Washington Association of Medical Staff Services
Lake Chelan, Washington

Quality Improvement Tools and Best Practices

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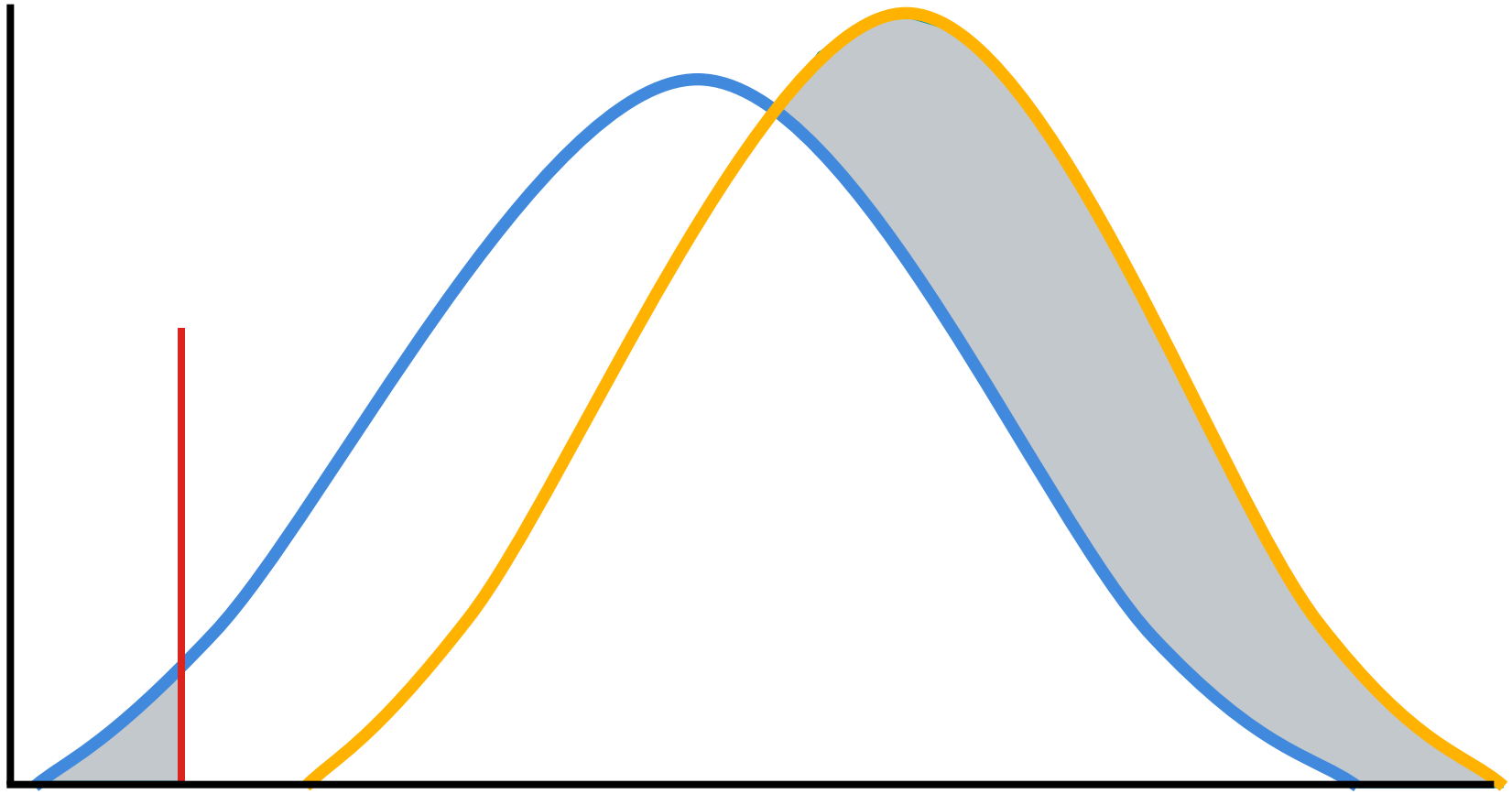
BURROUGHS
HEALTHCARE CONSULTING NETWORK

