Continuous Quality Improvement Methodologies and Tools for Solving Healthcare Problems

LARC Workbook

version 3

Table of Contents

OVERVIEW

Quality Improvement Primer

An overview of the key Continuous Quality Improvement (CQI) principles and methodology

- Guiding Principles for CQI
- The DMAIC Framework
- The Model for Improvement

Guiding Principles for Continuous Quality Improvement (CQI)

When questions arise in the details of the CQI work, refer back to these guiding principles to provide clarity of direction.

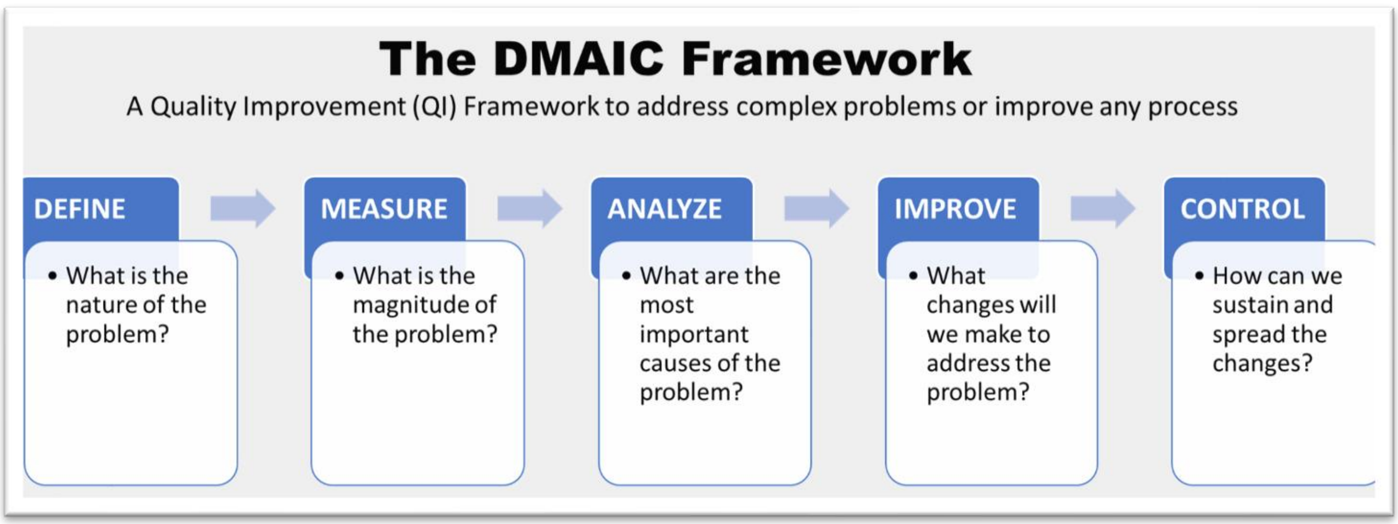
Guiding Principle	Related Tools
Focus on processes to increase the productivity of work	▪ Process Mapping
Focus on the needs of the users	▪ Voice of the Customer (VOC)
Use data to improve services	▪ Metric Use for Improvement
Use teams to improve quality	▪ Team Formation
Improve communication	▪ Stakeholder Analysis ▪ Communication Plan ▪ Action Plan ▪ Meeting Facilitation

THE DMAIC FRAMEWORK

A standardized, evidence-based framework for solving problems or improving any process

Problems are better solved and processes are better improved using a framework that is:

- Consistent, standardized for each complex problem or process requiring improvement
- Scientific evidence-based versus opinion-based
- Data-driven
- Based on exploration and analysis of causative issues
- Result-driven, measurable outcomes
- Focused on sustainable solutions
- Results in taking the project to scale - communication & spread of best practices



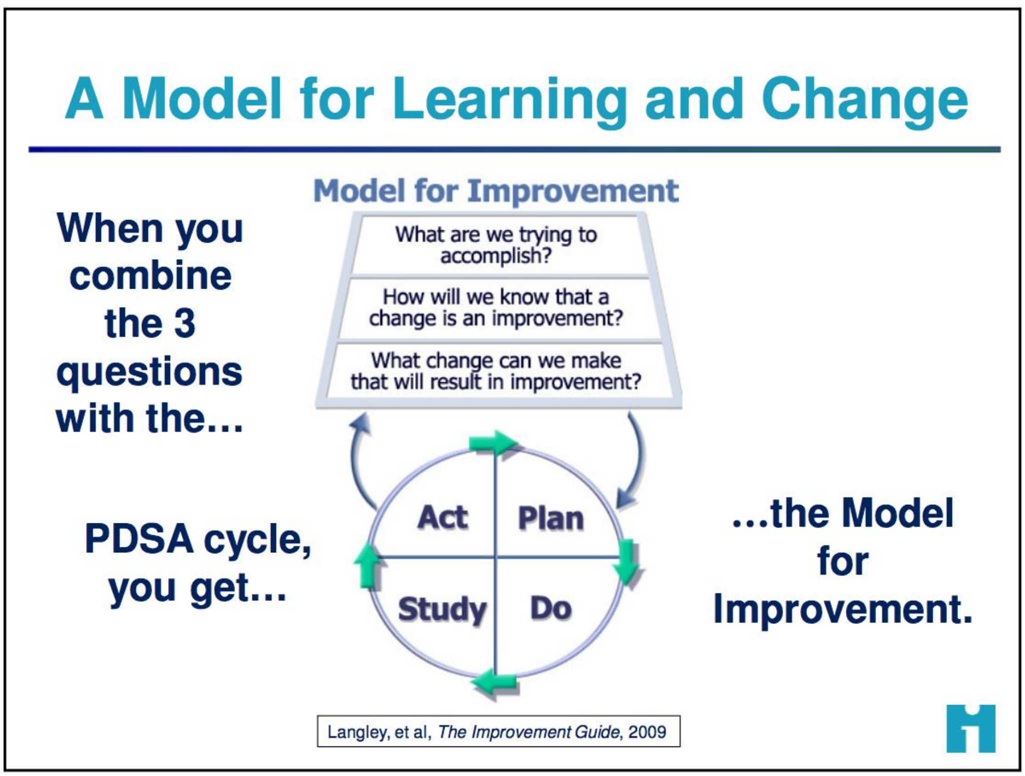
Phase	What Happens?
Define	▪ Create Problem Statement ▪ Define Goals & Aim ▪ Develop Timeline & Scope
Measure	▪ Select Metric ▪ Collect Data
Analyze	▪ Identify Root Cause
Improve	▪ Test and Select Changes
Control	▪ Monitor Process ▪ Communicate & Share Successes

THE MODEL FOR IMPROVEMENT (MFI)

A simple, yet powerful approach, using formal methods to test changes in the steps of a process, to achieve rapid and significant improvements (*IHI, Model for Improvement*).

The Model for Improvement consists of two components, which follow each other sequentially:

Part I	Answers to *Three Fundamental Questions* leading to the project Goals/Aim, Metric and Change
Part II	The *Plan-Do-Study-Act (PDSA) Cycle*, the iterative scientific method for achieving improvement through testing change, i.e., altering a step in a process and evaluating the impact of that alteration



PART I: The Three Fundamental Questions

Three Fundamental Questions:	Deeper/Probing Questions	Desired Output
1. What are you trying to accomplish?	▪ What outcome, in measurable terms, are you hoping to accomplish? ▪ Specify how good, for whom, and by when.	**Goals & Aim Statement** Overarching, "big-picture" goal initially; then hone to an aim statement with a specific, measureable, time-bound outcome
2. How will you know if a change is an improvement?	▪ What would be the most useful, meaningful metric to track? ▪ What metric provides the best measure of the desired goal?	**Metric** A metric to complete the aim statement; Define the numerator and denominator for your metric
3. What change will you make that will result in an improvement?	▪ Which changes will lead to the most significant improvement? ▪ Which changes will promote reaching the aim? Improve the metric?	**Change/Intervention** Based on insights gained during process mapping, begin small tests of change, ultimately describing, selecting and taking the best intervention to scale. Small tests of change allow rapid testing of various solutions before adopting the best intervention to addresses the root or underlying cause

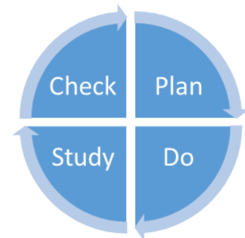
Tips:

- Engage the team and stakeholders in determining the overall goal; i.e., what you want to accomplish.
- Answering question #1 and #2 is an iterative process, with each round gaining additional clarity and specification toward creating an AIM Statement
- When asked, everyone on the team should know the aim statement and elevator speech

PART II: The Plan-Do-Study-Act (PDSA) Cycle - Tests of Change Cycles

PLAN	▪ State the objective ▪ Make predictions ▪ Generate solutions ▪ Develop a data collection plan (who, what, where, when)
DO	▪ Run the test on a small scale ▪ Document problems & observations ▪ Collect and chart the data
STUDY	▪ Analyze the data ▪ Compare data to predictions ▪ Summarize learnings
ACT	▪ Determine what modifications you should make – adapt, adopt, or abandon ▪ Standardize the process ▪ Select the next cycle

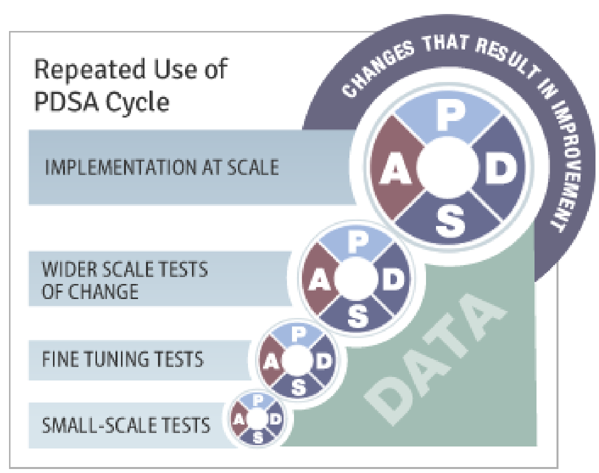
Tips:



- PDSA is not ‘one and done’, it consists of multiple iterative cycles. Think ahead & plan for the multiple cycles of testing over a wide range of conditions, collecting useful data from each test to guide the next one.
- Start small - Focus the initial test on the “one” – one doctor, one nurse, one laboratorian, one shift, one form, one day, etc.
- Start - Don’t wait around. Ask, “what change can we test by next Tuesday?”
- Keeping PDSA cycles updated on the Learning Board ensures that all involved know what changes are being tested

Moving from the small test of change to widespread “big” change using ever widening PDSA Cycles

- ***Begin with small tests of change*** - focus on the “one”. As one PDSA cycle is complete, the next cycle begins.
- ***Continue to fine-tune tests*** – use lessons learned to “tweak” the test, and with each cycle, the involvement expands to involve another person/s, another shift, etc.
- ***Conduct wider scale tests*** - involve another group, another unit, another facility, etc.
- ***Standardize/Implement*** - When the change is proven to work reliably, it then becomes the new way to do work. The change is standardized into a new process and implemented.
- ***Move to the Control phase*** - where the change is monitored for sustainability and results are shared
- ***Implement at scale*** – if the change is applicable, it may be spread to other facilities or organizations



Templates:

- Worksheet for Testing Change
- Quality Improvement Project Outline

Associated Frameworks/Tools:

- DMAIC Framework
- Critical to Quality
- Standard Work
- Learning Board
- Elevator Speech

Worksheet for Testing Change

Aim: ____

Every goal will require multiple smaller tests of change

Describe your first (or next) test of change:	Person responsible	By When	Where

Plan

List the tasks needed to set up this test of change	Person responsible	By When	Where
		.	

Predict what will happen when the test is carried out	Measures to determine if prediction succeeds

Do **Describe what actually happened when you ran the test**

Study **Describe the measured results and how they compared to the predictions**

Act (three options)

- ☐ **Adopt → Standardize**
- ☐ **Adapt → Describe what modifications to the plan will be made for the next cycle**
- ☐ **Abandon**

Quality Improvement Project Outline

Team

ROLE	NAME/S
Champion/Sponsor/s	See Team Formation & Stakeholder Analysis
Team Leader	
QI Expert / Coach	
Data Manager	
Front Line Team Member/s (One from each cadre)	
Other Team Member/s	

Scope of Project

Includes	Excludes
Specify first & last steps of process	

Background/Context/Setting

For example: Country Information – Statistics, MOH efforts
Clinic Information - Size, location, staff – number and cadres, NGOs/partners involved, resources available, previous improvement efforts
Patient Information - Number of patients with HIV, number of tests, community needs,

Model for Improvement

THE THREE QUESTIONS	DEVELOP	YOUR ANSWERS
What are you trying to accomplish?	**AIM**	See Model for Improvement – 3 Fundamental Questions
How will you know if a change is an improvement?	**METRIC**	
What change will you make that will result in an improvement?	**CHANGE**	

Quality Improvement Project Outline

DMAIC

PHASE	KEY COMPONENTS	PROJECT DETAILS
Define	Gap (Problem Statement)	(15 words or less)
	Aim	Increase/Decrease ____________ (metric) from ____ (baseline) to ____ (target) by _______ (date)
Measure	Baseline Measure	Numerator --- Denominator
	Data Source	
	Sample Size:	(need at least 25)
Analyze	Contributing Factor/s (See Analyze Tools):	See Analyze Tools
Improve	Intervention (Change):	See Model for Improvement - PDSA
	Re-measure:	See Run Chart
Control	Project Owner:	Specify who & date of project transfer
	Control Plan:	See Control Plan
	Communication of Project Outcomes:	See Final Report & Storyboard Templates Reported to Whom/Dates
	Lessons Learned:	

Accomplishments:

In one to two sentences, what did your team accomplish?

