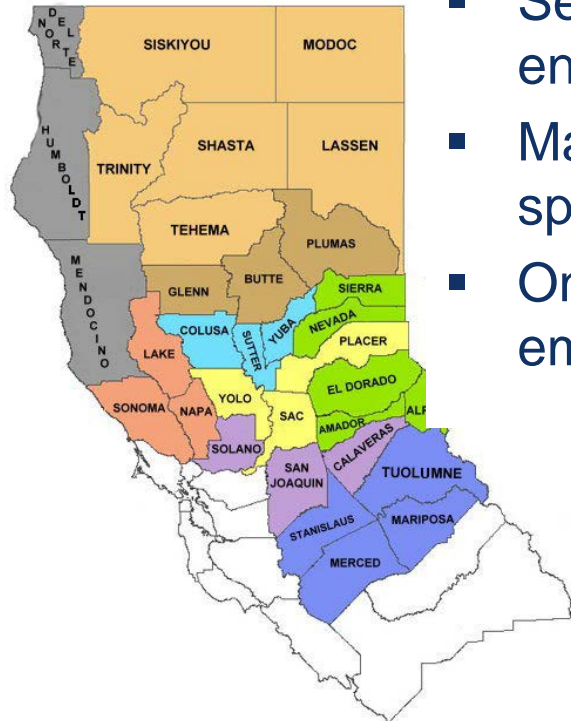




Performance Excellence  
Overview

February 01, 2013

Jared Quinton, MHSM, ASQ CSSBB  
Director, Performance Excellence  
UC Davis Health System



- Serving 6 million residents in 33 counties encompassing 65,000 square miles
- Major educational, research and patient-care facilities spread across more than 140 acres
- Only Level 1 trauma center for both adult and pediatric emergencies in inland Northern California

■ Licensed beds	619
■ Admissions	31,025
■ ED Visits	58,023
■ Clinic Visits	893,788

# External Data

## Competitor Intelligence

- Market Share
- Outmigration
- Alliances
- New Programs

## Consumer Information

- Patient Satisfaction
- Market Research
- Awareness / Perception

## Demographic & Economic

- Population growth / stratification
- Labor supply / demand
- Income / Employment
- Other regional business developments

## Policy, Regulatory & Legislative

- Federal/State/Local legal and health regulatory mandates
- Publicly reported data
- Industry/Professional organizations
- Partners/Collaborators

# Internal Data

## Financial Analysis

- Financial ratios
- Service line profitability
- Payor mix
- Efficiency measures

## Human Resources

- Recruitment
- Satisfaction
- Retention / Turnover
- Labor Expenses

## Infrastructure

- Capital requirements
- Facilities / Equipment requirements
- Capacity
- Market projections
- Program growth

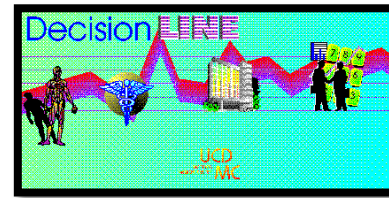
## Quality & Safety

- Quality metrics
- Safety metrics
- Service line utilization (statistics, trends, projections)



# Possible Data Sources @ UC Davis

## Internal Data Sources:



## External Data Sources:



# QI Challenges



Perception

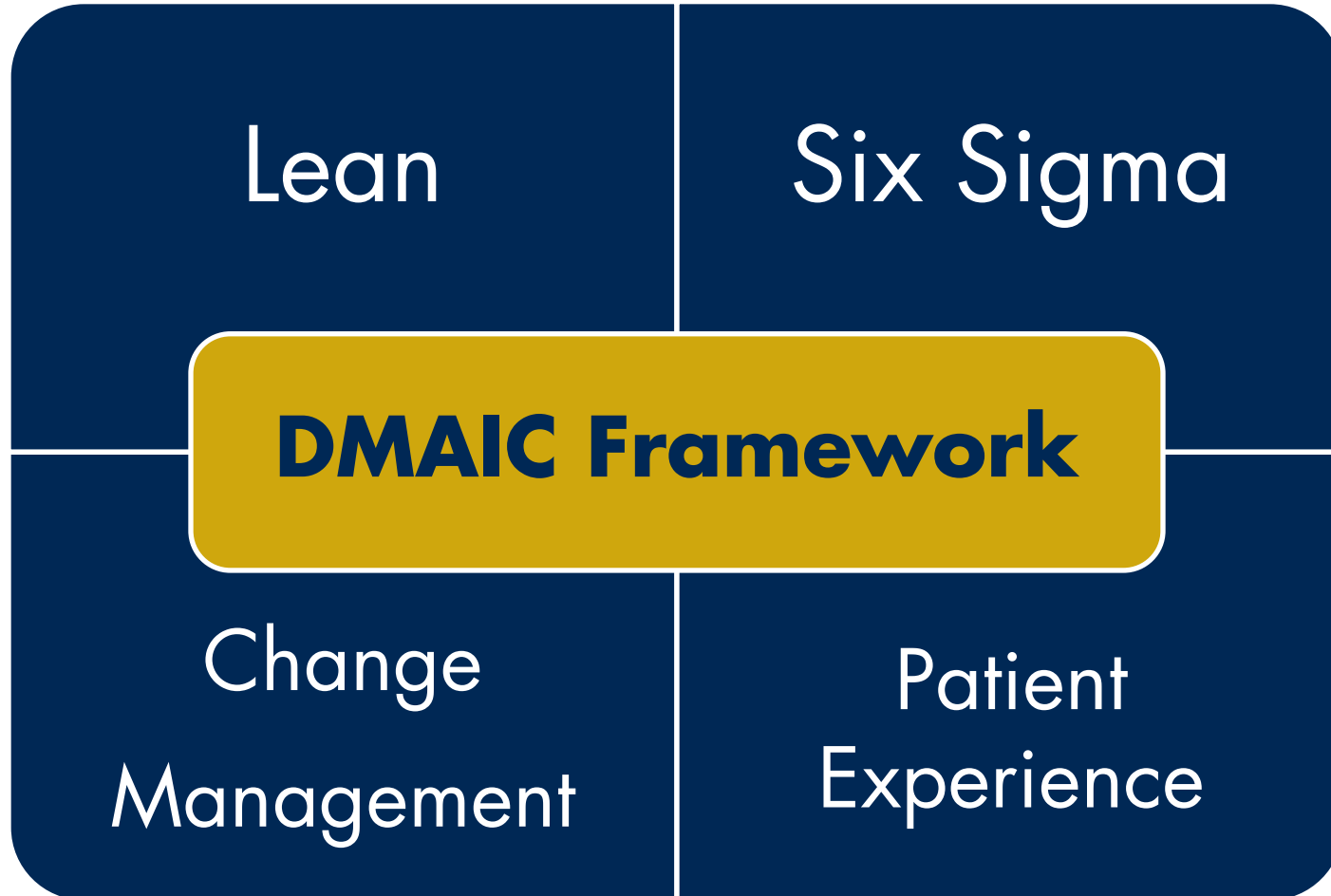


Culture



## DMAIC Methodology

# Creating Value Through Quality Improvement



$$\text{Value} = \frac{\text{Quality (Outcomes+Safety+Service)}}{\text{Cost (For a span of care)}}$$

# Why use **Lean + Six Sigma** ?

## ***DMAIC offers an organization:***

- A shared **methodology** for problem solving
- A shared **structure** to meet goals
- A shared system-wide **language**
- A shared **toolset** that is transferable to all levels

*DMAIC fosters innovative improvement through **high impact, value-added quality initiatives (QI)** targeted to **achieve system goals***



Why use **Lean + Six Sigma** ?