Quality assurance versus performance improvement



Early Quality Thinkers, Concepts and Tools

- Frederick Taylor's "The Principles of Scientific Management" (1911) (individual v. system improvement)
- Frank and Lillian Gilbreth (standardize to 'best practices' and eliminate 'waste')
- Walter Shewhart and W. Edwards Deming (1939) (statistical process control and PDCA)
- Joseph Juran (1951) (adoption of the Pareto Quality Principle- 80/20 rule)
- Avedis Donabedian (1980) (Defined quality in terms of efficacy, efficiency, optimality, adaptability, legitimacy, equality, and cost)(processes and structures may be proxies for outcomes)

Early Quality Thinkers, Concepts and Tools

- Total Quality Management (TQM)(1980s by the US Navy): focus on quality (customer satisfaction) throughout the organization and product/service life cycle through continuous improvement
- ISO 9001 (International Organization for Standardization): Formal guidelines to develop and maintain effective quality systems
- Malcolm Baldrige National Quality Award (1987/1999): Optimize quality/service to drive business performance through excellence in: 1. leadership, 2. strategic planning, 3. customer/market focus, 4. measurement/analysis/knowledge management, 5. HR focus, 6. process management, 7. results

Deming's "The New Economics for Industry, Government, Education"(1994)

1. Understand the 'system' and the inter-relationships within it
2. Understand variation within the 'system' (common and special cause) and seek to reduce or eliminate special cause variation
3. Seek knowledge rather than information (data to information to knowledge to understanding to wisdom)
4. Understand people and their need for intrinsic rather than extrinsic motivation (Herzberg's "Hygiene Theory")

Quality is Complicated!

Institute of Medicine's "Crossing the Quality Chasm" (2001):

a. **Safe** (minimize inadvertent errors/harm)
b. **Timely** (reduce wait times and harmful delays)
c. **Effective** (provide services that benefit (outcomes, processes, structures) and avoid services that aren't)
d. **Efficient** (avoid waste of all resources)
e. **Equitable** (avoid differentiating care based upon gender, ethnicity, location, socio-economic status)
f. **Patient centered** (integrate the patient's values and beliefs)

