

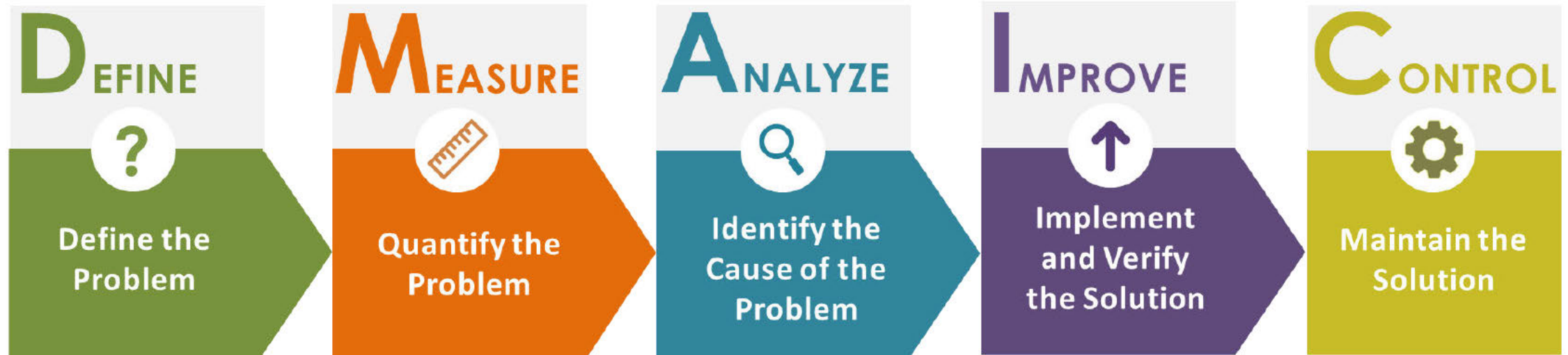
# Improve Medications Received Timely - Other Medications

CCHCS LEAN SIX SIGMA PROGRAM

GREEN BELT |

AVENAL STATE PRISON

# Lean Six Sigma Methodology



The Lean Six Sigma DMAIC methodology is a proven improvement approach used to address problems in existing processes where the root causes of those problems are unknown. The approach focuses on understanding the process, analyzing factors that contribute to the problems, identifying root causes, designing and implementing interventions, and establishing a structure to sustain high performance.



# Define Phase

*Define and scope the problem, identify the key metric and the team that will work the project, and create the project charter.*

# Project Background

- A priority of ASP is to ensure our institution meets community standards and provides all patient's access to medications as needed for less critical conditions, such as, providing allergy medications, ointments for skin conditions, vitamins, non-steroidal creams, pain medication, eye drops, etc.
- ASP identified the medications mentioned above, also known as, "other medications" as having a low performance of an average of 81% for the past several months on the Dashboard metric.
- The initial process impacted ASP's compliance showing as below the Statewide average of 90%.
- ASP's goal of 95% of patients receiving other medications timely was not being achieved as desired.

# Project Charter

- **Problem Statement:** Over the past several months, ASP has averaged 81% on a statewide measure of other medications received timely. When medications are not provided timely, it will have an impact on patients, Nursing staff, Pharmacy staff, and providers.
- **Project Objective:** To improve other medications received timely, ensuring patients receive prescribed medication timely as ordered **95%** of the time.
- **Primary Metric:** Percent of “other” medication doses shall be provided to patients timely as ordered. The measure will continue to be monitored at least three months after reaching 95%.

# Data Collection Process

- **Data is discrete:** compliant or non-compliant.
- **Health Care Dashboard:**
  - Benchmarking established via HC Dashboard requirements.
  - All process steps listed in the HC Dashboard glossary are required for compliance.
- **Sample Size:** Initially data was collected for a 6-month period, February 2023 through July 2023. Moving into the analyze phase, 283 non-compliant medication administrations were selected and reviewed for the month of August 2023.

# Team Members

- Champion: [REDACTED], Chief Medical Executive
- Process Owner: [REDACTED], Chief Physician Surgeon
- Executive Sponsor: [REDACTED] Chief Executive Officer
- Team Members:
  - [REDACTED], Health Program Specialist
  - [REDACTED], Chief Medical Executive
  - [REDACTED], Chief Physician & Surgeon
  - [REDACTED] Pharmacist In Charge
  - [REDACTED], Chief Nursing Executive
  - [REDACTED] Supervising Registered Nurse III
  - [REDACTED], Licensed Vocational Nurse
  - [REDACTED] Licensed Vocational Nurse

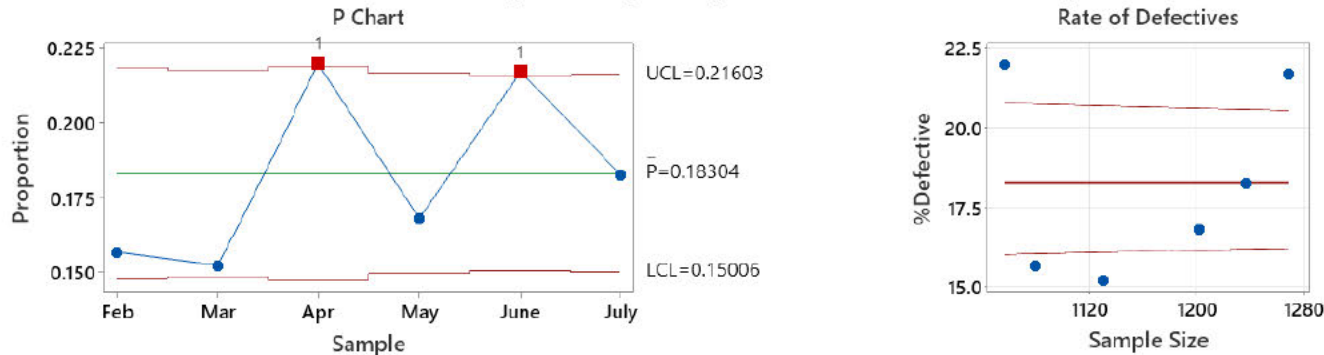


# Measure Phase

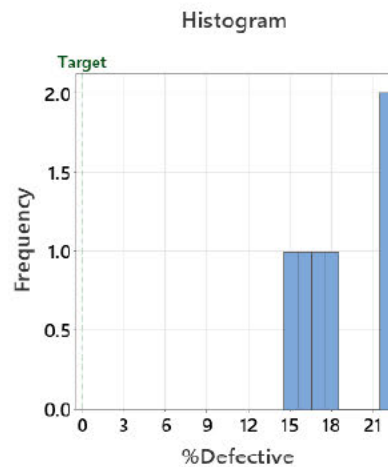
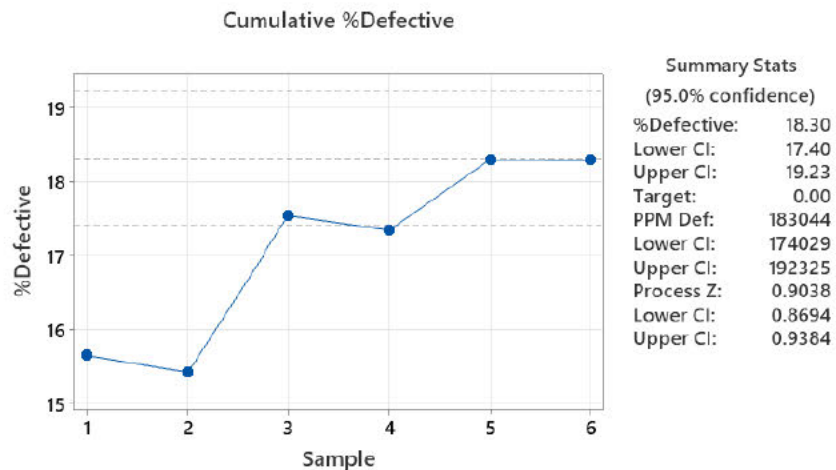
*Gather the process inputs, set up and validate the measurement system, and determine the baseline for the primary metric.*

# Baseline Capability/Performance

## Binomial Process Capability Report for Non-Compliance



Tests are performed with unequal sample sizes.