***DMAIC focuses on processes, not individuals***

“85% of the reasons for failure to meet customer requirements are related to **deficiencies in systems** and processes...rather than the employee.

The role of management is to **change the process** rather than badgering individuals to do better.”

- *W. Edwards Deming*

# UC HEALTH Performance Excellence Collaborative

	UCD	UCI	UCLA	UCSD	UCSF
Program Name?	Performance Excellence	Lean Six Sigma	Performance Excellence	Performance Excellence	Operations Improvement Dept.
"Start" date?	July, 2010	February, 2011	July, 2008	Fall 2011	Fall 2011
Methodology?	Lean Six Sigma (DMAIC)	Lean Six Sigma (DMAIC)	Lean (PDCA)	Lean Six Sigma (DMAIC)	Project Management to Lean

## *Mission:*

Identify and eliminate waste and inefficiencies within our **Healthcare Delivery Value System**, providing optimal value to our patients, staff and community

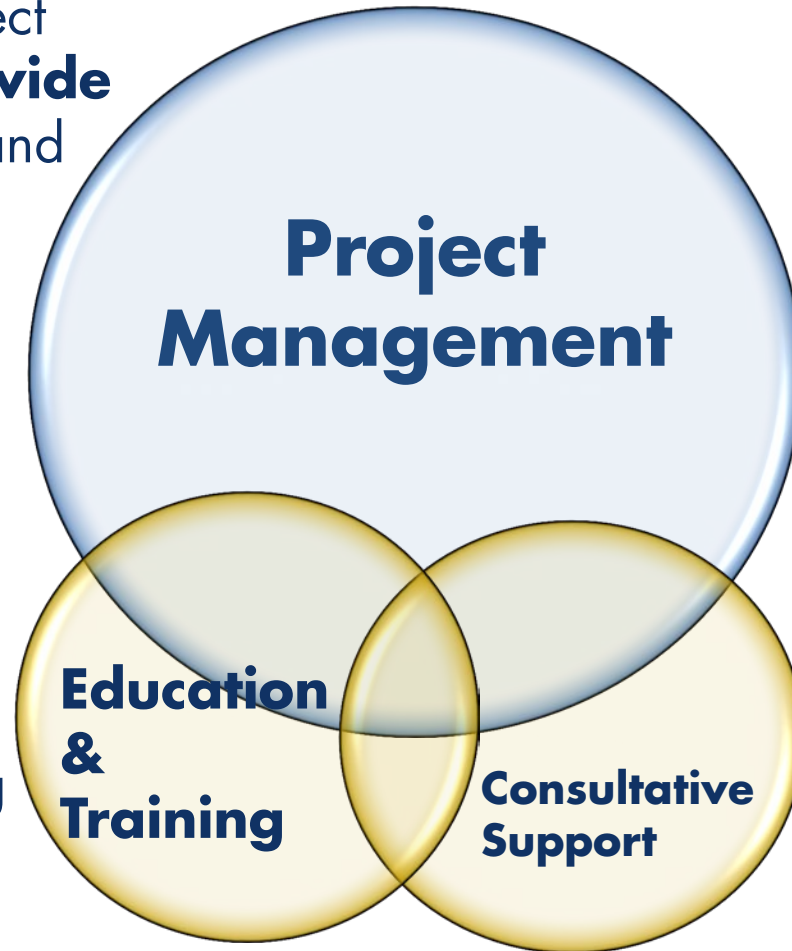
## *Goal:*

Provide patient care that is:

- **Safe** (no harm)
- **Effective** (prevent disease & complications)
- **Efficient** (the right care without unwanted delay)
- **Patient-centered** (informed, involved, educated)
- **Equitable** (the right care for all)

# Performance Excellence (PE) Structure

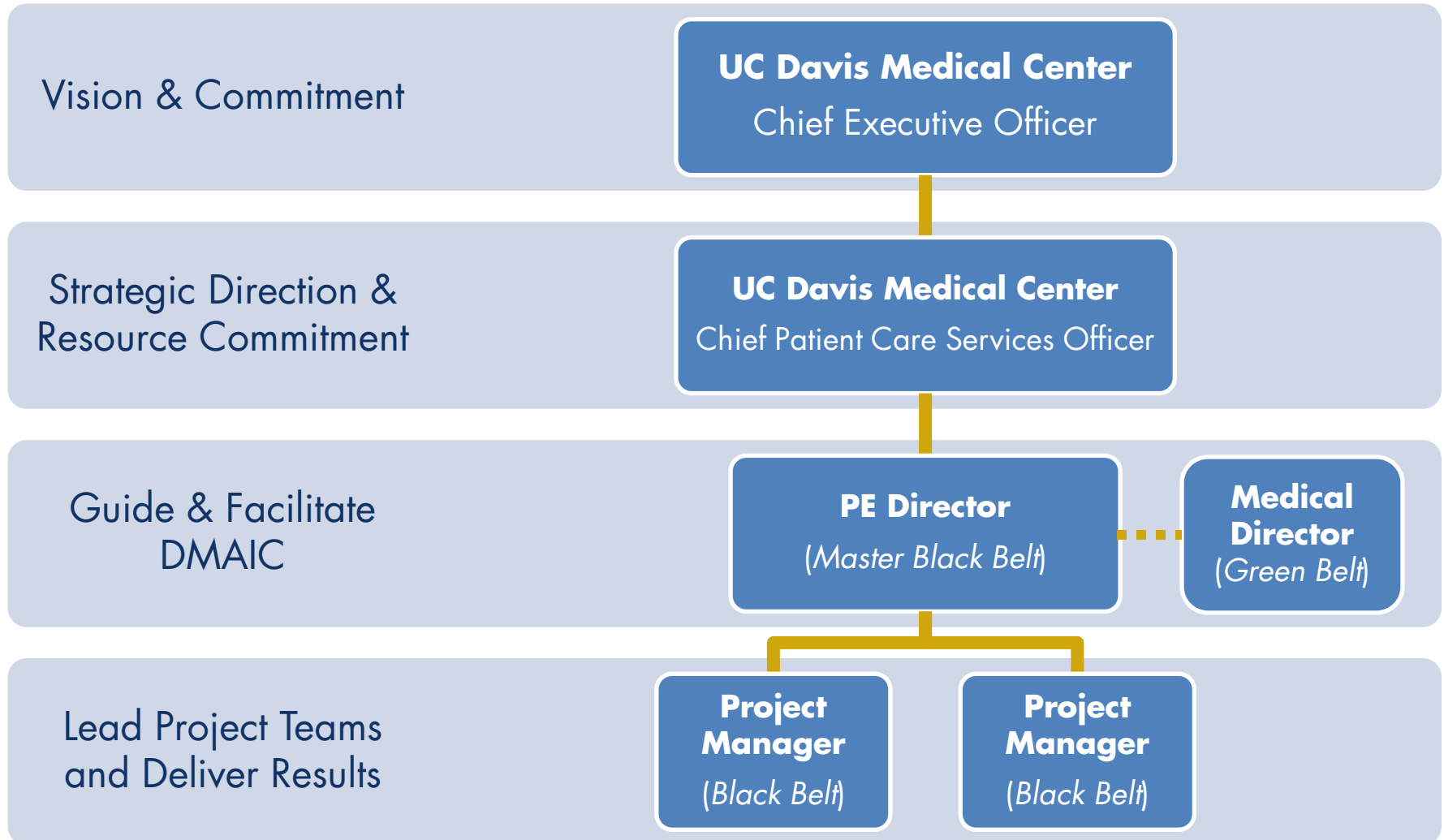
Facilitate DMAIC project management and **provide expertise** in the art and science of **quality improvement** and change management



