Institute for Healthcare Quality,
Safety and Efficiency
SCHOOL OF MEDICINE
UNIVERSITY OF COLORADO **ANSCHUTZ MEDICAL CAMPUS**

Quality Improvement & Change Management

Disclosures

NONE

Agenda

1. **Introduction of Faculty**
2. **Intro QI**

BREAK

3. **Change Management**

YOU ARE HERE

Session	2024-2025 Dates & Times*
Quality Improvement & Change Management	August 8: 1-4 p.m. MT August 21: 1-4 p.m. MT
Applied Patient Safety	August 15: 1-4 p.m. MT
Acquiring Data to Drive Change	September 5: 1-4 p.m. MT
Designing for Change	September 11: 1-4 p.m. MT
Spreading Change Locally and Nationally	September 19: 1-4 p.m. MT
Coaching and Teaching Quality Improvement	October 2: 1-4 p.m. MT

**ALL sessions held virtually on Zoom*


zoom

Quality Improvement

QI = Quality Improvement

Systematic and continuous actions that lead to ***measurable*** improvement in health care services and the health status of targeted patient groups.

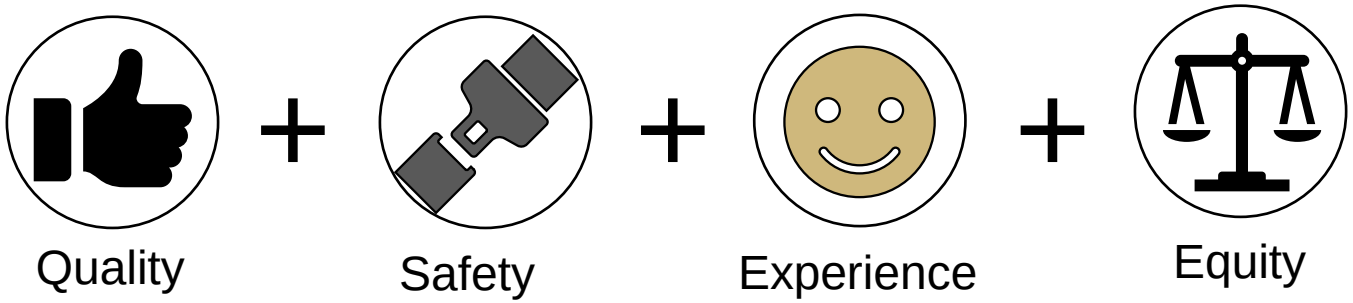
U.S. Department of Health and Human Services Health Resources and Services Administration. (2011). *Quality Improvement*. https://www.hrsa.gov/sites/default/files/quality/toolbox/508pdfs/qualityimprovement.pdf.

Value

QI = ~~Quality~~ Improvement

Systematic and continuous actions that lead to measurable improvement in health care services and the health status of targeted patient groups.

$$\text{VALUE} = \frac{\text{Quality} + \text{Safety} + \text{Experience} + \text{Equity}}{\text{Cost}}$$




CONVERSE
ALL STAR

Models of Quality Improvement

PDSA/Model for Improvement

Six sigma

Lean

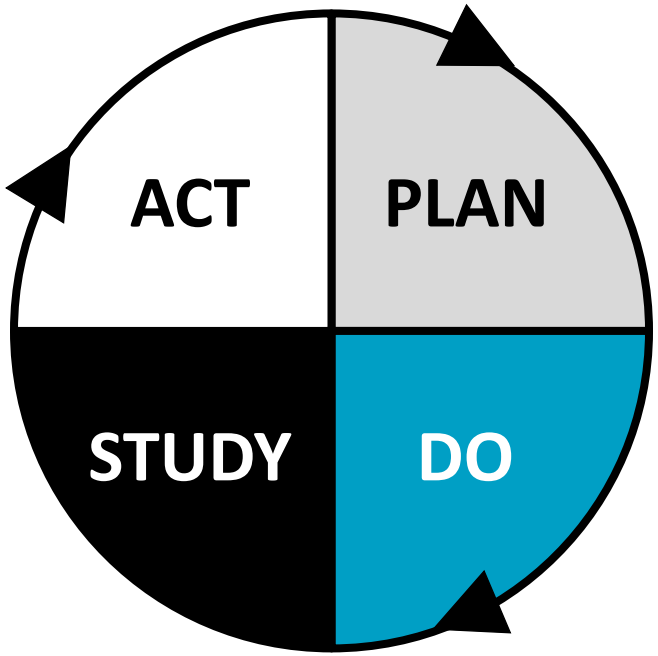
Institute *for* Healthcare Improvement

Model for Improvement

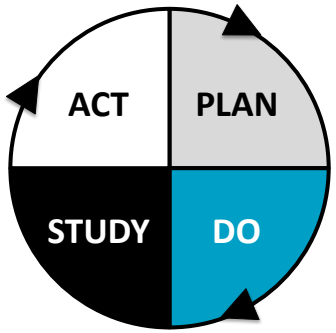
What are we trying to accomplish?

How will we know that change is an improvement?

What changes can we make that will result in an improvement?



Institute *for* Healthcare Improvement



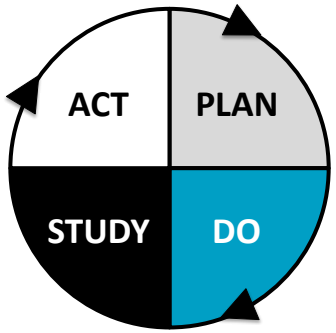
Plan: identify your problem, analyze contributing factors, and determine an intervention

Do: implement the intervention

Study: evaluate the results of the intervention

Act: determine what to do next to sustain or improve

Institute *for* Healthcare Improvement



Plan: identify your problem, analyze contributing factors, and determine an intervention

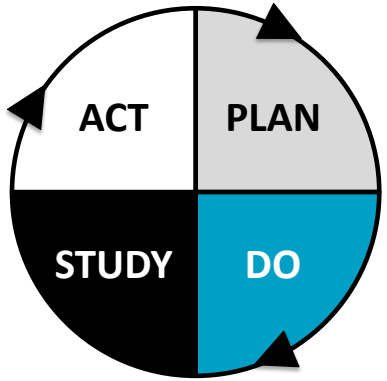
UNDERSTAND YOUR PROBLEM FIRST !!!

Six Sigma

"six" standard deviations from mean
(error rate of one per 3.4 per million)

DMAIC (*də-MAY-ick*)

Define, Measure, Analyze, Improve, Control



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"six" standard deviations from mean
(error rate of one per 3.4 per million)

UNDERSTAND YOUR PROBLEM FIRST !!!

Lean

Maximize value while *through* minimizing waste.

改善

Kaizen

'improvement' or 'change for better' (from 改 kai - change, revision; and 善 zen - virtue, goodness) with the inherent meaning of either 'continuous' or 'philosophy'

改善

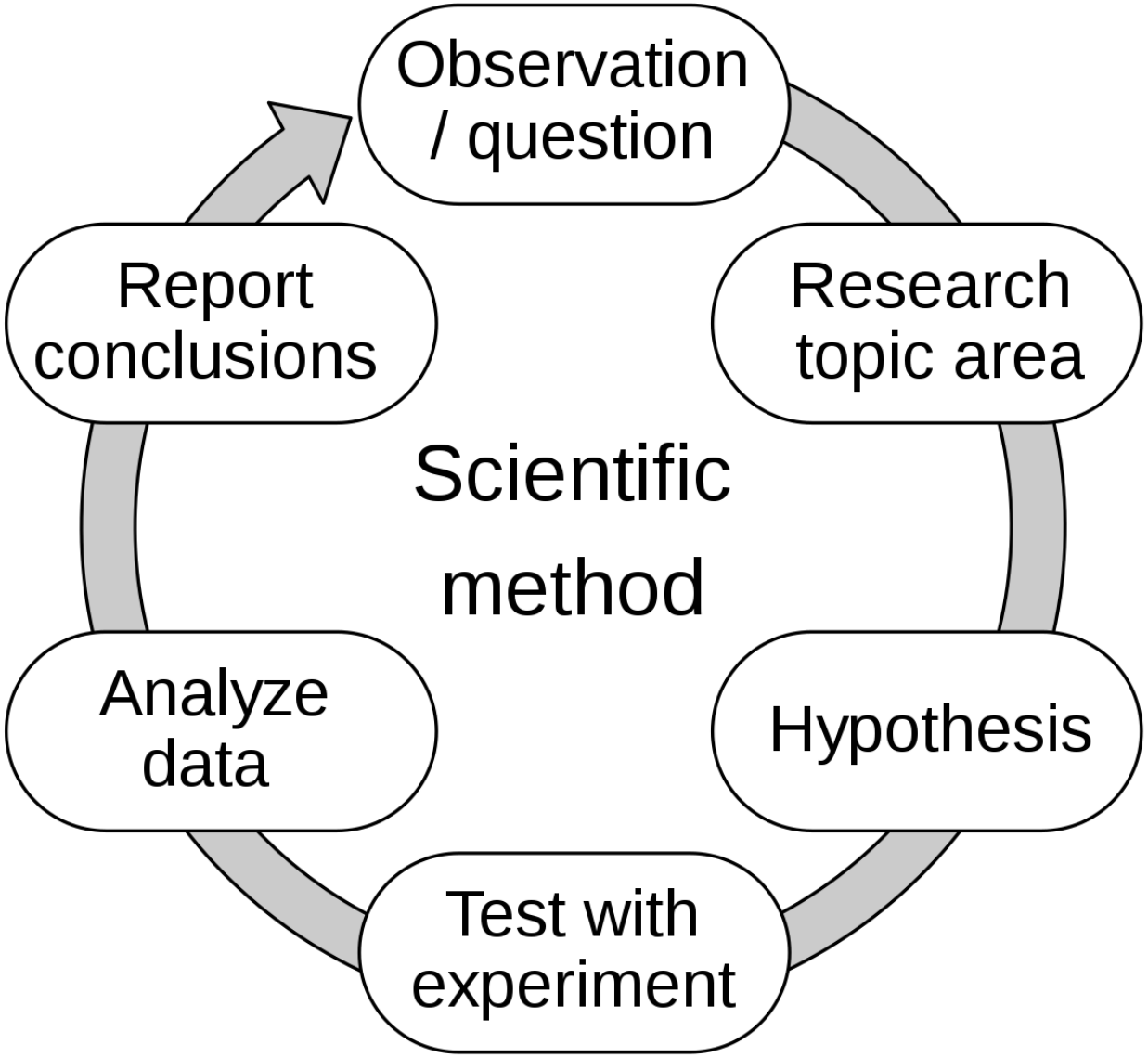
Eight Forms of Waste in Healthcare

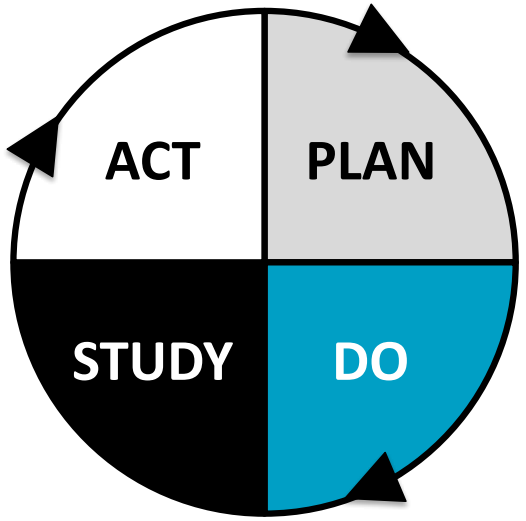
Photo Credit: *A3 Solutions • What We Do*. (2018). *A3 Healthcare Solutions*. Retrieved 7 April 2018, from http://www.a3healthcare.com/training-and-certification

6σ + 改善 =

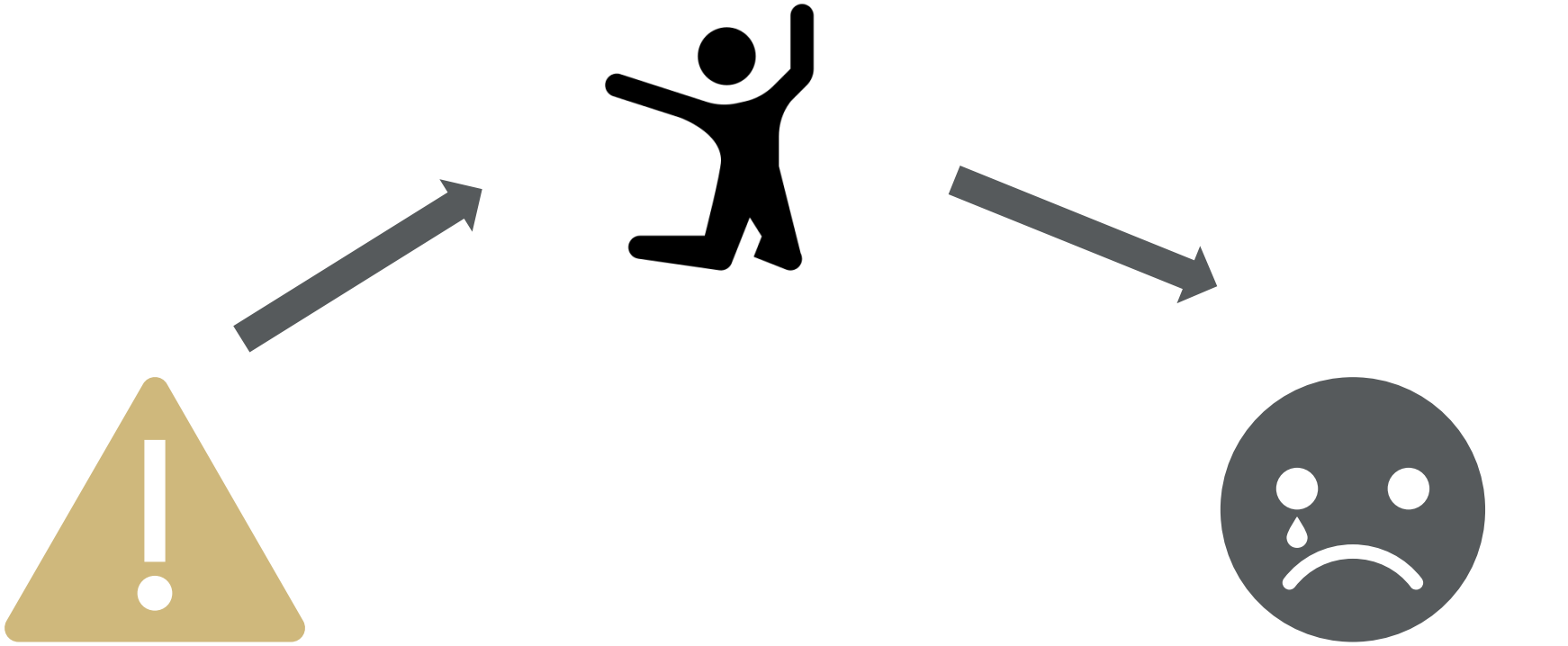
Six Sigma Lean


lean


Observation / question
Research topic area
Hypothesis
Test with experiment
Analyze data
Report conclusions
Scientific method

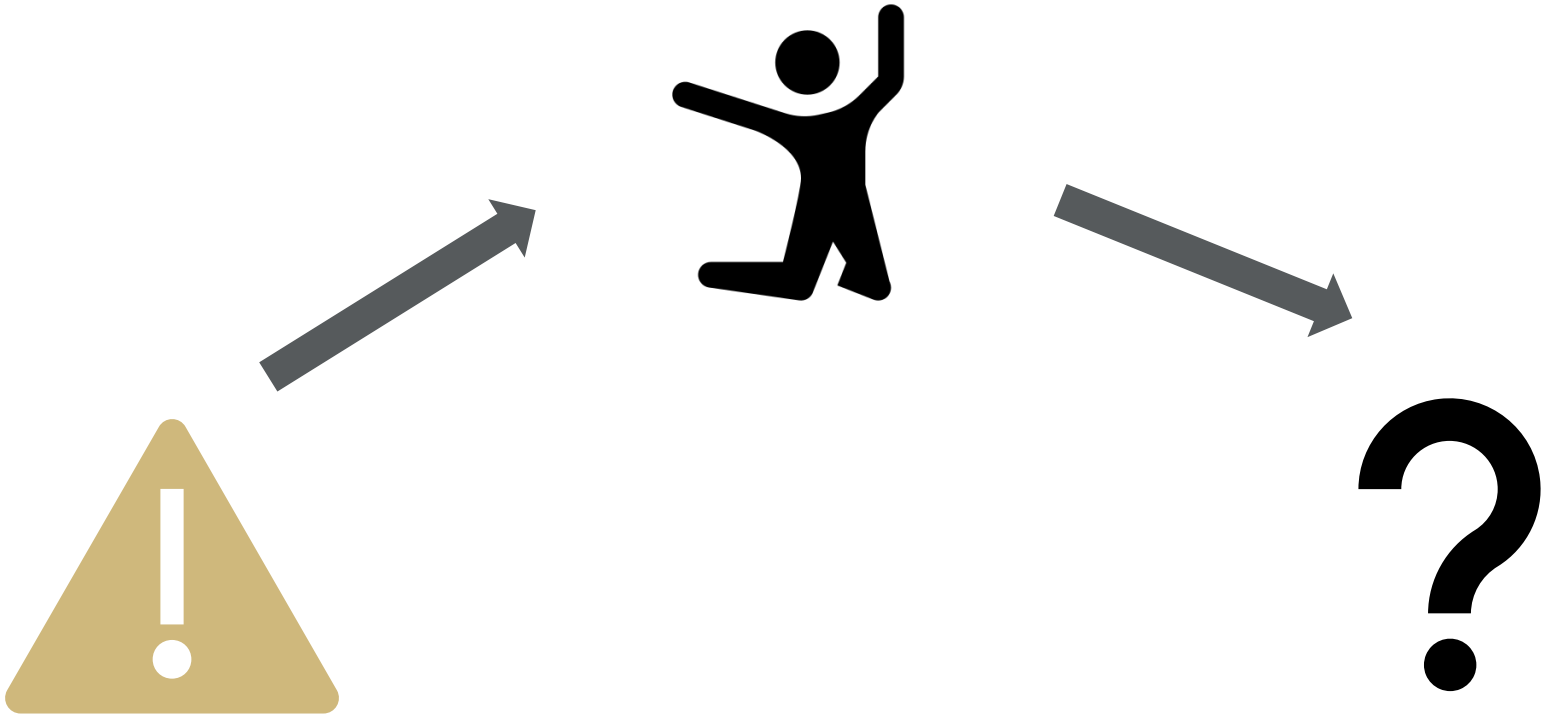

ACT
PLAN
STUDY
DO

UNDERSTAND YOUR PROBLEM FIRST !!!