I. Key Elements in Critical Quality Problem Solving

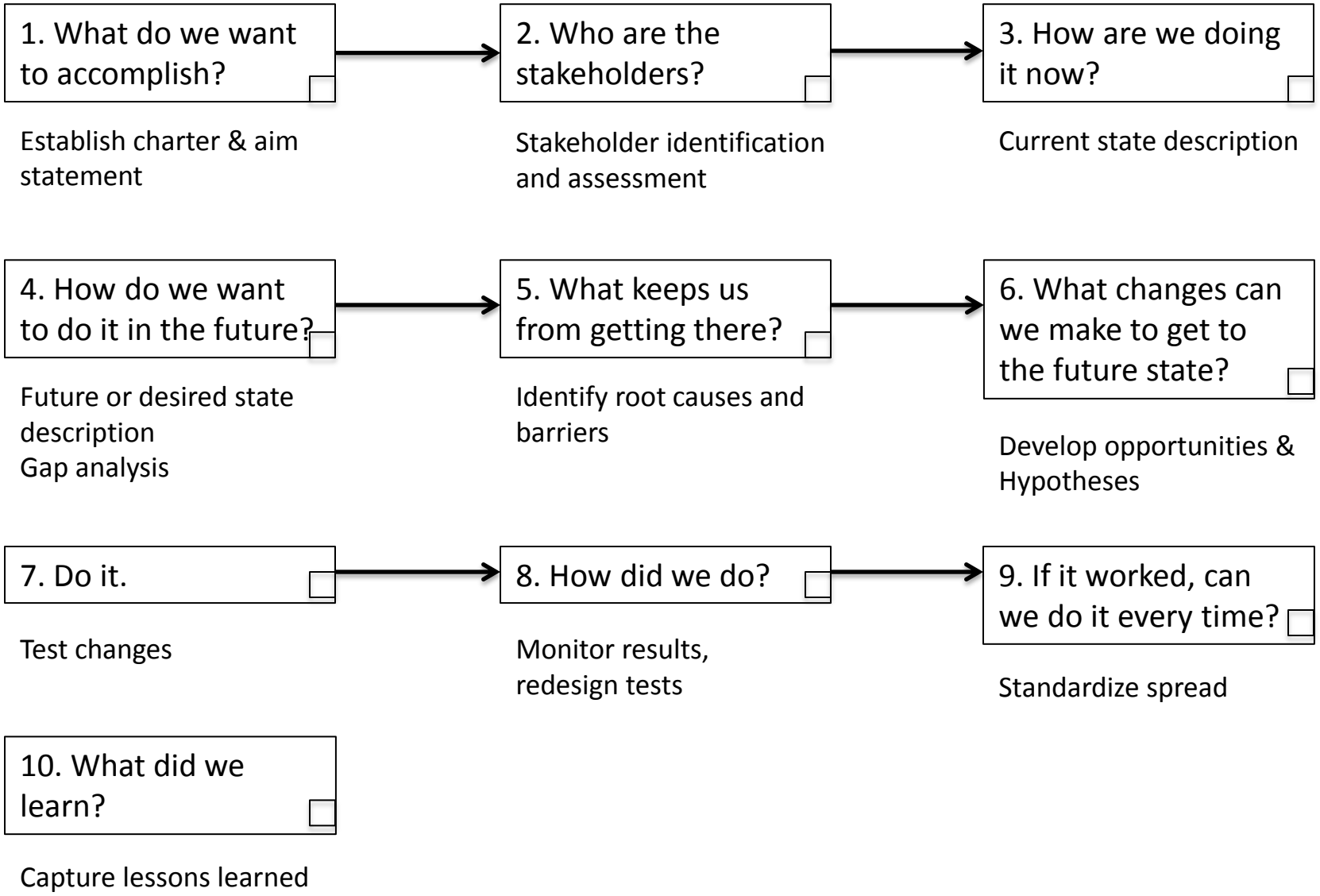
1. Ask the right question (ask the wrong question and get the wrong answer) (5% ⟶20%)
2. Gather intelligence (knowable and unknowable; avoid information that confirms biases) (45% →35%)
3. Systematically arrive at conclusions (even while asking further questions) (40%⟶25%)
4. Learn from feedback (and be willing to adjust your conclusions accordingly)(10% ⟶20%)

The Trap:

“Millions of dollars and working hours are wasted in finding solutions to the wrong problems. An ill-defined problem or mistaken premise can eliminate promising solutions before they can even be considered. People tend to identify convenient problems and find solutions that are familiar to them rather than looking more deeply.”

Daniel B. McLaughlin, MHA
John R. Olson, PhD
Authors of “Healthcare Operations Management 2nd Edition” (HAP, 2012)

Allina Health Improvement Model
Ten Step Quality Improvement Process



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II. Once the problem is properly framed, map the appropriate process:

1. Mind mapping: a non-linear technique used to develop thoughts and ideas by placing pictures or phrases on a map to show logical connections
2. Process mapping (flowchart): a graphic depiction of a process showing its inputs, outputs, and steps
3. Service blueprinting: a process map that separates actions into onstage (visible to the customer) and backstage (not visible to the customer)

