A3 Problem Solving
Seeking to Understand Problems, Big and Small

Lisa Segerstrom

10/02/2018

What does A3 Mean?

De-Mystifying a simple tool

The A3 Method

- A3 simply refers to a paper size (11x17 aka A3).

- Mainstay of the Toyota Production System for:
  - Proposals
  - Status Reports
  - Problem Solving

A3 is an approach to problem solving that grew out of Lean Manufacturing at Toyota. The A3 report condenses project information onto a single page in an easy-to-read, graphical format. This A3 template provides sections for describing background information, current conditions, root cause analysis, target conditions, implementation plan, and follow-up.

Why Use A3?

- Basic methodology to:
  - Identify problem, gap, or need
  - Understand current state
  - Develop simple target
  - Understand root cause
  - Brainstorm or identify countermeasures
  - Create action plan
  - Check results of corrective actions or improvements
  - Sustain results

Same Idea, Different Templates

No standard template – your organization or department may have preferred template.

A3 Report: Project name

Project mission statement
What is the team trying to accomplish?

Background
- Problem background
- Why the problem needed to be fixed
- Importance of identifying solution

Original state/problem statement
- Use a diagram if possible
- Show where the problems exist with Kaizen bursts, i.e. graphic indicators of opportunities for improvement
- Extent of the problem (e.g., metrics or measures of success that are below target)

Problem analysis
- Why does the problem exist?
- Does asking "why?" five times help identify the root cause?
- What influences caused the problem?

Team
Executive sponsor:
Champion:
Team lead(s):
Project team: List names and departments

Solution
- Describe recommendations of team
- Show diagram or map of new process
- Measurable targets to achieve within determined timeframes

Implementation plan
- Use a diagram if possible
- Who is responsible for which tasks?
- What resources are required?
- What targets have been identified? Timeline for achieving?
- How regularly will the improvement team connect while the change is underway?

Graph results
Show improvement over time
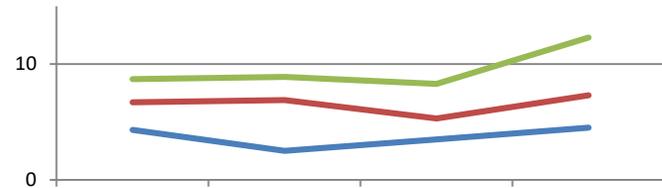
Sustain
Implementing a project doesn't guarantee long-term success. How does the team plan to continue to make the improvement part of daily practice, long after the "project" as ended? Determine metrics to track, feedback loops for staff, and maintain regular A3 updates to share with the team and supporting leadership.

| **A3 Project Title** | **Project Lead:**
 Project Champion(s):
 Date Updated: | **Project Team:** | **UCLA** Health |

1) Problem Statement: (description of the problem and its effect)

2) Current State: (depiction of the current state, its processes, and problem(s))

Best Practices/Literature Search:

3) Goal: (how will we know the project is successful; standard/basis for comparison)

4) Root Cause Analysis: (investigation depicting the problems' root causes)

5) Solutions: (action plan and findings of tested solutions)

Root Cause	Tested Solution	Responsible	Due	Finding

6) Check: (Summary of the solutions' results, overall goal success, and any supporting metrics)

Goal & Metrics	**Baseline**	**Target**	**Current**
Goal			
Supporting Metric			
Supporting Metric			

7) Act: (Action taken as a result of the Check, and the plan to sustain results)

*A3 is a UCLA Operating System 11x17 template used to document and communicate complex problem-solving using the Plan Do Check Act (PDCA) method: Steps 1-4 (Plan), Step 5 (Do), Step 6 (Check), Step 7(Act)

BACKGROUND / BUSINESS CASE
- What issue or problem do we need to solve?
- Why is this issue important to solve now?
- What benefits do we anticipate from solving the problem (e.g., quality, timeliness, cost, customer/employee satisfaction)?

STAKEHOLDERS
- Who are internal and external customers?
- Who are team members that will complete the A3 Problem Solving Tool?