Sense a problem

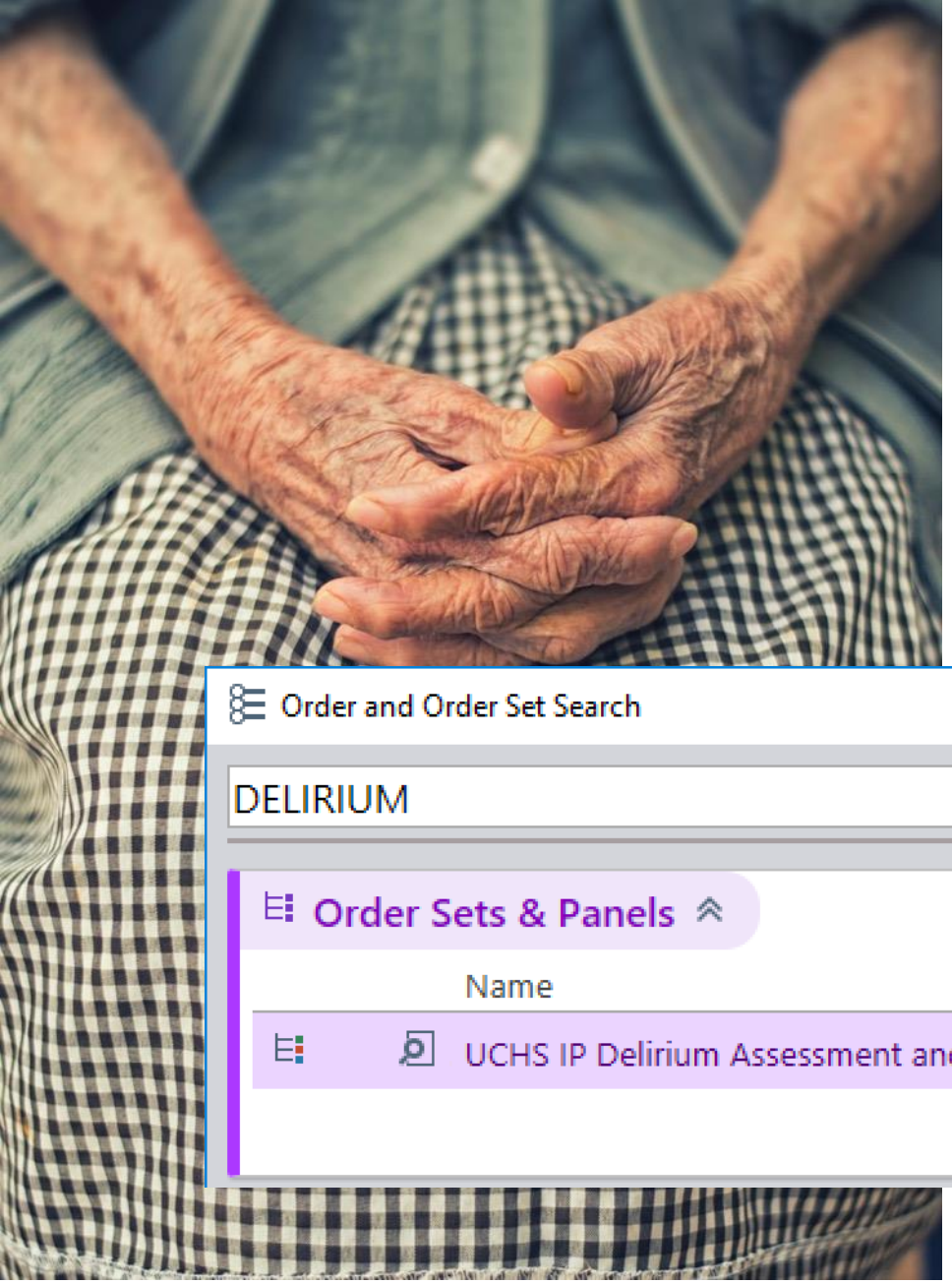
No improvement



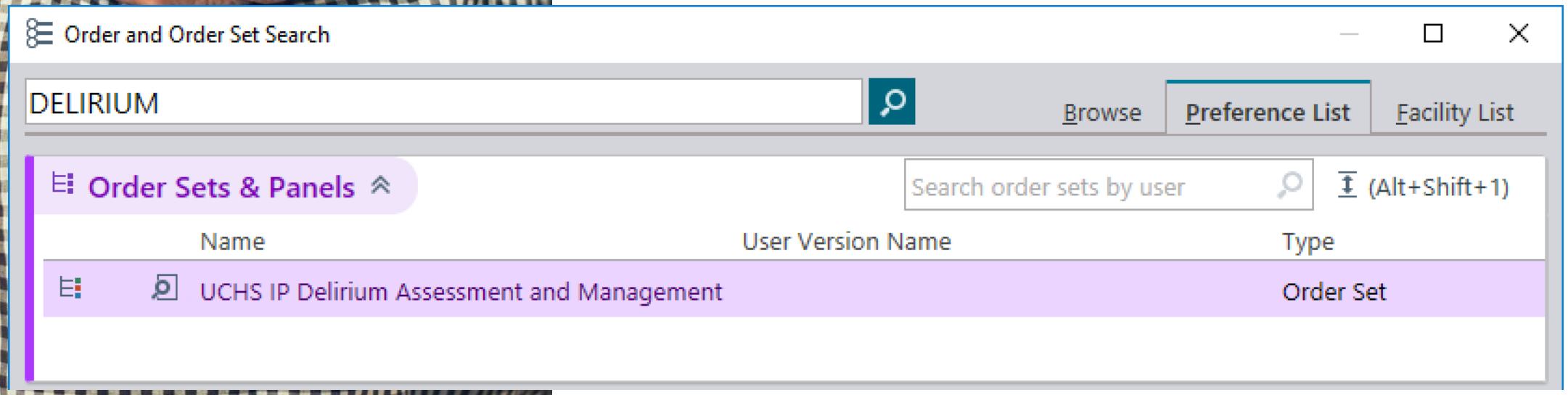
Sense a problem

Sense a problem

Sustained improvement



Agency for Healthcare Research and Quality



Journal of Hospital Medicine

Outcomes Following Implementation of a Hospital-Wide, Multicomponent Delirium Care Pathway

TABLE 3. **Unadjusted and Adjusted Clinical Outcomes for All Patients Combined and Medicine Unit Patients**

Clinical outcome	Unadjusted model result (95% CI)	*P* value	Adjusted model result (95% CI)	*P* value
All patients				
Length of stay proportional change[a]	1.00 (0.97-1.05)	.65	0.98 (0.92-0.99)	.0087
Total direct cost proportional change[a]	0.98 (0.96-1.00)	.17	0.99 (0.97-1.01)	.12
30-Day hospital readmission odds ratio	0.93 (0.86-1.00)	.039	0.86 (0.80-0.93)	.0002
Restraint rate ratio	0.83 (0.76-0.91)	<.0001	0.91 (0.71-1.16)	.45
Safety attendant rate ratio	0.51 (0.48-0.54)	<.0001	0.63 (0.41-0.97)	.034

LaHue, et al. Outcomes Following Implementation of a Hospital-Wide, Multicomponent Delirium Care Pathway. J. Hosp. Med 2021;7;397-403. Published Online First June 8, 2021. doi:10.12788/jhm.3604

Sense a problem

Sustained improvement

Six Steps for a Successful QI Project

1. Define the problem.
2. Identify areas that can be improved.
3. Decide how you will measure progress.
4. Explicitly state your goals (SMART)
5. Implement and measure small tests of change.
6. Build upon success and sustain the process.

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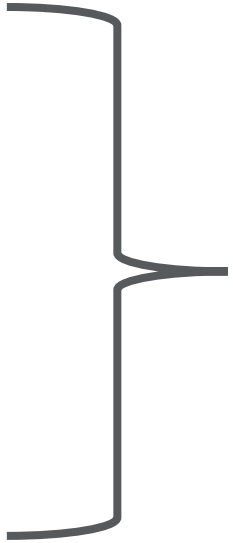

Understand your problem

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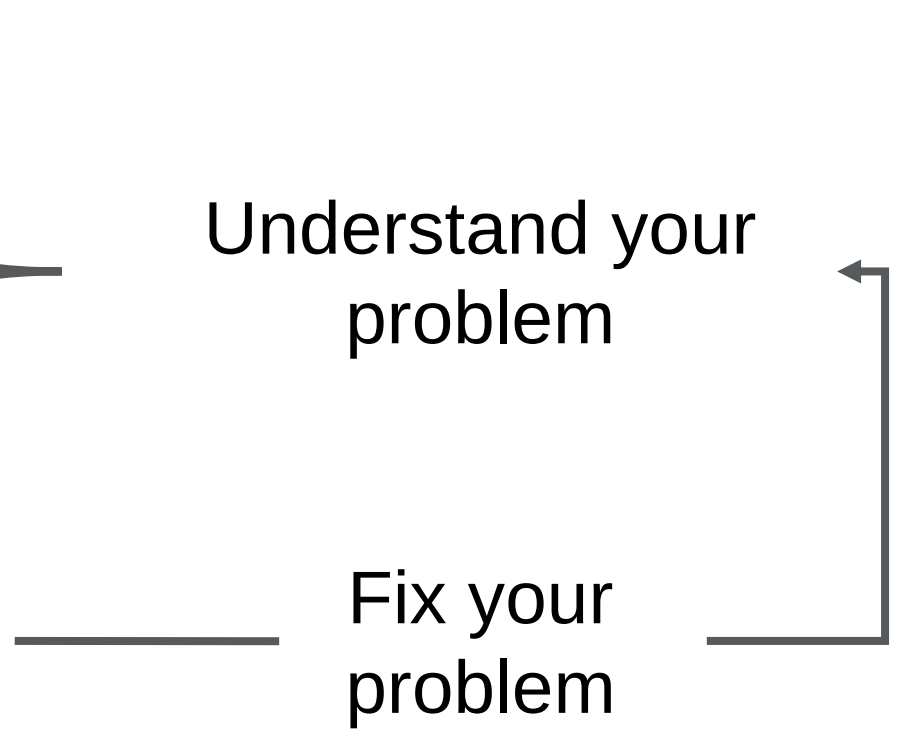

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Understand your problem

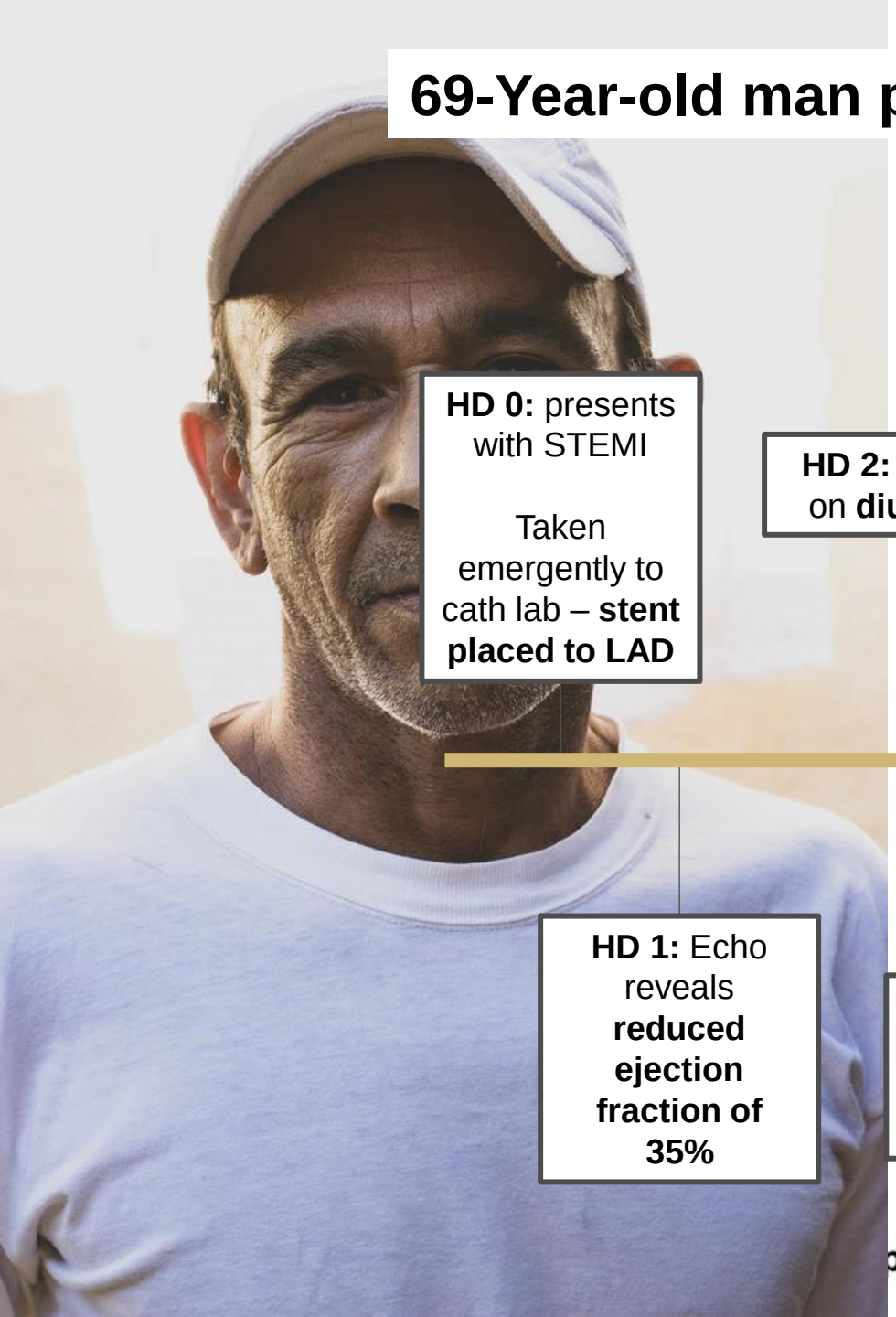
Fix your problem

Embed into the culture

George: 69-Year-old man presents with acute onset chest pain.

Photo Credit: unsplash.com – abstractofficial

69-Year-old man presents with acute onset chest pain.



HD 0: presents with STEMI

Taken emergently to cath lab – **stent placed to LAD**

HD 1: Echo reveals **reduced ejection fraction of 35%**

HD 2: started on **diuretics**

HD 4: doing-well, preparing for hospital discharge

HD 5: discharged home on **5 new medications**

Instructed to **"follow-up"** with Cardiology

On admission: critical hypokalemia to **1.8**

2 weeks later: found down at home suffering **cardiac arrest.**

Prolonged hospitalization but eventually discharged to SNF for rehab therapy.

ous | IHQSE

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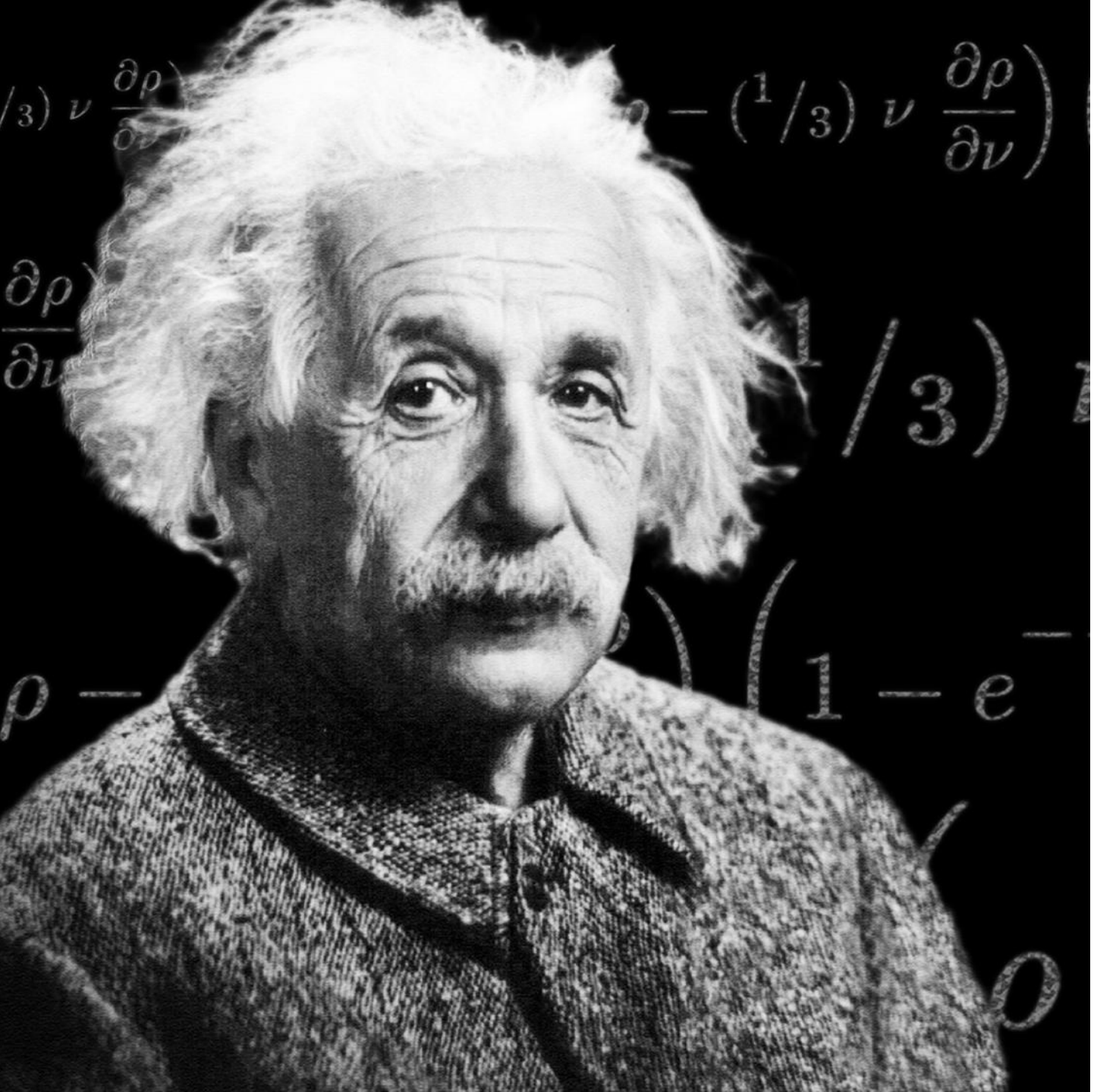


“If I had an hour to solve a problem, I'd spend 55 minutes thinking about the problem and five minutes thinking about solutions.”

1. **Define the problem.**

Who is affected? By how much?

Are there guidelines to refer to?

1. **Define the problem.**

Frequency: Count, Percent, Frequency

Vaccination rates CAUTIs Wrong-site surgeries

Central Tendency: Mean, Median, and Mode

Mean and median length-of-stay

Dispersion/Variation: Range, Variance, Std. Deviation

a1c measures in a clinic population, amount of blood loss after surgery

Position: Percentile Ranks, Quartile Ranks

1. Define the problem.

Frequency: Count, Percent, Frequency

Vaccination rates CAUTIs Wrong-site surgeries

Central Tendency: Mean, Median, and Mode

Mean and median length-of-stay

AKA Baseline data!

Dispersion/Variation: Range, Variance, Std. Deviation

a1c measures in a clinic population, amount of blood loss after surgery

Position: Percentile Ranks, Quartile Ranks

vizient.

BEST HOSPITALS USNews 2019-20

1. Define the problem.

Consider the heterogeneity of your population….

Are some groups affected differently than others?

Patients with HbA1c > 8% are more likely to experience complications and comorbidities. At X clinic…

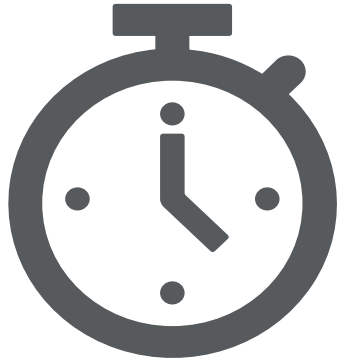
35% of ALL patients with diabetes are not under glycemic control as defined by an A1c<8%.