Project Management Tools

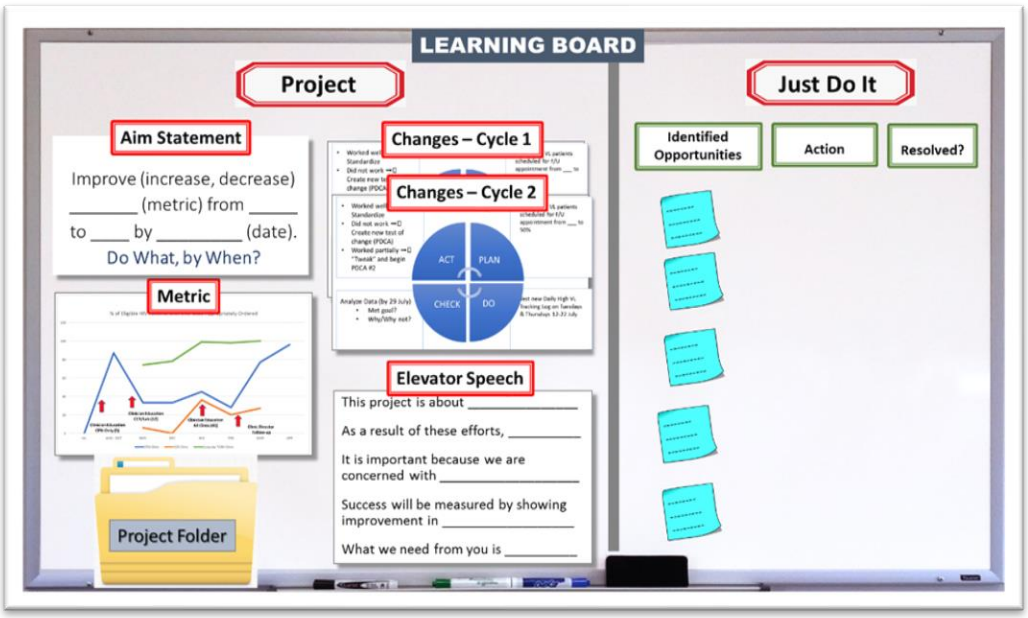
Five practical tools to ensure the project stays on track and is completed successfully

- Learning Board
- Project Folder
- Meeting Facilitation
- Action Plan
- Communication Plan

Project Management Tool

Learning Board

A bulletin board that serve as a key communication tool for the project



WHY

- To make the project visible to all, including aims and metrics over time
- To create understanding and engagement for the project from all the staff
- To encourage staff input – Opportunities for improvement (OFIs), Concerns, Ideas, etc.

WHEN

Throughout the project

HOW TO

1. Obtain a dedicated board & mount on wall
2. Divide the board (with color tapes) and label each section according to the above example
3. Populate the sections of the board with the appropriate material and update throughout the project

   <u>Project Side</u>
   - Project Aim Statement
   - PDSA Cycles – Each test of change outlined
   - Metric – Run Chart
   - Project Folder – Repository for project documents
   - Elevator Speech – Key messages for the project

   <u>Just Do It Side</u>
   - Opportunities for Improvement (OFI) - Place all sticky notes generated from the process mapping activity in the first column
   - Actions - Physically move each sticky note to second column as these items are acted upon.

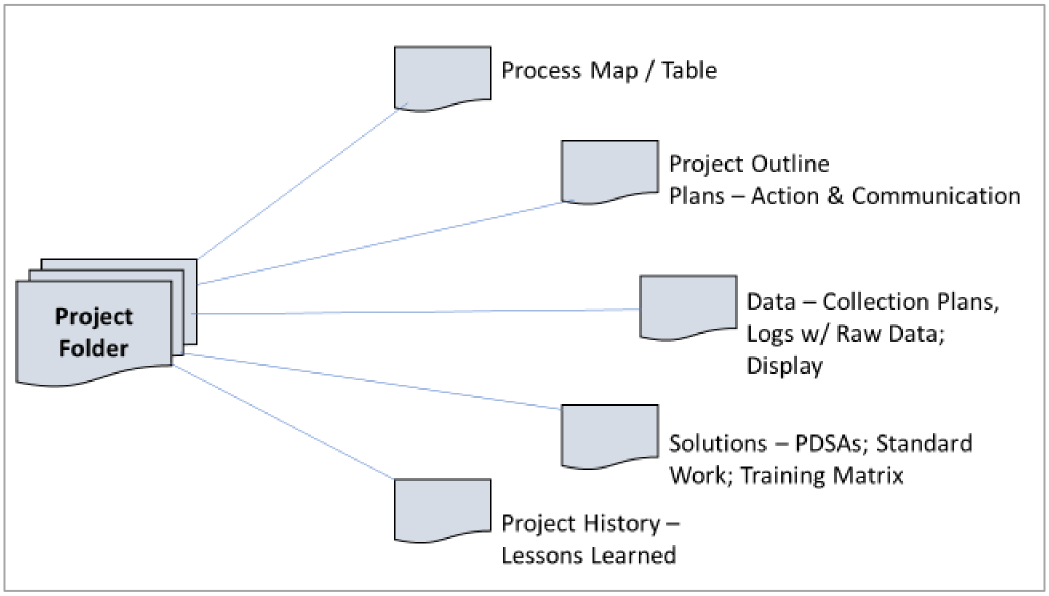
- Resolved - As items are resolved, physically move to third column
- Spreadsheet - After time for all team to see that the items are resolved, transfer to a spreadsheet that catalogues all completed items. If items are not able to be resolved at the current time, let team know that these items are not feasible at this time and why.

4. Encourage team to continue to generate opportunities for Improvement (OFIs) throughout the project and beyond
5. During team meetings
    - Project Side - Review & update data, share PDSA cycles, clearly let the team know what is needed from each team member during the tests of change
    - Just Do It Side - Evaluate any new OFIs and update any actions taken and issues resolved

Project Management Tool

Project Folder

The central repository of project knowledge



WHY

- A repository for the complete project documentation – from outline to final results, including all tests of change - in one central location
- To keep raw data for team review and assistance with analysis and display

WHEN

Throughout the project

HOW TO

1. Obtain a physical folder
2. Mount on learning board
3. Place all required elements in the folder

Project Management Tool

Meeting Facilitation

Meeting facilitation is a process that ensures meetings are conducted efficiently and effectively to achieve project goals

WHY

Meetings, when used appropriately and effectively,

- Keep the team focused on defined project goals, aims and timelines.
- Serve as a key communication tool for team members to inform each other about the project progress, successes, and challenges.
- Drive project implementation regarding planning & follow-up actions to meet project outcomes

WHEN

Meetings should be held regularly throughout the project period. Frequency depends on the project phase and timeframe: More frequently (e.g., weekly or bi-weekly) in the early phases of the project or if the overall project timeframe is shorter

HOW TO

Before the Meeting

- ☐ Determine meeting objectives (problems to be solved; topics to be discussed, brainstormed, or debated; consensus to be reached; team decisions to be made; camaraderie/teamwork to be enforced) by reviewing the following:
  - Project progress in relation to the project aims
  - Ongoing activity – tests of change
  - Data Collection & Display
  - Outstanding Action Items
  - Information needed
  - Challenges & Barriers
  - Next steps, direction of project
  - Items for discussion / Decisions to be made
- ☐ Develop meeting agenda
- ☐ Determine who should attend the meeting:
  - Mandatory for all core team members
  - Invite others as necessary based on specific meeting objectives
- ☐ Create meeting materials (presentations or handouts), if necessary
- ☐ Engage or invite stakeholders as needed
- ☐ Complete logistical details – location, date, time, place, transportation & Invitation
- ☐ Send out the agenda and materials in advance so people come ready to participate
- ☐ Assign a meeting note taker

During the Meeting

- ☐ Manage time effectively, adhering to pre-determined times, to assure meeting goals are achieved
    - Beginning - Spend only a short time orienting participants to meeting goals and materials
    - Middle - Spend most of the meeting time on group discussion
    - End – Complete action plan, confirming clear understanding of next steps by all – who is going to do what by when

After the Meeting

- ☐ Send meeting minutes
- ☐ Communicate to team members who did not attend the meeting
- ☐ Communicate to Stakeholders as directed by Communication Plan
- ☐ Make sure next meeting is on all team member's calendar
- ☐ Follow-up on action items

TIPS

- Create a group calendar
    - Determine all the meeting time/dates at the start of the project. People tend to remember the meetings better if they occur at the same time on the same day at a regular frequency. Set meeting dates while the team is together in person such as at the Smart Start session in the beginning of the project.
    - Make sure all meetings dates are populated on team members' calendars.
- Keep the meeting focused - Invite only the people who need to be at the meeting.
- Keep the meeting short - 60 minutes usually, 90 minutes if agenda warrants.
- Keep the meeting action oriented - Make sure next steps/action items include the three "Ws" - What/Who/When. Clearly articulate these action items at the close of each meeting and in the meeting follow-up communications.

Templates:

Select one or more of the following templates, based on meeting type, objectives, and project needs:

- Meeting Agenda
- Project Update
- Meeting Minutes
- LARC Conference Call Agenda

MEETING AGENDA

(Title)

[Date]

[Time]

[Location]

Meeting called by:

Type of meeting:

Attendees:

Agenda Items

Topic	**Action Item**	**Person Responsible**	**Deadline**

Notes:

Next Meeting:

PROJECT UPDATE

DATE:	**PROJECT STATUS REPORT**	**AIM:**
Accomplishments:	***Metrics Summary***	
Current Priorities	***Top Challenges & Issues***	***Action Items***
Next Meeting	***Important Dates***	

MEETING MINUTES

[Pick the date]	[Meeting Time]	[Meeting Location]
Meeting called by		
Type of meeting		
Facilitator		
Note taker		
Timekeeper		
Attendees		
Agenda Topic]		
[Time allotted]	[Presenter]	
Discussion		
Conclusions		
Action Items	Person Responsible	Deadline
[Agenda Topic]		
[Time allotted]	[Presenter]	
Discussion		
Conclusions		
Action Items	Person Responsible	Deadline
Agenda Topic]		
[Time allotted]	[Presenter]	
Discussion		
Conclusions		
Action Items	Person Responsible	Deadline

LARC CONFERENCE CALL AGENDA

Monthly Project Phone Follow-up

Date:	
Time:	
Site/Country:	
Call Attendees:	
AIM Statement:	
Intervention:	

Agenda	Update	Suggested Follow-up Actions
Current Situation Update		
Changes Implemented in Last Month		
Data Review		
Successes		
Challenges		
Next Steps		

Project Management Tool

Action Plan

A detailed plan outlining actions needed to reach one or more goals

WHY

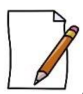
- To assure project stays on track and is ultimately successful
- To clearly communicate what needs to be done, by whom, and by when

WHEN

- Reviewed at beginning and end of each meeting (Agenda)
- Shared as a follow-up to each meeting

HOW TO:

- Discuss and reach group consensus on next steps in terms of What, Who, and When as in the template below



Action Plan Template

Topics/Goals	ACTION ITEMS	By Whom?	By When?

Project Management Tool

Communication Plan

A road map for sharing project information with the team and key stakeholders

WHY

- To assure the team and the stakeholders are kept updated on the project
- To assure clear, timely and desired communication regarding the project

WHEN

- Created during project initiation to inform communication needs
- Implemented and revised as necessary as project progresses

HOW TO

1. Based on inputs from the Stakeholder Analysis, determine which stakeholders require which information and how often they desire or require communication; Populate communication plan accordingly
2. Complete each column in the Template for any item that the team deems necessary to be communicated with team members and stakeholders
3. Update, if needed, after each meeting

Template:

- Communication Plan

Communication Plan

What?	To Whom?	By What Method?	When?	How Often?

CHANGE MANAGEMENT TOOL

Change management is a process with intentionally planned activities to assist stakeholders in understanding, embracing and implementing change

WHY

Change is hard, for all stakeholders. Change will not be accomplished without effort. However, change will occur more smoothly if a proven change management process is used early and sustained throughout the project period.

Change Management Principles

People will change if they:

- Understand why it is important
- Know exactly how it will affect them
- Have their concerns heard and addressed
- Are provided timely and effective communication about the change
- Are given specific, prescriptive guidance about what they need to do differently
- Have their efforts recognized

WHEN

Throughout the life of the project, beginning before the project launches when it is critical to engage all stakeholders

HOW TO

Change Management requires attention to three components, symbolized by the following terms: The rider, the elephant, and the path*. The *rider* refers to a person's rational mind, while the *elephant* is a symbol for a person's emotional mind, and the *path* is the environment in which the change occurs.

How to Change Things When Change is Hard

DIRECT the Rider CLARITY	**MOTIVATE the Elephant** DESIRE	**SHAPE the Path** EASE
Follow the Bright Spots Find what is working well and reproduce	**Find the Feeling** Appeal to the emotions	**Tweak the Environment** Modify the environment to make the change "easy"
Script the Critical Moves Give prescriptive direction needed to accomplish the change	**Shrink the Change** Make change stepwise, with achievable steps	**Build Habits** Help the change to become "automatic"
Point to the Destination Give the "big picture", describe the future state	**Grow Your People** Invest in your people – education, encouragement	**Rally the Herd** Engage the entire team & all stakeholders

*Adapted from the book, Switch: How to Change Things When Change Is Hard, by Chip and Dan Heath

The Change Management Plan will address the DESIRE component of change. The CLARITY and EASE components of Change Management will be addressed in other tools including Process Mapping – Future State, Lean, and Standard Work.

