

Lean Sigma Healthcare

A New Model for CHC and Small Hospital Quality and Performance Transformation

The Least I'd Like you to Learn

- ❑ **It's the Process Not the People**
 - 95% of your problems are process related, 5% are staff
- ❑ **You Don't Need to Start Big to Get Big Results**
 - Starting small and meaningfully is the most effective way to grow capabilities and ultimately transform your facility
 - Change on a **Keystone Habit** has Disproportionate Effects
- ❑ **Lean Six Sigma Should be Revenue Positive Very Quickly... If not, you aren't doing it right!**
- ❑ **LSS Tools and Techniques are Only One Aspect of Implementing Highly Effective Improvement Projects**
- ❑ **Change is about Modifying Organizational and Personal Habits**
 - People and Groups can only handle so much change
 - Building Belief (Hope) is Vital to Effective Change Leadership
- ❑ **Finally, this is a learning process and the only way to fail is to not make an attempt.** You'll get better next time, and the next...just aim for continuous improvement

Organizational Decisions are Poor

- ❑ Five Year Study of 1048 Organizational Decisions *
 - McKinsey analyzed how decisions were made and outcomes
 - All decisions incorporated extensive data and analysis
 - Less than 30% of the outcomes were considered effective
 - 83% of corporate mergers LOSE value for Shareholders
- ❑ Corporate Decisions Worse than Teenage Decisions
 - Only 30% of teenagers considered more than 1 option
 - Only 29% of corporations considered more than 1 option
- ❑ “Humans are rarely stumped. We draw rapid conclusions (often incorrect) conclusions all the time”

The Decision-making Process proved to be 6x more important than Analysis in Outcomes

How we Think we Make Decisions

Rational Actor Model

- You encounter a choice
- You analyze your options
- You make a choice
- You live with it

But Human Thinking is Predictably Biased

- ❑ **Narrow Framing....limits options**
 - Limiting options to those we can see in our “Spotlight”
 - Focusing on our current options means all others are out of our frame
- ❑ **Confirmation Bias....directs information gathering**
 - “Our normal habit in life is to develop a quick belief about something and subconsciously seek out information that confirms that belief”
- ❑ **Overconfidence....in our biased conclusions**
 - “People think they know more than they do about the future.”
 - Decca Record’s early rejection of the Beatles
 - When MD’s reckon they are 100% certain of a diagnosis, they are WRONG 40% of the time!
- ❑ **Short-term Emotion....heat of the moment**

How We Really Make Decisions

- You encounter a choice...**but Narrow Framing makes you miss better options**
- You analyze your options...**but Confirmation Bias makes you gather self-supporting information**
- You make a choice...**but Short-term Emotion will tempt you to make an incorrect decision**
- You live with it...**but you'll be Overconfident about how the future will unfold and stick with it too long....**

Overcoming Biases – WRAP

Widen Your Options – Exposure to even 1 more option greatly increases likelihood of good decision

- Distrust either/or, whether or not choices
- Multi-track – develop more than 1 solution
- Vanishing Options Test

Reality Test your Assumptions

- Consider the Opposite – Ask tough disconfirming questions
- Encourage Constructive Disagreement
 - Have another team develop contrarian case in parallel
- Zoom In – Zoom Out
 - Take an Outside View

Overcoming Biases - WRAP

Attain Distance Before Deciding

- ❑ Build a Cooling Off Period into all Important Decisions
- ❑ Use 10-10-10 – Ask Yourself How You Will Feel about it in 10 minutes, 10 months, 10 years
- ❑ What would you do if you were a consultant called in to help? Or ask, “What would my replacement do?”

Prepare to Be Wrong

- ❑ Bookend the Future...set worst and best case bounds
 - ❑ Set a Tripwire...a trigger for a change in course that will snap us awake
- As Team Leader, Consider yourself a **Decision Advisor** – what you would advise another to do?

Trusting the Process

- Better decisions **Always** result when using “bargaining”, compromise between disagreeing parties
 - Research shows that people care deeply about process
 - Compromise slows decision, but speeds implementation
 - **Procedural Justice** – even losers think process is fair
 - Fairness in Process Major Element of Acceptance
 - Acknowledging suitability of other options, but deciding to go in another direction provides sense of respect
 - This is in contrast to Defending the group’s choice

“What a process provides is confidence; not cocky overconfidence that comes from relying on biased information and ignoring uncertainties, but real confidence knowing you made best decision you could”

So, What is Lean Six Sigma?

- **First thing people think about are Tools and Techniques**
 - But this is only one aspect!
- **Rigorous Decision Making Framework** that improves the effectiveness and implementation of organizational decisions
- **Business Management Philosophy** that Empowers Employees to participate in the operational effectiveness of their work functions
- **Repeatable Project Management Methodology** that Staff uses to make dramatic improvements and achieve results they never thought possible

And What is Lean Sigma Healthcare

Start with a **Healthcare Specific Subset of Lean Six Sigma...**

- **Lean** (Toyota Production System) adapted... **Eliminate Waste**, Improve Flow, Deliver Value
- **Six Sigma** (Motorola and GE) **adapted...** **Reduce Process Variation and Defects** (from customer perspective)

Work on the **Right Project(s)**, with **Right Team**,
Properly Scoped

+ **Organizational Change Leadership**

+ **Process-Focused Project Management**

= **LSH...A Simpler & More Effective Methodology for Healthcare**

Typical Model for LSS – the Big Bang

- ❑ **Big Idea**
- ❑ **Big Implementation**
 - ❑ Hire consultants
 - ❑ Train everyone
 - ❑ Start lots of projects
- ❑ **Big bet...High Risk**
 - ❑ Leadership has too many projects to provide needed attention
 - ❑ \$\$\$..Everyone Impatient
 - ❑ Hard to Show Results fast enough to justify \$\$
 - ❑ Fire Consultants
- ❑ Not Realistic for CHCs or CAHs



“Training” Model for LSS – “The Dud”

- ❑ **Small Idea**
- ❑ **Small Implementation**
 - Pay to send a few staff to LSS “Belt” training
 - They’ll likely start a project, but usually not very effective
- ❑ **Small Bet, Low Risk, Low Odds of Success**
 - Trainees have no direction or experience
 - Without leadership structures, nothing happens
 - Precious time and money are wasted
 - No accountability for results and good idea fades away...
 - This is a Lean Waste!