Provide **just-in-time education** and **training** on Lean Six Sigma methodologies in order to develop infrastructure for evolving process culture

Provide **consultation** and/or **coaching** to Health System teams that require support in **analyzing current state** processes and **identifying improvement opportunities**

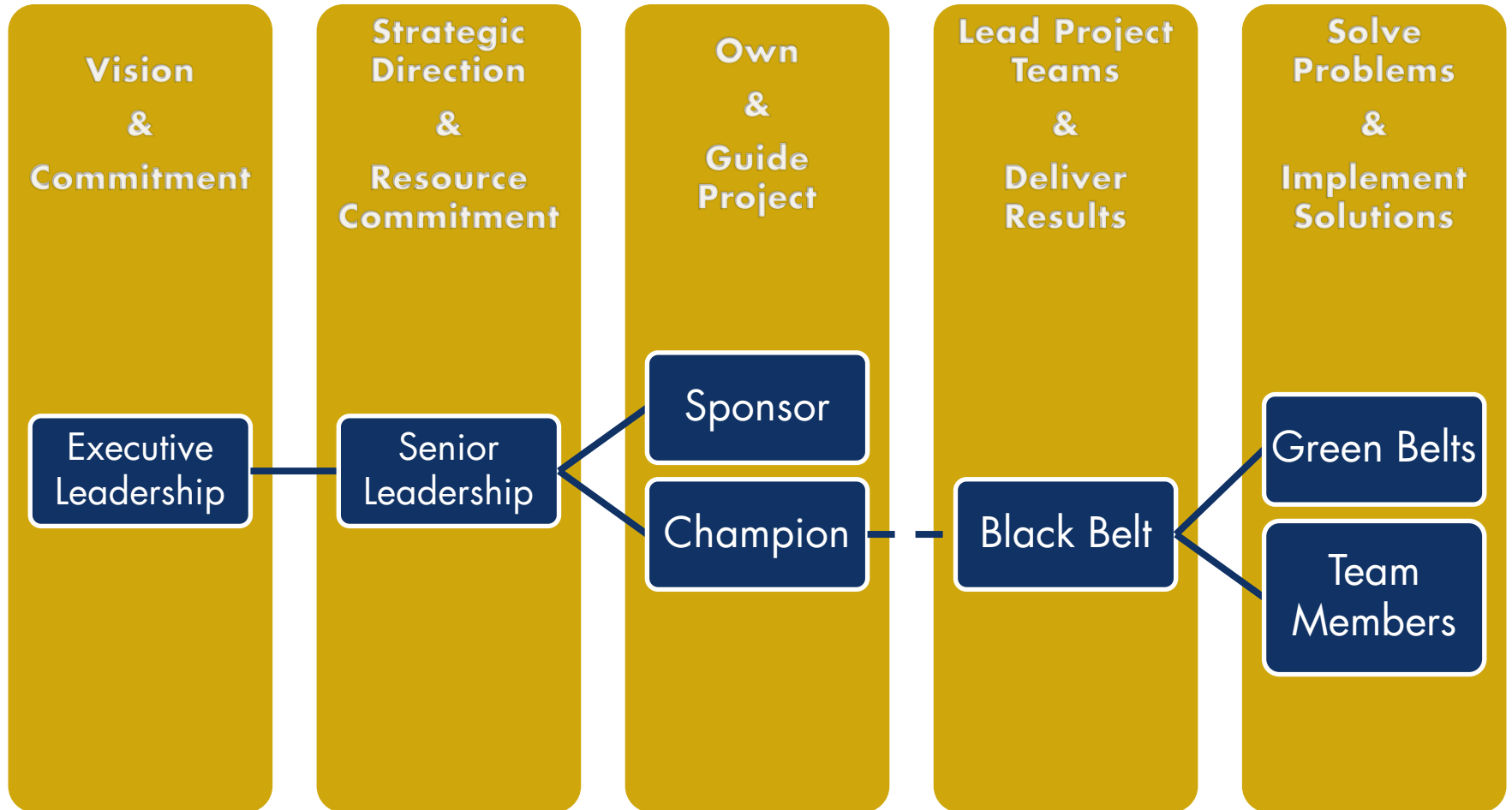
# PE Department Organization



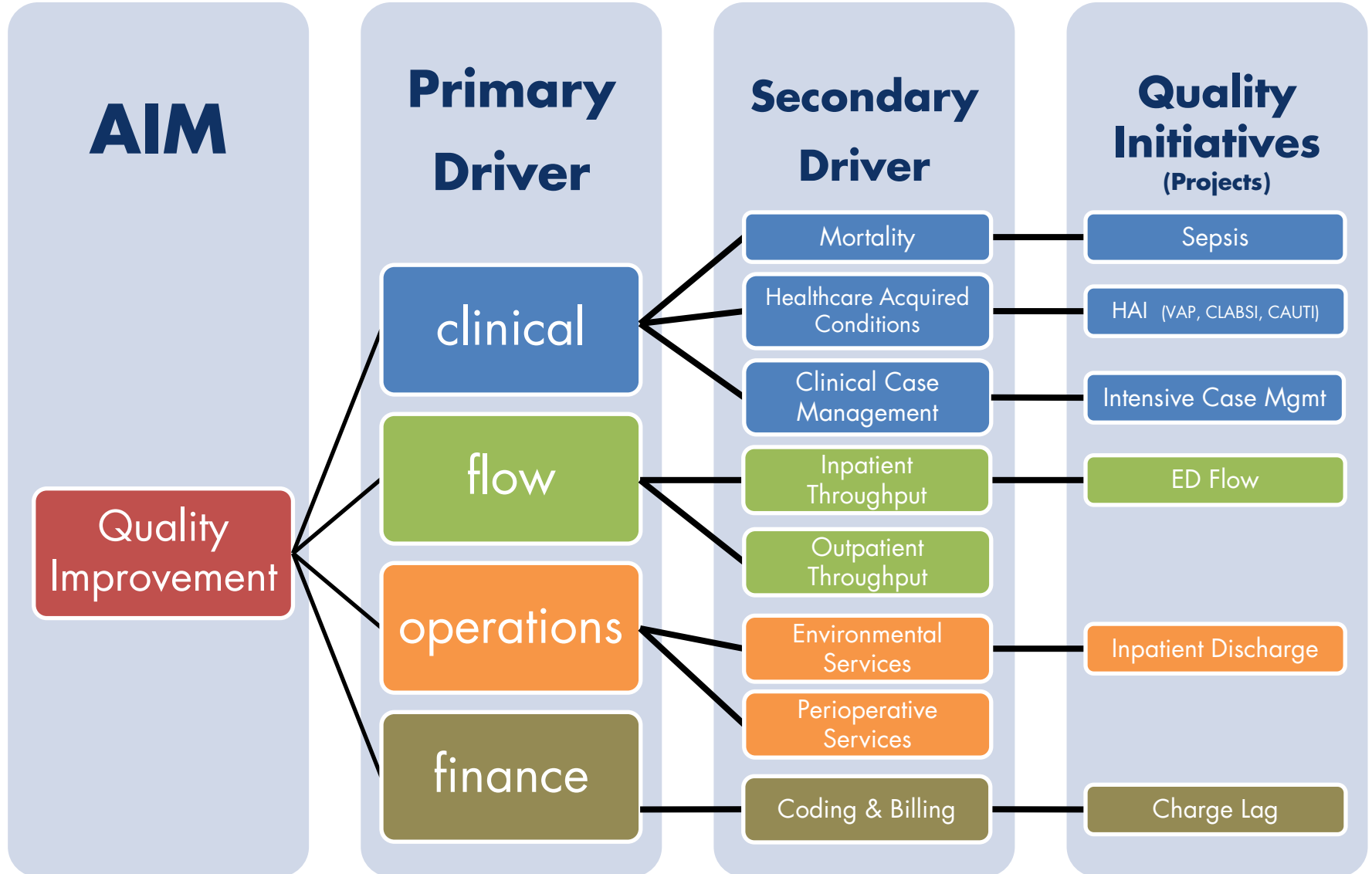
\* While in the Division of Patient Care Services, the PE department works across the Health System



