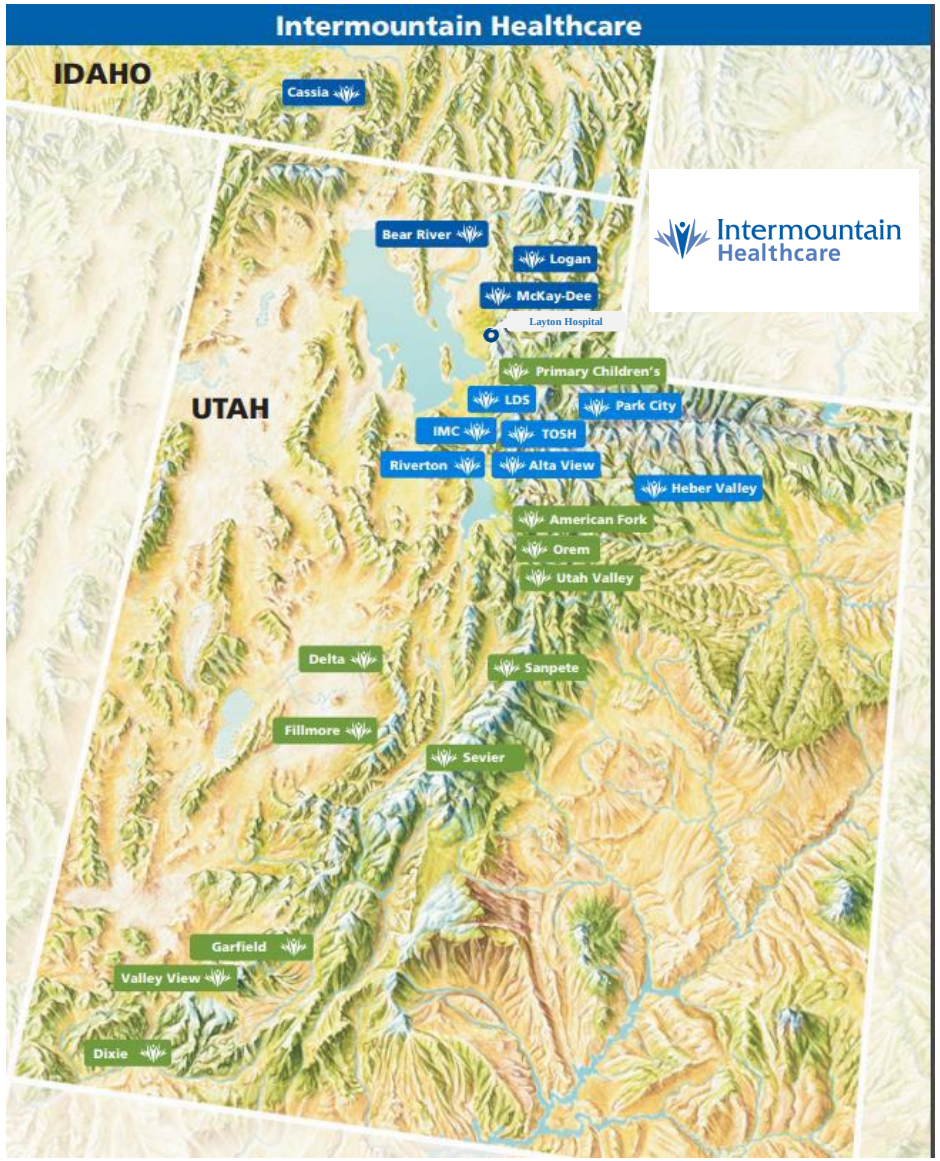
Intermountain Healthcare

Healing for life®

The Intermountain Operating Model

Driving a Culture of Continuous Improvement in a large, Non-profit Healthcare System

Matt Pollard, MD *– Executive Director, Intermountain Continuous Improvement*
Scott Saxton *– Executive Business Partner, Intermountain Continuous Improvement*



Intermountain Healthcare

Hospitals

Since 1975
- 22 hospitals
- 2,800 licensed beds
- $6.1 Billion Annual Net Revenue

SelectHealth

Since 1983
- Health plans
- 850,000+ members

Medical Group

Since 1994
- 180 Clinics
- 32 Instacare Clinics
- 1,560 employed physicians
- 680 APCs

Our Foundation

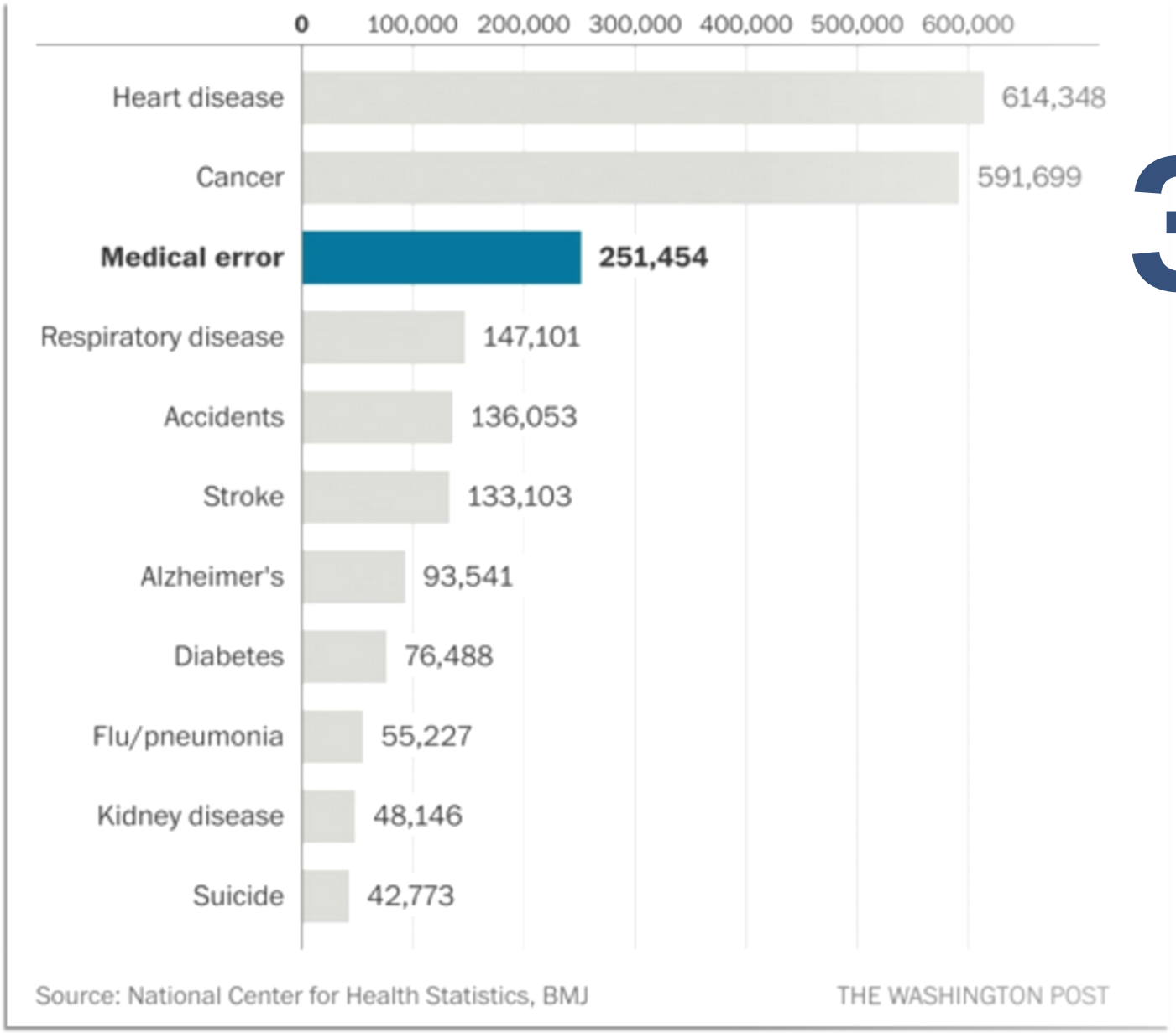
Mission

Helping people live the healthiest lives possible®

Vision

Be a model health system by providing extraordinary care and superior service at an affordable cost.

Intermountain® Healthcare



3RD LEADING CAUSE OF DEATH

Many Americans Can No Longer Afford Healthcare

- Costs increasing too fast- Our costs have gone up 22% in the past five years
- Patients (consumers) paying all costs out of pocket- 1/3 of our members are HDHP; 67% never reach their deductible
- Healthcare isn't delivering perceived value- We lag behind other industries in terms of experience and value

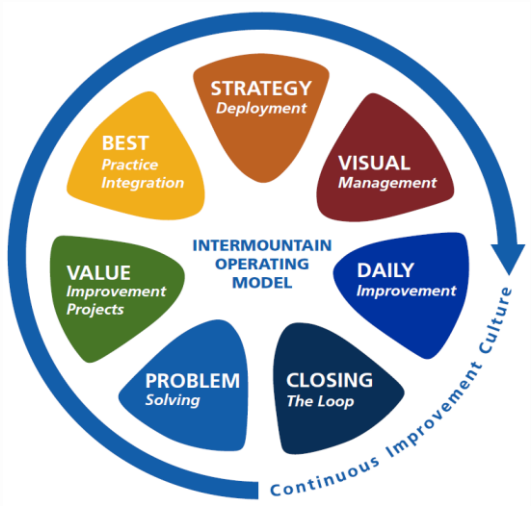
Healthcare Urgency to Improve!

Input

- People
- Materials
- Equipment

+

Method



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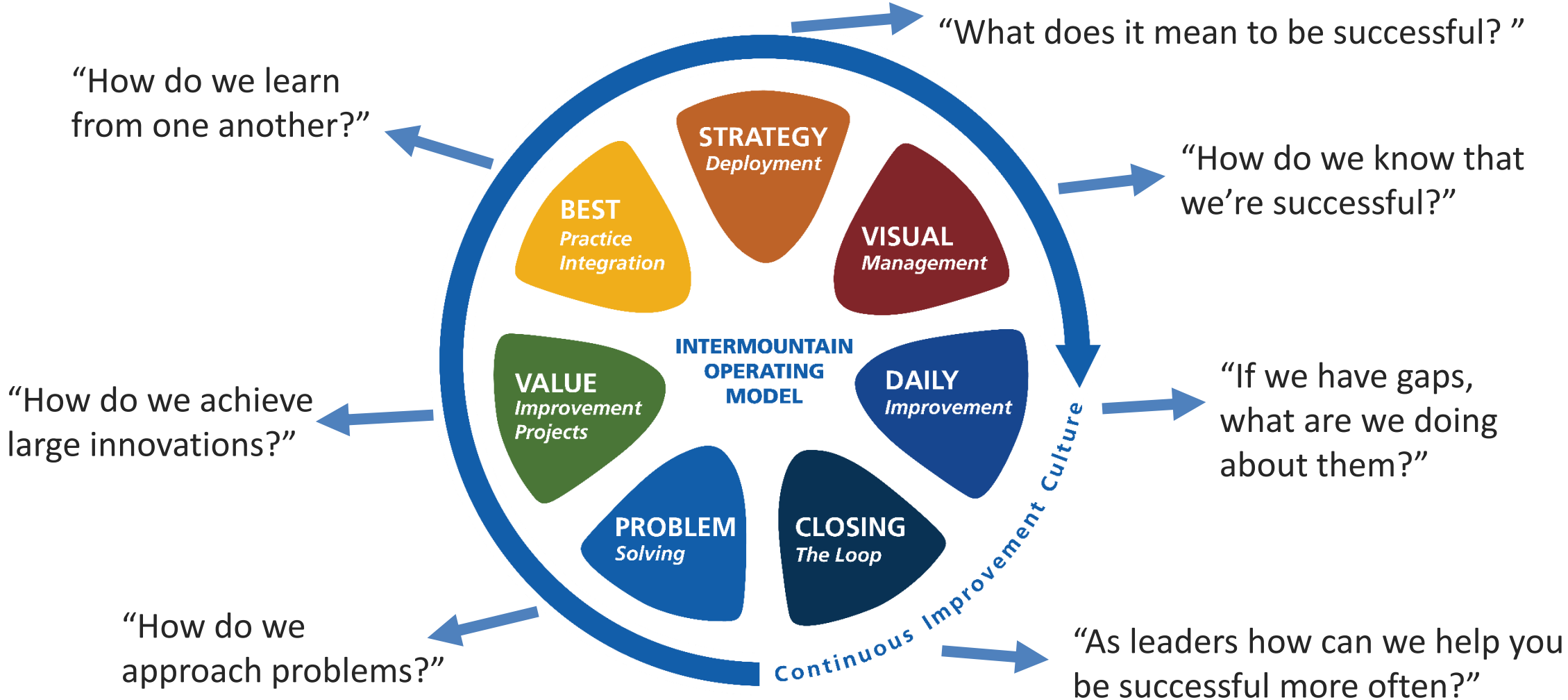
Outcomes

- Patient/Employee Safety
- Quality
- Patient Satisfaction
- Affordable Costs
- Financial Results

Intermountain
Continuous Improvement

Continuous Improvement is a method for engaging all caregivers throughout the organization in systematically increasing the value provided to our patients, members and caregivers.

Operational Alignment

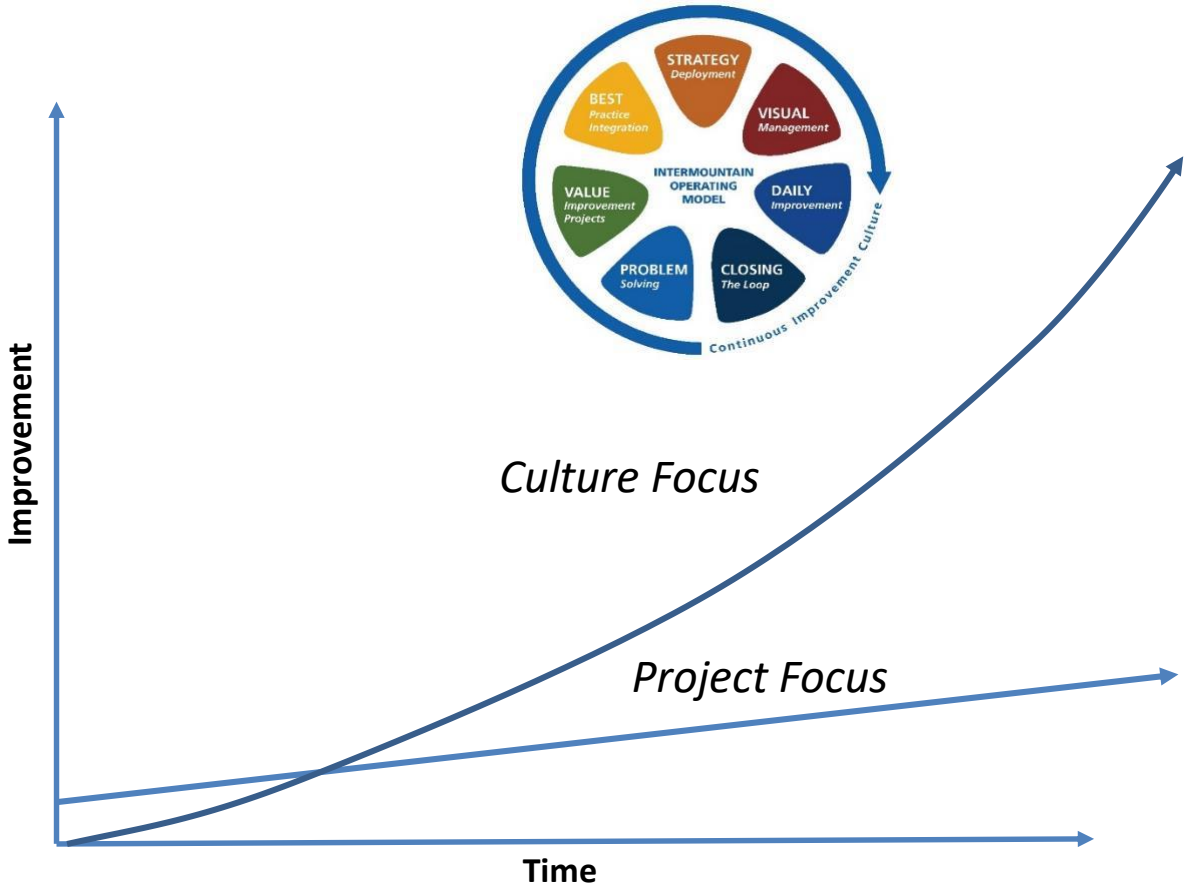


CLARITY | ALIGNMENT | ACCOUNTABILITY

Improvement Approaches

Culture Focus

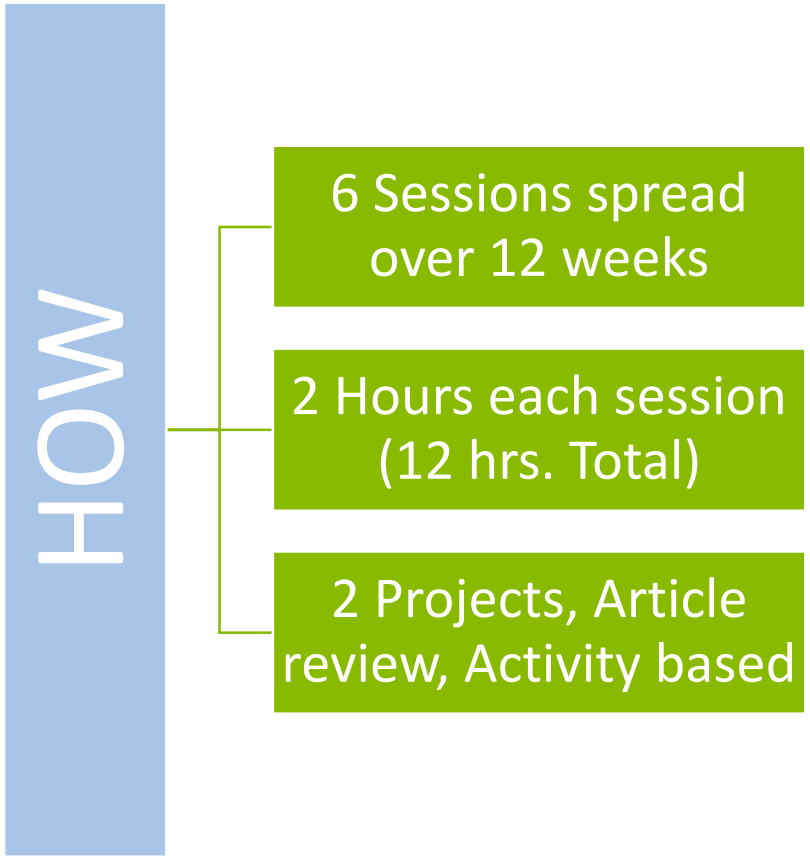
- Slower start to focus on culture
- Broad involvement of front-line
- People doing the work know best
- Focus on systems and processes
- Lean tools are not emphasized (although they are used)
- Improvements come from everyone
- Increase exponentially over time



How can a leader achieve successful outcomes if they do not know the Improvement Method?

Train & Develop Leaders

Certification Course



"For years we have been talking about many of the concepts, however, ***this course forged them altogether****. The management system and all of its tools, now seem to make sense.* ***The course has also helped the entire facility to exist on the same plateau*** *of continuous improvement.* ***We are speaking the same language*** *and supporting the same culture."*

- Bret Rohde, Bear River Valley Hospital

Managing from the office is

Humility and Servant Leadership

Key System: STRATEGY DEPLOYMENT

"What does it mean to be successful?"

Clear expectations of what it means to be successful at each level of the organization, coupled with aligned strategies, tactics, and actions to attain goals.

