

# UCLA Head & Neck Surgery

## Patient Safety and Quality Improvement:

### **MFI & PDSA cycles**

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"residents must demonstrate the ability to investigate and evaluate their care of patients, to appraise and assimilate scientific evidence, and to continuously improve patient care based on constant self-assessment and life-long learning. Residents are expected to develop skills and habits to be able to systematically analyze their practice using QI methods, and implement changes with the goal of practice improvement; residents are expected to participate in a QI project."



# QI vs Research

## Research

- Form hypothesis
  - Stick with it until bitter end
- One large test
- T-tests, chi square, p-value

## Quality Improvement

- Form a hypothesis
  - Adjust through multiple PDSA cycles to work out kinks
- Sequential tests
- Run charts or Shewhart charts

In QI, the goal is to improve the conditions that exist...  
not merely to describe what they are

And to do that, you need to be able to modify your assumptions and retest your theories based on what you learn in the course of your tests



# Goals of PS/QI

## 1st session

- The Quadruple Aim
- Accident Causation
- Root Cause Analysis

## 3rd session

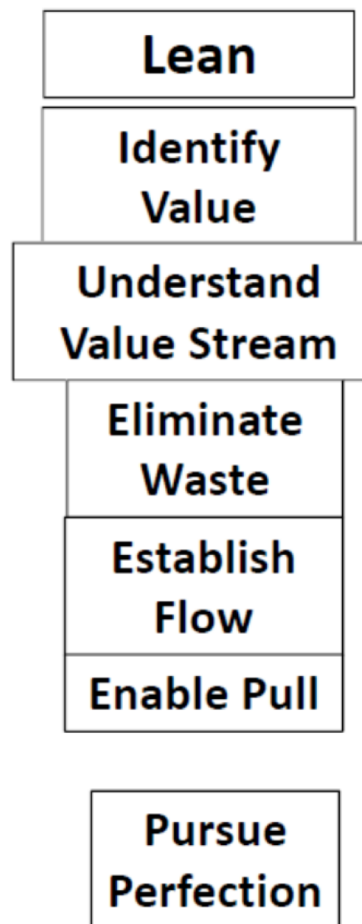
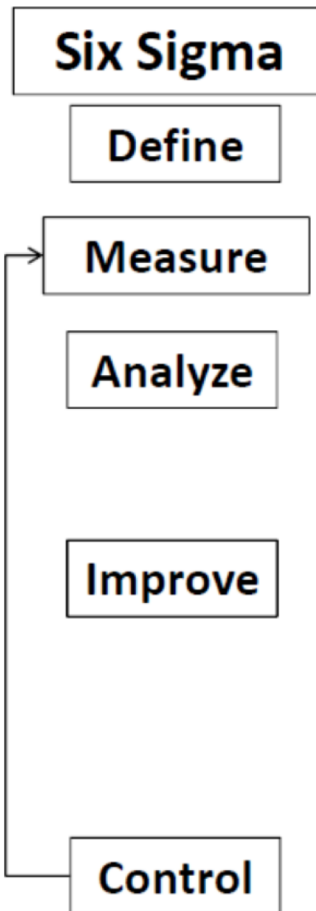
- Family of measures
- Run charts
- Histogram

