



# QUALITY IMPROVEMENT WORK IS EDUCATIONAL SCHOLARSHIP

# PRESENTERS

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# A QUALITY IMPROVEMENT PROBLEM

## Vascular access Procedures



# SQUIRE 2.0 AND PROBLEM SOLVING TABLE

SQUIRE 2.0 Framework	Content	Problem Solving Framework
The Challenge	Compelling introduction that outlines the problem	Project background
Introduction	Why did you Start?	Problem statement and goal statement
Methods	What did you do?	Baseline Analysis, investigation, Improvement design and implementation
Results	What did you find?	Outcome, monitoring plan
Discussion	What does it mean?	Lessons learned, barriers, what worked, what didn't work, next seps

# DETERMINING A PROBLEM STATEMENT

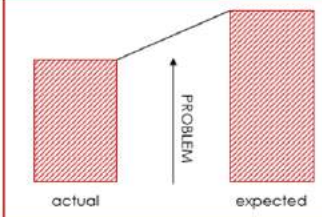
- What is the problem?

### How to Write a Problem Statement

The first step in problem solving: clearly state the problem you are trying to solve.

↳ It's important for everyone to agree on the problem that is being addressed ↳

**A problem is a gap in performance (actual versus expected)**



You should not approach a problem with a solution in mind: a problem statement is not a lack of something or the solution you would put in place.

For example: you may be inclined to state: "Lack of standard work creates inefficiencies and delays in the process." Standard work in this case is a possible solution. A better statement is: "Variation in the process causes inefficiencies and delays."

**A well-defined problem statement should address these questions:**

1. What is the problem?
2. Why is it a problem?
3. How does the problem impact the customer & the process?
4. When does the problem occur?
5. Where does the problem take place?

**Note:** It is helpful to be able to support the answers to these questions with data, but often the analytical component isn't yet available this early in the process. Anecdotal observation is a good starting place.

Example #1	Example #2
<p>"Psychiatric patients bound for UNI were waiting in the ED, sometimes up to 8 hours. Multiple factors contribute to delaying patients' acceptance and transfer to UNI: the speed of acceptance, doctor to doctor communication, nurse to nurse communication, etc. Delaying transferring the patient to UNI from the ED meant a delay in providing the patient with the right treatment resources"</p> <ul style="list-style-type: none"><li>• <b>What is the problem?</b> Psychiatric patients bound for UNI were waiting in the ED, sometimes up to 8 hours.</li><li>• <b>Why is it a problem?</b> Delaying transferring the patient to UNI from the ED meant a delay in providing the patient with the right treatment resources</li><li>• <b>How does the problem impact the customer/process?</b> Delays in patient treatment</li><li>• <b>When does the problem occur?</b> When patients are being admitted from the ED to UNI</li><li>• <b>Where does the problem take place?</b> At the ED, psychiatric patients being admitted at UNI</li></ul>	<p>"Women presenting for screening mammography at the Huntsman Cancer Institute had to wait an average of 6 days to receive final normal results; for the 97-98% of women who can be given normal results after routine and/or additional views only, this is an unnecessary delay. Delay in receiving results, particularly if additional views are required, are a major source of anxiety (harm) for this population; Time to results serves as a surrogate target measure for reducing harm."</p> <ul style="list-style-type: none"><li>• <b>What is the problem?</b> Women presenting for screening mammography had to wait an average of 6 days to receive final normal results</li><li>• <b>Why is it a problem?</b> For the 97-98% of women who can be given normal results after routine and/or additional views only, this is an unnecessary delay</li><li>• <b>How does the problem impact the customer/process?</b> Delay in receiving results, are a major source of anxiety (harm) for this population</li><li>• <b>When does the problem occur?</b> When patients are waiting for the results of their screening mammogram</li><li>• <b>Where does the problem take place?</b> At the Huntsman Cancer Institute Mammography Department</li></ul>

# HOW TO WRITE A PROBLEM STATEMENT

WHAT IS THE PROBLEM?

WHY IS IT A PROBLEM?

HOW DOES THE PROBLEM IMPACT THE  
CUSTOMER/PROCESS?

WHEN DOES THE PROBLEM OCCUR?

WHERE DOES THE PROBLEM TAKES PLACE?