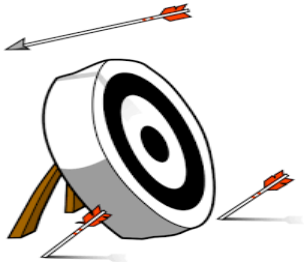
Key Elements of Strategy Deployment

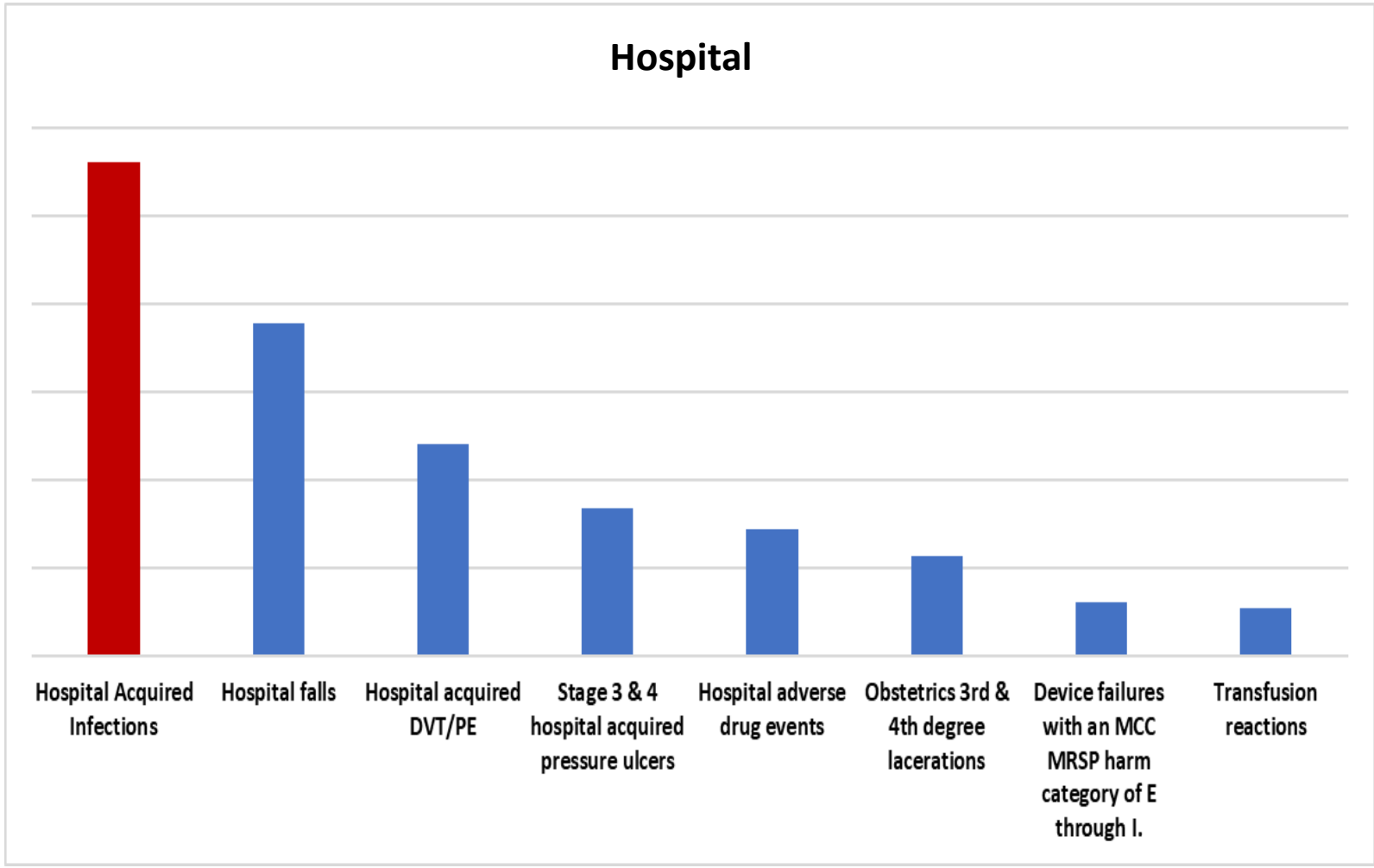
Choose Meaningful Key Performance Indicators (KPI's)

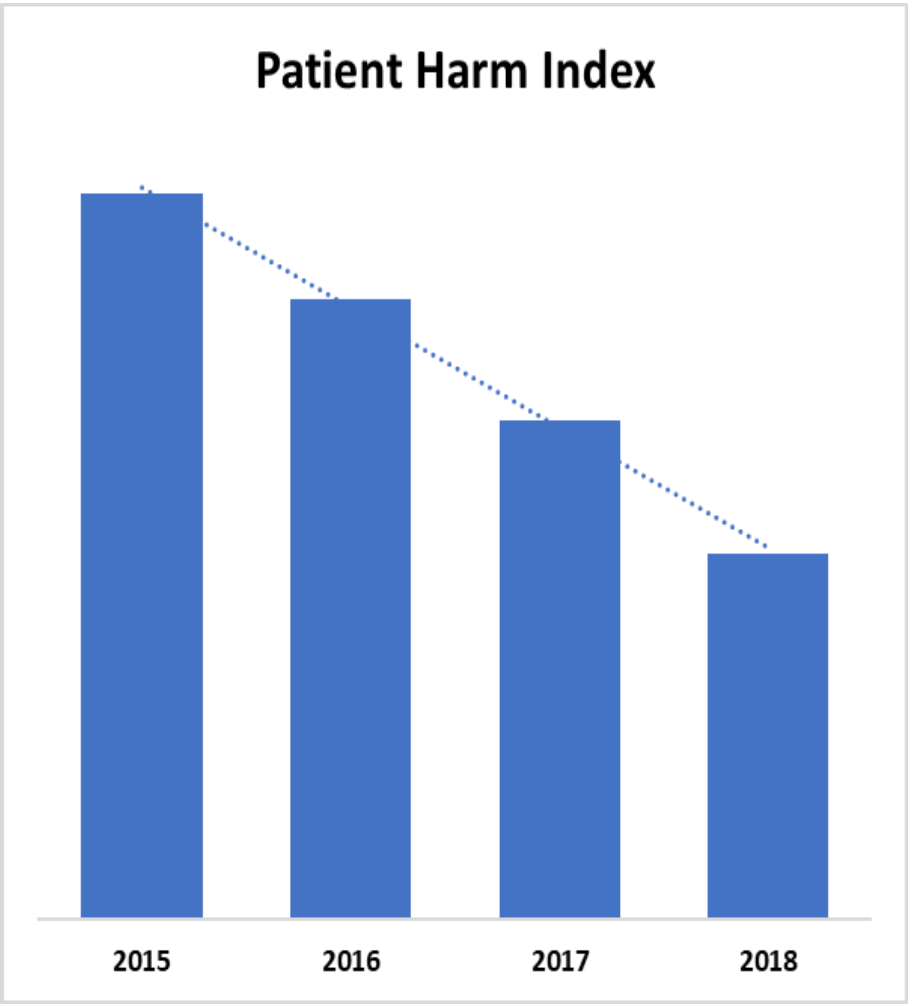
- Don't change year over year
- Validate how well the organization is moving towards mission and vision of organization
- Measurable and clear to everyone in organization
- Measure value provided to customers, patients and other teams

Patient Harm Index	Caregiver Safety Index	Length of Stay/Wait Times
Direct to Indirect Labor	Cost Per Case	Inventory Turns
Improvement $ Saved	Quality Rates: Infection, Complications, Readmissions, Mortality	Service Scores - HCAHPS

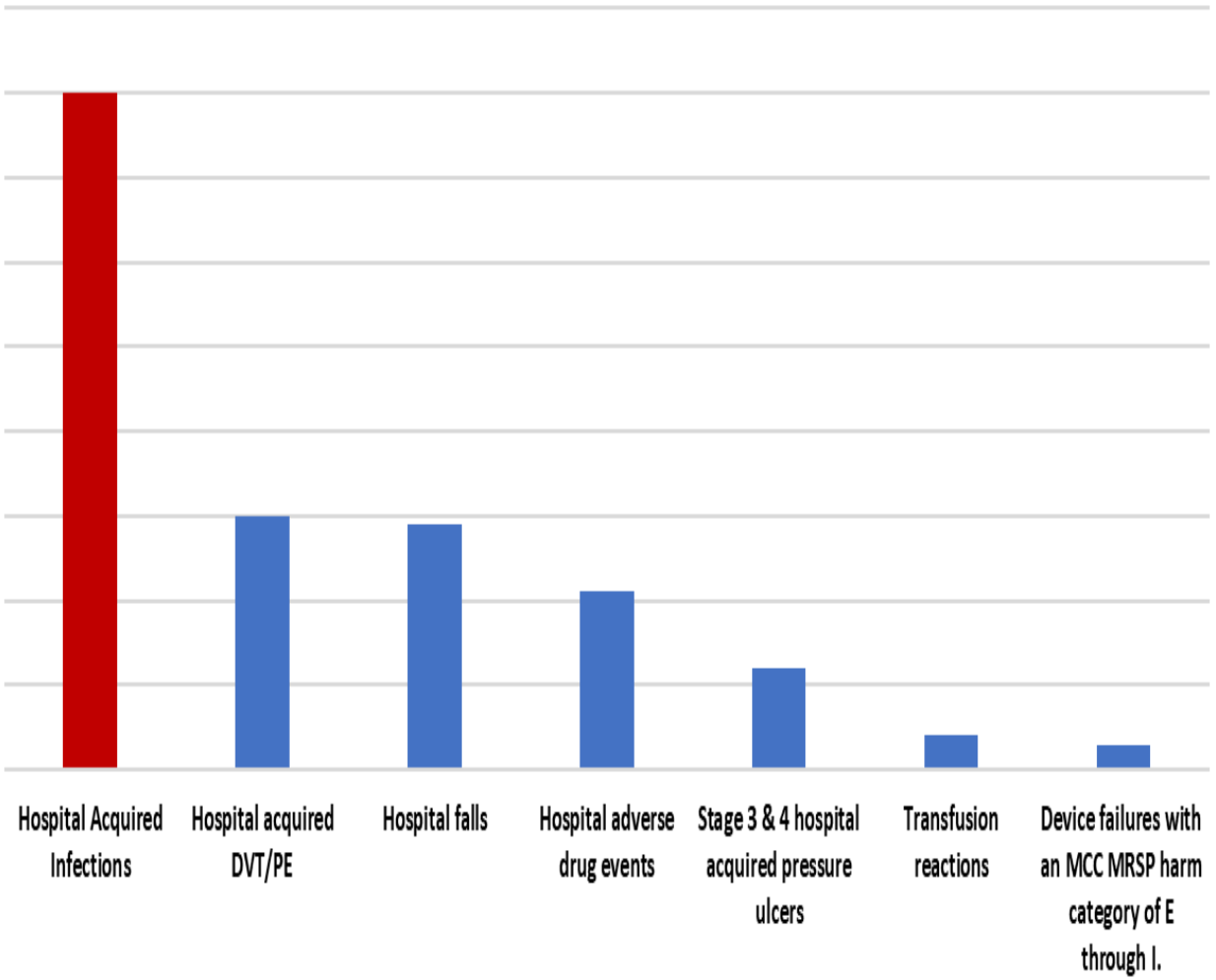
Random Board Goals Miss the Mark



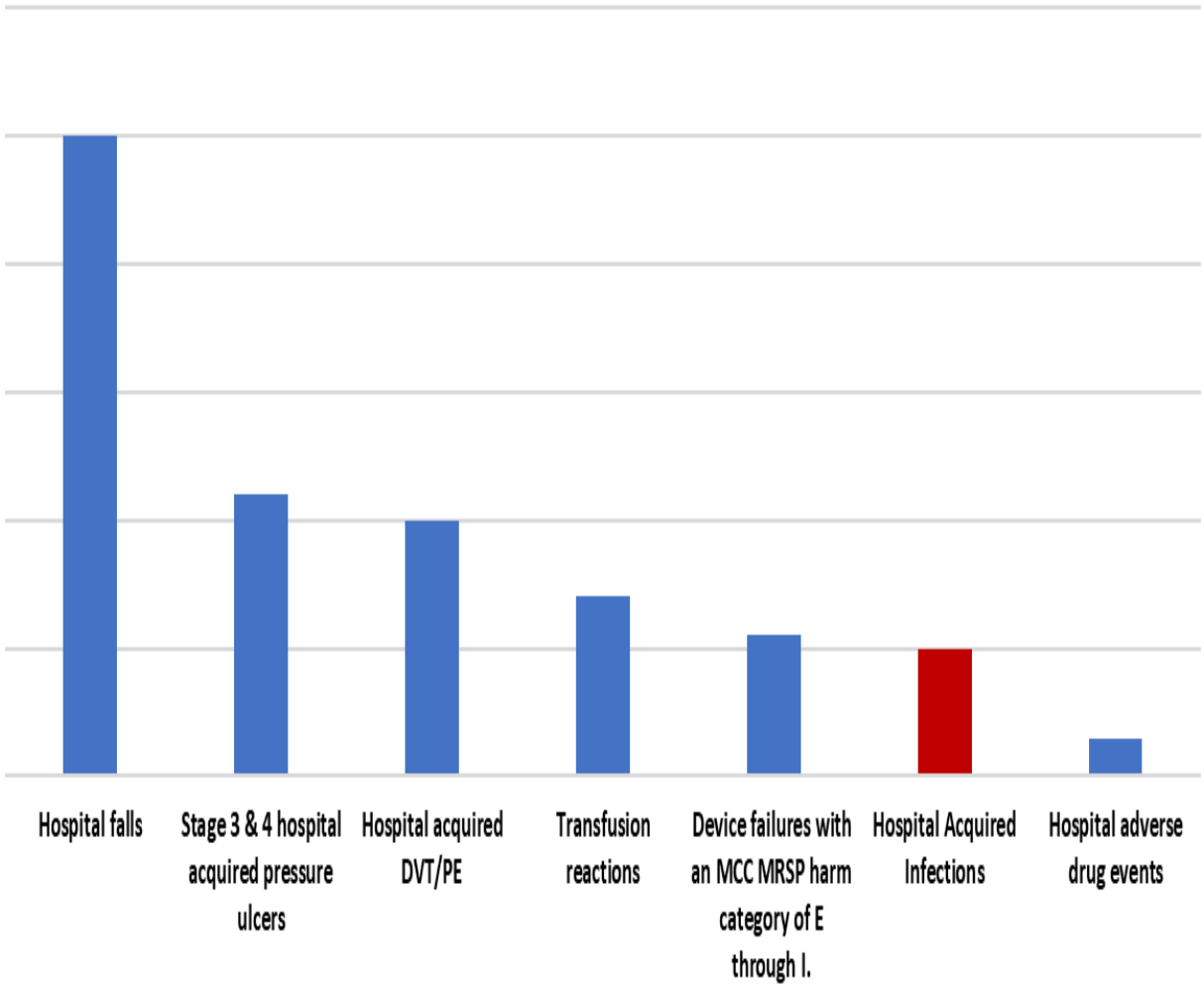


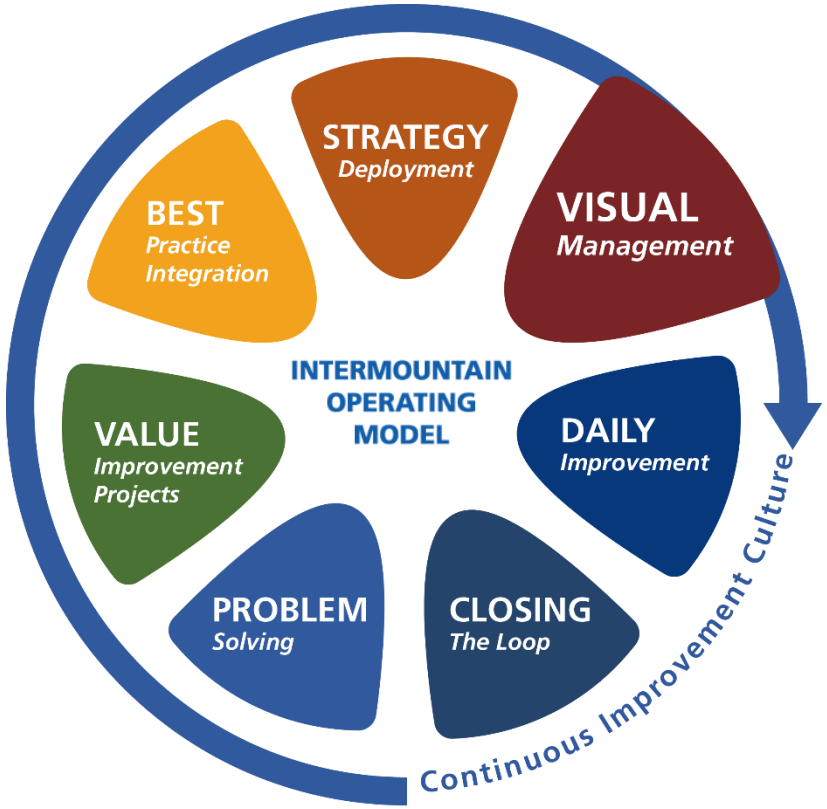


Med Surg Department



Joint & Spine Department





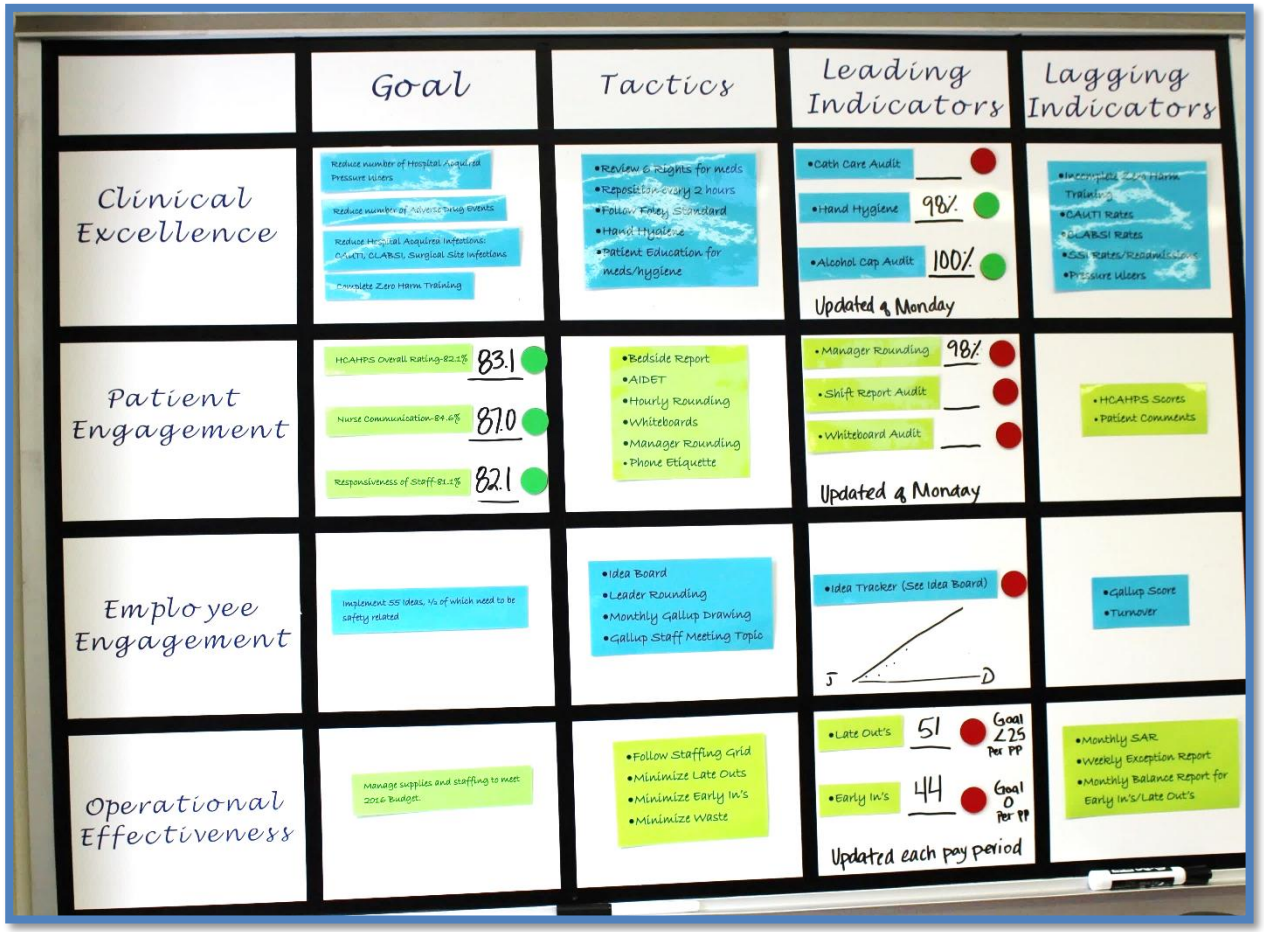
Key System: VISUAL MANAGEMENT

"How do we know that we're successful?"