Template:

- Change Management Plan

Related Tools:

- Stakeholder Analysis
- Communication Plan

Resources:

Switch: How to Change Things When Change Is Hard, by Chip and Dan Heath (Book)
Heath Brothers Website - http://heathbrothers.com

- Switch Framework
- Switch for Organizations: The Workbook
- Switch in 16 Minutes (Video)

ADKAR: A Model for Change in Business, Government and Our Community, by Jeffrey M Hiatt (Book)

Change Management Plan

As a reminder, include the problem statement here:

Motivate the Elephant: Find the Feeling = DESIRE

1. The camera crew thought experiment.
   As a team, engage in the camera crew though experiment.
   Imagine that, in making the case for change to your people, you weren't allowed to speak to them directly. Instead, you had a camera crew at your disposal who would film anything you wanted them to film, and you could pick any 10 minutes of footage that they shot. What would be happening in that footage?

2. The pivotal testimonial.
   As a team, discuss the following questions:
   Imagine that you can show your colleagues a video of one person talking, and the video has to persuade them that change is necessary. Who is the person? An employee who's seen problems firsthand? A customer who's sick and tired of the status quo? A competitor who is light-years ahead of you on something?

3. Build your own shrine. Can you make the need for change visual?
   Given the Switch story of the "glove shrine", as a team, brainstorm about how you could make the need for change VISUAL. Is there a "shrine" that you could build?

ACTION PLAN:

Based on the above discussions, **what** will you do when you return to your organization to "Find the Feeling" for your stakeholders, team, and persons involved in the process? To engage people's emotional side to change? By **who**? By **when**?

TEAM FORMATION TOOLS

Team formation is a process of forming a functioning team where people work together to achieve a clear and compelling common goal.

WHY

Issues involving complex, cross-functional processes cannot be successfully and sustainably resolved by one person, manager or leader. Forming a multidisciplinary team allows input, expertise and cooperation from vested stakeholders and persons involved in the process. The shared ownership and commitment of a team with a common purpose, vision, priority and plan results in sustainable solutions.

WHEN

Forming a team is one of the initial steps in the improvement effort, prior to first on-site training session.

HOW TO

1. Identify the process that requires improvement
2. Identify the cadres involved in the process, selecting a representative from each cadre
3. Select all team members (see Team Members: Roles & Responsibilities)
4. Secure resources and permissions for team members to participate in the improvement project
5. Invite team members (see Invitation Letter for Team Members)

TIPS

- Select team members that possess:
  - A high level of energy and commitment
  - Desire to improve and use resources more efficiently
  - Creativity & Innovation
  - Ability to learn quickly
  - Availability and appropriate supervisorial permission to participate in team meetings
- Form a core team that meets consistently, inviting other members as needs arise
- Consider forming two subsets of the team, one central and one at the site, if the site is distant from the headquarters
- The ideal number of members for a core team is 6-8 persons.

Templates:

- Project Outline
- Invitation Letter for Team Members

Team Formation Tool

Team Members: Roles & Responsibilities

Team Member	Role & Responsibility	Potential Persons
Champion/Sponsor	• Accountable for/vested interest in project outcome • Helps identify/remove barriers to progress & obtain necessary resources • Ensures activities are linked to organizational strategy • Ensures appropriate people are involved in project • Periodically reviews team progress	Key Stakeholder Leader/Administrator
Team Leader	• Guides and manages day-to-day team activities • Keeps team focused on goals • Plans, coordinates & chairs meetings and events; Oversees meeting agenda • Oversees team accountabilities & resources • Provides subject matter knowledge & shares workload • Works closely with the champion and coach	Manager of front-line team members Process Owner
QI Expert/Coach	• Consults, advises and provides feedback as needed • Coaches and educates team members • Ensures tools, concepts and techniques applied correctly • Make resource connections as needed • Attends meetings • Communicates expectations • Works closely with the champion and team leader	Person with QI training Person with QI experience or expertise
Data Manager	• Collects & analyzes data • Presents data graphically • Reports data	M & E (Monitoring & Evaluation) Person
Front Line Team Member – Each Cadre	• Have direct first-hand knowledge, i.e., “touch the process” • Committed to team’s purpose / Share in team’s success • Attend the QI training and team meetings • Participate fully in activities – Volunteer/complete action items	One member of each cadre who touches the process, i.e., Multidisciplinary
Additional Team Members/Roles - Assign as Needed based on Project needs		
Content/Subject Matter Expert	• Expert on technical matters or evidence-based practice/s • Contributes as needed; Will not necessarily attend every meeting	Expert in needed discipline
Project Manager	• Keeps project on track for completion • Organizes project/activities • Manages/maintains project management folder/s • Assists team leader in coordinating events/meetings	Project Manager Partner/NGO
Outside Eyes	• To see & think about the process/solutions without bias or “knowledge” of the process	Person unfamiliar with the process

Invitation Letter for Team Members (Template)

Greetings,

What: Welcome to the Viral Load Scale-up Quality Improvement Collaborative. A quality improvement collaborative is an important activity undertaken to improve patient care as well as our work environments and processes. This project will address and improve one phase of the viral load scale-up process for (Insert location/s).

Who: This communication is to inform you that you have been chosen by leadership to be a team member on this project. As a member of this approved multidisciplinary team, you will not only learn about multiple quality improvement methodologies, you will actively implement meaningful process improvements.

Team Members: Ideally will possess a high level of individual commitment, a desire to improve and use resources more efficiently, creativity, innovation and an ability to learn quickly.

Active team members are: List team members

When: The collaborative project will extend over a 6-month period. Attendance at four learning sessions, each occurring over 2-3 days, is expected. Sessions are tentatively set for April, June and August 2018.

In addition, a Pre-Training Orientation has been scheduled for (date, time, and location of pre-orientation). All active team members should attend our first introductory meeting. Schedules permitting, our (Sponsor/Champion) has/have also been invited to attend. The purpose of this meeting is to provide introductions, review/discuss the charter, discuss future meeting dates, and answer questions about the Quality Improvement Collaborative. Please take a moment to review the attached documents prior to the pre-training orientation meeting on (date of pre-orientation/training).

Attachments:

- Agenda
- Charter: outlines project description

Thank you: Thank you for your commitment and support. By focusing on quality and safety through process improvement, we can improve the lives of our patients and our work environments.

With appreciation,

Team lead name

DEFINE

M

A

I

C

Stakeholder Analysis

A process for identifying and assessing the importance of key people (individuals and groups) that may significantly influence the success of your project

WHY

Stakeholders are the people involved in or affected by project activities. Stakeholders may include project sponsor/champion, support staff, customers served by the process, people who work in the process, and suppliers to the process.

- It is critical that stakeholders are informed, engaged, apprised of progress (or lack thereof) and given opportunities to provide input into solutions.
- Without stakeholder involvement, support and active intervention, the project will not succeed.
- The stakeholder analysis is the primary input for the communication and change management strategies.

WHEN

The initial stakeholder analysis begins well before the project launch when it is most critical to identify and engage all stakeholders. Ongoing stakeholder engagement will continue throughout the life of the project.

HOW TO

Complete the Stakeholder Analysis Table Template:

Template Columns	How to
Name	As a team, brainstorm & Identify those who: ▪ Have authority over or are donors of the process; i.e. Clinic in-charge (Administrators), Partners, MOH, CDC ▪ Involved in, or touch, the process; i.e. Clinic staff - nurses, doctors, Couriers, laboratorians, Expert clients, etc. ▪ Customers of the process; i.e. patients (clients), laboratory, community, partners ▪ Suppliers of the process; i.e. Other clinics, partners, laboratory, community
Level of support	Identify current status of each stakeholder; Use to define an approach strategy
Key Interests/Issues	Make sure to understand the interests and issues of the stakeholders who are part of the process - How can they contribute to the solution?
Assessment of Impact	Based on the stakeholder's level of authority over the process and their involvement, how will he/she/they affect the project
Action Items/ Strategies to Influence	Who, What & When is needed to assure that actions are completed

Communication	▪ How: Personal visits and/or phone conversations preferred over email ▪ What: Early on, share overview of the project, seek support & input and answer questions; Ongoing, apprise of the team's challenges, support needed, progress & solutions ▪ Output: Based on level of involvement and expressed needs, determine what, when and how often communication will occur with each of the stakeholders → Communication Plan

ALTERNATIVELY – Complete the Stakeholder Grid Template:

Steps / Axis	**How To**
Identify Stakeholders / Name	As above
Power/Influence	Classify Stakeholder into low or high on this axis
Interest/Involvement in Process	Classify Stakeholder into low or high on this axis; Place Stakeholder into appropriate quadrant within the grid
Based on Quadrant, Identify method of dealing with Stakeholder	Complete Communication Plan and Action Plan, based on the quadrant – proceeding with either monitoring, satisfying, engaging or informing

TIPS

- Know your stakeholders, their power/influence over and interest/ involvement in the process and their desires
- Communicate with stakeholders, based on their desires and the teams' needs
- Involve stakeholders in solutions

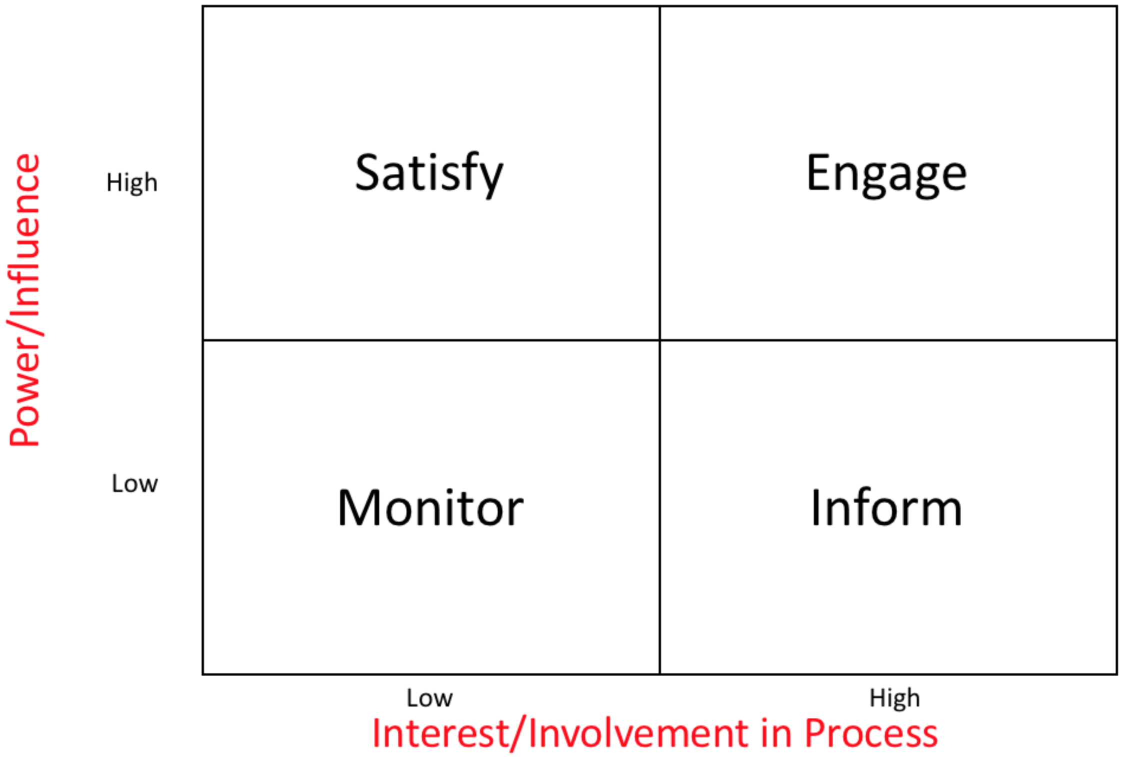
Template:

- Stakeholder Analysis Table
- Stakeholder Analysis Grid (Alternative Tool)

Stakeholder Analysis

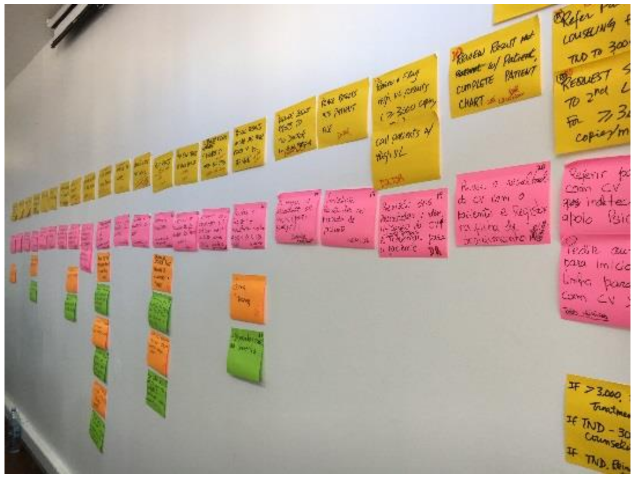
Name	Level of Support					Key Interests / Issues	Assessment of Impact (H, M or L)	Action Items / Strategy to Influence	Key Communication Points
	R	SK	N	SP	E				
	R = Resistant SK = Skeptical N = Neutral SP = Supportive E = Enthusiastic						H = High M = Moderate L = Low		

Stakeholder Analysis Grid



Process Mapping

A visual documentation (picture) of the sequence of steps in any process



WHY

To improve a process, you must first see and understand the process.

