

# Tools for Improvement: Affinity Diagram and Pareto Chart

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# Objective

- Describe two methods of organizing current knowledge to making processes visible and thereby identify opportunities for improvement.

## ***Quality Improvement Methods & Tools***

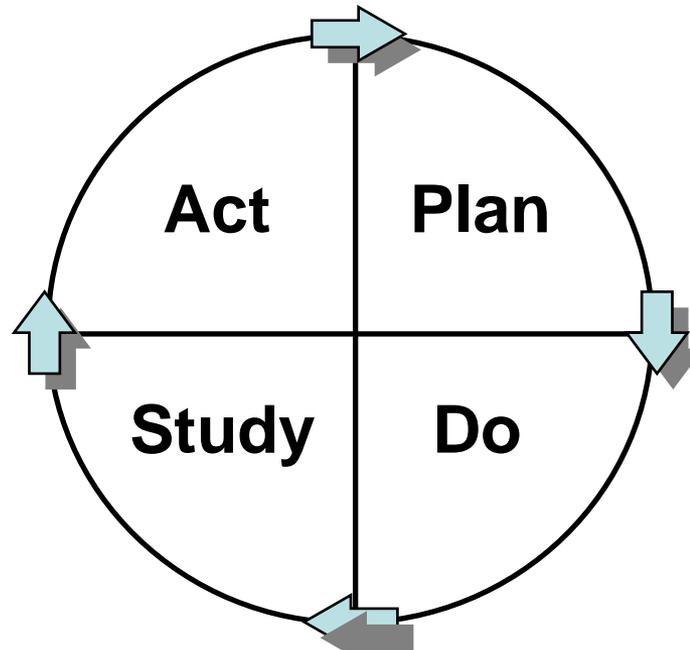
- **The Model for Improvement with the PDSA Cycle provides the structure and roadmap for accomplishing improvement of health care processes.**
- **In *many* improvement efforts, that is all that is required.**
- ***Other times*, teams get stuck looking for an idea or trying to understand the problems in the current process.**

# Model for Improvement

What are we trying to accomplish?

How will we know that a change is an improvement?

What change can we make that will result in improvement?



# Overview of *Methods* for Improvement

Category	Method	Typical Use of Method
Viewing Systems and Processes	<b>Process Mapping</b>	<b>Various approaches (flow diagrams, value stream mapping, Supplier-Inputs-Process-Outputs-Customers (SIPOC) Diagrams etc.) to make the activities and performance of a process or system visible</b>
	Dynamic Simulation	Map relationships with mathematical equations and then simulate performance
Gathering Information	Surveys	Obtain information from people
	Benchmarking	Obtain information on performance and approaches from other organizations
	Creativity Methods	Develop new ideas and fresh thinking.
Organizing Information	Quality Function Deployment (QFD)	Communicate customer needs and requirements through the design and production processes
	Failure Mode and Effects Analysis (FMEA)	Used by process and product designers to identify and address potential failures
	Problem Solving	A collection of concepts and tools (is/is not, <b>five why's</b> , stratification) to address the special case of improvement where a problem has been identified
Understanding Variation	Statistical Process Control	A philosophy and a set of methods for improvement with its foundation in the theory of variation. SPC incorporates the concepts of an analytic study, process thinking, prevention, stratification, stability, capability, and prediction
	Measurement System Analysis	Procedures to understand the impact of bias and precision of the measurement process on variation in data
	Statistical Methods	Graphical and numerical procedures to help understand, quantify, and communicate patterns of variation in data
Understanding Relationships	Planned Experimentation	Design studies to evaluate cause-and-effect relationships and test changes.
Project Management	<b>Model for Improvement</b>	<b>A framework or roadmap for an improvement project</b>
	<b>PDSA Cycle</b>	<b>Method for organizing learning, testing, and implementing during an improvement project</b>