# SELECT AN IMPROVEMENT GOAL

## OUTCOME MEASURES

measures the goals  
results of actions we do every day  
influenced by multiple factors



### OUTCOME

output from the process

e.g. urinary tract infection rate

e.g. equipment failure rate

## PROCESS MEASURES

measures something that  
leads to the goal  
something we can influence



### PROCESS

action to get to the outcome

e.g. removed the Foley before 48 hours

e.g. performed preventive maintenance within 96 hours

## BALANCE MEASURES

measures what we do not want to  
see negatively impacted



### BALANCING

unintended consequences

e.g. reducing length of stay  
but increasing readmissions is  
not an acceptable trade-off



# A SM-RT PROBLEM STATEMENT

- Specific
- Measurable
- Relevant
- Time-bound

“Women presenting for screening mammography at the Huntsman Cancer Institute have to wait an average of 6 days to receive final normal results; for the 97-98% of women who can be given normal results after routine exam, this is an unnecessary delay, and a major source of anxiety (harm). Time to results serves as a surrogate target measure for reducing harm.”



SEPTEMBER 30, 2016 | 11 MINUTES

## HOW A UTAH RADIOLOGY TEAM DECREASED SUFFERING WITH SAME-DAY RESULTS

Matthew Stein, MD, and the Breast Imaging team unflinchingly faced a source of uncertainty for patients: waiting for mammogram results.



# EXAMPLE

WHAT IS THE PROBLEM?	Women have to wait an average of 6 days to receive final normal results
WHY IS IT A PROBLEM?	It is in an unnecessary delay,
HOW DOES THE PROBLEM IMPACT THE CUSTOMER?	For 98% of women with normal result waiting is a major source of anxiety
WHEN DOES THE PROBLEM OCCUR?	When women have a screening mammogram (with normal results)
WHERE DOES THE PROBLEM TAKES PLACE?	At the Huntsman Cancer Institute Mammography Department

# YOU DEFINED THE PROBLEM – NOW WHAT?

- Baseline analysis – Why is it a problem?

# BASELINE ANALYSIS

## Process Map

### Baseline Analysis

Understand the Current State & Get the Facts

The process to collect information on the causes of the problem and the way that "things" are done. Also called current state analysis.

**FACTS & DATA**

understanding + data → what causes the gap in performance?

GO TO THE GEMBA

two visualization tools

PROCESS MAP

GO TO THE GEMBA

the purpose: understand the process you can't understand the process from a conference room

"gemba" = Japanese for "the actual place"

Walk the process. Talk with the people doing the steps, learn why they do things in a certain way.

Ask questions, humbly and respectfully. You are not there to give suggestions, or correct people, you are just collecting information.

Take notes on what you observe, or map the process (you can use them as reference later).

Take pictures, when permitted to do so (not to criticize, but to capture the process as is).

Watch for the seven wastes while you observe the work.

PROCESS MAP

the purpose: visualize the process so you can communicate about the current/future state

Current state process map: visualize the steps in the process, who does them, how long does it take to perform them, frequency of when they happen, & problem areas that come to mind.

Future state process map: visualize the process as it ideally should be happening

Should follow two rules:

- Must be easy to understand (if a complex process is represented by an equally complex map, it has missed the mark) – it should bring clarity to the complex.

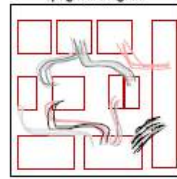
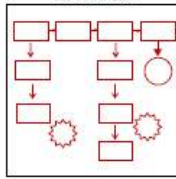
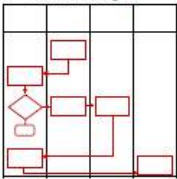
- Needs a purpose. Before you ever begin, figure out why you are mapping. What are you trying to see on your map? Delays? Errors? Travel? Information flow?

Swim Lane Diagram

PROCESS MAP TYPES

Basic Flow Chart

Spaghetti Diagram

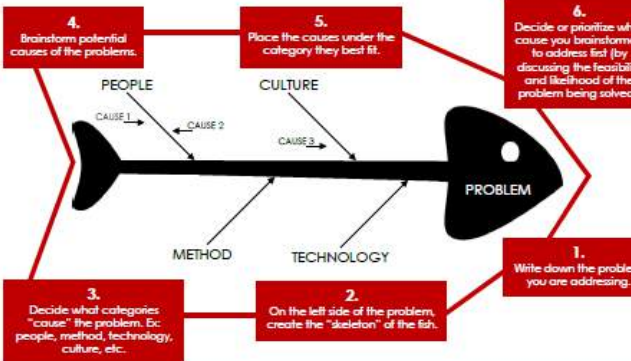


## Fishbone Diagram

### Fishbone Diagram

**WHAT** → The fishbone diagram is a tool that helps people organize their ideas and theories about what causes a problem or an event. Other names for it are: **Ishikawa diagram** (after Kaoru Ishikawa who developed this tool) or **cause and effect diagram**.