Mind Mapping

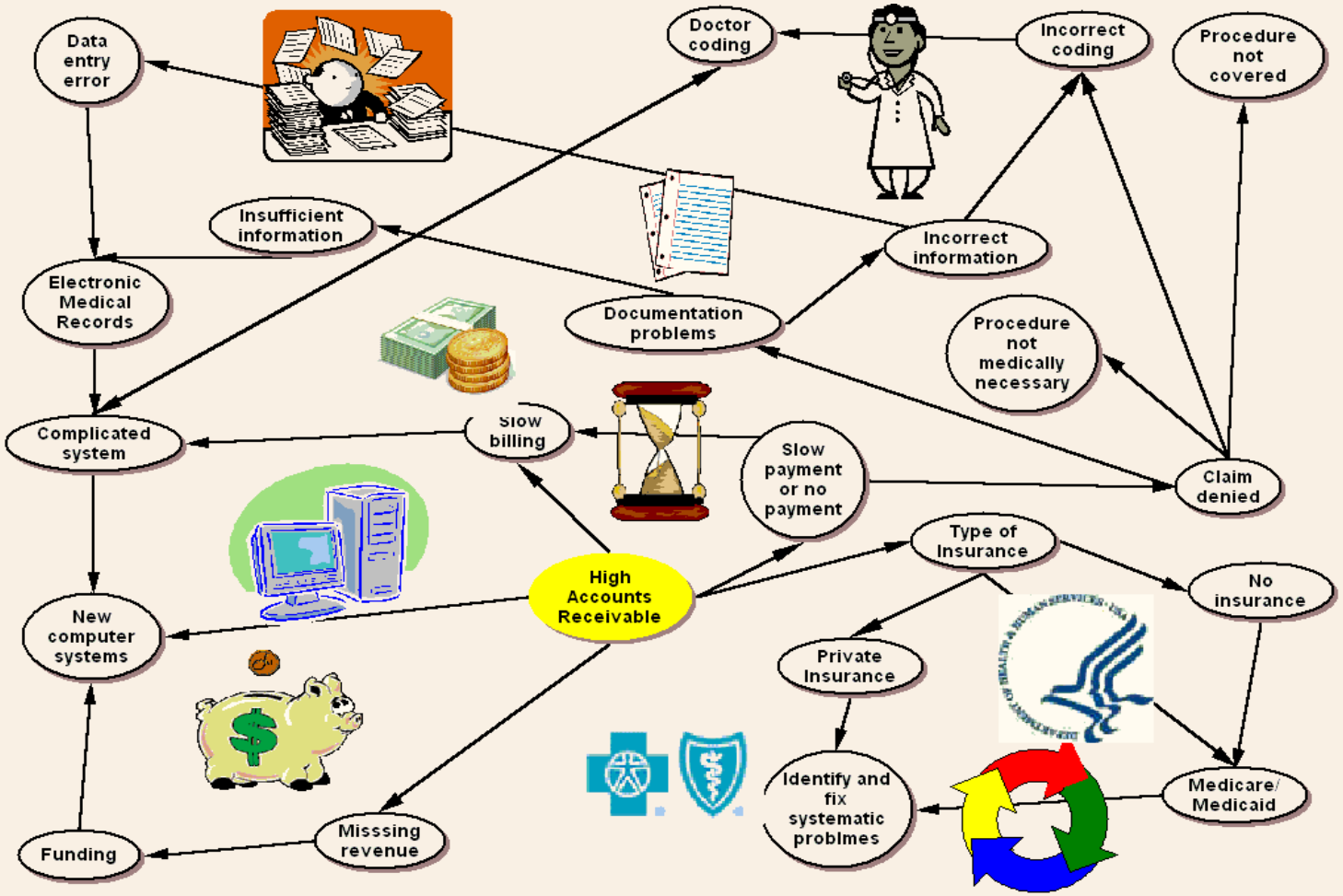