# Overview of *Tools* for Improvement

Category	Tool	Typical Use of Tool
Viewing Systems and Processes	<b>Flow Diagrams</b>	<b>Develop a picture of a process. Communicate and standardize processes. Includes value stream mapping spaghetti diagrams etc.</b>
	Causal Loop Diagrams	Identify reinforcing and balancing processes
	Linkage of Processes	Develop a picture of a system composed of processes linked together
Gathering Information	<b>Form for Collecting Data</b>	<b>Plan and organize a data collection effort</b>
	Operational Definitions	Provide communicable meaning to a concept by specifying how the concept will be applied within a particular set of circumstances
Organizing Information	<b>Affinity Diagram</b>	<b>Organize and summarize qualitative information</b>
	Force Field Analysis	Summarize forces supporting and hindering change.
	<b>Cause and Effect Diagram</b>	<b>Collect and organize current knowledge about potential causes of problems or variation.</b>
	Driver Diagram	Displaying the theory for improvement in an improvement project.
	Matrix Diagram	Arrange information to understand relationships and make decisions.
	Tree Diagram	Visualize the structure of a problem, plan, or any other opportunity of interest.
	Interrelationship Diagram	Identify and communicate logical and sequential connections between components of a problem
	Radar Chart	Evaluate alternatives or compare against targets with three or more variables or characteristics

# Overview of *Tools* for Improvement (cont)

Category	Tool	Typical Use of Tool
Understanding Variation	<b>Run Chart</b>	<b>Study variation in data over time; understand the impact of changes on measures.</b>
	<b>Frequency Plot</b>	<b>Understand location, spread, shape and patterns of data.</b>
	<b>Pareto Chart</b>	<b>Focus on areas of improvement with greatest impact.</b>
	Shewhart Control Chart	Distinguish between special and common causes of variation.
	Other Graphs	Variety of graphs used to display data for learning
Understanding Relationships	<b>Scatterplot</b>	<b>Analyze the associations or relationship between two variables; test for possible cause-and-effect.</b>
	Two-Way Table	Understand cause-and-effect for qualitative variables
Project Management	Gantt Chart	Organization of the project tasks over time with key milestones identified
	PERT Chart	Display the sequential relationships of the project tasks and determine the critical path
	Work Breakdown Structure	Develop a hierarchical relationship between the tasks on a project
	A3 Diagram	One-page format for summarizing improvement projects

# Affinity Diagram

Reference:

The Improvement Handbook:  
Model, Methods, and Tools for Improvement, Aug '07,  
Associates for Process Improvement

# Why is this a Useful Tool for an Improvement Effort (for you)?

- Reduce a large amount of data to a few focus areas for a targeted improvement effort
- Can help organize or prioritize large and complex issues
- Expand a team's thinking
- Help gain support from a team for the implementation of a change

## Phase 1

### **LEADERSHIP ENGAGEMENT**

Engage leadership; Identify sponsor who embraces their role

### **THE VOICE OF THE COMMUNITY**

Involve and engage the community

### **THE MICROSYSTEM**

Identify the Microsystem /Target Population

### **ASSESSMENT**

Assess the microsystem, using the Green Book (revisit intermittently)

### **THE AIM**

Develop organizational Aim, including some initial plans relating to spread

### **STRATEGIC ALIGNMENT**

Link IPC aim and goals to the organizational strategic plan

### **THE IMPROVEMENT TEAM**

ID Multidisciplinary Improvement team

## Phase 2

### **THE CARE TEAM**

Identify and develop the care team, optimizing the roles of the care team , patients and families, and community programs

### **COMMUNICATION PLAN**

Develop mechanisms to keep the community and staff informed

### **EMPANELMENT FOR IMPROVEMENT**

Empanel patients to achieve continuity and improve outcomes

### **CLINICAL INFORMATION SYSTEM**

Optimize the CIS, using it for reminders, prompts, queries, etc

### **ACCESS AND CONTINUITY**

Develop mechanism to ensure access to care and support continuity

### **TRANSPARENCY OF IMPROVEMENT**

Make quality related data available to all (transparency)

### **THE PRE-VISIT**

Pre-visit planning and care delivery (huddles, previsit calls, etc.)

