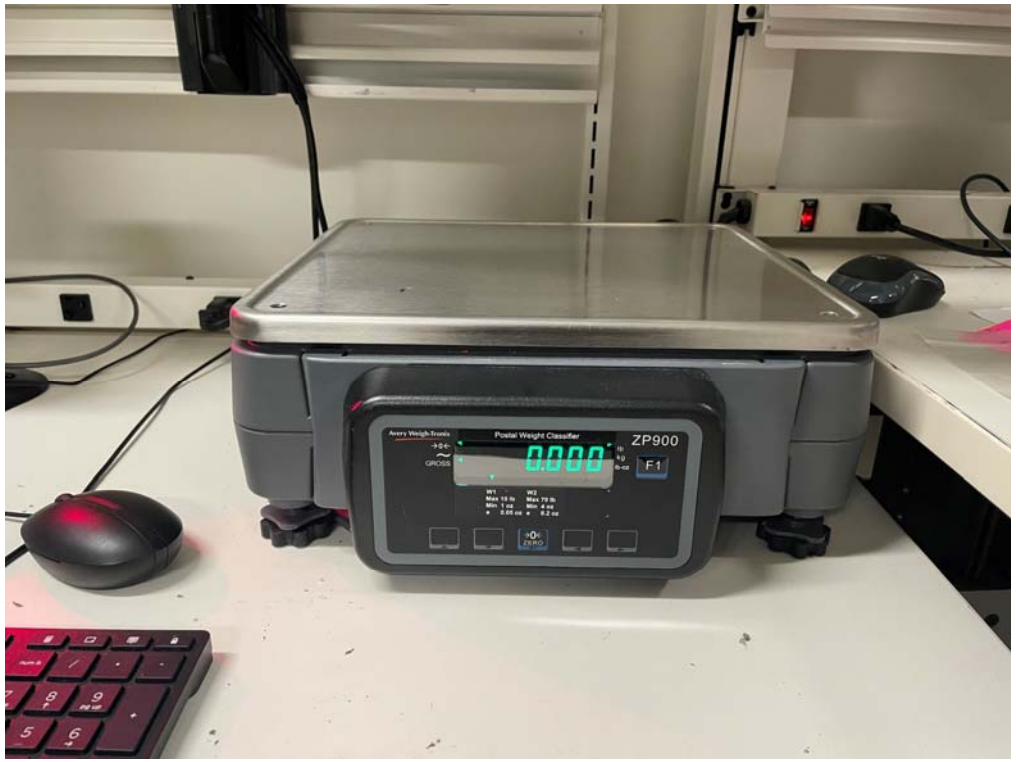
Bonus Robot!

Manual Fill

Manual Pack



Shipping



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Benefits of Automation

- Accurate counting
- Verify canister and not each script
- Accurate selection of correct product
- Efficient
- Allows staff time to focus on other activities

Challenges with Automation

- Lack of experience
  - Planogram
- Not having mechanic onsite
  - Company fly someone in when broken
  - Downtime procedures
- Not able to individualize (i.e.: pt requesting non-safety caps)
- Hard to locate medications quickly
- First clinical review critical
- Integrating two systems (i.e.: inventory, return to stock, edits)

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3. Susie Smith's atorvastatin 20mg prescription is set up for delivery next Monday. After the prescription falls into the ADS, what is the next step?

0

0%	0%	0%	0%	0%
The medication is verified by the pharmacist	The medication is clinically reviewed by the pharmacist	The medication is sorted by the ADS to fill in robot or manual fill	The patient receives a phone call to confirm shipping address	The medication is filled by a technician