# DMAIC Health System Roles



# Healthcare Delivery Value System



# What is **Lean + Six Sigma** ?

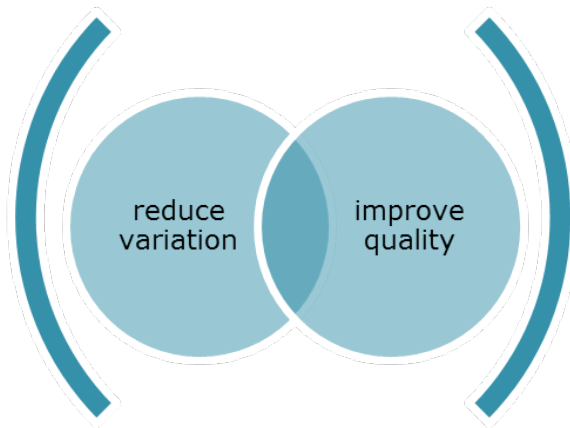
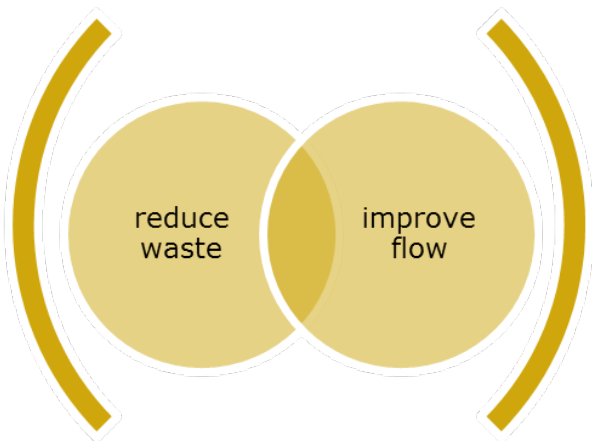
A systematic methodology utilizing effective data analysis tools and techniques driven by **DMAIC** [deh-may-ihk]



**GOAL** →

design processes with very high reliability, seeking to **improve quality, delivery, and cost**

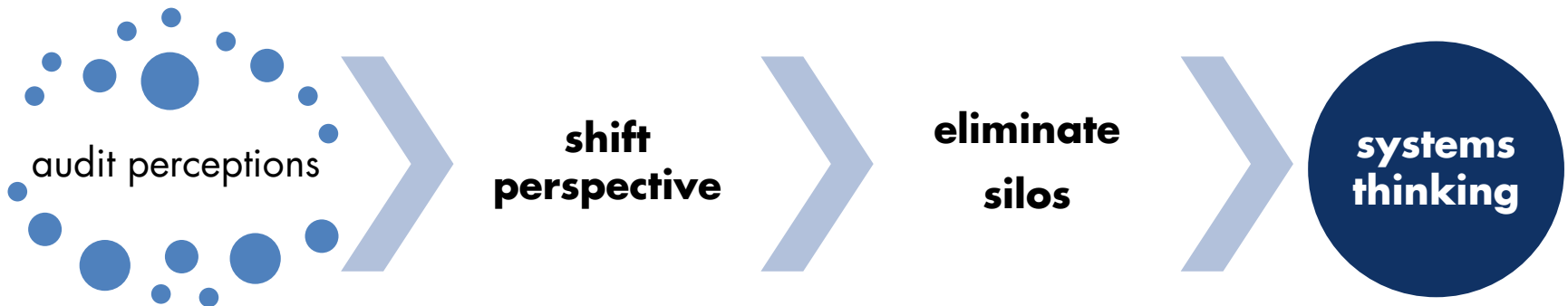
# What is **Lean + Six Sigma** ?