### **CAPACITY FOR IMPROVEMENT**

Build capacity in staff to support improvement

### **RESOURCES FOR IMPROVEMENT**

Identify inefficiencies and eliminate waste

## Phase 3

### **SPREAD**

Develop plan for spread

### **EFFICIENCY**

Increase value added time of all processes

### **CARE BETWEEN VISITS**

Care management integrated into care team

### **SELF-MANAGEMENT**

Empower the patient and family members by embedding self-management support processes in care

### **BEHAVIORAL HEALTH INTEGRATION**

Integrate behavioral health

# Purpose of the Affinity Diagram

- Sort and group large amounts of qualitative data or ideas by common relationship
- Develop headings for a Pareto chart
- Discover common themes by arranging data into the subject matter categories

# Examples of the types of data to analyze in Affinity Diagrams

- Customer Surveys
- Employee Surveys
- Benchmark data
- Complaints
- Suggestions
- Brainstorming session ideas

# Developing an Affinity Diagram

- Step 1: Bring together people who can contribute
- Step 2: Craft a statement of the issue to be considered
- Step 3: Record the data on sticky notes or cards
- Step 4: Sort the sticky notes in related subgroups
- Step 5: Create the main subgroups themes

# Lots of Random Comments

I can't get an appointment with my PCP when I need it

I can't get through to the Nurse on the phone when I have a question

My Doctor doesn't listen to me when I talk about my problems

It takes a long time to get my medication refilled

I wait to pick up my meds for a long time

I wait a long time when I come in for my appointment.

# Patient Experience Survey data

Clinic  
Waiting  
Time

Appt  
Making  
Process

Phone  
System  
Inaccessible

Inefficient  
Pharmacy  
Processes

# Hands-On Exercise Instructions

- Truncated process of building an Affinity diagram
  - Steps 1-3 already completed for you
- At each table, **SILENTLY** sort each comment on the sticky notes to like groups
  - 50 Staff Satisfaction comments on sticky notes
- Use the Flip chart paper to physically move stickies closer together
- Once you have grouped them, discuss at the table what the category name might be
  - Write this on the flip chart paper above stickies

# Pareto Chart or Diagram

Reference:

The Improvement Handbook:  
Model, Methods, and Tools for Improvement, Aug '07,  
Associates for Process Improvement

# Why is this a Useful Tool for an Improvement Effort (for you)?

- Helps to Focus Quality improvement efforts by identifying the relative importance of certain categories of events
- Raise up the more common issues to focus on those with greatest impact