Systems and processes are designed to help leaders and staff see problems in real time.

If we have gaps, what are we doing about them?

- Transparency = Team Collaboration
- If you are not green… you are RED.



Key System: DAILY IMPROVEMENT

"If we have gaps, what are we doing about them?"

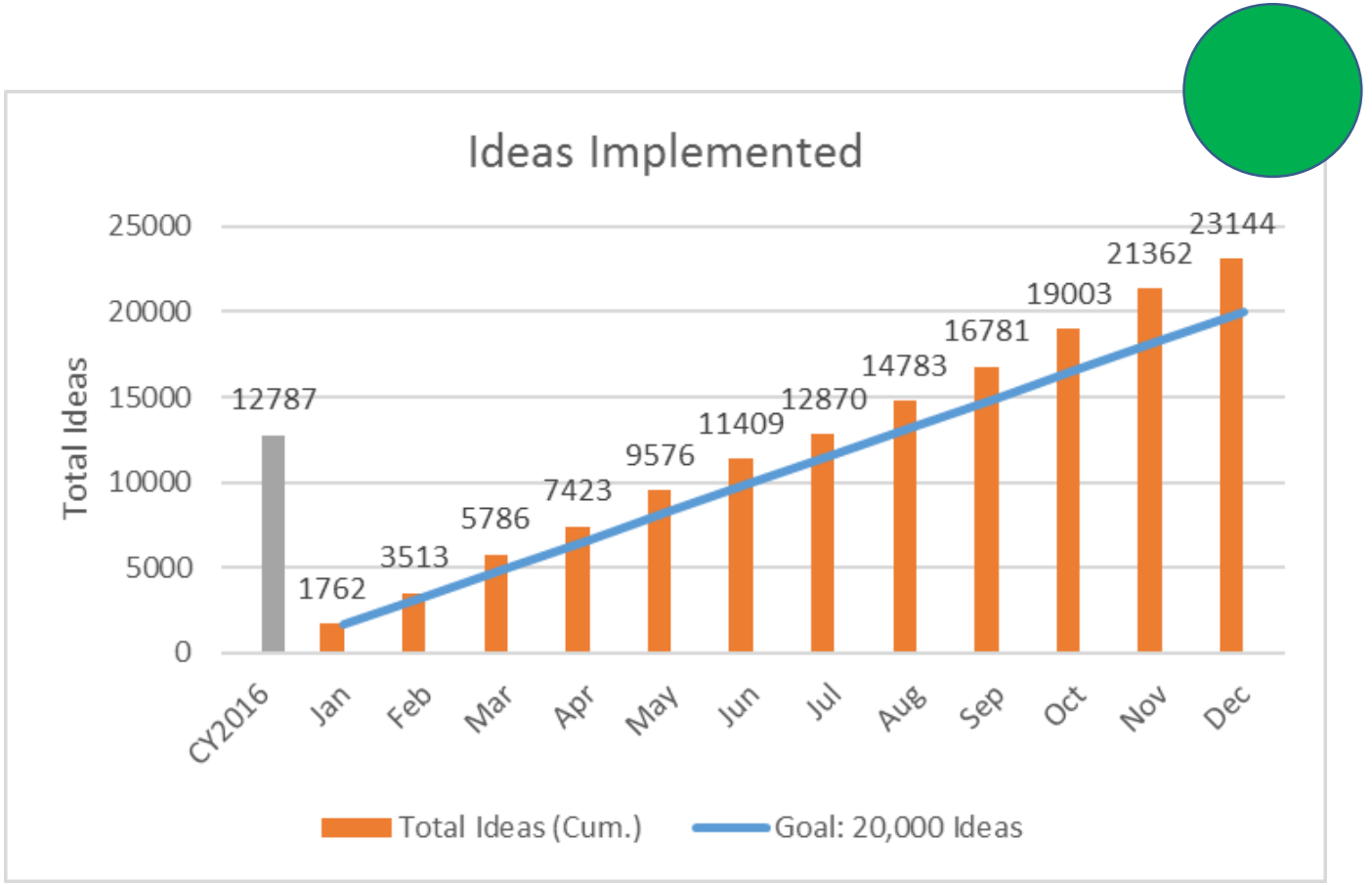
Employees are engaged through team-based problem solving, idea generation, and recognition.

DAILY IMPROVEMENT

Elements:

- Idea Boards
- Idea Innovation Time
- Implemented Idea Metric
- Idea Recognition

Cultural Improvement- Intermountain Operating Model




REGISTERED
NURSE

Key System: CLOSING THE LOOP

"As a leader, how can I help you be successful more often?"

Management is engaged through reaction protocols, coaching, and standard follow-up.

Daily Tier

Met
stat

Leade
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Daily
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Standard Work | Intermountain Healthcare – Urban North Region

Key Process: Nasal Swab Collection

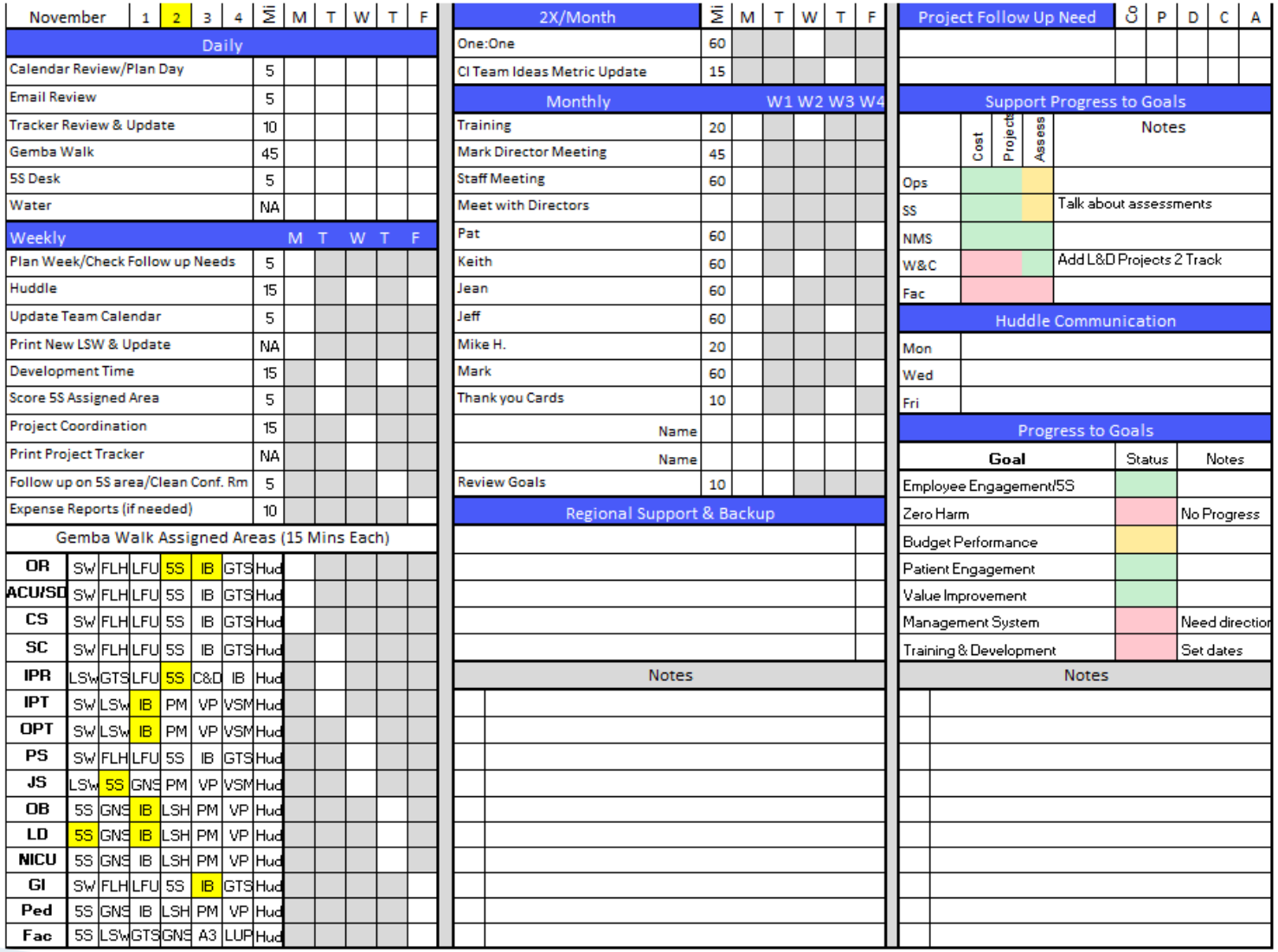
Trigger: Nasal swab (RSV, Influenza)

Process Performed By: Inpatient Nursing Staff
Owner: Respiratory Care Department
Version/Date: 8-1-13 **Date for Review:** 8-1-14

Timing	Major Steps:	Key Points:	Reasons Why:
At all times	1. Obtain appropriate protective equipment 2. Describe the process to the patient and position patient in sitting or prone position. **The patient may gag or show other signs of discomfort. Instruct patient to sit with their head supported to reduce the tendency of pulling away during this procedure.** 3. Check swab expiration date. Open swab packaging. Only one swab is needed. Discard 2nd swab (swab without wire shaft) if present.   4. Carefully remove swab from transport sleeve. Do not touch with the tip of the swab with any object other than the anterior nares of the patient.  **Use this swab to obtain sample**	1. Insert swab into one nostril **straight back** (not upwards) along the floor of the nasal passage until reaching the posterior wall of the nasopharynx and leave in place for a few seconds. **The distance from the nose to the ear gives an estimate of the distance the swab should be inserted.**   **Do not force swab. If resistance is encountered during swab insertion, remove it and attempt insertion in the opposite nostril.** 2. Slowly remove the swab from the naris with a rotating motion. This may be accomplished by rolling the handle end of the swab. 3. Carefully place tip of swab into the transport tube in which it came and break the shaft to allow the tube to be resealed.   4. Place the swab in a biohazard bag. Label the swab transport tube with patient identification, date and time of collection, the source and your initials. Send sample to lab.	1. Less invasive procedure to obtain a nasal sample from patient. 2. To increase sample result turnaround time. 3. Allow for patient to be removed from protective isolation sooner if sample results are found to be negative.

Critical Steps Safety **Visual Cues** Timing **Tip**

Example: Leader Standard Work



November	1	2	3	4	Mi	M	T	W	T	F
Daily										
Calendar Review/Plan Day					5					
Email Review					5					
Tracker Review & Update					10					
Gemba Walk					45					
5S Desk					5					
Water					NA					
Weekly						M	T	W	T	F
Plan Week/Check Follow up Needs					5					
Huddle					15					
Update Team Calendar					5					
Print New LSW & Update					NA					
Development Time					15					
Score 5S Assigned Area					5					
Project Coordination					15					
Print Project Tracker					NA					
Follow up on 5S area/Clean Conf. Rm					5					
Expense Reports (if needed)					10					

Gemba Walk Assigned Areas (15 Mins Each)

OR	SW	FLH	LFU	5S	IB	GTS	Hud					
ACU/SD	SW	FLH	LFU	5S	IB	GTS	Hud					
CS	SW	FLH	LFU	5S	IB	GTS	Hud					
SC	SW	FLH	LFU	5S	IB	GTS	Hud					
IPR	LSW	GTS	LFU	5S	C&D	IB	Hud					
IPT	SW	LSW	IB	PM	VP	VSM	Hud					
OPT	SW	LSW	IB	PM	VP	VSM	Hud					
PS	SW	FLH	LFU	5S	IB	GTS	Hud					
JS	LSW	5S	GNS	PM	VP	VSM	Hud					
OB	5S	GNS	IB	LSH	PM	VP	Hud					
LD	5S	GNS	IB	LSH	PM	VP	Hud					
NICU	5S	GNS	IB	LSH	PM	VP	Hud					
GI	SW	FLH	LFU	5S	IB	GTS	Hud					
Ped	5S	GNS	IB	LSH	PM	VP	Hud					
Fac	5S	LSW	GTS	GNS	A3	LUP	Hud					

2X/Month	Mi	M	T	W	T	F
One:One	60					
CI Team Ideas Metric Update	15					
Monthly		W1	W2	W3	W4	
Training	20					
Mark Director Meeting	45					
Staff Meeting	60					
Meet with Directors						
Pat	60					
Keith	60					
Jean	60					
Jeff	60					
Mike H.	20					
Mark	60					
Thank you Cards	10					
Name						
Name						
Review Goals	10					

Regional Support & Backup

Notes

Project Follow Up Need	S	P	D	C	A

Support Progress to Goals

	Cost	Project	Assess	Notes
Ops				
SS				Talk about assessments
NMS				
W&C				Add L&D Projects 2 Track
Fac				

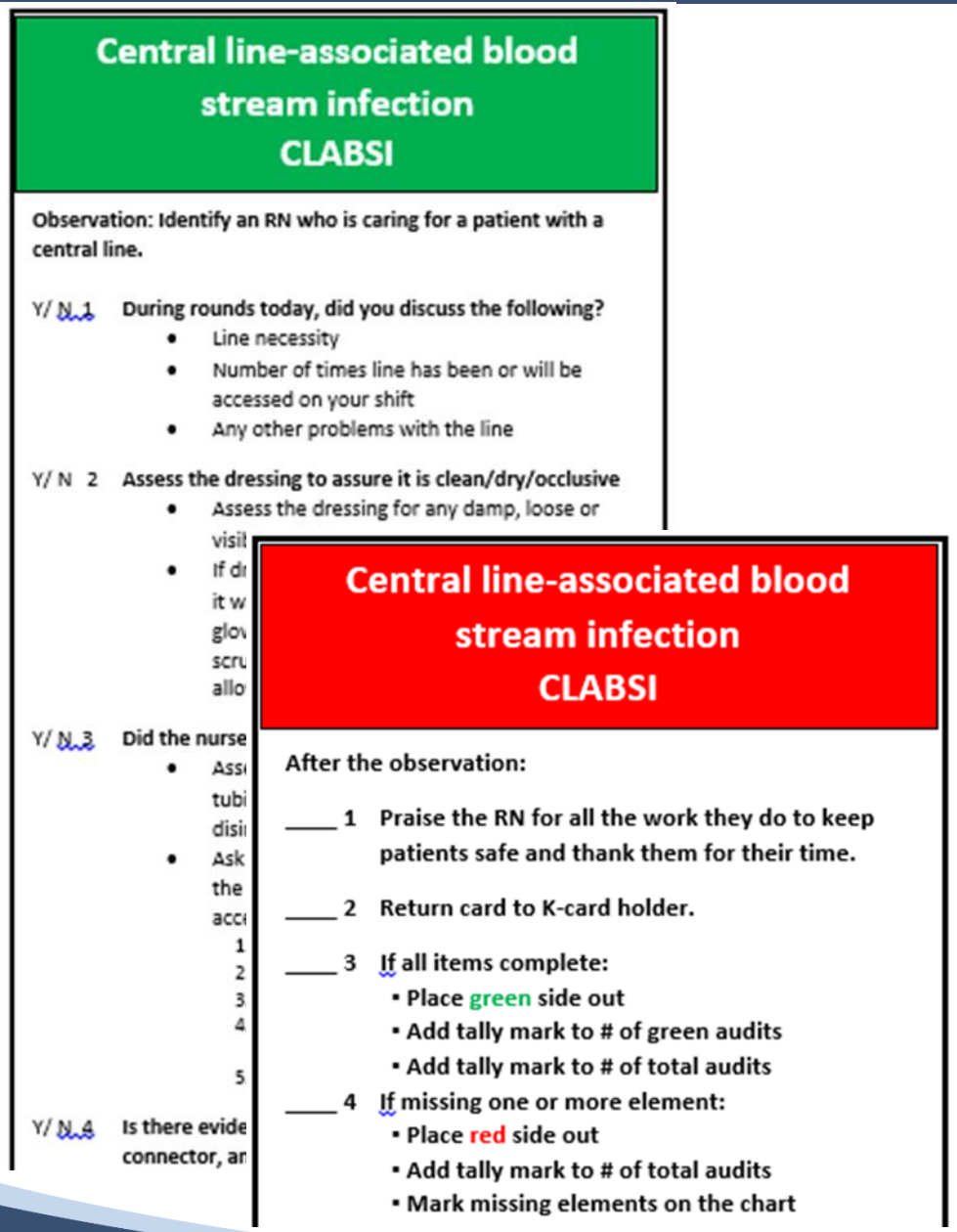
Huddle Communication

Mon	
Wed	
Fri	

Progress to Goals

Goal	Status	Notes
Employee Engagement/5S		
Zero Harm		No Progress
Budget Performance		
Patient Engagement		
Value Improvement		
Management System		Need direction
Training & Development		Set dates

Notes



Central line-associated blood stream infection
CLABSI

Observation: Identify an RN who is caring for a patient with a central line.

Y/ N 1 During rounds today, did you discuss the following?
- Line necessity
- Number of times line has been or will be accessed on your shift
- Any other problems with the line

Y/ N 2 Assess the dressing to assure it is clean/dry/occlusive
- Assess the dressing for any damp, loose or visil
- If dr it w glov scru allo

Y/ N 3 Did the nurse
- Ass tubi disi
- Ask the acc

1
2
3
4

5

Y/ N 4 Is there evide connector, ar

Central line-associated blood stream infection
CLABSI

After the observation:

____ 1 Praise the RN for all the work they do to keep patients safe and thank them for their time.

____ 2 Return card to K-card holder.

____ 3 If all items complete:
- Place green side out
- Add tally mark to # of green audits
- Add tally mark to # of total audits

____ 4 If missing one or more element:
- Place red side out
- Add tally mark to # of total audits
- Mark missing elements on the chart

What is the purpose of the K-card?

- Provide opportunities for front line staff to engage directly with the work aimed at HACs.
- Opportunity to align nurse practice expectations to outcomes.
- Real time data reporting.

Shift-to-Shift Indicator:

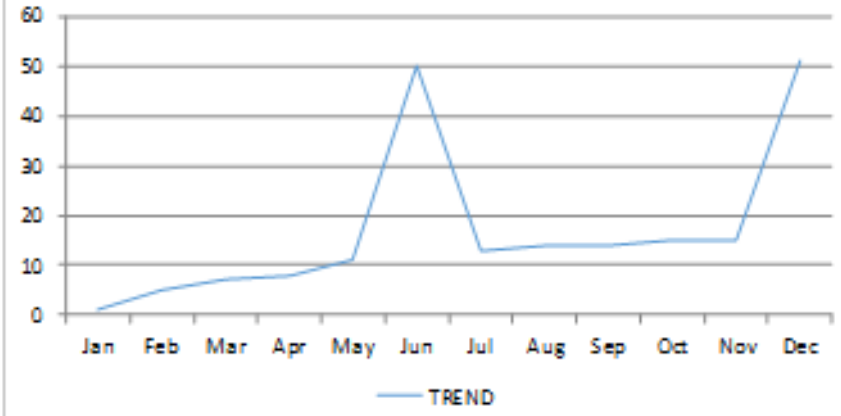
- What does this photograph tell you?
- What can we learn from the red?
- What does this mean for today's shift?
- As a leader, how can our unit learn?
- What is the teams next step to improve?