40% of Hispanic and Latino patients with diabetes have not achieved glycemic control.

Patients who suffer an acute myocardial infarction (MI) should have follow up within 7-days.

Society of Hospital Medicine (SHM) ACS Discharge & Transitions Workgroup

- In the past 4 months, 1/38 (2%) patients with MI were scheduled and seen within one week of discharge.
- The average duration of time from discharge to first appointment is 18.9 days.



Breakout #1

15 minutes

- Introductions
- Your problem/project
- How do you know it’s a problem? (IE: “Define”)

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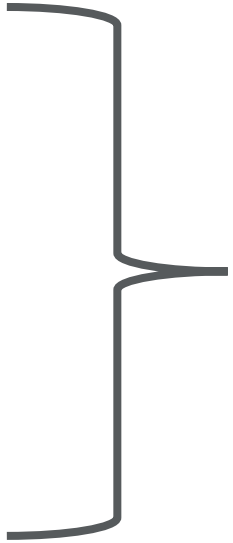
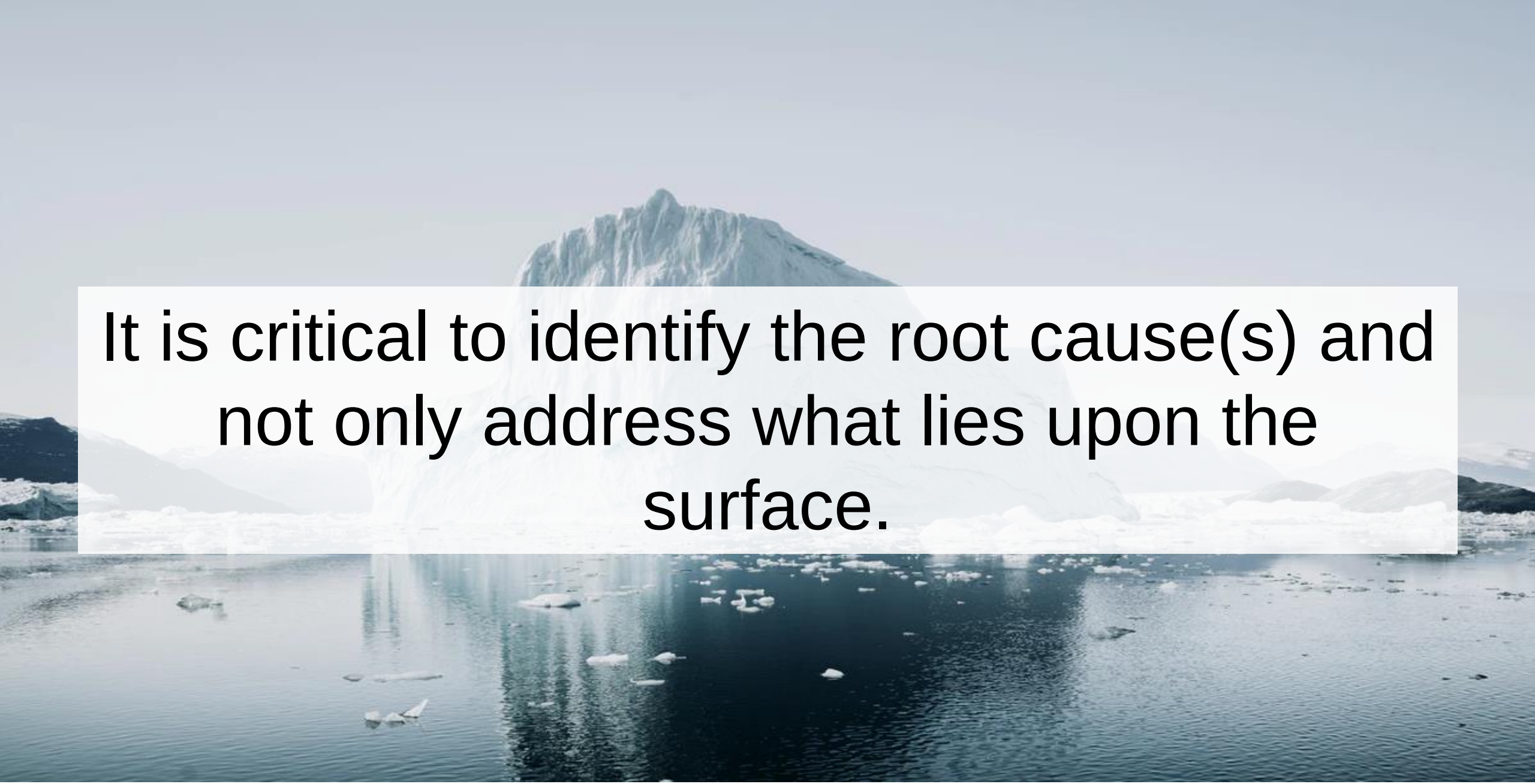


Understand your problem

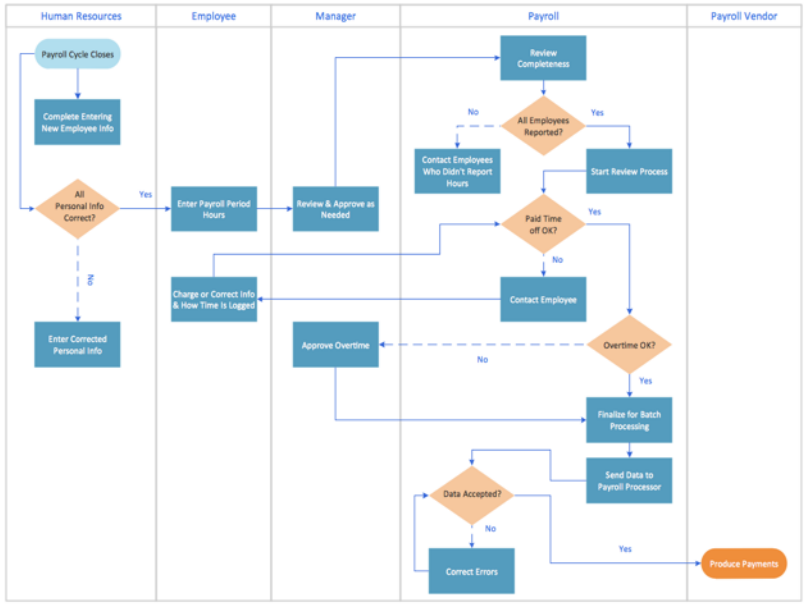

It is critical to identify the root cause(s) and not only address what lies upon the surface.

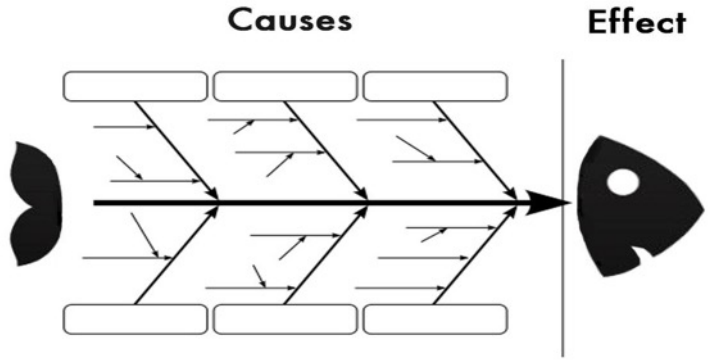
QI Tools

Gemba

現場

Go See.
Ask Why?
Show Respect.



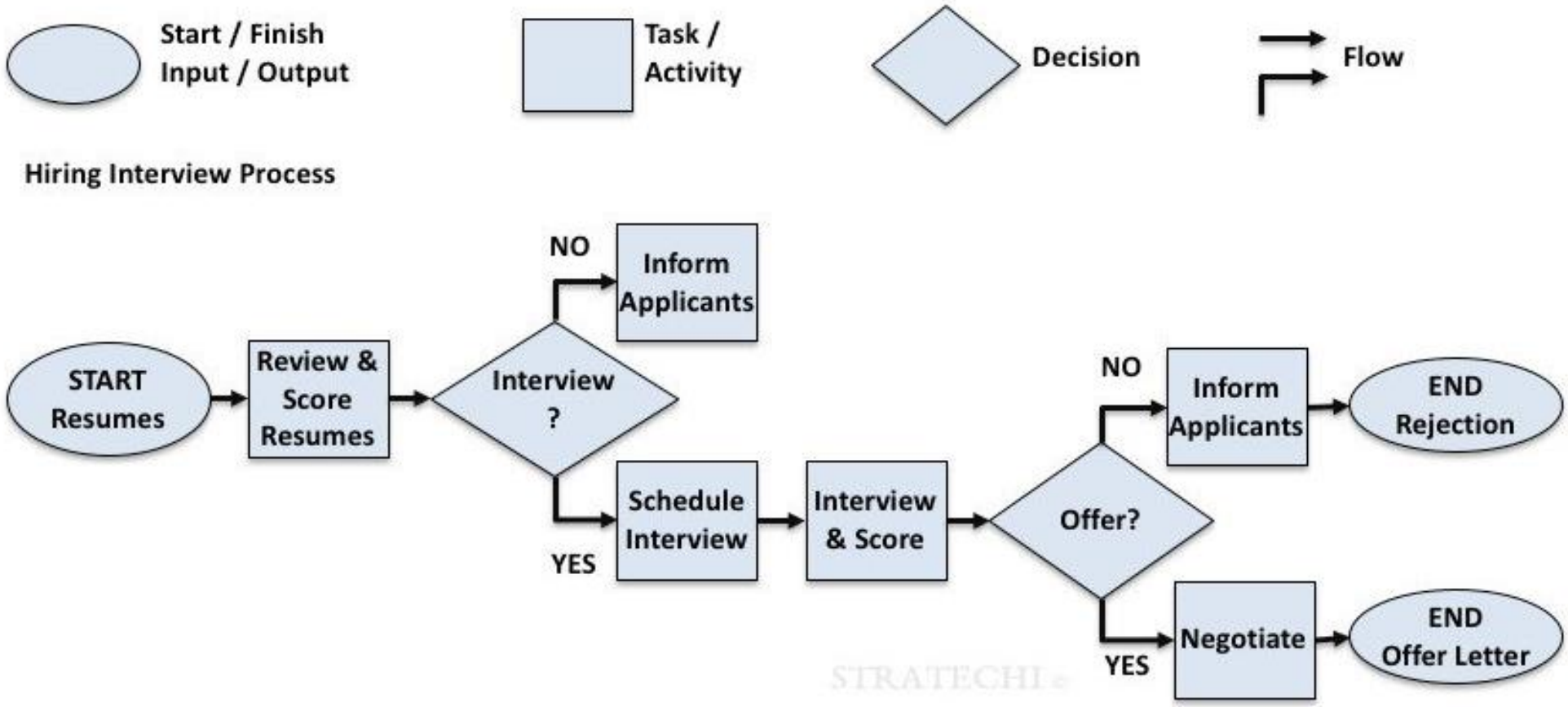


2. Identify areas that can be improved.

Gemba 現場 "the actual place"

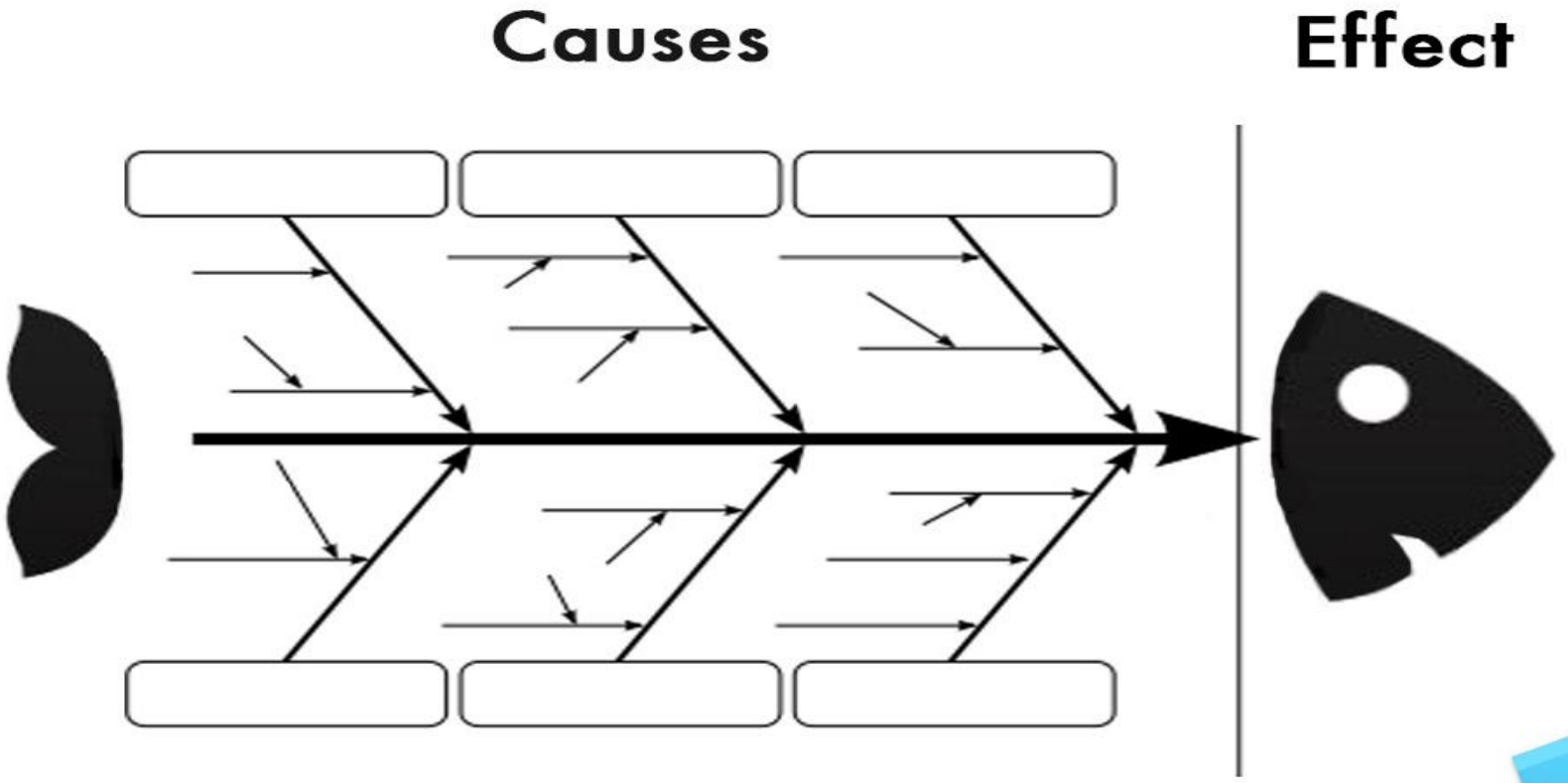
2. Identify areas that can be improved.

Process Map

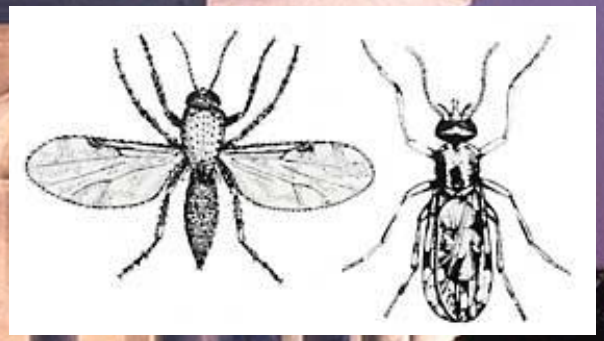


2. Identify areas that can be improved.

Fishbone “Ishikawa” Diagram



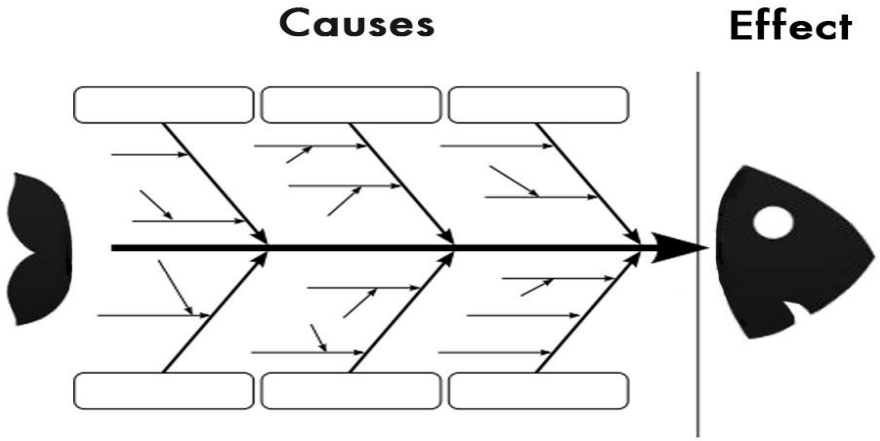
Five Why's



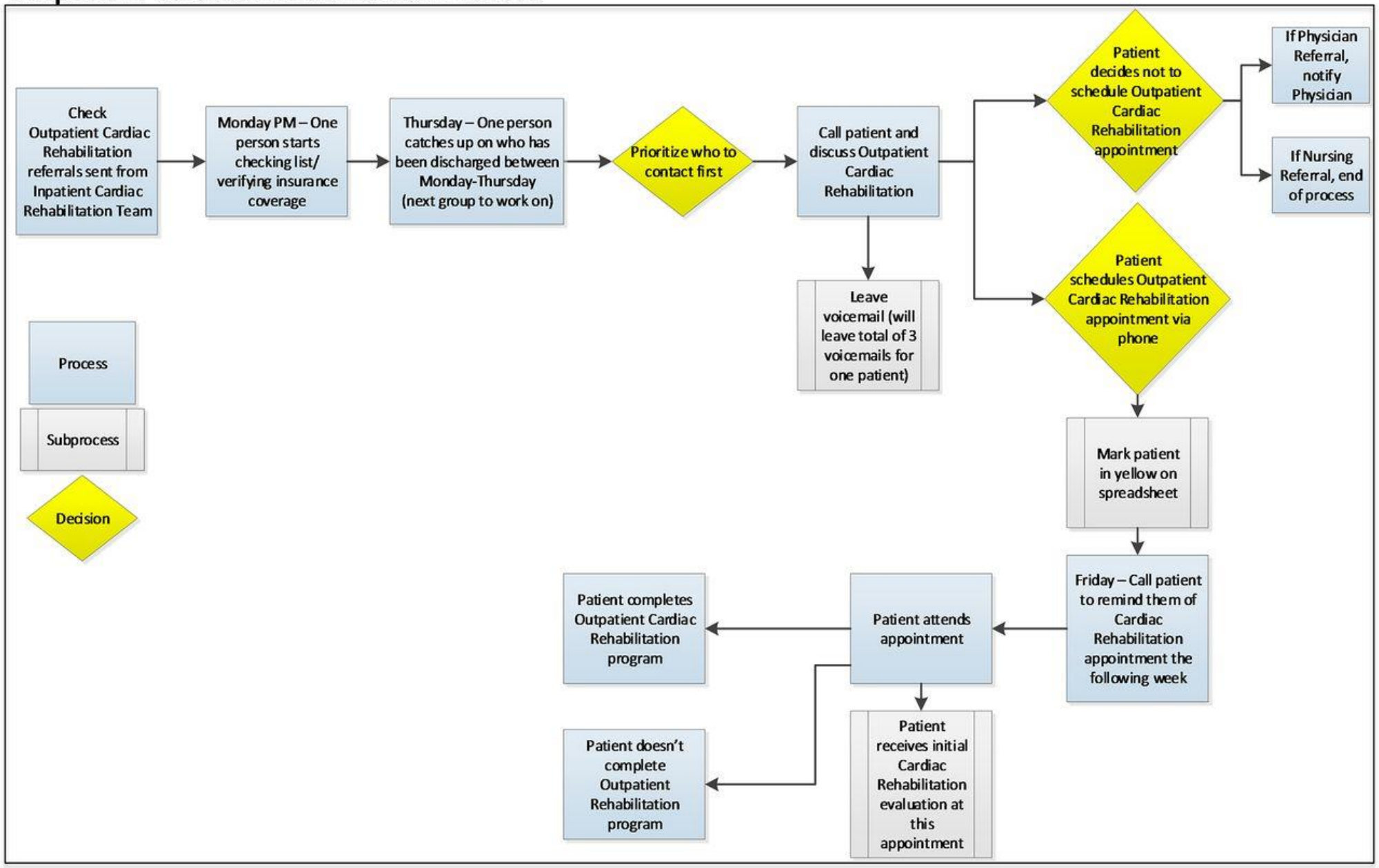
https://taproot.com/saved-post-5-whys-folklore-the-truth-behind-a-monumental-mystery/