Workflow Implementation and Optimization

Bernice Man, PharmD, BCPS, CPHQ, CSP

Clinical Pharmacy Manager, Specialty Pharmacy

University of Chicago Medicine

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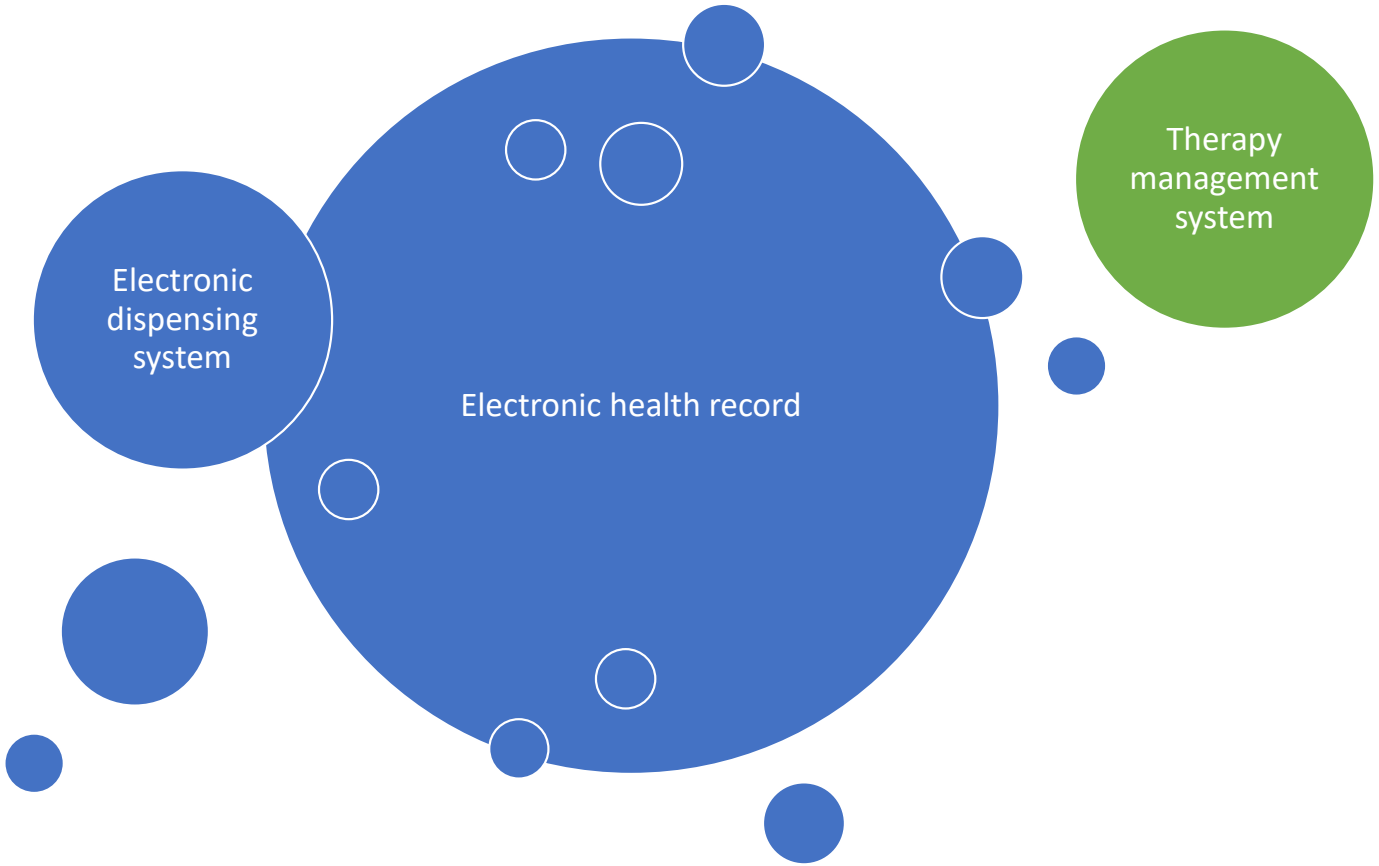
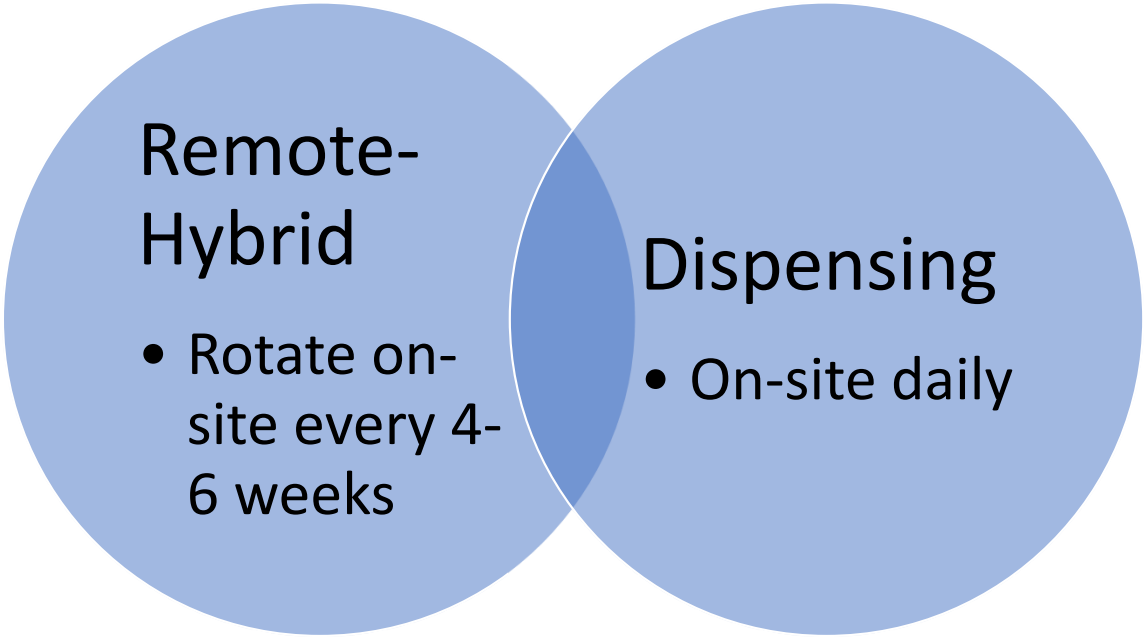
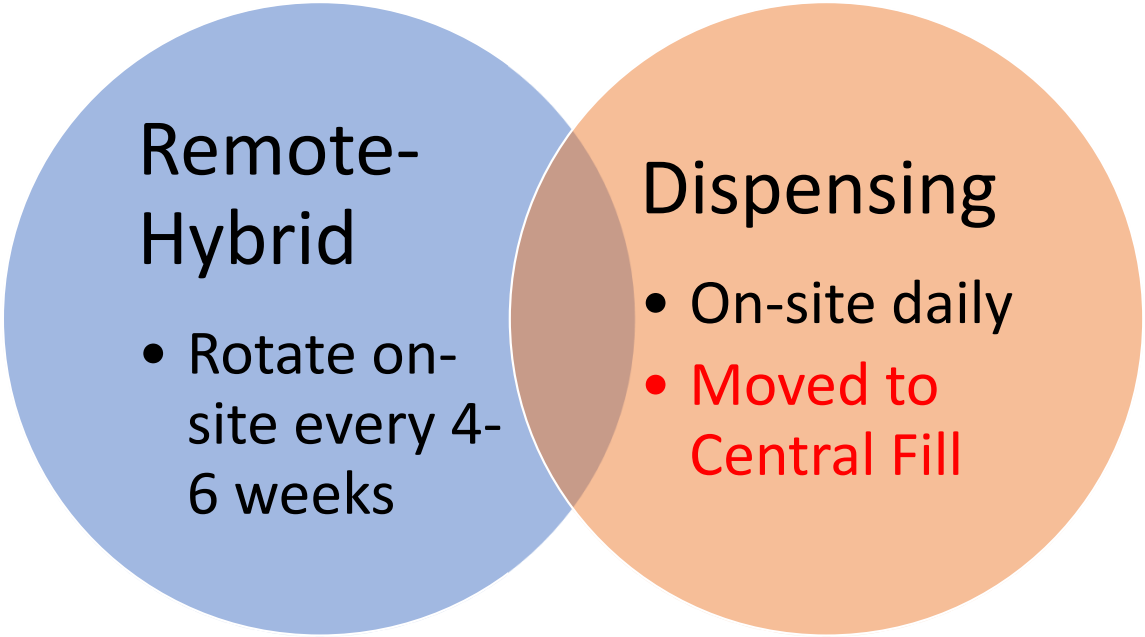
Specialty Pharmacy Systems