Example of Return to Green Plan:

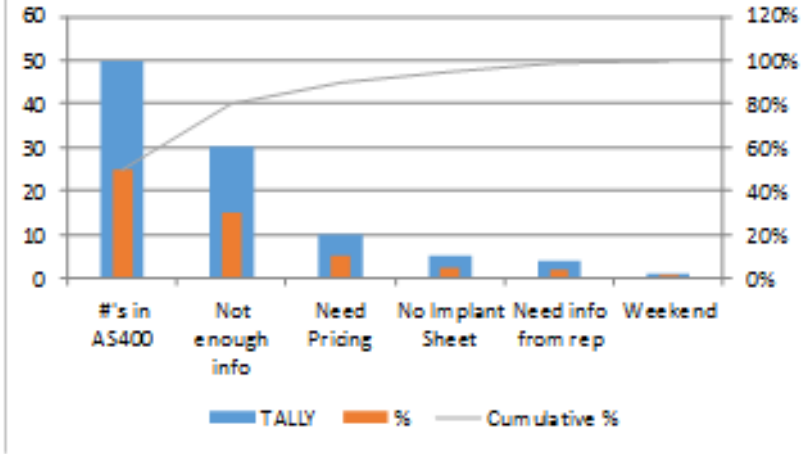
4 Quadrant Return to Green Plan (RTG)

Intermountain Continuous Improvement

1. CURRENT TREND



2. PARETO ANALYSIS



3. Gap/Root Cause Analysis Conclusions

- Be Brief
- Conclusions should have associated actions
- 5 Whys (understand the why, not just the how)

4. Action Register

Action Steps	Who	When	Status

Follow-up (Step-Back Reviews)

Key points consistent at each level:

Huddle board with clear goals, tactics and trends along with recognition of gaps and return to green plans.

Include direct reports and team members at the worksite.

Example of project improvement with standards and processes defined.

Example of implemented employee ideas presented by the employee.

Leader has engaged the team in development of goals and the supportive action plans to support goal achievement and recognition is built into the review.

Clear assignment for strategies and tactics with who, what and when and escalation of system deficiencies.

Step-back reviews take place at the work-site.

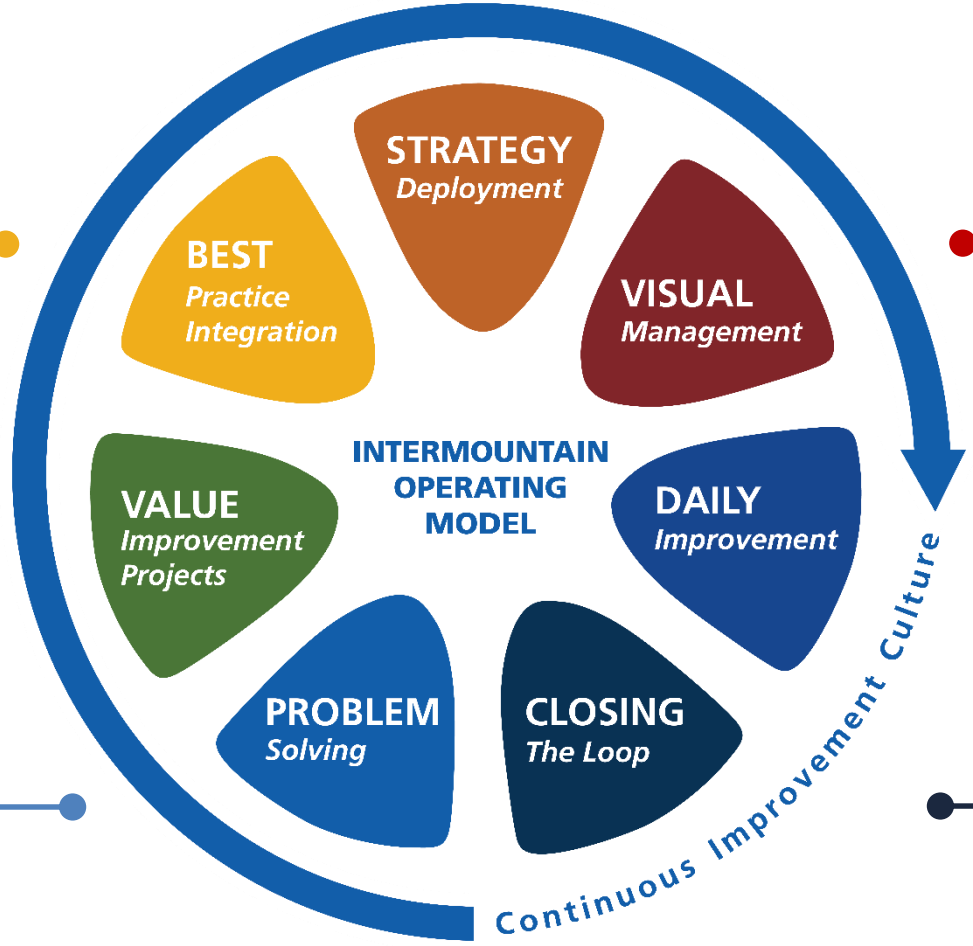
Follow-up, Follow-up, Follow-up
LEADER AS TEACHER

Operational Alignment

42% reduction in serious safety events

More than 3,000 huddles with a tiered escalation

Most CMS Star Ratings in our history



More than 23,000 ideas implemented

Improved access with 73% clinics extended hours

90% quality goals met

CLARITY | ALIGNMENT | ACCOUNTABILITY

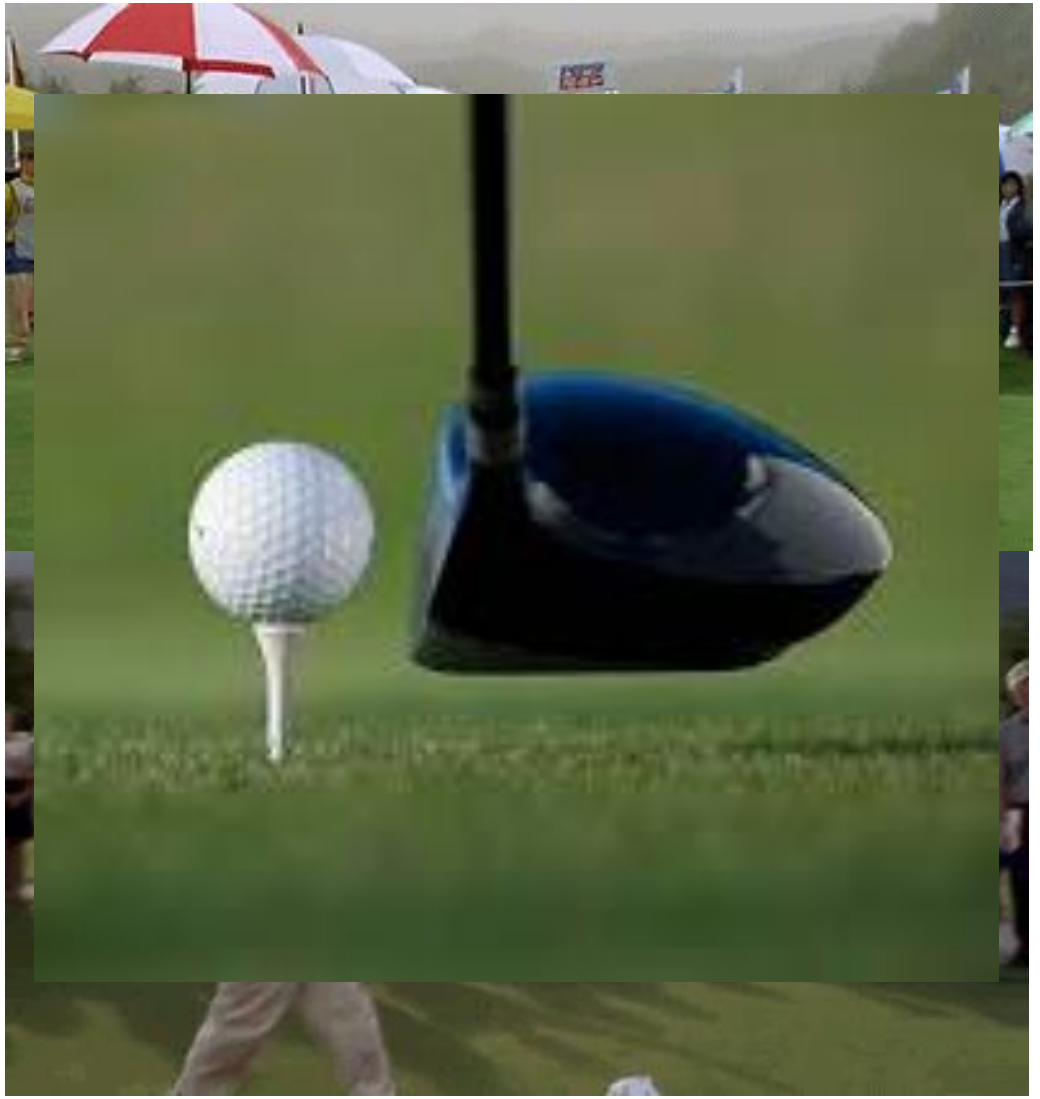
Danger of Tools

What is the job of this club?

Why won't the best golf club make me the best golfer?

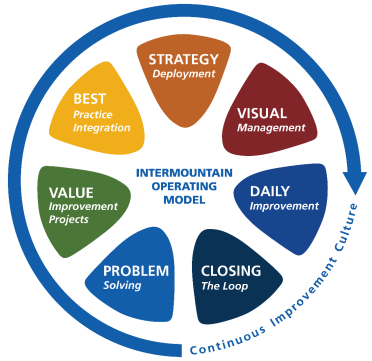
There is more to golfing than having the best clubs.

"Tools are techniques for problem solving, necessary but not sufficient. --Shingo



Tools help us ***manage.***

*It is **not** the way we manage.*



Sustainability survives with leadership follow-up.

Do you remember your FIRST DAY of MEDICAL SCHOOL?


HOW
ABOUT
NOW?

PARADIGM SHIFT

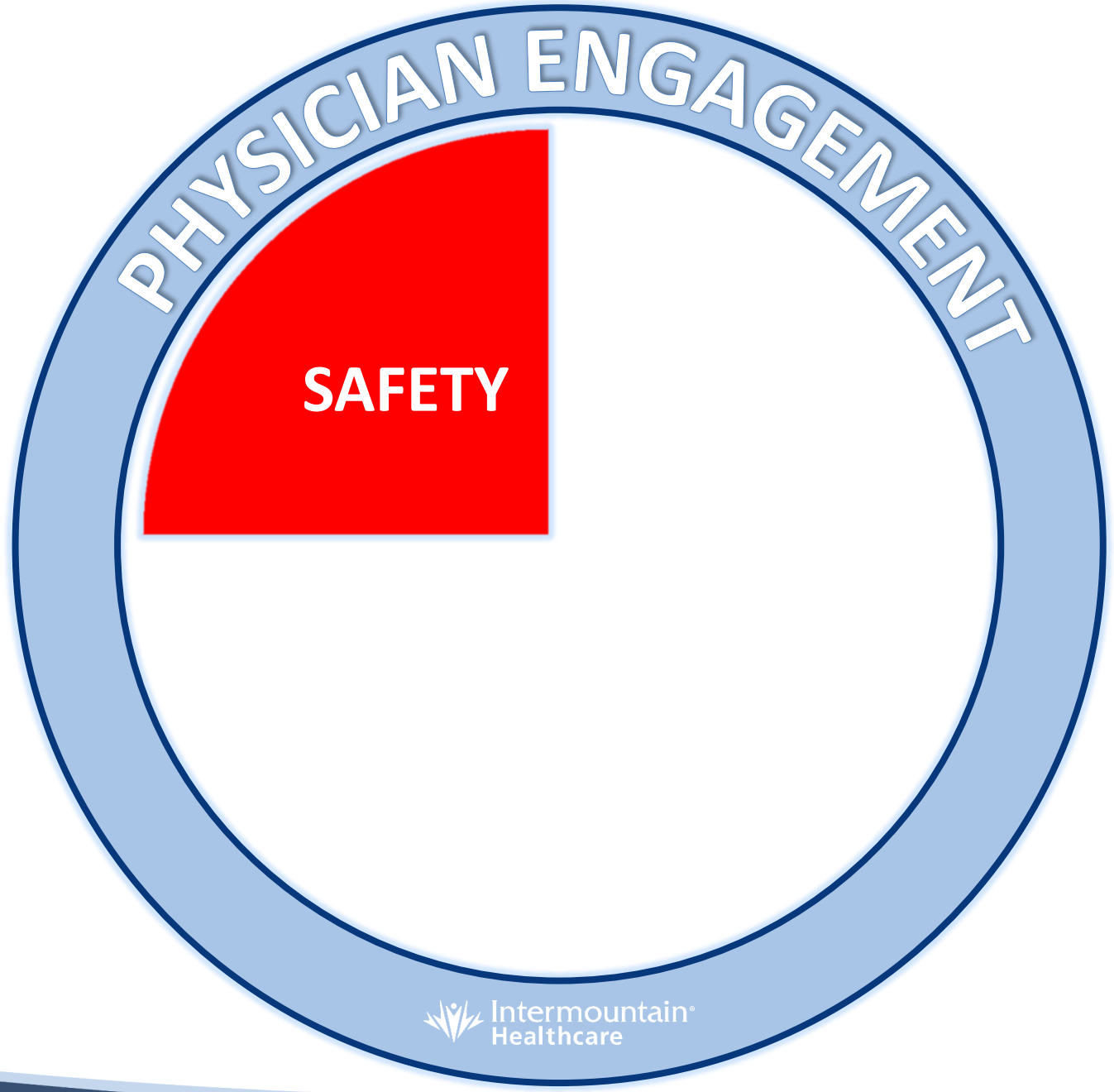
"As Medical Staff President, I HAVE WITNESSED FRUSTRATED PHYSICIANS TRANSFORM INTO HIGHLY ENGAGED PHYSICIANS as they utilized the CI principles they were taught. The CI process provided them with the tools and strategy to become empowered to CREATE CHANGE RATHER THAN TO FEEL AFFECTED BY CHANGE. That transformation, more than almost anything else, is the greatest power of the CI (program)."

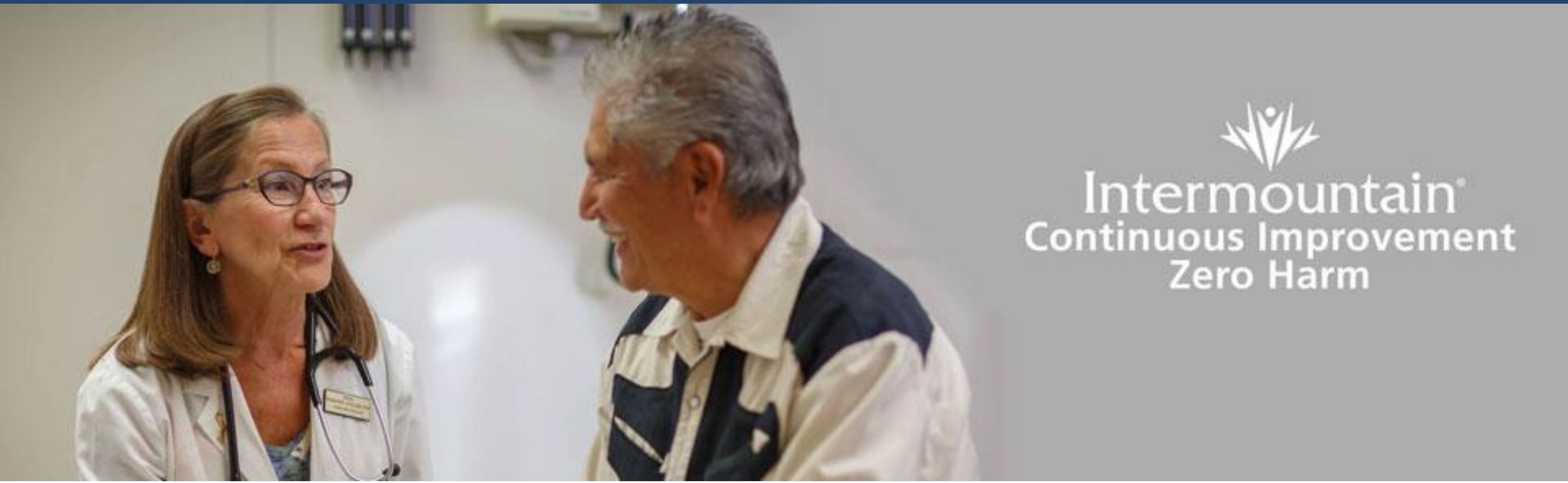
- Dr. Tom Wood

WHAT LOOKS LIKE **RESISTANCE** IS OFTEN LACK OF **CLARITY**

-CHIP & DAN HEATH

think


PHYSICIAN ENGAGEMENT
SAFETY
Intermountain® Healthcare

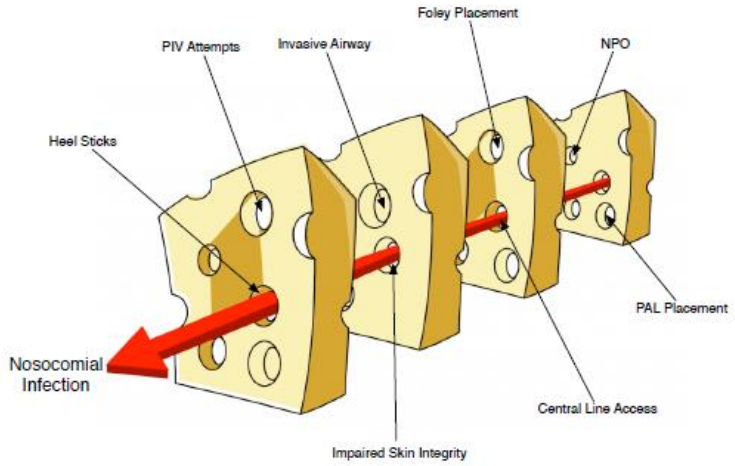


ZERO HARM

POKE..RS

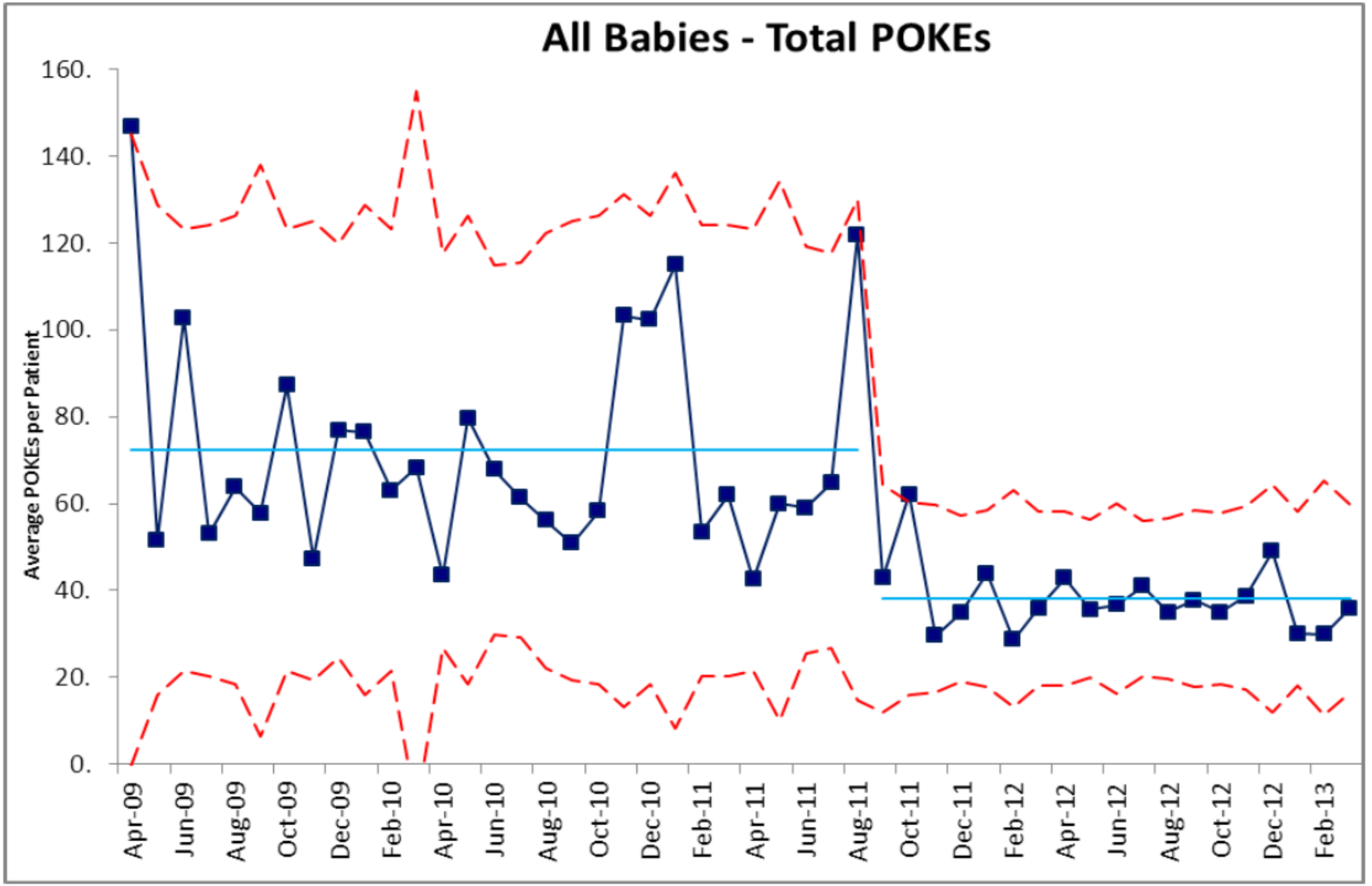
Prevent pain and Organisms from sKin and catheter Entry...and Resource and blood Savings

More Care isn't better care; it's just more care.