- See - The process map is visual. Visual information is a more efficient way of communication.
- Understand
  - Help everyone to see the entire process and their place in the process
  - Clearly define the current process or variation in the process; Understand what is actually happening
  - Identify wasteful steps and inefficiencies
- Improve
  - Improving the process by eliminating the wasteful steps and/or reordering the steps for maximum efficiency
  - A visual picture of the future (improved) state PM can be created & communicated
  - The improved PM can be used as a tool to orient new staff & train according to new standard work

WHEN

Throughout the DMAIC process:

- Define - to capture current state
- Measure & ANALYZE - to understand the waste, bottlenecks & inefficiencies identified
- Improve & Control - to capture & communicate the future (Improved) state

HOW TO

1. *Prepare for Process Mapping*

(Also see "QI Collaborative Pre-Workshop Planning and Preparation" Tool)

☐ Establish & engage the key stakeholders
☐ Define the process to be studied
☐ Identify all the cadres who will be involved in (i.e. touch) the process. Invite one representative from each cadre to participate in the process mapping sessions.
☐ Prepare Materials – Flip Chart paper, markers, self-stick notes
☐ Complete logistical details – location, date, time, place, transportation & Invitation
☐ Assign a scribe who will transcribe the paper-based process map into an electronic format

2. *Draft Process Map & Table – Current State (in a Conference Room)*

☐ Develop a first draft of the process map using self-stick notes/flipchart paper
  - Begin by obtaining the high-level steps in the process
  - Allow all cadres an opportunity to share their perspectives on the process

☐ Complete draft process table by identifying:
  - What happens at each step
  - Who performs the activities
  - Time for each step (approximate range)
  - Documents/Forms for each step
  - Identify "Opportunities for Improvement" (OFIs)

3. *Go & See*

☐ Observe the care process to validate the process map
  - Walk to observe each step of the process
  - Speak to the person who performs the process step
  - Ask the person:
    - ✓ "What happens here?"
    - ✓ "Who is responsible?"
    - ✓ "Approximately, how long does it take?"
    - ✓ "What forms are needed?"
  - Record your findings in the Process Table
  - Look/Listen & Record all OFIs
  - Move to the next step in the process

☐ Each team member will record the process steps (process table) and any OFIs (self-stick notes)

4. *Update Process Map & Table – Current State (in a Conference Room)*

☐ Using the collected information, validate or update the draft process map (flip chart & self-stick notes) as needed
☐ Using the collected information, validate or update as needed the draft process table

☐ Create an electronic version of the Process Map/Table – Current State (e.g., PowerPoint or Visio)
☐ Circulate to team members to assure accuracy and a clear representation of the current process

5. Place Opportunities for Improvement (OFIs) Self-Stick Notes on a Flip Chart (in a Conference Room)

☐ Collect OFIs on Flip Chart in preparation for next steps: Brainstorming → Affinity Diagram → Prioritization of OFIs using the Impact/Effort Grid

6. The Improved Process – The Future State Map

☐ After the new process is established, prepare & distribute the Process Map - Future State to highlight the outcomes of the improvement process to the team & stakeholders
☐ Post the Future State Map on Learning Board to show/train staff in the new process, i.e., the new way to work
☐

TIPS

- Capturing the Current State – Use pose-it notes on flipchart paper to facilitate discussion and modification until an accurate "picture" of the current process is captured. If you need to send the process map to someone, take a picture of the flipchart and email it.
- Capturing the Future State – At the end of the project, document the improved process with a future state map., a required deliverable for the project.

Templates:

- Process Table

Associated Tools:

- QI Collaborative Pre-Workshop Planning and Preparation
- Brainstorming / Affinity Diagram
- Impact Effort Grid
- Standard Work

Resources:
http://www.ihi.org/resources/Pages/Tools/Quality-Improvement-Essentials-Toolkit.aspx

Process Table

Process step	What happens?	Who is responsible?	Duration	Forms/logs	Opportunities for improvement

Project Outline

A planning document that specifies the key components of the project, including: roles & responsibilities, project scope, DMAIC outline and monitoring criteria for sustainability

WHY

- Proper planning is the first step towards project success. If you fail to plan, you plan to fail.
- A good project outline helps keep the project focused on defined goal/aim and timelines.

WHEN

- The project outline is created in the initiation and planning phases of the project.
- It is then referred to throughout the project, as it is a living document that is routinely referenced and updated.

HOW TO

Complete QI Project Outline
Instructions embedded into document template (gray print)

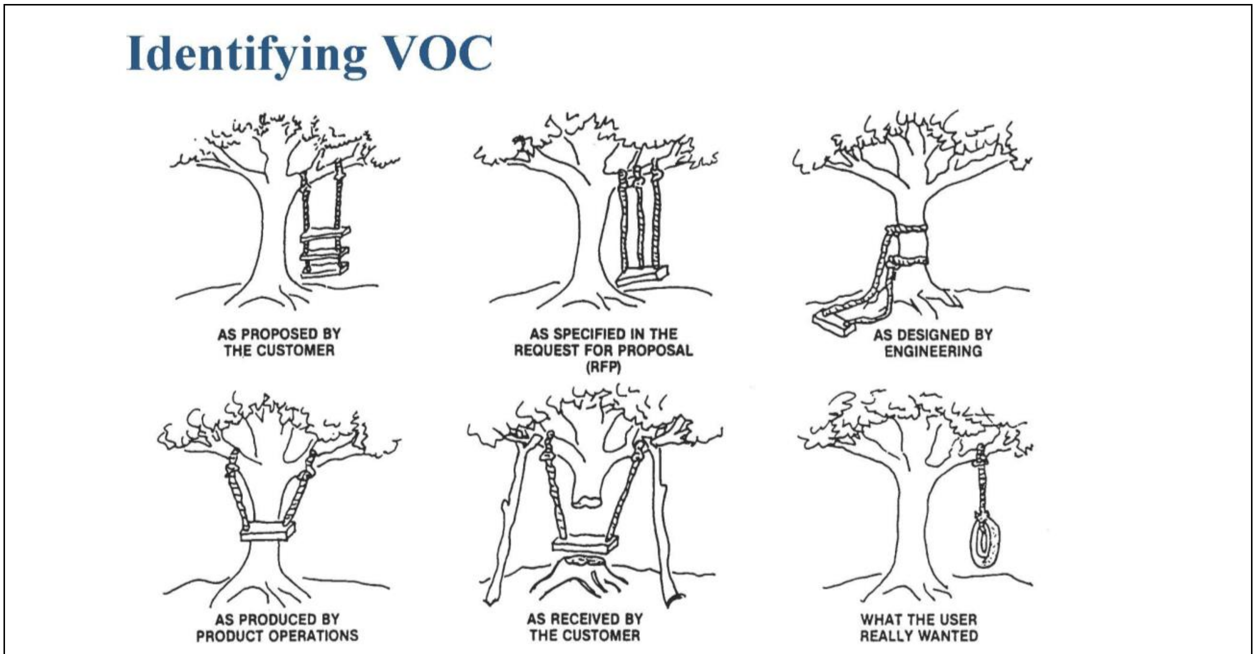
Template:
Quality Improvement Project Outline (See Overview) → Quality Improvement Primer → The Model for Improvement / Quality Improvement Project Outline)

Voice of the Customer (VOC)

An in-depth process, using both qualitative and quantitative research, to *systematically* listen to the customers, use the information to take action, and monitor performance over time

WHY

Quality must be defined for each product or service based on what the customer wants. Understanding their wants, needs and aversions is crucial as they are the key inputs for the new process or product, and will lead to improved customer experience, reduction in re-work and service recovery, and increased staff engagement.



Source: www.projectcartoon.com

WHEN

Voice of the Customer (VOC) studies are conducted at the start of any new product, process, or service design initiative (Define/Measure) to clarify and prioritize customer needs. VOC may also be used in the Improve Phase to test changes and seek feedback on potential solutions.

HOW TO

1.	Listen to Customers - Gather information about the customers and their experience with the current process/product or alternatives. ▪ Select the most appropriate tool. Consider: o Focus Groups o Interviews (face-to-face or phone) o Observation at point of use o Survey/Questionnaire (paper-based or electronic)

	Tips: ▪ Once a VOC tool is selected and designed, conduct a small pilot before creating the final tool o Assure that the questions are clear and unambiguous o Assure the tool is collecting the needed information ▪ Always match/design the VOC questions to measure the effectiveness of the interventions
2.	Analyze/prioritize the Information – Organize the collected information, i.e., the needs statements, satisfaction, concerns or opinions, then allow the customers to prioritize these issues
3.	Take Action - Design tests of change to address customer issues / concerns (See Model For Improvement – PDSA)
4.	Monitor over Time – Assess the effectiveness of the tests of change by repeating the query (using the same tool) after the changes (interventions)

Template:

- Voice of Customer Survey

Voice of Customer Survey

On a scale of 1 to 5, with 1 being least satisfied and 5 being most satisfied, how satisfied are you with the following aspects of the current ______ process (Mark an X in the number column that indicates your response):					
ASPECTS	**1**	**2**	**3**	**4**	**5**
Aspect 1					
Aspect 2					
Aspect 3					
Aspect 4					
Aspect 5					
Aspect 6					
Aspect 7					

For any 1 or 5 response, please share specific comments or examples to support your scoring:

____

____

____

What is working well:

____

____

____

What needs Improving:

____

____

____

Please share any ideas for improvement or additional comments:

____

____

____

Critical to Quality (CTQ)

A tool to translate unspecified, vague or undefined goals into specific, measurable, actionable metrics

WHY

Quality must be defined for each product or service based on what the customer wants through measurable, critical-to-quality characteristics. Project needs must be refined from general to specific; from hard-to-measure to easier-to-measure; and from personal perspective to measurable proof.

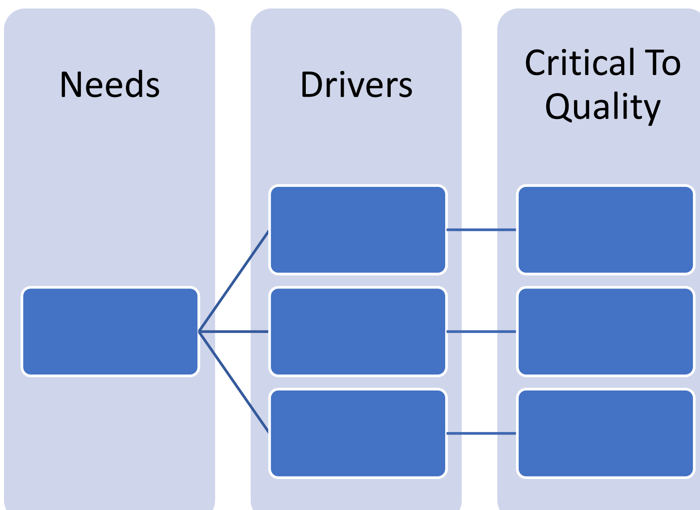
WHEN

Initial phases (Define/Measure) of process improvement

HOW TO

Move across the CTQ Tree from left to right, asking questions with increasing specificity:

Critical to Quality (CTQ) Tree



- ***Needs*** - Begin with the high-level, broad goals, the desired outcomes, what you want to accomplish (e.g., quality, safety, health, efficiency)
- ***Drivers*** – Ask, what are the drivers (components responsible for creating or delivering that high-level goal)? (e.g., accurate, reliable, timely lab results)
- ***Critical To Quality*** - Ask how the drivers can be placed in quantifiable, measurable terms (e.g., percentage of all viral load laboratory results that are completed within the 7-day target turnaround time)

Template:

- Critical to Quality Tree

Elevator Speech

A succinct project summary suitable to present during a short encounter (such as an elevator ride) that encompasses the core messages about the project

WHY

- For the project team, the elevator speech:
    - Defines the “Why” of the project
    - Builds consensus around the core vision and outcomes of the project
    - Engages the entire team
    - Clarifies the “ask” - what support/assistance is needed and from whom
- For the stakeholders, the elevator speech:
    - Communicates and shares the core information about the project
    - Clarifies what specific support or action items are being requested

WHEN

Created at the initial on-site session, after the aim statement is crafted

HOW TO

Complete the Elevator Speech template as a team, gaining consensus around the key elements of the project

Template:

Elevator Speech

Elevator Speech Template

This project is about ______________________________   ______________________________
As a result of these efforts, ______________________________   ______________________________
It’s important because we are concerned about ______________________________   ______________________________
Success will be measured by showing improvement in ______________________________   ______________________________
What we need from you (specify intended recipient ______________________)   ______________________________   ______________________________

CHART REVIEW

Chart review is an audit process to assess the actual care delivered.

WHY

Chart review (or audit) provides an opportunity to assess, at a granular level, how the current processes are reflected in the actual care given to patients. Chart reviews are critical to the improvement process – to collect data, analyze data, and to make, assess, and sustain improvement efforts related to the patient care provided.

WHEN

Throughout the DMAIC process:

- DEFINE/MEASURE - Initially, at the time of process mapping or before, to assess the baseline state of patient care
- ANALYZE – to identify the defects in patient care
- IMPROVE – to periodically track the results of the tests of change (i.e., improvements) and make necessary adjustments to meet the aim
- CONTROL – Ongoing auditing to assure sustenance of the improvements in patient care

HOW TO

1. Select the patient care process and the patient population that will be evaluated
2. Select the charts for review
    - For a research project, statistical methods will be required for chart selection
    - For a proper baseline data, select at least 25 charts for review
    - For improvement purposes, reviewing 5 charts prior to or during the process mapping will provide initial information to guide improvement efforts and help process mapping participants gain insights into how the process is working. This is part of the "ah-ha" moment in process mapping when participants use data to evaluate the process rather than "feelings."
        - Select the last 5 charts, or a random sample from the last 6 months
        - See **Tips** below
3. Create a data collection template. Include the key steps in the process to be assessed.
    - For HIV Viral Load Cascade, the country algorithm is an excellent resource to define the requirements and criteria for expected level of care.
    - A template for evaluating HIV Viral Load Cascade is provided.
4. Review charts, while populating the data collection template.
5. Collate data
6. Analyze data – There are two possible metrics.

Numerator: # patients that met expected level of care **Denominator**: Total number of patients	This metric evaluates how many patients received all the appropriate care as prescribed by the country algorithm. This metric assesses whether the entire algorithm was followed or not. (See example)
Numerator: # of Patients that met Parameter "X" **Denominator**: Total number of patients	This metric looks at individual components in the algorithm (i.e. 85% of patients did not receive an ***Enhanced Adherence Counseling*** Session within the specified timeframe). Consider using Pareto Chart to prioritize gaps.