5 Why's
(Linear)

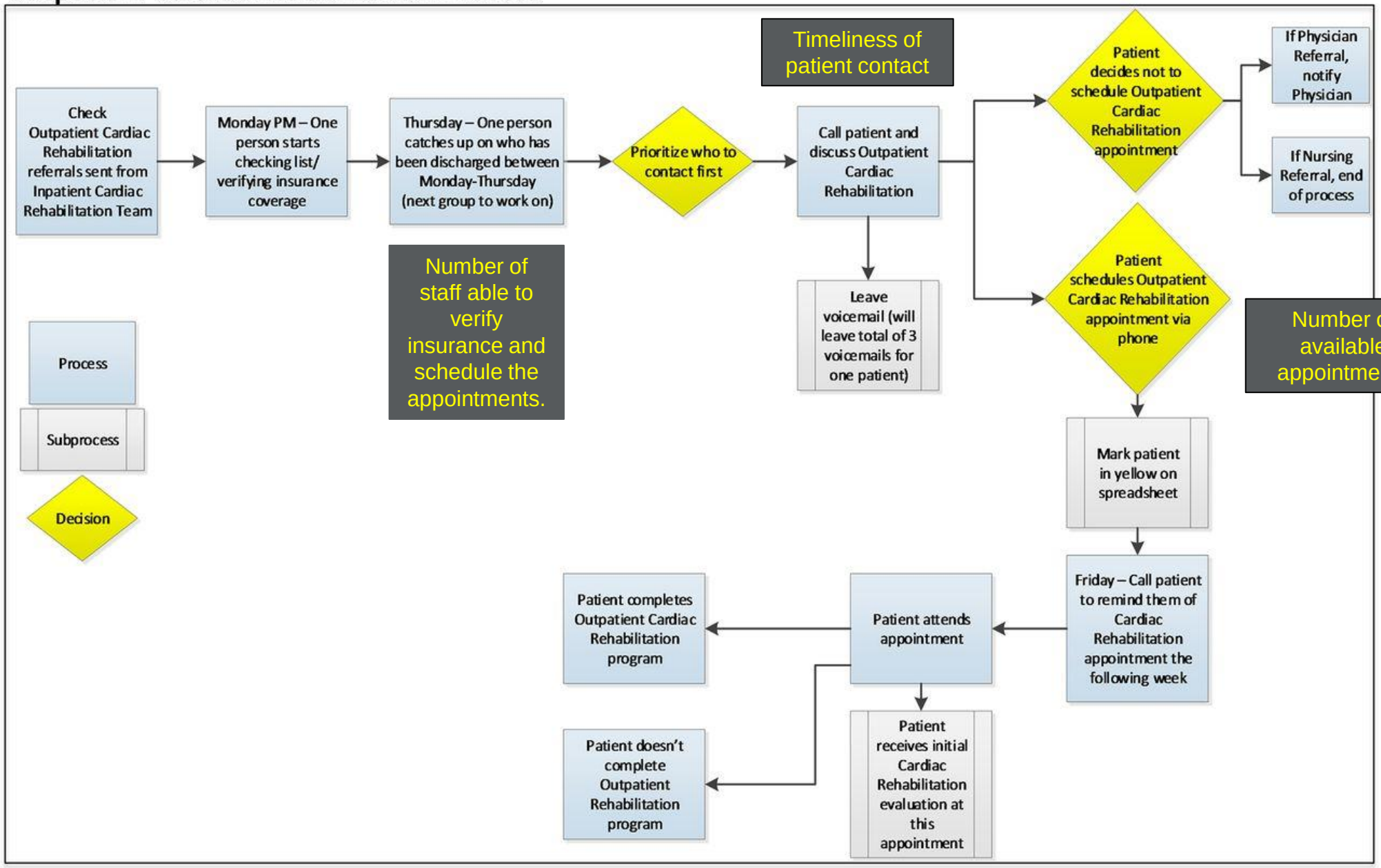
Fishbone
(Branched)

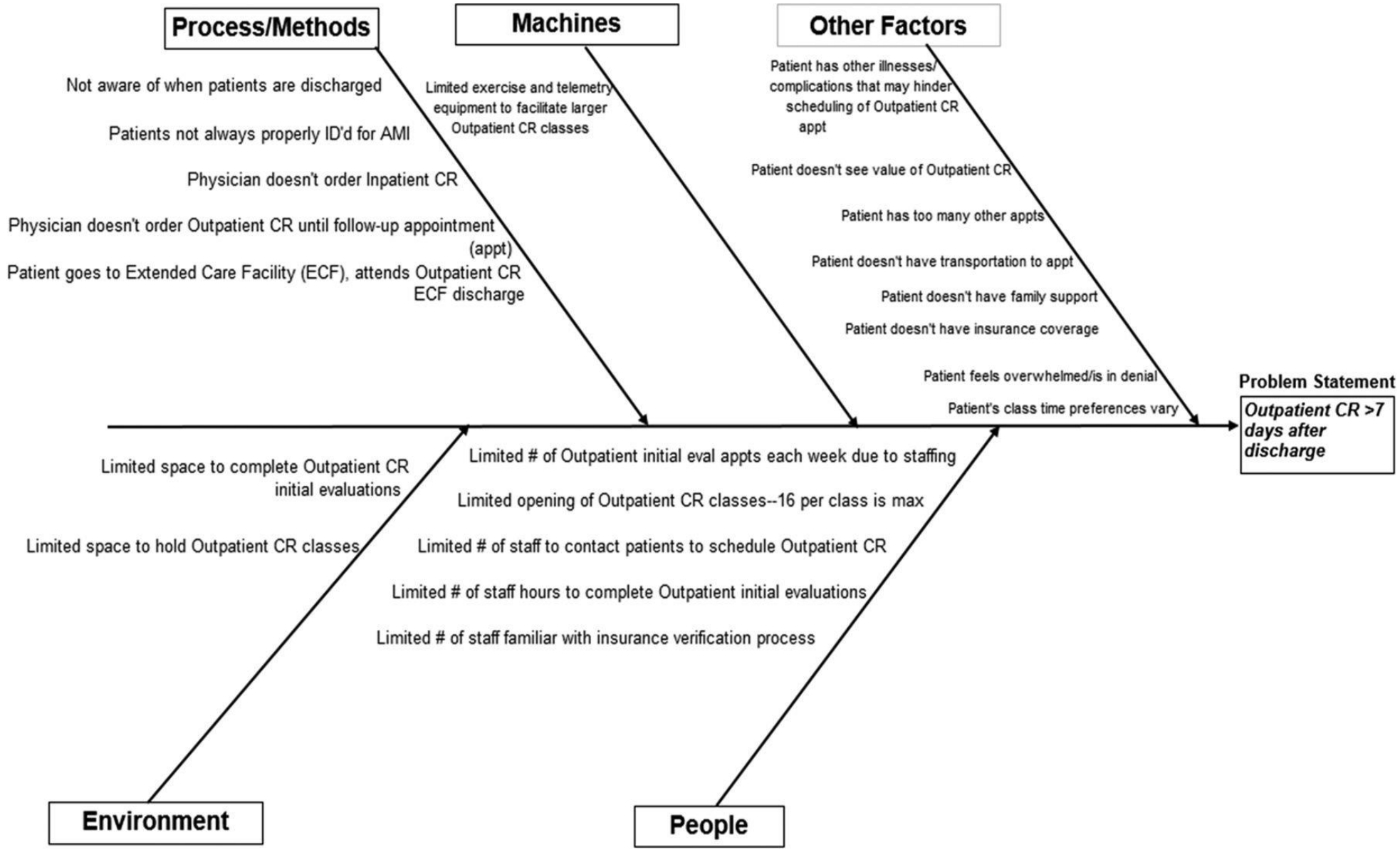


Outpatient Cardiac Rehabilitation Process

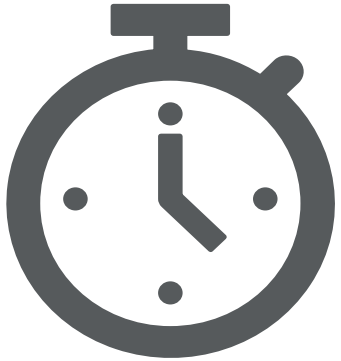


Outpatient Cardiac Rehabilitation Process




Process/Methods
Machines
Other Factors
Not aware of when patients are discharged
Patients not always properly ID'd for AMI
Physician doesn't order Inpatient CR
Physician doesn't order Outpatient CR until follow-up appointment (appt)
Patient goes to Extended Care Facility (ECF), attends Outpatient CR ECF discharge
Limited exercise and telemetry equipment to facilitate larger Outpatient CR classes
Patient has other illnesses/ complications that may hinder scheduling of Outpatient CR appt
Patient doesn't see value of Outpatient CR
Patient has too many other appts
Patient doesn't have transportation to appt
Patient doesn't have family support
Patient doesn't have insurance coverage
Patient feels overwhelmed/is in denial
Patient's class time preferences vary
Problem Statement
Outpatient CR >7 days after discharge
Limited space to complete Outpatient CR initial evaluations
Limited space to hold Outpatient CR classes
Limited # of Outpatient initial eval appts each week due to staffing
Limited opening of Outpatient CR classes--16 per class is max
Limited # of staff to contact patients to schedule Outpatient CR
Limited # of staff hours to complete Outpatient initial evaluations
Limited # of staff familiar with insurance verification process
Environment
People

Breakout #2



10 minutes

- Ask “WHY?” 5x for your problem

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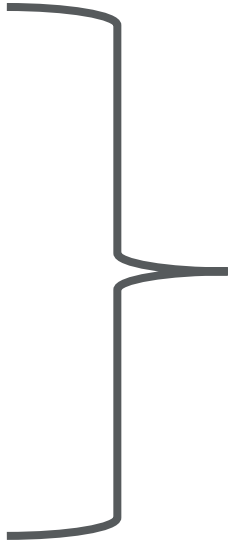
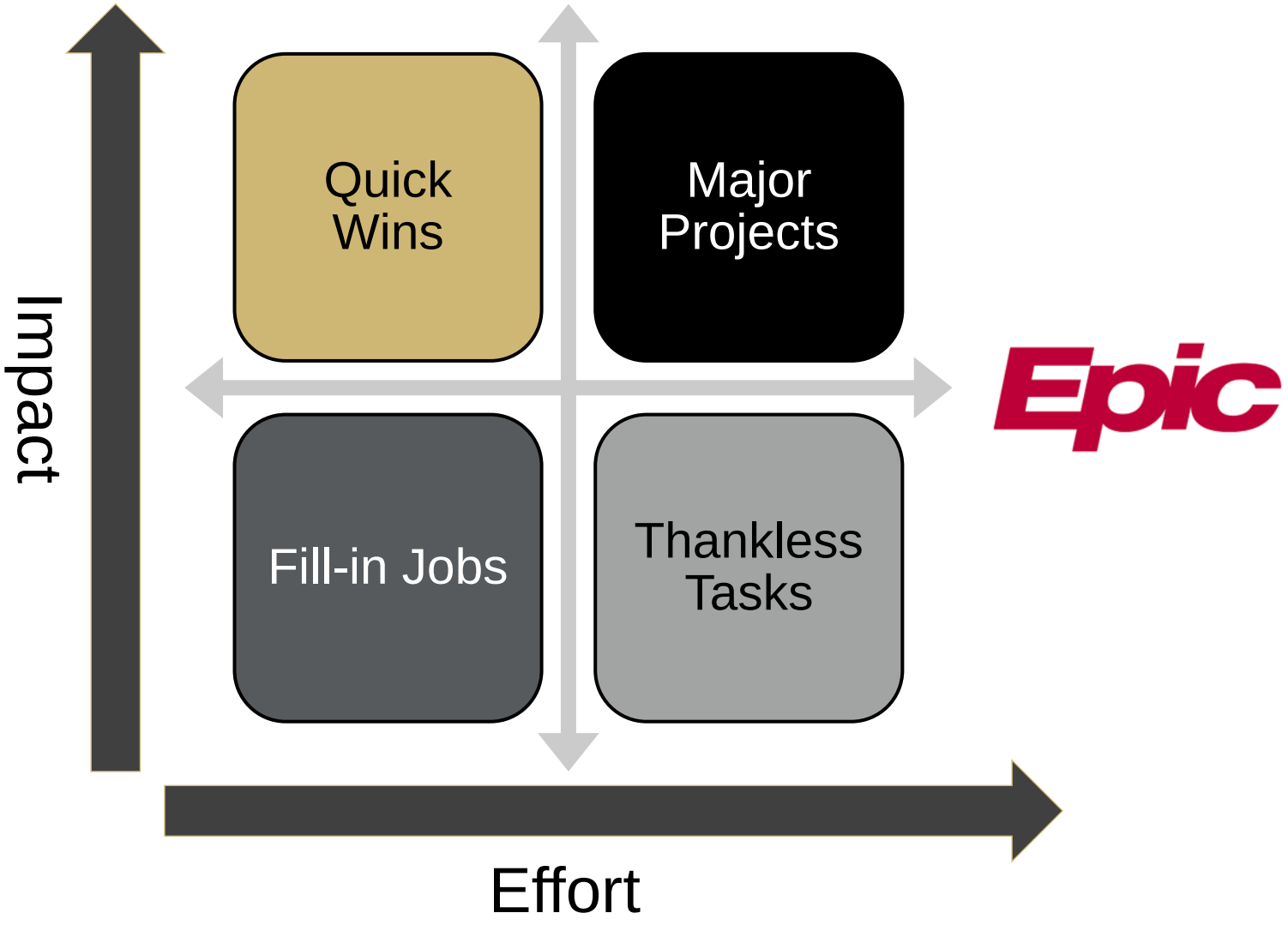


Understand your problem

2. Identify areas that <u>can be</u> improved.

Action Priority Matrix



Impact

Q Wins

Timeliness of patient contact

Major I

Number of available appointments

Number of staff able to verify insurance and schedule the appointments.

Fill-in Jobs

Thankless Tasks

Effort

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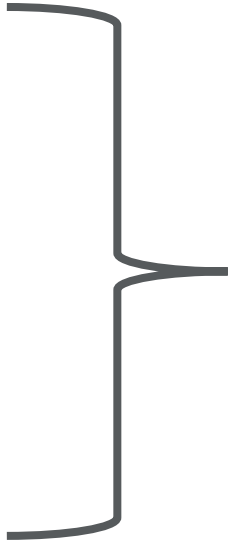


Understand your problem

Matter to Patients

OUTCOME

- Patient Satisfaction
- LOS
- Readmission Rate
- Throughput
- Adverse Events

Can act as proxy for outcomes

PROCESS

- Use of checklists
- Patient Centered Rounds
- Lab orders

STRUCTURE

- Order Sets
- Regionalized
- Nurse:Patient ratio
- Discharge navigators

INTERVENTIONS

BALANCE

Dependent on intervention

Consider health equity.

INTERVENTIONS

BALANCE

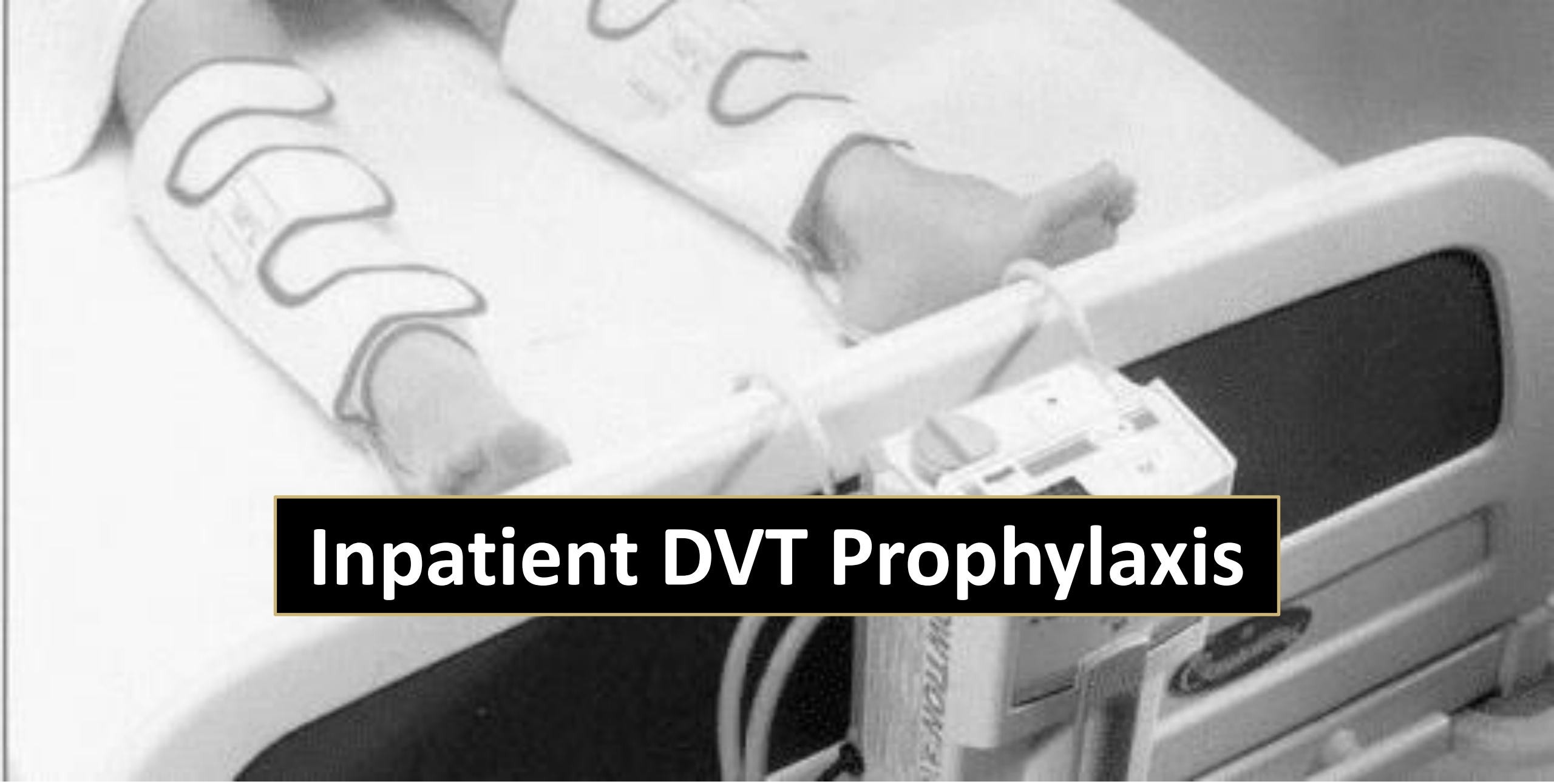
Dependent on intervention

Consider health equity.

