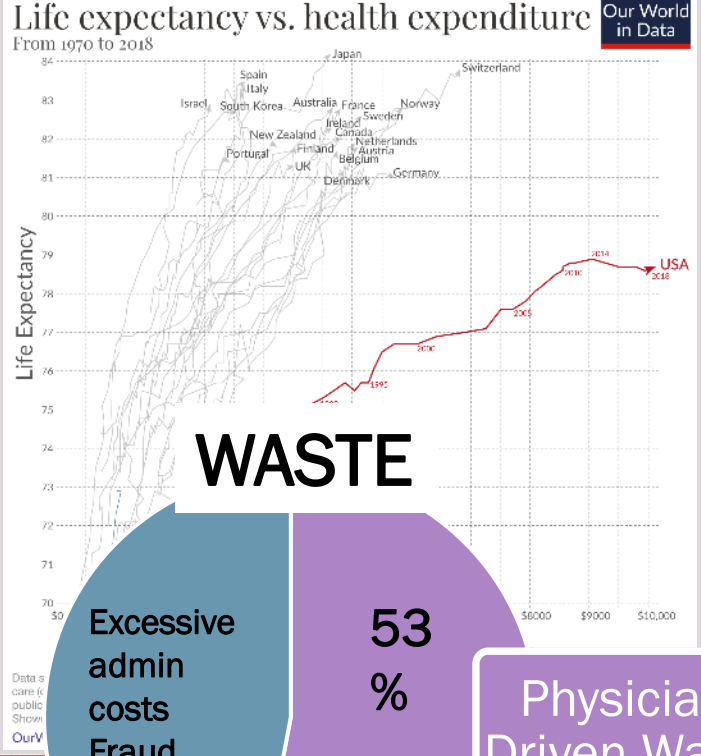
TEACHING IMPROVEMENT SCIENCE (TIS): WEEK 5

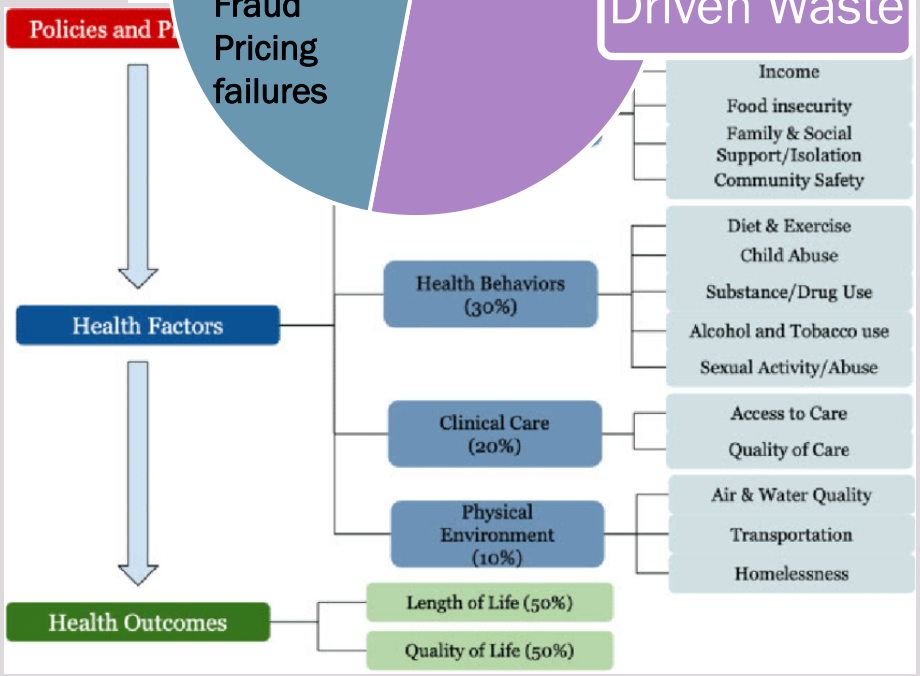
Today's Agenda

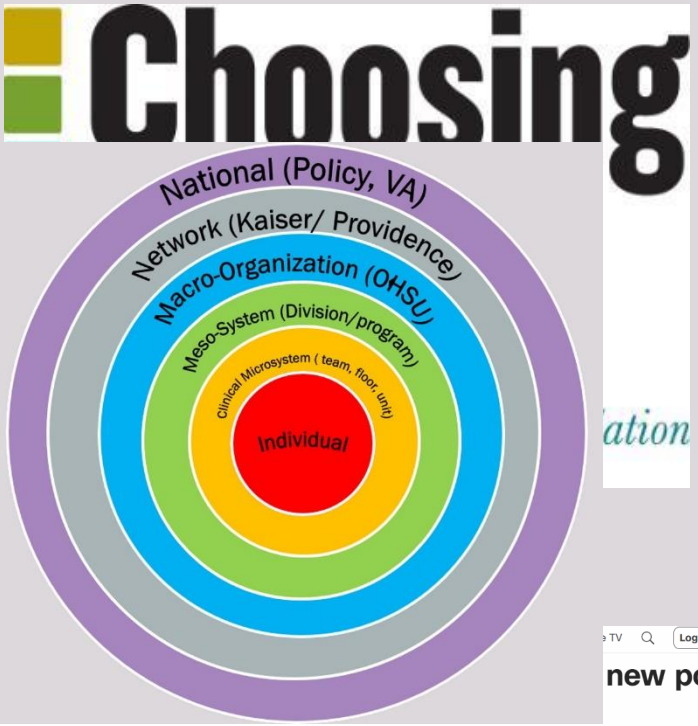
- Recap Week 4
- Intro to Week 5
- Iterative Improvement Activity Part 1
- Break
- Iterative Improvement Activity Part 2
- Wrap Up/HSPs



WASTE

Physician-Driven Waste





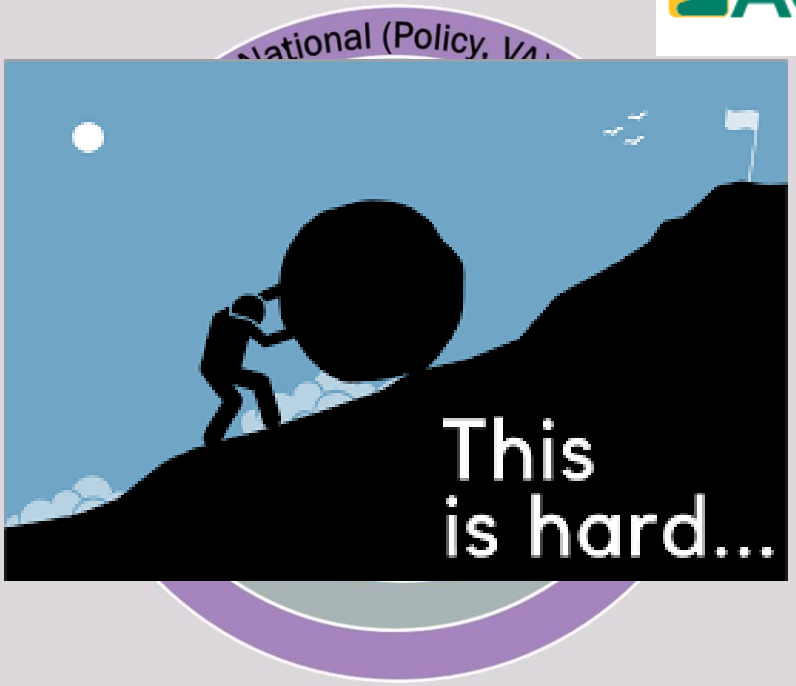
HEALTH AFFAIRS > VOL. 36, NO. 10: EMERGENCY DEPARTMENTS, BEHAVIORAL HEALTH & MORE

Low-Cost, High-Volume Health Services Contribute The Most To Unnecessary Health Spending

John N. Mafi, Kyle Russell, Beth A. Bortz, Marcos Dachary, William A. Hazel, and A. Mark Fendrick

- Labs for low-risk surgery patients
- Cardiac stress test/imaging for low risk/asymptomatic patients
- Annual EKG for low risk/asymptomatic patients
- Routine CT Head scans for ED visits complaining of dizziness
- EKG/Chest X-Ray/Pulmonary function tests in low-risk surgery patients
- Population screening for vitamin D deficiency
- PSA screening for all men regardless of age
- Routine imaging for uncomplicated Rhinosinusitis
- Routine annual cervical cancer screening women ages 21-65
- Imaging for low back pain within first 6 weeks without red flag symptoms

$586 Million dollars/year in waste in the state of Virginia



ACP American College of Physicians®
Leading Internal Medicine, Improving Lives

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An initiative of the ABIM Foundation

Week	1	2	3	4	5
Dates	8/10- 8/31	9/7- 9/28	10/5- 10/26	11/2-11/23	11/30-12/21
Topic	Systems 1: Intro & Clinical Efficiency	Systems 2: Microsystems & Tools for Improvement	Systems 3: Macrosystems & SDoH	Value-Based Care (+30 min)	Data Science (+30 min)

Week	6	7	8	9	10	11
Dates	1/11-2/1	2/8-3/1	3/8-3/29	4/5-4/26	5/3-5/24	5/31-6/21
Topic	Diagnostic Errors (+60 min)	Systems Errors (RCA) (+60 min)	Teamwork Simulation (+60 min)	Error Disclosure & Second Victim (+60 min)	Narrative Medicine (+60 min)	Present HSPs!

Health System Projects Will Be Completed Across Weeks 4-11

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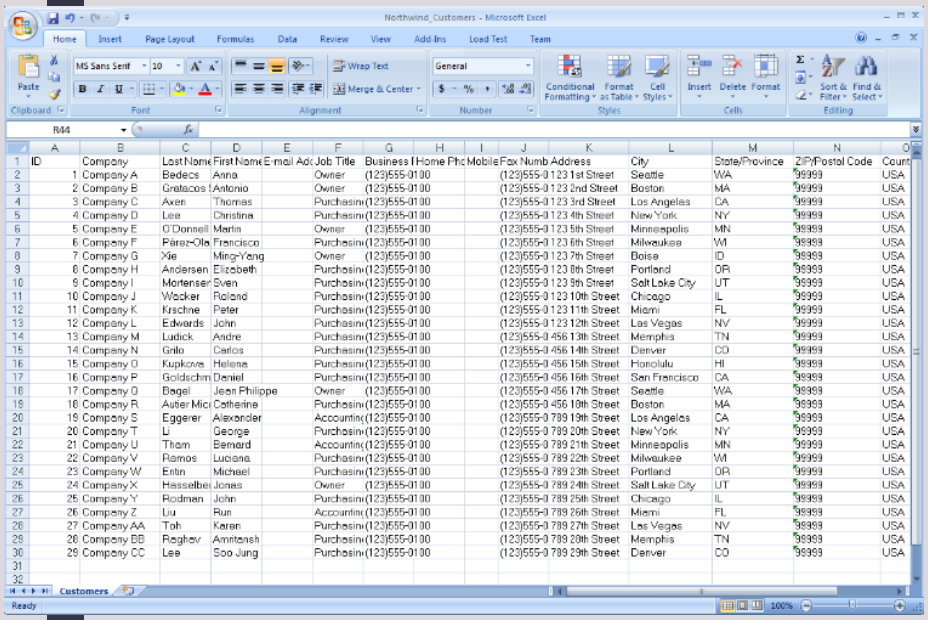
Why analyze data?



tell the STORY

&

AIM

What are we trying to accomplish?

Indi

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BEFORE WE GET TOO FAR... TEACHIS.ORG

https://www.teachis.org/student-qi

The Challenge

- Problem statement: Concerns have been raised that delays in morning lab completion are leading to delays in patient care and discharges.

- Your assignment: Understand the current state of morning lab timeliness and, if appropriate, improve the timeliness. You and your team will have 3 months to complete your work.

Team Formation

Phlebotomy manager
Phlebotomy team member
Lab tech
Physician

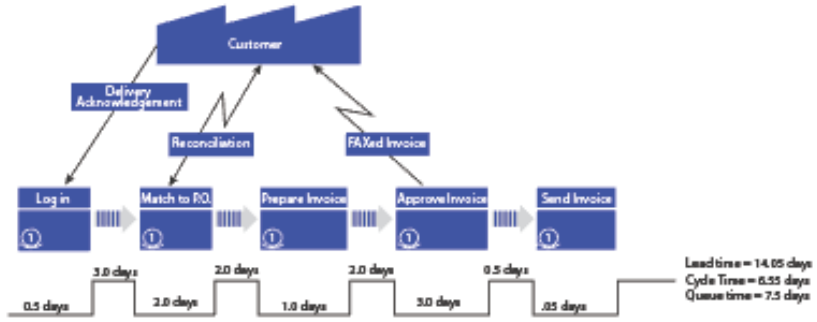
A3 - A Lean Tool

Prepared By: Jess Fixit | **Invoice Creation Lead Time Improvement - A3 Report** | **January 28, 2018**

Background

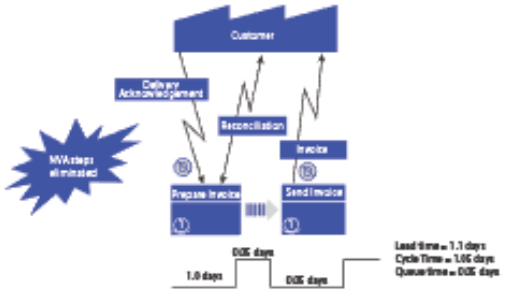
The time between product delivery and invoicing our customers averages 1405 days with a max of 25 days. Our customers pay their invoices on time (<30days) 99.95% of the time. The invoicing process has, on average, $22.3 million in invoices in process.