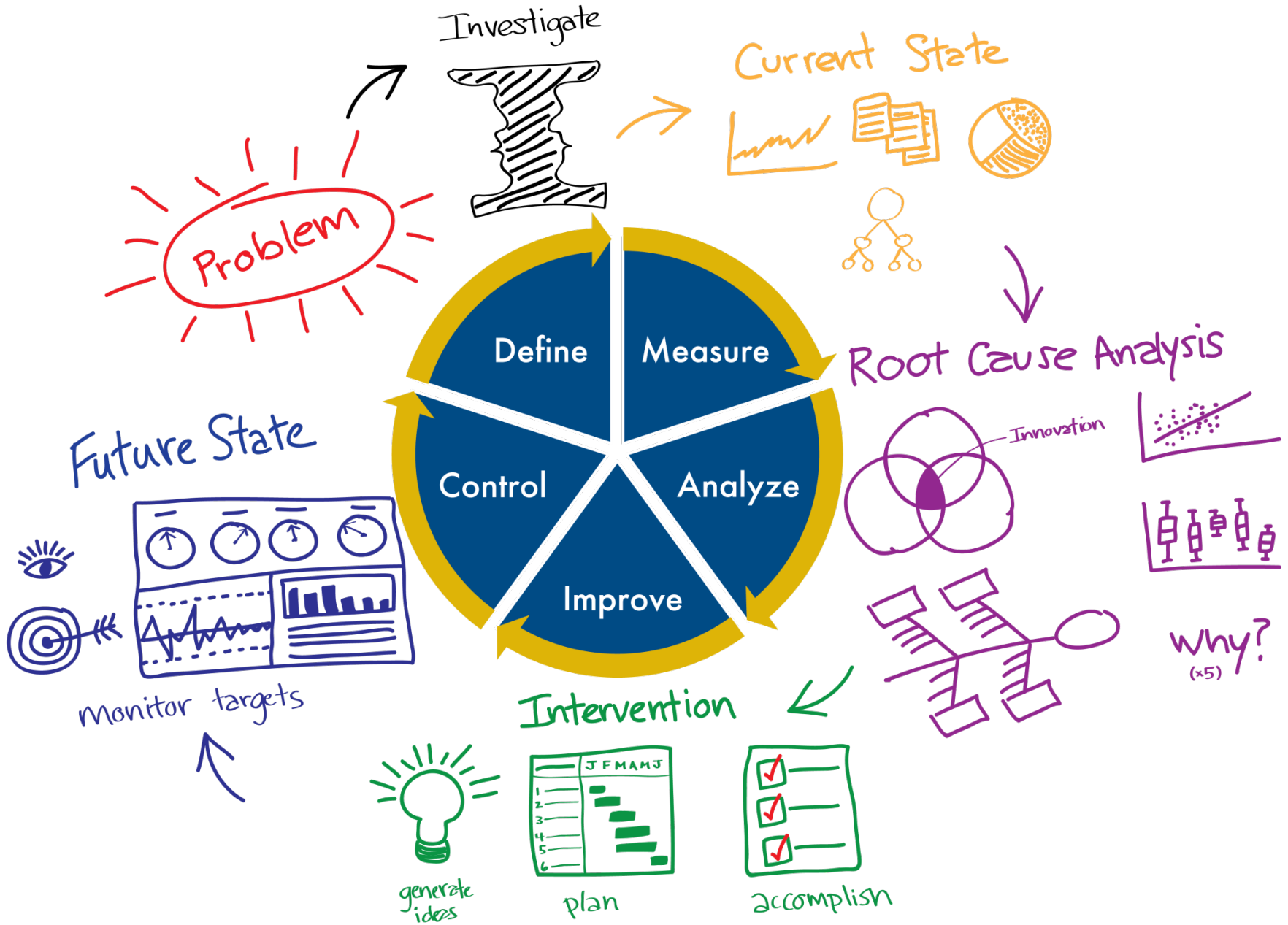
**\* requires systems thinking**

# What is **Lean + Six Sigma** ?

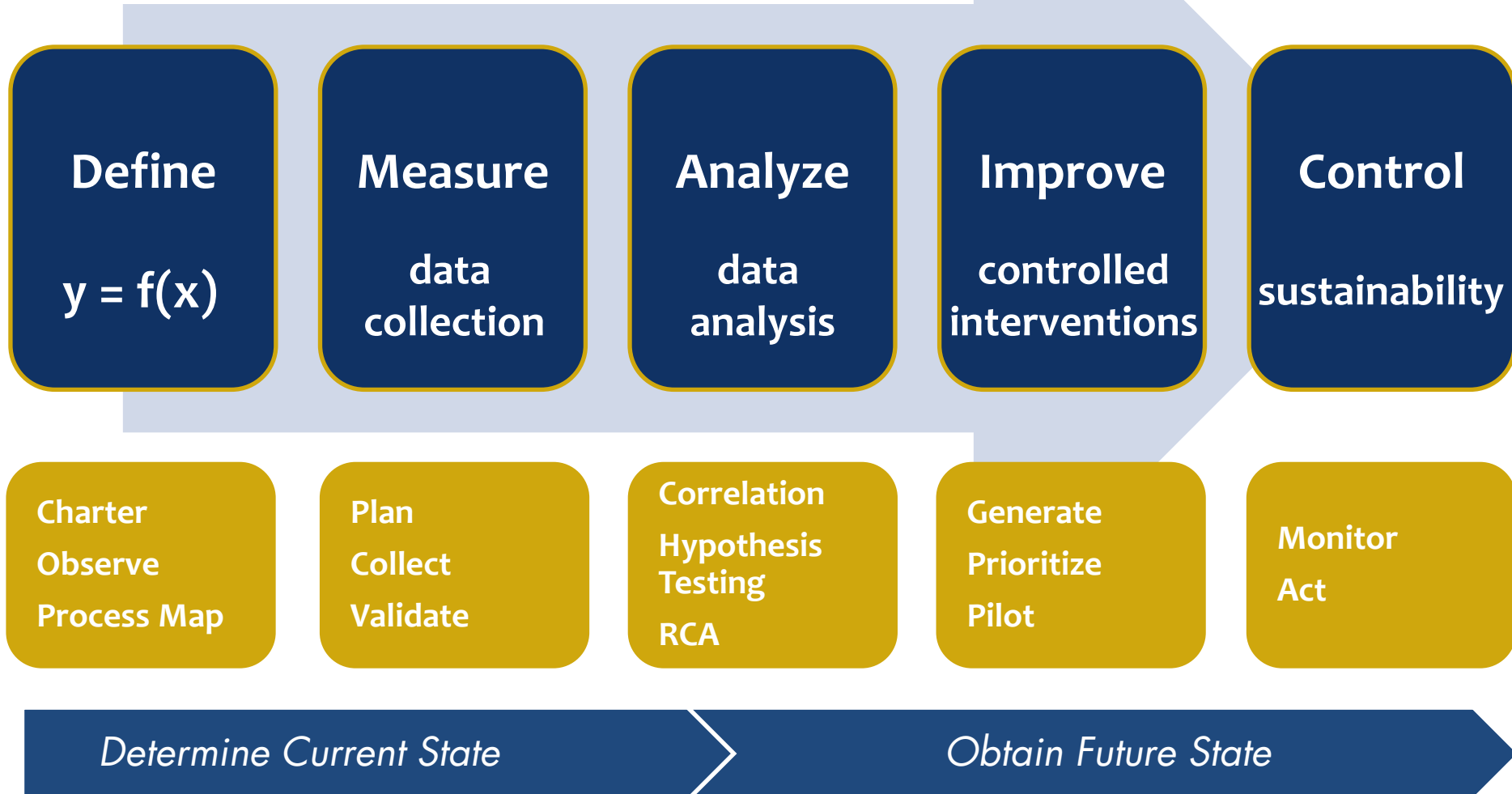
steps to achieving systems thinking...







# DMAIC up close...



The DMAIC methodology utilizes a lot of data...

...therefore, we use **statistical software** to:

- solve specialized calculations
- create charts, graphs or depictions of data in a standardized format
- keep organized



# The Role of DMAIC



DMAIC  
tools



- **Access** applicable data to monitor process performance
- Perform **analysis** to identify and improve opportunities for improvement
- Create and publish **reports**
- Provide project management **infrastructure**
- **Consult** during requirement phase of tool development
- Publish **data dictionary** for reporting tools

# PROJECT CHARTER

**PROBLEM STATEMENT:**

A brief description of the problem at hand and why it is a priority.

**GOALS / OBJECTIVES:**

Expected outcome of Quality Improvement process.

**SCOPE:**

Identify operational or organizational boundaries.

**METRICS:**

Identify critical to "X" requirements.