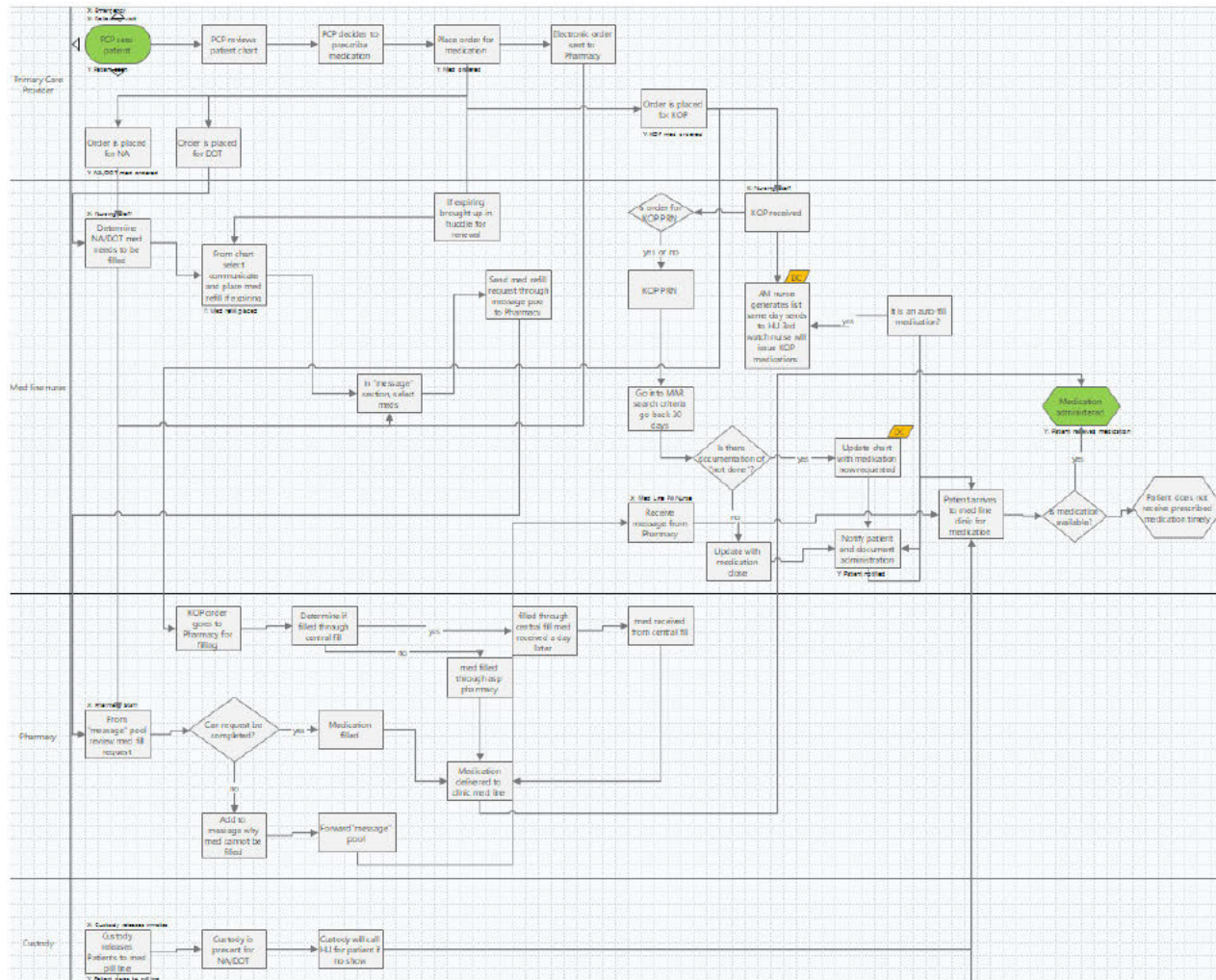


- This data shows a defective rate of **18.30%**.
- 95% confident the average non-compliance will fall between 17.40% defective rate - 19.23% defective rate.
- April 2023 and June 2023, the non-compliance rate increased, represented as outliers in red.

8/22/2023 [Redacted]

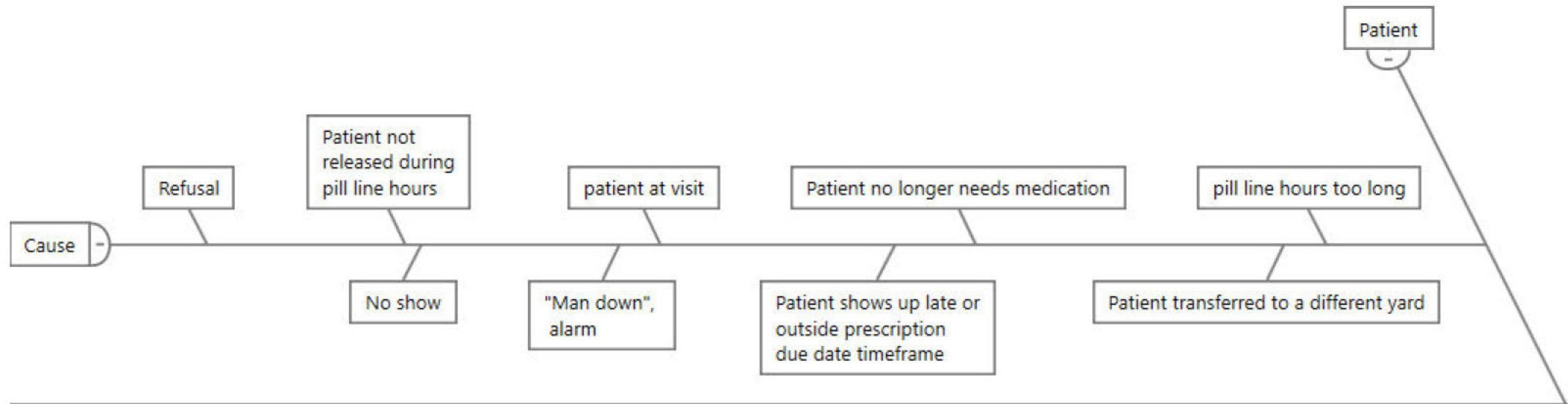
Measure Name	6 Mo Avg	Trend	FEB	MAR	APR	MAY	JUN	JUL
Medications Received Timely - By Medication Type: Other Medications	82%		84%	85%	78%	83%	78%	82%