TIPS

When using Chart Review as part of a process mapping exercise, pre-planning is required to ensure an efficient and effective chart review. Two options are available (below) depending on the time available and the number and expertise of the participants. The following suggestions may be helpful in facilitation of the desired "ah-ha" moment.

Group Chart Review Completed as ***part of*** the 2-Day on-site Smart Start Session & Process Mapping exercise	**Prior Chart Review** Completed ***prior to*** the 2-Day on-site Smart Start Session & Process Mapping exercise

Prior to Smart Start,
▪ Select 5 charts for the review
▪ Print the data collection template
At Smart Start,
▪ Gather the group in a conference room for the review
▪ Distribute the charts & template to the participants for "hands-on" review
▪ Guide the participants through the chart review
    o Assign roles and responsibilities (who captures data from which chart, for example)
    o Facilitate the report back to the entire group
▪ Debrief the chart review process, asking the participants to reflect on the experience (use of data versus "feelings")
	Prior to Smart Start,
	▪ Select 5 charts for review
	▪ Print the data collection template
	▪ Complete chart review and capture data on the template
	At Smart Start,
	▪ Facilitate a discussion of the Chart Review Tool
	▪ Share the data collected
	▪ Debrief the chart review process, asking the participants to reflect on the experience (use of data versus "feelings")

Template:

- Chart Review Template

Related Tools:

- Process Mapping (2-Day on-site Smart Start)
- Pareto Chart

Resources:

Agency for Healthcare Research and Quality (AHRQ) – Module 8: Collecting Data with Chart Audits

https://www.ahrq.gov/ncepcr/tools/pf-handbook/mod8.html

Chart Review Example

4/5 (80%) patients did not have high viral load follow-up per country algorithm

Patient	VL Result / Date Validated	Clinic Visits / Adherence% / Drug Supply	IAC	VL #2
A	1,653 copies 17 Aug 2015			5 Jan 2017 No Result
B	223,888 copies 10 Mar 2016 (C) 9 May 2016 (V)	16 Jun 2016 / 93% / 3 mo. 29 Sep 2016 / 85% / 3 mo. 29 Dec 2016 / 101% / 3 mo.	IAC #1 – 23 Mar 2017	
C	6,588 copies 2 Nov 2016			5 Jan 2017 No Result
D	82,201 copies 4 Nov 2016		IAC #1 - 25 Jan 2017 IAC #2 – 15 Feb 2017 IAC #3 – 15 Mar 2017	Drawn 12 April 2017
E	17,863 copies 28 Feb 2017	16 Feb 2017 / 96% / 3 mo.		

C = Sample Collected, V = Sample Validated by Laboratory

Chart Review Template

Viral Load Cascade – Result Reporting & Patient Management

PATIENT #	VL #1 ORDERED / DRAWN DATE	DATE VL RETURNED TO CHART	DATE VL NOTED BY CLINICIAN / ACTION	IAC/EAC #1	IAC/EAC #2	IAC/EAC #3	VL #2 ORDERED / DRAWN DATE	IS VL SUPPRESSED? / ACTION

D

MEASURE

A

I

C

Using Metrics for Improvement

How will we know a change is an improvement? Proper measurement provides an objective gauge of the project success (or failure)

WHY

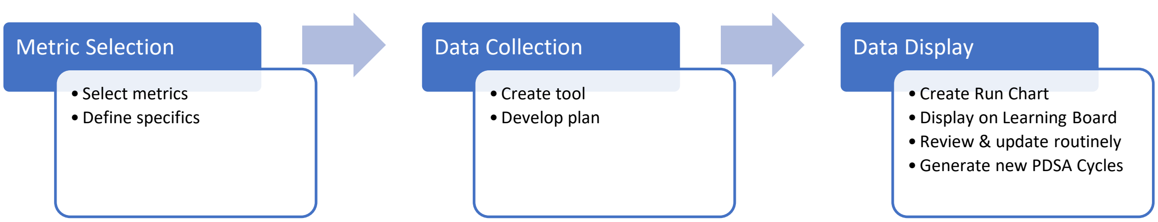
- Evidence-based - Metrics (or measures) focus on objective evidence rather than feelings or opinions.
  - To quantify the magnitude of the problem
  - To assure that a change is actually an improvement - tracking progress over time.
- Outcome-oriented - Metrics focus on the outcome articulated in the project aim statement. As the saying goes, "What gets measured, gets fixed."
- Visual - Metrics, when presented graphically, tell a powerful story. Visible data, displayed and tracked over time, is key to attracting and sustaining the engagement of the team and stakeholders in the improvement work.

WHEN

Throughout the DMAIC process

- Define/Measure - to understand the magnitude of the problem
- Analyze - to assist in assessing the root cause
- Improve - to test & select the solution
- Control - to insure sustainability by monitoring the metric over time

HOW TO



<table>
<tr><th colspan="2">METRIC SELECTION</th></tr>
<tr><td>1.</td><td>Select the most appropriate metrics
▪ Refer to the fundamental questions in The Model for Improvement
▪ Brainstorm with the team to get the best ideas
▪ See Metric Primer below</td></tr>
<tr><td>2.</td><td>Clearly define the specifics for each selected metric. For example:
▪ If measuring errors (or the lack thereof), specify the meaning of "error free."
▪ If measuring whether or not the requirements are met, clarify if all of the requirements have to be met, or only a percentage of the requirements?</td></tr>
</table>

METRIC PRIMER	
Types of measures	**What can you measure?**
Improvement relies on measuring the following aspects of the process: ▪ ***Inputs*** – What is needed to execute the process & deliver the outputs? ▪ ***Process*** – Steps within the process ▪ ***Outcome*** – Big picture, high-level goals; What does this process do or produce? ▪ ***Balancing or Counterbalance*** – Side effects or unintended consequences in upstream or downstream steps or processes	Consider the following (not an exhaustive list): ▪ Time – hours, minutes, days, months, length of stay, turn-around time, wait time, etc. ▪ Errors or defects ▪ Number of events, people, etc. ▪ Satisfaction ▪ Efficiency ▪ Productivity ▪ Cost ▪ Value ▪ Throughput / Flow ▪ Access
What makes an ideal metric?	**Key components of a metric**
The best metrics have the following characteristics: ▪ Direct linkage to the desired outcome or process (or a closely linked proxy) ▪ Powerful enough to demonstrate the effects of the change ▪ Meaningful to the project and stakeholders ▪ Realistic to collect	A metric must have: ▪ ***A numerator*** – The proportion of the study population that met the set requirements. *Example: # of patients with viral load testing ordered* ▪ ***A denominator*** – The entire study population, or all subjects reviewed in a selected sample. *Example: # of patients eligible for viral load testing according to country algorithm*

DATA COLLECTION

1. Create a data collection log (see Data Collection Log Example)

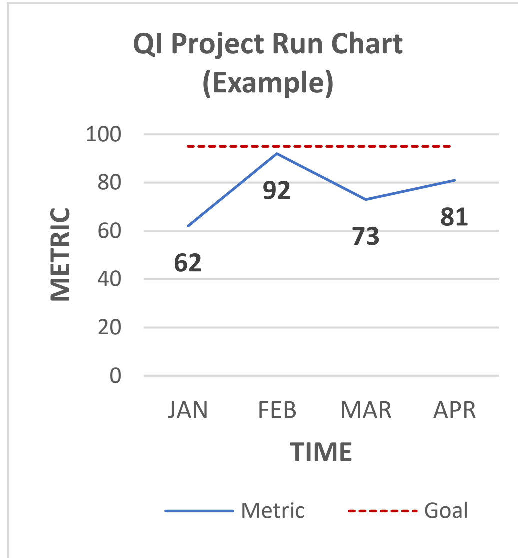
Make sure you include all data needed to calculate the metrics. Consider the following:

- The numerator (data to assure that the subjects meet the requirements of the study) and the denominator (data to assure all the eligible population is accounted for):
  - If evidence is required for an eligibility determination, consider a descriptive subheading or including an additional column in the log to verify the presence of that evidence
  - If the eligibility determination requires several steps, consider including a column in the log for each step required
- Any *demographic data* deemed important, such as sex, age, pregnancy status

	▪ Any *medical record or national identification numbers* needed to trace back to the patients in the future ▪ Any *site identification or site-specific data* (e.g., a specific specialty clinic within the site)

2.	Collect Baseline Data
	Using the data collection log, at the initiation of the project, collect baseline data to understand the magnitude of the issue
	▪ Collected before any changes are made in the current process
	▪ Data Source – Specify source of data
	    o Depending on the process, data may be collected retrospectively (i.e., chart review) or prospectively
	    o Potentially may be abstracted from data already being collected
	▪ At least 25 data points are needed

	Tips: ▪ Include definitions on the log so staff who may not be members of the team will be able to easily interpret and use the log ▪ Use small tests of change - Create a paper-based log first. Test the log through multiple iterations before finalizing or transferring to an electronic format. ▪ Make sure you have all the information needed to calculate the study metric
3.	Create a data collection plan (see the Data Collection Plan template) [Instructions for creating Plan included in the template in gray print]
DATA DISPLAY	
1.	Create a run chart to track the metrics over time
	▪ A run chart is a graphical representation of change over time ▪ It is one of the best ways to display Quality Improvement (QI) data

	Steps to create a run chart:
	▪ Title the chart and label the axes
	  ○ Place the selected metric on the vertical or y-axis
	  ○ Place time on the horizontal or x-axis
	▪ Plot your metric over time
	▪ Include a goal line (frequently shown in red ink), indicating the team's goal for the selected metric
	▪ Annotate the run chart, marking the tests of change along the timeline (See examples in PowerPoint presentation)
	▪ Keep the data up-to-date, posting weekly or as frequently as possible
	
	You may also use the Excel Run Chart Template to create run charts automatically
		

2.	Display the data on the project learning board (See Project Management Tools – Learning Board)	
3.	Review and update the data regularly (daily, weekly or monthly) with the staff & the QI team (See Project Management Tools - Meeting Facilitation templates) ▪ When reviewing the data, assess the trend and determine what additional "tests of change" need to be conducted to continue a desired trend or reverse an undesired trend. (See Model for Improvement – PDSA) ▪ Obtain input from the front-line workers. What is working well? What is not working well?	

Templates:
- Quality Improvement Project Outline
- Data Collection Log Example
- Data Collection Plan
- Run Chart Template (Excel)

Resources:

IHI QI Essentials Toolkit:

Run Chart & Control Chart

Data Collection: Key Planning Questions

Microsoft Excel Workbook: Insert → Chart → Line Chart

Data Collection Log Example

High Viral Load (HVL) Patients with Follow-Up Appointment

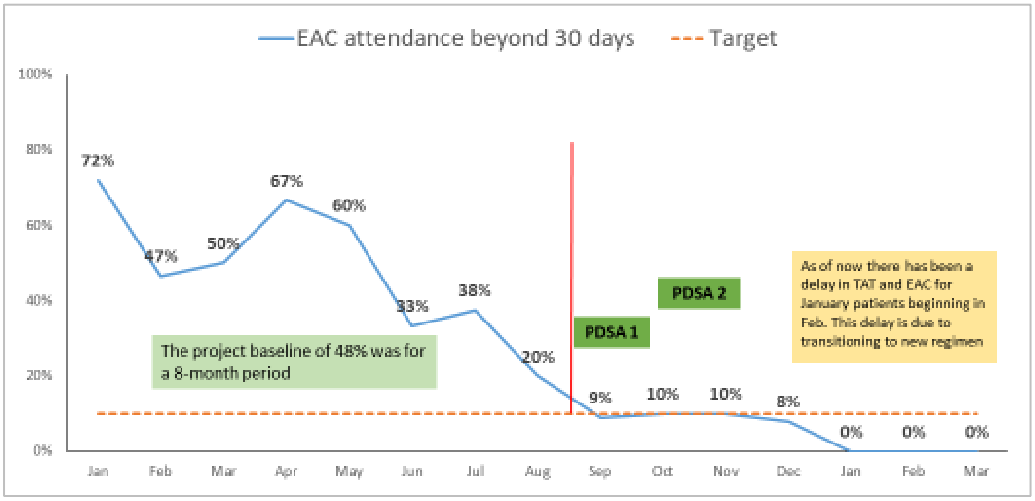
Metric = # of appointments made within 48 hours of receiving HVL results / All HVL Results

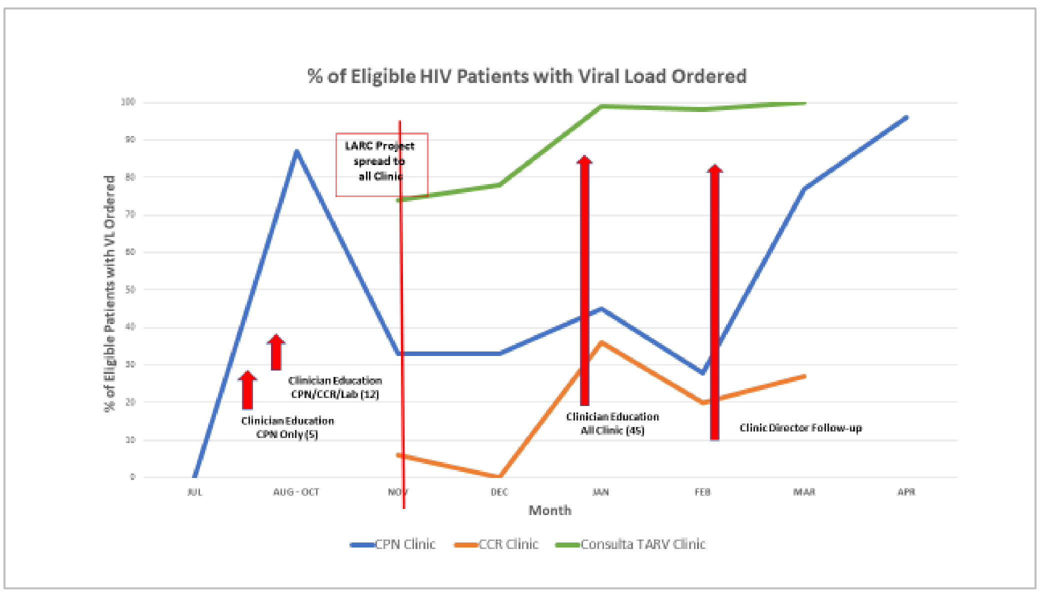
Patient ID	Age	SEX	VL Results (cp/ml)	Date of VL Testing	Date of VL Results at CTC	HVL (YES/NO)	Phone Call Made /Appointment Date	Follow-up Visit for EAC

