

Introduction to Lean Six Sigma in Rural Hospitals



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Today's Agenda



Introduction to Lean Tools

- Value Stream Mapping
- 5S: Worksite Organization
- A3 Problem Solving
- Standard Work and Kaizen



In the World of Lean Tools.....



These four tools can solve 95% of your organization's issues



Introduction to Value Stream Mapping



What is a Value Stream?

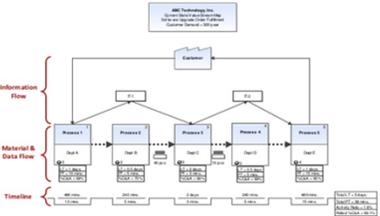
- **Value stream:** A sequence of processes that are connected by a common customer, product, or service request.
- **Value stream map (VSM):** The visual representation of the processes (work units and information required) to meet a customer demand
- **Value-added (VA) time:** "The time element that the customer is willing to pay for" *
- **Non value-added: (NVA)** "The part of the process that the customer will not pay for" *
- **Total cycle time:** The time for completion of a process or group of tasks that have a common element. It is calculated by adding up the individual cycle times for the value stream. This includes VA and NVA elements.

*Source: [The Lean Healthcare Pocket Guide XL](#) (2008) Authors: Debra Hadfield, RN MSN and Shelagh Holmes, RN



Value Stream Mapping (VSM)

Basic Value Stream Map



Purpose:
 "To See the Flow"
 Graphical representation of patient, material and information flow

The Goals of VSM in Healthcare

- Define **value** from your customer's point of view.
- Determine which steps **add value** and which ones add waste.
- Standardize and **improve** Value Added processes.
- Eliminate **waste**.

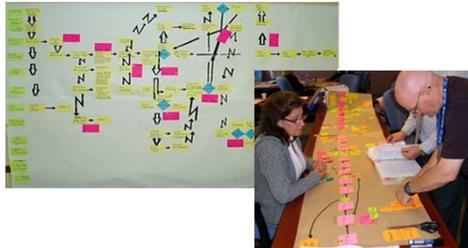
"If you can't describe what you are doing as a process, you don't know what you're doing."
W. Edwards Deming

Why is VSM Helpful?

- Helps **visualize** connections, interactions and flows of patients, materials and information.
- Provides a way for healthcare providers to easily **identify and eliminate** waste.
- Identifies the **constraints** – any resource whose capacity is less than customer demand.
- Helps employees **understand** the organization's entire Value Stream and not just a single function of it.

Current State Map

The way it "really" is today.....



Value Stream Mapping

Normally a Value Stream Mapping team is comprised of three to eight participants led by a Value Stream leader.





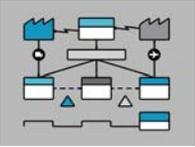
The process of Value Stream Mapping should involve the whole team.

- During the Value Stream Mapping process, team members will use additional Lean tools, methods and techniques.
- Actually walk the process...follow the material and information through the process starting at the beginning.

Getting Started with a VSM

- Define the boundaries
- Define the value
- Identify the tasks and flows of patient and information between them
- Identify resources for each task and flow
- Create the Current State Map
- Visualize the "ideal state" and create a Future State Map
- Develop action plans and tracking





Current State Value Stream Map for Patient Office Visit

Seven Forms of Waste (Muda) add no value in eyes of the patient

- Confirmation (activities that require clarification questions - looking for things)
- Motion/Consequence (Physical movement to complete a task)
- Waiting (Waiting for a procedure, medication to arrive, order from provider)
- Overprocessing (Doing more than is necessary)
- Unnecessary Inventory (excess things, stored supplies that are obsolete)
- Defects (errors, incorrect act or decision or misunderstanding)
- Overproduction (Doing more work than is necessary, redundant paperwork)

Legend

- Adds no materials
- Value Added Time has value in the eyes of the patient (PT would pay for it if given option)
- Non-Value Added Time has no value in the eyes of the patient (PT would not pay for it if given the option)

Non-Value Added Time	45 min.	60%
Value Added Time	30 min.	100%

James Shirley Management Consultants (2019)

Value Stream Mapping

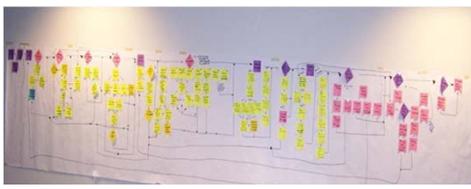
Using the current state map, we identify all the areas where there are significant opportunities for improvement, and mark these on the map.