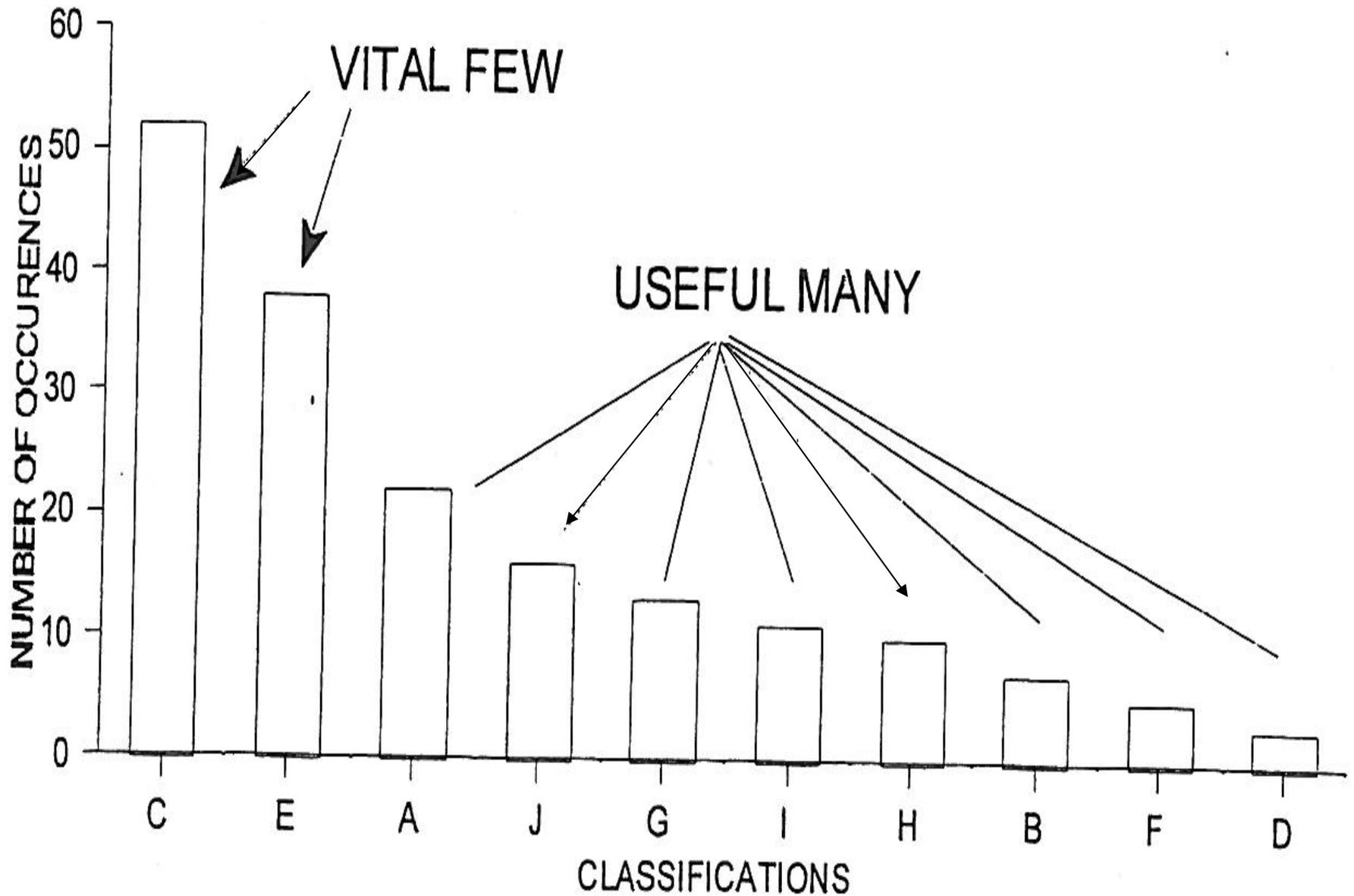
# Purpose of Pareto Chart

- Classify groups of data for further study and action
- Identify the Vital Few processes to focus improvement efforts on
- Highlight the Pareto Principle—80/20 rule
- Does NOT identify causes