# Initial Process Map



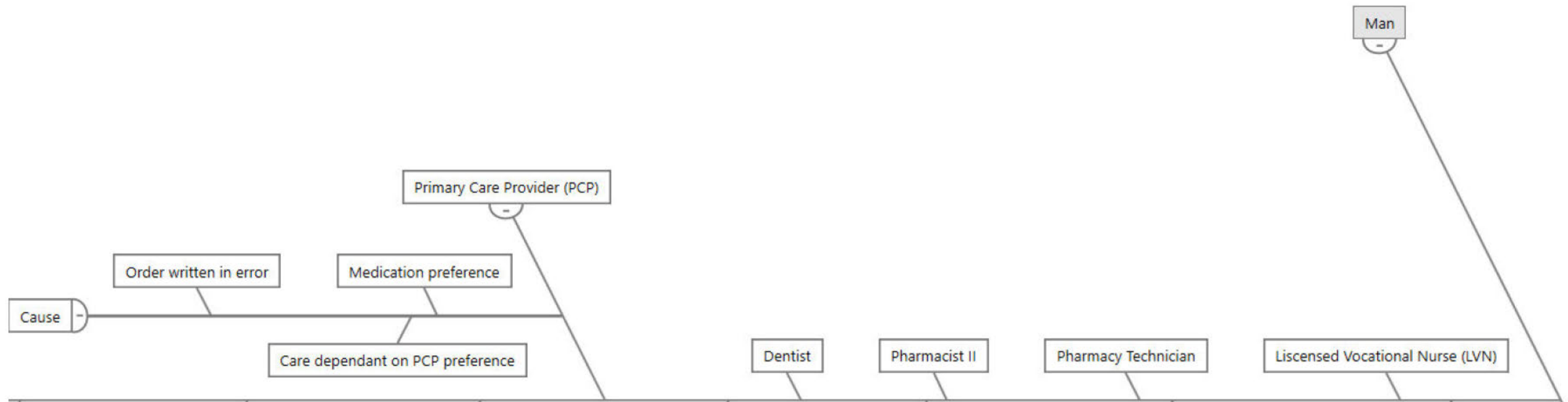
- A total of four swim lanes
- Two value added steps
  - Provider sees patient
  - Medication is administered
- Multiple steps and pathway streams
  - Rework loop may be repeated depending on the type of order placed and patient involvement.

# Brainstorming Using Fishbone



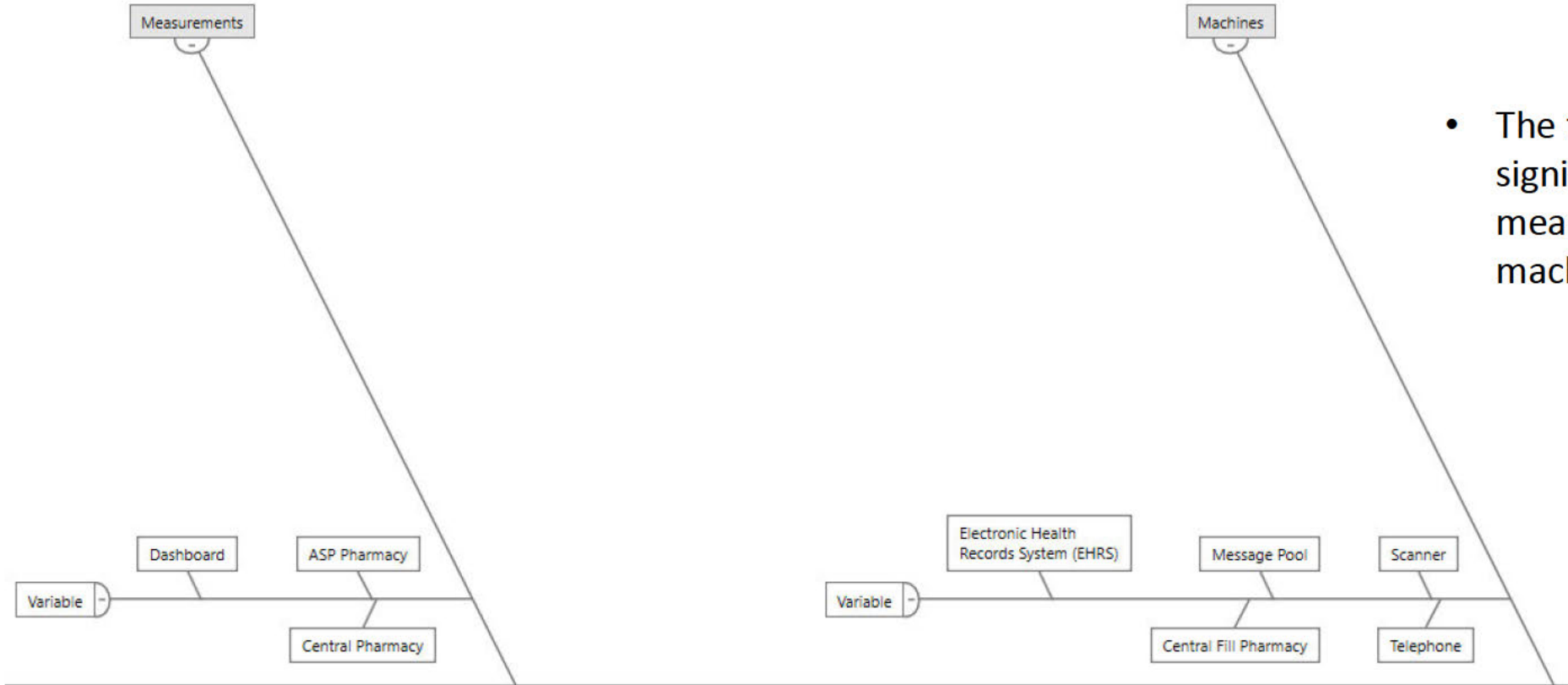
- During the team brainstorm, the team identified the patient and provider order as the significant areas impacting patient's receiving other medications timely.
  - Patient is a no show
  - Patient no longer needs the medication
  - Pill line hours too long

# Brainstorming Using Fishbone



- Provider order was the significant area impacting patient's receiving other medications timely.
  - Medication order written in error
  - KOP medication orders are not written as PRN

# Brainstorming Using Fishbone



- The team did not identify significant issues with the measurements or machines.

# Measurement System Analysis

- Data is collected from the Dashboard.
- Data is discrete; compliant or non-compliant.
- Sample: 30 yes and 30 no

## Dashboard Measurement System Analysis

Does the denominator for this metric correctly capture all the actual process opportunities?

YES

Number of "NO" errors:

0

Number of "YES" errors:

0

MSA Results and Actions:

Dashboard Data is correct and has been validated.

Samples Designated as "NO" (out of compliance)

sample	sample name	error?	root cause of error
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
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16			
17			
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27			
28			
29			
30			

Samples Designated as "YES" (in compliance)

sample	sample name	error?	root cause of error
1			
2			
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# Analyze Phase

*Analyze data to determine the critical inputs affecting the primary metric.*

# Failure Modes and Effects Analysis (FMEA) Findings

- **Medication Pill Line**

- Patient is a no show
- Patient transferred to a different yard and did not request his medication