Common practice is to use "Kaizen bursts", where each burst represents an opportunity for change that can be addressed through a short, focused, 3 to 5 day team-based improvement activity.

Next Step: Future State Map

- Where do we want to be?



Eliminate:

- Non-value added steps, minimize non-value added but necessary
- Maximize Value Added steps

VSM - Keys to Success

- Have the right people in the room
- Empower the team to make immediate changes to the process
- Full participation from all team members
- Attack process, not people
- Agree on measures and how they will be collected
- Review action plan frequently for progress





Introduction to 5S



Workplace Organization

Time lost to searching for things in a cluttered and disorganized workplace is another example of waste.



You can minimize waste of motion through better location and identification of equipment and supplies.



5S is short for: Sort, Set in Order, Shine, Standardize and Sustain

5S represents 5 disciplines for maintaining a visual workplace (visual controls and information systems).

These are foundational to continuous improvement and a strategy based on "lean" (waste removing) concepts.



5S is one of the easiest activities that you can get started in to learn the basic concepts of Lean



5S Workplace Organization

Sort
Sort out what is needed and what is not needed. When in doubt-throw it out!

Straighten
Keep everything that is needed in an orderly fashion so that things can be accessed easily.

Shine
Clean-Eliminate the sources for dirt.

Standardize
Make standards so that any abnormality becomes obvious.

Sustain
Be self-disciplined. Sustain the improvements to prevent backsliding.

Safety
All patients and staff are safe.



5S Defined

Simple but highly effective set of techniques that remove waste from your work environment through:

- Better workplace organization
- Visual communication and management
- Standardization
- General cleanliness





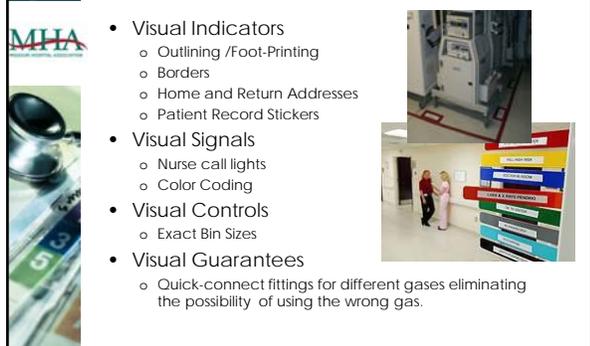
What Can 5S do for Your Organization?

Eliminates the need to search for items

- Better defined flow of materials and information
- Modifies the appearance of the workplace, conveying a more professional image
- Persistent and continuous productivity improvements
- Reduces clutter, waste and the probability of errors
- Reduced turnaround time
- Increases worker's morale and pride
- A safer and healthier!

The Key - Visual Management

- Visual Indicators
 - Outlining /Foot-Printing
 - Borders
 - Home and Return Addresses
 - Patient Record Stickers
- Visual Signals
 - Nurse call lights
 - Color Coding
- Visual Controls
 - Exact Bin Sizes
- Visual Guarantees
 - Quick-connect fittings for different gases eliminating the possibility of using the wrong gas.



Photograph Current Conditions



- Unorganized Workbenches
- Product Flow not Obvious
- Time wasted looking for things
- Hoarding of supplies
- Poor Utilization of Space
- General Clutter
- Supply Shortages and "Hidden" Inventories

Step 1: Sort

"When in Doubt, throw it out"



Separate the needed from the not needed

Removing unnecessary items:
Differentiating between waste, donations, items to move to other locations in the hospital or to the warehouse



NO Cover your...
CYA

Relocation

Donations

Waste

Step 2: Set in Order

BEFORE



AFTER

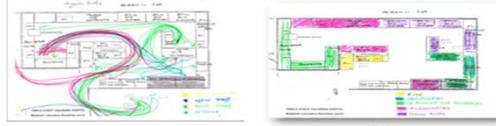


A place for everything & everything in its place!

Step 2 – Set in Order

The “Set-In-Order” phase should result in reduction of wasted time and motion because equipment and supplies are close to the work area and are easy to access.

Reducing unnecessary motion is one of the key objectives.