SMS Model for LSH – Organic Growth

- ❑ **Big Idea**
- ❑ **Small Implementation**
 - ❑ Start with one closely mentored project, one team
 - ❑ Leadership support to ensure success
 - ❑ Grow LSS capabilities from within based on success of this and subsequent projects
- ❑ **Small Bet...Low Risk**
 - ❑ One Project = Low Risk
 - ❑ You have to do it anyway
 - ❑ \$\$ Under the Radar
 - ❑ Internal buy-in & belief provides "Push" for change



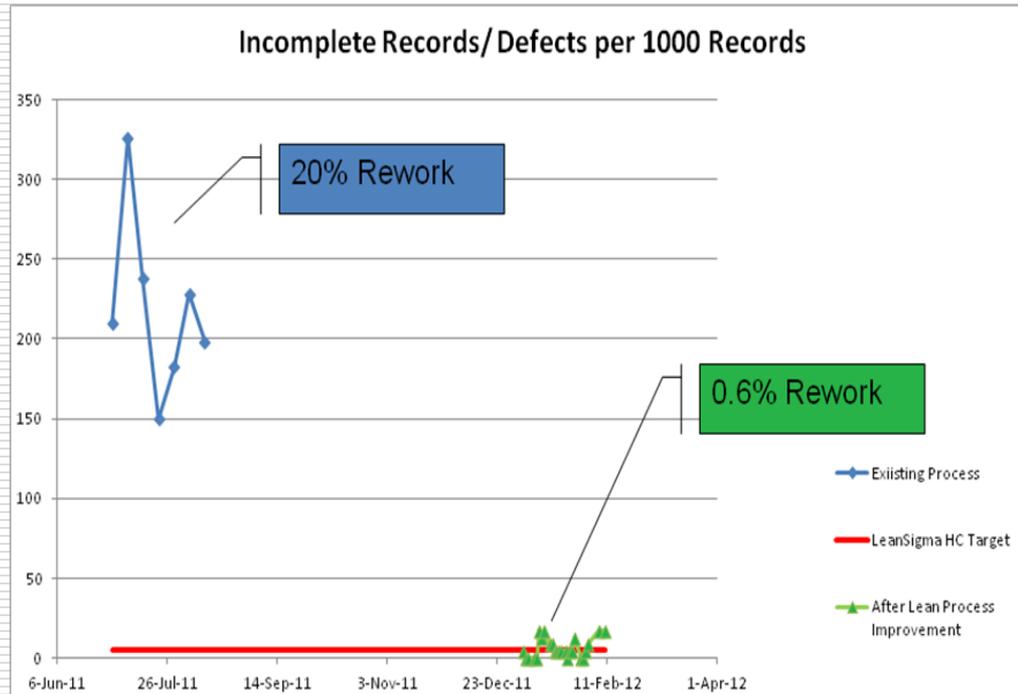
Lean Sigma Healthcare Projects in CAHs

Examples of dramatic results on first projects that launched CAHs on the path to Lean transforming

98.75%+ Reduction in Admissions Errors

- Southern Colorado CAH, 15 beds
- **Prior to Project, 40% of Admissions Contained one or more Errors** that Required Rework
 - Wrong Demographics, Insurance Information, etc
 - Cascaded through downstream processes causing immense amounts of rework
- Following 3 month project
 - **Error Rate Reduced to Fewer Than 5 errors per 1000**
 - Team Members enthusiastic about starting next project and continuing progress
 - **ROI Estimate > 300%**

99.8% Reduction in Errors on Outpatient Service Billing within 3 months

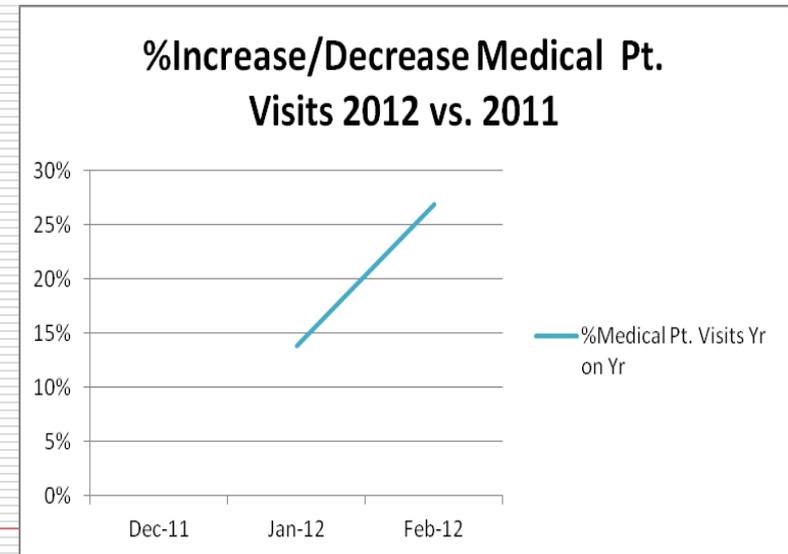
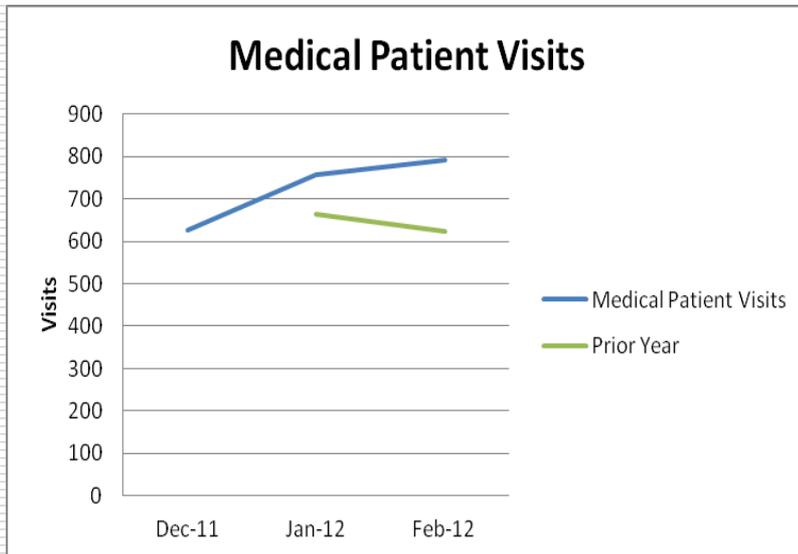


- Substantial Reduction of A/R
- Freed up 2 FTEs who were moved to care coordination
- Estimated ROI on Project > 400%+++

PCMH Level 2 & Revenue Turn-around

FQHC Attained PCMH Level 2 Recognition at the Same Time They...