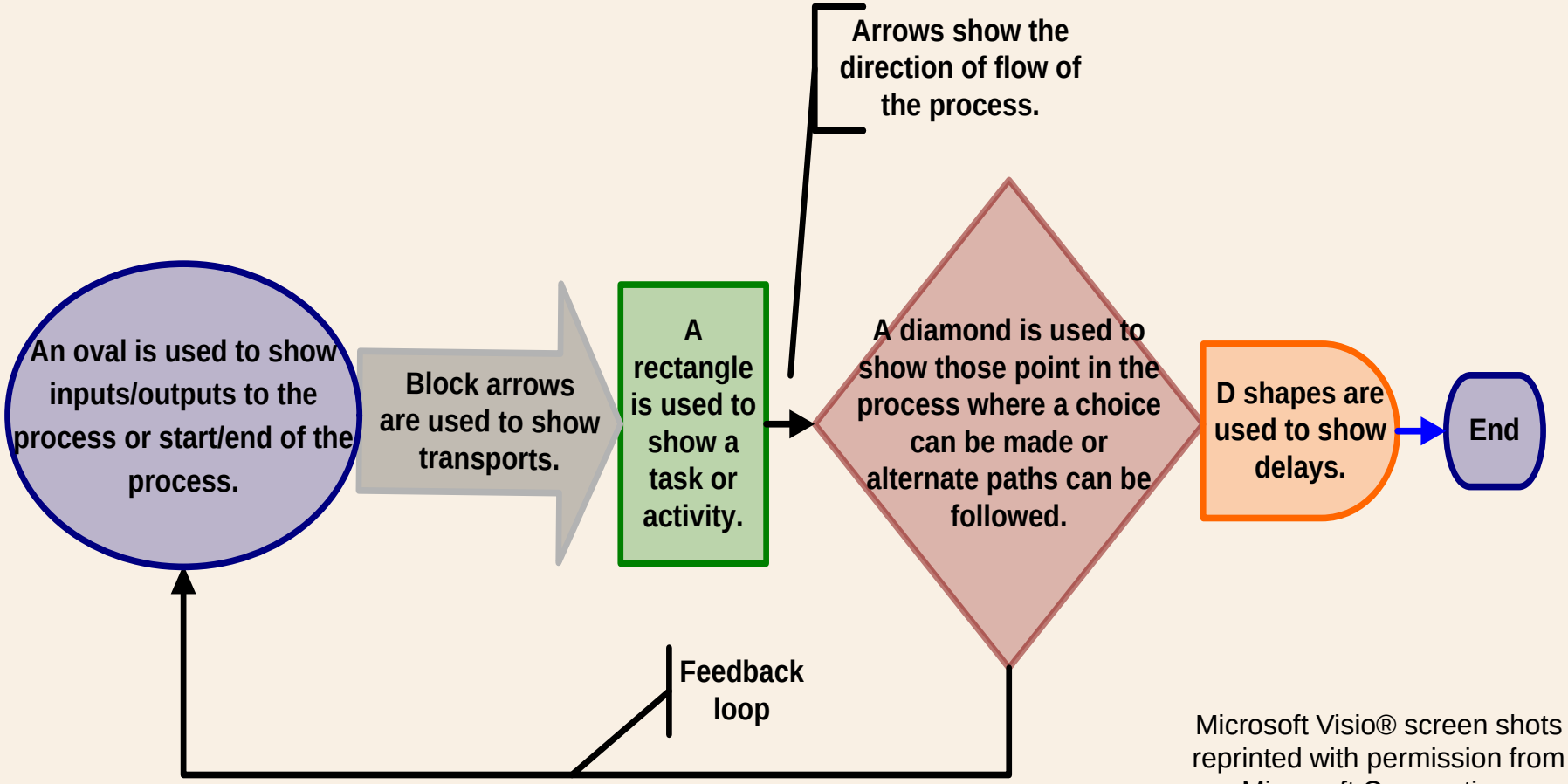