CURRENT CONDITION
- What do we know? What customer, process, program data/measures do we have on the problem (location, patterns, trends, frequency, factors)?   Answer questions like: *What* errors are occurring? *Who* is making the errors? *Where* are the errors occurring? *When* are the errors occurring? **How** are the errors occurring?
- What don't we know and need to find out? We may need to develop a Data Collection Plan that includes**: The** information/data we need to collect, who will collect the data, data sources, who will prepare the visuals (bar chart, trend, pie chart), when and who will be sent the data.
- What is the Problem Statement? What specific performance measure needs to improve? We need to understand the scope and nature of the problem before we can create a problem statement. More analysis may be needed if the team cannot write a problem statement.
    - Example: Reduce/Increase the number/percent of <?> from <current level> to <desired level> by <date>.

ANALYSIS/ROOT CAUSES
- What are root causes? Why are the errors occurring?
    - If the root cause is not obvious, use a root cause analysis tool. Use the simplest tool to show cause-and-effect down to the root cause(s). The root cause should be specific – not vague like "poor communication".
    - Tools: 5 Whys, Fishbone diagram, or Affinity and Relations diagrams
- Does our data verify the root causes? – a team may need to collect additional data to verify the root cause(s)

SOLUTIONS
What solutions will solve the root causes? (Tools: Brainstorming and Affinity Diagram)
- What solutions are best and we should recommend?
    - Tool for a few primary options: Impact/Difficulty Matrix
    - Tool for many options: Criteria Decision Matrix
    - Consider including an evaluation of the status quo (no change) option
- What impacts (positive and negative) may result from implementing the solutions? (Tool: Impact Wheel, FMEA)
- How will we mitigate or resolve negative impacts?
- What communication or stakeholder engagement is needed? (Tool: Communication Plan)
- What training is needed?

ACTION ITEMS

Task	Owner	Proposed Date	Actual Date

- What tasks or actions do we need to take? Who will be responsible for the task? When should the task be completed? (Tools: Action Plan, Gantt Chart)
- What support and resources are needed for each task?

METRICS/FOLLOW-UP
- What metrics will we use to track progress and performance? How will we validate results?
- How and when will we check progress and performance (e.g., daily, weekly, 30, 60, 90-days)?
- What processes will we use to enable, assure, and sustain success?
- How will we communicate results and share what we learn with others?

A3 TITLE: **Owner:**   **Sponsor/Manager:**   **Version #:**   **DATE:**

Problem Statement (Describe the Problem)

Historical Trend/Background (Current State of the Situation)

Root Cause Analysis

Implementation Plan/Countermeasures/Outcome

WHAT will be done	By WHOM	By WHEN	What was the OUTCOME

Target/Goal(s)	Summary/Wrap-Up/Next Steps

A3 Team: Date:

1. What is the gap?

2. What causes are preventing us from meeting our target?

Human   Training   Equipment
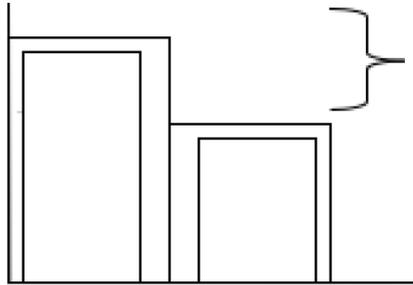
Policy/Procedure   Process   Environment
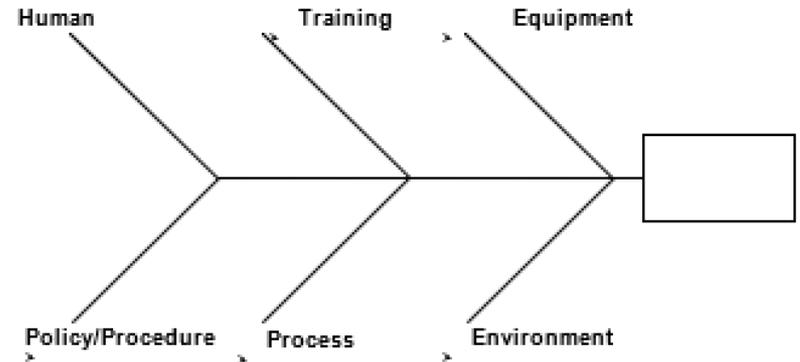
4. Which actions will address the most important causes?