- **Increased Clinic Revenue over \$265,000/yr**
- **Redesigned Core Process to See More Patients on Fewer Staff!**
 - **33% increase in patients yr-on-yr**
- **Greatly Improved Staff and Patient Satisfaction**
- **Sustained Gains and Transformed Clinic into a Lean Operation**

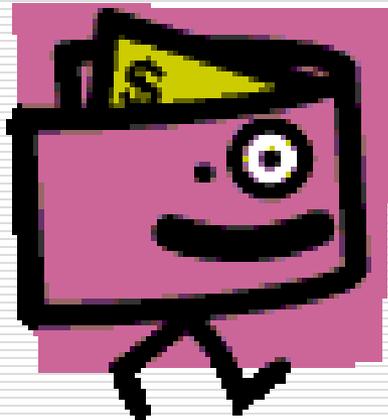


A Process View

- ❑ **All Work is Process that Must Create Value** for the Customer, i.e. something they would pay \$\$ for
- ❑ **What is wrong with HC Processes?**
 - ❑ They were generally never “designed”, they just happened. When they didn’t work, they got “patched”
 - ❑ There is usually not a standard process—people just modify (on a whim)
 - ❑ As a result healthcare processes create a lot of waste
- ❑ Process Outputs that Don’t Meet Customer Expectations are called **Defects**, and are a Result of **Variation – Common and Special Cause**
- ❑ **People do a “Bad Job” because they are working in a “Bad Process”**

A Customer is a Wallet with Legs!

The Paying Customer (with the wallet)



The Wallet Can and Will walk away from your Healthcare Business if Unhappy with your Service. He/She is the ONLY Customer

- Patients
- Referring Providers

“It’s the Process not the People”

- People make mistakes and waste time
 - A small fraction of the people probably should think of a career that isn’t directly related to patient health
- But what we find 95% of the time is that mistakes and wasted time are **built into** the Processes that the Healthcare system has “designed” for them
- So to fix Defects and Wasted Time, don’t fire people.
- Fix the Process!

What is the Result of “Bad” Process?

❑ **Wasted Time...**

❑ In end to end processes (Clinic door to door, ED door to door, surgery appointment to discharge) 75% or more of the time is wasted.

❑ **Time = money** and patient satisfaction

❑ **Defects...**

❑ Healthcare Business processes often run at 50% defect levels

❑ Defects (like insurance information) often have to be fixed. 25% plus of the billing department are often working on fixing Admissions Defects

❑ **Defects = money**, patient safety & satisfaction

❑ **Net result** is 40-70% of what we do is pure waste!

❑ **But, Wasted Time and Defects are Just Symptoms**

❑ **Must Fix Root Causes**

“Diagnose before you Prescribe”

- A Patient arrives in the ED w/SOB
- So the ED Physician Analyzes the situation
 - Takes a patient history
 - Does a physical exam
 - Runs blood tests
 - Takes x-rays
- And Diagnoses Root Cause of the Patient’s SOB as Pneumonia.
 - The patient needs a brief inpatient stay with antibiotics.
 - If we’d sent them home after treating their **symptoms** with oxygen, they might have died

We need to follow the same thoughtware for our Process Improvement Projects

Getting to Root Cause

- ❑ Resist any attempts to patch the symptoms...
- ❑ Make smart Measurements of your Process
- ❑ Develop your “Diagnostic skills” to be like an ED Doc and find the Root Cause of the problem.
 - The Lean Sigma Healthcare Toolset is like x-rays, blood tests, and organized methods for taking a history or performing a physical.
- ❑ Once you find the Root Cause, you can fix it with a Lean Process Change not a “Process Patch”
 - Patching symptoms increases complexity and thus creates more defects and waste

OTIFNE... key to process efficiency

- ❑ All Organizations Maintain what is called the “**Fix-it Factory**”, to fix errors created by upstream process steps
- ❑ **25-50%** of all work is always found here
- ❑ **OTIFNE** is a key principle used to eliminate waste...especially rework
- ❑ Each Step in a Process Must Deliver Work to the next Step **OTIFNE**, or waste, rework is created
 - ❑ **On-Time**
 - ❑ **In-Full**
 - ❑ **No-Errors**
- ❑ But, staff has to know what that means for their work
- ❑ To eliminate the “Fix-it Factory” we need to determine requirements for each step in a work process

LSH Defect Goals

- ❑ Manufacturing aims for 6 Sigma performance, or 3.4 defects per million opportunities...
- ❑ Healthcare isn't Manufacturing. They are way ahead of us!
- ❑ Healthcare should start with a goal of ~4.5 Sigma, or **5 defects per 1000 opportunities**
 - ❑ If we do something **1000 times**, we should expect no more than **5 OTIFNE** errors
 - ❑ Don't design new processes that can't meet that goal.
 - ❑ Design Safety Critical processes so they are "failsafe"
 - ❑ Design all others to meet this "Lean" Goal
 - ❑ Lean Sigma Healthcare will get you there
- ❑ This gives teams a realistic target resulting in meaningful improvement that will be noticed!