- Quality / Cost / Process / Safety / Delivery
- Regulations and/or standards
- Benchmarks

**Start Date:**    **xx/xx/xxxx**

**End Date:**     **xx/xx/xxxx**

**QI Leadership:**

**Executive Leadership:**    **Name**

---

**QI Champion/Sponsor:**    **Name**

---

**QI Black Belt:**     **Name**

---

Member	Role	Department
Name 1		
Name 2		
Name 3		
Name 4		
Name 5		
Name 6		
Name 7		



## A3

**DEFINE:****PROBLEM STATEMENT:**

A brief description of the problem at hand and why it is a priority.

**GOAL:**

Expected outcome of Quality Improvement process.

**SCOPE:**

Identify operational or organizational boundaries.

**PROCESS MAP / VALUE STREAM MAP (VSM):****MEASURE:**

Identify, collect and validate specific measurements that describe the process and reveal whether the goals have been achieved.

- SIPOC diagram
- Spaghetti diagram

**ANALYZE:**

Identify the root cause(s) of stated problem.

- Ishikawa/Fishbone diagram
- Correlation testing
- Hypothesis testing
- FMEA

**IMPROVE:**

Generate, prioritize and implement solution(s) to the stated problem. State result(s) of implemented improvement(s).

- Pilot
- Kaizen
- Standard work processes

**CONTROL PLAN:**

Develop a control plan to monitor the process in order to sustain improvement.

- Control chart
- 5S
- Poka-yoke (mistake-proofing)

# PE Intranet Site

- General Information
- Resources
- Current Quality Initiatives
- Contact Information

**UC DAVIS HEALTH SYSTEM | Performance Excellence**

The Insider

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 Six Sigma  
 Change Management  
 Patient Experience  
[Quality Initiatives](#)  
 Emergency Department Flow QI  
 Environmental Services QI  
 Intensive Case Management QI  
 Sepsis Reduction QI  
[Education](#)  
[References](#)

**Performance Excellence**  
*Creating Value Through Quality Improvement*

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CRC - Clinical Resources Center The Insider

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[Sepsis FAQ](#)  
[Key References](#)  
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**Sepsis Improvement Collaborative (SIC) @ UC Davis Medical Center**

**STOP**

The purpose of the treatment of Severe mortality (individual by a date to be determined)

Next Meeting: Wednesday, August 1, 2012 10:00 AM

Recent Meeting Times

- May 9, 2012
- April 11, 2012
- March 14, 2012
- February 8, 2012
- January 11, 2012

Click here to access the Sepsis Improvement Collaborative (SIC) Dashboard

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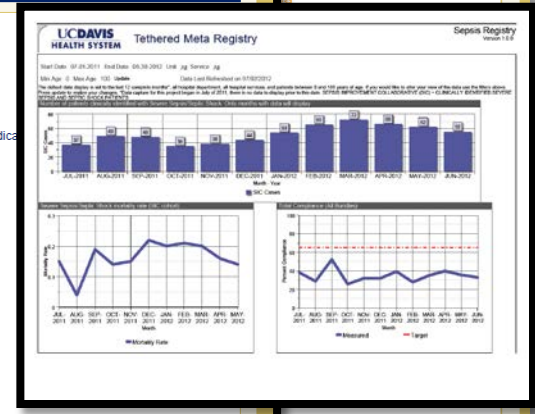
[Home](#)  
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**Sepsis Improvement Collaborative (SIC) Dashboard**

UC Davis Medical Center SIC Dashboard (all Units and Medical Services)

SIC High Level Requirements and Specifications

SIC Visualization Definitions



# References



## American Society for Quality

- <http://www.asq.org>

## Institute for Healthcare Improvement

- <http://www.ihi.org/IHI/Results/WhitePapers/GoingLeaninHealthCare.htm>

## Joint Commission Center for Transforming Healthcare

- <http://www.centerfortransforminghealthcare.org/leansixsigma.aspx>



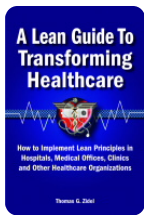
## Johns Hopkins Center for Innovation in Quality Patient Care

- [http://www.hopkinsmedicine.org/innovation\\_quality\\_patient\\_care/areas\\_expertise/lean\\_sigma](http://www.hopkinsmedicine.org/innovation_quality_patient_care/areas_expertise/lean_sigma)



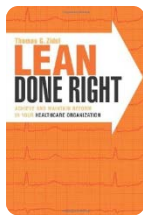
## University of Michigan, College of Engineering, LSS for Healthcare

