IV Got It!

Elevating Remote Oncology Verification

Presented by:

Caitlin Jones, PharmD, BCPS, LSSGB
Pharmacy Manager
Northwestern Medicine

Michal Stachulak, PharmD, BCPS
Pharmacy practice Coordinator
Northwestern Medicine

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1

Disclosures

The speakers have no conflicts of interest with ineligible companies to disclose.

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2

Learning Objectives

1. Describe the change management process to implement remote oncology order verification across multiple sites.

2. Discuss outcomes seen in turnaround times, workflow efficiencies, and team wellbeing with implementation of a remote oncology order verification solution.

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3

Health System Background

Northwestern Medicine is a non-profit academic health system in Illinois anchored by its flagship, Northwestern Memorial Hospital in Chicago.

- **Overview and Structure**
  - **Locations:** 11 hospitals and hundreds of outpatient sites across the Chicagoland area.
  - **1** Academic Medical Center
  - **10** Community Network Hospitals
- **System Oversight**
  - Network hospital cancer center pharmacies are staffed and managed under the leadership of the inpatient pharmacy team; providing operational oversight, staffing coordination, and management support.

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Health System Background

Pilot Focus

- Three Community Network Hospital pharmacies
  - Sites A - C
- Two freestanding outpatient cancer centers
  - Sites D - E

Pilot Goal Statement

- Provide **remote pharmacist support for five cancer centers**, the majority operating with a single onsite **pharmacist. Improving break coverage**, enabling second pharmacist verification when needed, enhancing patient safety, and **ensuring timely oncology order processing** without increasing onsite staffing requirements.

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Situation – Capacity versus Demand

Pre-Implementation

Multiple sites experiencing incremental growth in cancer center volumes resulting in **partial FTE additions** to budgeted FTE projections. **Site A anticipating clinic expansion** in next fiscal year.

	A	B	C	D	E
Productive Pharmacist FTE	1	1	2	2	1
Productive Technician FTE	1	1	2	2	1
Productivity Index	**113%**	**103%**	**124%**	**112%**	**147%**
Productive FTE Impact	**0.27**	**0.05**	**0.65**	**0.52**	**0.93**

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6

Situation – Capacity versus Demand

Pre-Implementation

Further review of current practices revealed opportunities to improve break and sick call coverage.

	A	B	C	D	E
Productive Pharmacist FTE	1	1	2	2	1
Productive Technician FTE	1	1	2	2	1
Break Coverage	**Schedule Dependent**	**Schedule Dependent**	**Schedule Dependent**	**Schedule Dependent**	**Schedule Dependent**
Sick Call Coverage	**Inpatient**	**Inpatient**	**Inpatient**	**Inpatient**	**Inpatient**

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7

Background – Current State

Pre-Implementation

One pharmacist, MANY responsibilities

- First and second verifications of orders
- Mid-prep, first, and second product verifications
- Working with nurses and providers
- Working up future patients and verifying inventory
- Treatment plan changes and adjustments
- Product delivery
- Communicating with other pharmacy staff

	A	B	C	D	E
Productive Pharmacist FTE	**1**	**1**	2	2	**1**

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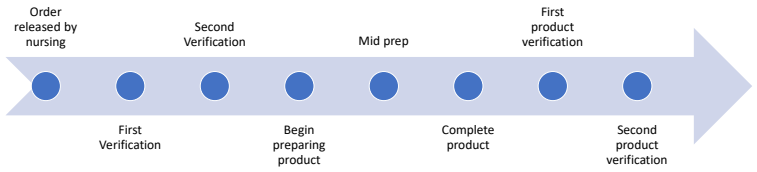
8

Verification Process Overview

Pre-Implementation

From an Order to a Completed Product



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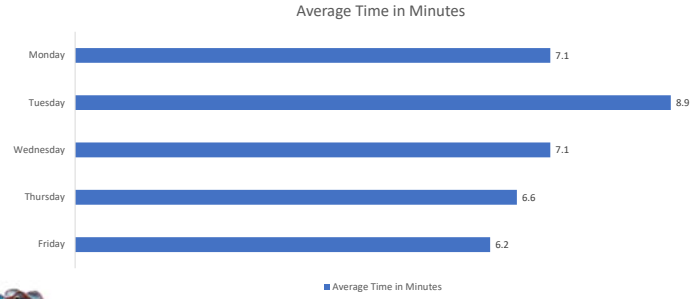
9

Turnaround Time from Prepped to Checked

Pre-Implementation (March - May 2025)



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Implementation of Remote Order Verification

Assessment of Current State

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11

Learning Objective #1

Describe change management process to implement remote oncology order verification across multiple sites.