The Theory of Constraints

- Systems Thinking with 2 Key Principles:
 - All systems have a **bottleneck**, otherwise they would deliver infinite output.
 - “Pareto Principle”—saving time **anywhere but at a bottleneck** won’t increase output.
- The Most Expensive Resource Must Be the Bottleneck, i.e. the Physician in Clinical Processes
 - The MD Shouldn’t Wait (expensive waiting) for something done by a cheaper resource
 - Resources must be allocated to maximize the flow of work through this expensive process step

The “DNA” of Effective Projects

#1

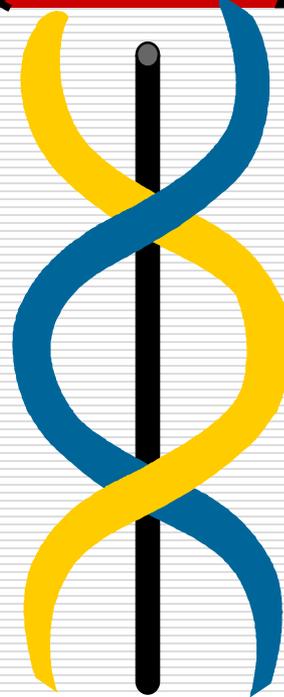
Improvement Methodology (Q)

Business improvement efforts need to have a methodology (e.g. Lean/Six Sigma) that matches their desired outcome and helps them get to the right “answer.”

However, having the right “answer” or solution is only part of the story...

Q

A



#2

Change Leadership (A)

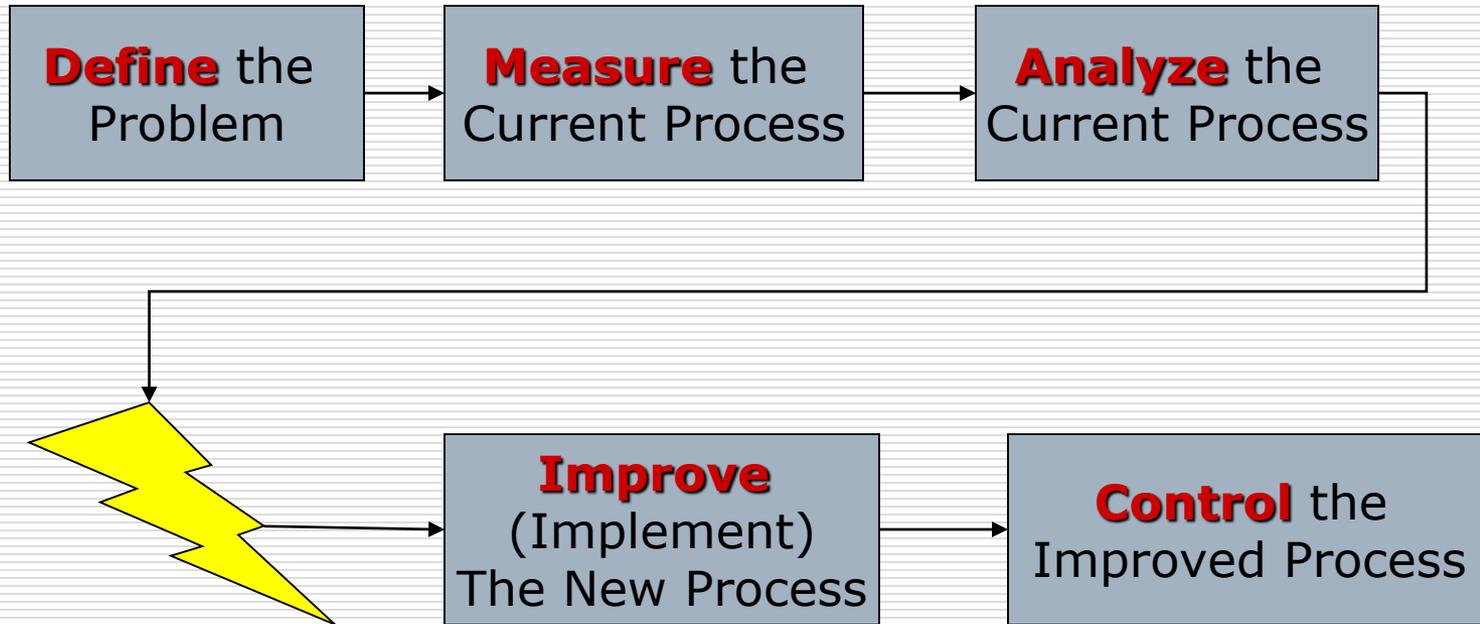
.... A is for Acceptance, as you also need people to accept this solution. Paying attention to the human side of change significantly increases the likelihood that a solution will be utilized to it's maximum potential. And...

#3

Facilitation Skills for Leaders™

...people *must* have sound facilitation skills to utilize the tools and ensure all ideas are heard, there is consensus on the root cause, key stakeholders, etc.

DMAIC Project Management



Then a Miracle
Happens...

Define the New Process

LSH Project Framework and Tools

Define the project so you know what you're doing

Manage it

Measure

Analyze

Improve

Control

Understand it

Fishbone

Process Maps

Pareto Charts

Data & Graphs

Design it

Value Stream

Lean Wastes

Defect prevention

Lead the Change

What Do the Numbers Say About Change?

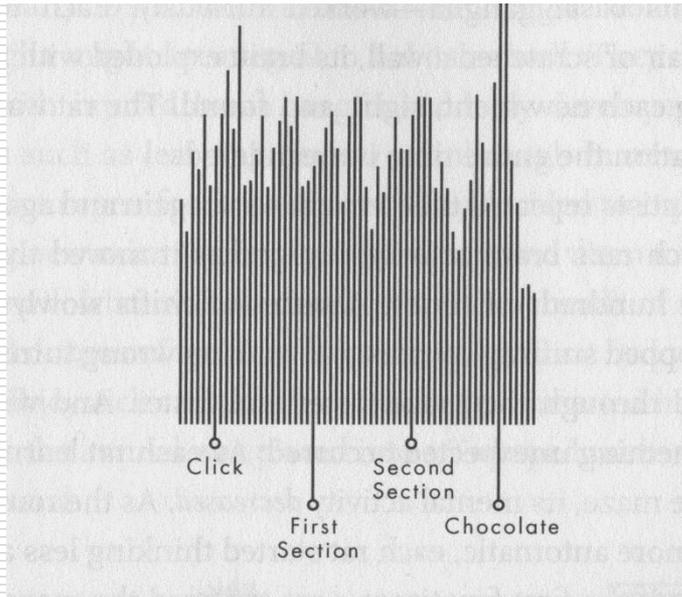
- **With Effective OCM, Change Investment ROI = 143%**
- **Characteristics of Successful OCM**
 - Senior and Middle Managers and Frontline Employees all were involved
 - Reasons for the project were understood and accepted throughout the organization
 - Everyone's Responsibilities were clear
- **With Poor OCM, Change Investment ROI = 65%**
That's a loss of 35% without OCM!
- **Reasons for the Failures**
 - Lack of commitment and follow through by senior executives
 - Defective project management skills among middle managers;
 - Lack of training and confusion among frontline employees