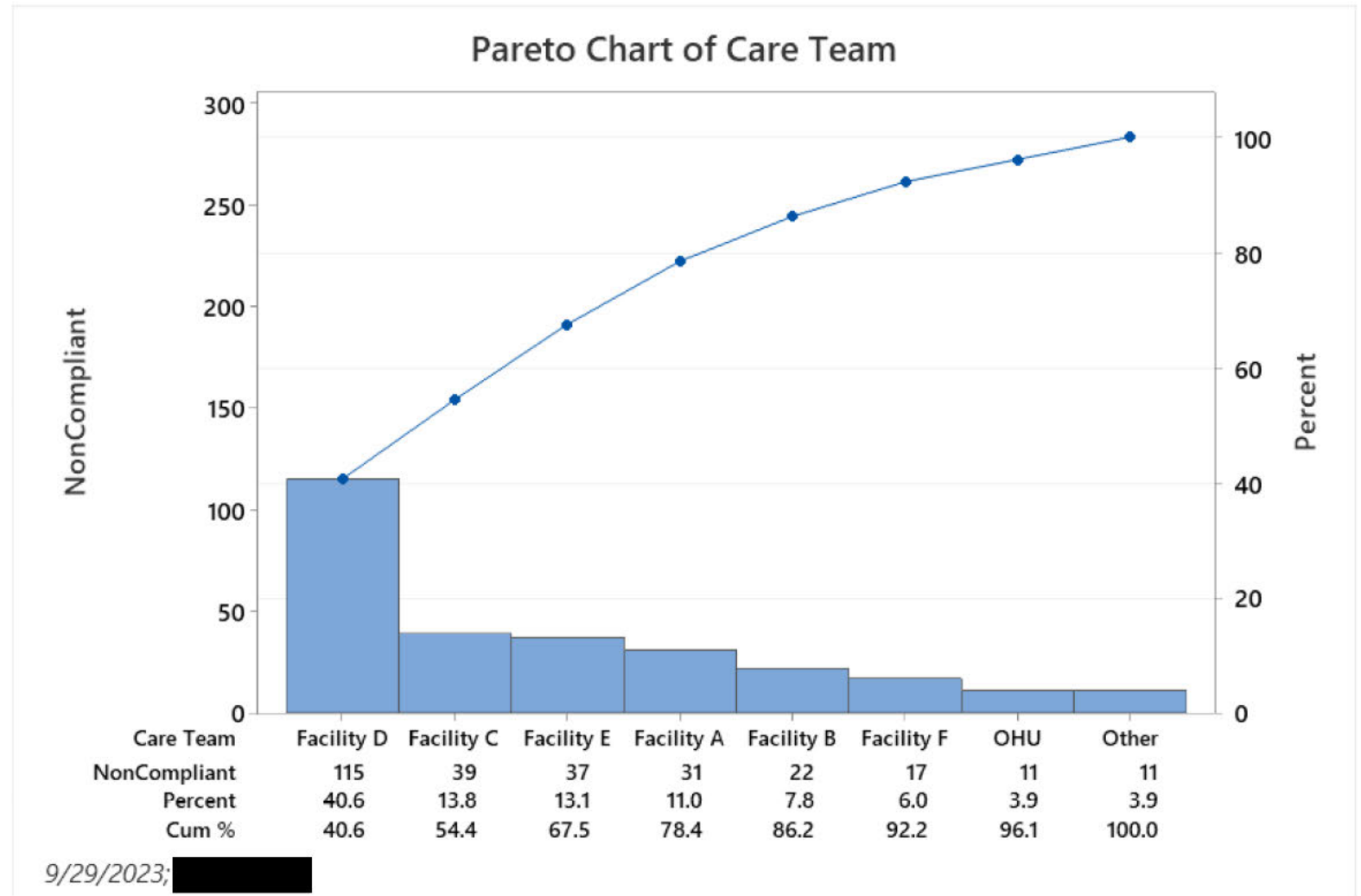
- **Provider Orders**

- KOP order written as “request refill”
- KOP request not written as PRN (As needed)

Step #	Process Map - Activity	Key Process Input	Potential Failure Mode	Potential Failure Effects	SEV	Potential Causes	OCC	Current Controls	DET	RPN	Action Reco
1	Medication Administration/ Order is placed for KOP, NA or DOT medication	KOP, NA or DOT order placed	patient may not show up at the pill line to request refill	no show/ med not given	7	priority ducat appt	9	Nurse will call Custody for patient	7	441	
2	Medication Administration/ Delivers meds	Pharmacy delivers medications to medication pill lines	patient transferred to different yard prior to delivery time	meds are on different facility	6	patient transferred	5	no current control	10	300	
3	PCP / PCP places order for KOP Medication	KOP order placed	incorrectly ordered/not ordered as PRN (as needed)	the medication fires every month even if not needed or if patient does not pick up	9	As needed medication	10	PCP write PRN order	3	270	

# Care Team Non-Compliance

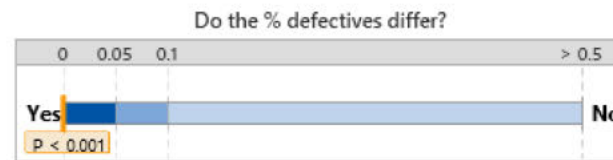
- Ran a pareto chart for August 2023 showing non-compliant medications by Care Teams
- Facility D had the highest rate of non-compliance, 40.6% of total non-compliant.



# Hypothesis Test - Care Team Compliance

- Chi-Square % Defective Test to identify if there is a difference in the defects occurring on different facilities.
- P-value  $\leq 0.05$ , there is a significant difference.
- Rejected the null hypothesis that there is no difference, and accepted the alternative hypothesis determined by the P-value.

Chi-Square % Defective Test for Test Items by Care Team  
Summary Report

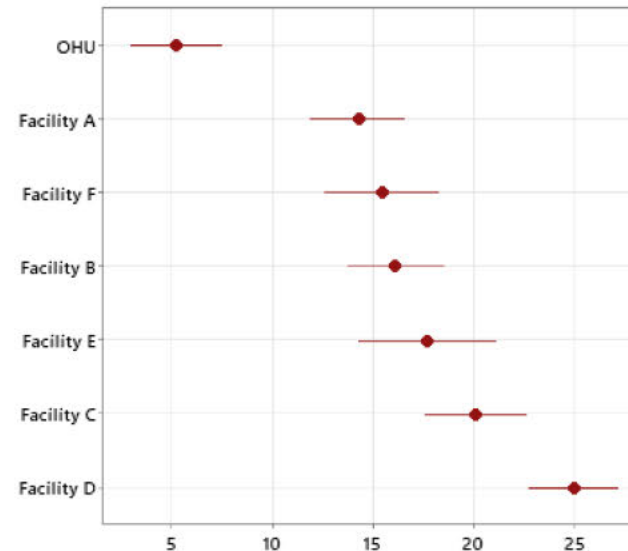


Differences among the % defectives are significant ( $p < 0.05$ ).

Which % defectives differ?

#	X	Differs from
1	OHU	2 3 4 5 6 7
2	Facility A	1 6 7
3	Facility F	1 7
4	Facility B	1 7
5	Facility E	1 7
6	Facility C	1 2 7
7	Facility D	1 2 3 4 5 6

% Defectives Comparison Chart  
Red intervals that do not overlap differ.