Data Collection Plan

Who	▪ Who is responsible for the collection, display and analysis of the data? ▪ If a series of data needs to be collected by different cadres, map the process of data collection from beginning to end
How Often	▪ Specify data collection frequency - hourly, daily, weekly or monthly ▪ Determine the collection cutoffs for the time frame selected. ▪ Consider the project metric and what makes sense in the collection cycle. When must the data be submitted for each cycle?
What	▪ Specify what is included or excluded ▪ Determine the data source and sample size ▪ Draw the data collection log showing what data will be captured
Where	Specify a location – e.g., a clinic, unit or department
How	Given the log, will data be collected at time of seeing the patient or actual event (real-time) or collected retrospectively through chart or record review?
Training	Who will be responsible for training the staff about the data collection? Specify how, when and where.
Sustainability – See Control Plan	Early in the project, determine who will own the process and the metric at project completion. How will the metric be monitored when the project is complete? (See Control Plan)

Data Display - Run Chart Template (Excel)





D

M

ANALYZE

I

C

5 Whys

A tool to assist in ascertaining the underlying or root cause of a problem

WHY

Understanding and addressing the root instead of a superficial cause is preferable because:

- Addressing a superficial cause will likely result in the issue resurfacing repeatedly
- Eliminating the root cause will likely result in a lasting solution

WHEN

- In the analyze phase, before attempting to resolve the issue
- When there is a need to resolve simple to moderately difficult problems

HOW TO

1. Begin with the problem statement.
2. Ask Why is this problem occurring? Cause 1, the most proximate to the problem, may also be obtained by studying the Cause & Effect Diagram or one of the tall bars on the Pareto Chart.
3. Ask, Why does this outcome occur? The answer, Cause 2, forms the basis for the next question and the activity continues on in similar fashion.
4. Continue to ask Why iteratively (multiple times in succession) until you have arrived at a potential root cause

TIPS

- Use this simple tool first whenever a process or system is not working properly, before moving to a more in-depth analysis such as root cause analysis (RCA) or Failure Modes Effects Analysis (FMEA)
- The root cause may be reached in 3 Whys or 7 Whys, there is nothing scientific or magic about the number 5
- Search deeper for system issues instead of blaming a person
- Stop when the team has reached a root cause that they will be able to act upon
- Do not fall into the trap of always identifying the last Why as "Lack of People/Staff" or "Lack of Resources"

Resources:

- The 5 Whys Problem Solving Method Video - www.mindtools.com

Template:

- 5 Whys

5 WHYS

PROBLEM STATEMENT

WHY

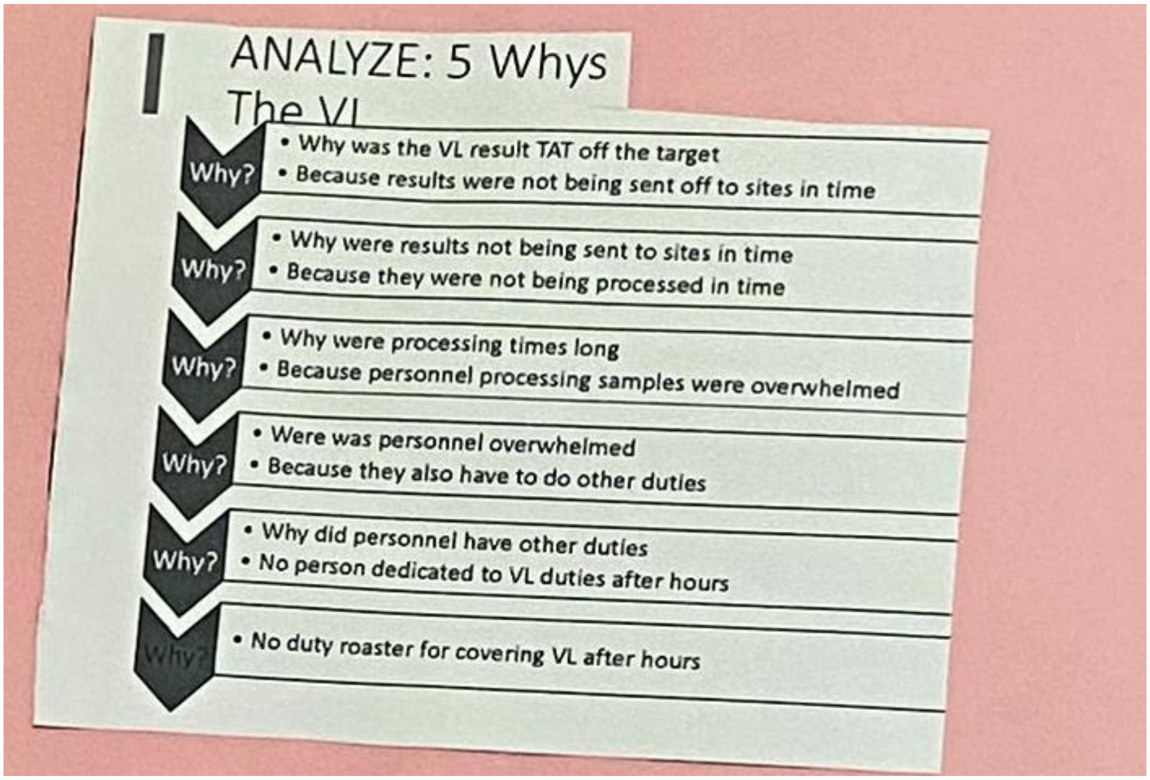
WHY

WHY

WHY

WHY

Example:



Courtesy of Bindura Provincial Hospital, Zimbabwe. Phone taken on 9th February 2023

Cause & Effect Diagram (Fishbone)

A tool to brainstorm/identify possible ***causes*** of a problem and to sort the ideas into useful categories.

WHY

- A visual way to look at and organize critical thinking about potential causes
- To identify that there may be multiple causes to one effect or problem

WHEN

- In the analyze phase, before attempting to resolve the issue
- When a more structured approach is needed to assess contributing causes for a problem of greater complexity

HOW TO

1. Engage the team in brainstorming about potential causes of the problem.
2. Using the template, write the problem statement (effect) at the mouth of the "fish".
3. Agree on the categories that are appropriate for the particular problem. The 6 standard manufacturing categories include the 6 "M"s, but may be modified as noted in the parentheses for health care:
   - ☐ Man (People)
   - ☐ Machines (Equipment)
   - ☐ Methods (Policies/Procedures)
   - ☐ Mother Nature (Environment)
   - ☐ Material (Supplies)
   - ☐ Measurement (Process)
4. Brainstorm about all the possible causes, creating branches from the appropriate major category/ies
5. Sub-branches from the causes may be created, if needed, to probe for the underlying or root cause/s

TIPS
▪ Keep focused on causes of the problem, not symptoms ▪ The Fishbone can be combined with the 5 Whys tool, continuing to explore root causes

Resources:

How to Use the Fishbone Tool for Root Cause Analysis

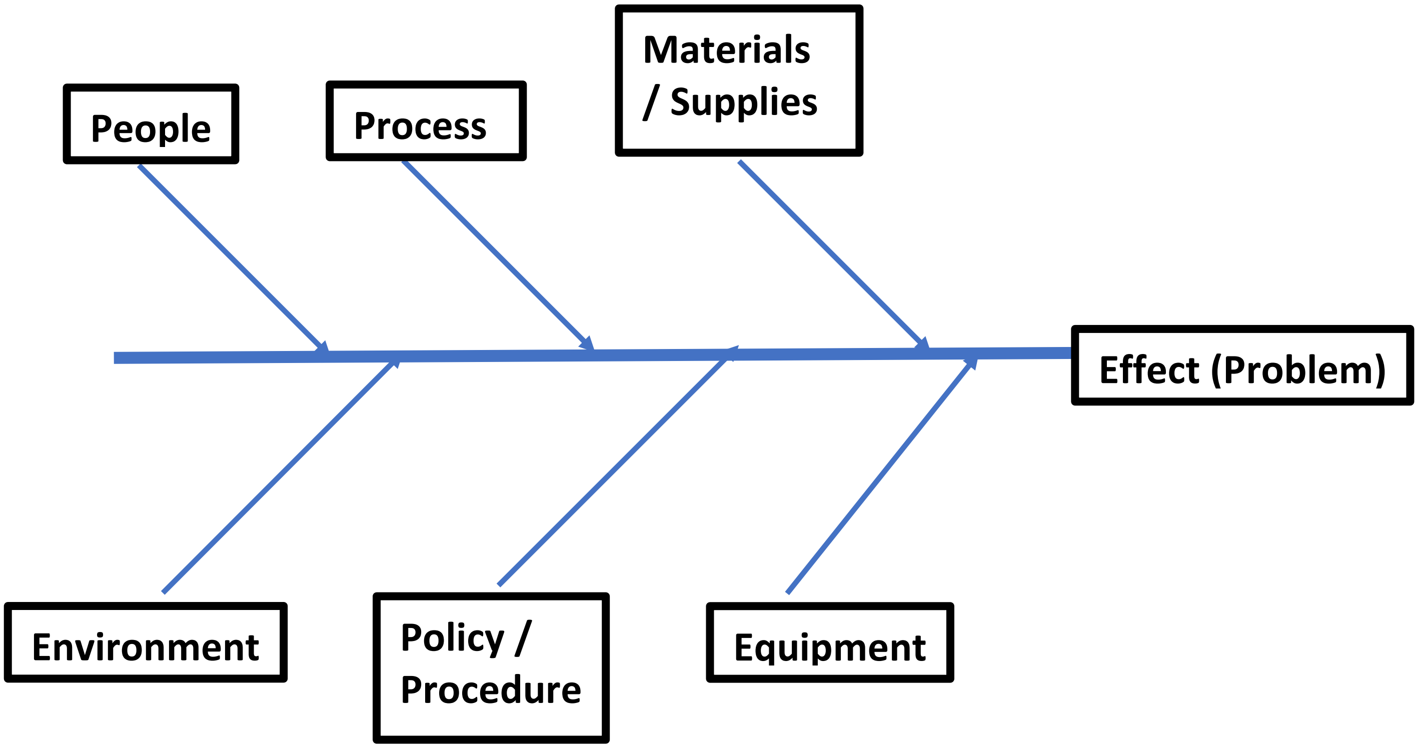
https://www.cms.gov/medicare/provider-enrollment-and-certification/qapi/downloads/fishbonerevised.pdf

IHI Videos: Cause & Effect Diagram and The Science of Improvement on a Whiteboard

Template:

- Fishbone

Cause & Effect Diagram (Fishbone)



Pareto Diagram

A combined bar & line graph used to determine the frequency and/or significance of problems or causes of problems

WHY

Identifying the major contributing causes of the problem allows the improvement focus to be on those causes that will yield the biggest gains, if addressed

WHEN

Analyzing data, especially when there are many different causes to a problem, in order to focus on addressing the most significant causes

HOW TO

1. Determine the categories into which the data will be divided – can be errors or defects or causes of errors or defects
2. If data must be collected, create a Data Collection Plan
3. Create a Pareto Diagram
    a. Tabulate the Scores → Populate the template table:
        i. Sort data into pre-determined categories; Sub-total each category
        ii. Tabulate the total number of causes or errors
        iii. Rank/order the categories from most to least
        iv. Calculate the percentage of each category and the cumulative percentages
    b. Create the diagram/graph:
        i. Complete the bar graph portion of the Pareto Chart
            1. The left vertical axis – Order the frequency of each category starting with the tallest bar (most frequent) on the left and proceeding to the shortest bar (least frequent) on the right. If there are several smaller categories, combine them all into an "Other" category
        ii. Then complete the line portion of the Pareto chart
            1. The right vertical axis (Scaled from 0-100%) – Using the percentages, create the line to represent the cumulative percentage of all the causes as it tracks across the graph from left to right (reaching 100% at the right axis)
4. Interpret a Pareto Diagram - Resulting graph will visually demonstrate the most significant causes; A Pareto effect will be seen when the few significant causes are responsible for approximately 80% of the problem (80/20 Rule)
5. Acting on a Pareto Diagram - Addressing these few most significant causes will likely solve the problem

TIPS
The tabulations can be calculated and charted using the Template Table or the chart can easily be created in Excel.