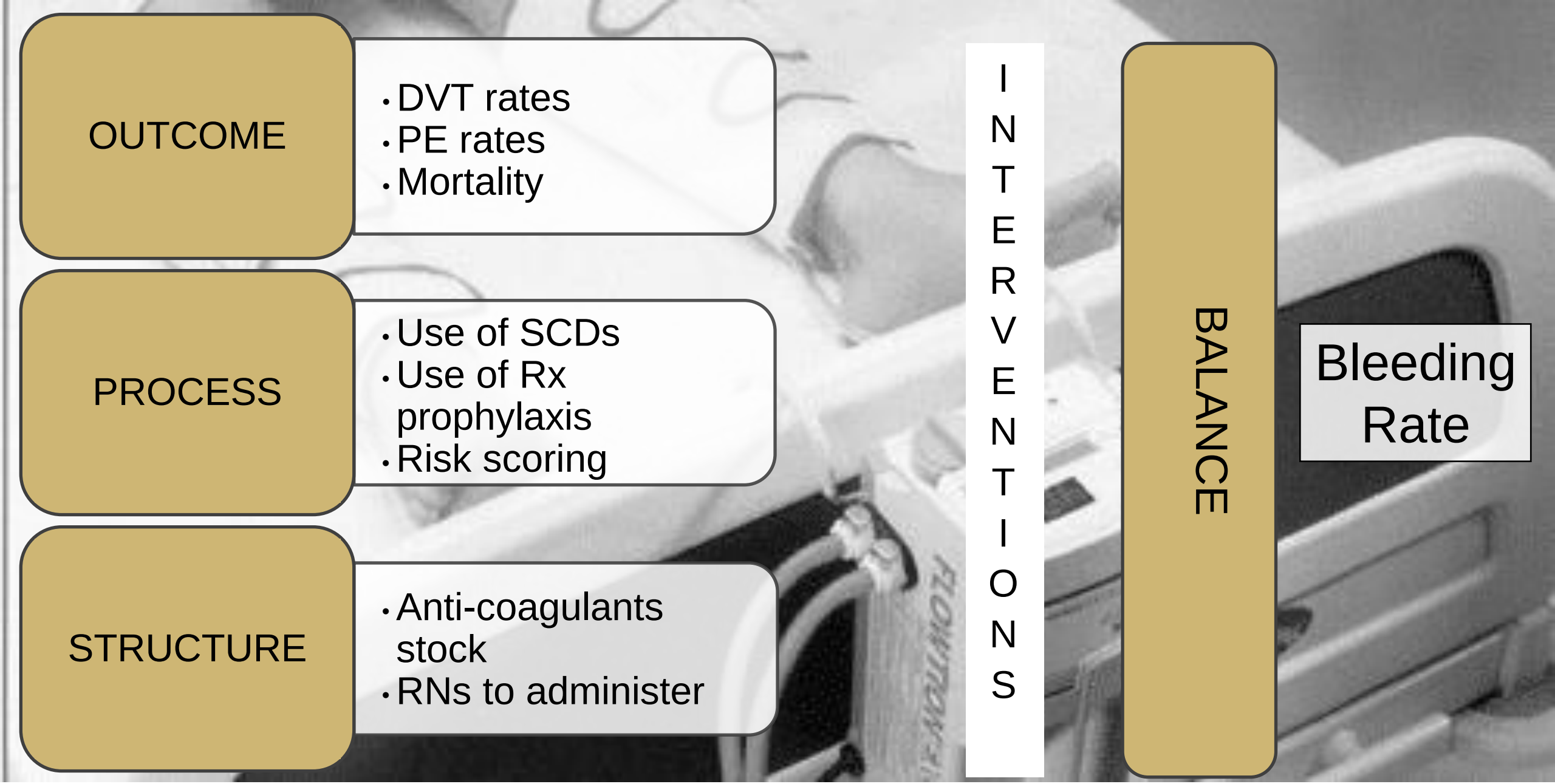
Experience shows that traditional QI methods can maintain or worsen health inequities across subpopulations.

Look at disparities and solutions upfront among commonly disadvantaged subgroups such as wealth, race, and location.

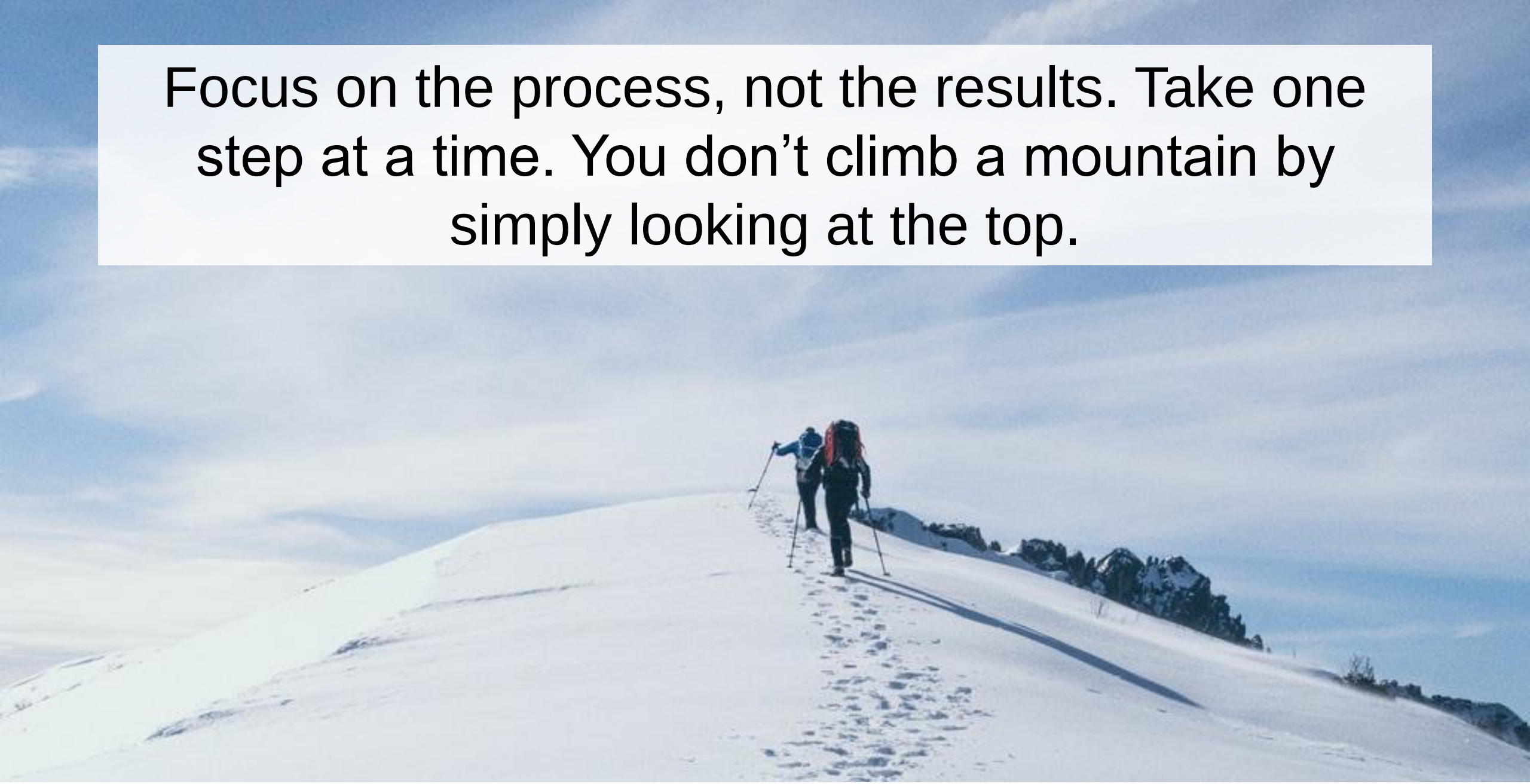
Hirschhorn LR, Magge H, Kiflie A. Aiming beyond equality to reach equity: the promise and challenge of quality improvement. *BMJ*. Published online July 20, 2021:n939.



Inpatient DVT Prophylaxis


OUTCOME
• DVT rates
• PE rates
• Mortality
PROCESS
• Use of SCDs
• Use of Rx prophylaxis
• Risk scoring
STRUCTURE
• Anti-coagulants stock
• RNs to administer
INTERVENTIONS
BALANCE
Bleeding Rate

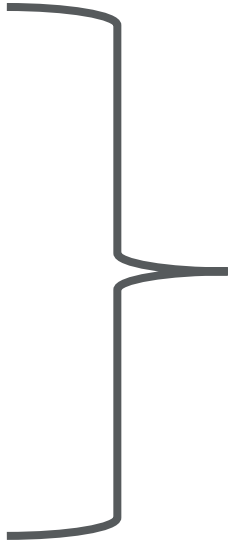
Focus on the process, not the results. Take one step at a time. You don't climb a mountain by simply looking at the top.



OUTCOME	• Readmission rate • 30/60/90-day mortality
PROCESS	• Outpatient appt. w/in 7 days of discharge • Number of patients contacted • Referrals placed before d/c
STRUCTURE	• Number of appointments • Number of staff trained to verify insurance

Six Steps for a Successful QI Project

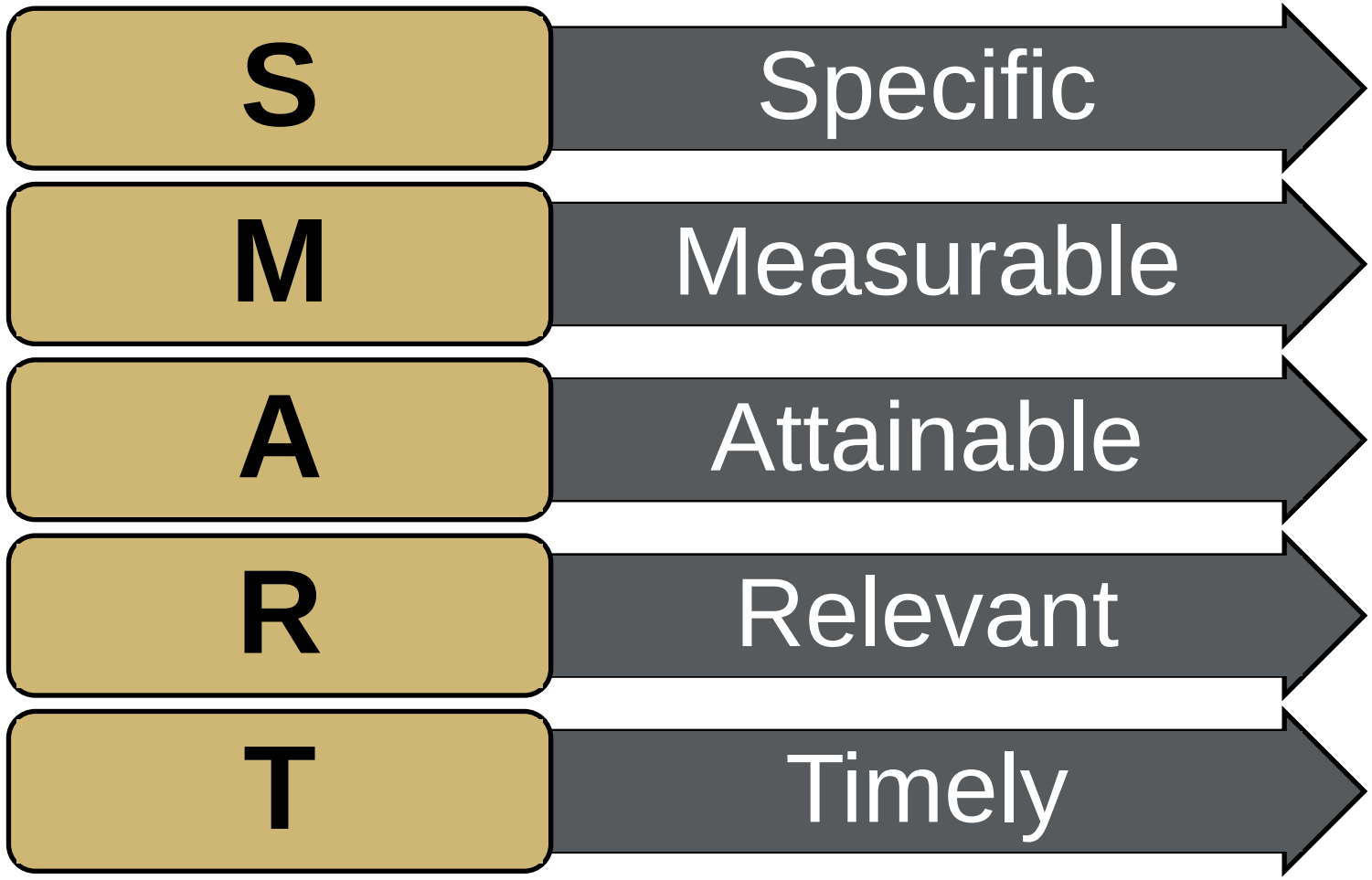
1. Define the problem.
2. Identify areas that can be improved.
3. Decide how you will measure progress.
4. **Explicitly state your goals (SMART)**
5. Implement and measure small tests of change.
6. Build upon success and sustain the process.



Understand your problem

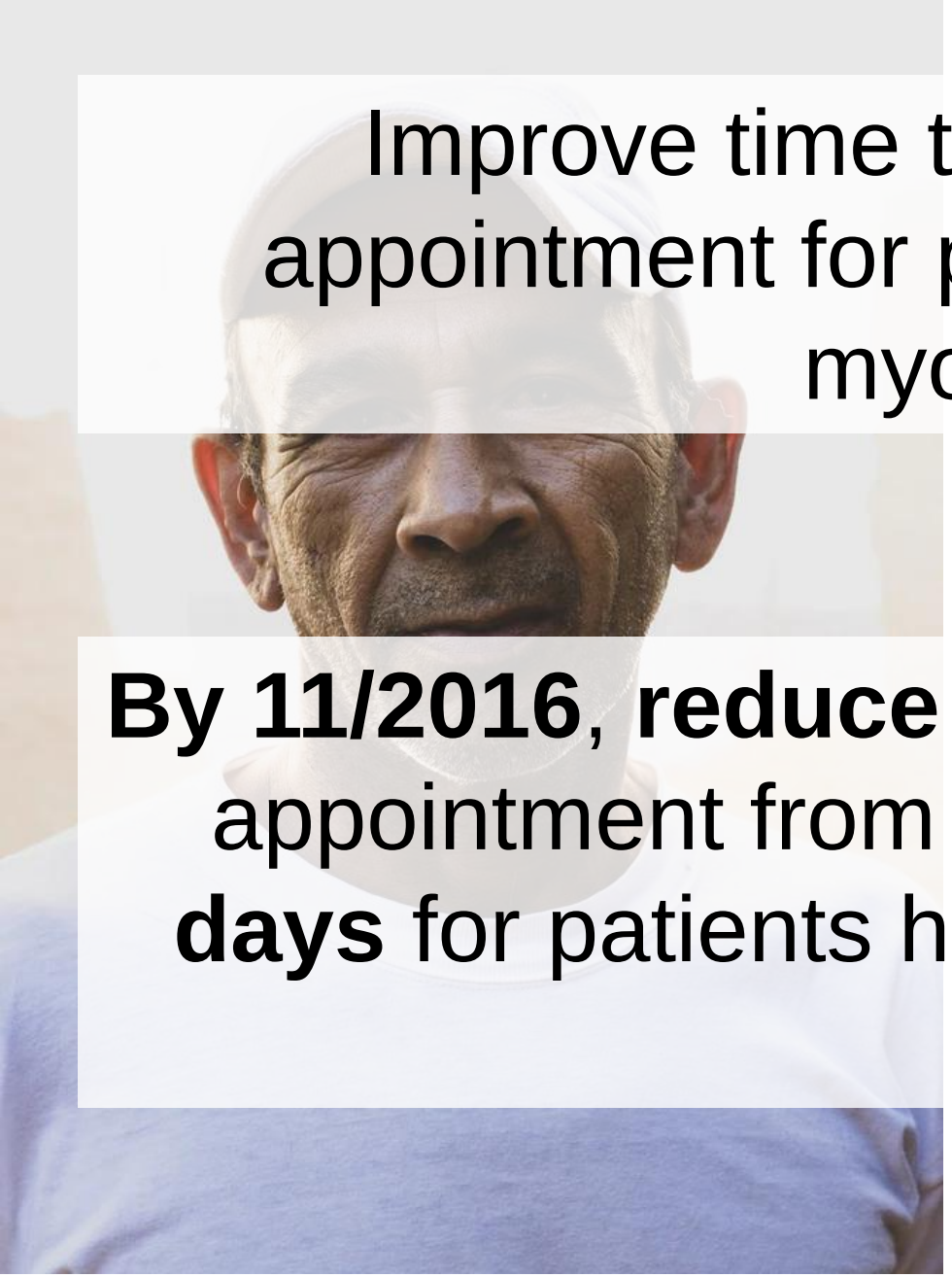
4. Explicitly state your goals

Aim Statement




“I want to be a better skier.”
“By the end of the 24/25 season, I will be able to make it down a double-black diamond slope without falling.”

S	Specific
M	Measurable
A	Attainable
R	Relevant
T	Timely

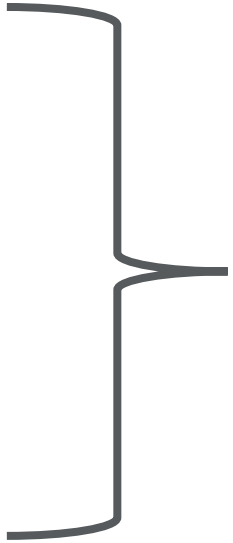


Improve time to initial cardiac rehabilitation appointment for patients hospitalized with acute myocardial infarction.

By 11/2016, **reduce time** to initial cardiac rehabilitation appointment from an **average of 18.9 days to < 7 days** for patients hospitalized with acute myocardial infarction.