Current Situation



Analysis

Goal



Recommendations

- Eliminate external approval, invoice preparer is responsible for making sure invoice is correct
- Eliminate logging delivery acknowledgement into the system; system has capability to generate invoices on user authority
- Use electronic delivery acknowledgement which returns our original information, thereby eliminating the need for re-entry of information and minimizing the need for P.O. matching and reconciliation
- Use electronic (EDI) transmittal of invoice to eliminate FAX problems

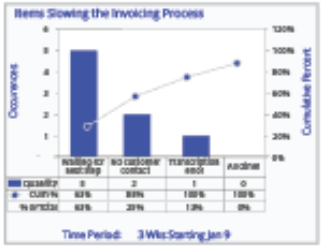
Implementation Plan

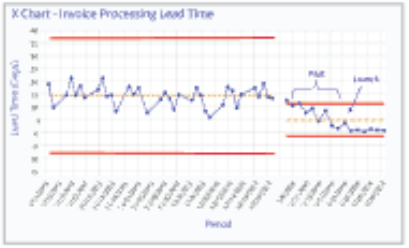
#	Description	Week								Who	% Comp
		1	2	3	4	5	6	7	8		
1	Process design									MK	100%
2	Simulation									MK	100%
3	Capital approval									DH	100%
4	Customer Input									GF	100%
5	Set up EDI									GF	100%
6	Pilot Runs									MK	80%
7	Launch									TJ	50%

Follow Up

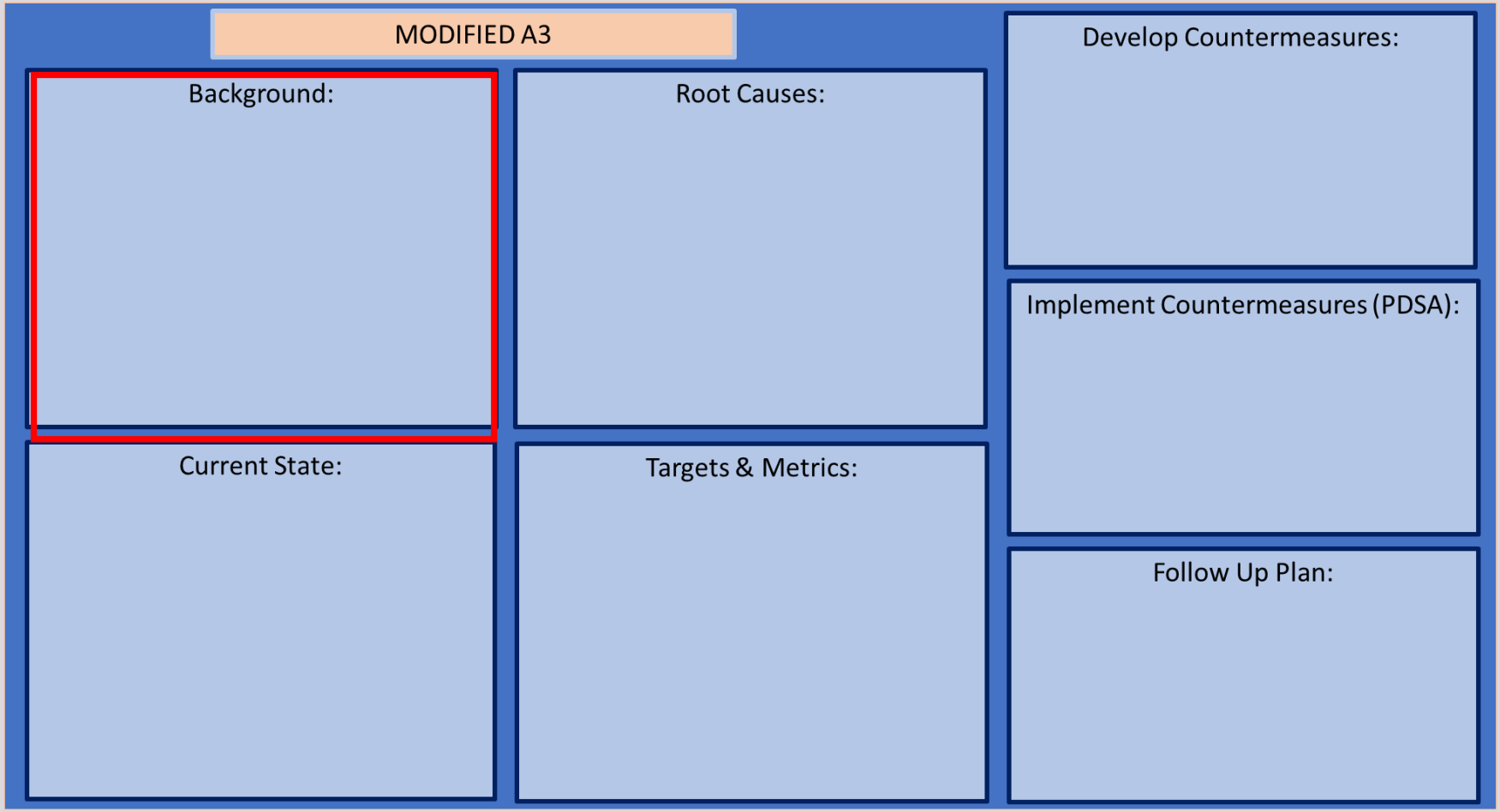
- Include section in next 6 customer surveys to determine any negative impact; MK, 03/01.
- Review back-up procedures with IS to ensure data continuity; DH, 03/01.

Results Report





Background Investigation



Background Investigation

Important things to understand:

1. Is this a problem reported elsewhere?
2. How have others have solved this problem?
3. Is there alignment with local quality priorities?

Background Investigation

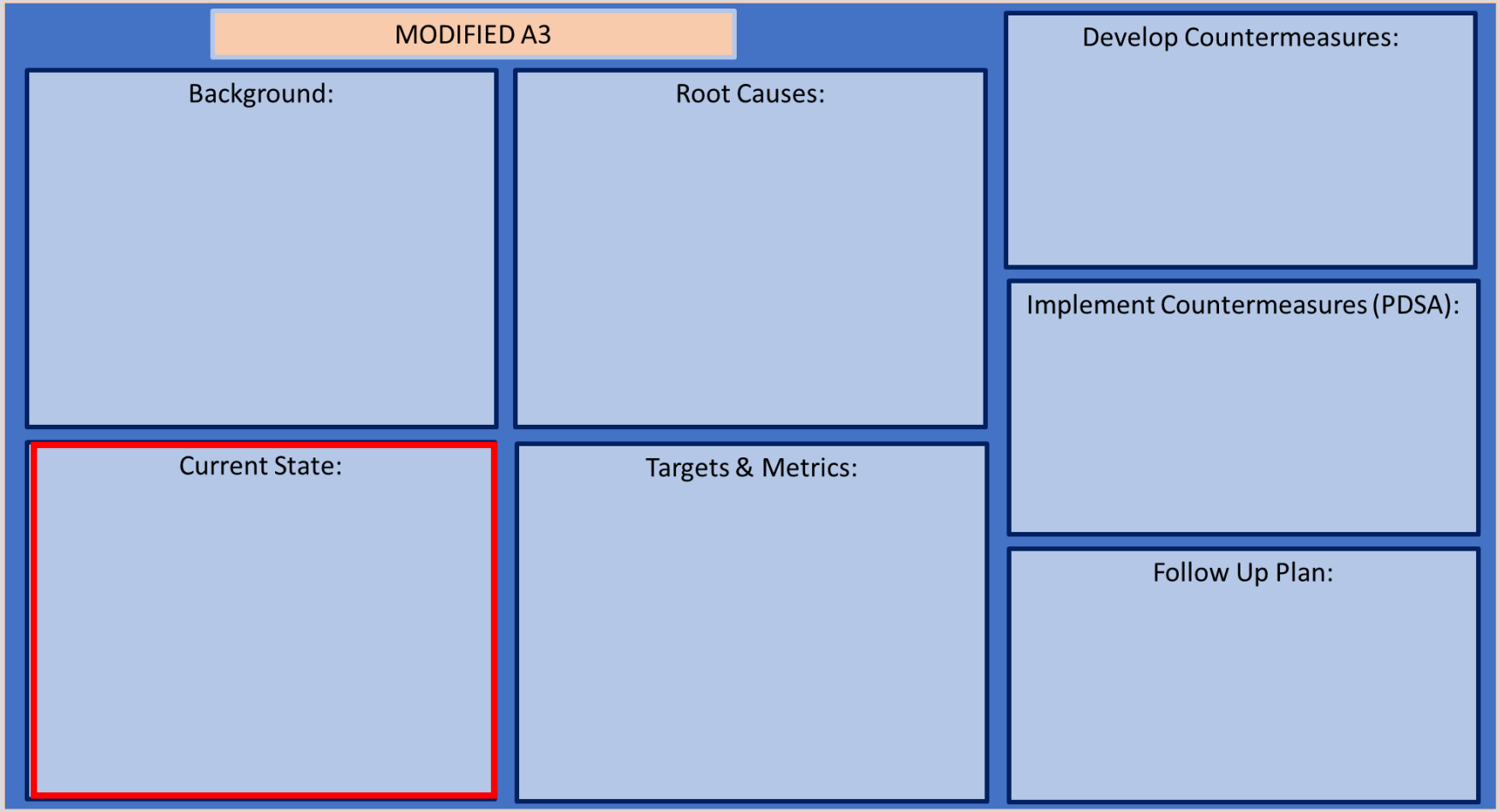
Question: What is the scope of the problem you are investigating?

1. Is this a problem reported elsewhere?
   - *Yes, report from 367 institutions recognized late lab reporting may delay patient care.*

2. How have others have solved this problem?
   - *Single institution report showed improvement in collection time of morning labs using Lean improvement tools.*

3. Is there alignment with local quality priorities?
   - *Yes, discharge before 10 AM identified as top priority and lab timeliness could affect this goal.*

Current State



Please click CURRENT STATE DATA on the website

CURRENT STATE INTERVIEWS

Physician

Question:

1. What information did you gather from the physician interview?
2. What step might you take next as a QI team to confirm this problem?

Current State Data

- Based off the concern raised by the physician interview about lab timeliness, a data pull is performed looking at what time AM labs result.

- It is reported out that the average result time over 3 months is 7:40 AM.

Question:

1. Is the average results time of 7:40 AM an accurate representation of lab timeliness?

This displays the count (number) of labs that resulted during each 30 minute time window over three months.

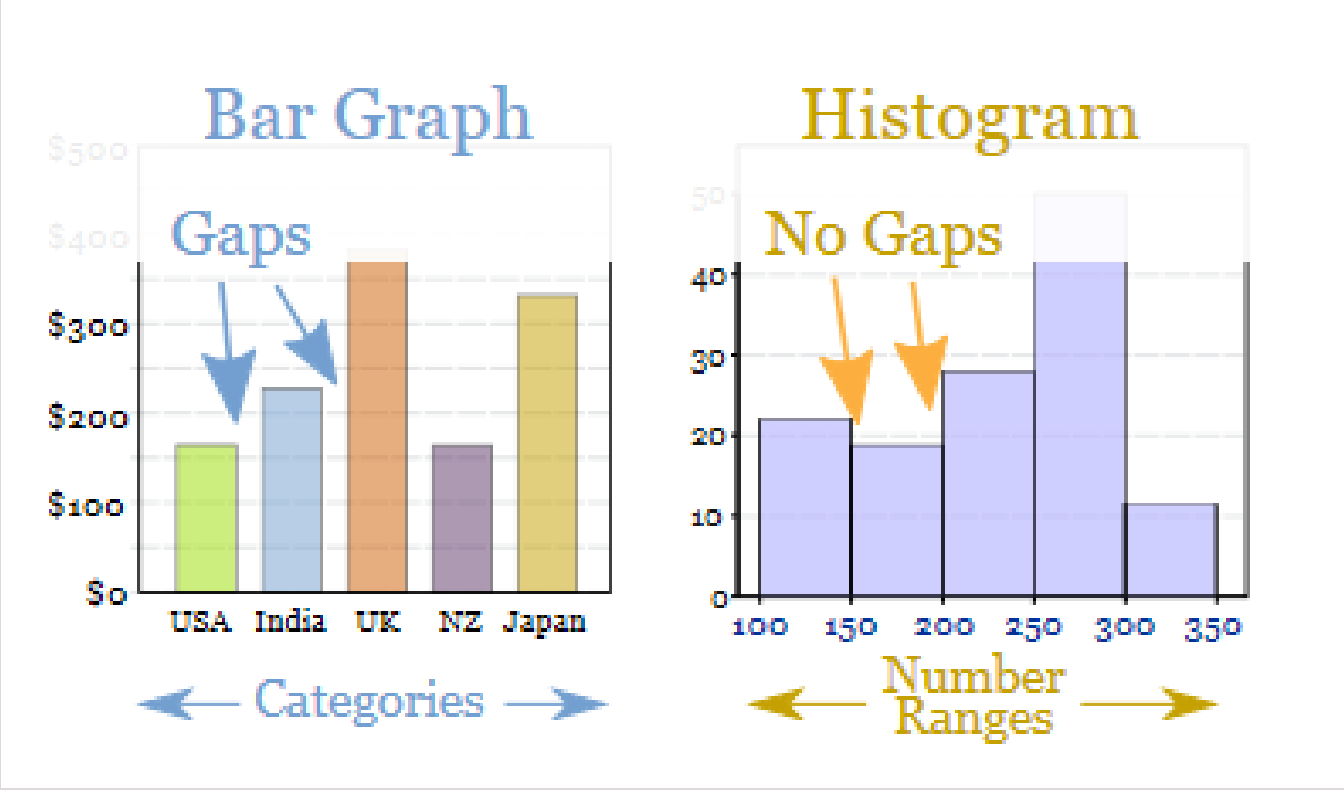
Time lab results	July	Aug	Sep	Total
<4:30am	7	1	5	13
4:30-5:00	103	48	76	227
5:00-5:30	210	209	151	570
5:30-6:00	124	145	112	381
6:00-6:30	65	35	54	154
6:30-7:00	176	111	81	368
7:00-7:30	352	374	222	948
7:30-8:00	538	549	658	1745
8:00-8:30	513	587	579	1679
8:30-9:00	371	325	288	984
9:00-9:30	81	127	218	426
>9:30	155	178	198	531
	2695	2689	2642	