Erick Ridout, M.D.
Jeannette Cutner, R.N.
DRMC NICU Team

Dixie Regional Medical Center
Neonatal Intensive Care Unit
St George, Utah


All Babies - Total POKEs
Average POKEs per Patient
160.
140.
120.
100.
80.
60.
40.
20.
0.
Apr-09
Jun-09
Aug-09
Oct-09
Dec-09
Feb-10
Apr-10
Jun-10
Aug-10
Oct-10
Dec-10
Feb-11
Apr-11
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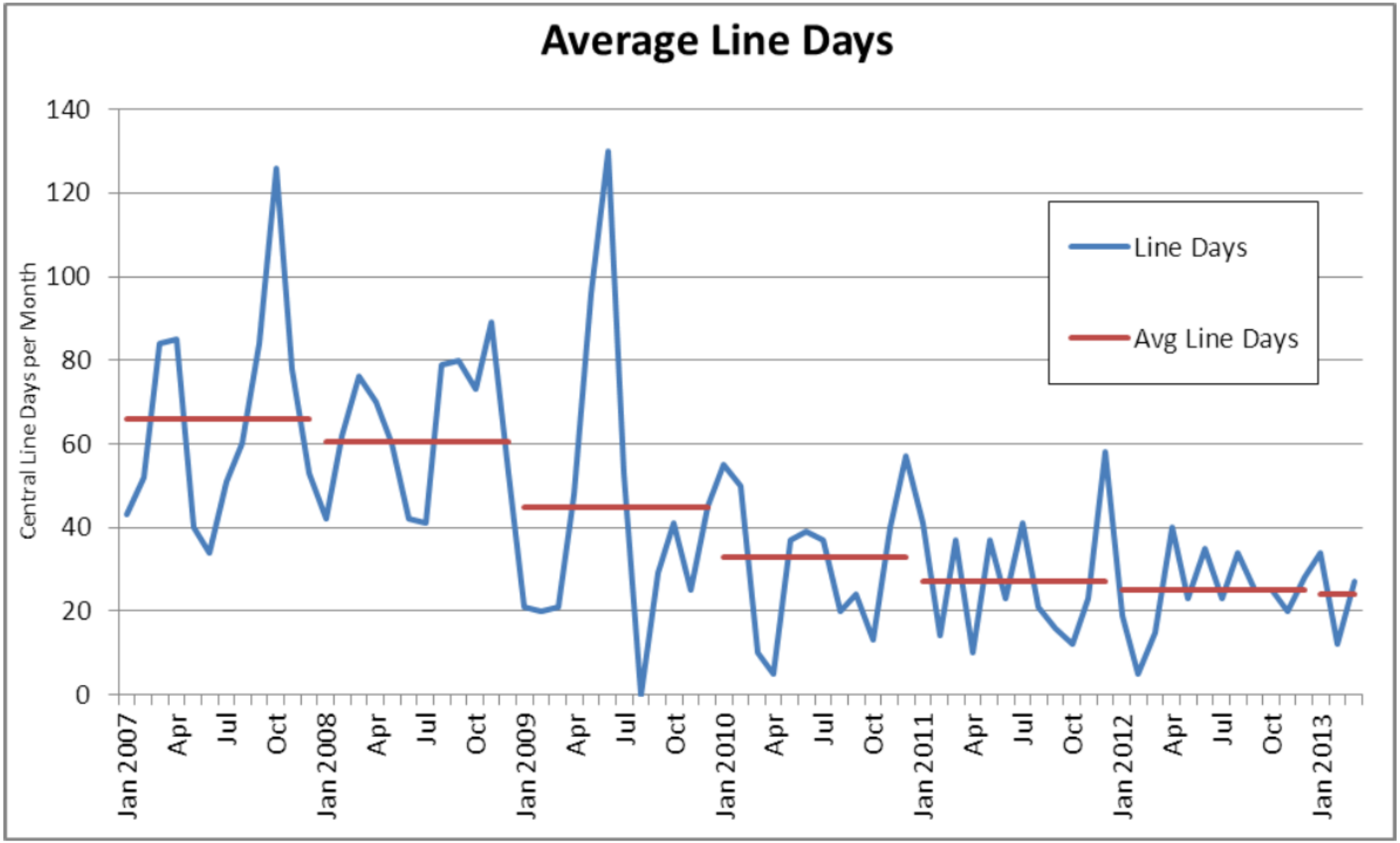
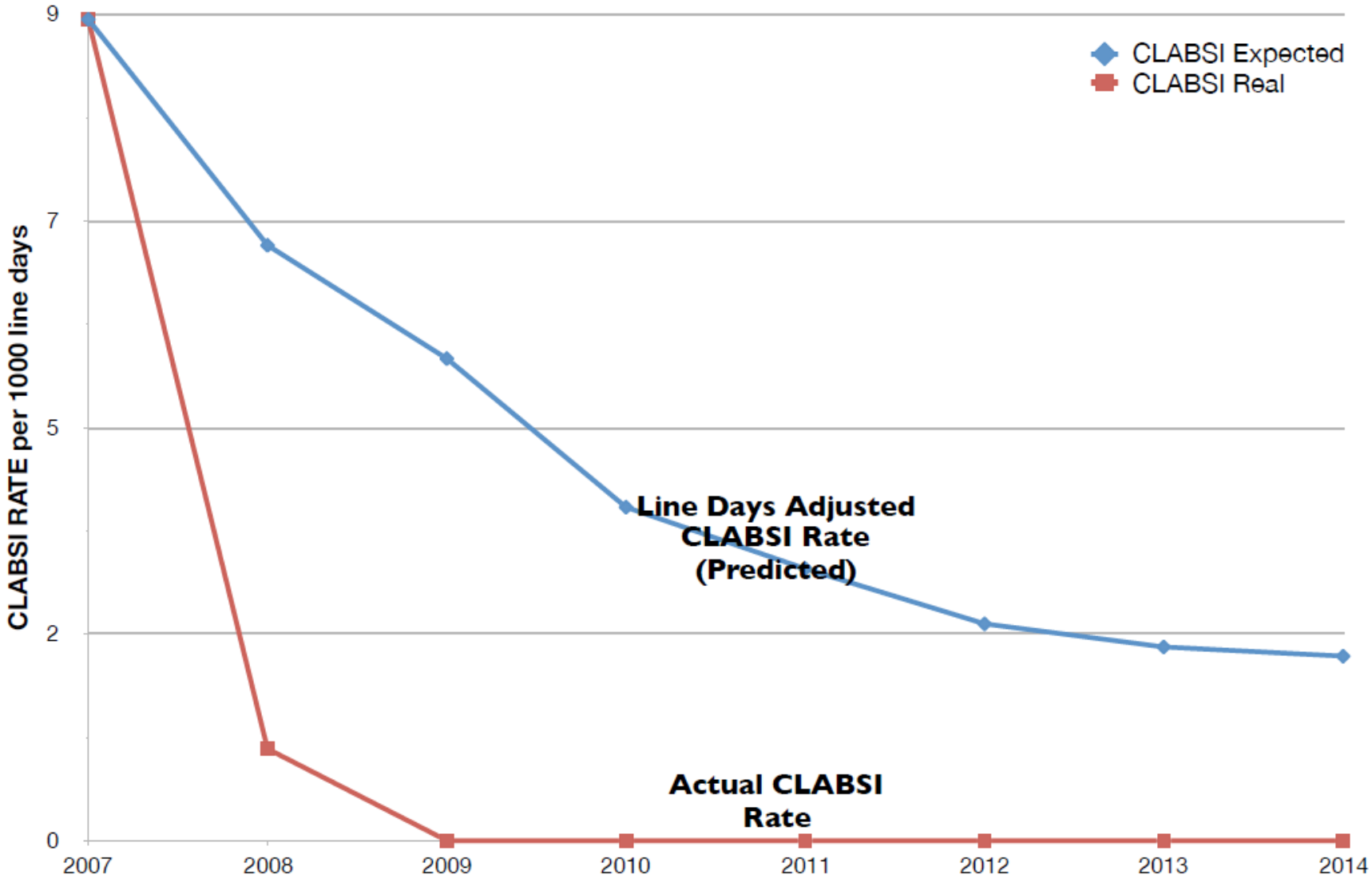
Apr-12
Jun-12
Aug-12
Oct-12
Dec-12
Feb-13

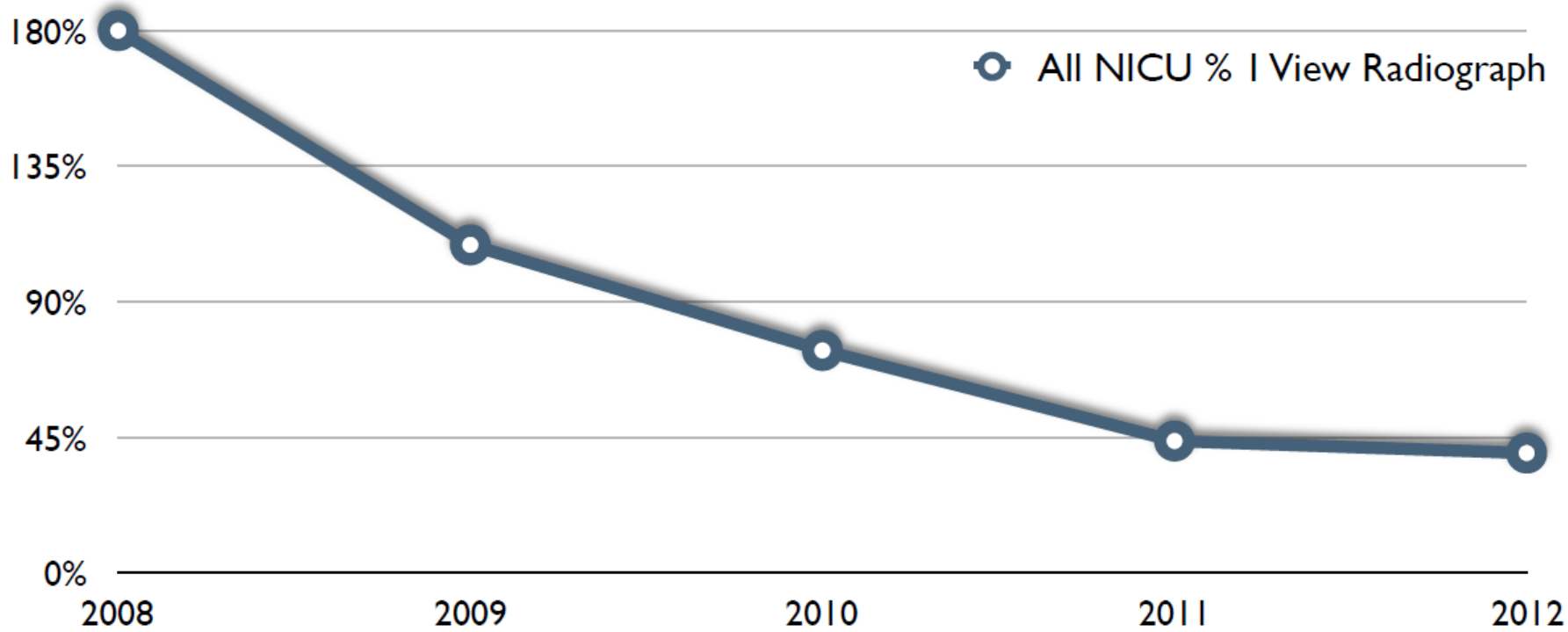

Average Line Days
Central Line Days per Month
140
120
100
80
60
40
20
0
Line Days
Avg Line Days
Jan 2007
Apr
Jul
Oct
Jan 2008
Apr
Jul
Oct
Jan 2009
Apr
Jul
Oct
Jan 2010
Apr
Jul
Oct
Jan 2011
Apr
Jul
Oct
Jan 2012
Apr
Jul
Oct
Jan 2013

CLABSI RATE

(ACTUAL AND PREDICTED)



RADIOLOGY UTILIZATION
(PLAIN CHEST FILM)

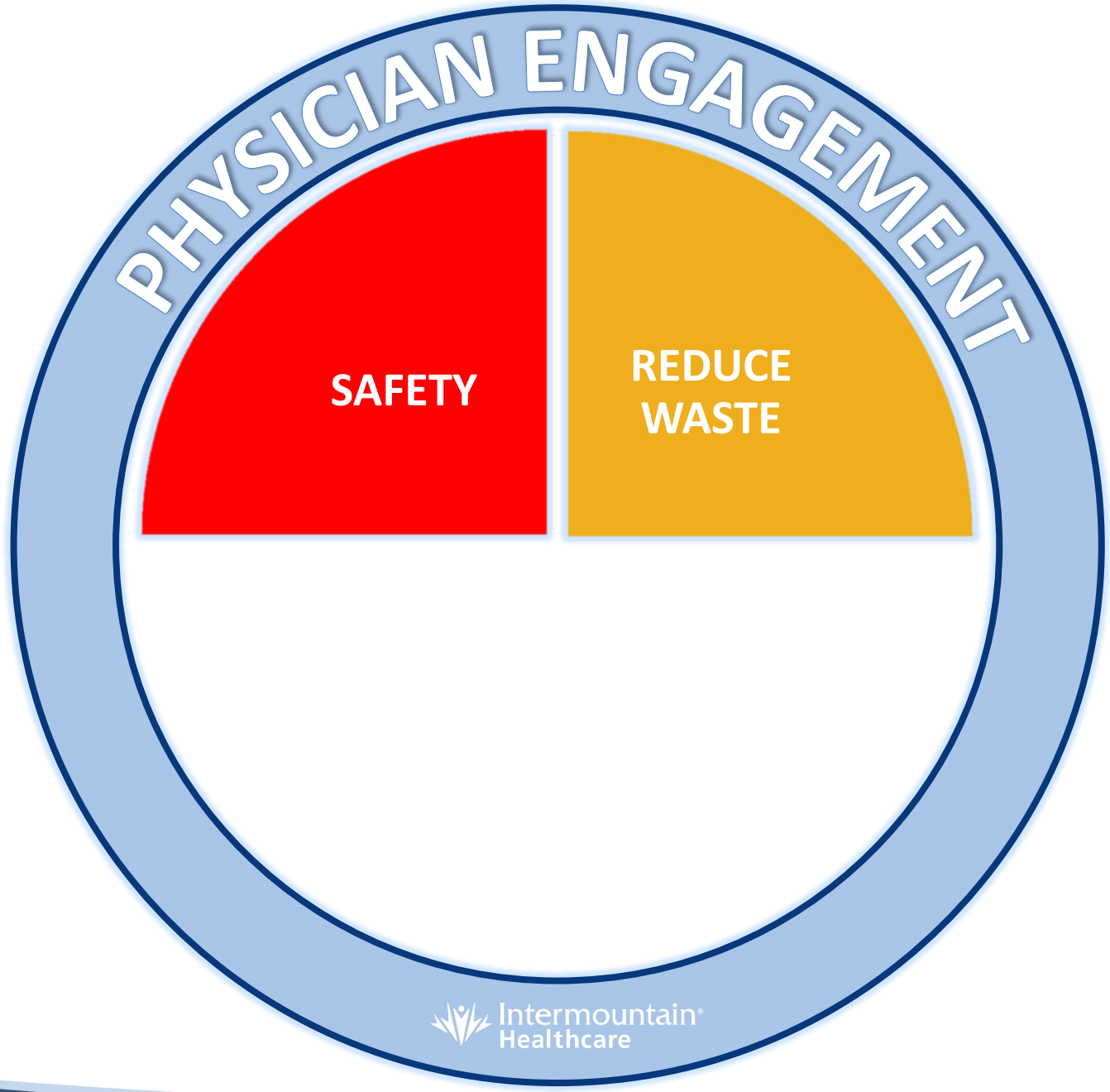


Baseline

% of all NICU admissions that have a 1-view chest radiograph performed

$3.5 M

Savings


PHYSICIAN ENGAGEMENT
SAFETY
REDUCE WASTE
Intermountain® Healthcare

Stoplight Improvement | Intermountain Healthcare – Urban North Region

Improvement: Cardiac biomarker testing

Trigger: Evaluation of any patient with chest pain or anginal equivalent

Clinical Areas Involved: ED, Medicine, Cardiology, ICU
Owner: Matt Pollard, MD; John Lund, MD
Version/Date: 1.0 | 10/2013 **Date for Review:** 10/2014

Stop! Consider changing from this . . .

"Cardiac markers are used in the diagnosis and risk stratification of patients with chest pain and suspected acute coronary syndrome (ACS). The cardiac troponins, in particular, have become the cardiac markers of choice for patients with ACS. Indeed, cardiac troponin is central to the definition of acute myocardial infarction (MI) in the consensus guidelines from the American College of Cardiology (ACC))." *(Medscape)*

Because of their increased sensitivity and specificity compared with creatine kinase MB (CK-MB) and other markers, troponins are preferred for the diagnosis of myocardial infarction (MI).