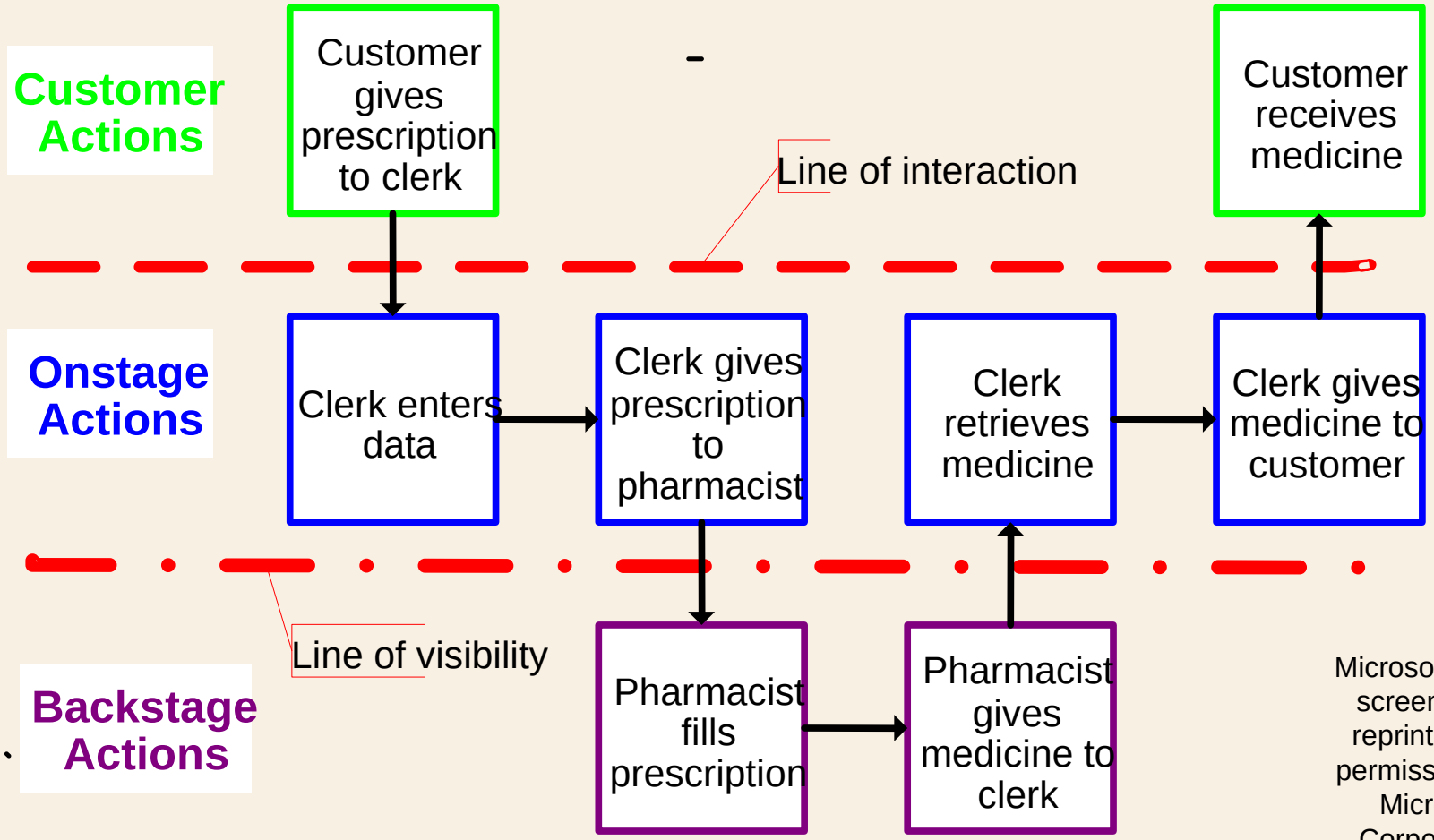