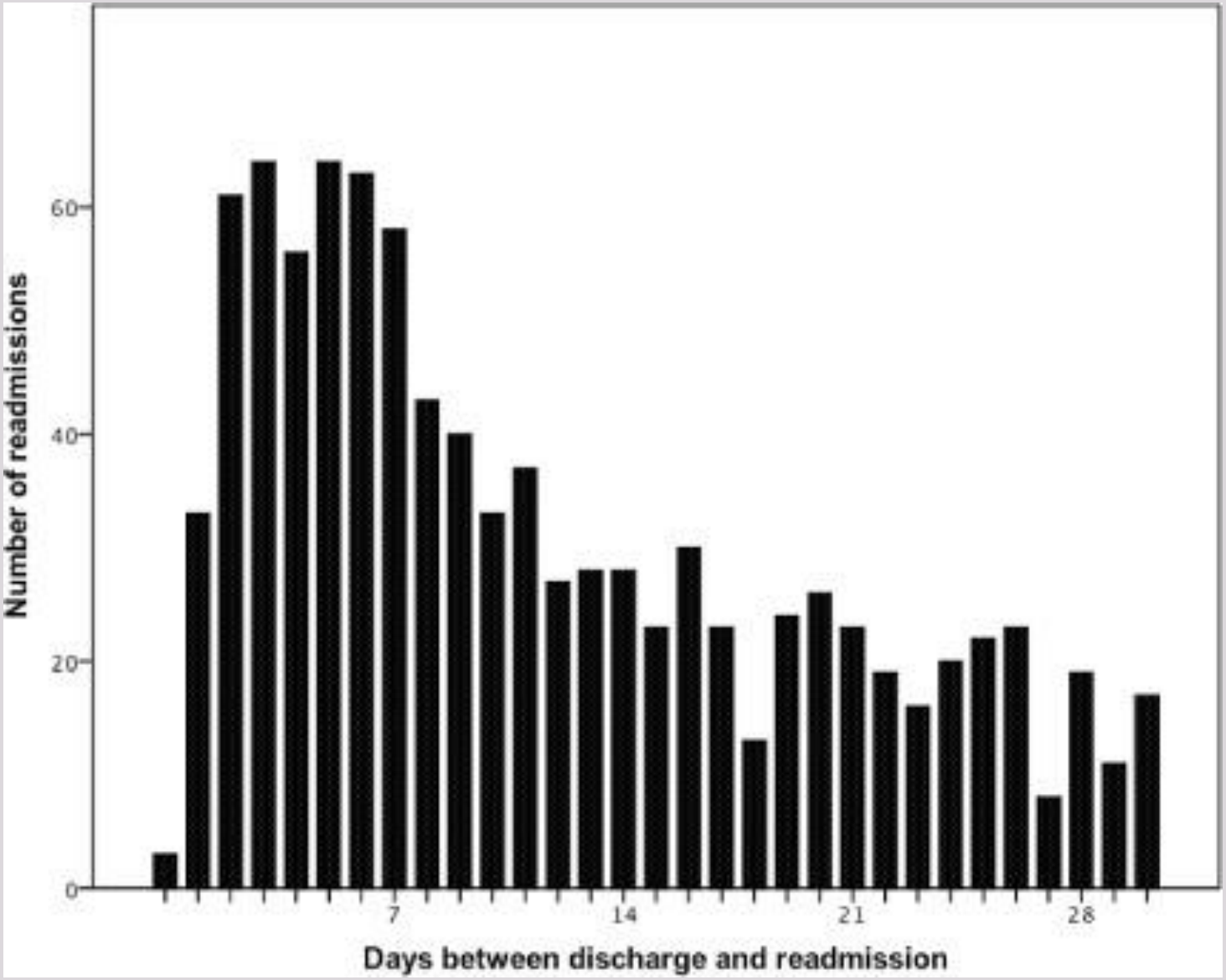
Question:

1. Do you think a problem exists?
2. How can you display this data to help your boss understand that there is a problem despite a relatively good average results time of 7:40 AM?

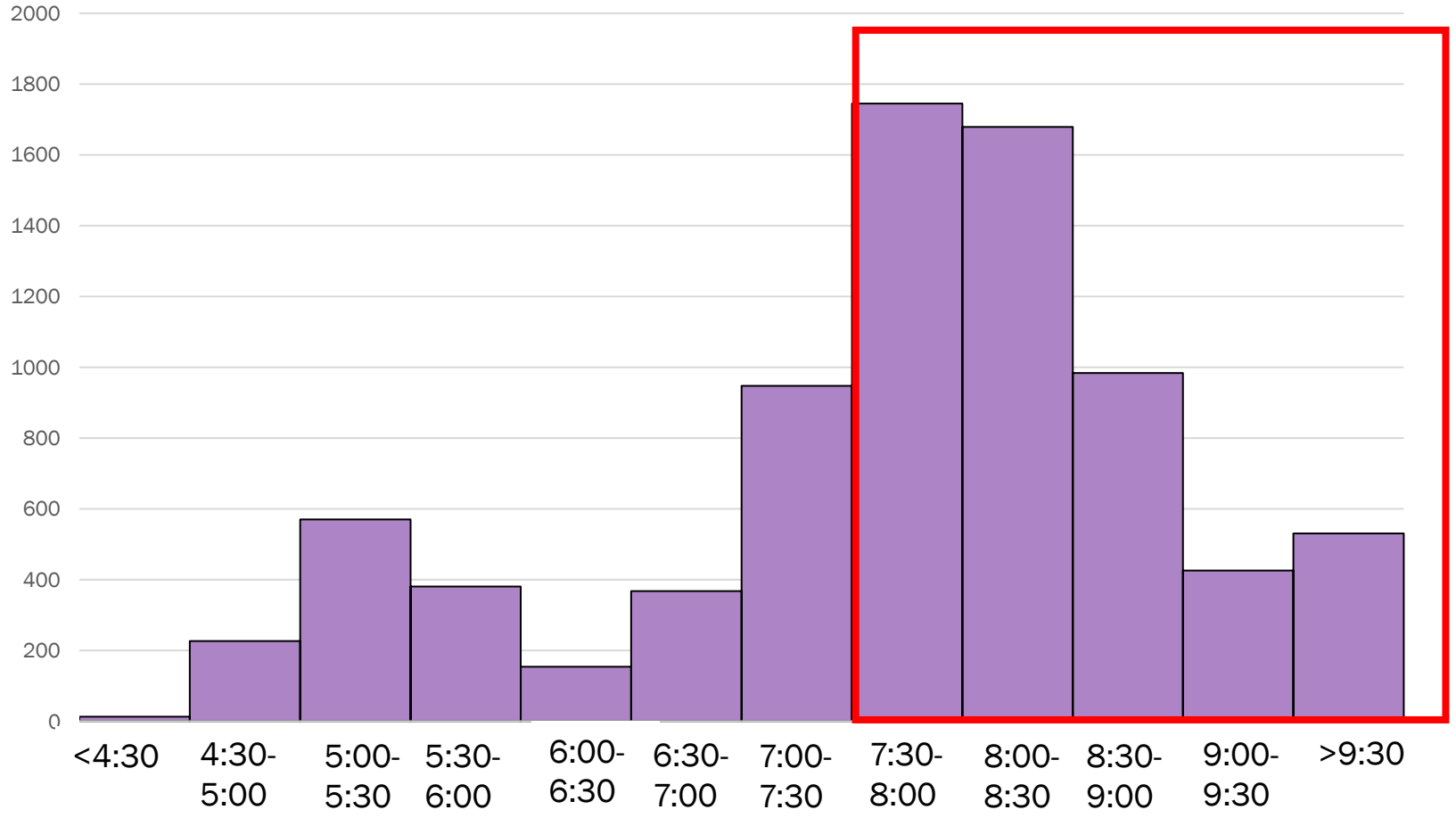
Histogram

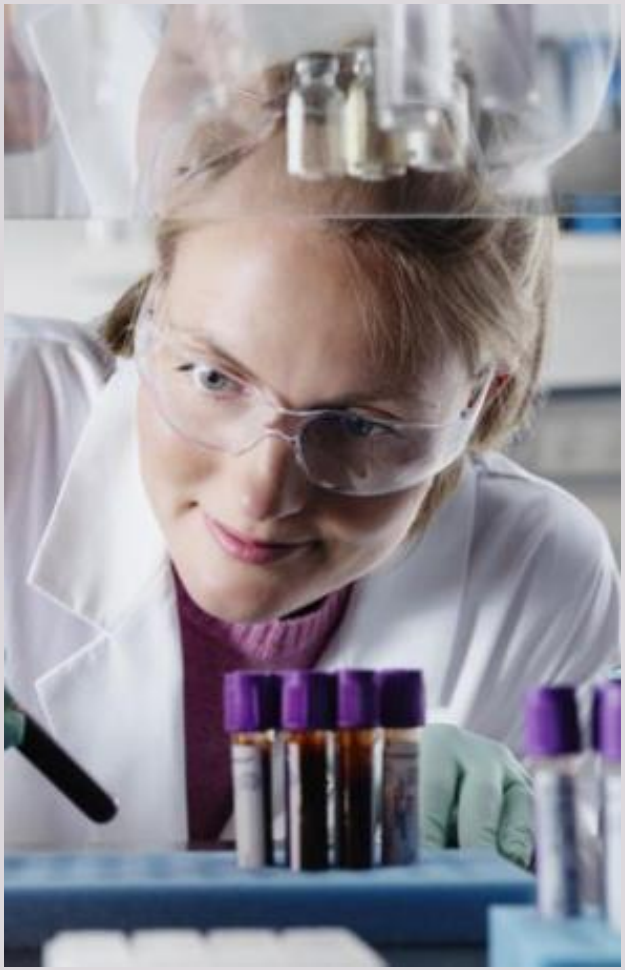
- Shows frequency distribution
- Bars represent different events
  - *numbers grouped into ranges*
  - *Height=frequency of occurrence*
- Useful to understand the spread of data for a process




Number of readmissions
60
40
20
0
7
14
21
28
Days between discharge and readmission

Histogram of lab draws by time resulted





CURRENT STATE INTERVIEWS

Lab Tech

Question:

1. What information did you gather from the lab tech interview?

CURRENT STATE INTERVIEWS

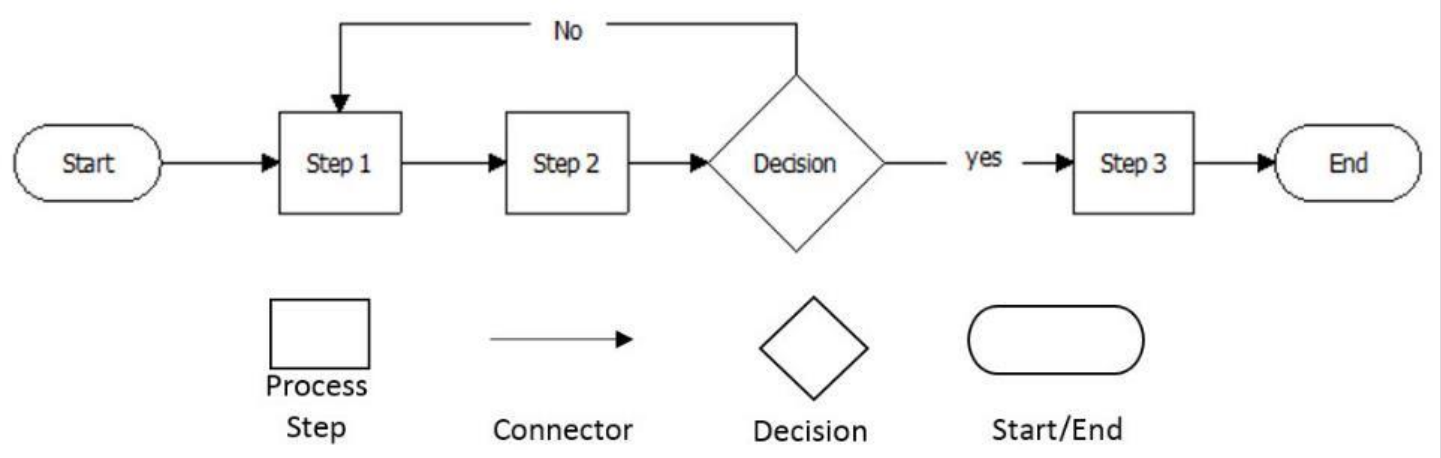
Phlebotomist

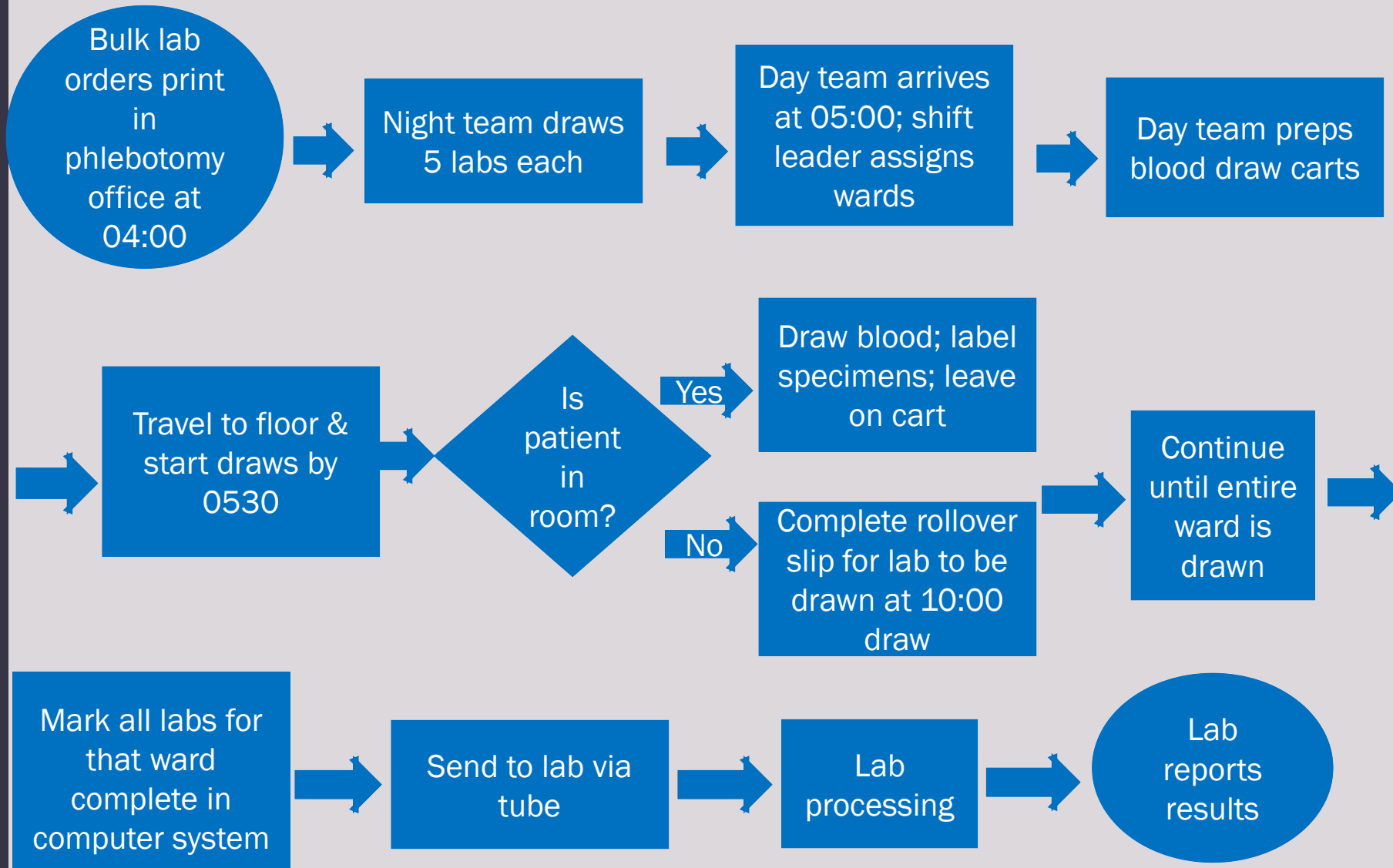
Question:

1. What information did you gather from the phlebotomist interview?

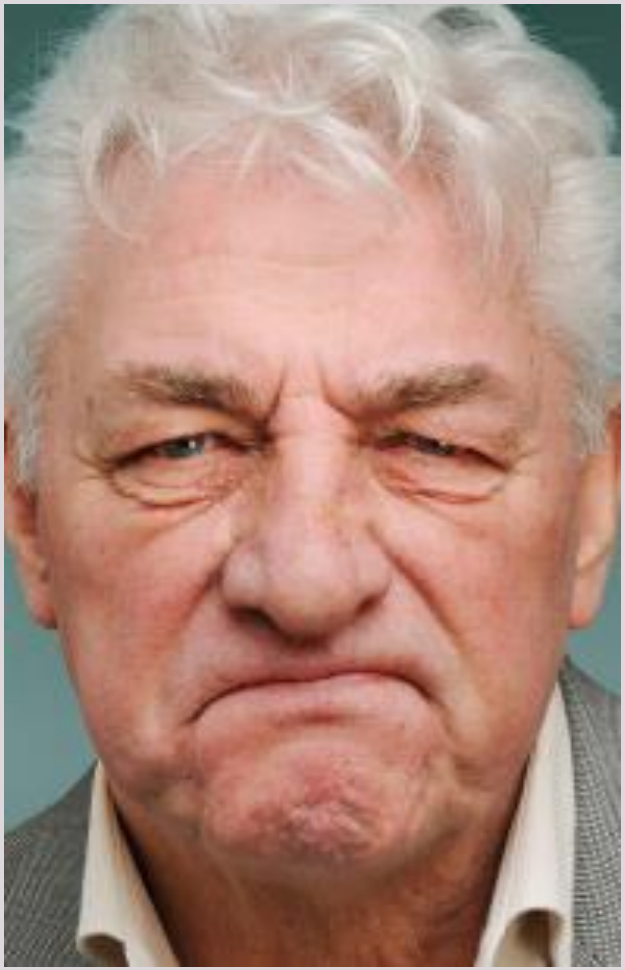
Process Mapping

Process mapping is the graphic display of steps, events and operations that constitute a **process**.




Bulk lab orders print in phlebotomy office at 04:00
Night team draws 5 labs each
Day team arrives at 05:00; shift leader assigns wards
Day team preps blood draw carts
Travel to floor & start draws by 0530
Is patient in room?
Yes
Draw blood; label specimens; leave on cart
No
Complete rollover slip for lab to be drawn at 10:00 draw
Continue until entire ward is drawn
Mark all labs for that ward complete in computer system
Send to lab via tube
Lab processing
Lab reports results

CURRENT STATE INTERVIEWS



Phlebotomy Manager

Question:

1. What information did you gather from the phlebotomy manager interview?

Observations of how where phlebotomists are spending time

First 2 columns includes time in motion between rooms, prep outside of room and time in room

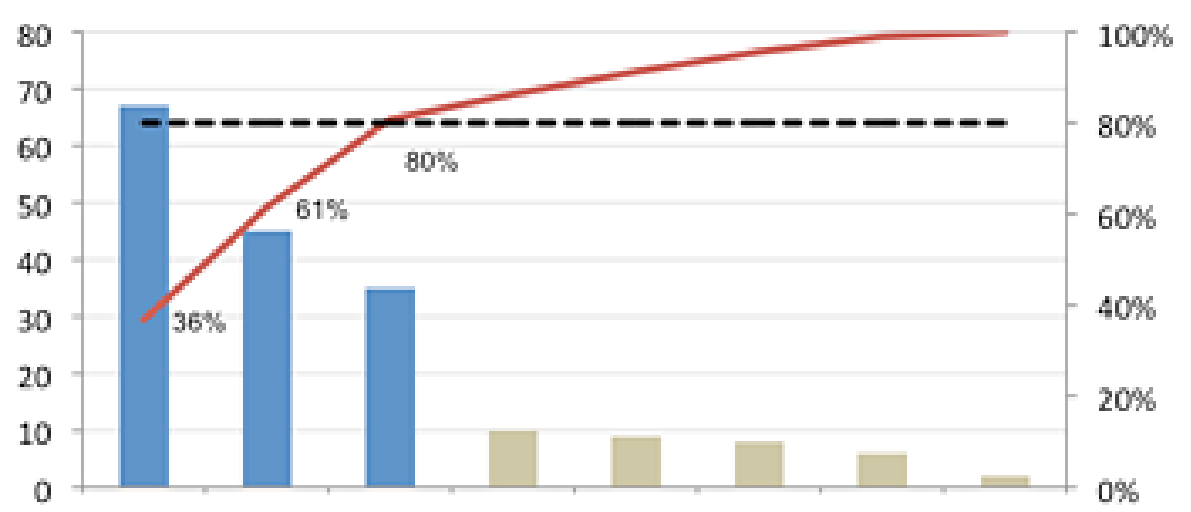
LPN # 1:

Floor 6D START 5:24 END 7:40

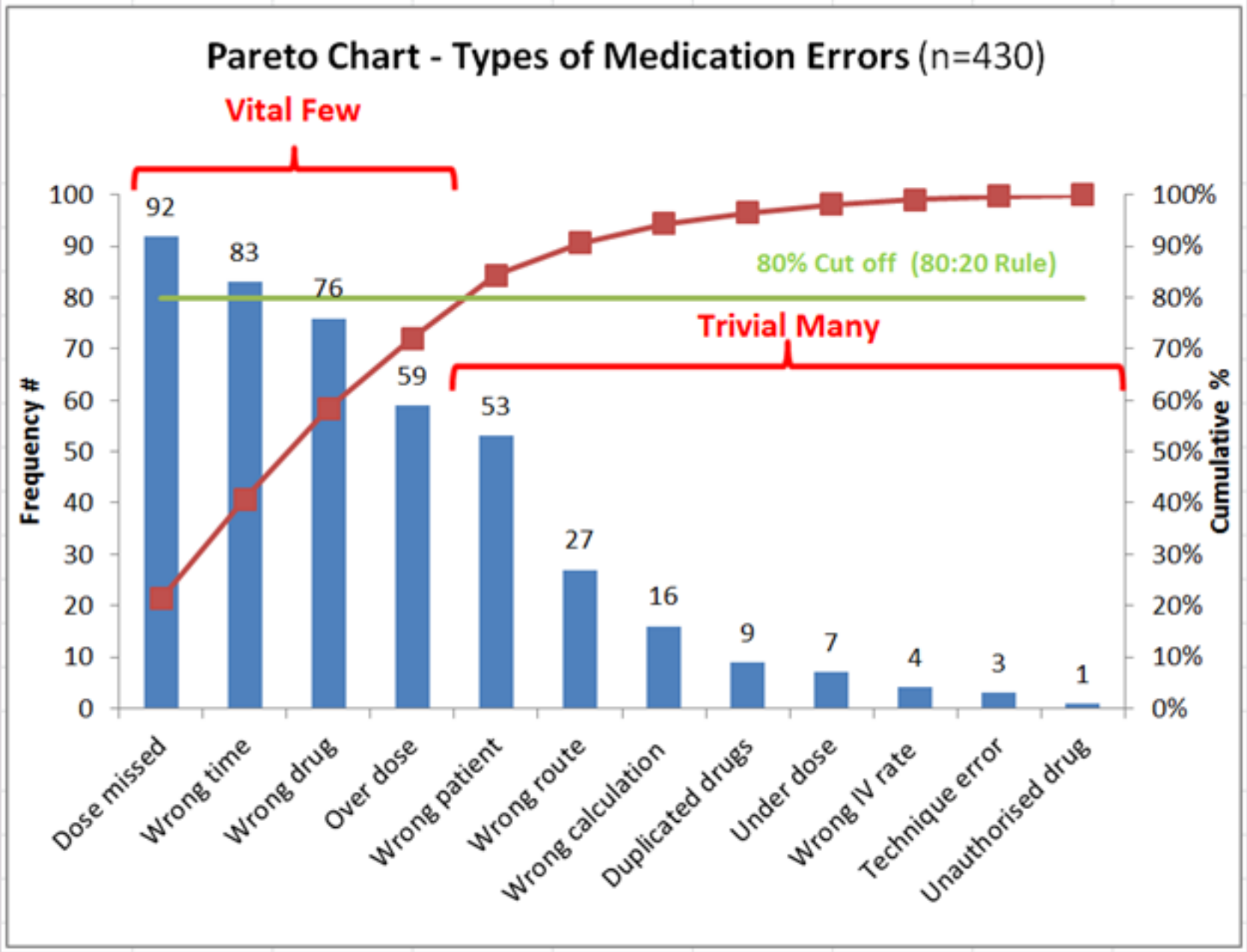
Minutes spent per task

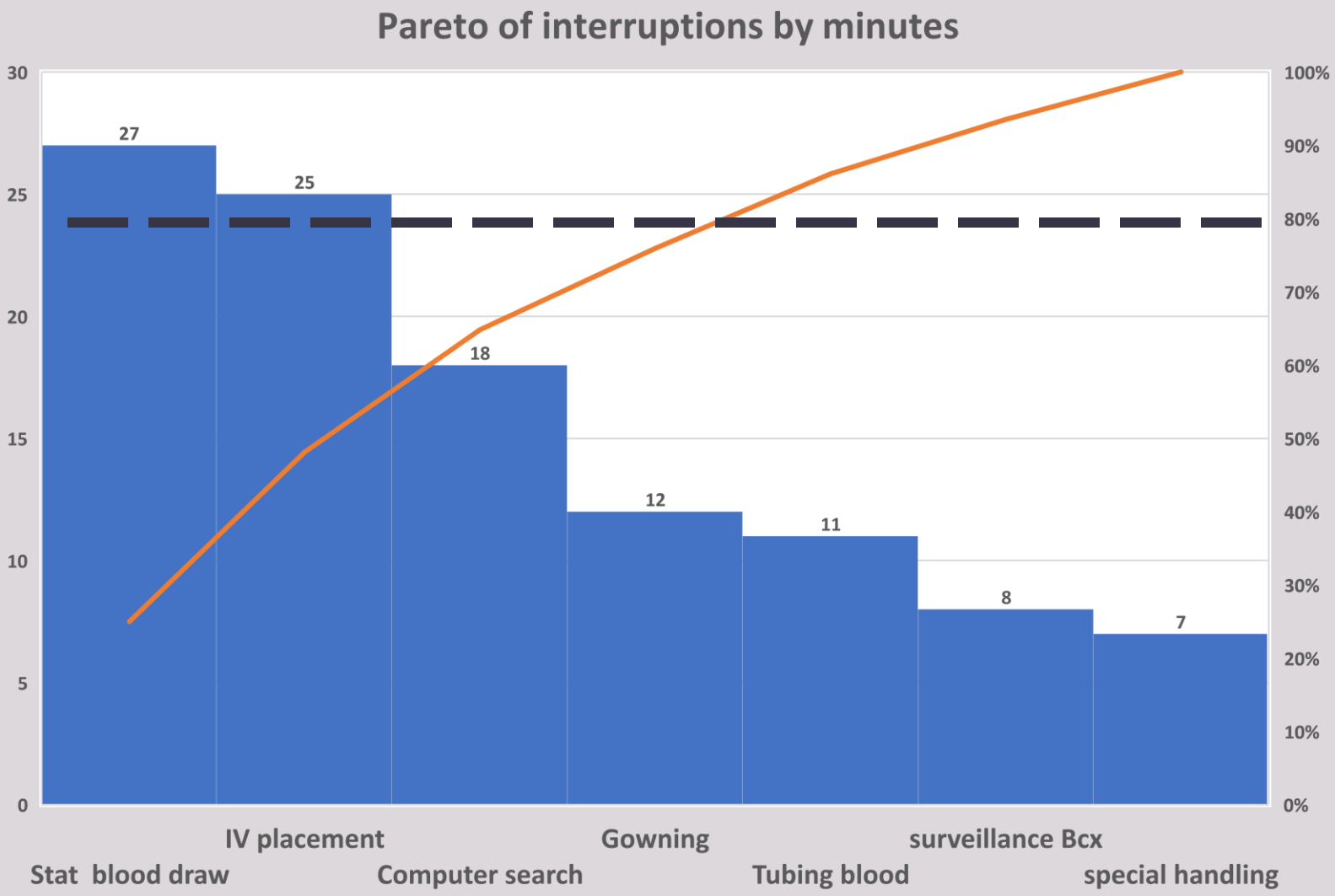
	Routine blood draw	Stat blood draw	surveillance Blood cx	special handling labs (name)	Gowning for contact precautions	Searching for computer	Tubing blood to lab	IV placement	Total mins for patient
Patient 1	8		4						12
Patient 2	6				1				7
Patient 3	5							3	8
Patient 4	6			2 (ACTH)					6
Patient 5		5				3	2		12
Patient 6	5				1			2	8
Patient 7	6				1				7
Patient 8	6								6
Patient 9	8		4					3	15
Patient 10		5				3	2		10
Patient 11	5				1				6
Patient 12	5				1			3	10
Patient 13	5			2 (D-Dimer)					7
Patient 14	6				1				7
Patient 15	7					4	3		14