(Source: McKinsey & Co)

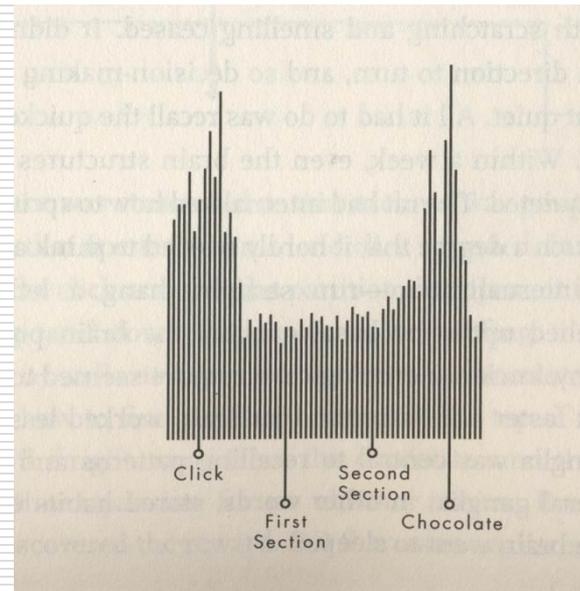
The Power of Habit...

Map of Rat Brain Activity In a Maze

Initial Attempts



Later Attempts



* "The Power of Habit," Duhigg, Charles, 2012

Human Elements of Change

- ❑ People and Organizations operate Primarily on the Basis of **Habits that have Developed Without any Thought!**
- ❑ Overriding these Automatic Behaviors takes a Huge Amount of Energy and **People have Limited Reserves!**
- ❑ **Belief** is Essential for Change to Occur
- ❑ An **Early Win** is Essential to Build the Necessary Belief
- ❑ Improvement on **“Keystone Habits”** can have a hugely disproportionate effect!
- ❑ Working in **Groups** makes change far easier and Believable

People are Generally Not Unwilling to Change, Rather, They are Exhausted by the Extra Effort it takes!

Keys to the Define Phase

- ❑ Probably the most important step in LSS
 - This is where projects succeed grandly or fail!
- ❑ State the Problem
- ❑ Determine your Goals
 - (are they worthwhile before you invest your time!)
- ❑ Make a Plan
- ❑ Engage Senior Leadership in the Project.
- ❑ Key Output is the Project Charter —your guiding document
 - Answers the “Who/What/When/Where/Why?”
 - Working document revised as you get smarter

Importance of a Business Case

- ❑ Why Estimate Benefits Now?
 - Prioritize the opportunity among many
 - Focus and motivate team
 - Increase chances project will be visible and supported by executives
 - Ensure you are not wasting time or money solving what amounts to a non-problem
- ❑ What are Criteria for Benefits?
 - Directly linked to a project or group of projects
 - Incremental
 - Auditable
 - Based on best available data and assumptions
- ❑ Quantifying benefits at this point focuses team and leaders on the importance of completing project

A Few Words About Measurement....

1. At this point, we want to be able to say **roughly** how well (badly) our process performs **now**
2. We want to collect the data with **minimum effort**.
3. We want to classify **Defect Types** into “buckets” and make a **Pareto Chart...work on the most common 1st**
4. Adding some Process Insight with **In-Process** (little “x”) **Metrics** makes our improvement efforts more effective
5. Document our Measurement Plan for data consistency
 - You’ll want to **change the plan as you get smarter**
6. **Averages tell us almost nothing** – Customers don’t experience our average performance. Need range and distribution to tell us anything useful about how our process performs

Analyze....what not to do!