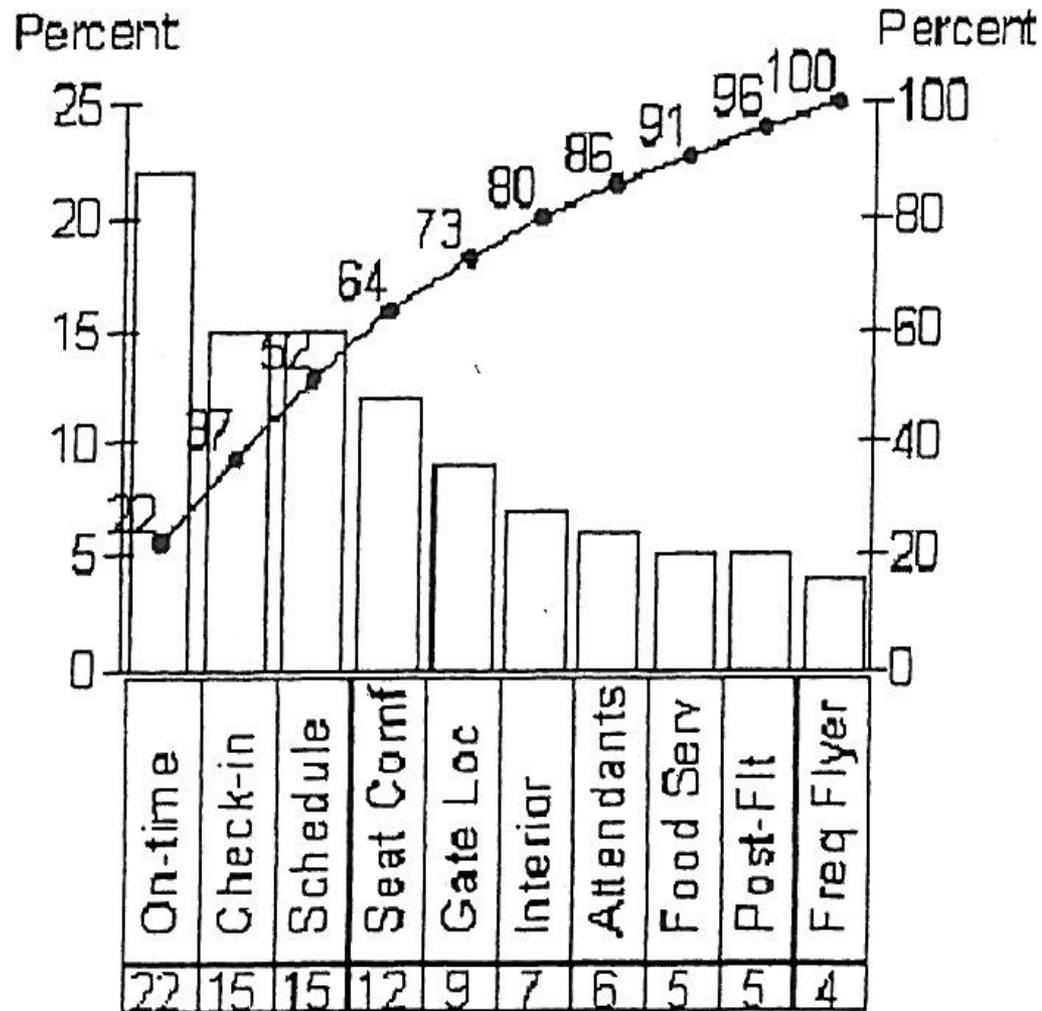
# Examples of the types of data to Classify and Prioritize

- Problem issues
- Errors
- Defects
- Customer/Patient/Staff feedback

Figure 31-1: Pareto Analysis



# Pareto Chart on Customer Satisfaction with Airline Service



Reference: Frequent Flyer Magazine, 1997

# Complete Steps for Developing and Analyzing a Pareto Chart

1. Complete a Planning Form for Collecting Data (next slide)
2. Create a check sheet to organize the data
3. Collect at least 30 data points (occurrences)
4. Order the categories of data by frequency
5. Construct Pareto Chart

# Planning for Data Collection: Key Questions to Answer for Improvement

- Questions to Answer
- Information to record
- Variables for stratification
- Operational Definitions
- Duration and location of data collection
- Essential Tasks (who and when)
  - Develop form
  - Collect data
  - Analyze data

# Hands-On Exercise Instructions (Steps 4 and 5)

- Take the categories from the Affinity exercise
- Count up all of the # of comments per category and record them
- Put each category in a table from most frequent to least frequent
- Create a X and Y axis on the Flip Chart
- Label them with:
  - X axis for categories (horizontal)
  - Y axis for # of comments in each category (vertical)
- Label the most freq. category on the far left side to the least freq on the far right
- Label the Y axis with your scale to encompass total # of comments at 5 or 10 increments
- Draw the bars for each category up to the appropriate # on the Y axis scale

# Analysis

- From your Pareto Chart:
  - Apply the 80/20 rule
  - Decide which areas to focus improvement efforts on for Improving Staff Satisfaction
  - Brainstorm areas this tool might be useful in your work