Pareto Chart

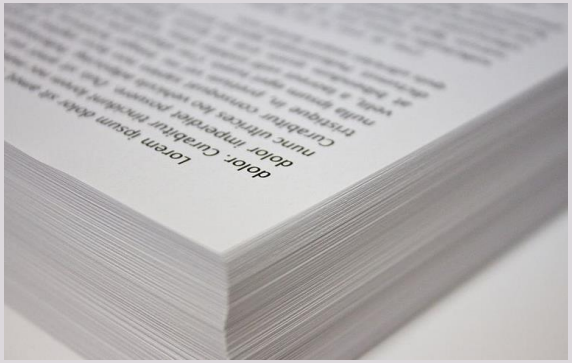


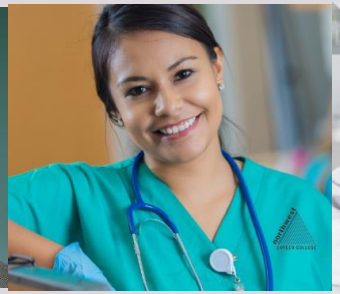
- Powerful for showing relative importance of factors
- Combines bar & line graph
  - *Aka: sorted bar graph*
- Individual factors in descending order, cumulative total represented by the line
- 80% cutoff line indicates where 80/20 rule applies, i.e., the few key (vital) factors that warrant attention


Pareto Chart - Types of Medication Errors (n=430)
Vital Few
Trivial Many
80% Cut off (80:20 Rule)
Frequency #
Cumulative %
100
90
80
70
60
50
40
30
20
10
0
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
92
83
76
59
53
27
16
9
7
4
3
1
Dose missed
Wrong time
Wrong drug
Over dose
Wrong patient
Wrong route
Wrong calculation
Duplicated drugs
Under dose
Wrong IV rate
Technique error
Unauthorised drug

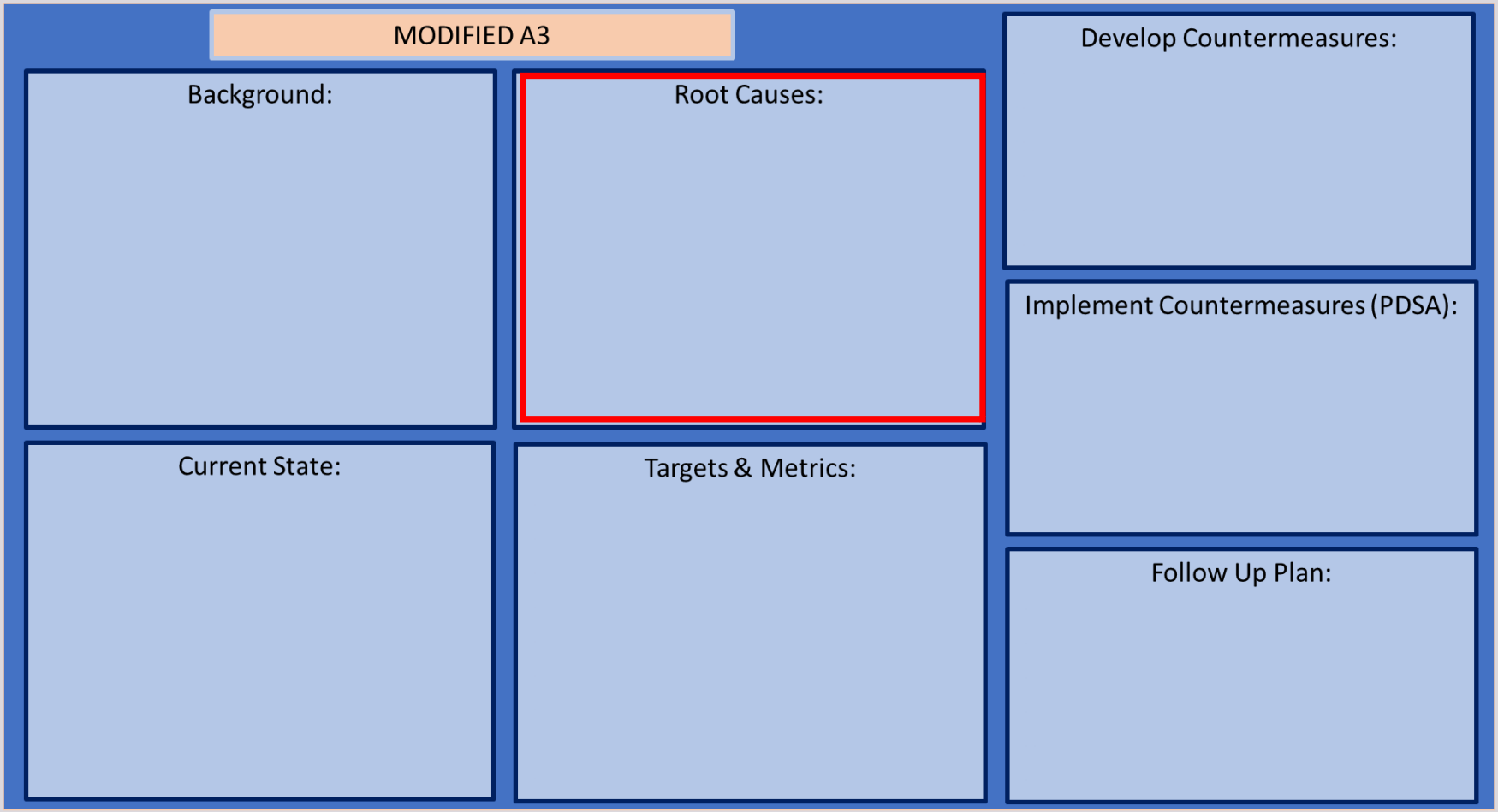

Pareto of interruptions by minutes
30
25
20
15
10
5
0
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
27
25
18
12
11
8
7
Stat blood draw
IV placement
Computer search
Gowning
Tubing blood
surveillance Bcx
special handling

So where are we?





Root Causes



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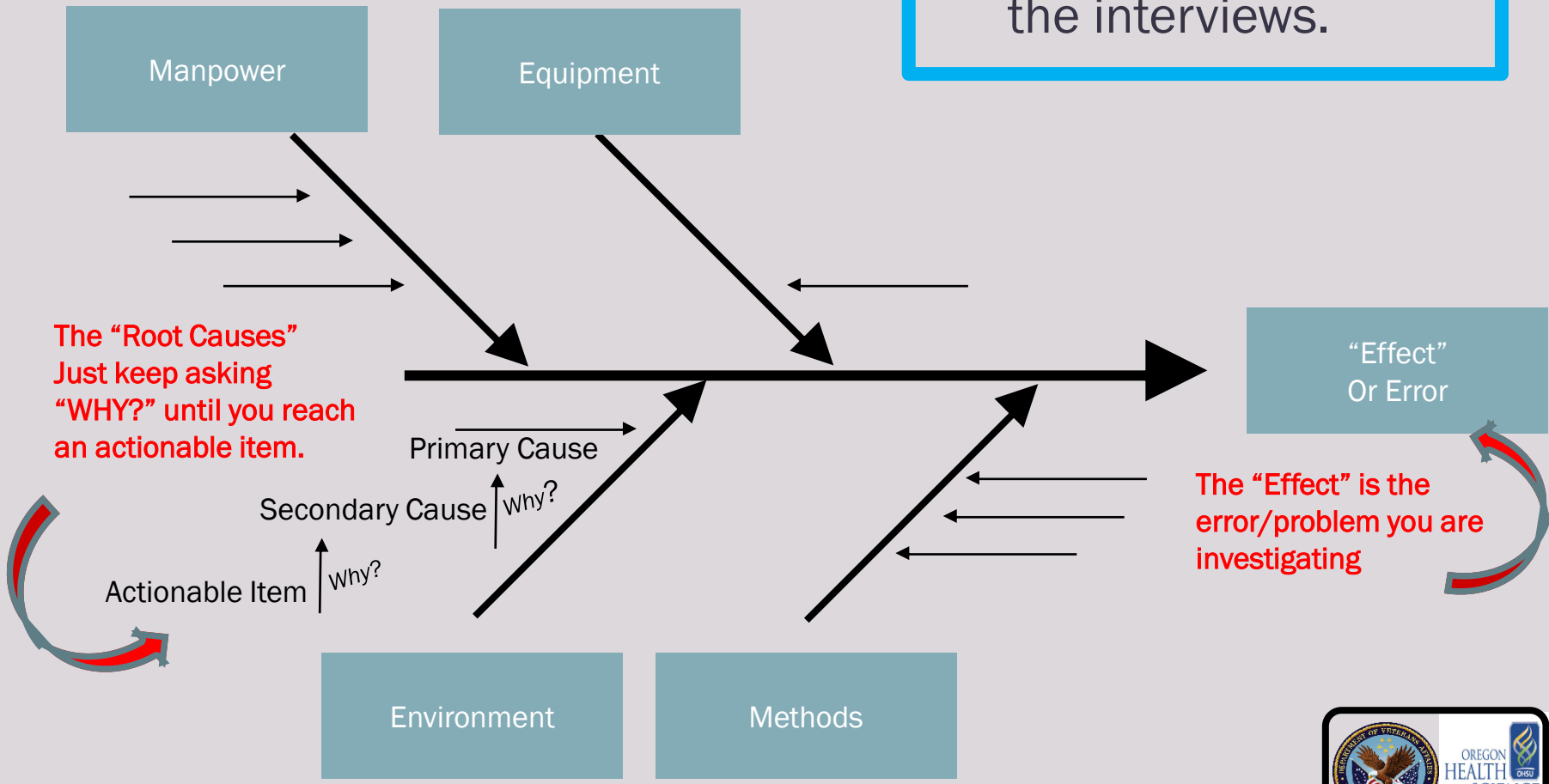
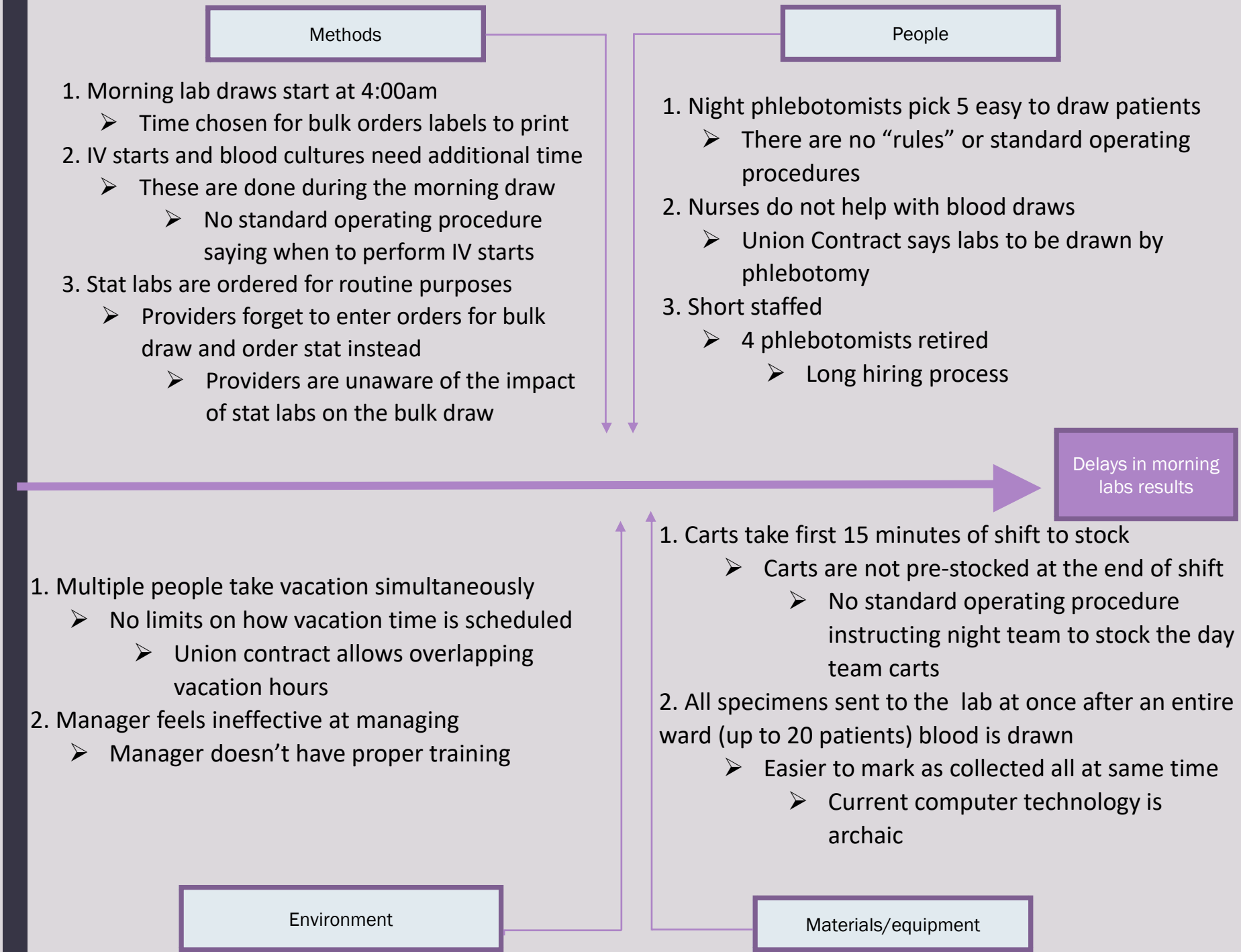
Fishbone Diagram