**WHEN + WHY** → During the baseline analysis, a fishbone diagram is helpful to brainstorm reasons (why is it happening) of the problem you are trying to address. The causes that are identified are then grouped in several categories highlighting the causes of the potential issues.



<b>STEP ONE</b>	Write down the problem you are trying to solve. For example: length of time from funding to enrollment; delays in the site start up; patients wait 1 hour to be seen by the doctor; room turn over in the operating room, etc.
<b>STEP TWO</b>	Identify as many factors you can think of that contribute to the issue or problem you are addressing. You can start out with 4-6 main categories, and that may be sufficient, or you may choose to use more. Examples of general categories of what causes problems are: people (or stakeholders), culture, method (or process), technology, equipment, supplies, etc.
<b>STEP THREE</b>	Brainstorm the possible causes of the problem and place these causes under the category where they best fit. For example: 1. We don't have clear expectations on why to track results, could go under Culture 2. There are bottleneck and delays in step A of the process, could go under Method 3. The computer system is outdated, could go under Technology
<b>STEP FOUR</b>	Prioritize what cause you should address first. You can't (or shouldn't) tackle every cause at once. Ideally you will select the key 1-3 causes that, if addressed, will have the highest likelihood to solve the problem. This is where you discuss each cause's feasibility to address (based on cost, support, timeframe, etc.) and likelihood of success in solving the problem.

## Data Analysis

### Histograms & Run Charts

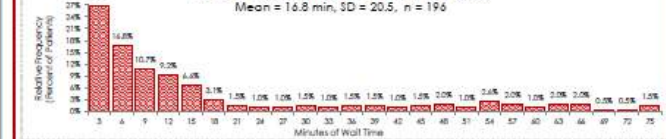
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**histograms & run charts** Pictures that explain a continuous dataset. A histogram is the shape (distribution) of your data and the run chart is the direction of your data (plotted over time).

Let's say you're on a project that's lacking "excessive wait time" at a fictional patient service desk. After some data gathering and scrubbing, you find that:  
**Mean of 16.8 minutes; Standard deviation of 20.5 minutes**  
Knowing the mean and the standard deviation provide helpful information, yet doesn't provide the whole picture.

#### HOW A HISTOGRAM LEADS TO BETTER QUESTIONS

Fictional Histogram of Fictional Patient Wait Times  
Mean = 16.8 min, SD = 20.5, n = 196



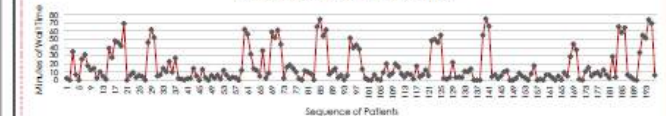
Creating a histogram with your data, you can see that:  
 22% of the sample waited 3 minutes or less  
 There's a long tail, pulling the mean to the right  
 76% of the sample waited 21 minutes or less, meaning 24% waited longer than 21 minutes

the mean doesn't tell us that a quarter of the population is waiting 21 minutes or more

**The better question:** "Since 24% of our population waited longer than 21 minutes, what if our next step is focusing on the causes of waits greater than 20 minutes?"

#### HOW A RUN CHART LEADS TO BETTER QUESTIONS

Fictional Run Chart of Patient Wait Times  
Mean = 16.8 min, SD = 20.5, n = 196



Looking at this run chart, you notice:  
 Most of the data points are below 20 minutes  
 When the data goes up, it seems to stay in little groups of 3-5 patients

the mean obscures this pattern

**The better question:** "Why does this happen? It looks like it happens every 7-20 patients. Let's schedule a gemba walk focused on this pattern."

Datasets and analysis: Steven Johnson, MechE, MBA

# PRINCIPLES OF PROCESS IMPROVEMENT

- Visualize the process

You improve the process by:

- Eliminate waste
- Reduce variation
- Simplify the process

# Breakout session

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# YOUR TURN: 30 MIN.

1. Write a problem statement for the Vascular Access case study
2. Visualize the process by creating a process map
3. Create a fishbone diagram to identify the causes of the problem(s)
4. Write recommendations on how to address 1-2 main causes

# BRINGING IT TOGETHER

- The experiential learning in quality improvement work can and should be written during the work

# FROM QI WORK TO SCHOLARSHIP

- How to publish your QI work



# QI WORK AND FARA



# Thank You