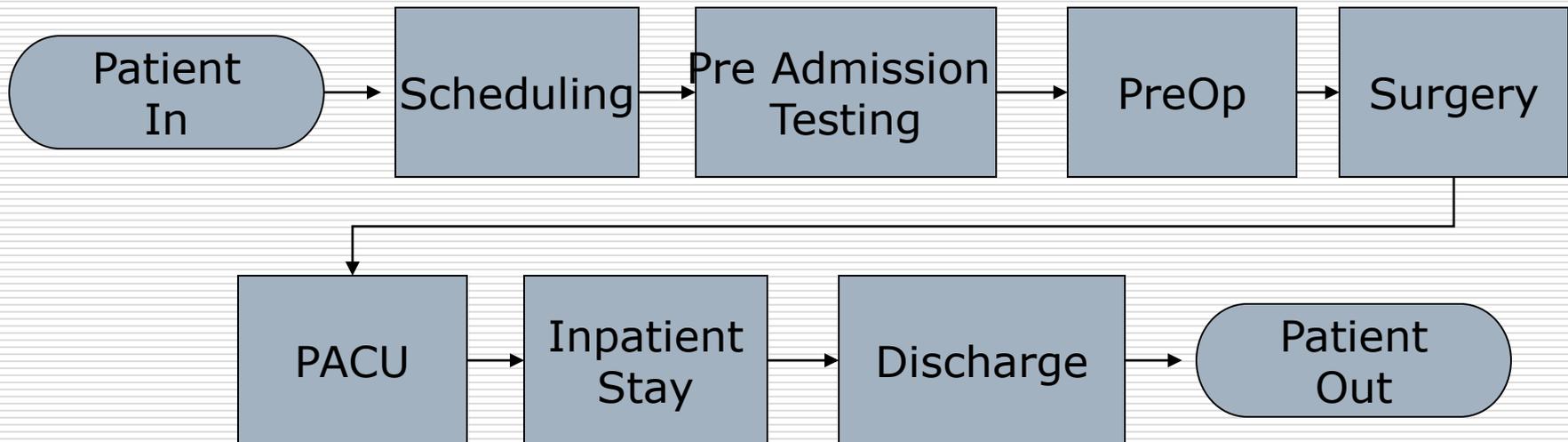


Fixing Defects and Wasted Time

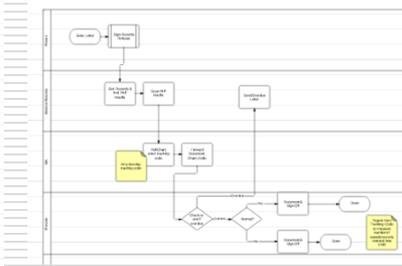
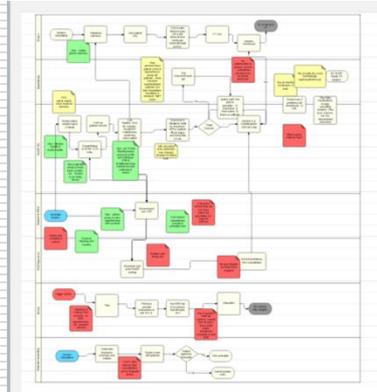
- *"Learn to see" Root Causes on swimlanes*
 - *Defect, inspection, rework loops*
 - *Lean Waste Identification through Time measurements*
 - *Don't need to do*
 - *Wrong order*
 - *Wrong role*
 - *Bad messaging*
- *Finding elusive Root Causes with Fishboning*

Start: A High Level Process Map...

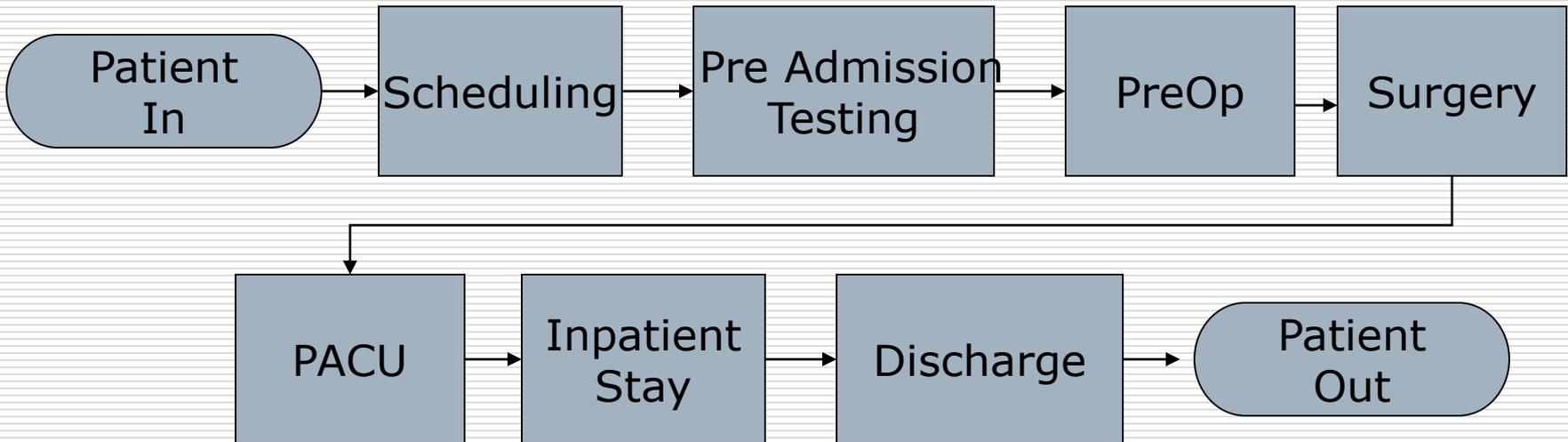
- We do this **first** to define the Process we want to design or improve
 - A must-do for the Project Charter to get consensus
 - But, if we look at this high level surgical flow, it all seems to add value...



Break the Process Down...