Before

After

Step 2 - Set in Order



BEFORE **AFTER**



Visual Controls – Use labels and color codes

Step 3: Shine



- Organize materials according to frequency of use
- Implement visual aids to improve communication
- Make items/tasks easier and faster to complete

Create a Place For Every Needed Item
Every Needed Item Has a Specific Place/Reason

Step 4 - Standardize

“Make the Rules”



- A daily discipline to an agreed upon plan that is executed by the work area team members.
- Decide who is responsible for each task

Standardize around the following:
Design
Production Workplace
Materials
Motion
Process Management

Train all staff to work with standards

Step 4: Standardize

Note: Blue taped outlines and labels ensure equipment is quickly found and returned to the same spot every time.

Standard Work requires determining the best method then following that method every time.

Standardize

Note labels and instructions

Visual Controls ensure that anyone can find what they need in a matter of moments.

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Step 5 - Sustain

Note labels and instructions

Pride in Improvement, Accomplishments, and the Desire to do More

MHA

Keeping the gains and building further progress.

- The “control and sustain” thought process becomes the culture.



Introduction to A3 Problem Solving

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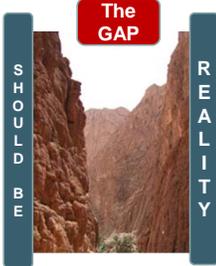
Problem Solving 101

What is a problem?

- Gap between what "Should Be" and "Reality"

Why are problems hard to solve?

- People treat symptoms
- No clear goals
- No consensus





What is the problem?



- Most people are smart enough to solve problems. Most people don't do it right.
- They don't define the problem and jump into conclusions.
- Some analyze it to death without trying out anything.
- Many rely too much on themselves, when multiple people typically have a better chance of solving the problem.

Why problems are not solved in hospitals



- Different departments see the problem differently
- People leap to solutions rather than identify the real issue-symptoms instead of root cause
- Solutions are adopted before their implications are fully considered
- Once the 'fire' has stopped blazing people think that the problem is solved
- The solution implementation isn't properly managed
- Nobody notices that the solution isn't actually working properly
- When the focus shifts elsewhere, things drift back to how they were

A3 Uses PDCA Methodology



- PLAN**
 - Gain understanding (ID Root Cause)
 - Decide what to do (majority of PS time)
- DO**
 - Implement changes
- CHECK**
 - Confirm results
 - Should be able to predict
- ACT**
 - Lock in changes if as planned
 - Continue cycle if not as planned

Background

Toyota and the A3



- A3 in use for decades
- Came to North America in the '80s
- Increasing press in last decade
- Attributes success to A3 thinking
 - Toyota free with info
 - Hard to copy

A3 Report



A3 Thinking and Organization Culture

Why Add Structure to Problem Solving?



Structure promotes...

- Thinking
- Understanding
- Communication
- Consensus

Structure reduces mistakes and waste

Team Approach in Solving Problem



Advantages of team-based problem-solving:

- Those closest to the work know best how to perform and improve their jobs
- Application of a broader range of knowledge from multiple disciplines
- Broader, more creative solutions
- Greater chance of risk-taking
- Teams tend to be more successful in implementing complex plans
- Higher level of ownership of results

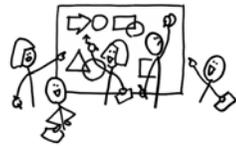
Team Make-Up



Typically problem solving A3 are made up of small groups (approximately 3-5 people)

Having process owners or value-adders is a must

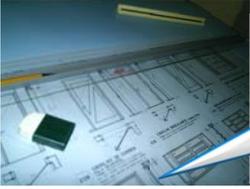
A good cross-functional representation is recommended



This allow the people closest to the problem to make an impact

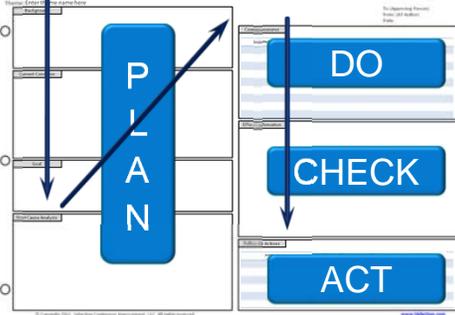
Now, About the A3 Report

If architecture = problem solving...