## 2nd session

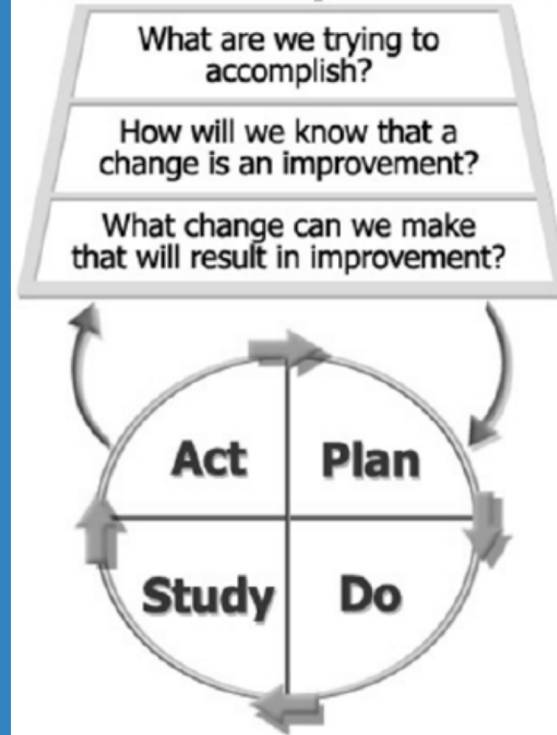
- Model For Improvement (MFI)
- Setting an Aim
- Plan-Do-Study-Act (PDSA cycle)