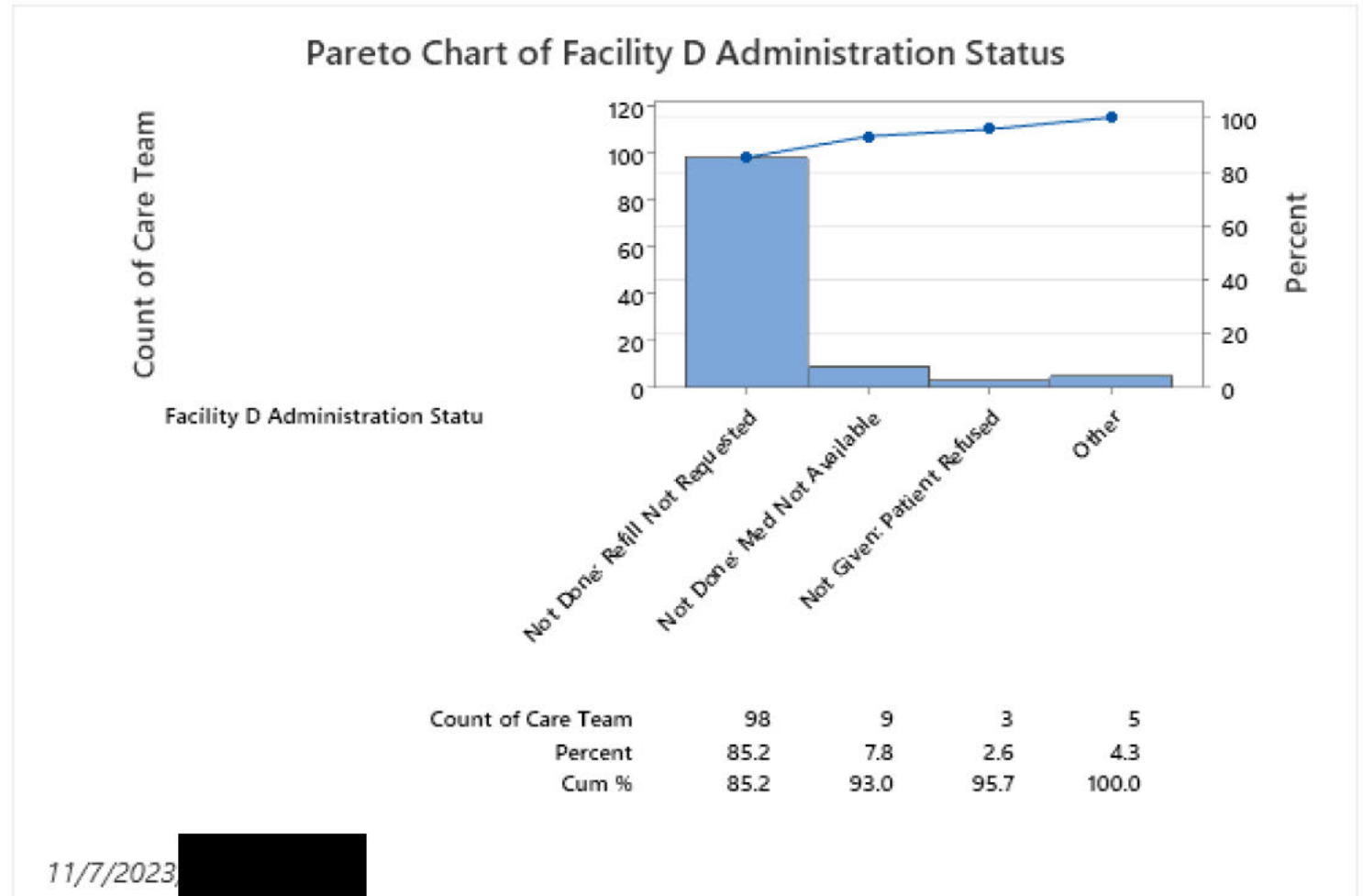


Comments

- Test: You can conclude that there are differences among the % defectives at the 0.05 level of significance.
- Comparison Chart: Look for red comparison intervals that do not overlap to identify % defectives that differ from each other. Consider the size of the differences to determine if they have practical implications.

# Key Findings 1- Facility D Non-Compliance

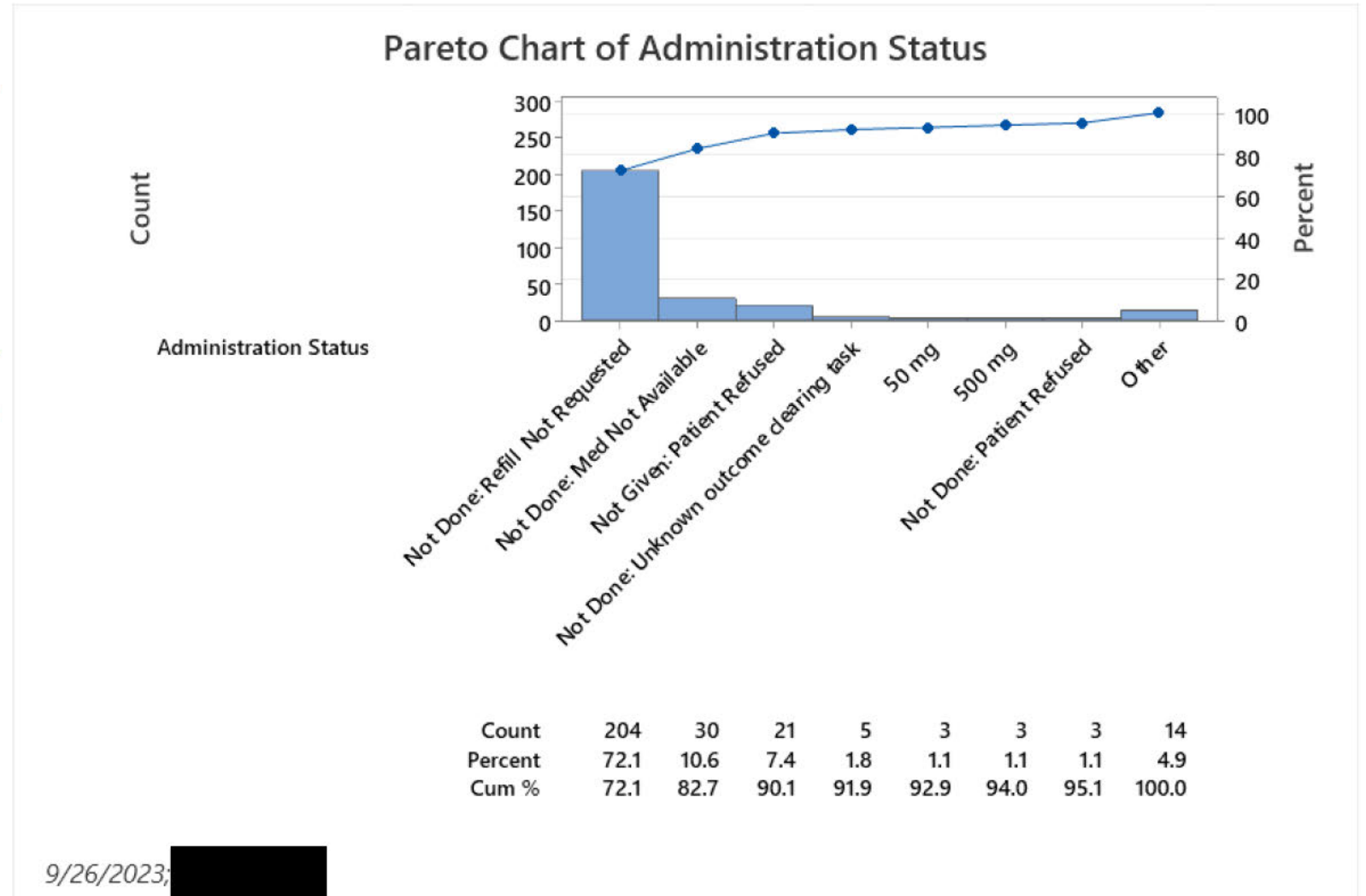
- Not Done: Refill Not Requested has the highest rate of non-compliance accounting for 85% of Facility D non-compliance.



# Key Findings 2- Factors of Non-Compliance

Pareto shows the administrative status reported for all facilities for August 2023.

- Not Done: Refill not requested has the highest rate of non-compliance, accounting for 72% of total non-compliant.