- <http://interpro.engin.umich.edu/Healthcare.htm>

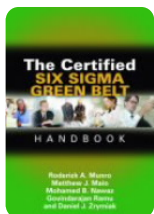


## A Lean Guide to Transforming Healthcare (2006)

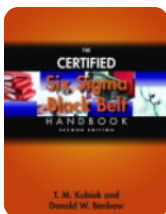
- Thomas G. Zidel



## Lean Done Right (2012)



## The Certified Six Sigma Green Belt Handbook



## The Certified Six Sigma Black Belt Handbook (Second Edition)



## The Certified Six Sigma Master Black Belt Handbook

- ASQ, Quality Press

Lean + **Six Sigma**



**UCDAVIS**  
HEALTH SYSTEM



# Example 1

*Improving Detection &  
Management of Severe Sepsis*

# Severe Sepsis Detection & Management QI



**Improvement of severe sepsis detection and management to reduce unnecessary death and harm attributable to sepsis**

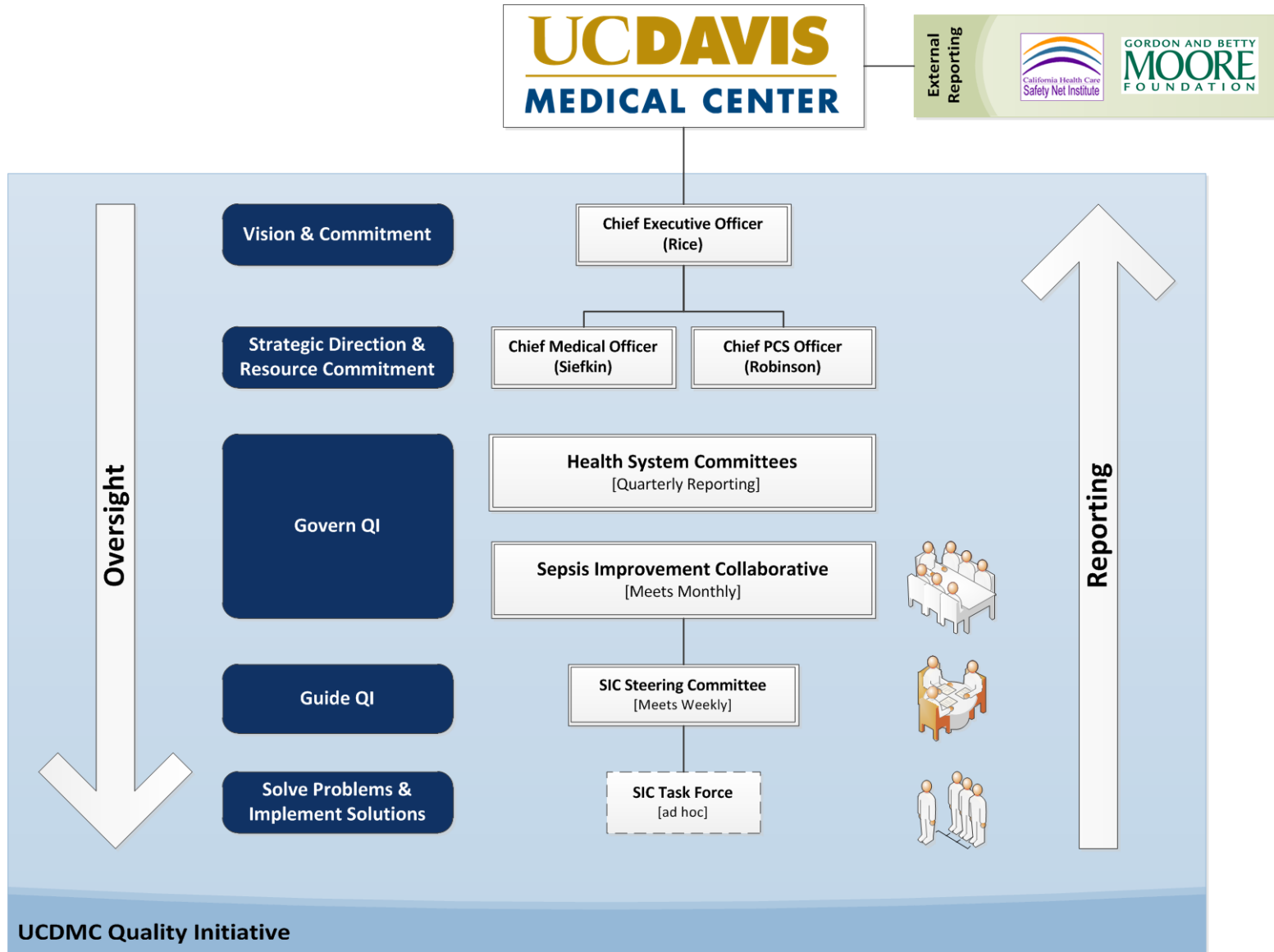
- Fully leverage the EHR
- Utilize Lean Six Sigma methodologies
- Partner with
  - Gordon and Betty Moore Foundation
  - California Health Care Safety Net Institute
  - University HealthSystem Consortium
- Comply with the UCDMC DSRIP Proposal

GORDON AND BETTY  
**MOORE**  
FOUNDATION





# Sepsis Improvement Collaborative



# Project Charter

**Start Date:** 01/01/2012  
**End Date:** 12/31/2012

**PROBLEM STATEMENT:**

Severe Sepsis and Septic Shock mortality.

**GOALS / OBJECTIVES:**

Fully implement evidence-based practices for the early identification and treatment of Severe Sepsis and Septic Shock with the goal of significantly reducing Severe Sepsis and Septic Shock mortality (individually, in rate and absolute number) at UCDCM using advanced EPIC EHR tools.

**BENEFITS:**

- Improve detection & management of severe sepsis and septic shock
- Reduce Severe Sepsis and Septic Shock mortality
- Reduce ALOS for sepsis population in UCDCM
- Build quality improvement partnerships across UCDCM

**SCOPE:**

- All patients admitted to UCDCM: focusing on pathways in the emergency department (ED), acute care units (ACUs) and intensive care units (ICUs)

**METRICS:**

- Sepsis related mortality data (clinical & coding sources)
- SIC bundle compliance data (clinical data from electronic screening tool)
- Financial data (UCDCM data of sepsis related patients)
- Ad hoc quality improvement data
- External reporting requirements
  - i. DSRIP – Category IV Project
  - ii. Gordon and Betty Irene Moore Foundation Grant

**QI Leadership:**

**Senior Leadership:** Allan Siefkin, MD & Carol Robinson, RN  
**QI Champions:** Hien Nguyen, MD & Marci Hoze, RN  
**QI Black Belt:** Jared Quinton, CSSBB

Member	Lic. / Cert.	Role
Albertson, Timothy	MD	Sepsis Expert
Berger, Tony	MD	ED Physician Representative
Black, Hugh	MD	ICU Physician Representative
Chenoweth, James	MD	ED Resident Representative
Cocanour, Christine	MD	Surgery Physician Representative
DiPierro, Christine	RN	Acute Care Nursing Representative
Dunbar, Karrin	RN	Nursing Education Representative
Henk, Bobbi	RN	CQI Representative
Hill, Michelle	MD	Internal Medicine Resident Representative
Hunkins-Flores, Marcie	RN	ED Nursing Representative
Johl, Hershan	MD	Acute Care Physician Representative
Koopman, Marsha	RN	Infection Prevention Representative
Lonigan, Joleen	RN	Rapid Response Team Representative
Meyers, Jaime	RN	PCS Quality & Safety Champion Representative
Mondino, Karen	RN	ICU Nursing Representative
Natale, Joanne	MD	Pediatric Physician Representative
Parker, Tricia	PharmD	Pharmacy Representative
Polage, Christopher	MD	Laboratory Representative
Stocking, Jacqueline	RN	PCS Quality & Safety Representative
Teach, Lori		EHR / IT Representative
Warren, Scott	PMP	Lean Six Sigma Green Belt

A3

# SIC Mortality Rate

## DEFINE:

### PROBLEM STATEMENT:

Sepsis related mortality at UCDMC

### GOAL:

By December 2012:

- Reduce combined severe sepsis and septic shock mortality by  $\geq 15\%$
- Reduce severe sepsis mortality by  $\geq 15\%$
- Reduce septic shock mortality by  $\geq 15\%$ 
  - in percentage rate and absolute numbers
  - from 2009 baseline data

### SCOPE:

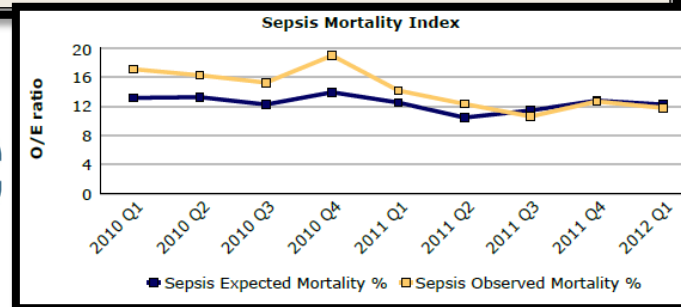
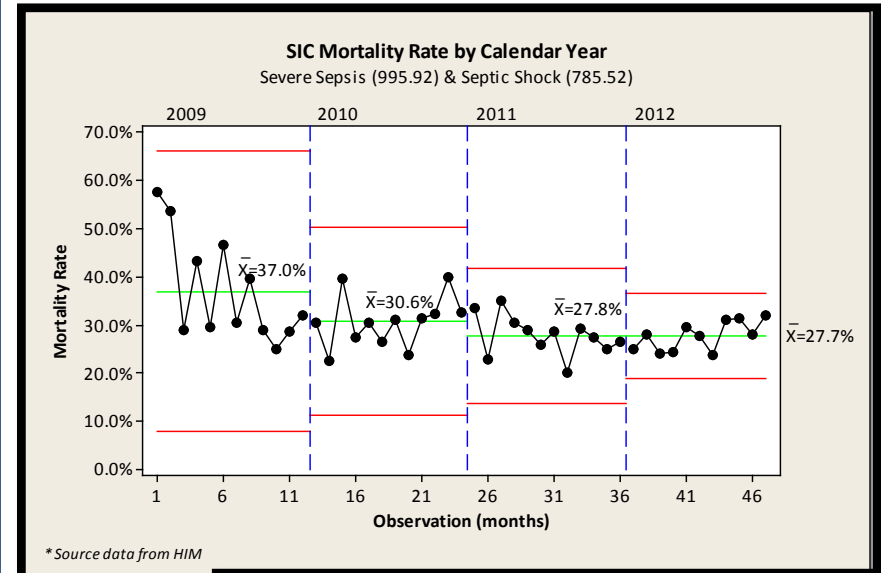
All UCDMC patients (ED, ACU and ICU) with severe sepsis and/or septic shock