Activity:

1. Fill out the fishbone diagram on the website of potential root causes based on the interviews.




Methods
1. Morning lab draws start at 4:00am
Time chosen for bulk orders labels to print
2. IV starts and blood cultures need additional time
These are done during the morning draw
No standard operating procedure saying when to perform IV starts
3. Stat labs are ordered for routine purposes
Providers forget to enter orders for bulk draw and order stat instead
Providers are unaware of the impact of stat labs on the bulk draw
People
1. Night phlebotomists pick 5 easy to draw patients
There are no "rules" or standard operating procedures
2. Nurses do not help with blood draws
Union Contract says labs to be drawn by phlebotomy
3. Short staffed
4 phlebotomists retired
Long hiring process
Delays in morning labs results
1. Multiple people take vacation simultaneously
No limits on how vacation time is scheduled
Union contract allows overlapping vacation hours
2. Manager feels ineffective at managing
Manager doesn't have proper training
1. Carts take first 15 minutes of shift to stock
Carts are not pre-stocked at the end of shift
No standard operating procedure instructing night team to stock the day team carts
2. All specimens sent to the lab at once after an entire ward (up to 20 patients) blood is drawn
Easier to mark as collected all at same time
Current computer technology is archaic
Environment
Materials/equipment


BREAK

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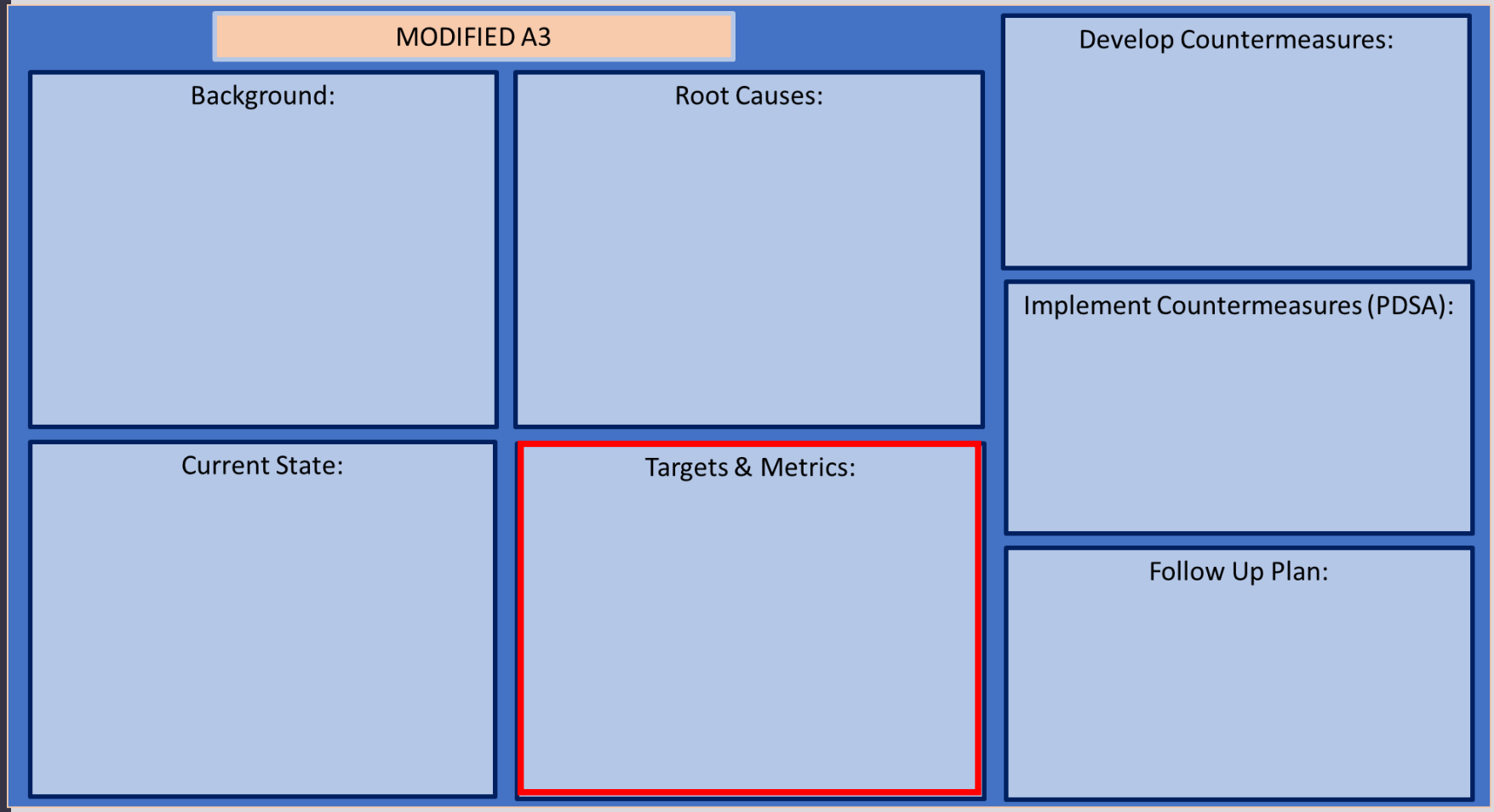
Target & Metrics



Please click NEXT PAGE TARGETS & METRICS on the website

Targets & Metrics

Activity: Come up with an AIM statement, outcome, process and balancing measure for this project and put it into the website.

AIM statement

- Specific
- Measurable
- Attainable
- Relevant
- Timebound

Outcome measures:

- What we are trying to improve
- What the end-user cares about

Process measures:

- Key steps and processes that influence the outcomes
- What we do proximal to outcomes

Balancing measures:

- The undesirable effects on a system because of your interventions

Target State:

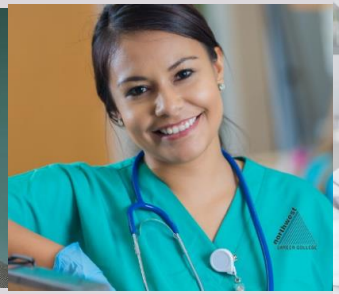
AIM Statement:

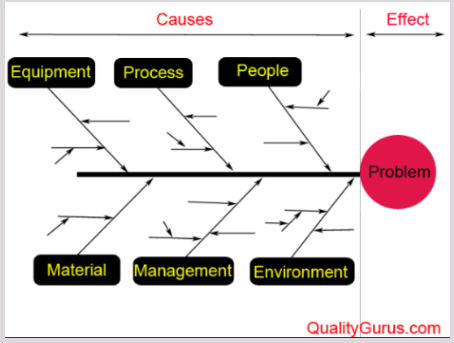
Increase the percentage of labs reported by 7:30 AM by 50% over a period of 3 months

Measures:

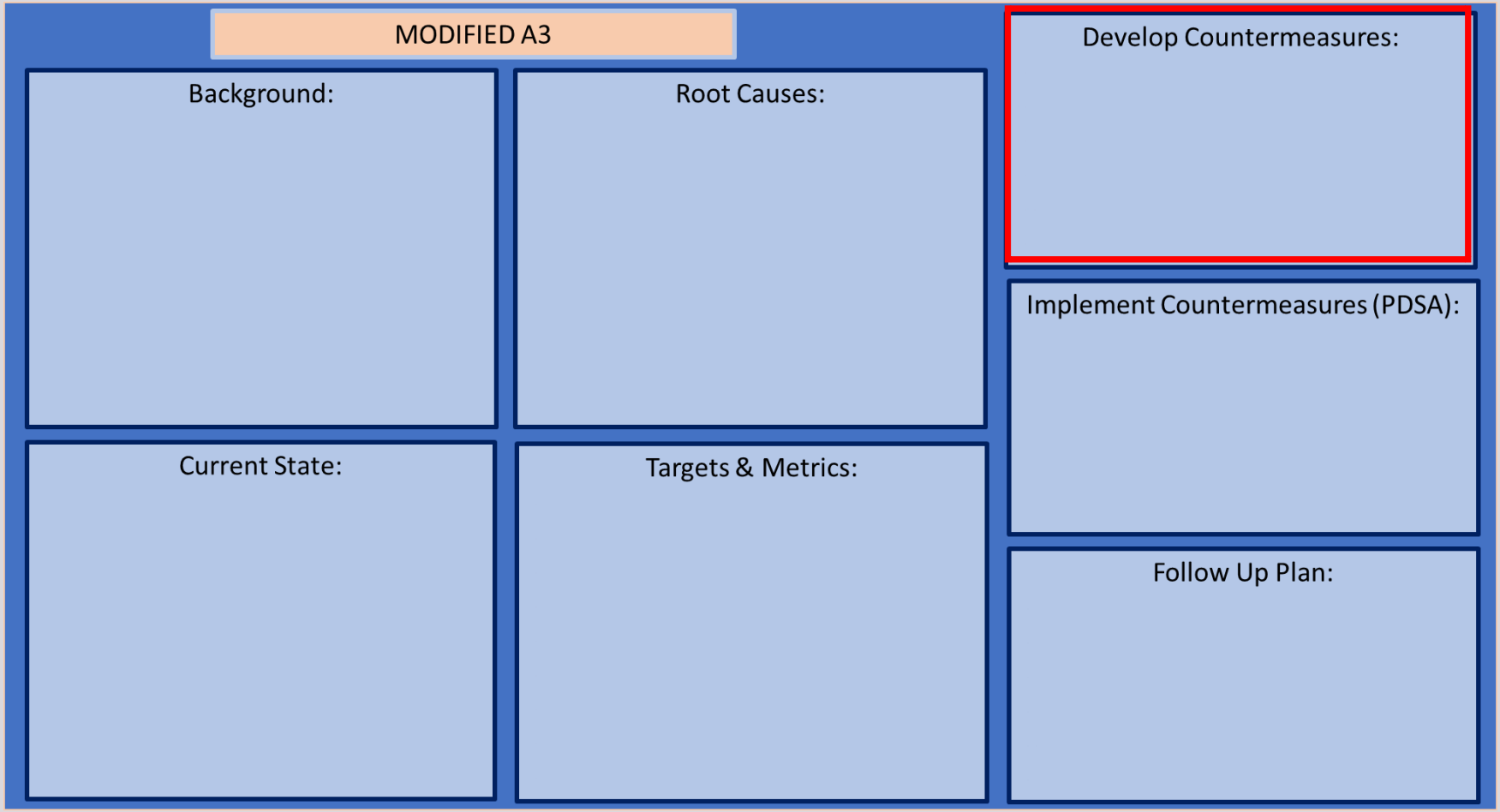
Outcome measure:	% of labs reported by 7:30 AM
Process measure –	*Staff attendance, average accession time*
Balancing measure -	*Minutes processing in the lab*

So where are we?





Develop Countermeasures



Please click NEXT PAGE TO DEVELOP COUNTERMEASURES on the website

Develop Countermeasures

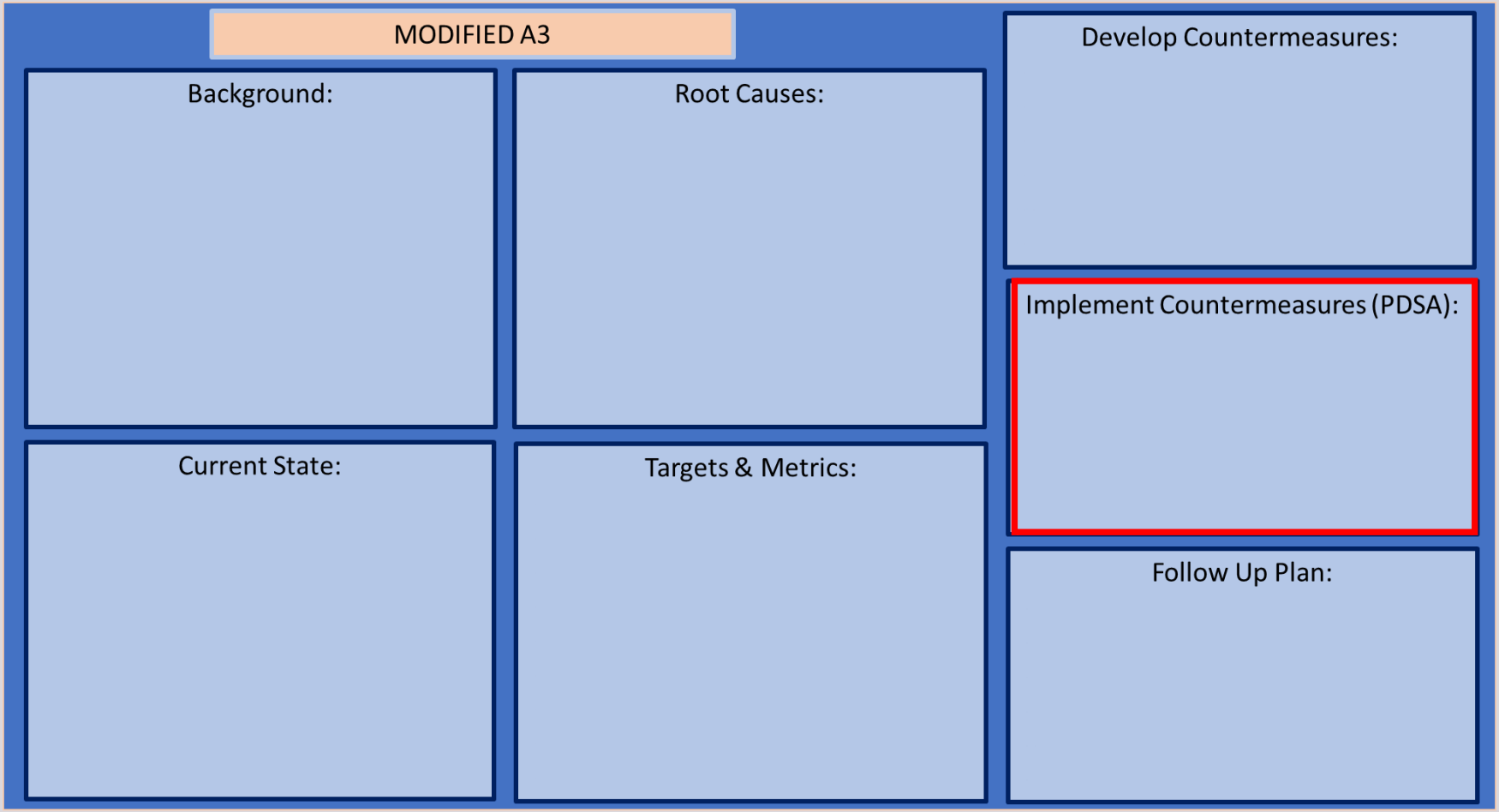
Outcome Measure: Increase the percentage of labs reported by 7:30 AM by 50% over a period of <u>3 months</u>

What change do you want to make to accomplish this?