# Six Sigma, Lean, MFI



## Model for Improvement



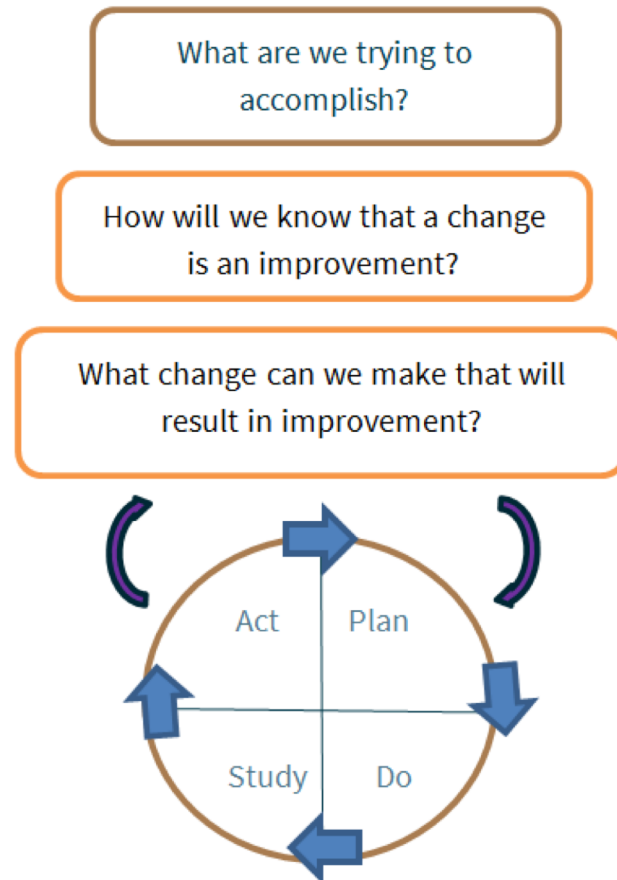
Source: The Improvement Guide, API



# Model For Improvement (MFI)

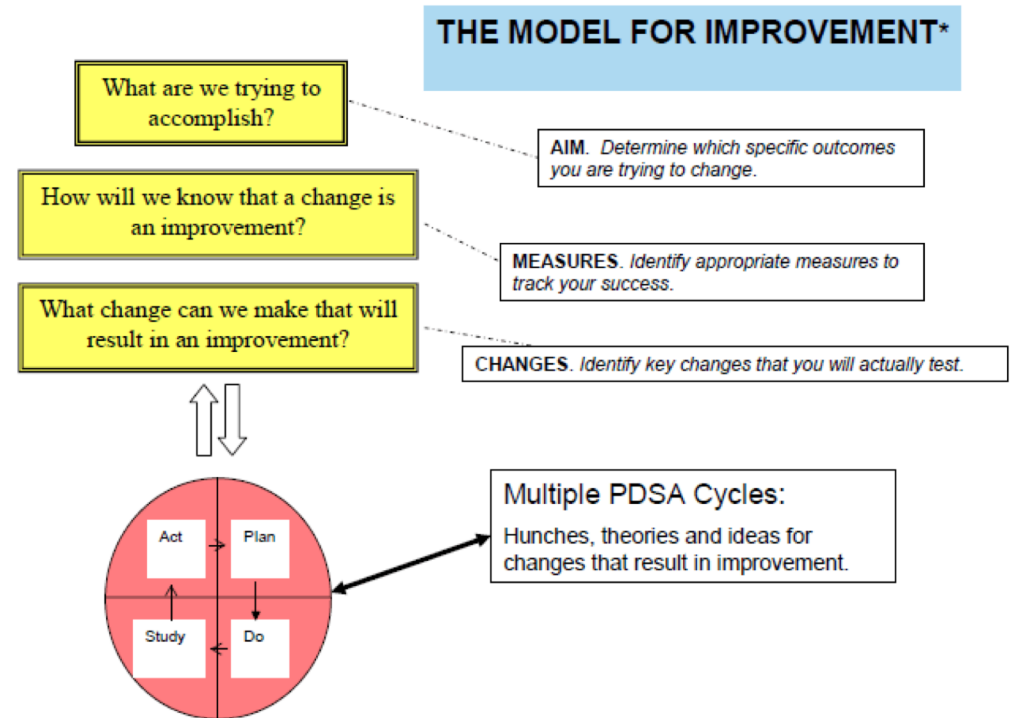
2 parts:

- 3 fundamental questions
- PDSA cycles



# Applying MFI requires the following steps:

1. Set an aim
2. Establish measures
3. Identify changes
4. Test changes
5. Implement changes



# How to set an aim

“What are we trying to accomplish?”

Your aim statement needs to be **SMART**:

- **S**pecific: Sets a clear goal.
- **M**easurable: Has concrete criteria for measuring progress and defines success numerically.
- **A**chievable: Can actually be accomplished.
- **R**ealistic: Includes objectives that the team is willing and able to work towards.
- **T**ime-bound: Establishes a timeframe (usually 6-12 months).

# How to identify a quality gap: SAC Matrix

Probability and Severity	Catastrophic	Major	Moderate	Minor
Frequent	3	3	2	1
Occasional	3	2	1	1
Uncommon	3	2	1	1
Remote	3	2	1	1

<b>Catastrophic</b> <u>Patients with Actual or Potential:</u> Death or major permanent loss of function (sensory, motor, physiologic, or intellectual) <b>not related to the natural course of the patient's illness or underlying condition</b> (i.e., acts of commission or omission). This includes outcomes that are a direct result of injuries sustained in a fall; or associated with an unauthorized departure from an around-the-clock treatment setting; or the result of an assault or other crime. Any of the adverse events defined by the Joint Commission as reviewable "Sentinel Events" should also be considered in this category.  <u>Visitors:</u> A death; or hospitalization of three or more visitors <u>Staff:</u> A death or hospitalization of three or more staff*	<b>Major</b> <u>Patients with Actual or Potential:</u> Permanent lessening of bodily functioning (sensory, motor, physiologic, or intellectual) <b>not related to the natural course of the patient's illness or underlying conditions</b> (i.e., acts of commission or omission) or any of the following: a. Disfigurement b. Surgical intervention required c. Increased length of stay for three or more patients d. Increased level of care for three or more patients  <u>Visitors:</u> Hospitalization of one or two visitors  <u>Staff:</u> Hospitalization of one or two staff or three or more staff experiencing lost time or restricted duty injuries or illnesses  <u>Equipment or facility:</u> Damage equal to or more than \$100,000**.*
<b>Moderate</b> <u>Patients with Actual or Potential:</u> Increased length of stay or increased level of care for one or two patients <u>Visitors:</u> Evaluation and treatment for one or two visitors (less than hospitalization) <u>Staff:</u> Medical expenses, lost time or restricted duty injuries or illness for one or two staff <u>Equipment or facility:</u> Damage more than \$10,000, but less than \$100,000**.*	<b>Minor</b> <u>Patients with Actual or Potential:</u> No injury, nor increased length of stay nor increased level of care <u>Visitors:</u> Evaluated and no treatment required or refused treatment <u>Staff:</u> First aid treatment only with no lost time, nor restricted duty injuries nor illnesses <u>Equipment or facility:</u> Damage less than \$10,000 or loss of any utility without adverse patient outcome (e.g., power, natural gas, electricity, water, communications, transport, heat and/or air conditioning)**.*