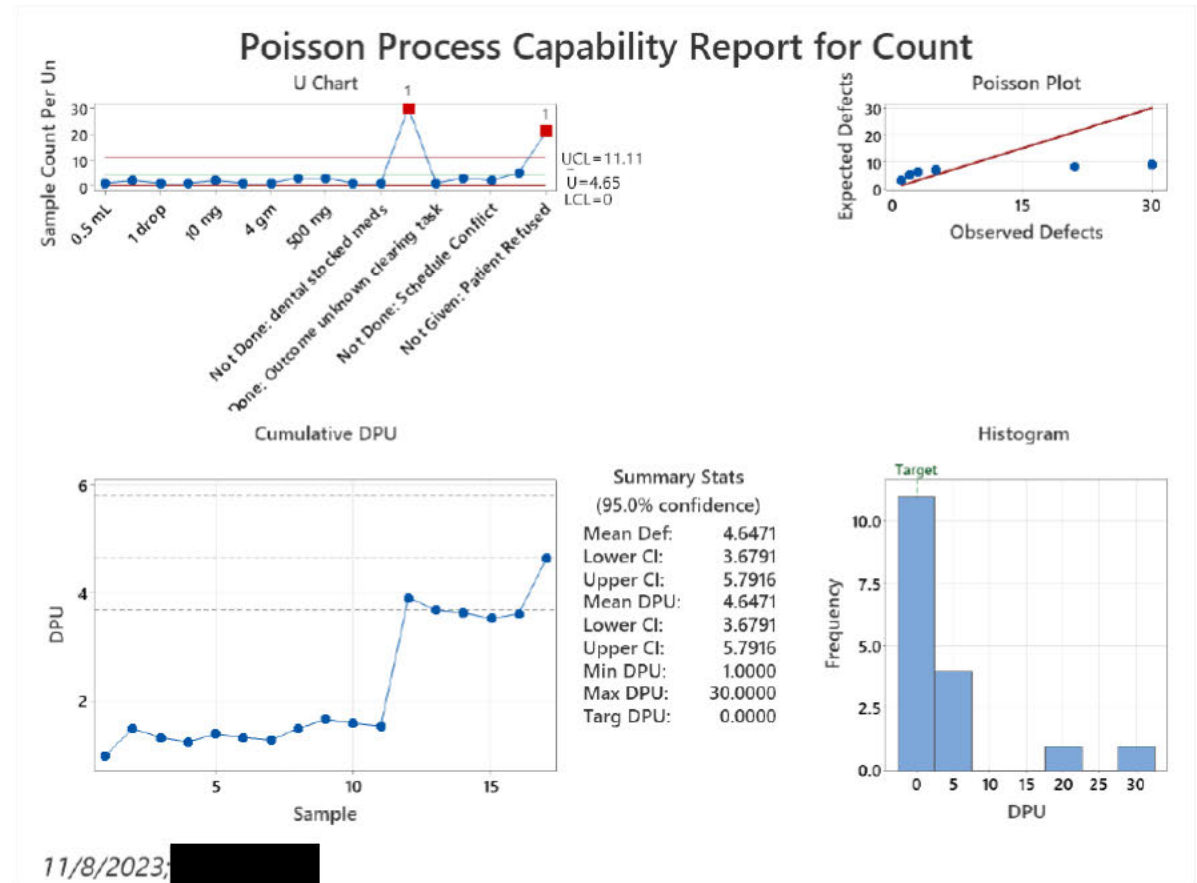
# Key Findings 3 – Survey Results

- Medication Refill Request Patient Survey delivered to Facilities D, E, and F
- In 86 of the recorded responses, the findings are:
  - Fac D - 54% of total, pill line hours are noted as too long
  - Fac E - 31% of total, pill line hours are noted as too long
  - Fac F - 43% of total, pill line hours are noted as too long

Survey Response	Facility D	Facility E	Facility F
At a family visit	0	0	0
At an appointment	1	2	0
C/O did not release the housing unit on time	3	2	1
Did not feel like picking it up	0	2	3
I forgot to pick up the medication	1	1	1
I refused the medication	1	1	0
I was at a committee hearing or board hearing	0	1	0
I was at the hospital	0	0	0
I was move to a different yard	1	1	1
I was out to court	1	0	0
No longer needed the medication	2	2	3
Other	7	6	4
Pill line hours too long	20	8	10
Grand Total	37	26	23

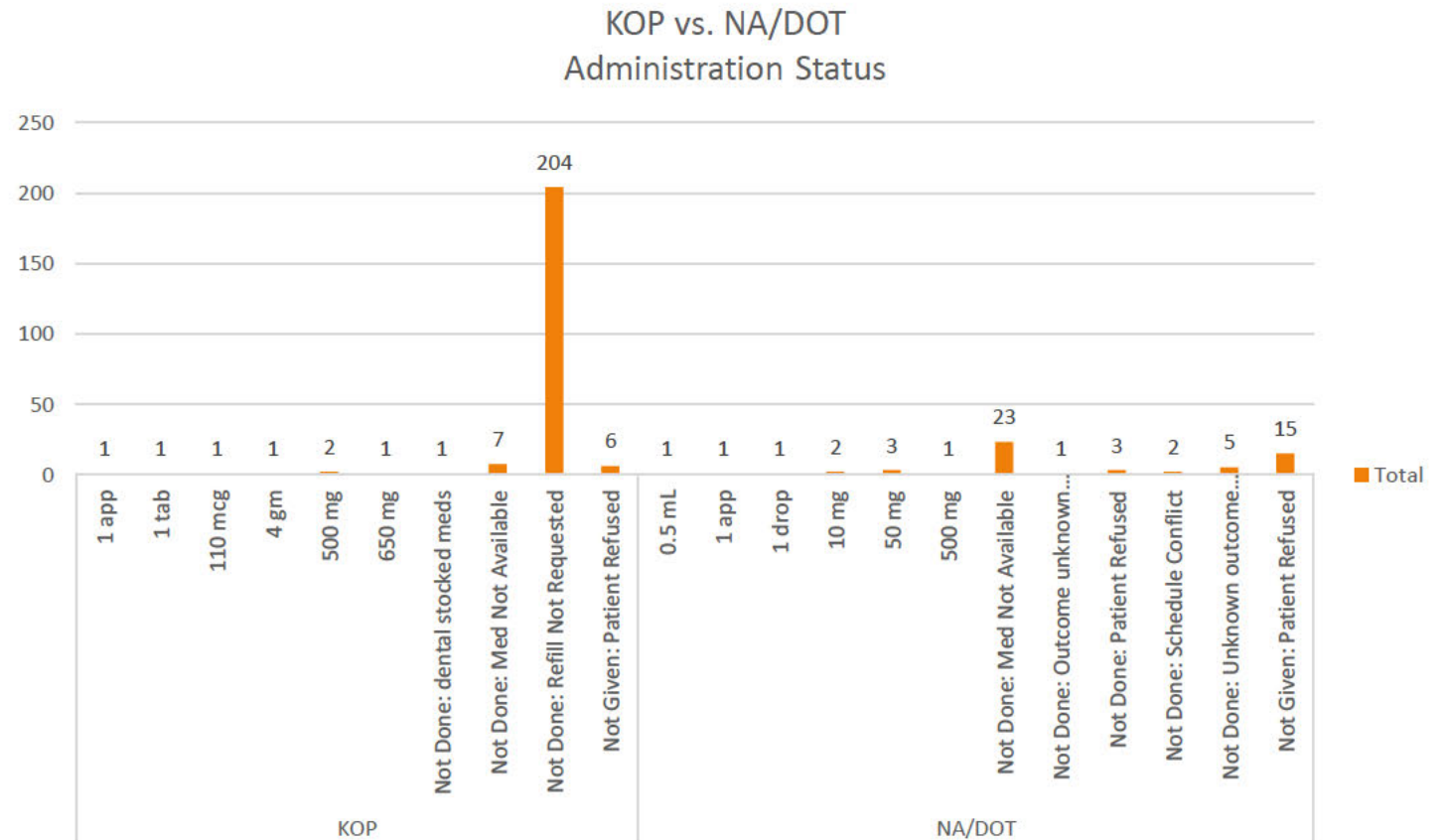
# Future Directions

- Ran a Poisson Process Capability to see the defective rate would be removing the 204 Not done: Refill not requested
  - Defective rate of 4.64%



# Not Done: Refill Not Requested KOP Vs. NA/DOT

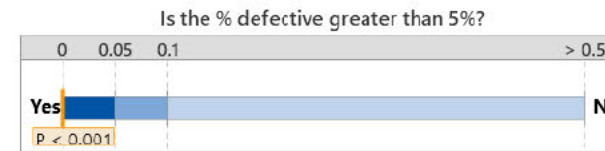
- Comparison between KOP vs. NA/DOT medication non-compliance
- Graph shows 204 Not done: Refill not requested are KOP medication orders



# Not Done: Refill Not Requested – Keep on Person (KOP) Medication Orders

- Ran a 1-Sample % Defective Test to test Not Done: Refill not requested Keep on Person (KOP) Orders not ordered as PRN (as needed) medications
  - Percent defective is greater than 5% at the 0.05 significance level
  - 12.75 defective rate
  - 95% confidence the defect rate will not be lower than 9.09%

1-Sample % Defective Test for KOP Orders Not Ordered as PRN  
Summary Report



The % defective of Test Items is significantly greater than the target ( $p < 0.05$ ).