It is difficult today to find any situation in which CK-MB adds anything other than cost to the clinical utility of troponin if that marker is used properly. This is becoming increasingly evident as these cardiac biomarkers have been studied and compared for more than a decade.

We recommend that clinicians no longer use CK and CK-MB when evaluating patients with suspected AMI or ACS.

References:

Eggers KM, Oldgren J, Nordenskjöld A, Lindahl B. Diagnostic value of serial measurement of cardiac markers in patients with chest pain: limited value of adding myoglobin to troponin I for exclusion of myocardial infarction. *Am Heart J*. Oct 2004;148(4):574-81.

Macrae AR, Kavsak PA, Lustig V, Bhargava R, Vandersluis R, Palomaki GE, et al. Assessing the requirement for the 6-hour interval between specimens in the American Heart Association Classification of Myocardial Infarction in Epidemiology and Clinical Research Studies. *Clin Chem*. May 2006;52(5):812-8.

Saenger AK, Jaffe AS. Requiem for a heavyweight: the demise of creatine kinase-MB. *Circulation*. Nov 18 2008;118(21):2200-6.

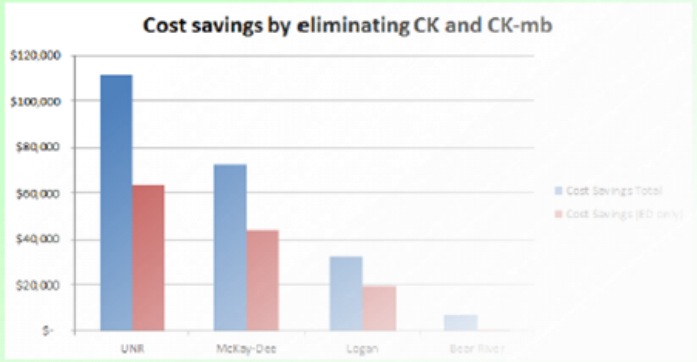
Go! To this . . .

When evaluating patients with chest pain for AMI/ACS, remove CK, CK-MB and other cardiac biomarkers from your orders and use cardiac troponin as the sole biomarker in these patients.

After extensive collaboration with clinicians, several other institutions, including Mayo Clinic, have taken similar actions without any discernible negative effects on clinical care.

In fact, removing CK-MB from the cardiac biomarker panel will not only reduce cost but may also reduce confusion when evaluating these patients.

A very conservative estimate of the annual cost savings per facility are as follows:



It is recommended that the use of CK be eliminated [illegible] AMI/ACS are being considered. It remains a useful [illegible] clinical conditions such as rhabdomyolysis.

Examples of when CK, CK-MB might be helpful:

- *When evaluating patients where [illegible] clearance is longer [illegible]*
- *Patients who have a [illegible] other than AMI (PE, [illegible] etc.).*

Critical Steps | Safety | Visual Cues | Timing | Tip

STOPLIGHT IMPROVEMENT

Stoplight Improvement | Intermountain Healthcare – Urban North Region

Improvement: Blood Count Ordering

Trigger: Any time a blood count is ordered

Idea: Todd Miller, MD – Bear River

Clinical Areas Involved: All inpatient/outpatient areas

Owner: RJ Bunnell, MD – Lead Hospitalist; Barb Kerwin, MD – ICU Medical Director; Matt Pollard, MD – Continuous Improvement

Version/Date: 1.0 5/2014 **Date for Review**: 05/2014

Stop! Consider changing

Before ordering a blood count, consider

Stoplight Improvement | Intermountain Healthcare – Urban North Region

Improvement: URI Viral Panel Testing

Trigger: Adult and pediatric patients with symptoms c/w viral respiratory infection

Clinical Areas Involved: Any practice environment where viral panel testing is considered (ED, clinics, hospitals, InstaCare, etc.)

Owner: Matt Pollard, MD – Continuous Improvement

Version/Date: 2 | Oct 2014 **Date for Review**: Oct 2015

Stop! Consider changing from this . . .

Viral upper respiratory infections are among the most common diagnoses during the late fall, winter and early spring months. Many times when evaluating these patients in the outpatient setting the question arises whether or not these patients should have viral panel testing performed. In fact, in many instances, viral panels might routinely be performed whether the results of the testing will have an impact on the treatment plan or not.

Recognizing that there are instances when viral panel testing is appropriate, this *Stoplight Improvement* has the aim of helping the clinician consider when testing might not be needed.

Before testing these patients without further consideration -

Go! To this . . .

As a general rule, if the results of a test are not going to change management, that test might not be needed. In the case of viral panel testing there are instances where the results might not change management but *where testing is recommended* (inpatients, epidemiological purposes, etc.). However, the majority of patients likely do not need testing.

Here are some specific examples and other considerations:

- RSV testing is rarely necessary or helpful in making the diagnosis of bronchiolitis and is no longer a criterion for evaluation and treatment in the Bronchiolitis Clinics at Intermountain.
- Influenza Considerations:
  - Testing is not needed for all patients with signs and symptoms of influenza to make antiviral treatment decisions. Once influenza activity has been documented in the community or geographic area, a clinical diagnosis of influenza can be made for outpatients with signs and symptoms consistent with suspected influenza, especially during periods of peak influenza activity in the community. (credit: CDC.gov)
  - If the patient has had symptoms for more than 3 days, any prescribed antiviral will have minimal (if any) effect and testing might not be indicated.
  - False negative rapid flu results are common (false negatives are *not* common with PCR testing). If you are going to treat the patient regardless of the result perhaps you should reconsider.
  - *Caveat*: Testing in the right circumstances can be important (institutions, schools, outbreaks, etc.).
- RFAPCR testing is very expensive and should likely be reserved for select cases and inpatients (it *is* recommended for many inpatients).
- In the febrile infant < 3 months old viral panel testing SHOULD be done.

The Laboratory Services Test Ordering Quick Guide for Respiratory Infectious Diseases is available and provides other useful information – including approximate costs per test – approximate turn-around times, etc.

Visual Cues Timing Tip Safety

Stoplight Improvement | Intermountain Healthcare – Urban North Region

Improvement: Standardized treatm… chorioamnionitis/endometritis

Trigger: Treatment of any of these p… hospital, ED or outpatient settings (w…

Stop! Consider changing from this

A brief review of prescribing patterns for…

Stoplight Im…

Improvement: Side ef…

Trigger: Any admission…

Stop! Consider cha…

Patients taking antipsychotic drugs need … these medications. In particular, the *fasti… levels* must be watched closely but curren… recommended intervals.

Furthermore, when patients get admitte… are routinely obtained both for medical c… Most of the time, these labs are medicall… the patient. However, there are times wh… habit or reflexively and might not be nec…

Fasting lipid and glucose levels are often … the psychiatric unit as a routine order, w… ongoing treatment of the patient.

Critical Steps

…ntain Healthcare – Urban North Region

Clinical Areas Involved: ED, ICU, IMC, CVTU, OR, others

Owner: Matt Pollard, MD **Idea**: Rob Alley MD

…or Review: 6/2015

. . .

…are significantly more expensive than …e to replace all…

…an emergent …lily identified.

…al line kits in the…

…ders for a CBC…

…ial. The…

…nly add value …tial out of…

…the patient is…

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…ement initiative, …org

…Region

…vice, ED

…r Review: 8/2015

. . .

…Level I Trauma lab panel, the WBC …trauma panel.

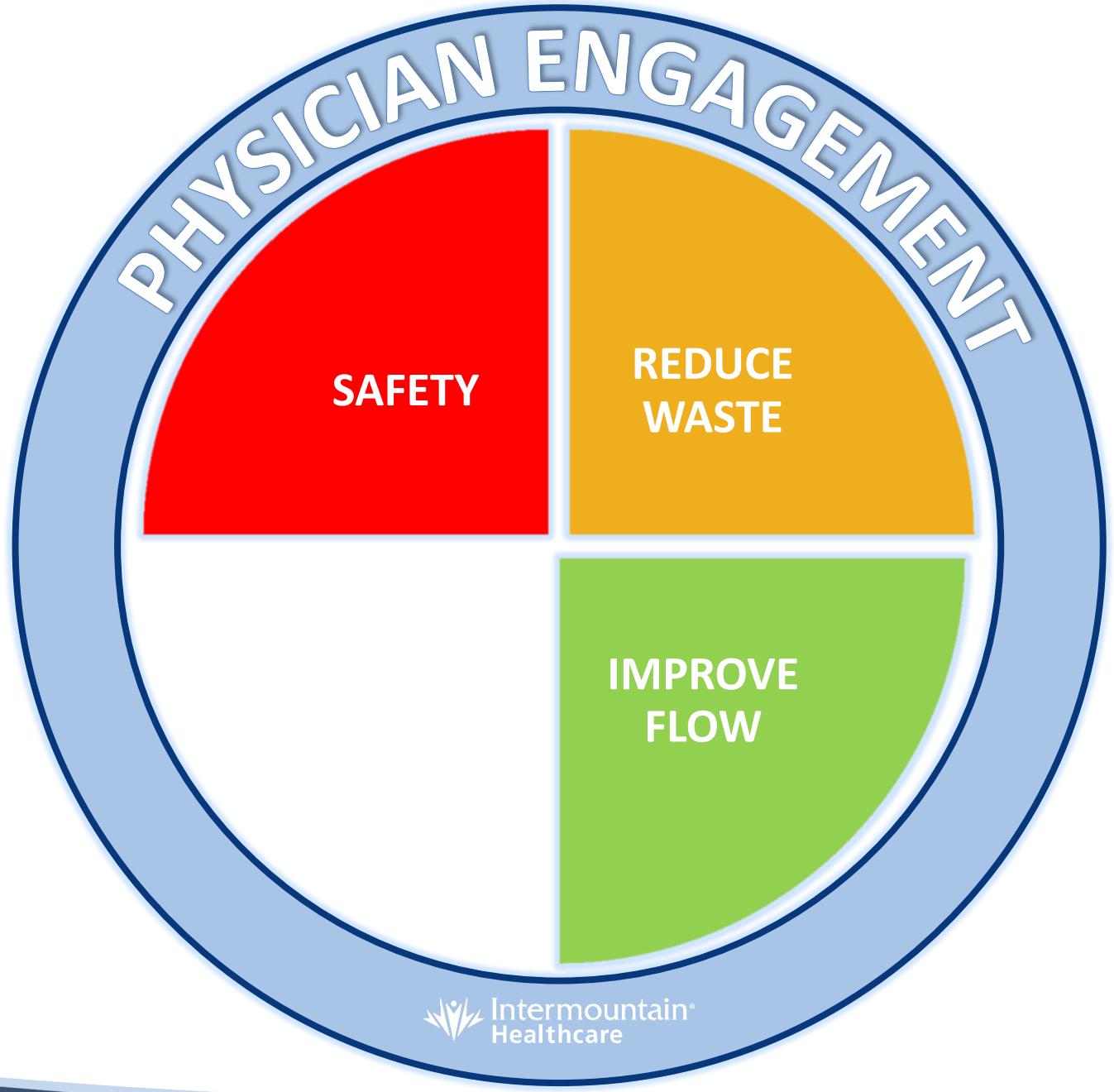
…rrants further evaluation, a …nt's care.

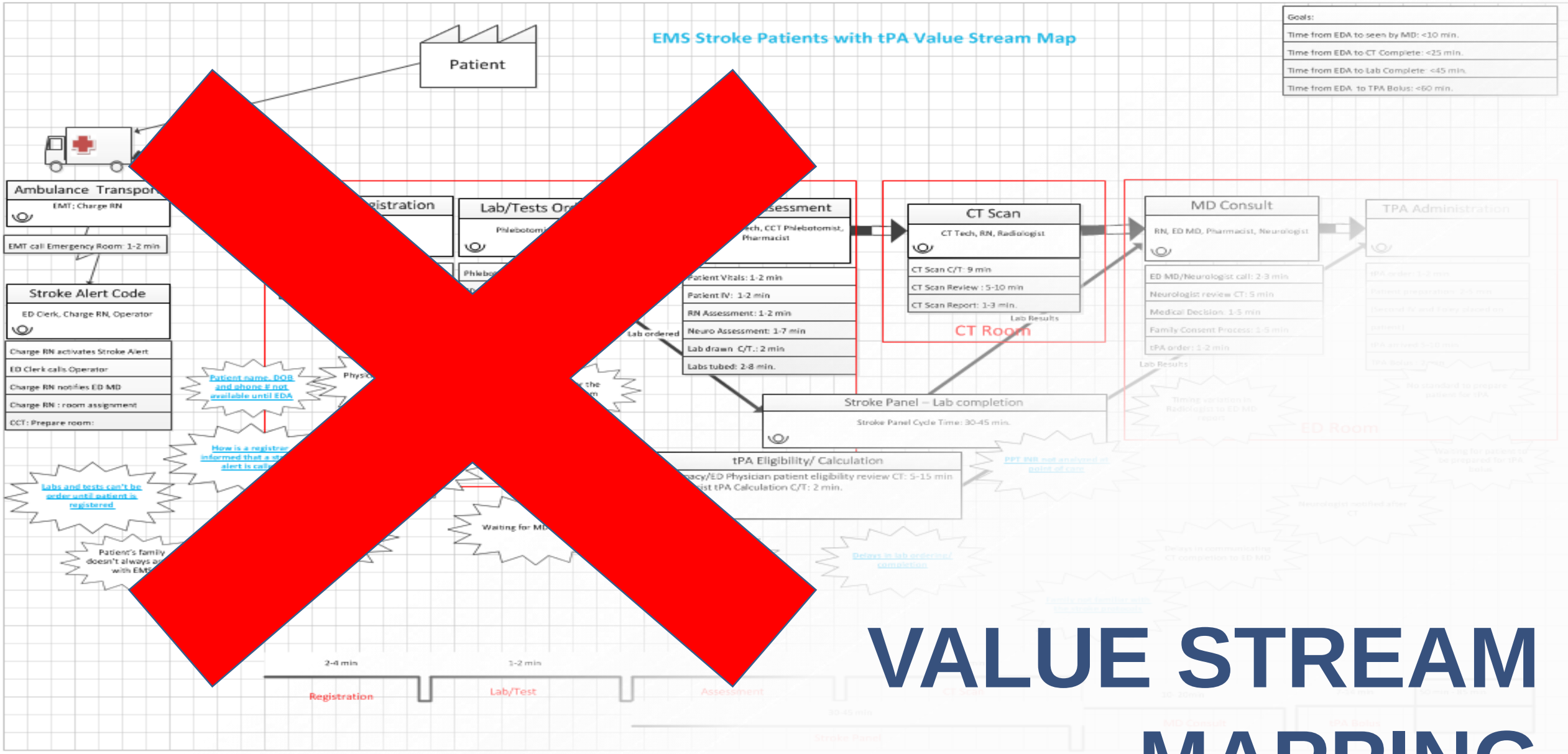
…marginal difference with regards …tment to Operational…