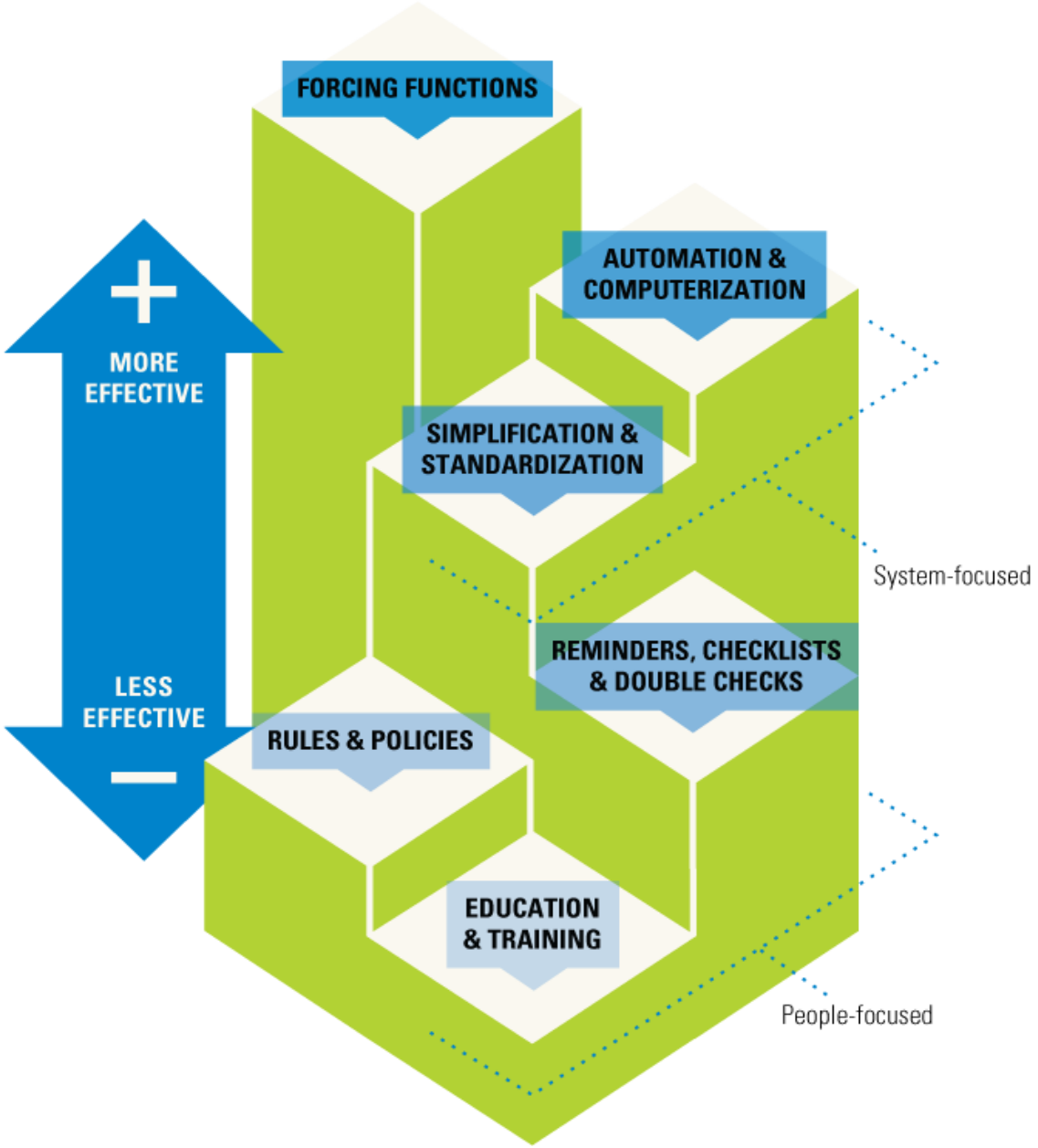
Six Steps for a Successful QI Project

1. Define the problem.
2. Identify areas that can be improved.
3. Decide how you will measure progress.
4. Explicitly state your goals (SMART)

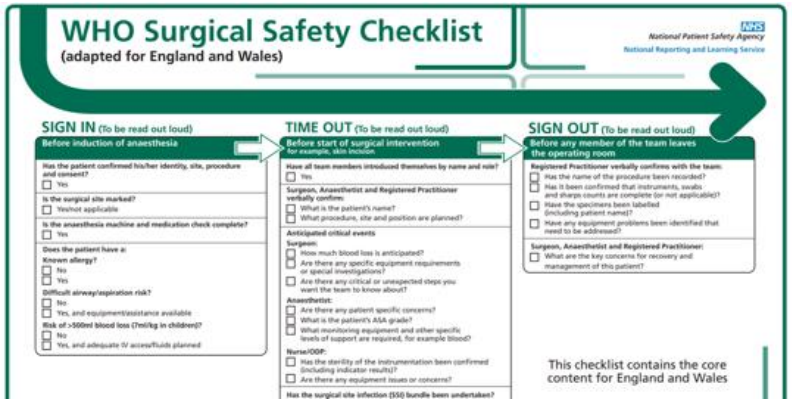


Understand your problem

5. **Implement and measure small tests of change.**
6. Build upon success and sustain the process.


FORCING FUNCTIONS
AUTOMATION & COMPUTERIZATION
SIMPLIFICATION & STANDARDIZATION
REMINDERS, CHECKLISTS & DOUBLE CHECKS
RULES & POLICIES
EDUCATION & TRAINING
+
MORE EFFECTIVE
LESS EFFECTIVE
−
System-focused
People-focused


Please order contact precautions (BPA# 1183)
Infection Prevention and Control
Contact precautions until result is negative, if result is positive precautions will continue for duration of therapy.
Please refer to Gastroenteritis table on the Infection Control page on The Source for more information.
If you have questions regarding isolation precautions, please contact Infection Control at 720-848-6978.
Order
Do Not Order
Special contact isolation status
Acknowledge Reason
Isolation not required
Deferred at this time


WHO Surgical Safety Checklist
(adapted for England and Wales)
National Patient Safety Agency
National Reporting and Learning Service
SIGN IN (To be read out loud)
Before induction of anaesthesia
TIME OUT (To be read out loud)
Before start of surgical intervention
for example, skin incision
SIGN OUT (To be read out loud)
Before any member of the team leaves the operating room
This checklist contains the core content for England and Wales

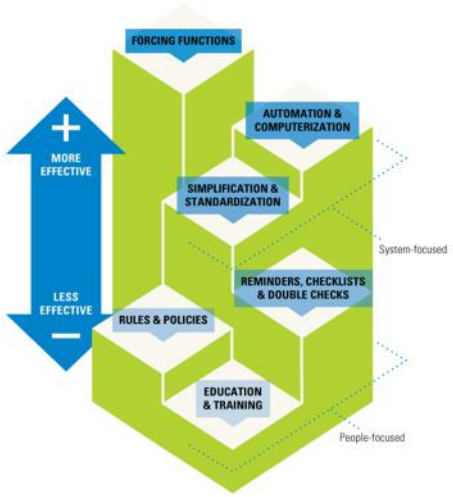

Body Planes
MDpocket.com

BMJ Quality & Safety

EDITORIAL

Education as a low-value improvement intervention: often necessary but rarely sufficient

Christine Soong ,[1] Kaveh G Shojania[2]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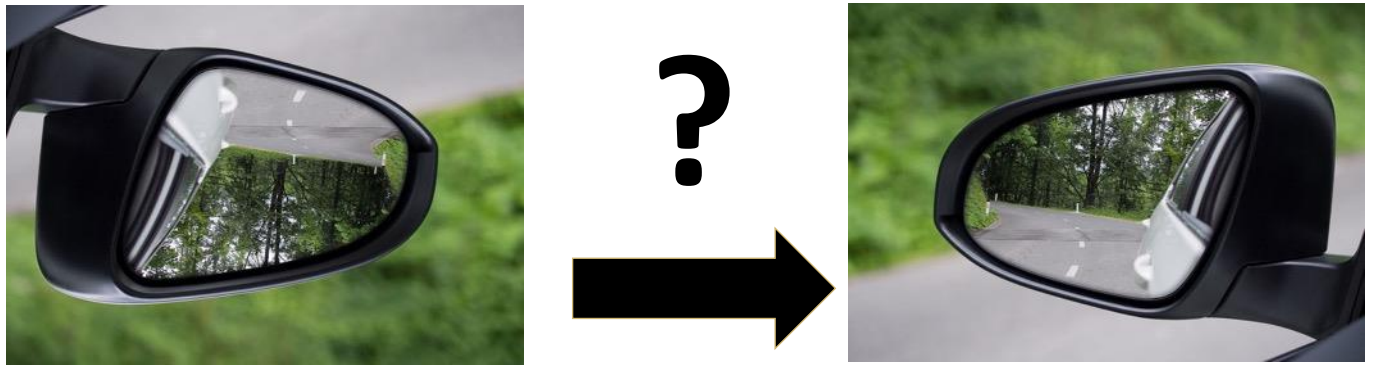
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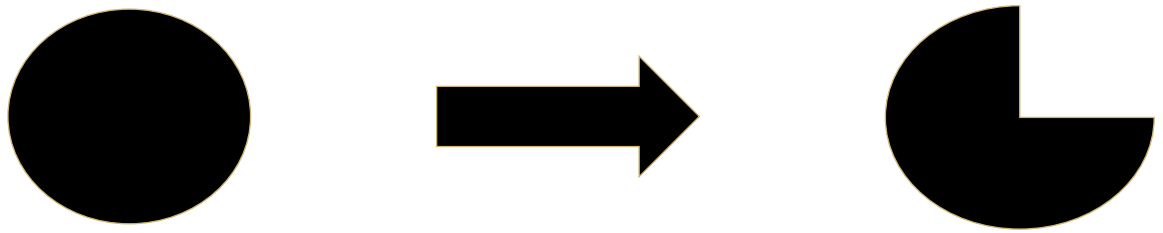
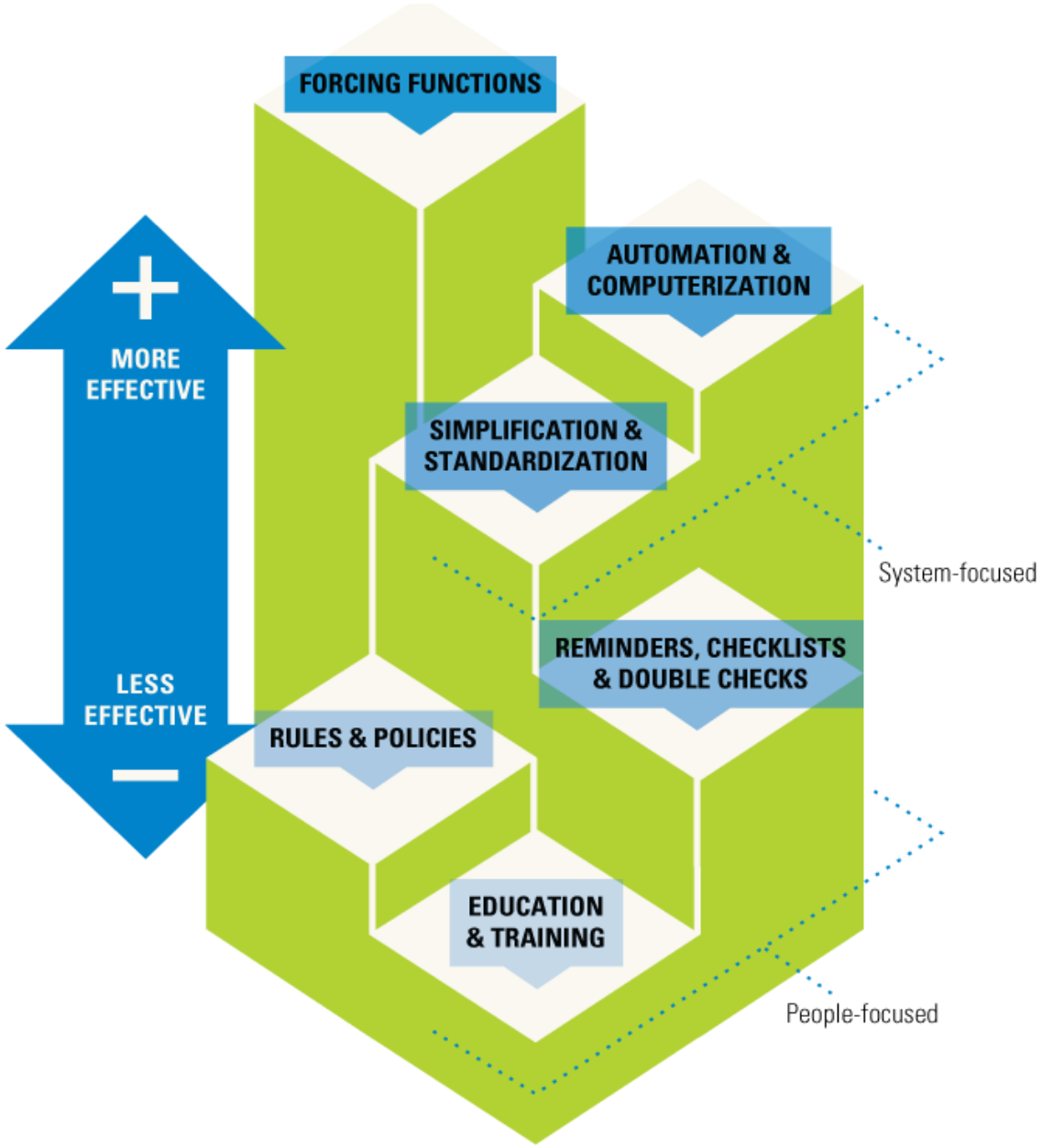



TR HARDER
DO MO E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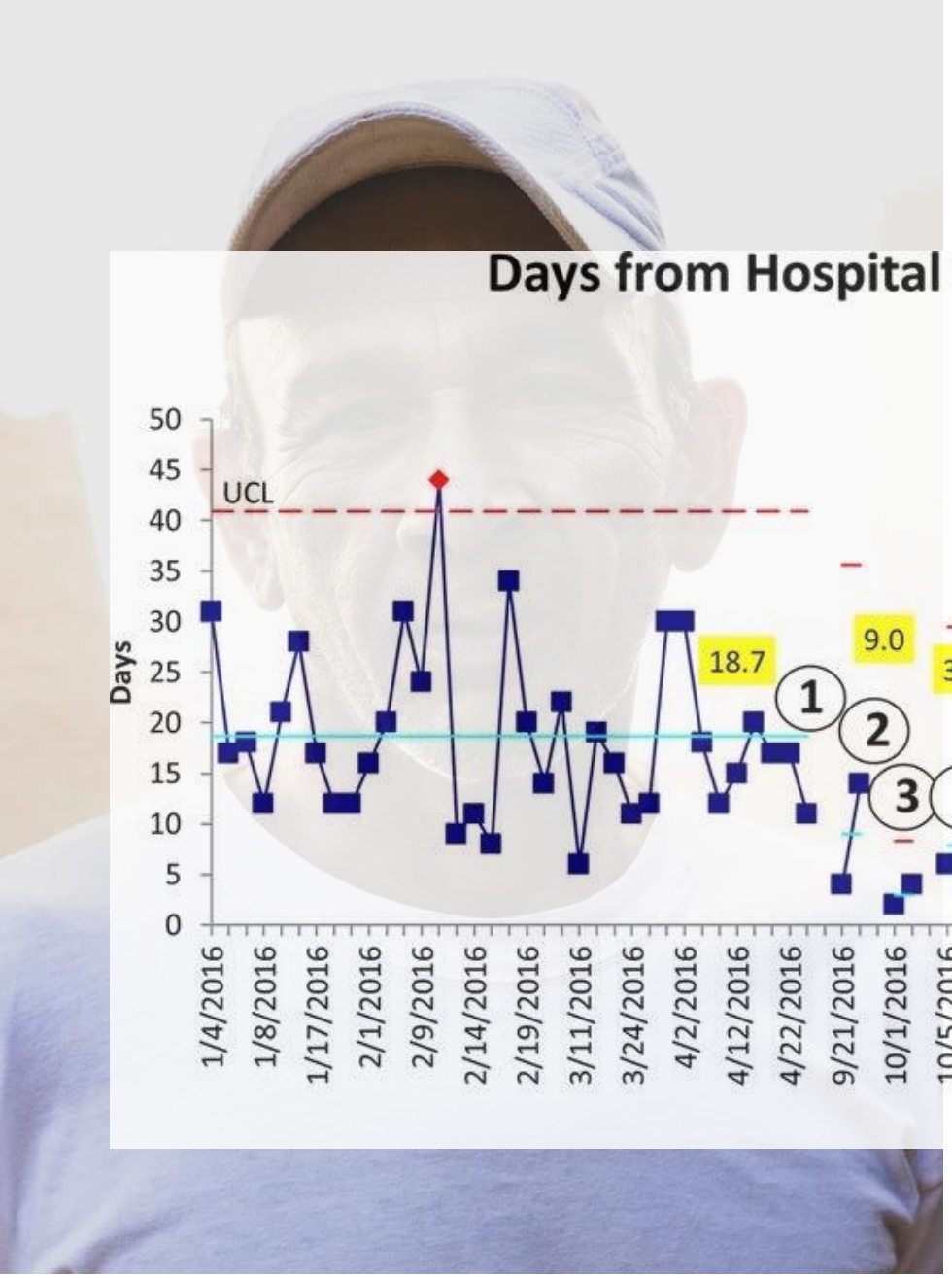
People-focused

1) Add additional appointment slots.

2) Cross-train schedulers.

3) Cross-train insurance verification.

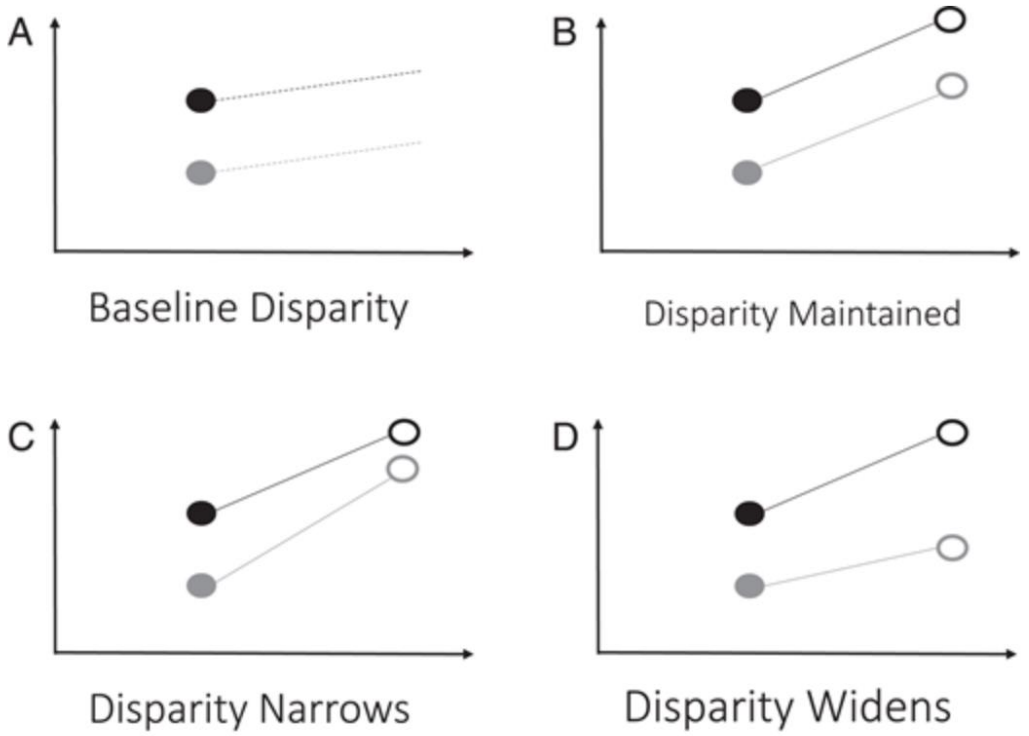
4) Schedule appointment prior to hospital discharge.