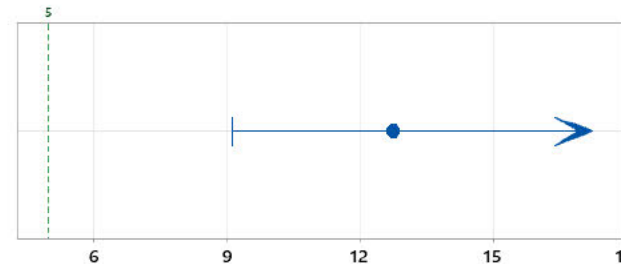
#### Statistics

Total number tested	204
Number of defectives	26
% Defective	12.75
95% Lower bound	9.09
Target	5

#### Comments

- Test: You can conclude that the % defective is greater than 5% at the 0.05 level of significance.
- CI: Quantifies the uncertainty associated with estimating the % defective from sample data. You can be 95% confident that the true % defective is greater than 9.09%.

95% Lower Bound for % Defective  
Is the entire interval above the target?



# Critical Xs

- Keep on person (KOP) medications are written as “request refill” but not marked as PRN (as needed).
  - Orders are written as “request refill” but not marked PRN resulting in a task firing each month for medications the patient no longer is needing or the patient does not show up at the pill line.
- Pill line hours too long.
  - Patient does not pick up his medication refill due to the long wait time in the pill line.
  - During monthly Executive Joint Rounding tours, patients have reported waiting in the pill lines for approximately 30 minutes.



# Improve Phase

*Identify and implement fixes for the problem, and analyze new data to validate the improvement.*

# Improvements

- When medically determined, providers will order non-essential KOP (keep on person) medications as PRN (as needed).
  - The CP&S has provided training and information to Providers during the Provider meeting.
  - KOP medications will be ordered as PRN.
- The new process has been standardized on each Facility.
  - Providers will order KOP medications as PRN.
- A Memorandum has been generated granting ASP Pharmacists authority to correct orders placed by Providers for non-essential KOP medications.
  - Pharmacists will correct KOP medications orders placed by Providers to be ordered as PRN.



## MEMORANDUM

Date: October 13, 2023  
To: All Concerned  
From: [REDACTED] Chief Medical Executive (CME)  
Subject: NON-ESSENTIAL KOP (KEEP ON PERSON) MEDICATIONS ORDERED AS PRN (AS NEEDED)

The purpose of this operational memorandum is to grant pharmacists at Arsen State Prison (ASP) the authority to correct orders placed by Facility Providers when ordering non-essential KOP medications. This memorandum provides local Pharmacists with the necessary documentation to bypass contacting the ordering prescriber when an order is placed for a non-essential KOP medication that was not ordered as PRN.

Effective immediately, ASP local Pharmacists are authorized to correct a non-essential KOP medication order to KOP PRN for all non-essential KOP medications.

Please disseminate as appropriate. If there are any questions, please contact [REDACTED]

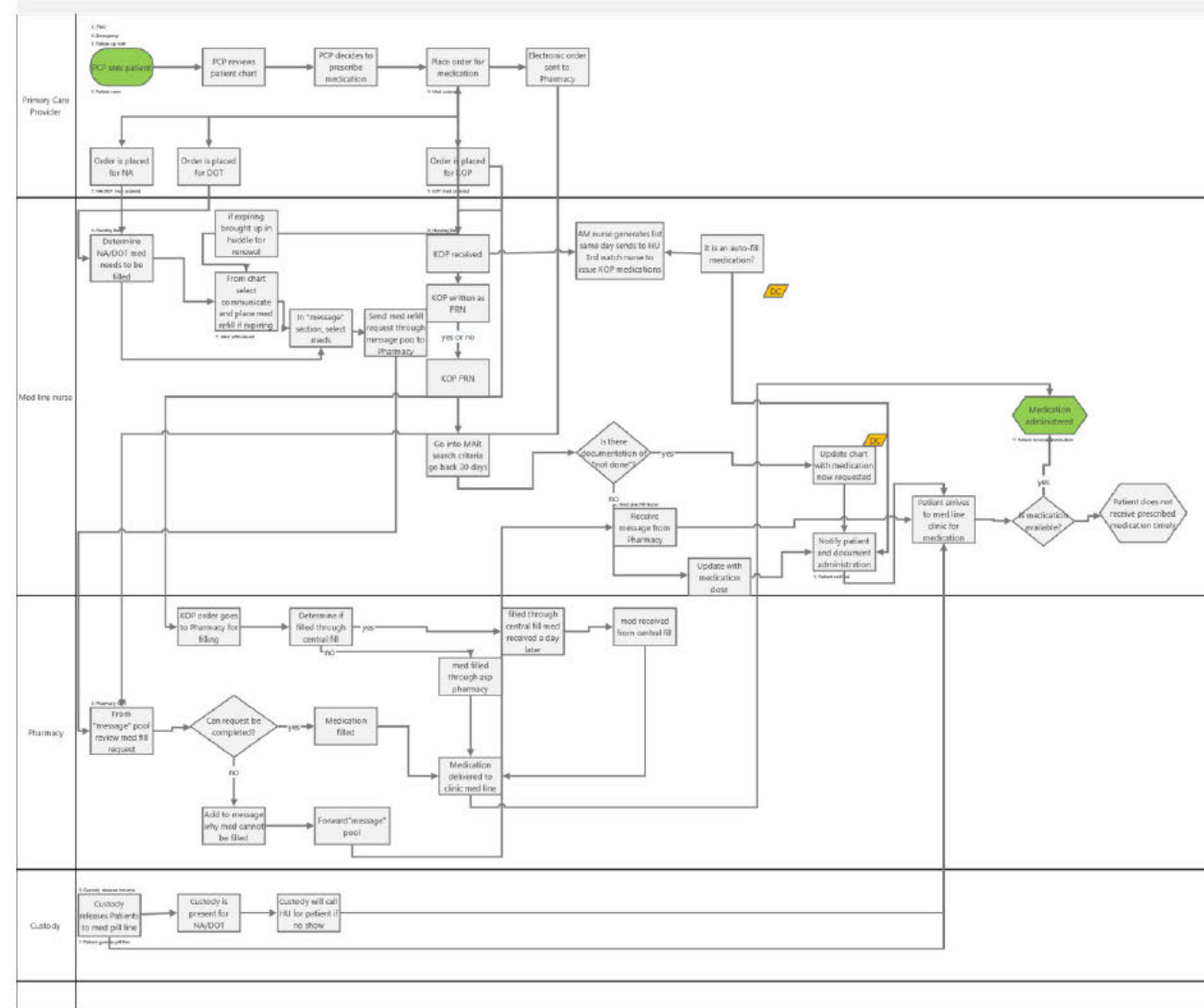


# Control Phase

*Implement controls to assure that the improvement remains permanent, and create a control plan with a sustaining and continuous improvement strategy.*