<u>Activity</u>: Based on your root causes & AIM statement develop a plan of a single change what you would like to make to fix the system.

- *Remember you have a 3-month timeline to make improvement!*
- *Refer back to the pareto chart & fishbone diagram for ideas*
- *Write down your plan in the website*

Implement Countermeasures



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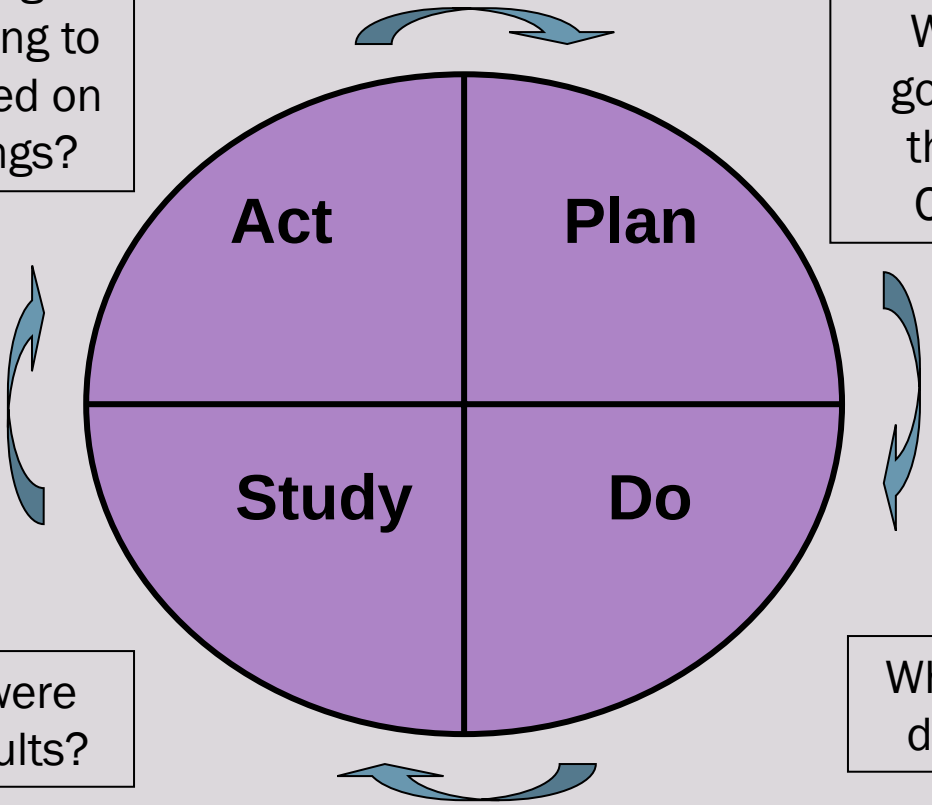
PDSA

What changes are we going to make based on our findings?

What exactly are we going to do? (Decided this during "Develop Countermeasures")

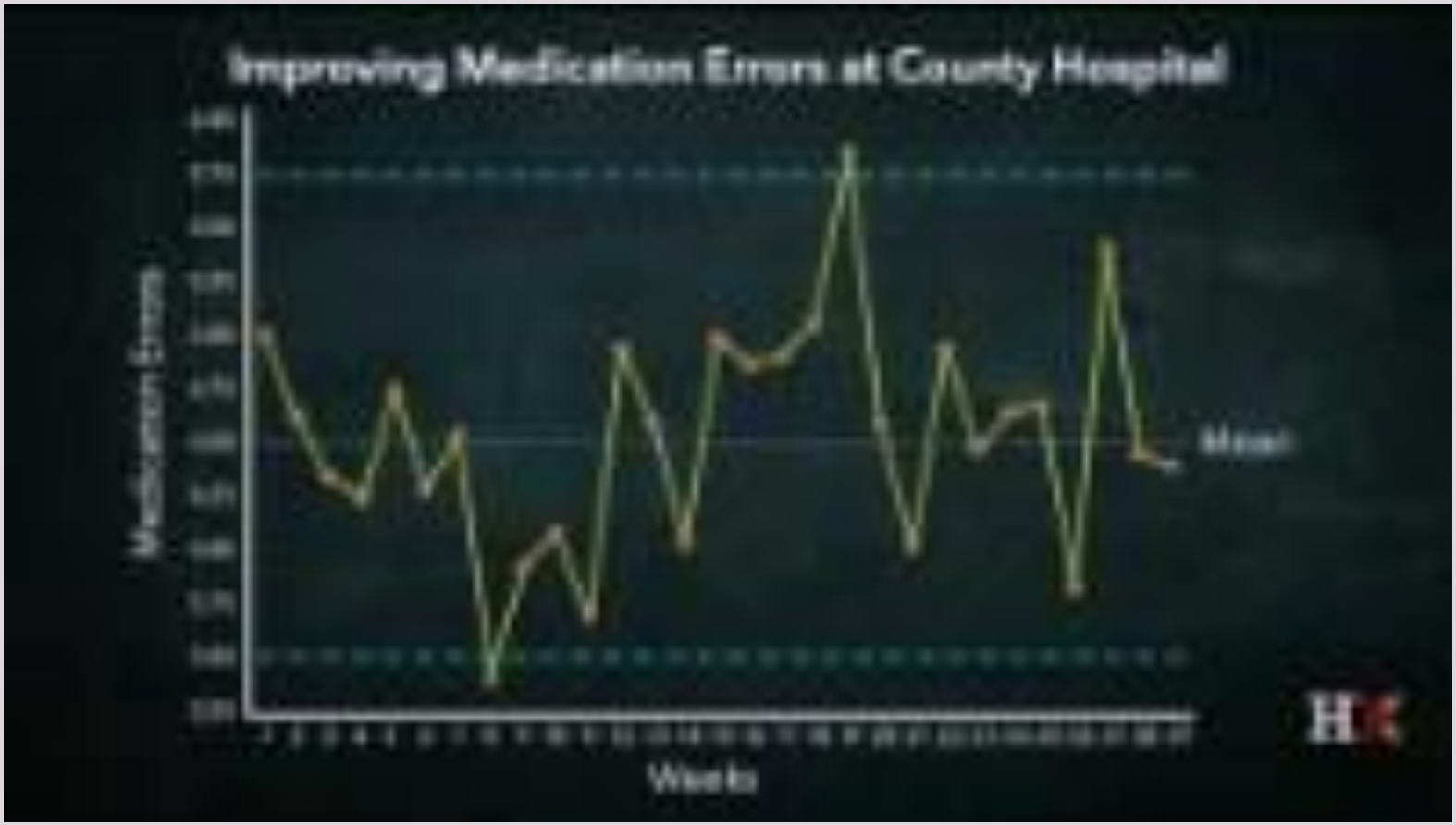


Adopt?
Adapt?
Abandon
?

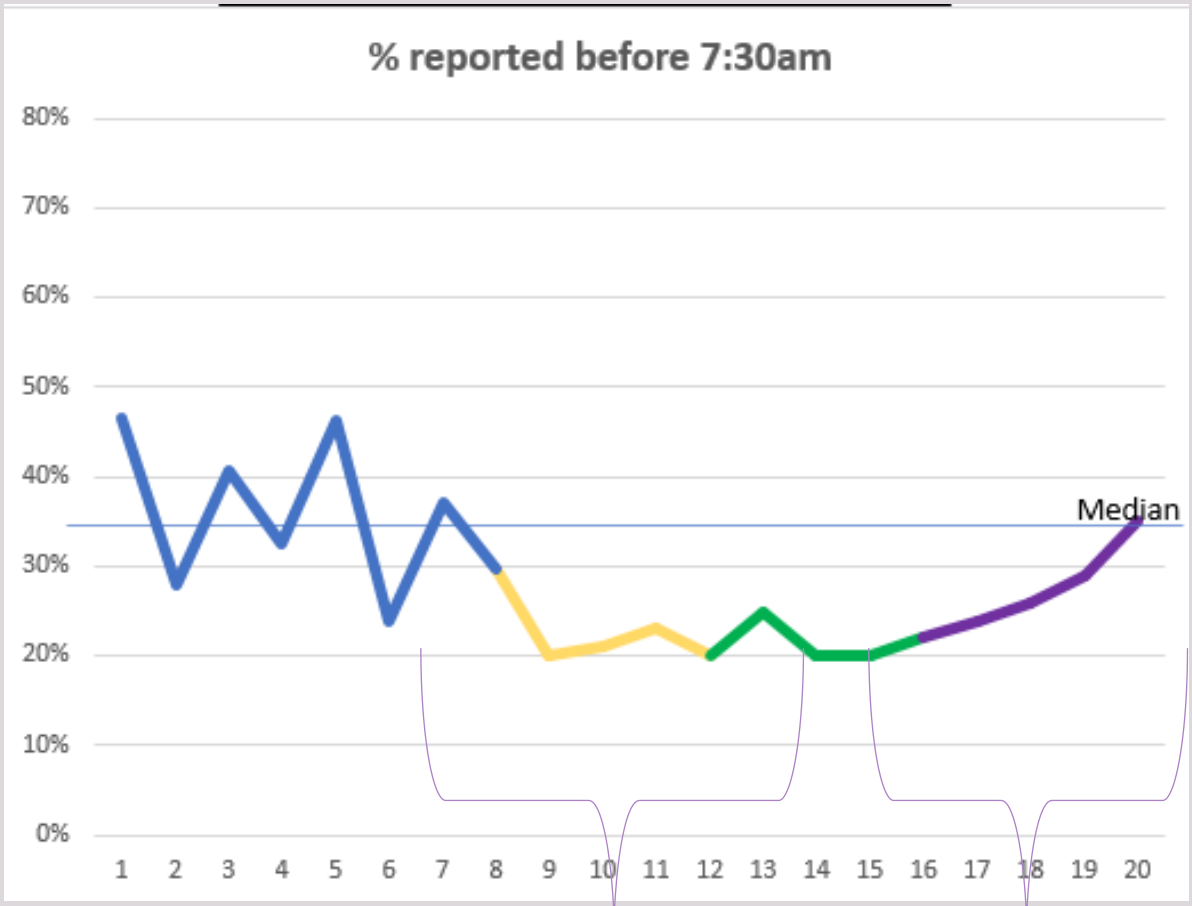
What were the results?

When and how did we do it?

Run Charts



Run Charts



Shift: 6 or more consecutive points above or below median

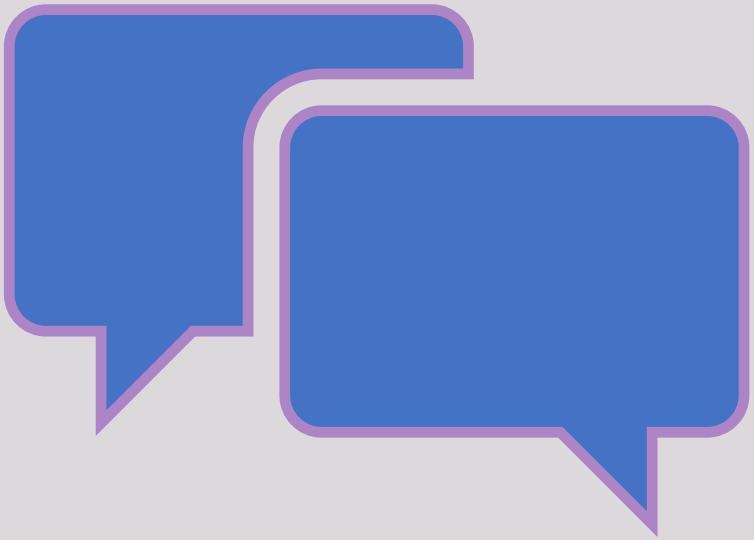
Trend: 5 or more increasing or decreasing points

Implement Countermeasures

Activity: Return to the website and begin your PDSA cycle. Choose the link to the data that best represents the type of change you want to implement.

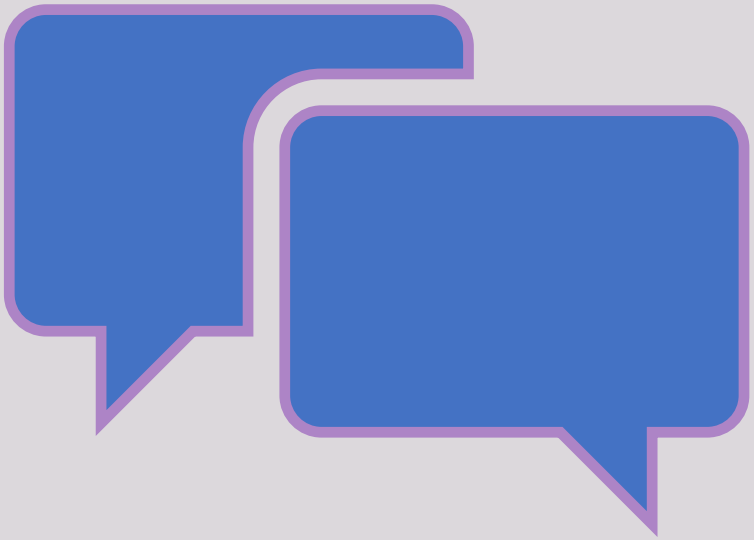
When you click on the link (Blue, Green, Orange) this will open a new window with data that you can graph into website.