Goals	Actions	Timeline

3. What are the causes in order of importance?

1	2	3	4
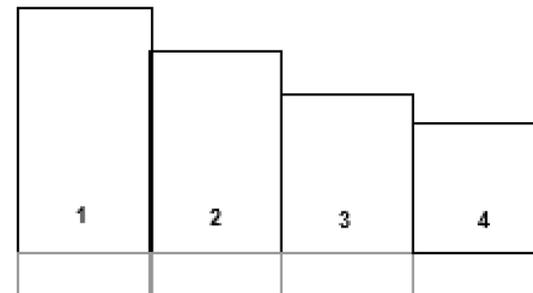
Benefits of Using A3 Fishbone

- Unlike many other quality improvement tools, it doesn't require much instruction or orientation to the process – it's fairly intuitive.
- Helps focus on process issues or common human error rather than individual performance.
- Helps shift focus from symptoms of defect to causes of defect.
- Helpful when data isn't available to identify exact root causes.
- Can help identify other process issues that can be relatively hidden.
- Allows for identification of all possible causes.
- Allows for clear visual representation of the problem and causes and process used to come to improvement actions.

A Word of Caution

- When using the cause and effect or fishbone for problem solving, identified causes are based on perception and should not be considered quantitative analysis. It is best suited for problems that do not have hard data to use to discover causes.
- Some potential causes identified during the exercise will be worthy of further analysis or verification.
- It is possible to focus on solving problems that ultimately have little effect on the problem.
- Best when the exercise involves representatives of all stakeholders.

How to Use A3/Fishbone

- Clearly identify your problem – what are the "bookends".
- Consider impact to patients as a compelling argument to get attention to the problem.
- Make sure there is appropriate leadership support for working on this problem.
- Identify stakeholders – this exercise is best when all stakeholders have a representative at the table (think outside the box about who this might be).
- Identify a facilitator and, if resources allow, a note-taker. (My preference is for both not to be direct stakeholders)
- Schedule an appropriate space and amount of time (typically at least 90 minutes).

The Nuts and Bolts of Facilitating Fishbone Problem Solving

- Provide a paper copy of the template to everyone but use a whiteboard or flip chart to capture potential causes.
- Facilitate effective brainstorming – no idea is bad or criticized, all offered causes are recorded and included.
- Ask probing questions to dig deeper into potential causes and to clarify.
- Instruct the group to ignore the categories (Human, Training, Equipment, Policy/Procedure, Process, Equipment)
  - These are suggestions and can by modified as necessary including excluding some or adding others. (there is no set number required)
  - Trying to categorize causes as they are shared will derail your facilitation as well as limit participants ability to think about all potential causes.
- Once all possible causes seem to be exhausted, ask the group to identify which of the causes seem to be the most important to solve first (ask if any need additional data or validation).
- Transfer everything to the template after the session and send to everyone to review for accuracy.

Problem-Solving Story

Problem-Solving Story

Problem: _____   Date: _____

Goal: _____   Team Members: _____

Step 1: Define the problem

Quantify!

- Sketch
- Picture
- Spreadsheet

xyz	|||
abc		
zyx	
def	|||
urs	

- What is the problem?
- Why should the problem be addressed?
- How does the problem affect customers?
  - What are the consequenses?
- How will progress be measured?
- What graphics do you have to illustrate the problem? Place data on storyboard.
- Where does the problem occur, when does it occur, and who does it involve?
- How will the focus (scope) of the project be narrowed?

Step 2: Identify the causes of the problem

- What potential causes were identified?
- How were the causes verified?

Fishbone Diagram

- Man
- Method
- Material
- Machine
- Environment
- Effect

5 Why Analysis

- Why
- Why
- Why
- Why
- Why
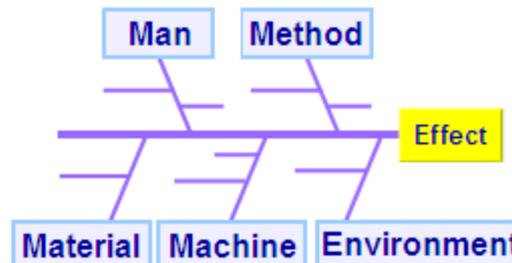
Step 4: Monitor the results

- What are you monitoring?
  - Compare actual results to the identified goal
- How are you using the data?
- Have we met our initial goal?
- Is there a need for additional improvements?
  - Make any necessary adjustments
- How are you communicating the results? Are you...
  - Documenting the new process?
  - Training current and new employees?
- How are you monitoring the Form G Action Plan?
  - What revisions have you needed to make?
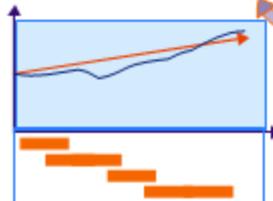
Step 3: Problem-solving

- What solutions were considered and evaluated?
- How did the solutions address the causes of the problem?
- What is the plan for:
  - Testing or piloting the solution?
  - Introducing it on a large schare?
  - Monitoring the progress and success?
- How easy to follow is the plan for implementation?
- Use Form G to define an Action Plan
  - What needs to be done?
  - Who is responsible?
  - When is it due?