Days from Hospital Discharge to First Scheduled Outpatient Cardiac Rehabilitation Appointment

Consider the heterogeneity of your population….
Are some groups affected differently than others?

FIGURE 1



Strive for this

Monitor for/avoid this

Lion KC, Faro EZ, Coker TR. All quality improvement is health equity work: designing improvement to reduce disparities. *Pediatrics*. 2022;149(Supplement 3):e2020045948E.

Six Steps for a Successful QI Project

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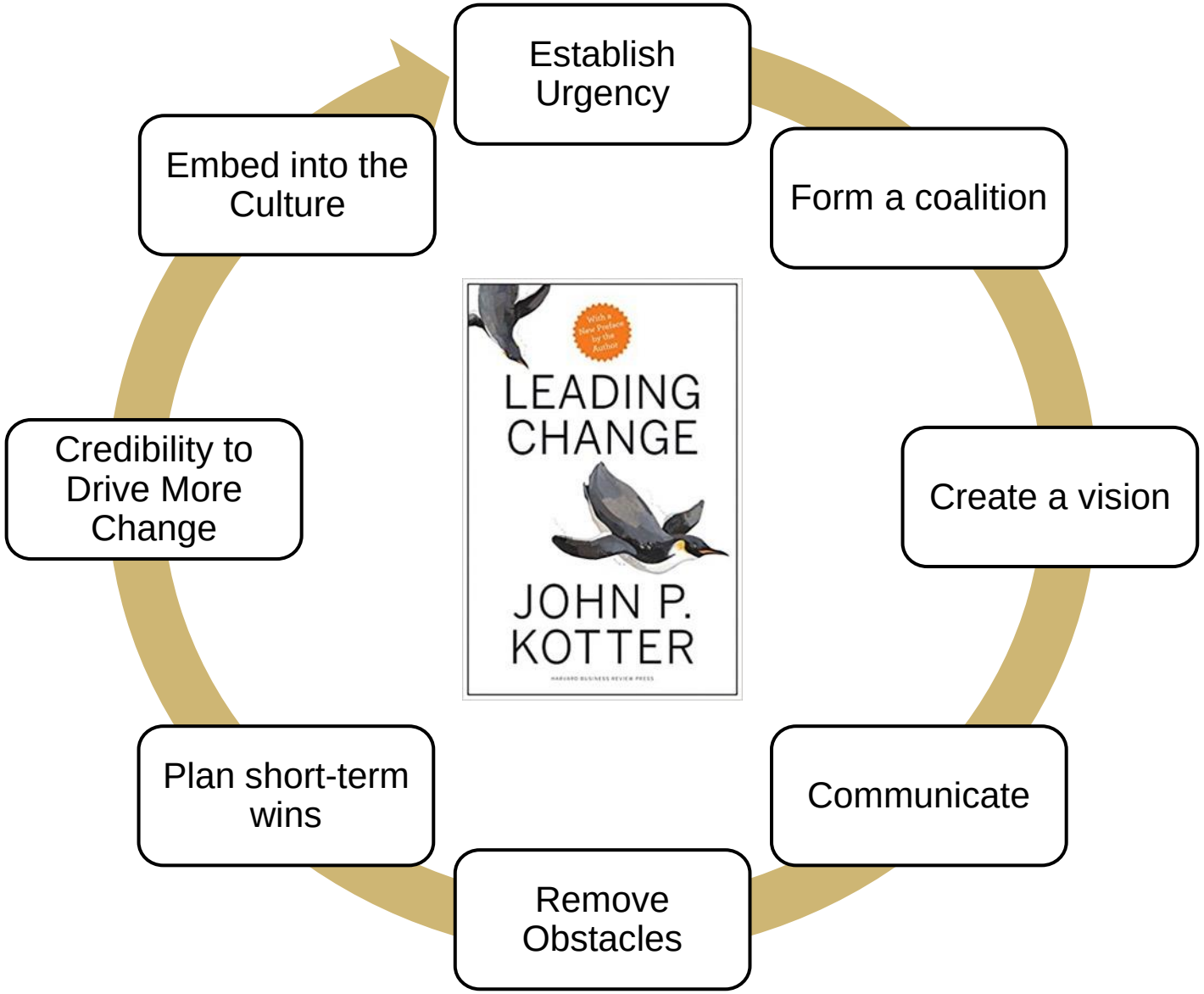
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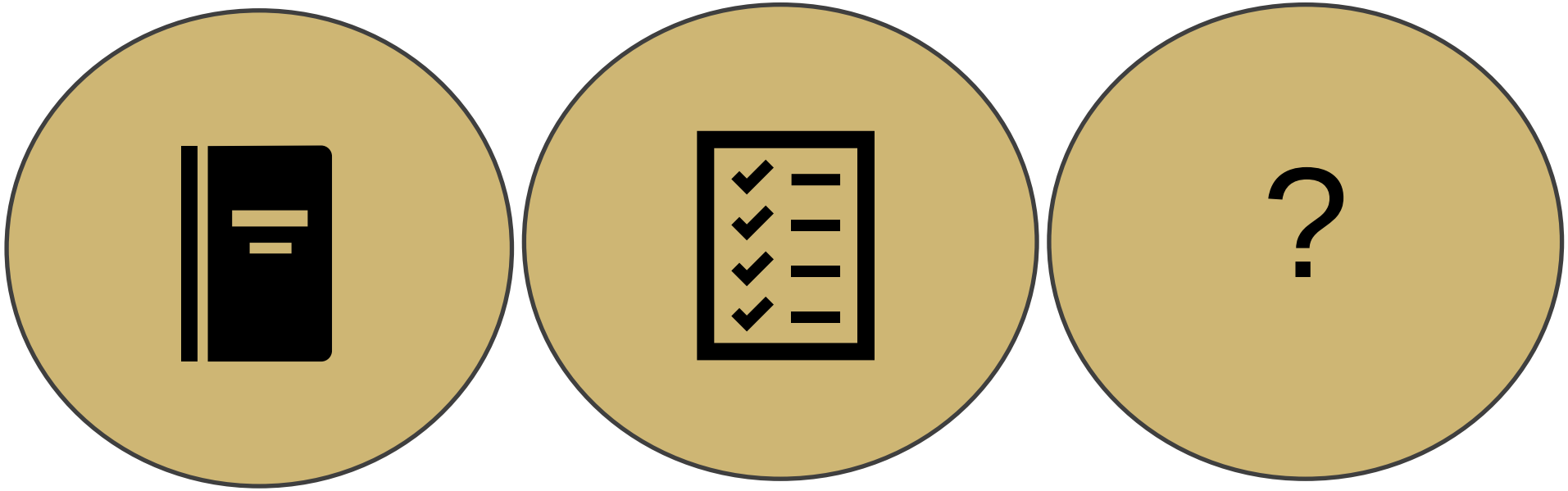
Plan short-term wins
Credibility to Drive More Change
Embed into the Culture
LEADING CHANGE
JOHN P. KOTTER

BREAK-TIME

Come back at 3:03 MT!

Change Management

AGENDA



Change Case

Kotter's 8-Steps

Questions

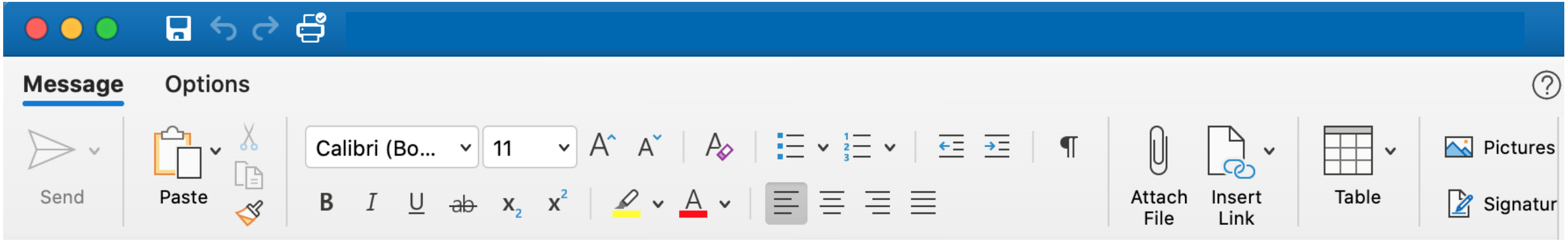
A Local Story, 2008

Vancomycin Use in the ICU

Problem: Only **50%** of 1st vancomycin troughs within desired range of 10-20 mcg/mL

Solution: QI project to develop simple weight- and creatinine-based guide to dosing

- ICU and Pharmacy leadership buy-in
- Rolled out nomogram for the ICU
- Email sent to residents/faculty every month



I wanted to make everyone aware of the ongoing QI initiative in the MICU addressing initial vancomycin dosing. The standard 1 gram every 12 hours is not appropriate for many ICU patients and the first troughs have been in the therapeutic range of 10-20 mcg/mL only about 50% of the time. We have developed a very simple dosing nomogram (attached) that also includes guidelines on dosing for HD and CVVH, and when the troughs should be checked. Based on the existing data, we expect this nomogram to eliminate about 75% of subtherapeutic troughs and 50% of supratherapeutic troughs.

The nomogram requires only the patient's actual body weight and MDRD-estimated GFR with age, gender, race, and serum creatinine (online at www.mdrd.com).

We rely primarily on you as treating physicians to follow the nomogram and correctly order the antibiotics, decreasing the risk of under- or over-dosing your critically ill patients in the crucial initial 24-72 hours of therapy until the first trough is obtained. The MICU pharmacists will be helping you with the nomogram as well.

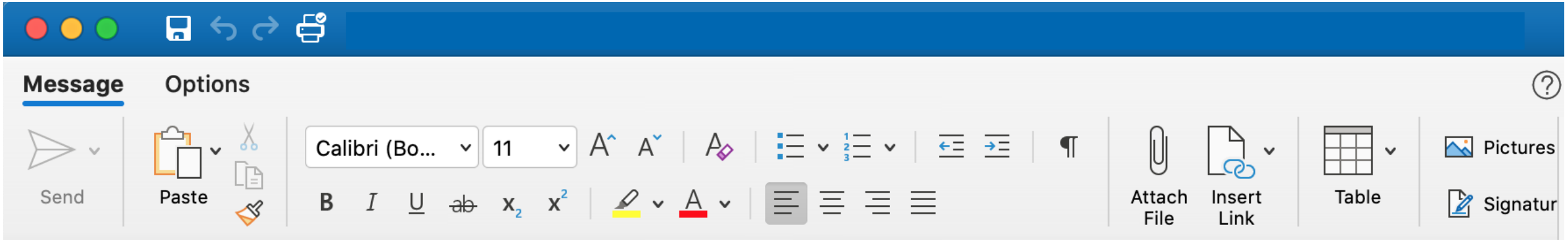
Thank you in advance for your help and your hard work. We welcome all questions and feedback on this quality improvement initiative.

Vancomycin use in the ICU: **Outcomes**

Pre-intervention trough (10-20)	50%
Post-intervention trough (10-20)	50%
Protocol adherence rate	20%!

Why didn’t the providers change their behavior?

What was wrong with this approach to leading change?



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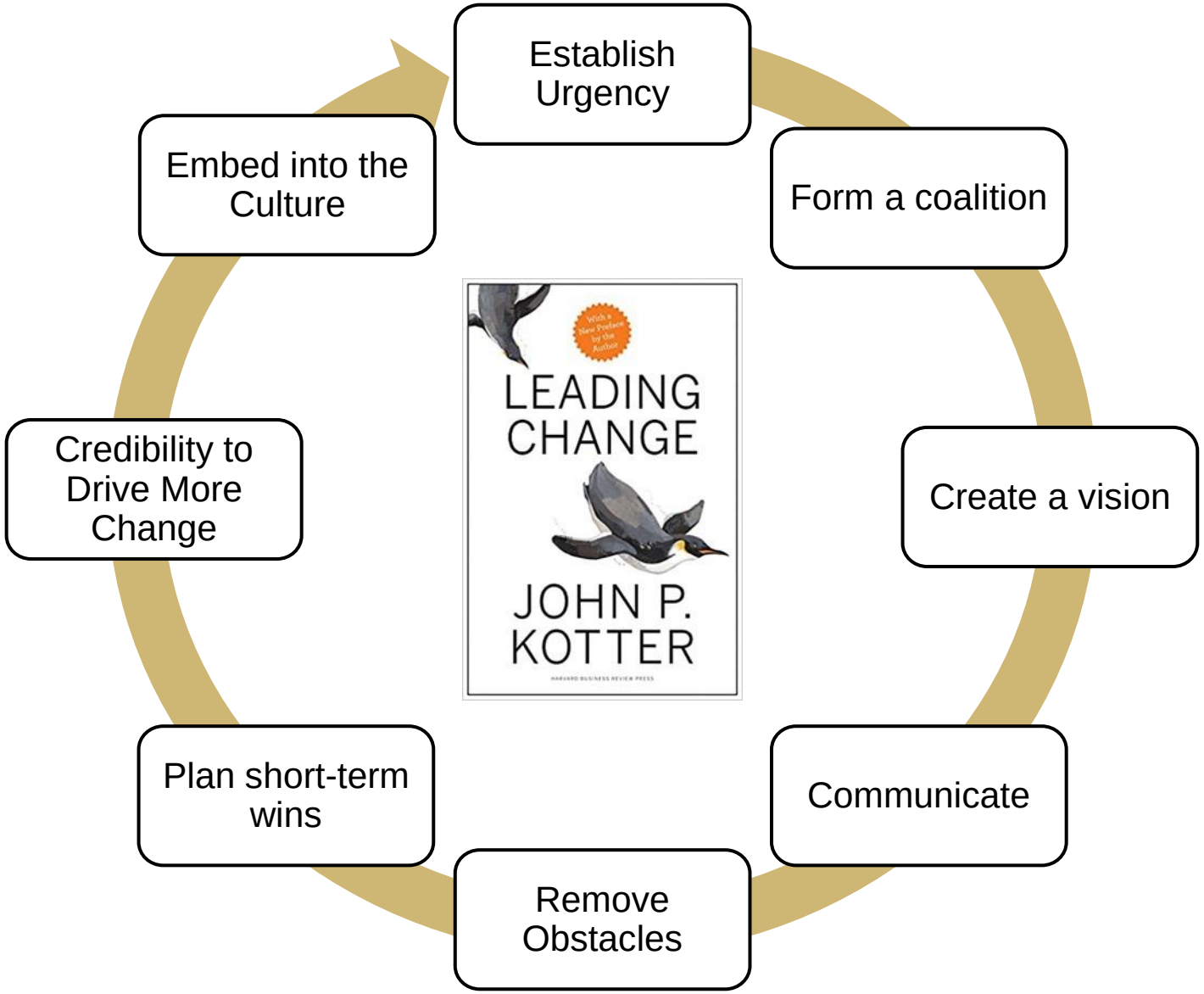
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LEADING CHANGE
JOHN P. KOTTER

Establish Urgency

Establish Urgency

Establish Urgency

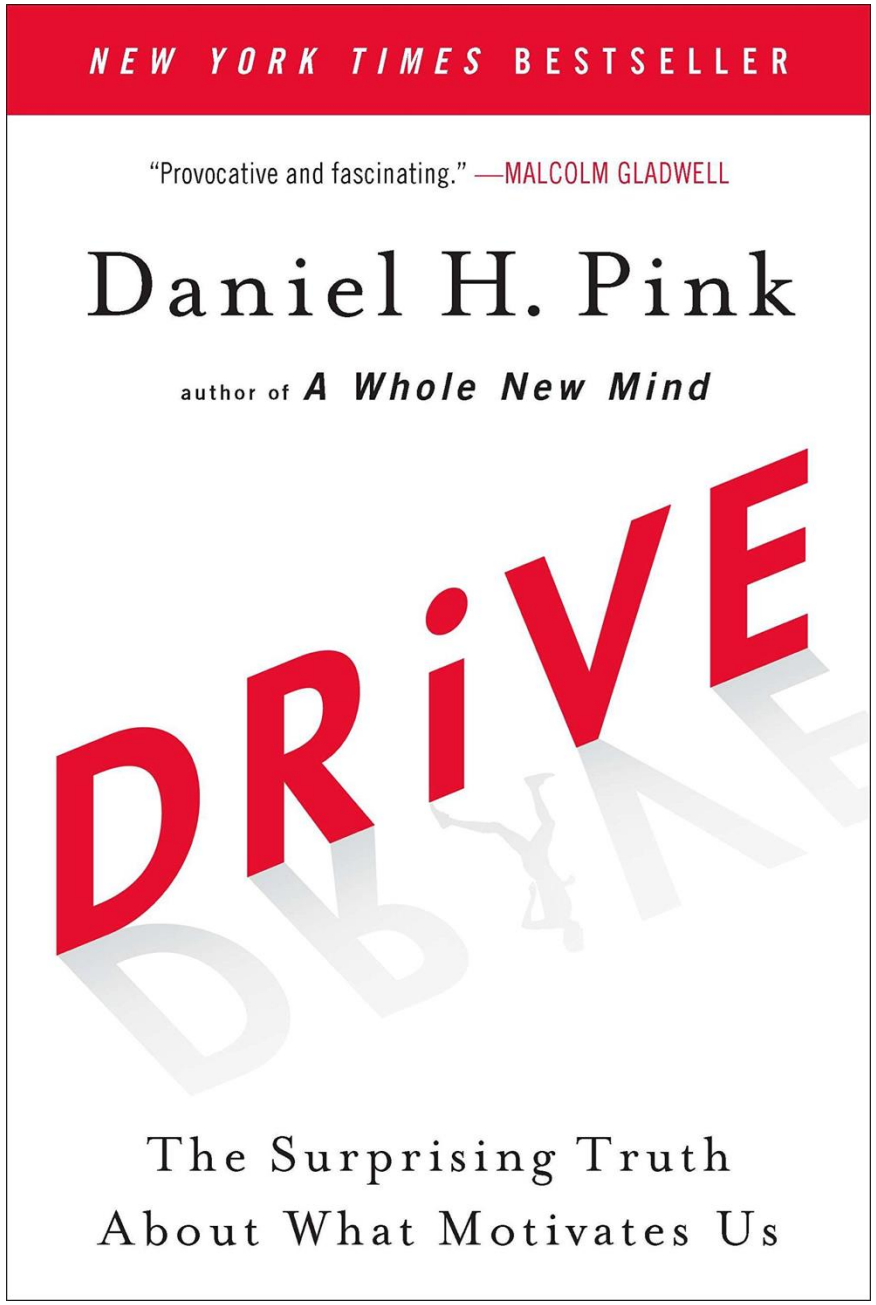
1.0 - Survival

2.0 - Extrinsic Motivation: reward, punishment

3.0 - Intrinsic Motivation

Burning Aspiration

Establish Urgency



AUTONOMY

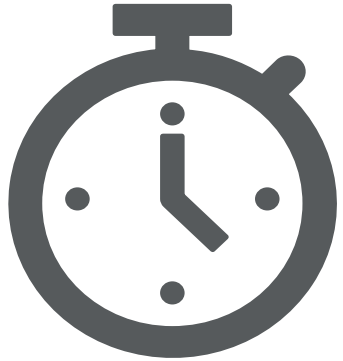
MASTERY

PURPOSE

PLAY

CONNECTION

Breakout



10 minutes

- What is your burning platform? (IE: SO WHAT?)