Tip

Timing Tip

Intermountain® Healthcare

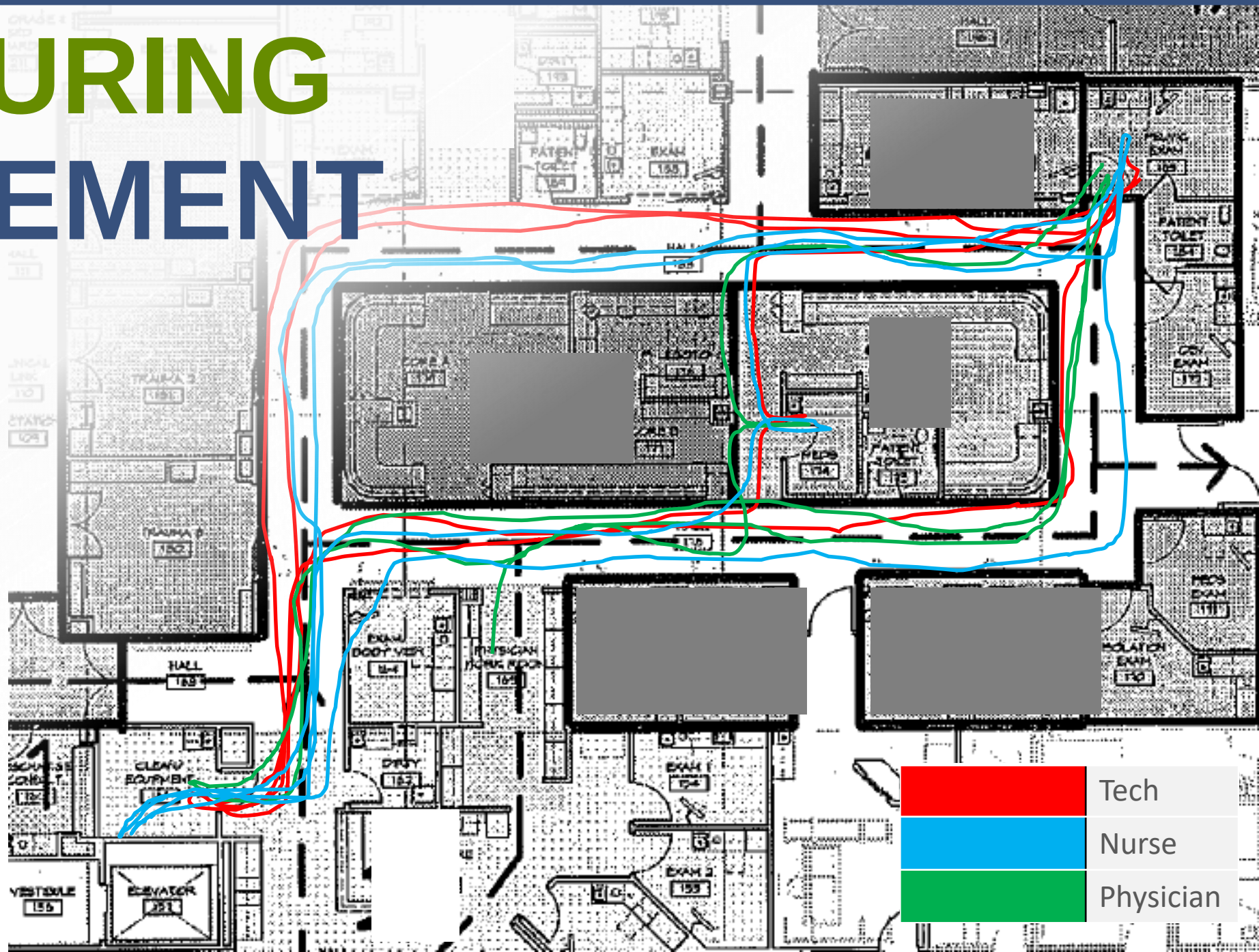

PHYSICIAN ENGAGEMENT
SAFETY
REDUCE WASTE
IMPROVE FLOW
Intermountain® Healthcare

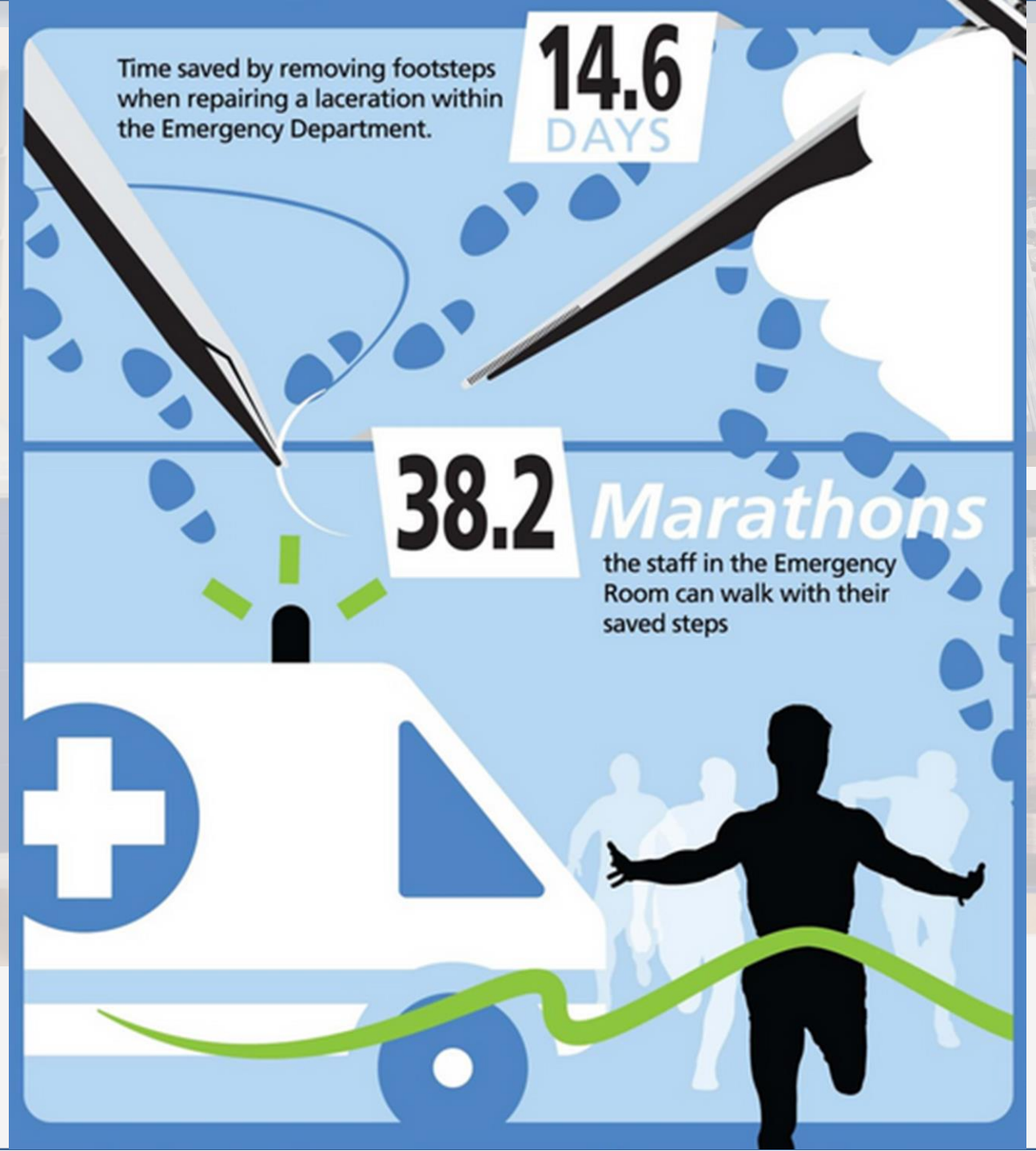


VALUE STREAM MAPPING

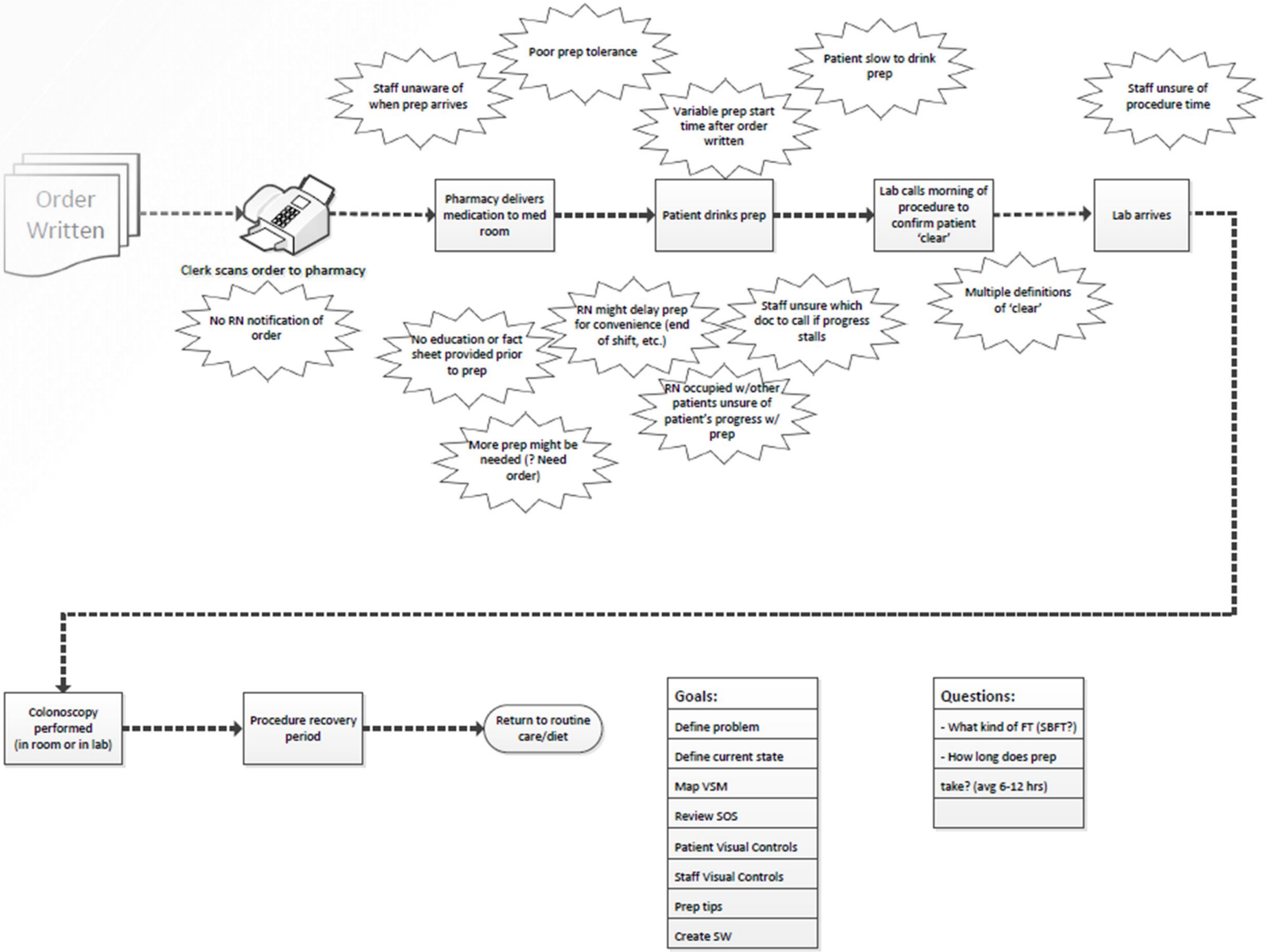
ED SUTURING IMPROVEMENT

737

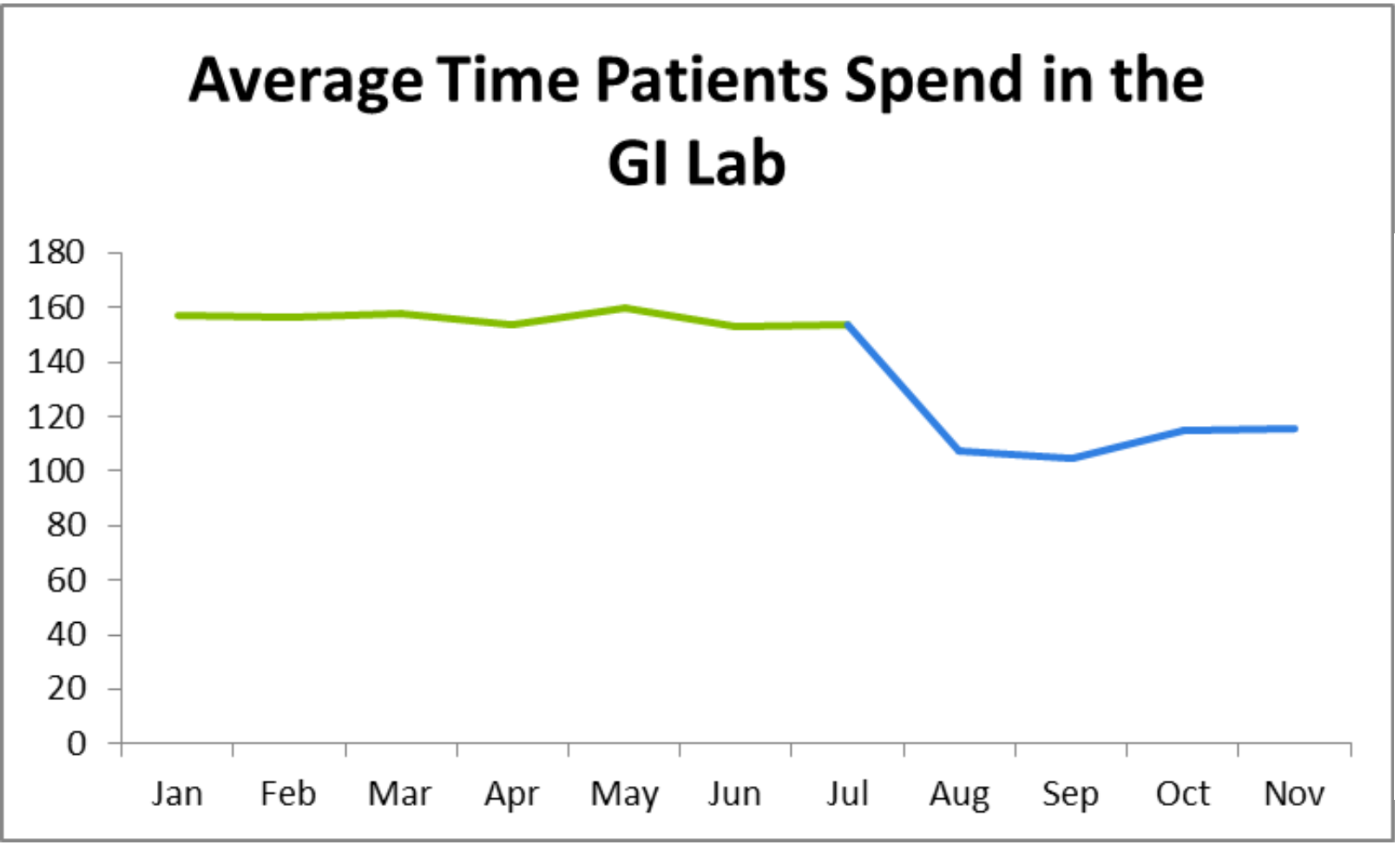



Time saved by removing footsteps when repairing a laceration within the Emergency Department.
14.6
DAYS
38.2
Marathons
the staff in the Emergency Room can walk with their saved steps

PROCESS MAPPING



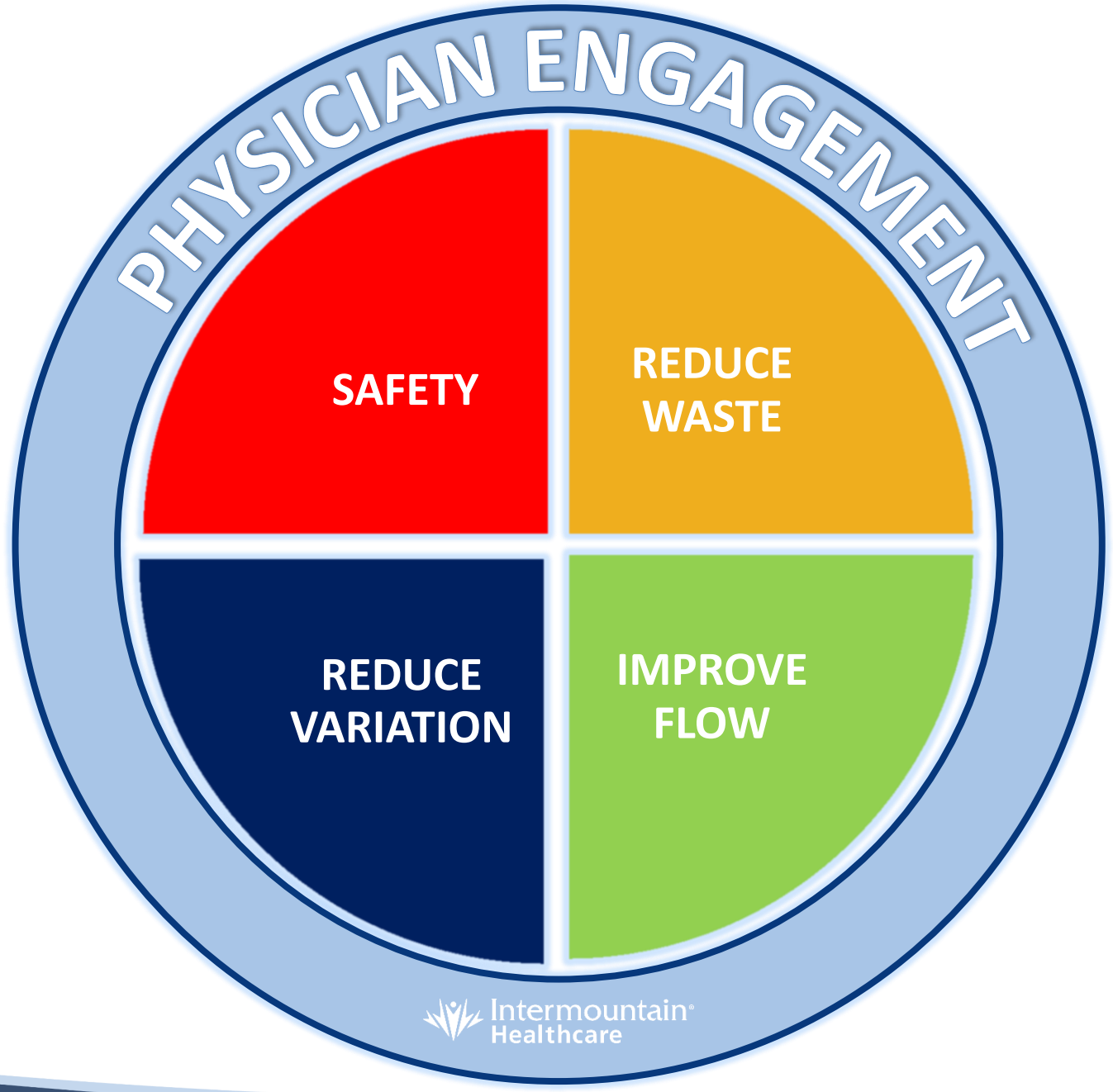

Porter Family Medicine Clinic
Current State Map
Jan 2015



TELL US YOUR STORY

Today's appointment was so much nicer than our appointment in Dec 2014

The pros of today—
1. Much quicker! I was here 2.5 hours today. Last time it took over 4 hours start to finish.


PHYSICIAN ENGAGEMENT
SAFETY
REDUCE WASTE
REDUCE VARIATION
IMPROVE FLOW
Intermountain® Healthcare

STANDARDIZATION

DOCTORS	APPROACHES	PROBLEMS
10	10	10
10	1	1

WHERE THERE IS

NO [STANDARD],

THERE CAN BE

NO IMPROVEMENT

- Taichi Ohno -

ASSESSMENT AND MANAGEMENT OF

Pediatric Community-Acquired Pneumonia (CAP)

patients age 3 months and older without bronchiolitis

This care process model (CPM) is produced by Intermountain Healthcare's Pediatric Infectious Disease Team, a subgroup of the Pediatric Speciality Clinical Program. The CPM summarizes evaluation and treatment recommendations for **community-acquired pneumonia (CAP) in previously healthy children without chronic health conditions age 3 months and older.** Recommendations are based on recent studies in peer-reviewed medical literature, local susceptibility data and practice patterns, and recent consensus guidelines from the Infectious Disease Society of America (IDSA) and the British Thoracic Society Standards of Care Committee (BTS).[1,2]

Note that this model **does not provide guidance for treating children with bronchiolitis;** refer instead to Intermountain protocols available on the Bronchiolitis clinical topic page. Also note that this model **does not apply to healthcare-associated pneumonia (HCAP) or to complicated pneumonia** requiring care in the ICU or interventions for effusion.

WHY FOCUS ON PEDIATRIC PNEUMONIA?

- **Pneumonia remains common, serious, and costly.** Pneumonia is the leading cause of death in children worldwide. Each year, more than 2 million children younger than 5 years die from pneumonia, representing approximately 20% of all deaths in children within this age group.[1] Within Intermountain Healthcare, pneumonia is the fourth most common reason for a pediatric admission and is the pediatric condition with the fourth highest cost.[3]
- **Well designed and implemented guidelines have decreased morbidity and mortality for adults with CAP.**[1] For the management of pediatric CAP, retrospective studies support the safety and efficacy of the recommendations in the IDSA and BTS guidelines; adapting these to our Intermountain system local practice can guide outpatient and inpatient care and drive better outcomes.[4]
- **We have an opportunity to improve care and reduce variability in several areas of practice.** Analysis of Intermountain practice patterns reveals several areas where we can standardize care around evidence-based guidelines:
  - Use of pulse oximetry to support diagnosis and guide site-of-care decisions
  - Use of immunization screening and viral testing to guide treatment decisions
  - Appropriate use of chest x-rays for diagnosis and follow-up
  - Blood culture testing at admission and prior to antibiotic therapy
  - Selection and administration of anti-infective agents used in outpatient and inpatient care
  - Discharge criteria for inpatients

KEY RECOMMENDATIONS IN THIS CPM

- Use **pulse oximetry** and clinical assessments of respiratory distress to make site-of-care determinations
- Assess **immunization status** of all patients
- For outpatients, **do not** routinely order chest x-rays; **do not** automatically prescribe anti-infective therapy
- Perform **viral testing** — always for inpatients, as needed for outpatients
- Obtain **blood cultures** on all admitted patients before starting anti-infective therapy; do not routinely perform cultures in fully immunized children well enough for outpatient care
- When antibiotic therapy is indicated, begin with **amoxicillin or ampi**[illegible] is used, convert early
- Provide **influenza** an[illegible] children hospitalized

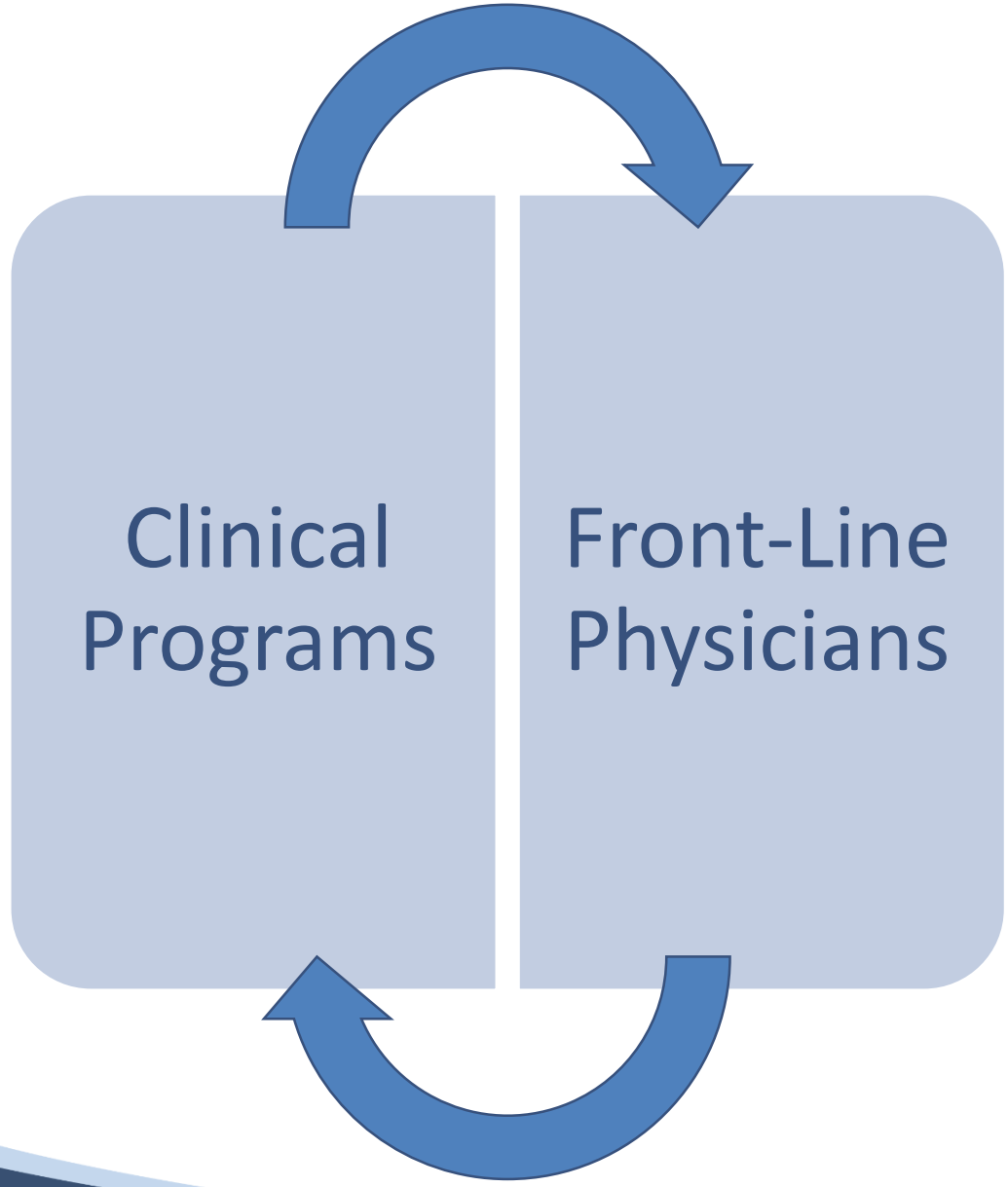
GOAL

To support our overall goal of improving clinical outcomes and appropriate use of resources, in 2013 we will begin measuring in select Intermountain facilities the percentage of **children admitted to the hospital** with uncomplicated CAP and given antibiotics **who receive amoxicillin or ampicillin**. **Our goal: 55% or better.**

Intermountain Healthcare

The inside pages of this tool provide an algorithm and can be folded open and posted to your office or clinic. The back page provides a discussion of recommendations and information about resources and references.

CARE PROCESS MODEL



TWO-WAY CYCLE OF IMPROVEMENT

CSWP: Adult Inpatient Warfarin Reversal v.1.0

INTRODUCTION:

Warfarin is a common anticoagulant that inhibits vitamin K-dependent coagulation factors. In the inpatient setting, the effects of warfarin often have to be reversed, whether because of bleeding complications or in preparation for surgery or a procedure. Treatment plans proscribed by providers generally involve the use of commonly accepted modalities: fresh frozen plasma (FFP), vitamin K, and in some instances, prothrombin complex concentrate (PCC). There exists, however, significant variation among providers in how these agents are used and at what doses. This Clinical Standard Work Pathway has the aim of addressing this variation and establishing a consensus so that we might standardize our treatment to the extent possible, increase patient safety, and use our resources wisely.

INCLUSION CRITERIA:

- Adult patients taking warfarin who have need for 'INR reversal'

EXCLUSION CRITERIA:

- Trauma patients (although the same principles generally apply)
- Neurosurgical patients
- Patients with liver failure (since the INR does not accurately reflect the
- Patients on anticoagulation, pro-coagulation
- Pediatric patients (although the same principles generally apply)

GOALS:

- Standardize use of Vitamin K & FFP for inpatients on warfarin with active bleeding and/or elevated INR
- Decrease inappropriate FFP utilization

AUTHOR:

- **Matt Pollard, MD** – Continuous Improvement Medical Director, North Region; Emergency Medicine, MKD

ADVISORY COMMITTEE:

- **RJ Bunnell, MD** – Lead Hospitalist, MKD; Chair, Hospitalist Development Team
- **Laurel Fedor, MD** – Hospitalist, MKD
- **David Fedor, DO** – Critical Care, McKay-Dee Anticoagulation Committee; MKD
- **Scott Woller, MD** – Co-Director, Thrombosis Program; IMC
- **Scott Stevens, MD** – Co-Director, Thrombosis Program; IMC

KEY POINTS:

- FFP is not required to correct the INR in all patients
- FFP is [illegible] high risk of bleeding or prophylaxis when INR <2.0
- Vitamin K can be [illegible] with PO, IV, SubQ, and topical routes
- Clinical evaluation should be the primary driver of clinical need and the [illegible] transfusion of plasma neither achieves measurable change in the INR nor is of any known clinical benefit [1]

FRONT-LINE PHYSICIAN IMPROVEMENT

AUTHOR:

- **Matt Pollard, MD** – Continuous Improvement Medical Director, North Region; Emergency Medicine, MKD

ADVISORY COMMITTEE:

- **RJ Bunnell, MD** – Lead Hospitalist, MKD; Chair, Hospitalist Development Team
- **Laurel Fedor, MD** – Hospitalist, MKD
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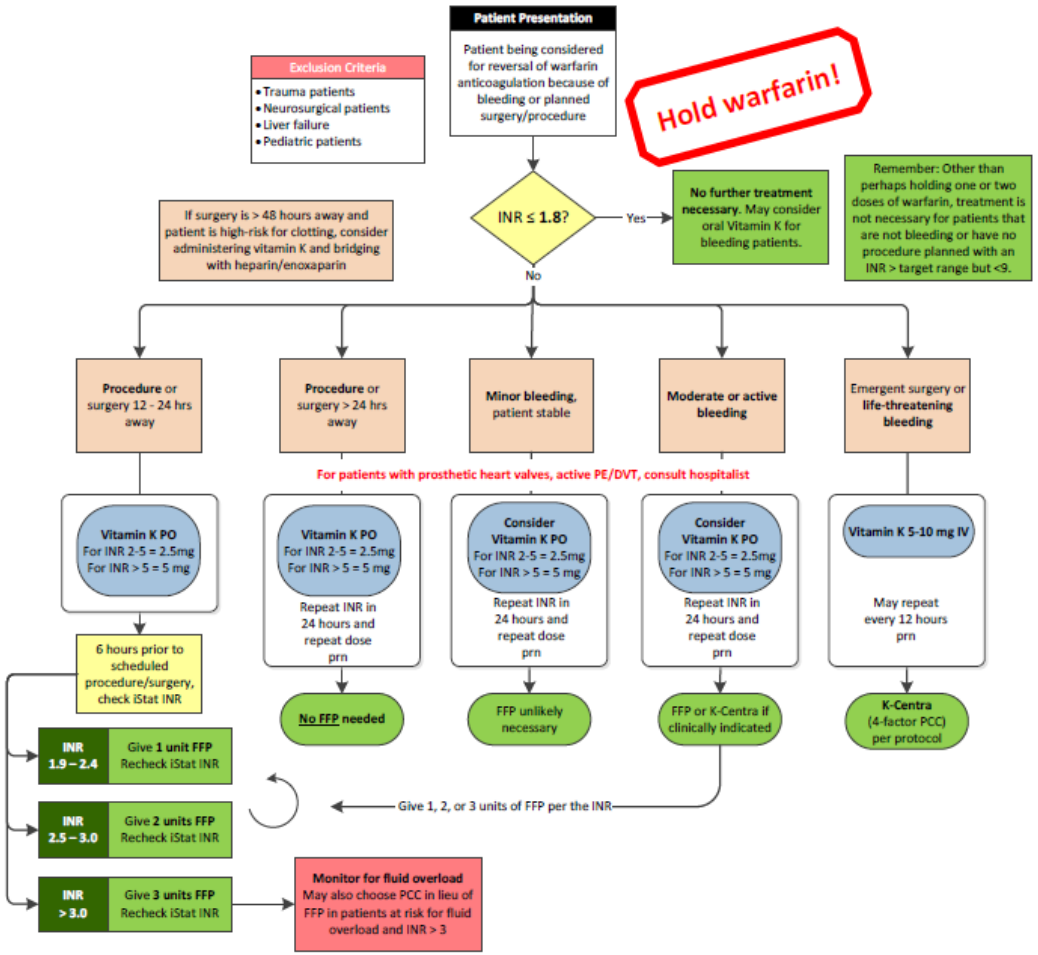
- **Scott Woller, MD** – Co-Director, Thrombosis Program; IMC
- **Scott Stevens, MD** – Co-Director, Thrombosis Program; IMC

CSWP: Adult Inpatient Warfarin Reversal v.1.0

Algorithm for Inpatient Reversal of Warfarin Anticoagulation



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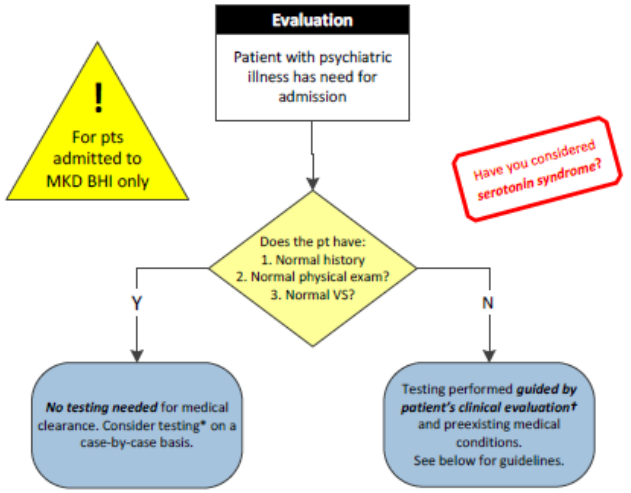
CSWP: Medical Clearance of Psychiatric Patients | v.1.0



TSH	• Consider in patients with unexplained HTN or tachycardia. • Consider in patients on thyroid if level has not been checked for > 1 yr. • Levels not necessary in patients without thyroid disease for medical clearance with normal vital signs.
SDS	• Consider testing those patients with history of substance abuse or as clinical condition warrants. • Consider in patients with h/o overdose or current suicidality if warranted.
UDS	• Routine screens for drugs of abuse in alert, awake, cooperative patients do not affect management and need not be performed as part of the ED assessment • Consider in patients with unexplained tachycardia. • Consider in patients who have symptoms of previously undiagnosed psychosis or a previous psychosis related to substance abuse.
CBC	• Not routinely required. • Consider in symptomatic menstruating females.
CMP	• Not routinely required. • Consider based on clinical evaluation: - Dehydration - Taking electrolyte altering meds - h/o hepatic or renal dysfunction - APAP/ASA ingestion
EKG	• Not routinely required for medical clearance. • Consider in patients with an overdose of a medication that may cause EKG abnormalities. • Consider in patients with appropriate symptoms.

***Studies used for medical clearance might include:**

Labs	Other
CMP	EKG
CBC	Brain imaging
SDS	
UDS	
TSH	
± β-hCG	
UA	

†High-risk patients who need careful consideration:

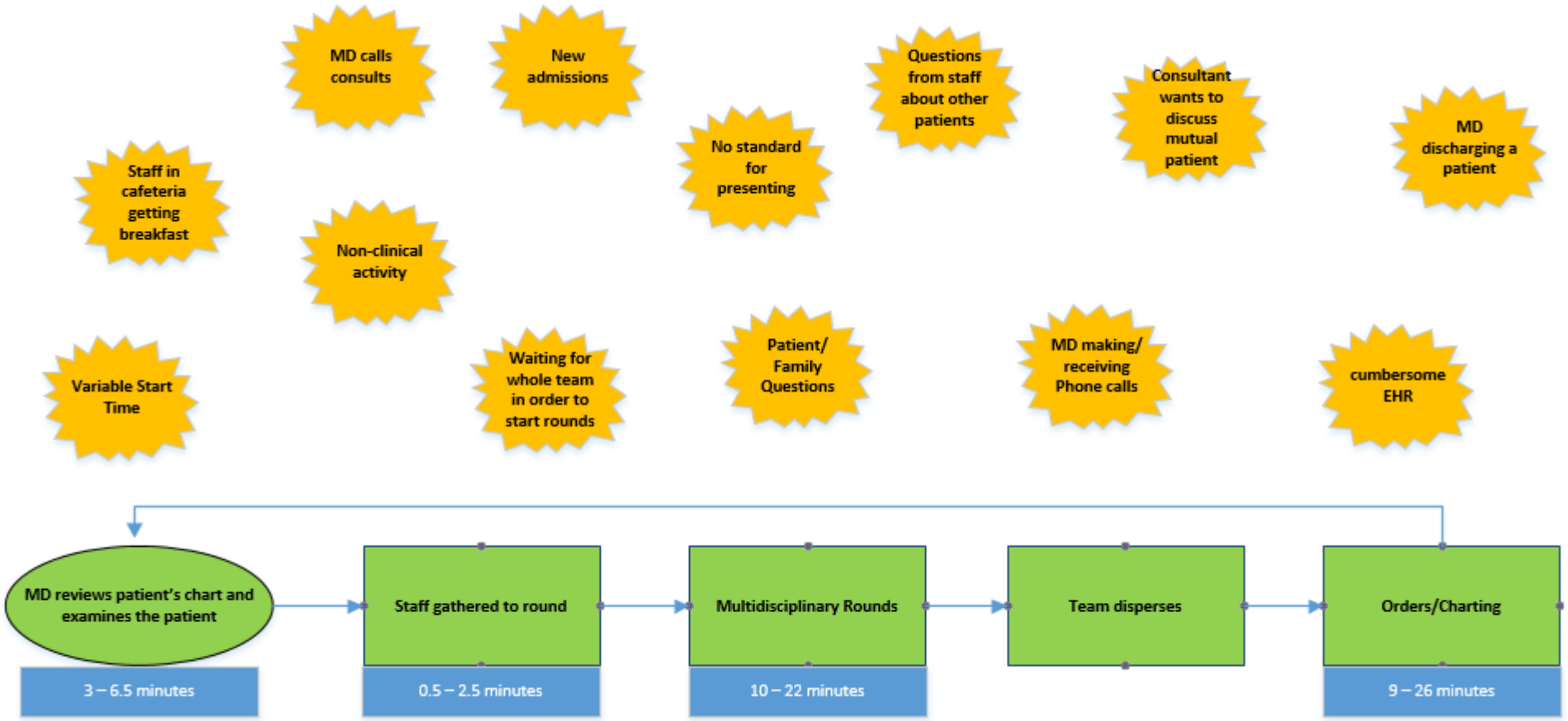
- Elderly
- h/o substance abuse
- No prior psychiatric history
- New or complicated preexisting medical conditions
- Medication toxicity that can mimic psychiatric illness (eg. Lithium)

While extensive testing is not usually necessary for medical clearance, if the requested tests can be obtained in the ED and it does not cause significant delay, it can help the admitting psychiatrist with inpatient management (especially true with UDS).

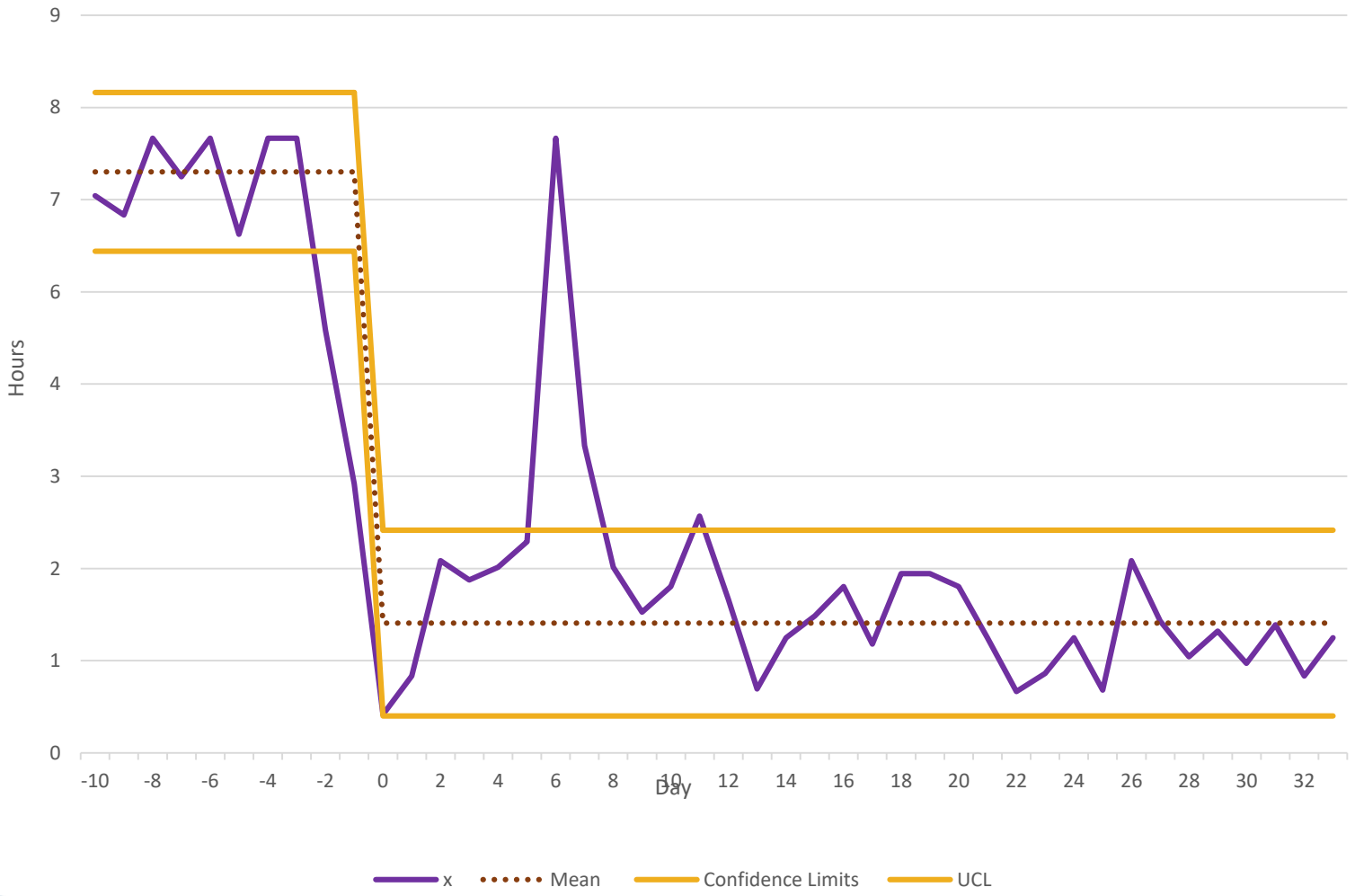
UA	• Not routinely required for medical clearance in asymptomatic patients. • Consider in elderly patients.

EtOH	• Patients impaired by alcohol may be more difficult to medically clear. As the blood alcohol level decreases, the patient becomes less impaired and the psychiatric symptoms may also clear. A period of observation may help determine final disposition. • Cognitive function should be assessed with each patient and this should be the basis for initiating the crisis evaluation. There is no evidence to support the practice of delaying psychiatric evaluation to obtain a predetermined blood alcohol concentration if the patient is alert, has normal vital signs and examination and appropriate cognition.

ICU ROUNDS: Too Much Variation



LENGTH OF DAILY ROUNDS



7.5 hrs

1.5 hrs

PHYSICIAN ENGAGEMENT

> 1800

COMPLETED IDEAS

IN 2017

"As a physician leader it's been so satisfying to see docs that might be feeling frustrated or questioning their decision to go into medicine completely turn around and become engaged, excited, participants in their physician role, and more importantly, focus on how what we do impacts patients."

-Dr. Christine Nefcy

Intermountain®
Continuous Improvement

Thank You

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