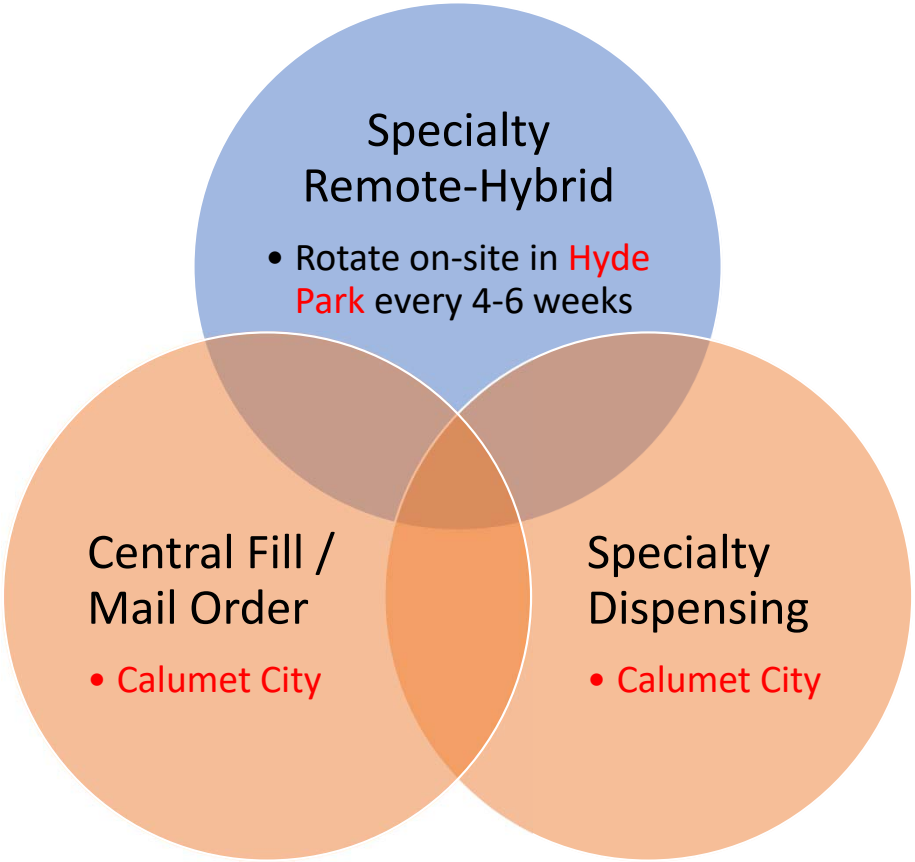
Specialty Pharmacy Team



Specialty Pharmacy Team



Two Teams Become One



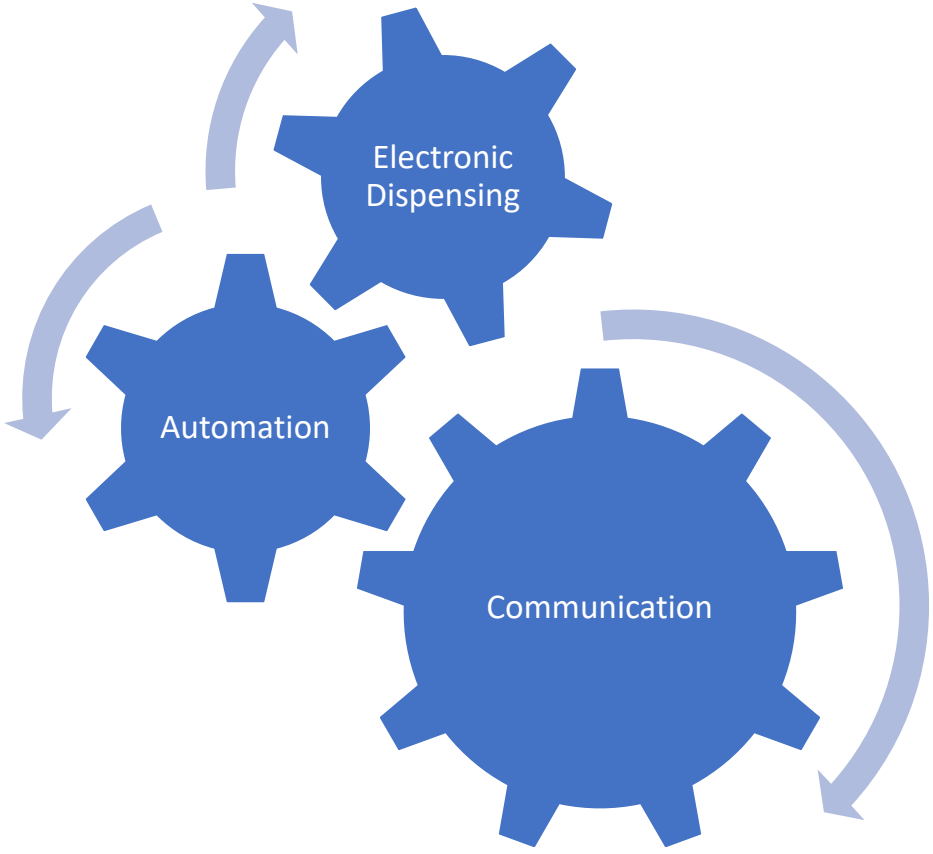
Overview of Process

Dispensing System - Adjudication

Dispensing Automation - Fulfillment, Shipping

Receives Prescription Package

Systems to Consider When Coordinating Between Remote-Hybrid and On-Site



Variables to Consider When Coordinating Between Remote-Hybrid and On-Site

Shared vs. separate systems between sites

- What information electronically communicates?
- What information transmits automatically?
- Distinguish between mail order and specialty

Existing system adaptation

- Creation of specialized queues
- Integration into therapy management system workflow

Integration of central fill logistics

- How can we remotely manage the automation?

Variables to Consider When Coordinating Between Remote-Hybrid and On-Site

Internal workflow changes

- Adapt workflow
- Rinse and repeat based on new information gathered during initial post-go-live month

Communication pathways

- Rely on electronic communication

Timing is everything!

- What needs to be done at what time to ensure prescriptions are packaged and shipped?
- Dependent on third parties (e.g. shipping carriers)

Workflow Coordination: Begin With the End In Mind

Workflow endpoint for each prescription: Nexia: Registered at External Ship App

3:30p	FedEx Ground Driver departs		
	Shipping APTs		Ask for shipping help if behind
4:30p	FedEx Express Driver departs		

Workflow endpoint for each prescription: Nexia: Registered at External Ship App

If endpoint not met, use Nexia: Status Trail to troubleshoot prescriptions to ensure they are shipped SAME Day

Time	Specialty Pharmacy Team				Calumet City Team		