Form a Guiding Coalition

Key Partner Engagement

Who - *Anyone* impacted by your work

<u>To Gain Trust, Expertise, Insight:</u>

- Interprofessional
- Patients
- The Cool Kids

<u>To Gain Resources:</u>

- Various levels of organization
- The Bosses

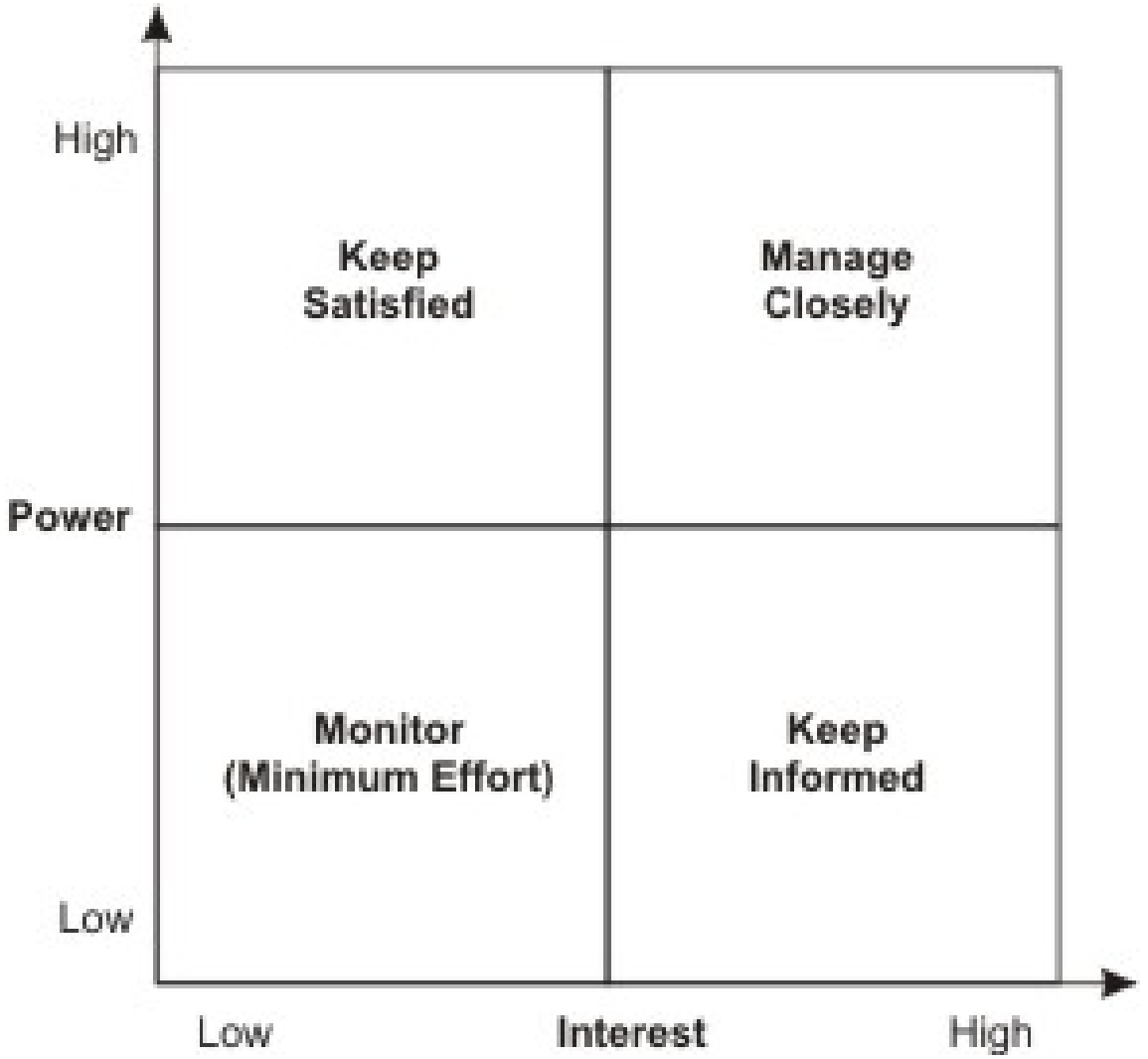
Guiding Coalition

Stakeholder/**Partner Map**

Step 1: Identify

Step 2: Prioritize

Step 3: Understand



Write down one person who you will contact after this session to move your work forward.

Create a Vision

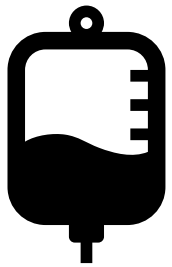
Create a Vision

Earth's most customer centric company.

A world without Alzheimer's disease.

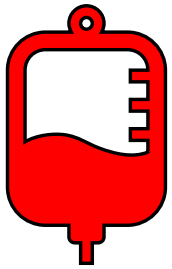
Eliminate all preventable harm.

Create a Vision



Discharge instructions will accurately list medications for patients discharged on IV antibiotics

Patients will be admitted during day shift for planned chemotherapy.



We will transfuse wisely. Not a drop wasted.

Communicate

Communicate

The Elevator Pitch

Communicate

Introduction: Who are you?

Hook: What is the problem or opportunity?

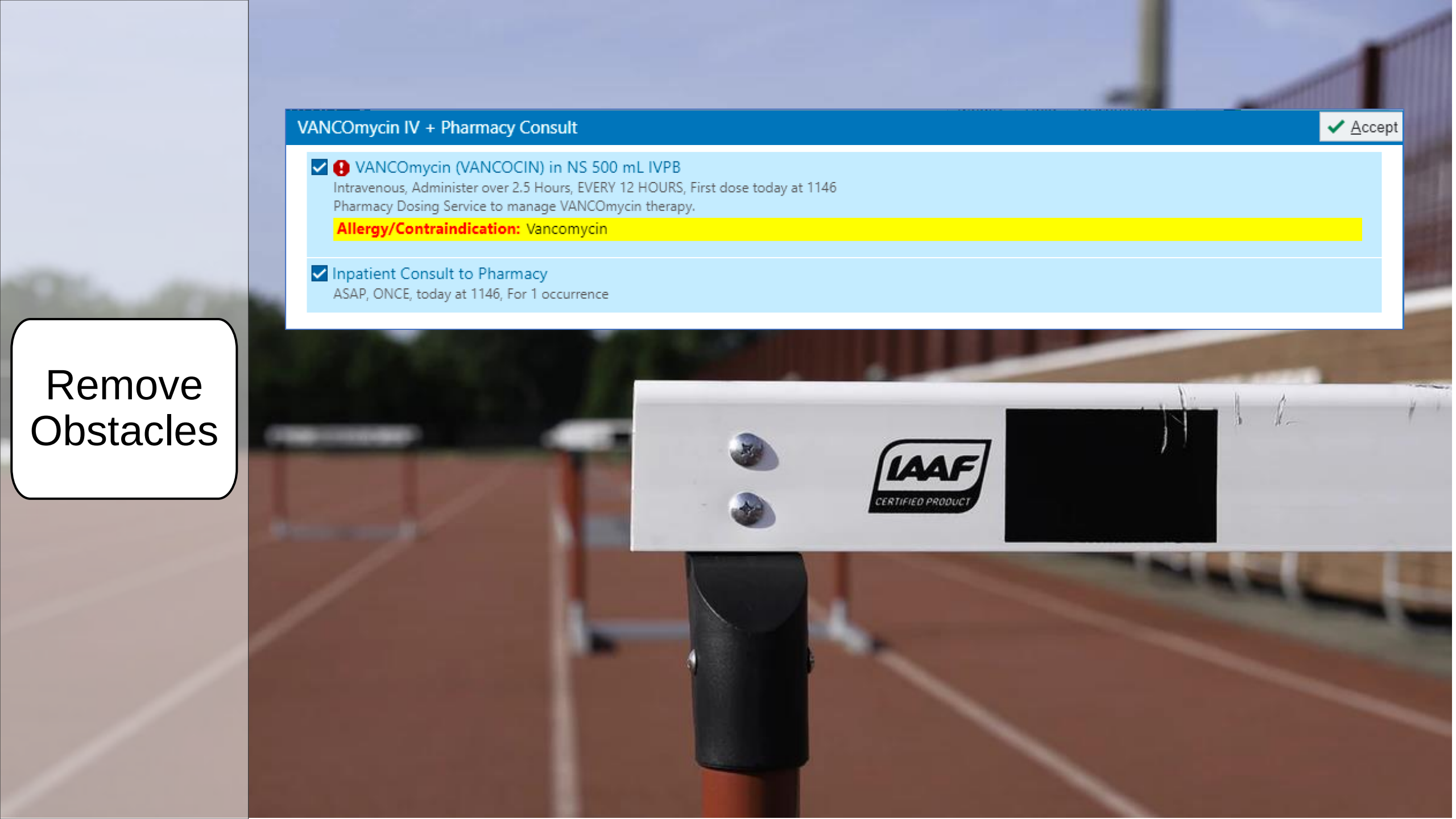
Solution: What are you doing about it?

Value proposition: How does this create value for him/her?

Call to action: What next?

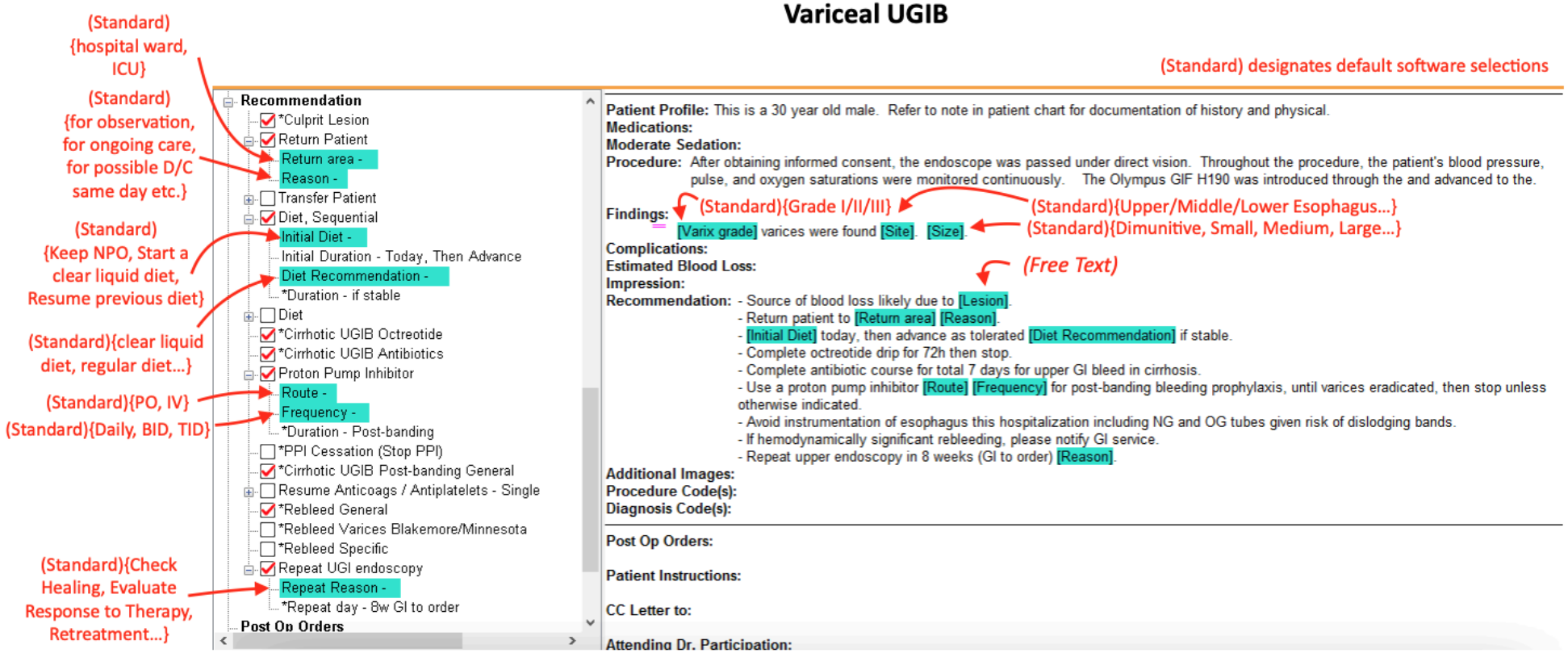

IV BY ID

Remove Obstacles


VANCOmycin IV + Pharmacy Consult
Accept
VANCOmycin (VANCOCIN) in NS 500 mL IVPB
Intravenous, Administer over 2.5 Hours, EVERY 12 HOURS, First dose today at 1146
Pharmacy Dosing Service to manage VANCOmycin therapy.
Allergy/Contraindication: Vancomycin
Inpatient Consult to Pharmacy
ASAP, ONCE, today at 1146, For 1 occurrence
IAAF
CERTIFIED PRODUCT
Remove Obstacles

Remove Obstacles

Remove Obstacles



Yen T, et al. Optimizing Endoscopy Procedure Documentation Improves Guideline-Adherent Care in Upper Gastrointestinal Bleeding. *Dig Dis Sci*. 2023;68(6):2264-2275.

Remove Obstacles

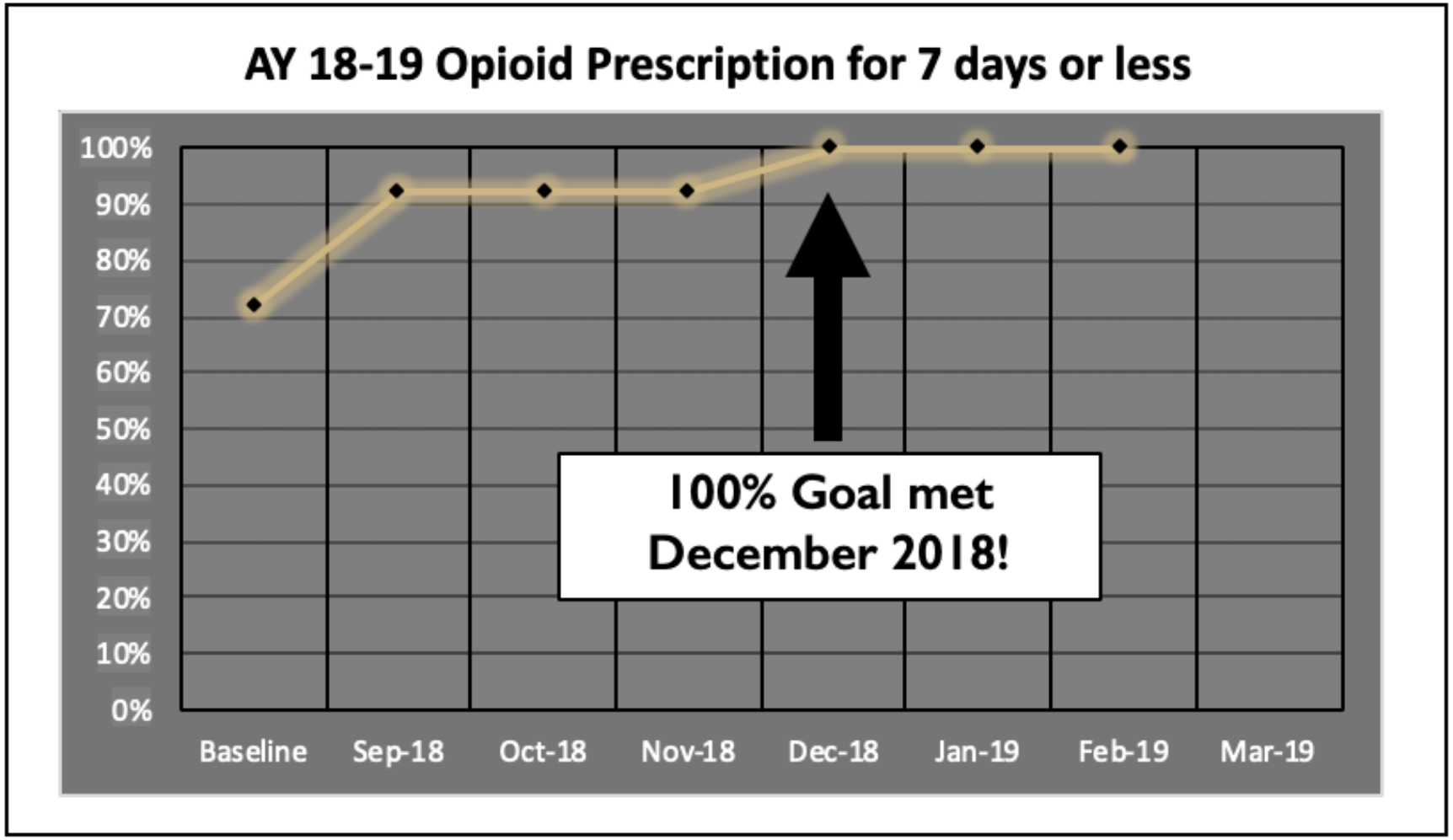
Generate Short-Term Wins

Short Term Wins

Celebrating Wins: Wea-ner of the Month

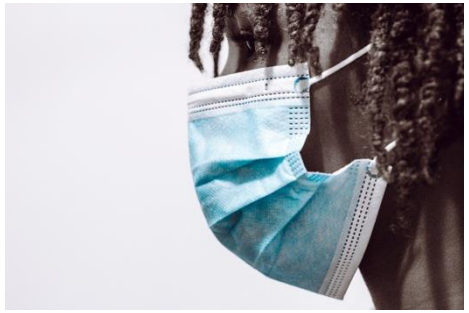
Use Credibility to Drive More Change

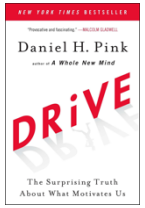
Credibility Momentum

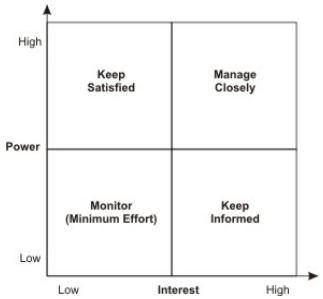


Embed it in the Culture

Culture Change







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Remove Obstacles

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Embed into the Culture

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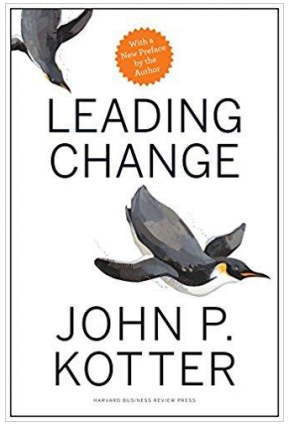

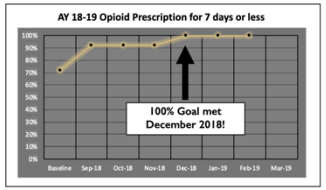

TARGETZERO
ELIMINATING PREVENTABLE HARM

“Survival is optional. No one has to change.”

W. Edwards Deming


Anschutz
IHQSE