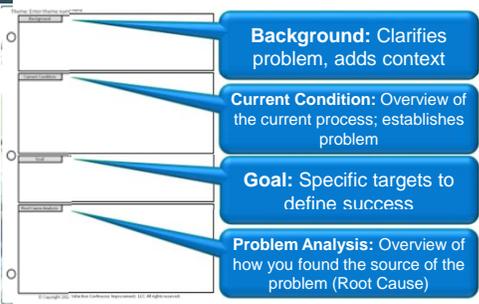
The blueprint would be the A3 report.

What is an A3?



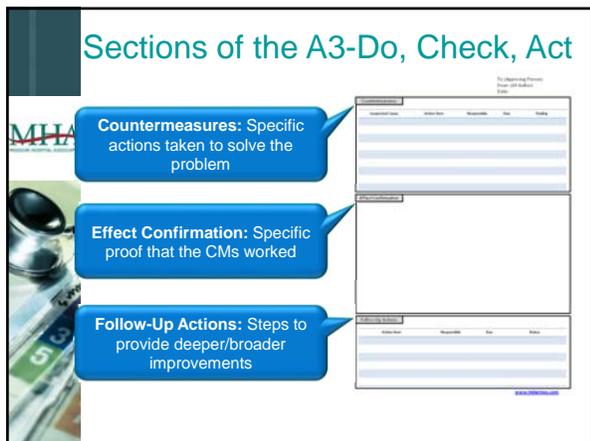
PLAN
DO
CHECK
ACT

Sections of the A3-Plan Side



- Background:** Clarifies problem, adds context
- Current Condition:** Overview of the current process; establishes problem
- Goal:** Specific targets to define success
- Problem Analysis:** Overview of how you found the source of the problem (Root Cause)

Sections of the A3-Do, Check, Act



Countermeasures: Specific actions taken to solve the problem

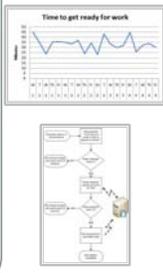
Effect Confirmation: Specific proof that the CMs worked

Follow-Up Actions: Steps to provide deeper/broader improvements

Underlying Structure

What's under the iceberg?

- Continuous improvement culture
- Problem solving skills
- Removal of silos (requires teamwork)
- Thick skins (must get used to feedback)
- Freedom from fear of failure
- Mentoring mentality



About the A3

Format

- No set format
- A3 (11.7" x 16.5") size paper (Ledger in US-11 x 17)
- Some momentum to go to 8 1/2 x 11 sheet
- Handwritten OK, even encouraged (Hybrid HW/PC common)

Content

- Summary of a lot of work
- Should include as much graphical content as possible

Types of A3s

- Problem solving-most common
- Proposal (higher level)
- Status

Build A Culture of Problem Solvers

A3 Thinking is cultural.

A3 Process requires help (collaboration, assignments).

A3 Report works individually.

Example

Theme: Reducing Jeff Hajek's tardiness

Jeff's Tardiness

Tardiness has become a problem, jeopardizing job. In one year, attendance was good - 4 tardies all year. After year, start lag to March, start aging one per week. We want to improve the time spent preparing and driving. Monthly tardies to be ready to work (at 8:00).

Current Conditions

- Start lag to March
- Start aging one per week
- Monthly tardies to be ready to work (at 8:00)

Target Conditions

- Start lag to March
- Start aging one per week
- Monthly tardies to be ready to work (at 8:00)

Goal

- Reduce tardiness from 12/day to 1/day
- Reduce time spent preparing for / traveling to work

Contributing Factors, Q3-2010

Jeff's Tardiness Target (per day)

Tardy by month, 2010

Follow-Up Actions

Action Item	Responsible	Due	Status
1. Open shared drop calendar at office	Jeff Hajek	3/23/10	Schedule of tardies set
2. Improve what participants do prior to departure/arrival	Jeff Hajek	3/23/10	Share coffee house process

Characteristics of A3 Thinking

Objectivity and Openness

Structured thinking

Clear, concise communication

Process AND Results

Simple report built on sophisticated thinking

Systems thinking

Teamwork and Alignment

Continuous learning

Ideas reviewed and exchanged

Example of Tools used with A3

A3	A3
5 Whys	Affinity Diagram
Brainstorming	Run Chart
Flow Chart	Gantt Chart
Pareto Diagram	Value Stream Map
Spaghetti Diagram	Fishbone Diagram
Histogram	Control Charts
PDPC	Tree Diagram

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A Tool for Problem Solving

When everyone in an organization has the confidence in one consistent way to solve problems, it is incredibly powerful.