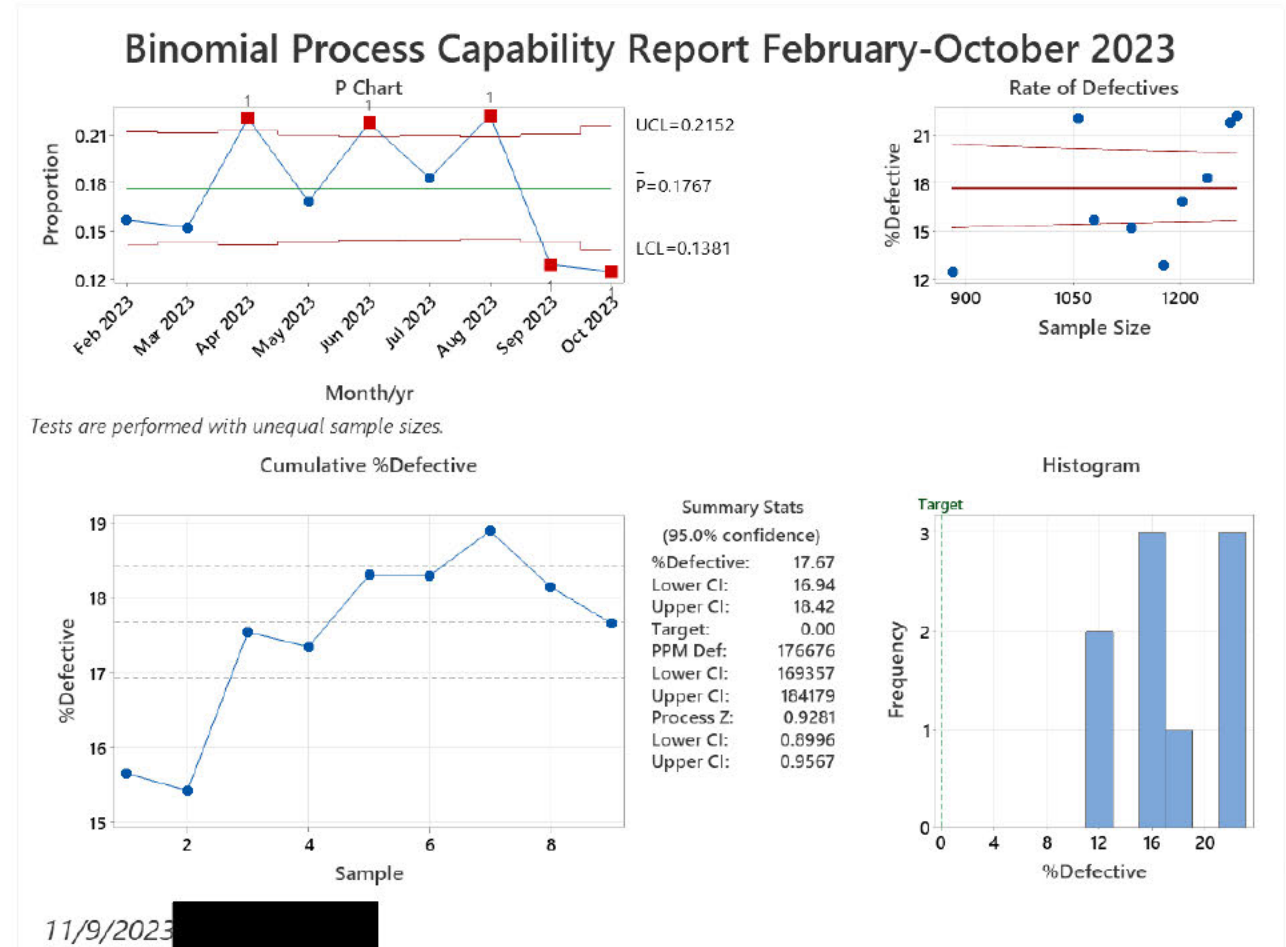
# Updated Process Map

- A total of four swim lanes
- Two value added steps
  - Provider sees patient
  - Medication administered
- Change includes Providers writing KOP medications as PRN.



# Updated Capability/Performance Analysis

- ASP has started to see improvement since implementation.
- At the start of the process, had a defective rate of 18.3%, 82%
- Currently have a defective rate of 12.73%, 87% compliance.



# Control Plan

- The improvement process will be discussed during Provider meetings.
- Training will be provided to new or onboarding staff.
- Providers are in the process of updating past medication orders needing to be written as PRN.
- If KOP medications are made PRN when indicated there will be less patients arriving at the pill line, potential shorten pill line.
- Improvement and compliance will continue to be monitored.

# A3 Performance Tracker

## A3 PERFORMANCE TRACKER

### General Information

Project Title: Improve Medications Received Timely- Other Medications performance  
 Agency/Department: CCHCS  
 Division/District/Office: Avenal State Prison  
 Process Owner: [REDACTED]  
 Executive Sponsor: [REDACTED]  
 L6S GB/BB: [REDACTED]  
 Last Updated: 11/8/23

### Problem Statement

Over the past several months, ASP has averaged 81% on a statewide measure of other medications received timely. When medications are not provided timely, it will have an impact on patients, Nursing staff, Pharmacy staff, and providers.

### Primary Metric

Percent of "other" medication doses shall be provided to patients timely as ordered.

### Goal

Improve compliance and ensure patients receive prescribed medication timely as ordered.

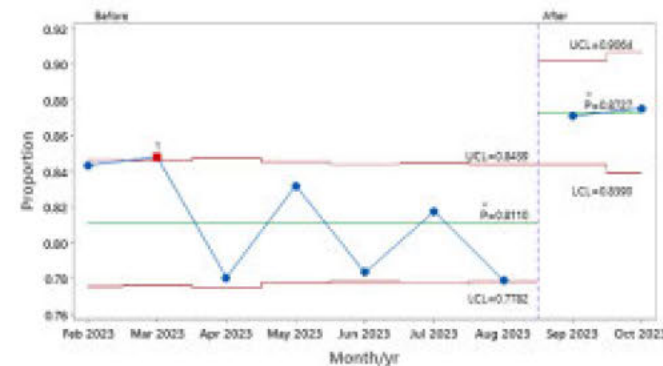
### Root Causes (Critical Xs)

- KOP Prescription order is not written as PRN
- Patient does not show up to the pill line due to pill line hours, movement, medication no longer needed, etc.

### Solution Implementation Tracking:

Item	Status
Providers trained on improvement process during Provider Meeting	Implemented
Training will be provided to new or onboarding staff	In progress
Providers are in the process of updating past medication orders to PRN	In progress
Dashboard metric will continue to be monitored	In progress

P Chart of Yes\_1 by Implementation



Tests are performed with unequal sample sizes.

Baseline Average: 18.3% defective rate, 82% compliance.  
 Current Average: 12.73% defective rate, 87% compliance.

# Project Impacts

- Reduces medication adherence non-compliance
- Developed a standardized process for all Providers
- Developed a standardized process on all facilities

# Project Summary and Lessons Learned

- Throughout the project, our team discovered the following:
  - There are patients who are no longer needing their non-essential medication; however, a task was still firing for the medication to be pulled by staff and the patient would not pick up the medication.
  - Patients do not want to wait in the pill line for long periods of time to pick up their medication.
  - A significant amount of rework and wasted time will be reduced.

## Green Belt Contact Information

- █ [REDACTED]
- █ [REDACTED]
- █ [REDACTED]
- █ [REDACTED]