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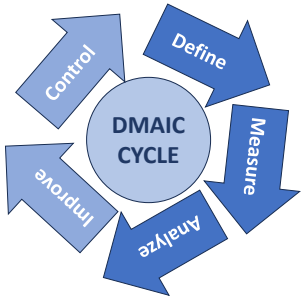
12

Gap Analysis and Change Management

Resources to Start

- DMAIC Explained Simply: The Heart of Six Sigma
- **Jim Hemerling: 5 ways to lead in an era of constant change | TED Talk**
- **Continuous process improvement: Penny Weller at TEDxKalamazoo**
- **A sixth sense for project management | Tres Roeder | TEDxCWRU**
- Great Leadership Is a Network, Not a Hierarchy | Gitte Frederiksen | TED - YouTube
- Linda Hill: How to manage for collective creativity
- Teams Need Leadership, Not Leaders | Michael Morand | TEDxPrinceton
- Tom Wujec: Got a wicked problem? First, tell me how you make toast



6. *DMAIC: the effective Lean Six Sigma Project Approach*. (2025, February 1). Lean Six Sigma Group.

13

Define

Pre-Implementation

Stakeholders	Scope	Identify
Project manager	**Free-standing cancer center**	Implementation phasing
ADC report expert	Inpatient oncology unit	Meeting cadence
EHR report expert	Hospital cancer center	Project documentation needs
IT data team		Project tracker
Local leader – RX Operations		Stakeholder updates
Local leader – RPh Oncology Lead		
Local leader - CPhT Oncology Lead		

14

Define – Pilot Planning

Pre-Implementation

Remote Oncology Workgroup Deliverables:

- **Identify Local Leads and Support Team Members**
- **Draft Pilot Model**
  - Define on-site versus remote responsibilities
  - Set meeting frequency and standing times
  - Establish decision rights and escalation pathways
  - Identify opportunities for standardization
- **Coverage and Downtime**
  - Develop technology downtime workflows
  - Define call-in coverage process
  - Establish planned absence coverage expectations
- **Training and Sustainment**
  - Create initial cross-training plan
  - Establish on-going cross-training and competency maintenance

15

Measure – EMR Metrics

Pre-Implementation

Establish Baseline Performance

Validate the Measurement System

Metric	Definition	Date Type	Size and Frequency	Data Source/ Tool	Owner
Product Turnaround Time (TAT)	**Total minutes elapsed from product being prepared to checked**	Continuous (Minutes)	100% of patients over 90-days	EMR Report	Local Leader – RX Operations
Dispense Preparation Compliance (%)	**Percentage of medications with dispense code "IVPB" with both dispense preparation and dispense check completed**	Discrete (Pass/Fail)	100% of medications over 90-days	EMR Report	Local Leader – RX Operations
Team Wellbeing Score	**Score measuring burnout risk and workload balance on a 1-5 Likert scale**	Continuous (Interval Scale Avg)	Sampled pre and post implementation	Survey	Local Leader – RX Operations

16

Measure – Team Wellbeing Surveys

Pre-Implementation

Online surveys sent **pre and post implementation** to team leads, support members, and technicians.

Focus on perception of improved metrics, wellbeing, and continued opportunities.

Strategic Value of Adding Wellbeing to DMAIC

- **Correlating TAT and Burnout:** Look for threshold limits. When TAT drops below a certain duration, the Team Wellbeing Score sharply declines, indicating that the speed is being achieved via unsustainable human effort rather than a true process optimization.
- **Compliance vs. Friction:** Drop in wellbeing may correlate with drop in process compliance. If compliance rules are too repetitive, employees experience friction, skip steps to save time, and experience lower job satisfaction.
- **Sustainable Controls (Control Phase):** Monitoring team wellbeing alongside process outputs ensures improved state is sustainable long term.