Standard Work

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Do you ever hear statements like these:



"We haven't followed that process for years"
"We have a bunch of binders on the shelf"
"Our policies don't reflect reality"
"We only update our policies when the surveyors are coming"

Standardized work doesn't always mean a long, detailed document like we have now.

IMPORTANCE OF STANDARD WORK



- Provide a common understanding of the process—the right way to do the work.
- Improve predictability of results.
- Make abnormal vs. normal clear.
- The basis for continuous improvement.

Think of it like this.....



Add eggs to an omelet before cracking them?

Serve multiple meals to your family?

Let too many cooks spoil the soup?

What is Standard Work?

Cooked based on need

Standard Work = Production Recipe

Precisely specified amounts of ingredients

Defined sequence to add ingredients

In Other Words....

Standard Work is the most effective combination of activities that will **minimize** non-value added activities while **providing** high quality care.

Why Use Standard Work?

We use Standard Work for the same reasons we use recipes.

- Consistent Output**
 - Identical results every time
 - Everyone makes it the same
- Easier Planning**
 - Know meal requirements
 - Know time to produce
- Managing Materials**
 - Limits workspace size
 - Know material needs

Helps employees to work safely and productively

Standard Work



Standard Work involves five important tasks:

- Standard task
- Standard sequence
- Standard time
- Standard Work in process
- Standard work documents



The Standard Work Instruction is used to carefully record standard tasks, standard sequences, tact time, and standard work in process, together with any safety and quality checks that need to be embedded in the workflow.



Standardized Work Chart

Acme Corp.		Product: AC-1000	Process: Gear Machining
Standardized Work Combination Table		Part: Gear cutting machine	Op: 1 of 1
Date:	By:	Approved By:	Effective Date:
No.	Major Steps	Time (min)	Time (sec)
1	Pick up raw material	1	10
2	Unload raw part and load BSC 000104	1	10
3	Unload raw part and load BSC 000104	1	10
4	Unload raw part and load BSC 000104	1	10
5	Unload raw part and load BSC 000104	1	10
6	Unload raw part and load BSC 000104	1	10
7	Pack FG in pallet	1	10

Standard Work provides a platform for improvement.

Slide 4-7

From aviation and now in medicine



The "checklist approach" emphasizes a simple one-page document that contain just the "key points"

- Who does what?
- When do you do it?
- How do you do it?



Small But Mighty

- Question 1:
 - Do you think you could improve your performance 1% today verses yesterday?
- Question 2:
 - Where would you be in one year?



“Quick and Easy” Kaizen

1. Find
2. Discuss
3. Implement
4. Document
5. Share

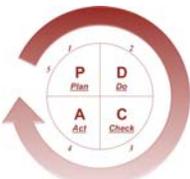



Figure 2.2: The PDCA Cycle

Kaizen Events

- Continuous Improvement Event
 - Dedicated Resources
 - Specific Goals & Deliverables
 - Short Time Frame
- Also known as
 - Rapid Continuous Improvement Event
 - Rapid Fire Lean
 - Kaizen Blitz
 - Lean Event

What is the Goal of an Event?



- **Improve an area of business**
 - Process waste reduction
 - Space reduction
 - Labor efficiency
 - Quality or mistake proofing
 - Output improvement
 - Throughput
- **Manageable**
 - Pick items that can be done right away
 - Not about big projects-new machines, new buildings, etc.
- **Employee Involvement**
 - Culture change
 - Trying out ideas



What Does an Event Look Like?



- **Dedicated Resources**
 - No other responsibilities for event duration
 - 8 hours for 4 days (Mfg.)/8 hours for 2-3 days (BPI)
- **Core Team Members**
 - Leader (IE, BPIL, other)
 - Product Builders, functional reps (2)
 - Supervisor (from the target area)
 - Subject matter expert (IE, ME, QE, other)
 - At-large participant (Operations)
 - At-large participant (Non-operations)

This work is most easily done by front line employees

Lean Tools Exercises

A3
VSM (Two Parts)
5S
Standard Work

For You

Dropbox Link -
<https://www.dropbox.com/sh/bt6lk708c6wggq3e/AAAgcRjvcP7DsGxhVfX5C3GWa?dl=0>

Lean Tools Resources





Thank you!

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