## Develop a QI Project: Clinical Example

Identify an issue that you feel needs improvement

- perioperative efficiency of DISE procedures

Define why improvement in this area is necessary

- time utilization, healthcare cost, patient experience, staff utilization, loss of multiple streams of revenue, delay in access to care

Collect and/or review baseline data in your problem area to confirm it is actually a problem

- track baseline time for a short period:  
ie DISE procedure time vs pt facility time



## Develop an Aim Statement: Clinical Example

What are you trying to accomplish?

- improve efficiency of DISE

For whom? (or what system?)

- at Ronald Reagan

 How?

- *reduce facility time by 30%*

By when?

- January 2019

Need to understand  
the baseline process  
and data



***AIM Statement: We will reduce facility time for patients undergoing DISE procedures at Ronald Reagan by 30% by January 2019***



# Developing Measures and Changes: Clinical Example

## Outcome measure?

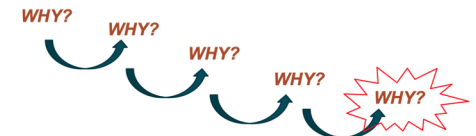
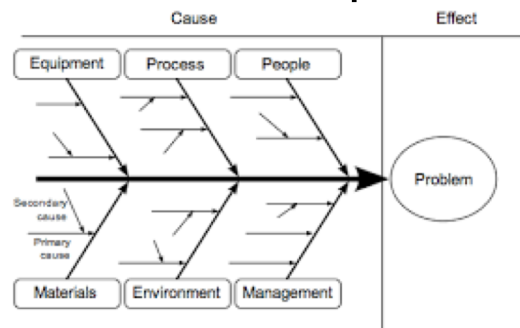
- facility time (min)



## How will you determine what to change?

- Describe the current process for this and current data
  - DISE is performed in the MOR with or without concurrent other procedures, current average time for the procedure is 10 min, and the facility time is 312 min.
- What change can result in the improvement?

- setting: RR, MOR
- staff
- equipment
- anesthesia protocol
- procedure time
- patient factors





## Aim Statement Worksheet

We will improve efficiency of DISE procedures  
(High level area, e.g., health of our patients, operational efficiency, patient experience, etc.)

By reducing  
(Reducing/decreasing or raising/increasing, etc.)

facility time  
(What are you going to reduce/decrease, raise/increase?)

From 312 min to 220 min  
(Baseline) (Target goal)

By January 2019  
(Target date)

***Example: We will reduce the time utilization of DISE procedures at Ronald Reagan by 30% by January 2019***

Improvement measures tracked monthly to measure progress toward Aim:

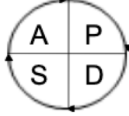
1. Procedure/operating room utilization
2. Anesthesia time utilization
3. Recovery room utilization
4. Facility time
5. Procedure time