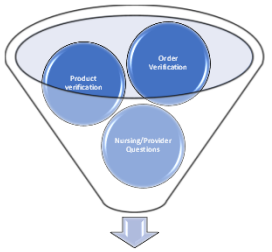
17

Analyze - Challenges of the Solo Model

Pre-Implementation

- Problem: Single oncology subject matter expert pharmacist (SME) responsible for provider order verification. **Bottleneck and limited redundancy**.
- Problem: Single oncology SME responsible for product verification. **Competing priorities and workflow constraints.**
- Problem: Nursing and provider education, clinical questions, and therapy clarifications are routed through one pharmacist. **Frequent interruptions and reduced verification efficiency.**
- Problem: Meal break coverage is dependent on gaps in the patient schedule. **Inconsistent and increased fatigue risk.**
- Problem: Inpatient pharmacy provides PTO and sick-call coverage. **Operational strain on both teams.**

Problem: Solo pharmacist staffing limits flexing during high-volume periods. **Workload variability and reduced operational resilience.**



Solo Oncology Pharmacist

18

Improve – Workgroup Deliverables

Implementation

- ☑ **Identify Local Leads and Support Team Members**
- ☑ **Draft Pilot Model**
  - Define on-site versus remote responsibilities
    - On-site pharmacist completes first order and product verification checks, communicates with providers.
    - Remote pharmacist completes second order and product verification checks, communicates with on-site pharmacist.
  - Set meeting frequency and standing times
    - Bi-weekly, afternoon Teams calls with minutes and action items emailed to the group
  - Establish decision rights and escalation pathways
    - Teams channel created with all oncology pharmacists and technicians.
    - Daily Loop component created at each local site with remote pharmacist included.
    - Remote pharmacist escalates concerns to on-site pharmacist. May communicate directly with compounding technician.
  - Identify opportunities for standardization

19

Improve – Workgroup Deliverables

Implementation

- ☑ **Coverage and Downtime**
  - Develop technology downtime workflows
    - Revert to draw-back method. Remote pharmacist to convert to first checks.
  - Define call-in coverage process
    - Local pharmacy leadership to call-in remote pharmacist to short staffed site.
  - Establish planned absence coverage expectations
    - Communicate with team in advance. All sites revert to historical workflows.
- ☑ **Training and Sustainment**
  - Create initial cross-training plan
    - Site visits completed. Job aide created. Procedures updated for new hire onboarding.
  - Establish on-going cross-training and competency maintenance

20

Improve – Product Image Standards

Image 1 - Bag and Ingredient Check
- Diluent bag
- Specialty tubing, if applicable
- Drug vial(s)
- Diluent vial(s)

Image 2 – Lot and Expiration Check
- Diluent bag
- Specialty tubing, if applicable
- Drug vial(s) turned with lot and expiration visible
- Diluent vial(s) turned with lot and expiration visible
- Filter needles/straws, if applicable

Image 3 - Diluent Volume Check
- Diluent bag
- Specialty tubing, if applicable
- Ingredient vial(s)
- **Diluent volumes** to be injected drawn up in syringes(s)

Image 4 - Drug Volume Check
- Diluent bag
- Specialty tubing, if applicable

Ingredient vial(s)
- **Drug volumes** to be injected drawn up in syringes(s)

Image 5 - Final Product Check
- Completed product after ingredient injected
- Label affixed to product
- Port covered

A. **Compounding into an empty container**
Universal Language: When compounding with an empty container, take a photo of the container upside down.
Note: Bag type, such as non-PVC, mini-bag plus, or irrigation, must be visible in image.

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21

Improve – Capacity versus Demand

Implementation

Three sites commit to 8 hours of remote coverage per week (0.2 FTE)

	A	B	C	D	E
Productive Pharmacist FTE	1	1	2	2	1
Remote Coverage	**Mondays**	**Tuesdays**	**Wednesdays**	n/a	n/a

	A	B	C	D	E
Productive Pharmacist FTE	1	1	2	2	1
Productive Technician FTE	1	1	2	2	1
Break Coverage	**Remote**	**Remote**	**Remote**	**Remote**	**Remote**
Sick Call Coverage	**Remote to Site**	**Remote to Site**	**Remote to Site**	**Remote to Site**	**Remote to Site**

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22

Audience Question #1

Which of the following is not a part of the change management process used for implementation of remote oncology order verification across multiple sites?

A. Define – establishing project scope, stakeholders, objectives, and identifying items outside the scope of the pilot.
B. Measure - conducting a data validation period to ensure dispense preparation compliance is only applicable to medications compounded in the cancer center.
C. Improvise – identifying cause of compounding delays.

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23

Learning Objectives

Discuss outcomes seen in turnaround times, workflow efficiencies, and team wellbeing with implementation of a remote oncology order verification solution.

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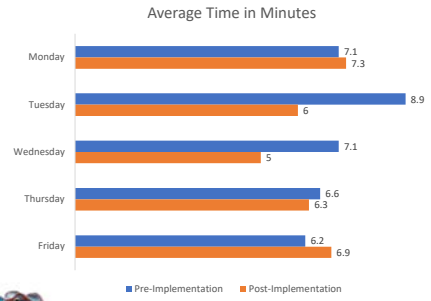
24

Turnaround Time from Prepped to Checked

Post-Implementation (May-July 2026)



Total Number of Orders

Day	Pre	Post
Monday	237	↑ 282
Tuesday	316	↑ 370
Wednesday	341	↑ 366
Thursday	235	225
Friday	196	↑ 237

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25

Improve – Regional Standardization

Implementation

One health system with inter-site variability

Streamlining the following practices:

- Overfill practice
- Dose rounding
- Lab parameters
- Verification
- Documentation

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26

Improve – Communication Tools

Implementation

- **Teams**
  - Shared teams channel to communicate start of shift, lunch, and signing-off
  - Direct contact with site for order clarification
  - Teams Loop
- **Order Queue - Comments**
  - Quick and easy location for sharing comments
    - Example: “ok to treat with ANC 1.1 – see plan communication”
- **Patient’s Chart**
  - Plan communication
  - FYI notes

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27

Control

Post-Implementation

One pharmacist, LESS responsibilities

- First and verifications of orders
- Mid-prep and first product verifications
- Working with nurses and providers
- Working up future patients and verifying inventory
- Treatment plan changes and adjustments
- Product delivery

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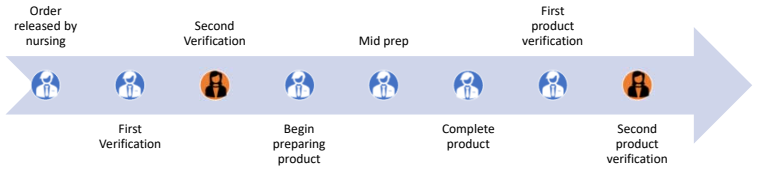
28

Control

Post-Implementation

From an Order to a Completed Product

Second order verification and product verification transitioned to remote pharmacist



29

Control – Team Wellbeing Survey

Post-Implementation

100% Faster Verification
All respondents rated verification time significantly faster.

100% Peak-Volume Efficiency
All respondents agreed work is completed more efficiently.

88% Better Meal-Break Access
7 of 8 reported somewhat or significantly improved access.

BEFORE

- Verification delays
- Waits for mid-prep and second checks
- Frequent task switching and interruptions
- Break coordination across sites

AFTER

- Significantly faster verification, mid-prep, and second checks
- More continuous compounding workflow
- More time for provider support and clinical work
- Reduced stress and improved ability to take breaks

STAFF IMPACT

100%

Agreed workflow efficiency improved

100% also agreed work-related stress was reduced

FUTURE OPPORTUNITIES Expand Consistent Coverage • Standardize Site Procedures • Address Cleanroom Capacity and Workflow Interruptions

Source: N/NW Remote Oncology Order Verification Post-Implementation Survey

30

Control – Team Wellbeing Survey

Post-Implementation

Before: Verification delays affected compounding

All respondents experienced delays at least sometimes before implementation

FREQUENCY OF PRE-IMPLEMENTATION DELAYS

MOST COMMON PRE-IMPLEMENTATION BARRIERS

After: Key turnaround steps became faster

Every respondent rated all three measured turnaround steps significantly faster

POST-IMPLEMENTATION TURNAROUND

BROADER STAFF OUTCOMES

ADDITIONAL IMPROVEMENT 100% Improved Peak-Volume Efficiency • 100% Reduced Work-Related Stress • 88% Improved Meal-Break Access

Source: N/NW Remote Oncology Order Verification Post-Implementation Survey

31

Audience Question #2

After implementation of the remote oncology order verification model, which responsibility was shifted from the on-site pharmacist to the remote pharmacist based on survey respondents?