## MEASURE:

Year	Category	Count	SIC Population	Rate (%)
2009*	Septic Shock	112	257	43.6%
	Severe Sepsis	67	235	28.5%
	<b>SIC Population</b>	<b>179</b>	<b>492</b>	<b>36.4%</b>
2010	Septic Shock	121	310	39.0%
	Severe Sepsis	73	330	22.1%
	<b>SIC Population</b>	<b>194</b>	<b>640</b>	<b>30.3%</b>
2011	Septic Shock	113	321	35.2%
	Severe Sepsis	63	311	20.3%
	<b>SIC Population</b>	<b>176</b>	<b>632</b>	<b>27.8%</b>
2012 YTD Jan-12 to Nov-12	Septic Shock	123	333	36.9%
	Severe Sepsis	57	325	17.5%
	<b>SIC Population</b>	<b>180</b>	<b>658</b>	<b>27.4%</b>

\* Baseline

## ANALYZE:



## IMPROVE:

Sepsis Improvement Collaborative work products

## CONTROL PLAN:

Sepsis Improvement Collaborative work products

Lean + **Six Sigma**



**UCDAVIS**  
HEALTH SYSTEM



## Example 2

*Environmental Services  
Inpatient Discharge Process*

# EVS Inpatient Discharge Process QI



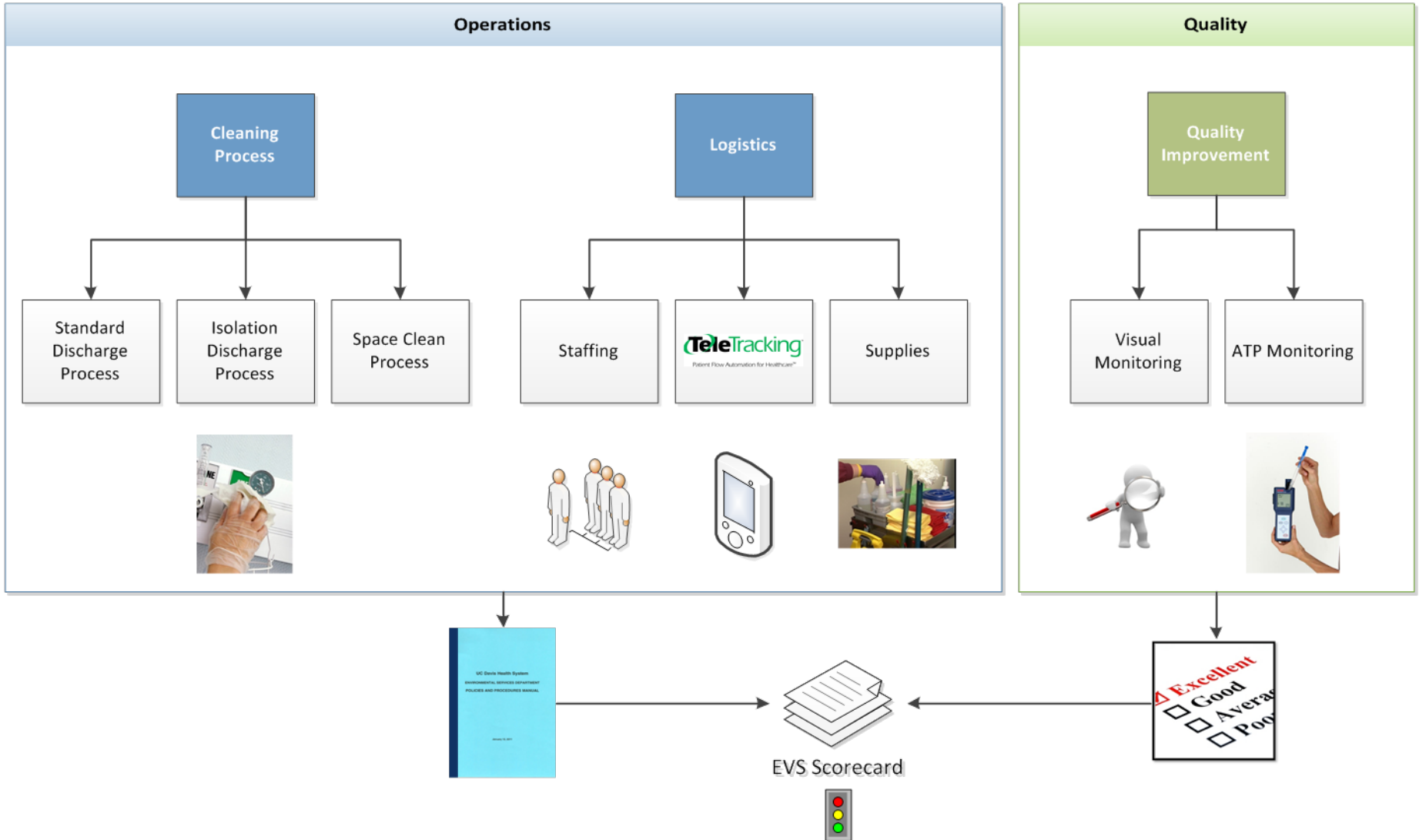
**Improvement of departmental efficiencies with the goal to decrease discharge cleaning turnaround time and improve process quality**

- Utilize LSS to fully leverage EVS metrics
  - Logistical metrics (TeleTracking)
  - Quality metrics (Visual & ATP Monitoring)
- Engage all levels of EVS staff in QI process

**TeleTracking**<sup>™</sup>



# EVS Inpatient Discharge Process





# Quality Audit Process

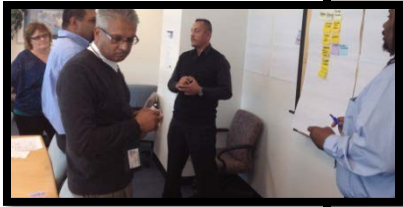
## DEFINE:

**PROBLEM STATEMENT:** Lack of standard quality audit form

**GOAL:** Design and implement standard quality audit form

**SCOPE:** Inpatient discharge process

## PROCESS MAP:



## ANALYZE:

## IMPROVE:

## MEASURE:



## CONTROL PLAN:

