Improving Timeliness of Patient Care

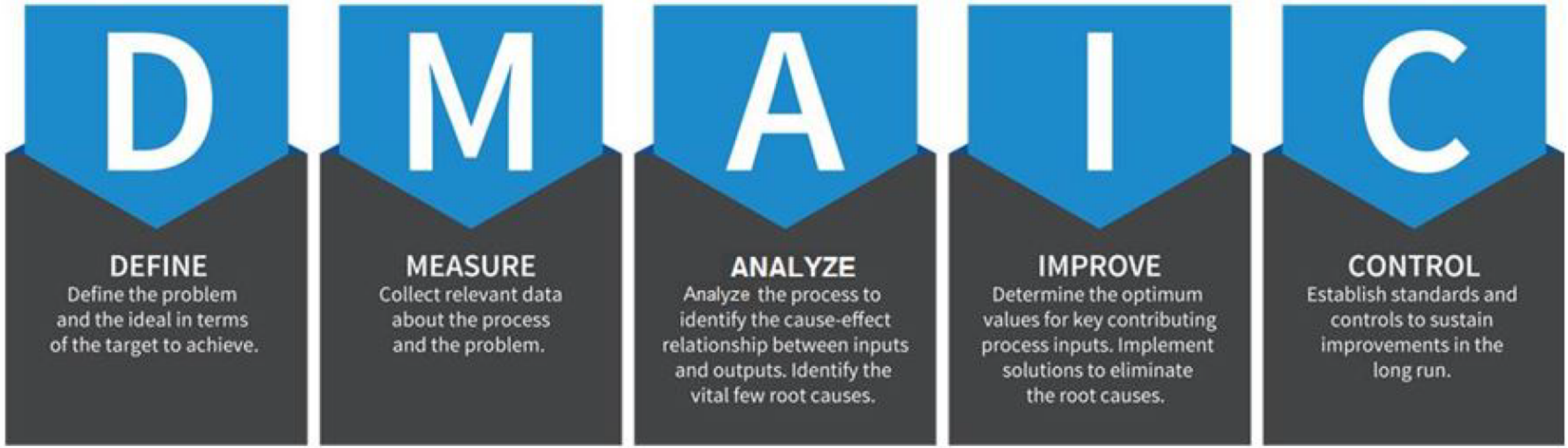
CCHCS LEAN SIX SIGMA PROGRAM

BLACK BELT | [redacted]

NURSING AGPA

SIERRA CONSERVATION CENTER

Lean Six Sigma Methodology



Define Phase

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

Houston, we have a problem...
(Project Background)

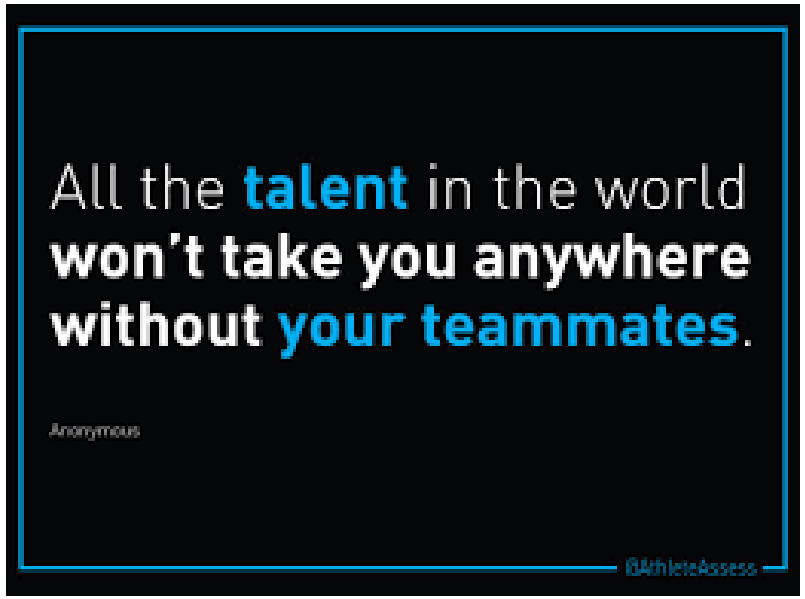
- Primary Care RN patients are not being seen at their scheduled appointments times.
- If the PCRN is unable to stay to complete their line and no staff are available to step in and finish, patients are seen in TTA or someone must be mandated.
- This issue can potentially cause:
  - An abundance of unnecessary overtime.
  - Longer wait times for patients.
  - Over crowding in the waiting room
  - Poor outcomes for patients who may choose to refuse their appointment instead of waiting.

Can you define that for me?
(Project Charter)

- Problem Statement: SCC is encountering an influx of patients being seen after their scheduled appointment time. This can result in longer wait times for patients, overtime for staff, as well an increase in cancelled and rescheduled appointments.
- Project Objective: The aim of this project is to ensure that patients scheduled for RN appointments are seen timely.
- Primary Metric: Proportion of patients who are seen timely for scheduled RN appointments:
  - Patients are seen no more than 7 minutes beyond their scheduled appointment time 95% of the time.
  - 7 minutes was agreed upon as an acceptable amount of time for RN's to be able to call their patient and get back to the office in order to start the appointment.