A. Turnaround times improved on all days, with some improved workflow efficiencies and no reduced work-related stress
B. Turnaround times improved on most days with remote pharmacist coverage, all reported improved workflow efficiencies and reduced work-related stress
C. Turnaround times improved on all days, with no improved workflow efficiencies or improved meal-break access

32

Control

Post-Implementation

Future State Opportunities

- Continued procedure and policy standardization
- Expansion to 5 days per week remote coverage
- Adaptation with future 1.0 FTE site additions
- Data tools and reporting
- Solicit nursing feedback on perceived TAT and communication
- Inclusion of nursing team for scheduling adjustments on days without remote coverage

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33

<Mo/Yr>

Key Initiative: Implementation of Remote Oncology Order Verification

Project Phase:
PM Leader:
Executive Sponsor:

Overall project status	Current Mo.	Last Month
Status		

DEFINE

- Identify local and system stakeholders (e.g., project manager, executive sponsor, ADC report expert, EHR report expert, IT data team, Rx operations, RPh oncology lead, tech oncology lead)
- Define project scope, identify implementation phasing, organize project documentation
- Identify method and venue for roll-out and review education/communication needs

MEASURE

- Data validation period
- Document the process for EMR dispense preparation and photo capture
- Collect baseline data (e.g., TAT, dispense prep compliance, wellbeing survey)

ANALYZE

- Analyze process breakdowns, workflow issues
- Identify policy/procedure issues and adjust, as necessary
- Review team feedback; consider check-ins or open office hours
- Create Microsoft Teams channel

IMPROVE AND CONTROL

- Generate job aides to address new hire onboarding; update any EMR templates to be more clear/concise
- Update polices and procedures, standardize training, downtime planning
- Validate benefits of increased TAT and wellbeing for pharmacy
- Validate benefits of increased TAT and wellbeing for nursing
- Determine report out metrics, venue, and cadence

Key Milestones

Key Milestones	Target	Status

Status Key			
Complete	Delayed	On Track	At Risk

Project Deliverable Tracking Log

Change Type	*Change Title/Description*	*Approved By*	*Approved On*

34

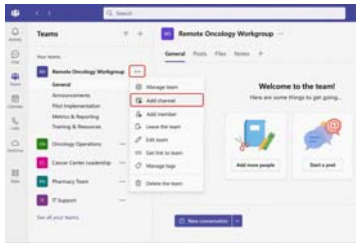
34

Microsoft Teams Channel + Microsoft Loop

Visual quick guide for setting up the Remote Oncology Workgroup collaboration space

1 Create the Teams channel

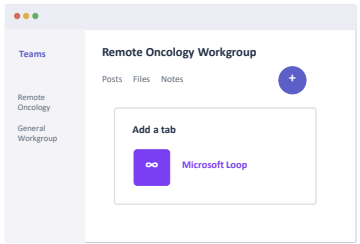
Select the team's More options (...) menu, then choose Add channel.



Name: Remote Oncology Workgroup • Type: Standard

2 Add Microsoft Loop

In a standard channel, select + in the header, choose Apps, then select Loop.



Create pages for agendas, decisions, action items, and training

35

Resources

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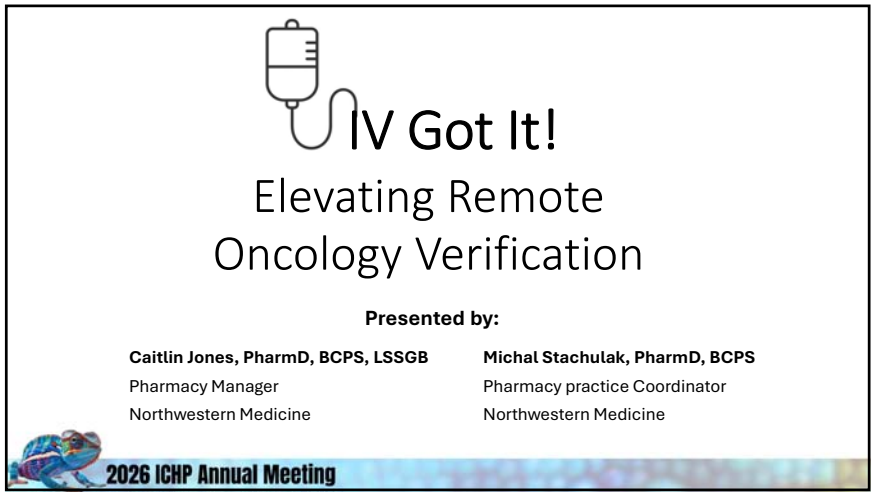
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37