Resources:

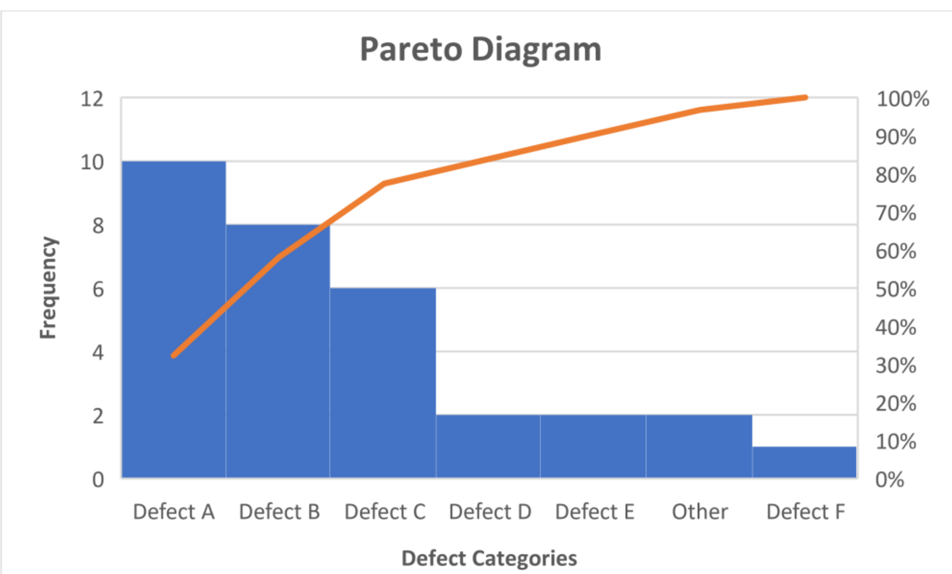
- Pareto Chart http://asq.org/learn-about-quality/cause-analysis-tools/overview/pareto.html

Template:

- Pareto Chart Table
- Excel Spreadsheet - Enter data - categories (text) and subtotals (numbers) in two columns and select both columns → Choose Insert → Select the "Statistical Chart" icon → Select Histogram → Select Pareto Chart

Pareto Diagram Table

Category of Defects	Frequency	Percentage (%)*	Cumulative %*
		*May be calculated to create Diagram	



Pareto Diagram
Easily created using an Excel spreadsheet

D

M

A

I MPROVE

C

Brainstorming

A technique to generate ideas, input and insights from the team

WHY

- To gather the greatest variety and diversity of ideas and insights into the problem or solutions
- To stimulate creative thinking
- To allow consideration of input from all the team
- To allow collection of ideas over a short period of time
- To group the ideas in categories or themes to facilitate organization of the brainstorming session
- To evaluate how many people identified a particular opportunity, idea or solution – to assign a degree of consensus or numerical "vote" to each option

WHEN

- Define Phase - Post Process Mapping - to gather Opportunities for Improvement (OFIs) that the team identified as they walked the process
- Analyze Phase - With the Cause & Effect Diagram to explore potential causes
- Improve Phase – With the Impact-Effort Grid to prioritize potential solutions

HOW TO

1. Gather all team members or activity participants & describe the goal of the session
2. Provide all participants with multiple self-stick notes
3. Ask participants to write their input on the self-stick notes, one OFI, cause or solution per note
4. Place all notes on flipchart, board or wall
    - Defer discussion until all ideas are shared
5. Proceed to group or collate the responses according to similar topics, categories or themes (also called an affinity diagram)
    - One or two people (preferably the facilitator and/or team lead) to begin reading and organizing the notes
    - Group similar notes – forming groups with similar themes
    - Clarify any ideas not clear
    - Capture any new ideas that are stimulated as the ideas are shared
    - The team may be asked to assist in the titling of the groups

  - Count & note the number of notes in each group
6. Ask the participants about their reaction to the ideas generated
   - Any surprises in the responses?
   - Agreement with the most mentioned ideas?
   - What actions, if any, will be generated?
7. This activity can provide inputs toward creating:
   - Opportunities for Improvement (OFIs)
   - Cause & Effect Diagram
   - Impact Effort Grid

TIPS
- Encourage all to participate with at least one note per person
- Encourage as many ideas/notes as possible
- When working on solutions, encourage unfettered thinking that may be “outside the box”, innovative, big, impossible, or audacious ideas
- Do not criticize or dismiss any idea
- For ease or organization, use a different color self-stick note to title the affinity groups so ideas and corresponding numbers of notes (votes) can be seen by the team

Associated Tools:
Cause & Effect Diagram
Impact-Effort Grid

Impact-Effort Grid

A tool to rank order potential solutions according to degree of impact and amount of effort

DELIVERABLE

- Impact Effort Grid
- Action Plan for Just Do It, 1st & 2nd

WHY

- Allows input from the team, especially those who know the process first-hand, on the potential solutions
- Provides an organized process to elicit thoughtful discussion and consensus on the potential impact of a solution and the degree of effort required to create that impact
- Allows prioritization of potential solutions

WHEN

- Prioritizing solutions, early as part of the two-day Smart Start On-Site Session
- In the Improve phase, as additional solutions are generated following analysis of causes

HOW TO

1. Create/post the 4-quadrant grid with labels on the flipchart, board or wall for all to see
2. Working one at a time, address each of the groups of the problems and/or solutions generated from the brainstorming/affinity diagram sessions
3. For each group, ask:
   - "What would be the impact of this solution on the problem? HIGH (Major Improvement) or LOW (Minor Improvement)"
   - Hold the self-stick note over the accompanying half of the grid
   - Then ask, "How much effort would it require to accomplish this solution? EASY to do or HARD/Difficult to do)"
4. Facilitate a discussion of each solution, asking probing questions about the grid placement
5. Place notes in the appropriate quadrant of the grid
6. See grid diagram template for prioritization
   - Just Do It - Create short-term (1 week to 1 month) action plans for this quadrant
   - Just Do 2nd, if impactful – Create short to medium-term (1 week to 3 months) action plans if the team deems the solution impactful
   - Do 3rd, detailed planning and work – This is the quadrant from which projects (3 to 9 months) will be selected. Prioritize the first project that the team wishes to address
   - Maybe someday – Create list for potential long-term (9 months to a year or more) activities, place in Parking Lot, or discard

TIPS

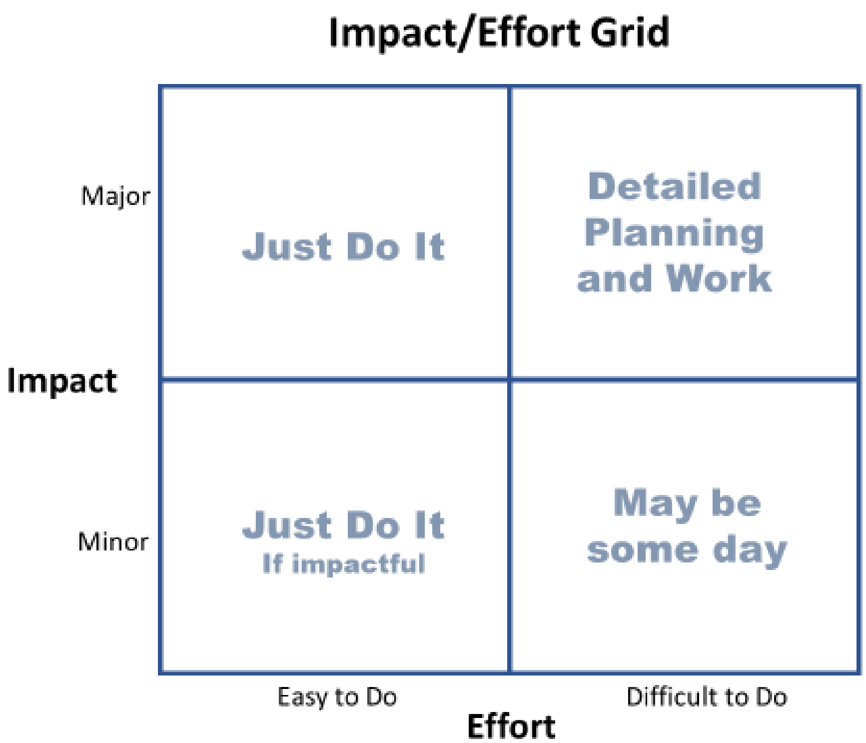
Capture the completed Impact-Effort Grid in a photo for ease of transfer to an electronic format

Associated Tools:

- Action Plan

Template:

- Impact Effort Grid



LEAN TOOLS

Lean is an improvement methodology focused on delivering value to the customer and eliminating waste.

WHY
With limited resources in healthcare, it is inefficient and costly to expend energy, time and money on things that do not add value for the customer (i.e., waste)

Type of Waste	Example
Misutilization of Skills	Not taking advantage of people’s skills or capabilities; Not listening to or acting upon people’s improvement ideas
Reprioritization	Phone calls, emails, trouble shooting, Texts or IM pop-ups
Transport	Moving people, products and information; Going to get signatures; Moving patient records
Inventory	Storing parts, pieces, documentation ahead of requirements; Pharmacy stock, lab stock, office supplies
Motion	Bending, turning, reaching, lifting; Searching for patients, charts, medications or files; Moving patients for testing
Waiting	For parts, information, instructions, equipment; Waiting for discharge, approvals
Over Production	Making more than is immediately required; Making extra copies;
Over Processing	Multiple bed moves; Extra paperwork, excessive reviews/analysis, creating reports no one uses or reads, using out-of-date forms
Defects	Rework, scrap, incorrect documentation; Medication errors, improper diagnosis, patient complaints, data entry error, pricing error, mislabeled specimen

Guiding Principles for LEAN	
Eliminate waste	To eliminate waste, you must first see the waste
Increase Value	Value is defined in terms of the customer. For what is the customer willing to pay?
Respect Expertise	The front-line workers know best how to solve front-line problems
Go and See	The improvement team must go to the work and see the actual condition

HOW TO:

1. **See the Waste** - Identify waste using the following tools:
    - Process Mapping – Current State (see Process Mapping)
    - Waste Walk
    - 5S
    - Spaghetti Diagram/Physical Layout
2. **Eliminate the Waste** - Once waste is identified, use the following tools to eliminate:
    - Process Mapping – Future State (see Process Mapping)
    - Waste Walk →Action Plan
    - 5S
    - Spaghetti Diagram/Physical Layout
    - Visual Management
    - Standard Work
    - PDSA

These tools are explained in the following pages:

- Waste Walk
- 5S
- Visual Management
- Spaghetti Diagram / Physical Layout

Lean Tool

Waste Walk

A planned visit to where work is being performed to observe what is happening and specifically to look for waste - to make waste visible again

WHEN

After identifying problems during the process mapping, conduct a Waste Walk to validate observations and gather front-line staff ideas about the problems and potential solutions

HOW TO

1. Gather team and explain what, why, and how to of Waste Walk
   - Provide copy of the process map table with the identified problems
   - Provide a Waste Walk Template
2. Walk the entire process with the team. Assign pairs at each work area to observe the process for 30-45 minutes, and record observations on the Waste Walk Template
3. Talk to front-line staff, share process map with identified problems. Ask for validation of identified problems and elicit any potential solutions
4. When team comes back together, discuss observations
5. Collate identified wastes
   - Compare with identified problems (or OFI) from the Current State Process Map or Table
   - Update Project Action Plan with any new wastes/problems/OFIs identified and assign action items
6. Follow up Action Plan routinely to assure that identified waste is eliminated

Template:

- **Waste Walk**

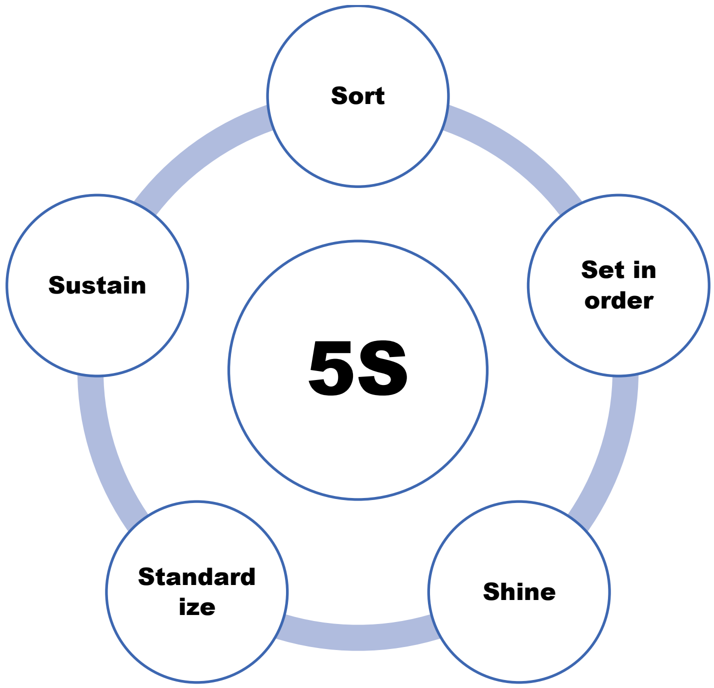
Waste Walk

Type of Waste	Observation	Possible Solutions - from People Doing the Work
Misutilization of Skills		
Reprioritization		
Transport		
Inventory		
Motion		
Waiting		
Over Production		
Over Processing		
Defects		

Lean Tool

5S

A workplace organization method that uses a list of 5 words, each beginning with S, to prescribe how to organize a work space



WHY

5S improves the efficiency and effectiveness of the work, eliminating clutter and disorganization

WHEN

In the beginning of any improvement effort, as 5S provides an immediate visual change to the workplace, inspiring staff in the promise of the entire improvement effort

HOW TO

1. Choose a target area for the 5S exercise
2. Engage a cross-functional team, including staff from the targeted work area; Insure that upper management is involved
3. Plan for a staging area, a physical area near the target area, in which to place items that need further categorization
4. Document the “BEFORE” state using the 5S Audit Sheet and photographs
5. Organize and complete the 5S Exercise of the area according to the steps below
6. Record the “AFTER” state using the 5S Audit Sheet and photographs

Sort	**Identify & eliminate what is not needed** 1. Remove items from the area that have not been used recently (in the last three months) 2. Red tag the unused items 3. Place them in the staging area 4. Have manager or team lead determine disposition: Either back to area, dispose of, or donate
Set in Order	**A place for everything and everything in its place** 1. Identify everything in the area 2. Define & label or mark off a place for each item 3. Create a standard (a photo, chart, or label) to identify where items go and to make it readily visible if something is missing 4. Make workflow smooth and easy 5. Place frequently used items close to their place of use, relegating less used items further away
Shine	**Keep the work area clean and uncluttered.** ▪ "Spring-Cleaning" of all items in area ▪ Create 5S Cleaning Plan
Standardize	**Develop standards and stick to them**. ▪ Put procedures in place to make sure the first 3 Ss are consistently and reliably implemented ▪ Build the work structure to incorporates routine "maintenance" of the first 3 Ss into daily work activities ▪ Create visual controls – charts, color coding, photos, marked off areas, etc. – to assure that everything stays as it should be
Sustain	**Sustain all gains.** ▪ Conduct 5S Training ▪ Encourage self-discipline & accountability ▪ Regularly conduct 5S Audits

Templates:
- 5S Audit Sheet
- Learning Session PPT Template for Reporting 5S Exercise

Area: ________________

5S Level of Excellence Audit Sheet

Date: _________

Level	**Sort** **Identify and eliminate what is not needed**
1	Necessary and unnecessary items are mixed together in the work area
2	Necessary and unnecessary items are separated (boxes, supplies, equipment)
3	All unnecessary items have been removed from the work area (no broken items)
4	Documented method to maintain work area free of unnecessary items.
5	Unnecessary items are immediately visible and triggers a planned response with root cause analysis and corrective action demonstrated over at least 3 months

Level of Excellence				
1	2	3	4	5

Comments

Level	**Set Order** **A place for everything and everything in its place**
1	Equipment room shows no sign of organization. Items are randomly located.
2	Designated location established for all items as needed.
3	Visual controls are in place so that items that are missing or out of place are immediately noticed (Task Board, color, outlines, labels, numbers, etc). Visuals make items “home” location obvious.
4	Documented method of visual sweep to identify items out of place or exceeding quantity limits.
5	Items are either in use or in their designated location at all times, demonstrated over 3 months or more.