Costs

Time
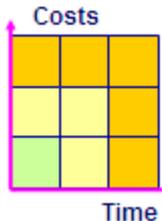
Example: Two patient ID

1. What is the gap?

We experienced 50 two patient identification errors last month (43 were mislabeled specimens)

Fewer than 25 two patient identification errors

50% reduction*

*while we want to eliminate this type of defect, it may not be a reasonable or achievable to set this as a goal. Most would agree that starting with a 20-50% reduction per improvement period is a reasonable goal.

2. What causes are preventing us from meeting our target?

Human
- Patients with similar names roomed near each other
- Chart/labels inadvertently left in wrong room
- Staff perception of knowing patients and not needed to ask patients for names/DOB

Training
- Not trained to verify patient name/DOB stated by patient against labels or record
- Reliance on knowing how to implement policy without demonstration and teach-back

Equipment
- Different patients labels printed between sets of another patients labels
- Computer not accessible when needed
- New labels do not stick well

Mislabeled or unlabeled specimens leading to delayed results, results to wrong patient, or patient needing repeat testing*

Policy/Procedure
- Specimen not labeled in front of patient (brought to nurses station)
- Staff didn't know about policy Policy/expectation changed too many times

Process
- Using room and bed numbers to identify patients
- Patient wristband on bed, not patient

Environment
- Labels not printed near patient care area
- Labels too small to see clearly
- Staff rushed due to competing needs/priorities

*I prefer to include, when appropriate, a statement about the impact to patient(s)

The 'Do's' and 'Don'ts' of Effective Brainstorming

3. What are the causes in order of importance?

Patient ID wristband not on patient	Information on label (font size) is too small to see clearly	Specimen labels may not adhere to specimen container	Inadequate training
1	2	3	4

4. Which actions will address the most important causes?

Goals	Actions	Timeline
1) 100% compliance with properly placed patient identifiers (wristbands on patient)	A) Assess current state to understand how broadly poor practice habit is embedded B) Assess current policy C) Develop training	A) Oct. 15 B) Oct. 7 C) Nov. 30
2) Make information on specimen labels easier to see	A) Increase font size on labels	A) Oct. 31
3) Ensure labels adequately adhere to containers	A) Alert vendor of issue B) Replace all stock of labels reported to have this issue via standard recall process C) Work with Purchasing to ensure adequate product testing for future manufacturer changes.	A) Oct. 7 B) Oct. 5 C) Oct. 31
4) Improve staff and provider training on best practices and expectations.	A) Assess current practice B) Review policies and procedures to ensure they align with best practices C) Develop accountability system for monitoring	A) Oct. 15 B) Oct. 7 C) Nov. 30

1. What is the gap?

We experienced 50 two patient identification errors last month (43 were mislabeled specimens)

Fewer than 25 two patient identification errors

50% reduction*

*while we want to eliminate this type of defect, it may not be a reasonable or achievable to set this as a goal. Most would agree that starting with a 20-50% reduction per improvement period is a reasonable goal.

2. What causes are preventing us from meeting our target?

Human
- Patients with similar names roomed near each other
- Chart/labels inadvertently left in wrong room
- Staff perception of knowing patients and not needed to ask patients for names/DOB

Training
- Not trained to verify patient name/DOB stated by patient against labels or record
- Reliance on knowing how to implement policy without demonstration and teach-back

Equipment
- Different patients labels printed between sets of another patients labels
- Computer not accessible when needed
- New labels do not stick well

Mislabeled or unlabeled specimens leading to delayed results, results to wrong patient, or patient needing repeat testing*

*I prefer to include, when appropriate, a statement about the impact to patient(s)

Policy/Procedure
- Specimen not labeled in front of patient (brought to nurses station)
- Staff didn't know about policy Policy/expectation changed too many times

Process
- Using room and bed numbers to identify patients
- Patient wristband on bed, not patient

Environment
- Labels not printed near patient care area
- Labels too small to see clearly
- Staff rushed due to competing needs/priorities