	Who	System: Queue	Task		Who	System: Queue	Task
7a-8a	AMACs	Willow: Holding Queue - Scheduled Shipment	Resolve Scheduled Shipment Specialty Flags				
					Ship1/Arrow APT	Arrow	Print and find all SAME Day Arrow prescriptions
					armacist	Nexia: Pending & Nexia: Scheduled	Change all FedEx Priority Overnight as Urgent
					ventory Ts	Willow	Checking in Inventory
12p	AMACs	Willow: Holding Queue - Scheduled Shipment	Resolve Scheduled Shipment Specialty Flags for NEXT Day Arrow				
1p					Inventory APT	Willow: Inventory – Central Fill	Resolve Insufficient Inventory Flags for medications to go out SAME Day
1:30p					FedEx Express Driver departs		
			Check for SAME Day				
			Shipped SAME Day				
			Shipment	Flags for SAME Day			
						Willow: CalCity – Nexia	Sort Comments to ensure there are no pending prescriptions for SAME Day
						Willow: Ready to Fill - CalCity	Sort Comments to ensure there are no pending prescriptions for SAME Day
						Willow: Ready to Dispense	Sort Comments to ensure all prescriptions to be dispensed SAME Day have been dispensed
			Medications				Review FedEx Priority Overnight to ensure all specialty prescriptions have been filled that need to be shipped SAME Day
						Nexia: Ready to Ship	Review FedEx Priority Overnight to ensure all specialty prescriptions have been filled that need to be shipped SAME Day
3:30p					FedEx Ground Driver departs		
					Shipping APTs		Ask for shipping help if behind
4p	AMACs	Willow: Holding Queue - Scheduled Shipment	Resolve Scheduled Shipment Specialty Flags for NEXT Day Refrigerated Medications		Pharmacist	Nexia: Ship Pending	Review FedEx Priority Overnight to ensure all specialty prescriptions have been shipped that need to be shipped SAME Day
4:30p					FedEx Express Driver departs		