Level of Excellence				
1	2	3	4	5

Comments

Level	**Shine** **An effective, organized environment**
1	Supplies and equipment are dirty and/or disorganized.
2	Equipment room is cleaned on a regular scheduled basis.
3	Visual controls are in place. Room is cleaned daily. Procedures are in place to communicate improvement ideas and maintenance needs.
4	Equipment and supplies are obviously Clean. Can see evidence that improvement ideas and maintenance tasks are followed up on in a timely manner.
5	Abnormal is immediately visible and triggers a planned response with root cause analysis and corrective action, demonstrated over 3 months or more.

Level of Excellence				
1	2	3	4	5

Comments

Level	**Standardize** **Develop standards and stick to them**
1	No attempt is being made to document or improve current processes.
2	Current process is known, but not documented.
3	Current state is documented as Standard Work performed the same by all employees.
4	Future state is documented. Implantation plan is actively worked. Area metrics are linked t company metrics and area clearly displayed.
5	Improvements are based on data and tracked for actual results, demonstrated over 3 months or more.

Level of Excellence				
1	2	3	4	5

Comments

Level	Sustain 5S is a way of life
1	Minimal attention is spent on 5S.
2	5S is a scheduled event.
3	5S practices are evaluated on regular basis
4	Documented methods have been put into place to ensure adherence to 5S. Current/historical 5S levels are posted.
5	Employees continually seek improvement opportunities, and the significant level of engagement is visible to outsiders. Exceptional 5S levels in other categories have been sustained for 3 months or more.

Level of Excellence				
1	2	3	4	5

Comments

AREA FOCAL'S NAME: ________________________

Total 5S Level:___________________

Lean Tool

Visual Management

A variety of simple methods to make the work and processes easily visible;
May be part of a 5S Exercise

WHY

- To improve the effectiveness of communication and reaction.
- To convey messages quicker and invite more interest than written information.

WHEN

Use this tool when organizing the following areas:

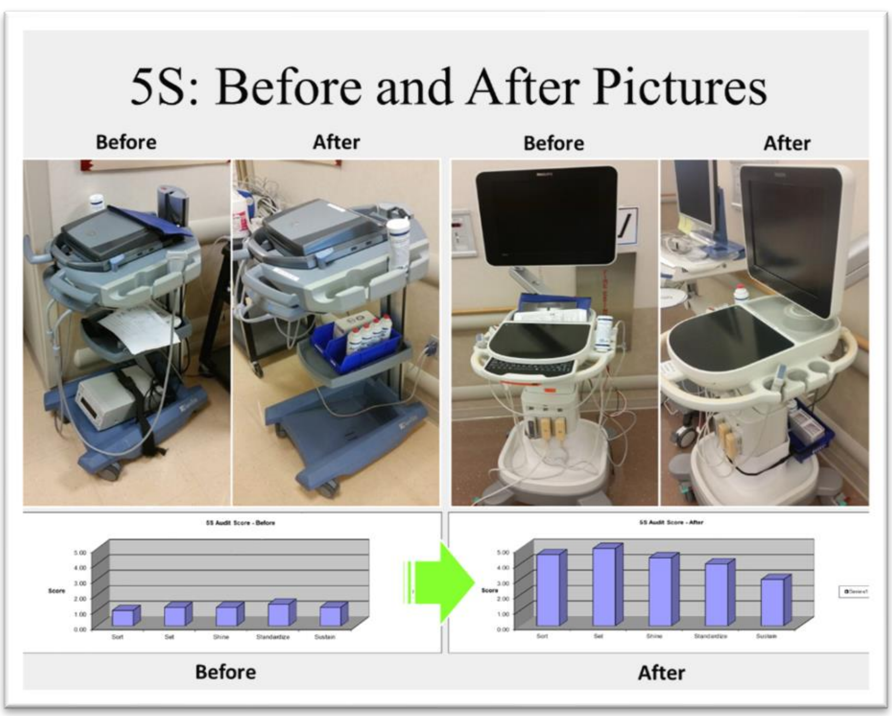
- Work Areas
- Work Processes
- Storage of equipment or supplies
- Records/Files/Procedures
- Way-finding

HOW TO

Visual management may be accomplished by the following methods:

- Color coding
- Tape marking of areas / Signage
- Diagrams / Charts / Graphs / Standard Operating Procedures
- Photographs

Template:
Learning Session PowerPoint Template for Reporting Visual Management (Photograph)



Lean Tool

Spaghetti Diagram/Physical Layout

An observational activity resulting in a representation or drawing of the floorplan of a room and the paths taken by staff performing the steps in the process

WHY

This tool reveals the relationship between the process and the structure (physical layout), detecting transport and motion wastes

HOW TO

1. Create floor plan of selected work area on flip chart
2. Ask an observer to trace the path of staff in the work area using a marker
3. Analyze, as a team, the spaghetti diagram
4. Discusses, as a team, how to eliminate the excess transport and motion by
   - Streamlining the process – combining, removing or altering the steps
   - Redesigning the physical layout – to match the new process
5. Create future state process maps, standard work and floor plan to codify the new processes

TIPS

- Use cross-training to assist in the new layout, thereby providing staff who can perform various roles, flexing as needed to maintain flow and thus accommodating the needs of the customer
- Consider creating pull systems where one workstation will “pull“ new work from the previous workstation whenever feasible, instead of having work “pushed” to the next workstation when not ready
- Focus on continuous flow, moving uni-directionally from first to last step in the process
- Remain flexible when redesigning floor plans, as updates may need to be made over time
- Establish before and after metrics (measurements) to show the improvements

Associated Activities:

- Simulation – Before/After
- Standard Work

Standard Work

A key output of the DMAIC process – Documented current best practice for performing a task or process

DELIVERABLE

- Process Map – Future State
- Standard Work Instructions

WHY

- For consistent reliable repeatable outcomes, consistent reliable repeatable processes are required
- For change management – Staff need clarity about the expected new way to work

WHEN

Following multiple tests of change, a new best practice is selected, documented and implemented (with training)

HOW TO

1. Once the new way to work is selected through PDSA / Multiple small tests of change, then the process must be documented
2. Select from the following documentation formats:
    - Simple or hierarchical steps
    - Graphic procedures – Photos/Videos
    - Flow chart
    - Process Map – Before/After or Current/Future
3. Training – hands-on with return competency demonstration
4. Auditing – ongoing auditing of the process steps and the outcomes
5. Remember, the process is subject to ongoing improvement

TIPS

- Do not begin to create standard work instructions until the process has been tested and validated through the DMAIC process.
- When developing standard work instructions, have a person unfamiliar with the process test the instructions to be sure they are clear and unambiguous
- Keep standard work instructions available at the place where the work is performed
- Create graphical standard work instructions if at all possible

Associated Tools:

- Process Map – Future State

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CONTROL

Control Plan

Documentation of elements required to transition and maintain the new improved process

DELIVERABLE
Control Plan

WHY

- To officially transition the project from the project team to the process owner
- To "maintain the gains" by outlining the critical elements required to sustain the project results and outcomes
- Establishes ongoing monitoring parameters
- To establish accountability – who is responsible
- Describes what to do - a reaction plan - if the process begins to fail

WHEN

- The official documentation is presented at project closure; however, planning for transition back to the process owner and sustainability begins at the project outset

HOW TO

Complete the project closure document using the embedded directions (gray print)

TIPS

- At the project outset, establish who will be the project owner, how the project will be monitored on an ongoing basis and who will be ultimately accountable for the results
- Throughout the process, continue to engage/emphasize to the process owner, team, and stakeholders the concept of long-term sustainability
- At each step of the DMAIC process, think about how to "build in" sustainability

Associated Tools:
Standard Work

Template:
Control Plan

Control Plan

Project Title

Project Owner

Specify a name & a position

Critical Elements for Quality

Process Step: Is there a critical step that is required for the desired outcome? Is there a vulnerable step that may revert to the “old way” over time?

Output: What is critical to the desired outcome or vulnerable in the output?

Monitoring over Time

Metric – Define the metric

Acceptable Range – Define Upper and Lower limits (Action Levels)

How measured – Data Collection Plan

Control or Reaction Plan

If the metric goes out of range, what will be done? What is the first step?

Accountability

Who is responsible for measuring – Specify a person & a position

Where is the measure reported – Specify a committee or standing meeting

To whom is it reported – Specify a person & a position, i.e. Clinic Chief Nurse/Sister-in-Charge

Who is ultimately responsible – Specify a person & a position, i.e. Ministry of Health Department Chief

Related Documentation (Provide documents or links to documents)

Process Map - Future/Improved State

Standard Work Instructions

Data – Run Chart

Result Communication

Various avenues to share the project results and lessons learned

DELIVERABLES

- Progress Report – For each Learning Session (PowerPoint Presentation)
- Final Report to the Collaborative (PowerPoint Presentation)
- Storyboard

WHY

- To showcase the improvement efforts of the team
- To synthesize and summarize lessons learned
- To show donors and stakeholders the results of their investment
- To spread and scale-up – begin by sharing with others who may be potentially interested in implementing the same changes
- To publish academically – to share with the larger scientific community

WHEN

- At each collaborative learning session - Progress Report
- At project closure

HOW TO

1. Complete the PowerPoint Template for each learning session and the Final Report
2. Complete the Storyboard

TIPS

- This is a great opportunity for the team to synthesize their learnings and feel a sense of pride and accomplishment
- Emphasize to team that they now have the skills to make process improvement a continuous ongoing activity
- Each team member has two jobs – the job they are assigned and the improvement of that process

Templates

- Learning Session Report Out (PowerPoint) – One for each session
- Final Report (PowerPoint)
- Storyboard (PowerPoint)

Take Aways

From the LARC Improvement Collaborative

Lessons Learned from Location A		
Best Practices to add:		
Practice	By Whom?	By When?

Lessons Learned from Location B		
Best Practices to add:		
Practice	By Whom?	By When?

Lessons Learned from Location C		
Best Practices to add:		
Practice	By Whom?	By When?

Write an Abstract

A succinct, single-paragraph summary of the key points of the project

DELIVERABLES
- Abstract

WHY
- To publish academically – to share with the larger scientific community

WHEN
- At project closure

HOW TO
1. Write a Title
2. Using 250 words or less, summarize the key points of the project in one paragraph
3. Include the following components:
    - Background – setting or context
    - Local Problem – refer to problem statement
    - Methods – How did you address the problem? Aim statement, DMAIC, PDSA
    - Interventions – Changes, what you did to resolve the problem
    - Results – Increased or decreased by how much?
    - Conclusions – What you learned, what worked

TIPS
- The title should be like a newspaper headline – Give the most important outcome, the "news-worthy" headline in the title
- For the abstract, begin by writing 1-2 sentences summarizing each component of the project, aiming for accuracy
- Edit & re-edit the sentences - Crafting / "word-smithing" each sentence, using the most accurate, succinct, impactful words
- Work with a colleague who will read the abstract critically, using "red-ink" to edit and provide comments that will improve the writing
- Writing, like improvement, is iterative – Continue to improve & refine the abstract through editing

Reference:
Revised Standards for Quality Improvement Reporting Excellence SQUIRE 2.0
http://squire-statement.org

Convince the Minister

Refining & revising the elevator speech to engage key stakeholders

DELIVERABLES

- Revised Elevator Speech

WHY

- Project Advocacy - To secure action on the project, the impactful and important information about the project must be conveyed to key stakeholders

WHEN

- At the beginning of the project - to gain stakeholder buy-in and support for the time & resources for the project
- Throughout the project, as barriers arise and/or needs change
- At the completion of the project, when the project needs to be sustained and spread

HOW TO

1. Use the elevator speech previously created
2. Edit the speech specifically for the key stakeholder
3. Strategically consider the "What we need from you" response

> **TIPS**
> - Carefully consider the stakeholder analysis and the information collected about the interests of the stakeholders
> - Consider which key stakeholder will best be approached about which issues, barriers, or concerns
> - Don't always ask immediately for money, consider other opportunities for meaningful engagement

Template:
Elevator Speech

Elevator Speech Template

This project is about ____

____

As a result of these efforts, ____

____

It's important because we are concerned about ____________________________________ ____
Success will be measured by showing improvement in ______________________________ ____
What we need from you (specify intended recipient ________________________) ____ ____