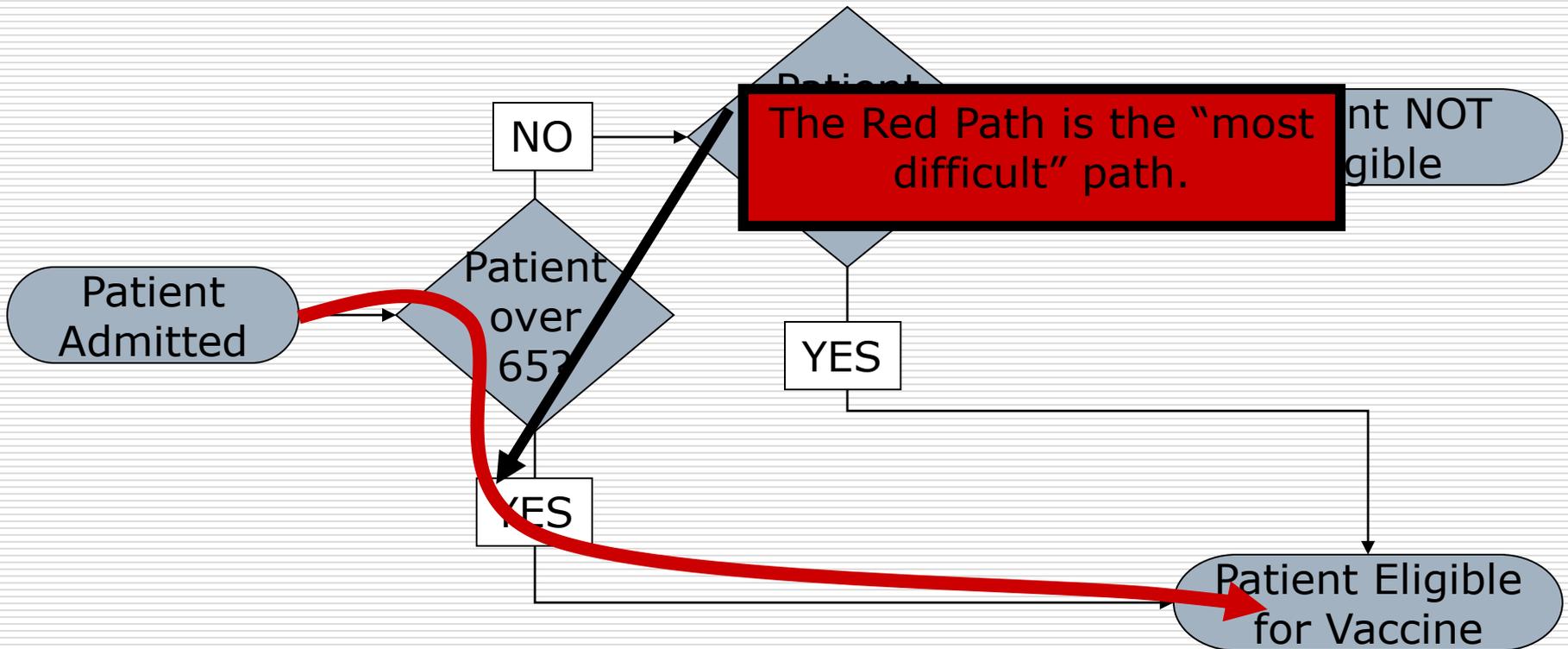


etc....



Keeping it simple

- Teams usually have trouble with Process or Value Stream Maps that have decision points. We recommend you find the “highest volume” or “most likely” or “most difficult” path



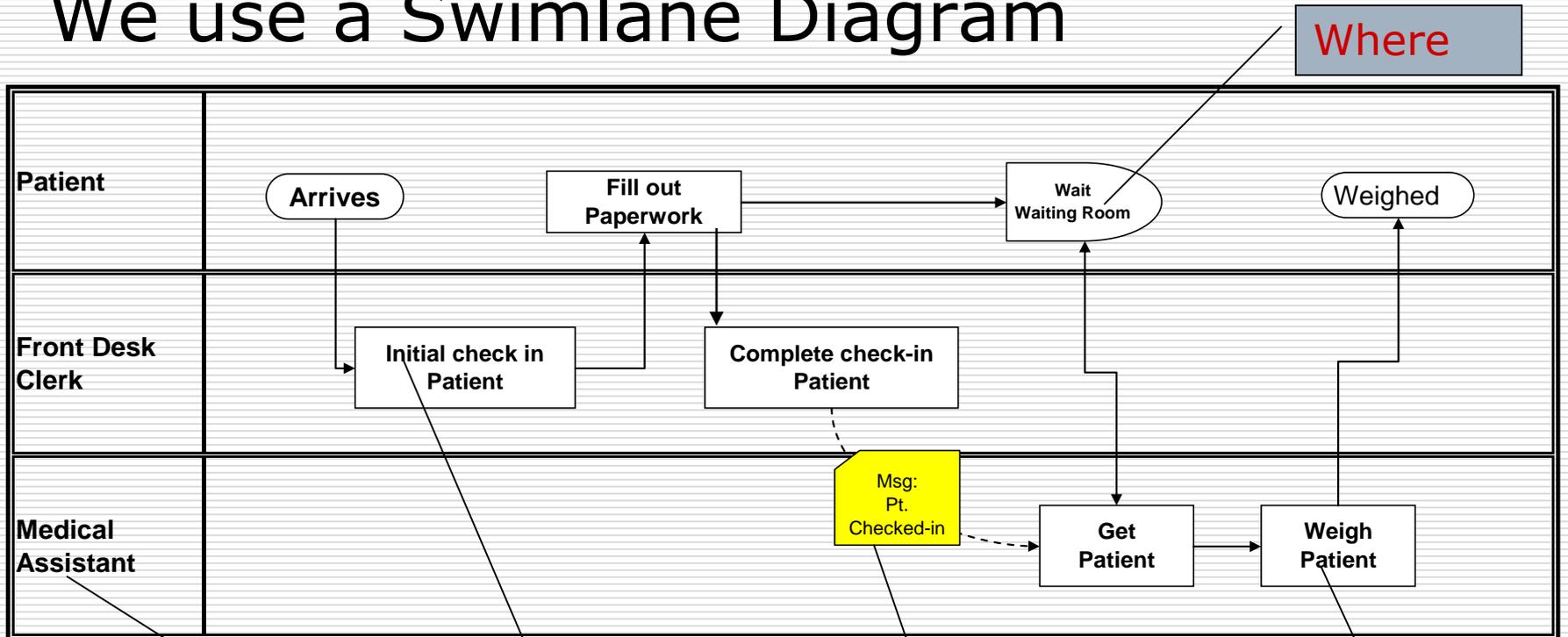
To Improve Anything, We Need a Detailed Process View...

- We want to specify
 - **Who** does **what to whom, where**, and how do they know **when** they should do it...
 - In a **complicated** Process with many roles and Departments, it can be hard to visualize that on a simple flow chart or process map



To See the Details...

We use a Swimlane Diagram



Where

Who = "Lanes"

Does What

Message =
 1) All info to do things OTIFNE
 2) When to start

To Whom

Improve Phase – 2 Key Pieces

1. Get the process so it will work well through PDCA experimentation and gradual roll-out
 2. Get people to actually do it (Change Leadership)
- ❑ Initial process designs always need tweaking after seeing how they work in the real world....this is expected!
 - ❑ Fail Fast, Fail Often to Arrive at Best Solution!