4. Which actions will address the most important causes?

Goals	Actions	Timeline
1) 100% compliance with properly placed patient identifiers (wristbands on patient)	A) Assess current state to understand how broadly poor practice habit is embedded B) Assess current policy C) Develop training	A) Oct. 15 B) Oct. 7 C) Nov. 30
2) Make information on specimen labels easier to see	A) Increase font size on labels	A) Oct. 31
3) Ensure labels adequately adhere to containers	A) Alert vendor of issue B) Replace all stock of labels reported to have this issue via standard recall process C) Work with Purchasing to ensure adequate product testing for future manufacturer changes.	A) Oct. 7 B) Oct. 5 C) Oct. 31
4) Improve staff and provider training on best practices and expectations.	A) Assess current practice B) Review policies and procedures to ensure they align with best practices C) Develop accountability system for monitoring	A) Oct. 15 B) Oct. 7 C) Nov. 30

3. What are the causes in order of importance?

1	2	3	4
Patient ID wristband not on patient	Information on label (font size) is too small to see clearly	Specimen labels may not adhere to specimen container	Inadequate training
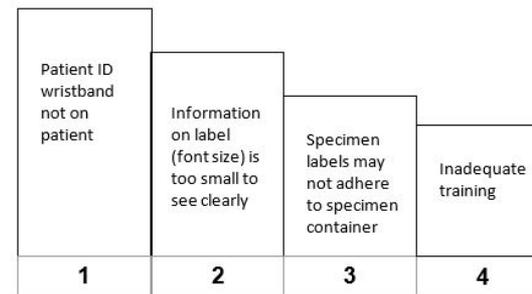
Easy Enough, But Now What?

- As with any quality improvement project, you want to have a solid work plan, method for assessing if the improvements have had the desired effects (or not), and a plan for sustaining improvements.
- Once you have completed Step 4 with a high level action plan, create a more detailed work plan for actions/improvements that are complex, multi-phased, involve multiple departments, or require significant resource.
- Use your organizations preferred tool. Should, at a minimum, include:
  - One person responsible for completing or overseeing completion of each task
  - Target date for completion for each task

A3 TITLE: **Owner:**   **Sponsor/Manager:**   **Version #:**   **DATE:**

Problem Statement (Describe the Problem)

- We experienced 50 patient identification errors last month with the majority being mislabeled or unlabeled specimens. This can result in delayed diagnosis, wrong diagnosis, or patients having to come for repeat testing which is dissatisfying for them and costly for us.

Historical Trend/Background (Current State of the Situation)

We experienced an unexpected increase in the number of mislabeled or unlabeled specimens last month. We brought together stakeholders from the nursing staff, lab, and medical staff to complete A3 problem solving to better understand what may be contributing to these defects. We prioritized our findings to focus on:
- Ensuring all patients are wearing identification bands.
- Increasing font size on specimen labels to make it easier to see.
- Replacing current specimen labels with a new product that better adheres to containers
- Improving staff training, clarifying expectations, and developing process to monitor practice.

Root Cause Analysis

Human
- Patients with similar names roomed near each other
- Chart/labels inadvertently left in wrong room
- Staff perception of knowing patients and not needed to ask patients for names/DOB

Training
- Not trained to verify patient name/DOB stated by patient against labels or record
- Reliance on knowing how to implement policy without demonstration and teach-back

Equipment
- Different patients labels printed between sets of another patients labels
- Computer not accessible when needed
- New labels do not stick well

Mislabeled or unlabeled specimens leading to delayed results, results to wrong patient, or patient needing repeat testing*

Policy/Procedure
- Specimen not labeled in front of patient (brought to nurses station)
- Staff didn't know about policy Policy/expectation changed too many times

Process
- Using room and bed numbers to identify patients
- Patient wristband on bed, not patient

Environment
- Labels not printed near patient care area
- Labels too small to see clearly
- Staff rushed due to competing needs/priorities

*I prefe... when a... a state... the imp... patient...

Implementation Plan/Countermeasures/Outcome

WHAT will be done	By WHOM	By WHEN	What was the OUTCOME
Each detailed action step	Name	Target Date	

Target/Goal(s)

- At least 50% reduction in two-patient identification errors in Q4

Summary/Wrap-Up/Next Steps

- We will continue to monitor defects as we make these improvements to be sure they are having the desired effect.