PDSA Cycle 1



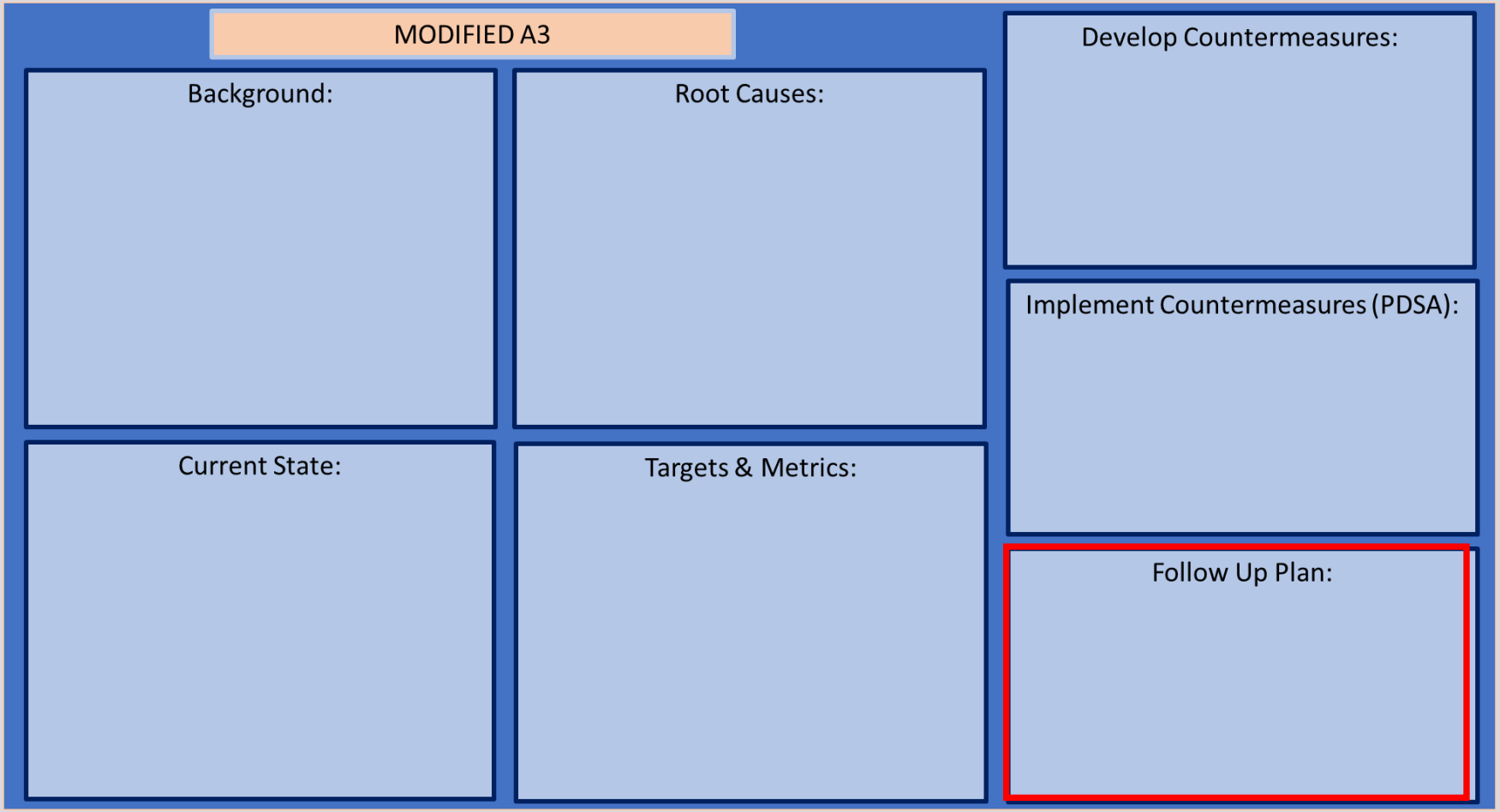
DEBRIEF PSDA MONTH 1

Complete PDSA Month 2 & 3



DEBRIEF PDSA MONTH 2-3

Follow Up Plan



Please click NEXT PAGE TO FOLLOW UP PLAN on the website

Follow up plan

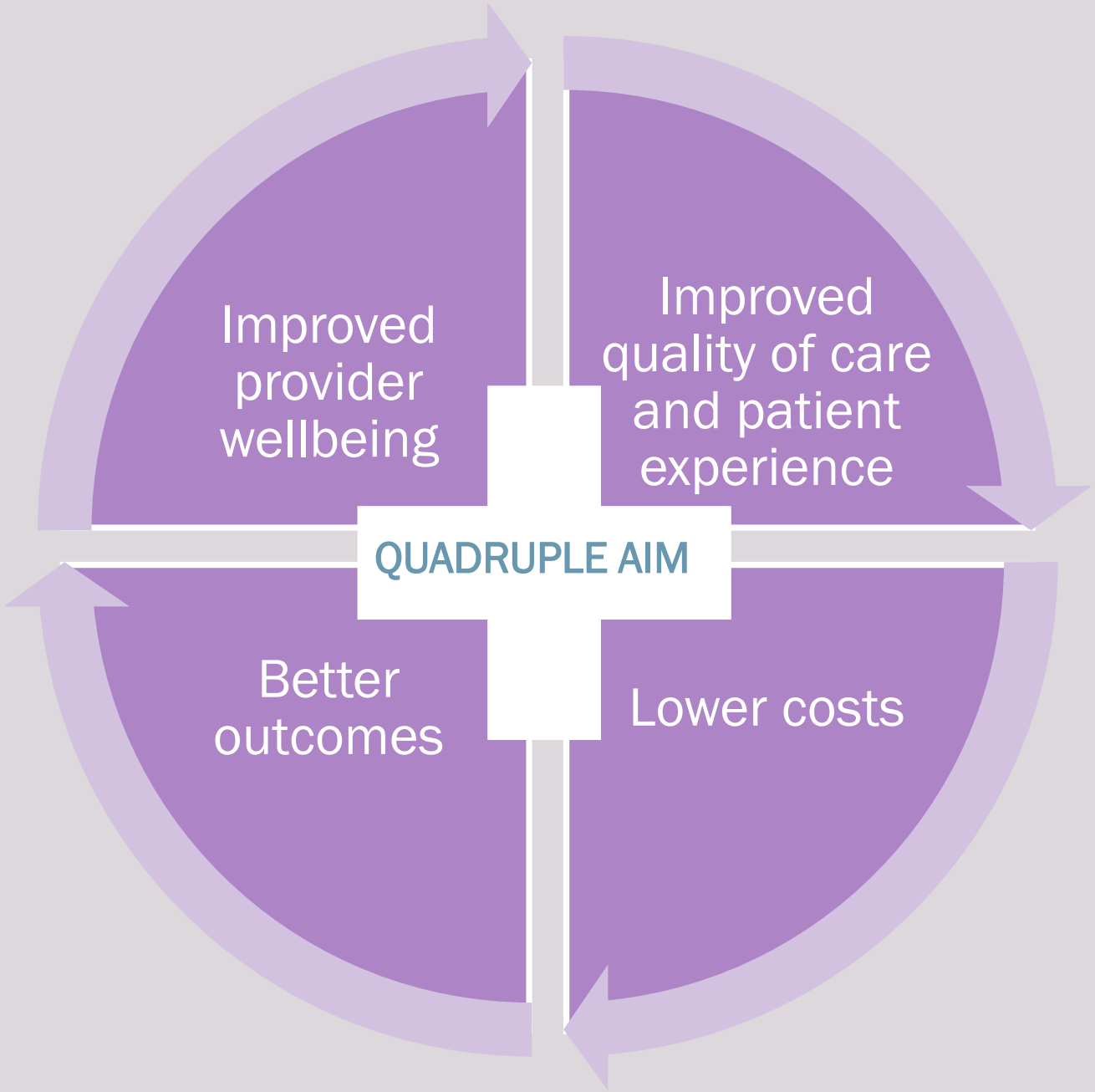
Things to consider:

- Publicize the agreed upon best way to do the work (“standard work”).
- Who will monitor data?
- What thresholds will you use to re-convene improvement team?

Today's Agenda

- Recap Week 5
- Intro to Week 4
- Iterative Improvement Activity Part 1
- Break
- Iterative Improvement Activity Part 2
- Wrap Up/HSPs

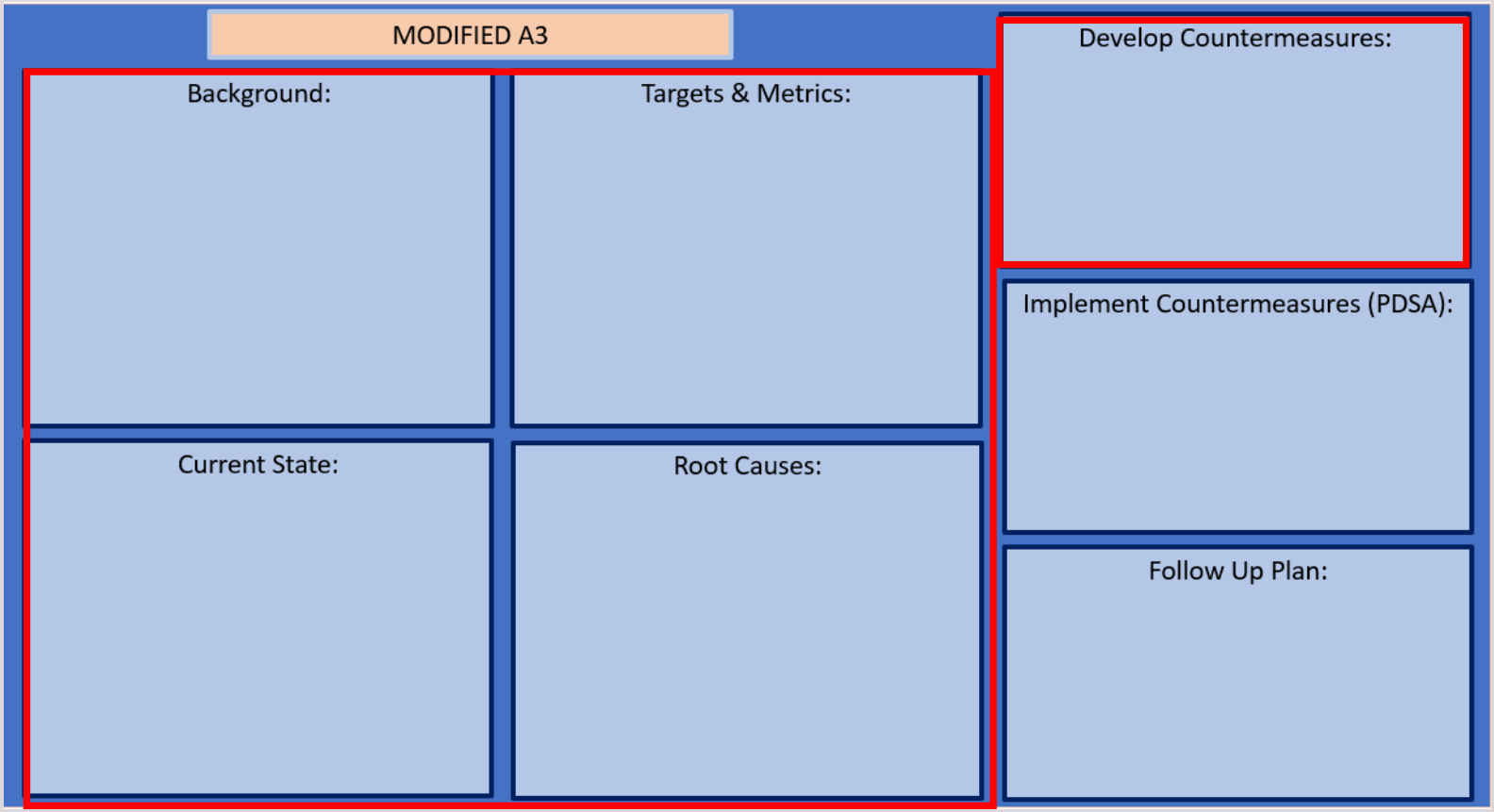

the
WRAP
UP


Improved provider wellbeing
Improved quality of care and patient experience
QUADRUPLE AIM
Better outcomes
Lower costs

Health System Project (HSP) Timeline:

11/2-11/23	11/30-12/21	1/11-2/1	2/8-3/1	3/8-3/29	4/5-4/26	5/3-5/24	5/31-6/21
Introduction to HSPs	Team & project selection, planning	Background & current state	Targets & metrics	Fishbone & root cause statements	Develop counter-measures	Finalizing PPT	Presentations! 

Structuring the HSP



Next steps:

- Team selection: 1-3 people. Recommend groups of 2 with similar interests.
- Check out IMRESPDX:
  - Full outline for the project and presentation.
  - Currently available list of faculty projects.
- Brainstorm a topic (either from the list or dream up your own).
- Project selection will be due by January 2023.
- If you plan on carrying a project forward for scholarship, please email Anne Smeraglio smeragli@ohsu.edu by January 1.
- The top 4 project presentations from the end of TIS will win a DOM award and be given the opportunity present at a DOM wide noon conference in July 2023.

Selecting a project:

- ***Existing Projects:*** *You can choose between existing projects (see IMRESPDX for list), or again, you can use your own idea. These come with mentors and will be much easier to launch.*
- ***Passion****: Care about the problem. An error you witnessed, a policy you care about, a systems issue that bothers you.*
- ***Bite-sized:*** *Projects should be small enough to be completed with limited time.*
- ***Feasible Interventions:*** *Actions that can be carried out by your team to fix the issue.*
- ***Mentorship****: You will be either assigned a mentor or if you have a mentor in mind, you can self select a mentor.*
- ***Scholarship****: If you plan on doing this for scholarship purposes let us know up front so your project can be appropriately designed/supported for this.*
- ***Future Careers Goals****: Consider selecting a project in a domain you plan to practice. For instance, if you are fellowship bound for Cardiology consider a project around a topic that will build your application (i.e. daily weights, diuretic dosing errors etc.).*

PSI REPORTING

THE WINNER IS…

Yellow Firm
(carried by Clint Kolseth)

Feedback