Workflow Coordination

Workflow endpoint for each prescription: Nexia: Registered at External Ship App

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Time	Specialty Pharmacy Team			Calumet City Team		
	Who	System: Queue	Task	Who	System: Queue	Task
7a-8a	AMACs	Willow: Holding Queue - Scheduled Shipment	Resolve Scheduled Shipment Specialty Flags			
8a				Ship1/Arrow APT	Arrow	Print and find all SAME Day Arrow prescriptions
				Pharmacist	Nexia: Pending & Nexia: Scheduled	Change all FedEx Priority Overnight as Urgent
8a-12p				Inventory APTs	Willow	Checking in Inventory
12p	AMACs	Willow: Holding Queue - Scheduled Shipment	Resolve Scheduled Shipment Specialty Flags for NEXT Day Arrow			
1p				Inventory APT	Willow: Inventory – Central Fill	Resolve Insufficient Inventory Flags for medications to go out SAME Day
1:30p				FedEx Express Driver departs		
2p	AMACs	Willow: Holding Queue - Scheduled Shipment	Check for SAME Day shipments that have Insufficient Inventory Flags and Zoom chat Pharmacist group			

Workflow Coordination

Workflow endpoint for each prescription: Nexia: Registered at External Ship App

If endpoint not met, use Nexia: Status Trail to troubleshoot prescriptions to ensure they are shipped **SAME** Day

Time	Specialty Pharmacy Team			Calumet City Team		
	Who	**System: Queue**	**Task**	**Who**	**System: Queue**	**Task**
7a-8a	AMACs	Willow: Holding Queue - Scheduled Shipment	Resolve Scheduled Shipment Specialty Flags			
8a				Ship1/Arrow APT	Arrow	Print and find all **SAME** Day Arrow prescriptions
				Pharmacist	Nexia: Pending & Nexia: Scheduled	Change all FedEx Priority Overnight as Urgent
8a-12p				Inventory APTs	Willow	Checking in Inventory
12p	AMACs	Willow: Holding Queue - Scheduled Shipment	Resolve Scheduled Shipment Specialty Flags for **NEXT** Day Arrow			
1p				Inventory APT	Willow: Inventory – Central Fill	Resolve Insufficient Inventory Flags for medications to go out **SAME** Day
1:30p				FedEx Express Driver departs		
2p	AMACs	Willow: Holding Queue - Scheduled Shipment	Check for **SAME** Day shipments that have Insufficient Inventory Flags and Zoom chat Pharmacist group			

Workflow Coordination – Begin With the End In Mind

3p				Pharmacist	Willow: CalCity – Nexia	Sort Comments to ensure there are no pending prescriptions for **SAME** Day
					Willow: Ready to Fill - CalCity	Sort Comments to ensure there are no pending prescriptions for **SAME** Day
					Willow: Ready to Dispense Specialty	Sort Comments to ensure all prescriptions to be dispensed **SAME** Day have been dispensed
					Nexia: Scheduled	Review FedEx Priority Overnight to ensure all specialty prescriptions have been filled that need to be shipped **SAME** Day
					Nexia: Ready to Ship	Review FedEx Priority Overnight to ensure all specialty prescriptions have been filled that need to be shipped **SAME** Day
3:30p	FedEx Ground Driver departs					
4p	AMACs	Willow: Holding Queue - Scheduled Shipment	Resolve Scheduled Shipment Specialty Flags for **NEXT** Day Refrigerated Medications	Pharmacist	Nexia: Ship Pending	Review FedEx Priority Overnight to ensure all specialty prescriptions have been shipped that need to be shipped **SAME** Day
4:30p	FedEx Express Driver departs					

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4. What is not a variable to consider when coordinating between remote-hybrid and on-site teams?

0

0%	0%	0%	0%	0%
How current systems need to adapt	How teams will communicate	What information automatically transmits between systems	Timing	Who is staffing on any given day

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Moderate | Visual settings | Edit

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Questions?

0

Nobody has responded yet.

Hang tight! Responses are coming in.

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