We have a mission should you choose to accept…
(Team Members)

- Champion: [redacted], CNE
- Process Owner: [redacted], SRN III
- Executive Sponsor: [redacted], CEO
- Team Members:
  - [redacted], LVN
  - [redacted], OSS II
  - [redacted], HPS I
  - [redacted], CO
  - [redacted], SRN II
  - [redacted], PCRN
  - [redacted], PCRN



- Various other staff who have graciously given their time to answer questions and help with anything needed.

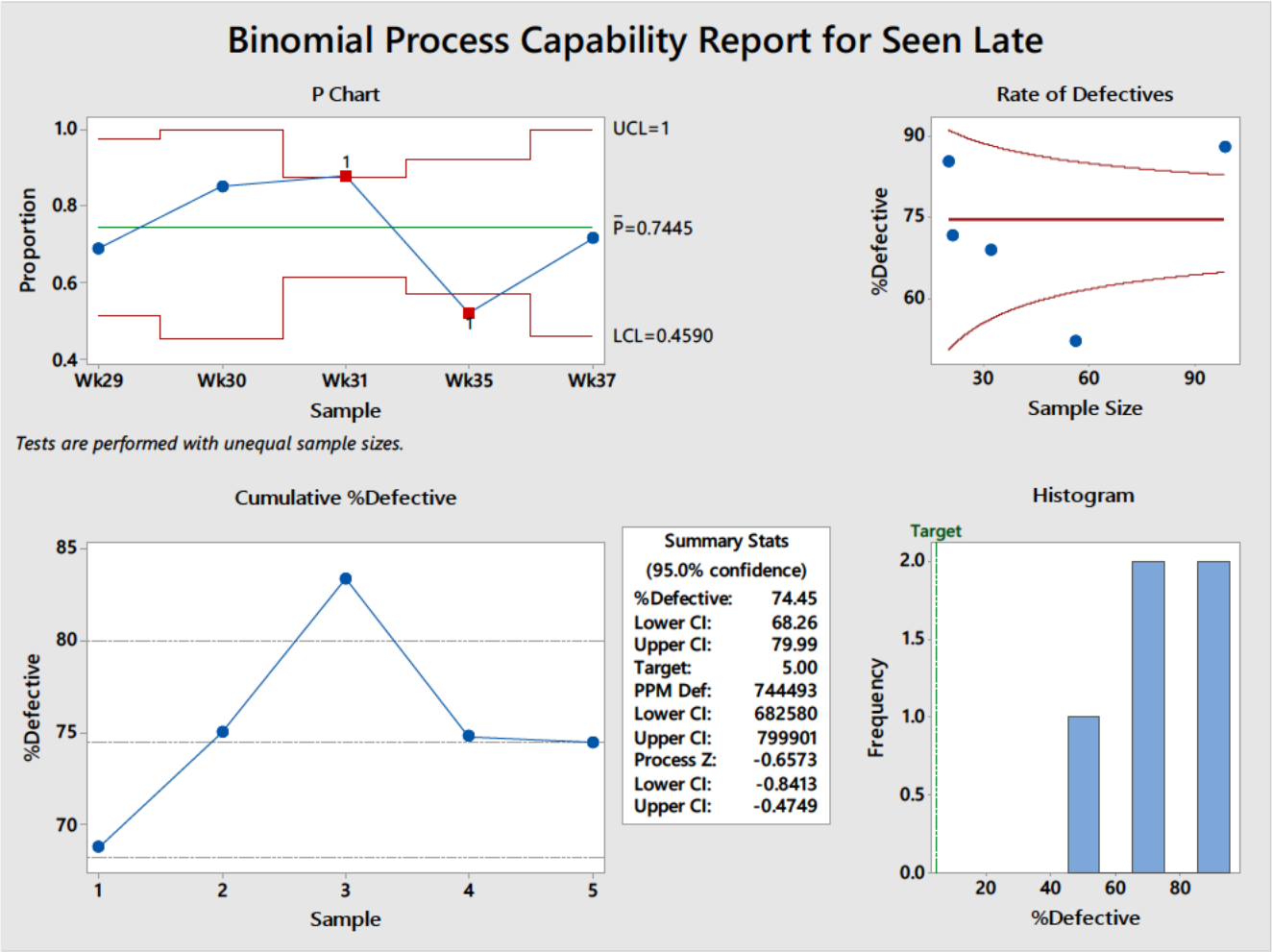
Measure Phase

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

Let's talk about performance…

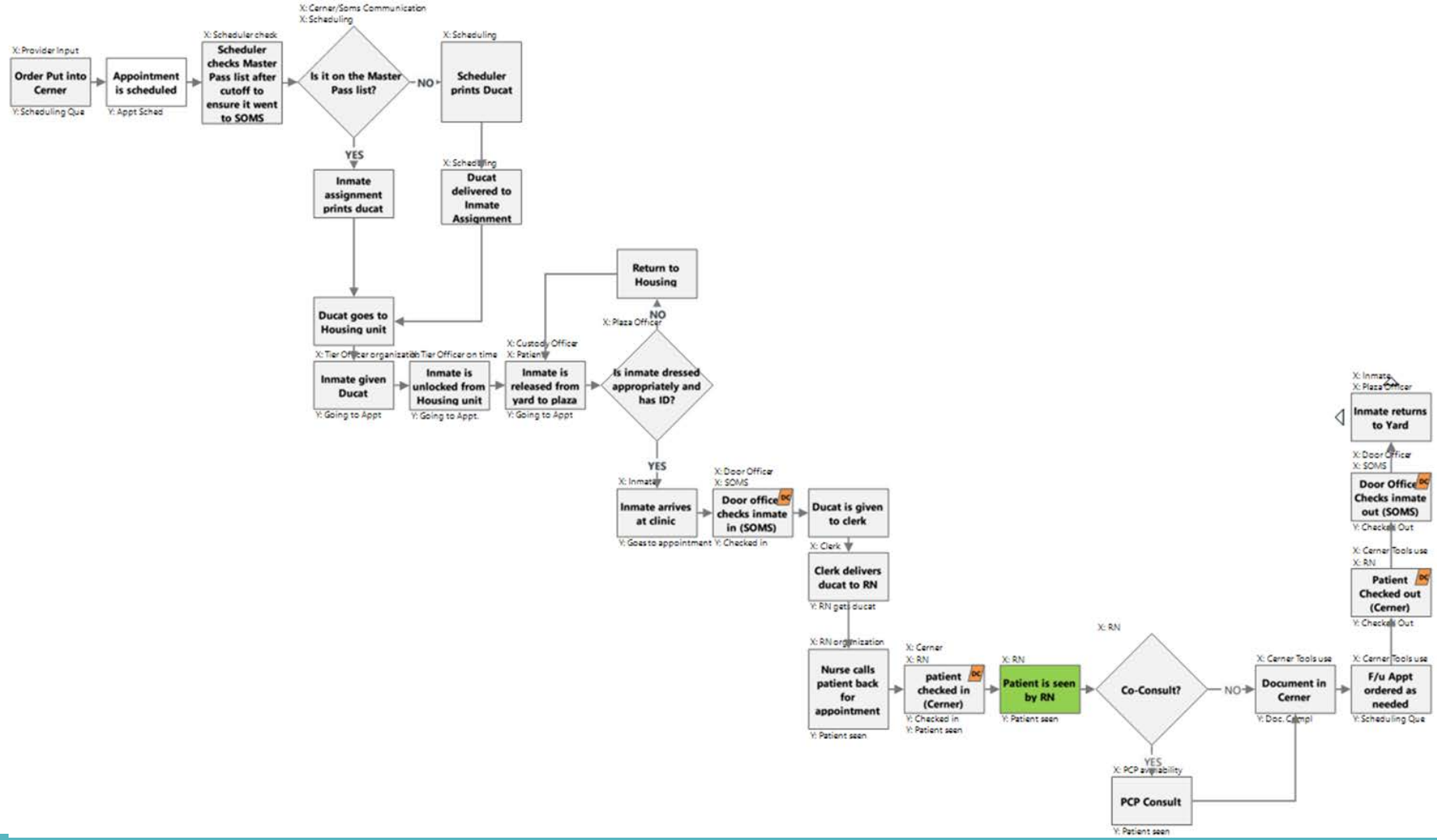
(Baseline Capability Analysis)

- Defect rate: 74.45%
- Patients are consistently being seen after their scheduled appointment times.
- Each sample is appointments from a specific week.



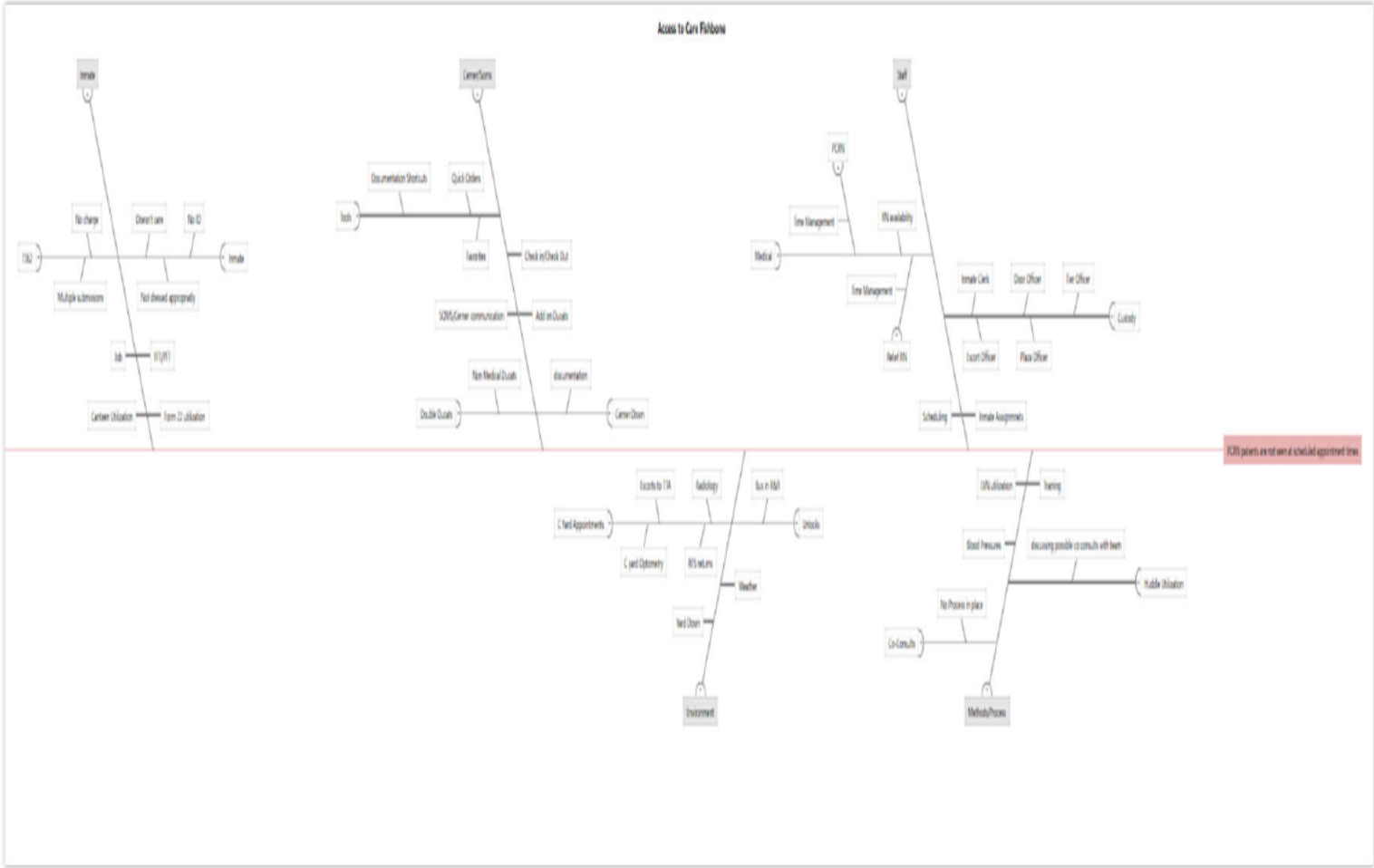
How do we get from here to there?

(Initial Process Map)



Fishing for ideas….
(Brainstorming using Fishbone)

- Our starting points of interest were:
  - Time Management of RN's
  - The unlocks from the yard to the plaza
  - Staffing



Are you sure you're looking at this right?
(Measurement System Analysis)

- This was manually collected data utilizing the Cerner scheduling book and power chart in conjunction with Custody's AQR.
- Measurement system was validated in two different fashions:
  - An attribute agreement was completed between the appraiser and two other staff members. Agreement deemed system valid.
    - Appraiser and Staff agreed 97% of the time.
  - A time study comparison to time entered and time arrived was validated to ensure entries into Cerner were accurate.
    - Observer and Time stamped entry agreed 86% of the time.

Analyze Phase

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

Ideas? We need ideas!
(FMEA)

- Care Team structure: Is one nurse per yard adequate?
- Change in Population: Does the increase in complex care patients contribute to the issue?
- Time Management: Are nurses utilizing their time efficiently?
- Staffing: Does a shortage of RN's have an impact?
- Plaza Unlock Schedule: Does this cause a delay in on time patient arrival?

High-Level Process Map - RN sees patient for Appointment	care team structure	lack of nursing resources	longer waits	7	care team structure	10	none	10	700
High-Level Process Map - RN sees patient for Appointment	patient demands more time for things not scheduled for	multiple issues they want resolved today	appointment goes over scheduled time frame	7	patient comes in with large list of concerns	8	none	10	560
High-Level Process Map - RN sees patient for Appointment	short staffed	no RN available, TTA sees line, relief RN sees line	seen late	7	call ins	8	none	10	560
Detailed Process Map - Inmate is released from yard to plaza	unlock schedule	time of unlock	not on time for appointment	8	miss unlock	6	schedule	10	480
Detailed Process Map - Patient is seen by RN	RN organization	RN on shift	line behind schedule	7	time management	8	suggested time frames for appointments	8	448
1. Detailed Process Map - Appointment is scheduled	appointment scheduled	takes longer than 20min	subsequent appointments are seen late.	10	appointment s run over	8	no control	5	400

The likely suspects…
(Where we decided to start)

- The highest RPN on the FMEA was lack of nursing resources which relates to the care team structure we were allotted. Requests have previously been submitted to the hiring authority to address this issue.
- The team decided our likely causes for this issue were:
  - Timely arrival to the clinic.
  - Efficient use of RN time.

Detailed Process Map - Inmate is released from yard to plaza	unlock schedule	time of unlock	not on time for appointment	8	miss unlock	6	schedule	10	480
Detailed Process Map - Patient is seen by RN	RN organization	RN on shift	line behind schedule	7	time management	8	suggested time frames for appointments	8	448
1. Detailed Process Map - Appointment is scheduled	appointment scheduled	takes longer than 20min	subsequent appointments are seen late.	10	appointment s run over	8	no control	5	400

Things that make you go hmmmm….
(Key Findings #1)

- Are Patients arriving timely to the clinics?
  - 73.57% of patients are arriving timely
- If they arrive on time, are they being seen on time?
  - 32.97% of on time arrivals are seen at their scheduled time
- What percentage of late appointments can actually be attributed to late arrivals to the clinic?
  - Observation within the clinics determined over the course of three days, that only 4.5% of the patients seen late were due to the patient arriving late to the clinic.

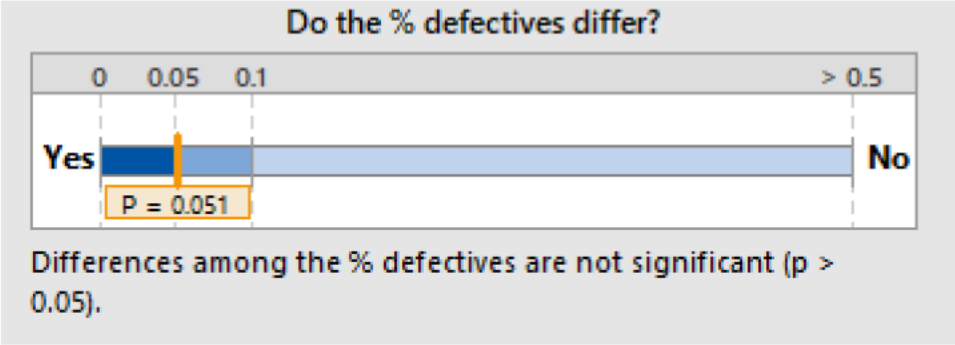
We ruled out late arrival as a cause.

When nothing goes right, go left….
(Key Finding #2)

- Are RN's efficient in the use of their time?
  - Early hypothesis tests revealed that there may be a difference between RN's regarding the defect rate for late appointments.
  - Upon further analysis it was determined the RN with the outstanding performance was only seeing a particular type of appointment. Once that nurse was removed, we discovered there was not a difference between the RN's performance.

Chi Squared % defective test:

Null hypothesis: there is not a difference
(P value >0.05)
Alternate hypothesis: there is a difference
(P value <0.05)
P value is .051 therefore there is a difference



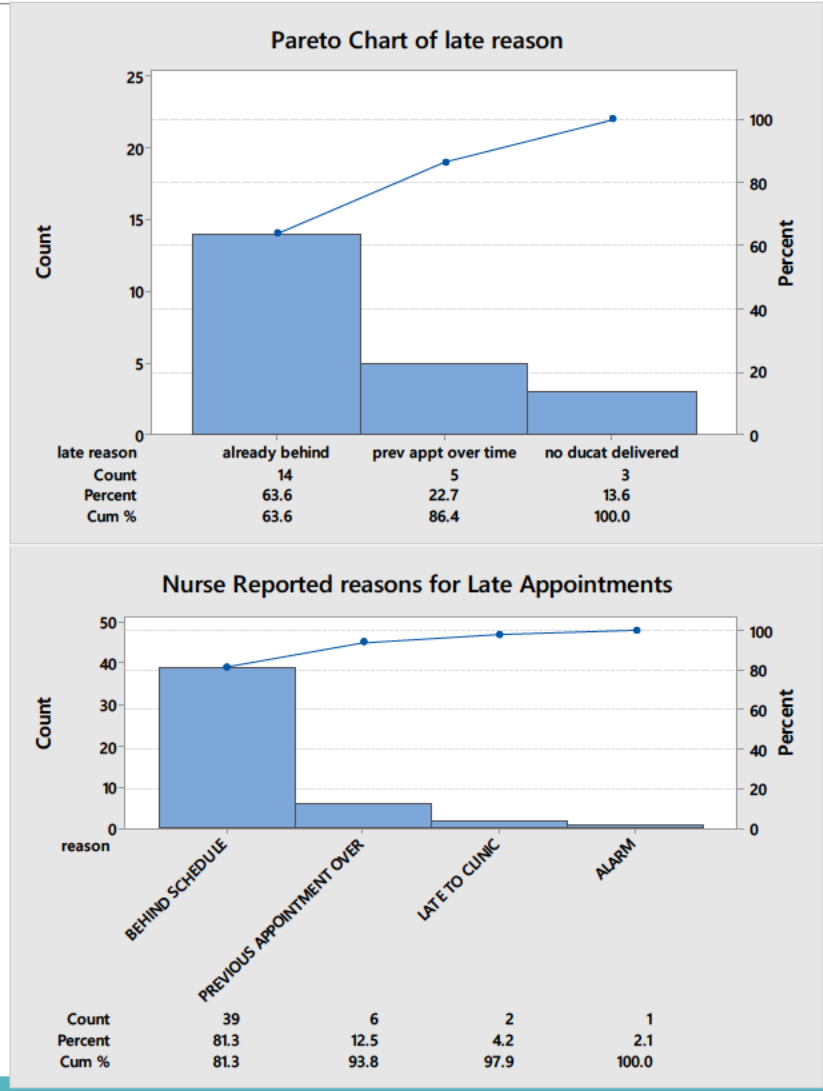
  - As mentioned before, three days were spent observing the clinics as a whole along with two individual days with each Primary Care RN. Time analysis studies were performed and no significant issues were found in the performance of the nurses seeing their lines.

We ruled out RN time usage as a cause.

Back to the drawing board….

(Key Finding #3)

- If it's not late arrival and it's not something the nurses are doing, what could it be?
  - Is an appointment that runs over their time allotment an issue?
    - YES!
  - A meeting with the PCRN's highlighted some possible factors to explore:
    - Spanish speaking patients take longer due to translation
    - 7362's for patients with in depth issues take longer than the time allotted.



Follow that lead….

(Key Finding #4)

- The greater majority of appointments are late because the line is already behind schedule. Is time of day a factor?
  - Hypothesis testing determined there was a significant difference between the morning appointments that ran over and the afternoon appointments that ran over.
  - Appointments before noon run over 74.14% of the time as opposed to only 25.86% in the afternoon.

2 Proportion % defective test:

Null hypothesis: there is not a difference
(P value >0.05)
Alternate hypothesis: there is a difference
(P value <0.05)
P value is <.0001 therefore there is a difference.

Test

Null hypothesis	$H_0: p_1 - p_2 = 0$
Alternative hypothesis	$H_1: p_1 - p_2 \neq 0$

Method	Z-Value	P-Value
Normal approximation	5.94	0.000
Fisher's exact		0.000

Just keep on digging…

(Key Findings #5)

- This is happening primarily in the morning. Is there a particular type of appointment driving this?
  - When comparing the two primary types of appointments we found that there is a difference between the 7362's and Inter-facility's in regards to running over the allotted time.
  - 56.38% of 7362's run over their 20 min allotment. The average time in front of the nurse is 23.38 minutes. 34.1% of inter-facility's run over 10 min allotment an average 9.5 minutes.

2 Proportion % defective test:

Null hypothesis: there is not a difference
(P value >0.05)

Alternate hypothesis: there is a difference
(P value <0.05)

P value is .047 therefore there is a difference.

Test

Null hypothesis	$H_0: p_1 - p_2 = 0$
Alternative hypothesis	$H_1: p_1 - p_2 \neq 0$

Method	Z-Value	P-Value
Normal approximation	2.23	0.026
Fisher's exact		0.047

Anything else, anything at all…
(Key Findings #6)

- We determined 7362's tend to run over time, are there any specific factors that may drive this?
  - 50% of the 7362 appointments that went over were patients with chronic care conditions with an average appointment time of 28 minutes.
  - Appointments for patients that require a translator average at 33 minutes per appointment and account for 16% of the appointments that went over.
  - Co-Consults average at 27 minutes per appointment and accounted for 36% of the appointments that went over.

Ding ding, we have a winner!
(Critical X)

PCRNs are not scheduled adequate time to complete all 7362 appointments!

Improve Phase

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

How do you solve a problem like 7362s?

(Improvements)

RN's will be allotted 25 minutes to see 7362 appointments.

- 25 minutes gives the RN extra time for those more complex encounters.

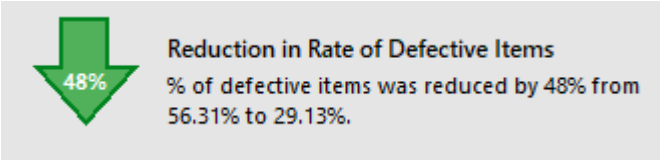
Why 25 minutes?

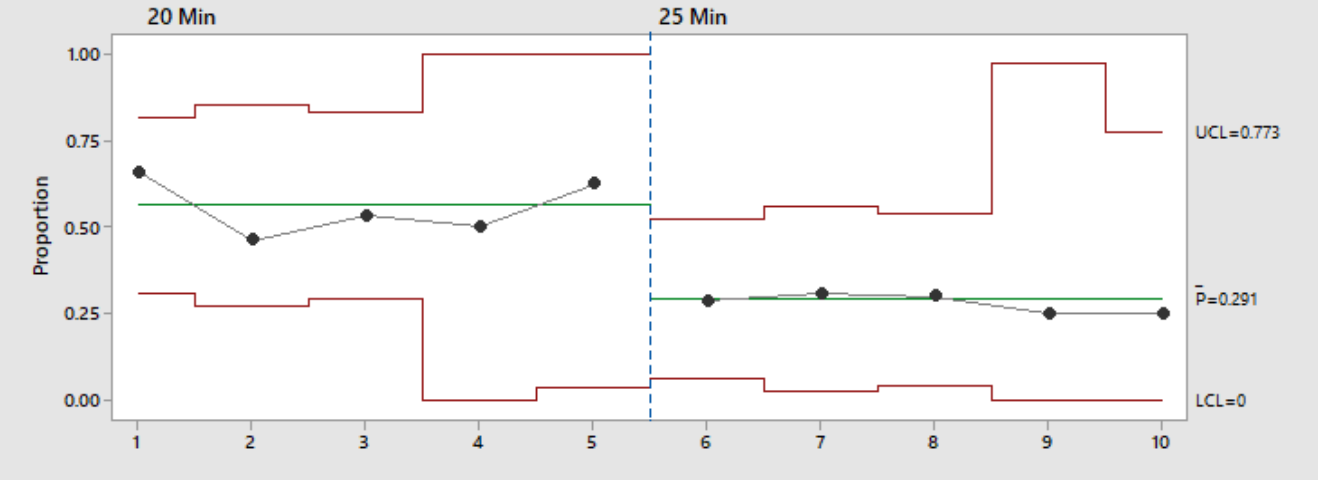
- With the average of 23.38 minutes, the team felt 25 minutes would allow for the greater majority of appointments to be completed timely and not start the snowball effect that occurs when they go ever.
- We are aware that there will still be appointment that run longer than the allotment, however there will also be appointments that do not require the entire 25 minutes.
- The logic in this decision is for the over and under time frames to balance each other, allowing RN's to catch up when the line falls behind.

Could this work?

(Project Improvements continued)

- Statistical projection shows that an increase to 25 minutes would drop the percentage of 7362 appointments that ran over their time allotment from 56.38% to only 29.12%.





- While we are unable to project how this will impact the percentage of appointments seen late, we are confident this reduction in defects on 7362 appointments will have a positive impact on that percentage.

Will there be fallout from this change?

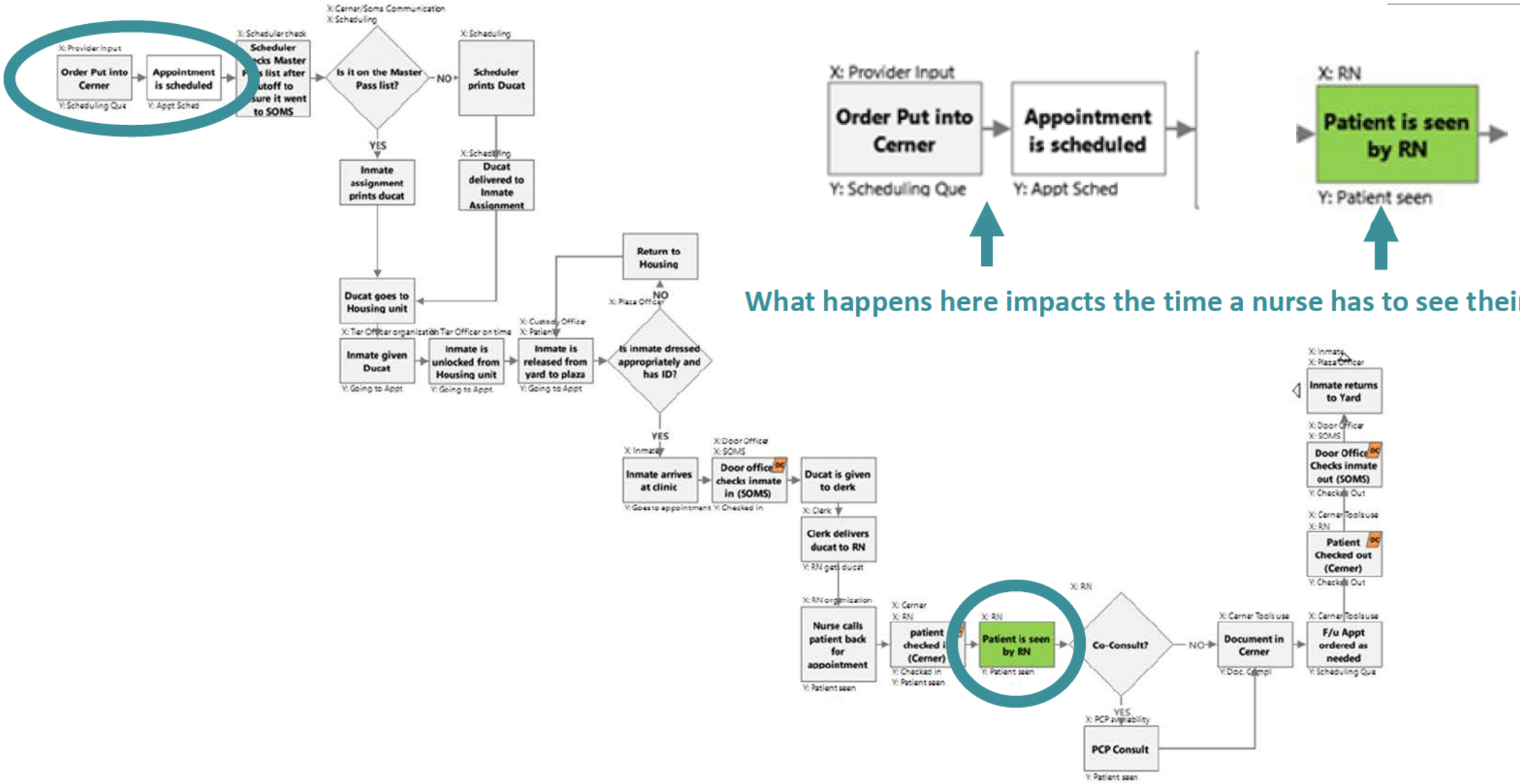
(Improvements continued)

Due to the increase time for these appointments, it limits the number of patients an RN can see.

- Low and medium risk transfers with no medications or chronic conditions will be seen by the LVN Care Coordinators for their care team visit. This will alleviate the potential for a backlog created by the additional time allotment.
- MA's and Care Coordinator LVN's will take over researching and reviewing the send outs and camp calls for huddle and will report them. This allows more line prep time in the morning for the PCRN's.
- Creating a best practices list for all Face to Face lines to ensure all staff working in these posts are set up for success while seeing their patients.

Are we directionally challenged?

(Updated Process Map)



Have we reached success?

(Updated Capability/Performance Analysis)

- This process was set to roll out mid March, however, due to the current COVID-19 pandemic, this has not occurred.
- In order to practice social distancing for patients, the time allotment for appointments was increased well beyond 25 minutes to limit the number of patients in the waiting area.
- We look forward to the opportunity to roll out this process and see how the improvements help.

Control Phase

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

Maintenance is key…
(Control Plan)

- Control Plan:
  - Roll out process ASAP.
  - Audit monthly to ensure process is being followed and determine if the changes are improving this process.
  - Weekly check-ins with scheduling to ensure any barriers discovered through the scheduling process are addressed immediately.
  - Begin monthly team meetings, again, to ensure process review and reassessment are completed as necessary.
  - Oversite for this will be done through the Nursing Sub-Committee.
  - As the process owner, the SRN III will manage this through data collected and provided by the nursing analyst.

A3

General Information:

Project Title: Improving Timeliness of Patient Care
Agency/Department: SCC
Division/District/Office:
Champion/Process Owner: [redacted] SRN III
Black Belt: [redacted]
Executive Sponsor: [redacted]
Date: 4/19/20

Problem Statement:

SCC is encountering an influx of patients being seen after their scheduled appointment time. This can result in longer wait times for patients, overtime for staff, as well an increase in cancelled and rescheduled appointments.

Primary Metric:

Proportion of patients who are seen timely for scheduled RN appointments.

- Patients are seen no more than 7 minutes beyond their scheduled appointment time.
- 7 minutes was agreed upon as an acceptable amount of time for RN's to be able to call their patient and get back to the office in order to start the appointment.

Goal:

95% seen on time

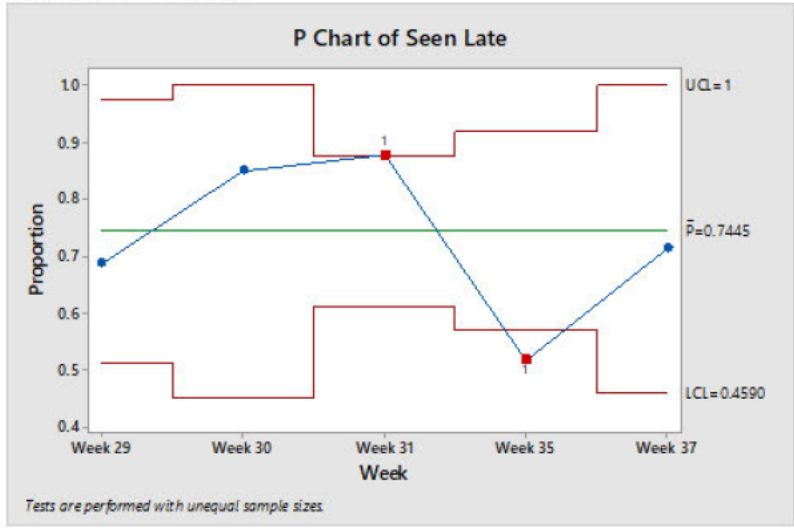
Root Causes (Critical X's):

PCRN's are not scheduled adequate time to complete all 7362 appointments.

Solution Implementation Tracking:

item	status
Scheduling will begin the 25 minute scheduling process once the COVID 19 situation is resolved.	On hold
MA's will begin researching the huddle information	On hold
LVN Care Coordinators have already begun seeing Low risk inter-facility appointments.	In progress

Baseline Control Chart:



Baseline Average: 74.45%
Current Average: TBD
Current Capability: TBD

Let's talk about cold hard cash…

(Financial Impact)

- Annual Savings:
  - RN Overtime (FTF line only): $13,910
  - RN to LVN Appointment change (inter-facility appointments): $11,700
  - RN to MA Research time for huddle: $13,000
- One Time Savings:
  - RN Overtime to clear backlog (Inter-facility and FTF only): $2,210

Total Annual Savings: $38,610

Black Belt Contact Information

[redacted]

Don't be discouraged. It's often the last key in the bunch that opens the lock.

— Anonymous