Bad Model on how to Improve

- ❑ The “Big Bang” model is helpful in understanding the Universe



- ❑ It is the worst possible model for the Improve Phase

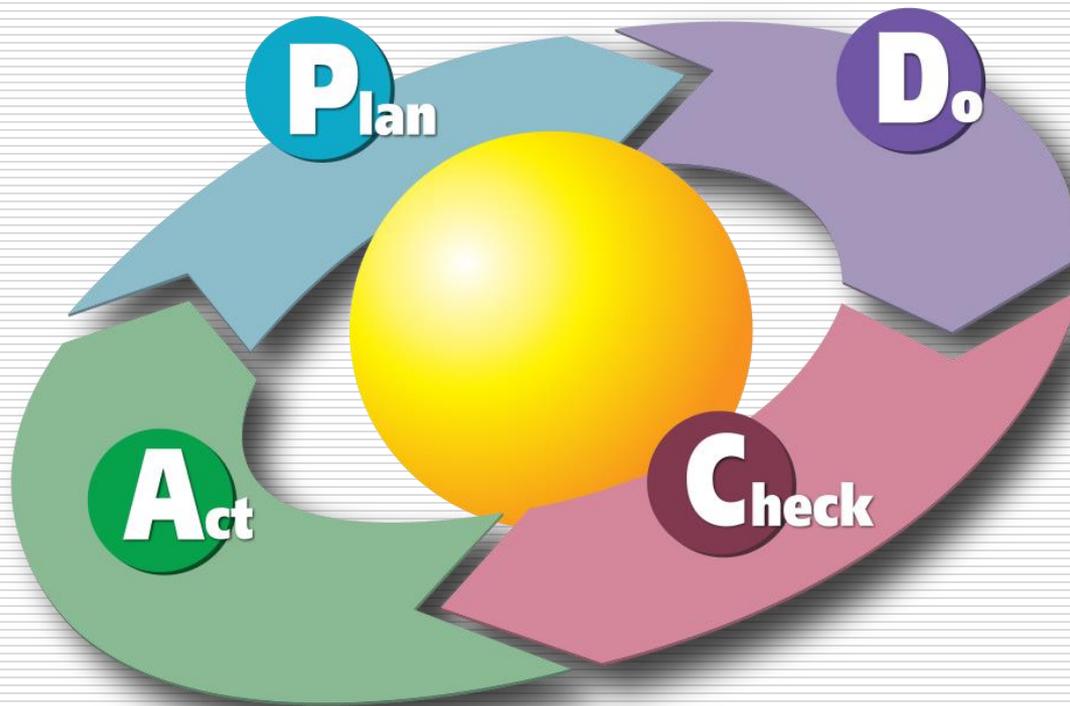
Good model—spread gently

“like ripples on a pond...”



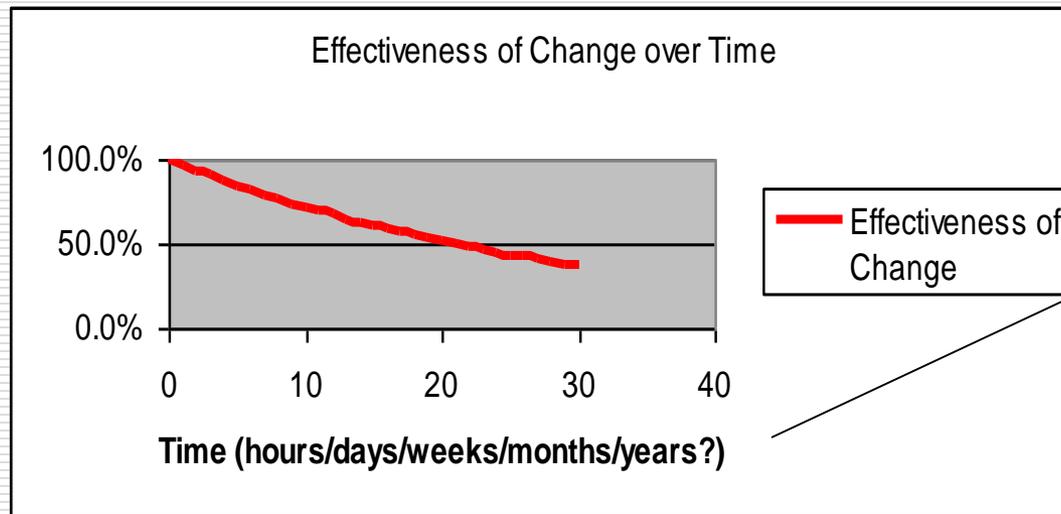
Good model--PDCA

"Fail safe, fast, cheap and learn from it"



Control....If you don't, you Slide Back!

- Left to themselves, Process Improvements (e.g. MU) are somewhat like radioactive elements—they have a “half life”



All too often, this is **Days!**

Unlike radiological decay, we can Control the loss of Effectiveness Through graphing data and acting when we notice decline

The path forward...what we need to do

- **Life is Short...Eat Dessert First**
- **Change our Thinking**
 - *We can't solve problems by using the same kind of thinking we used when we created them.” [Albert Einstein](#)*
- **Set new Goals**
 - <5 defects/1000
 - 50%+ Flow Time Efficiency
- **Use “Vital Few” New Tools Well**
 - Lean Sigma Healthcare to eliminate Defects and Wastes of time and human potential
- **Ask us for Help if You Need It...**

LSH by SMS – Lean That Isn't a Waste!

☐ **Immediate ROI**

- Pay for training with results on first project that **you have to do anyway...this is not an extra project!**

☐ **Results that Last**

- Includes all elements of long-lasting change leadership

☐ **Organic, Right Sized Transformation for Small and Rural**

- Targeted and Affordable Approach
- Effective Change Efforts Begin with Results

☐ **JIT Online Training and Virtual Facilitation**

- Better Retention and More Efficient Use of Team Meeting Time
- Learning in Context increases Ability to Apply to Next Project

☐ **Mentoring**

- Ensures Project Success and Rapidly Builds Internal Capacity

SigmaMed, the Company

- ❑ **Lean Six Sigma Project Mentors with a Focus on CAHs, CHCs and Small Rural Facilities**
 - ❑ Profitable Lean Six Sigma Transformations for CAHs and CHCs
 - ❑ Lean Core Process Redesign for PCMH and ACO Transitions
 - ❑ EMR Deployment and Meaningful Use Process Redesign
- ❑ **Contracted Lean Six Sigma Provider for:**
 - ❑ The National Rural Health Resource Center
 - ❑ Colorado Rural Health Center
 - ❑ Western Healthcare Alliance
 - ❑ Wyoming PCA
 - ❑ APS, JV of the Missouri and Kansas Hospital Associations
- ❑ **Teach CE and CME rated Courses on LSS for:**
 - ❑ CU College of Nursing, HRSA, Colorado AHEC, etc.