# PDSA cycles : 4 stages

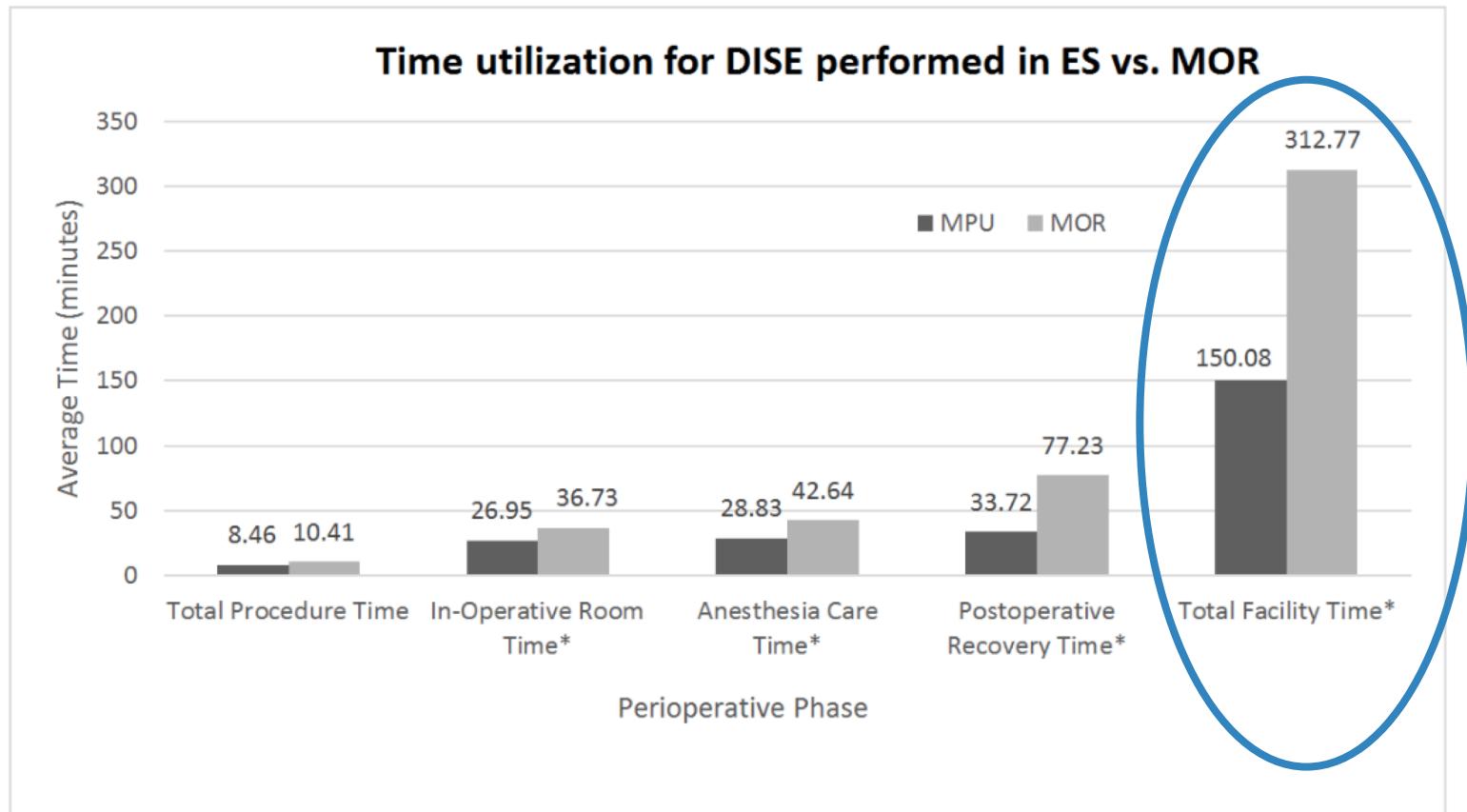
1. Plan
2. Do
3. Study
4. Act

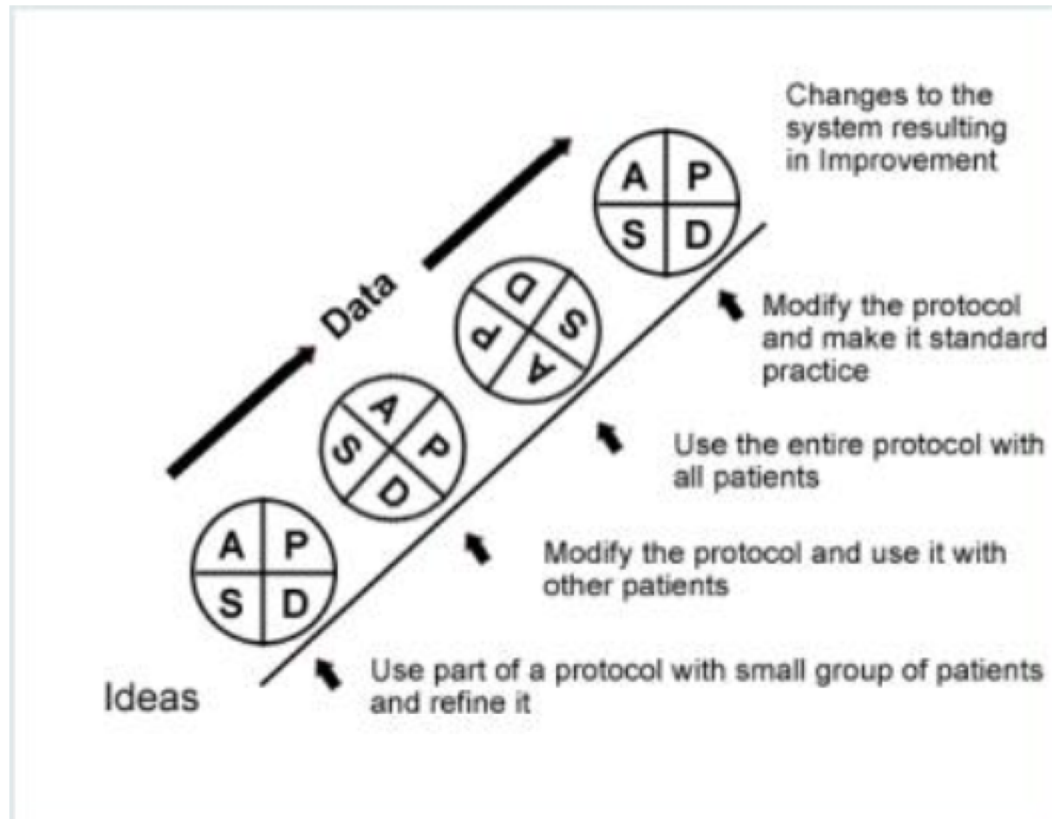
**The Plan-Do-Study-Act (PDSA) cycle** is shorthand for testing a change in the real work setting — by planning it, trying it, observing the results, and acting on what is learned. This is the scientific method used for action-oriented learning.

MODEL FOR IMPROVEMENT		CYCLE : ____ DATE : ____
	Objective for this PDSA Cycle	
PLAN : QUESTIONS :		
PREDICTIONS :		
PLAN FOR CHANGE OR TEST: WHO, WHAT, WHEN, WHERE		
PLAN FOR COLLECTION OF DATA: WHO, WHAT, WHEN, WHERE		
DO : CARRY OUT THE CHANGE OR TEST; COLLECT DATA AND BEGIN ANALYSIS.		
STUDY : COMPLETE ANALYSIS OF DATA; SUMMARIZE WHAT WAS LEARNED.		
ACT: ARE WE READY TO MAKE A CHANGE? PLAN FOR THE NEXT CYCLE.		



## PDSA cycle: Clinical Example





# References

- Committee on Quality of Health Care in America, Institute of Medicine. *Crossing the Quality Chasm: A New Health System for the 21st Century*. Washington, DC: National Academies Press; 2001.
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- American College of Healthcare Executives and IHI/NPSF Lucian Leape Institute. *Leading a Culture of Safety: A Blueprint for Success*. Boston, MA: American College of Healthcare Executives and Institute for Healthcare Improvement; 2017.
- Frankel A, Haraden C, Federico F, Lenoci-Edwards J. *A Framework for Safe, Reliable, and Effective Care* [white paper]. Cambridge, Massachusetts: Institute for Healthcare Improvement and Safe & Reliable Healthcare; 2017.
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