Diagram created in Inspiration® by Inspiration Software®, Inc.

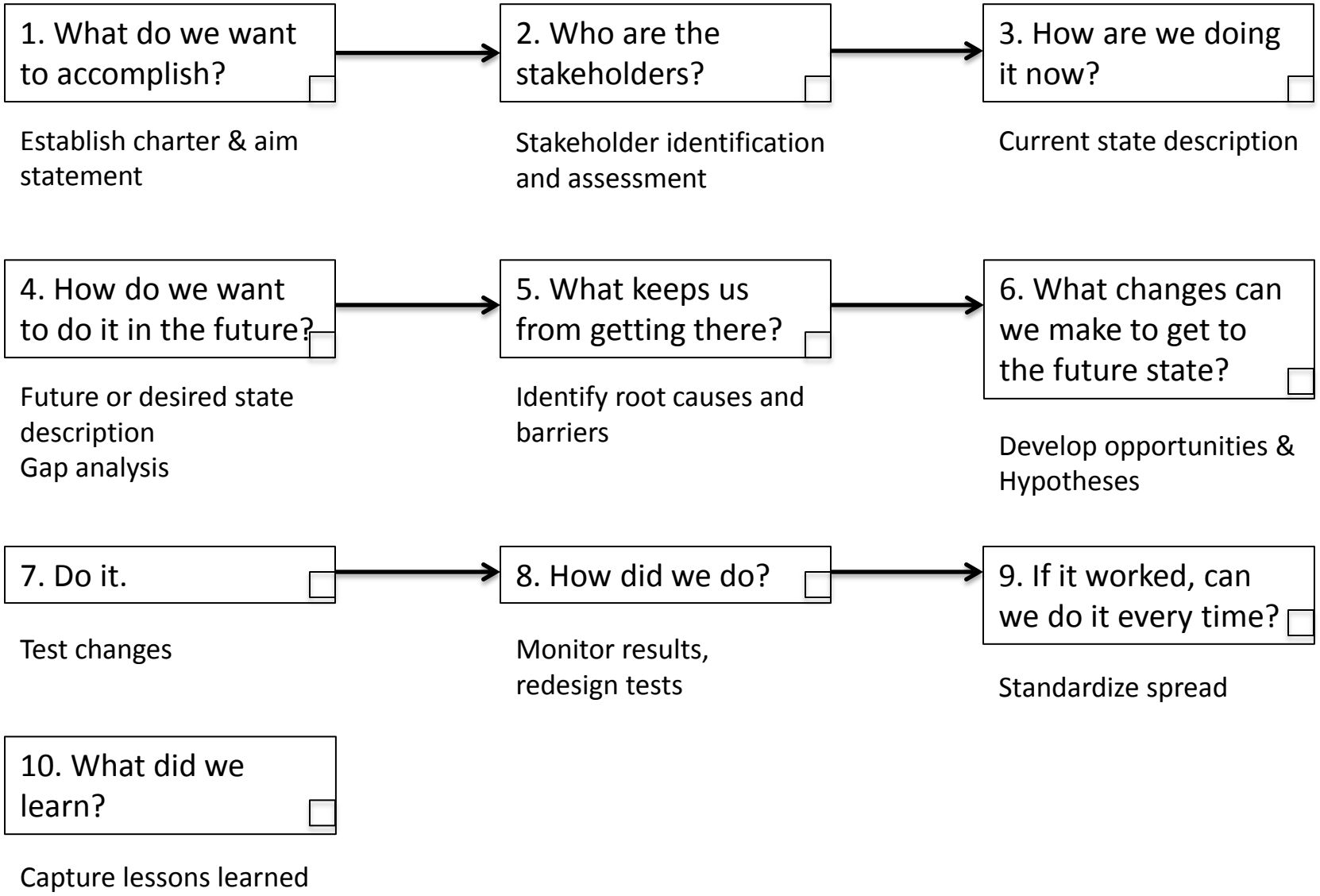
Flowchart Standard Symbols



Service Blueprinting



Allina Health Improvement Model
Ten Step Quality Improvement Process



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III. Once the appropriate process is mapped, identify the problems:

1. Root cause analysis (RCA): a retrospective structured problem solving technique to identify root (as opposed to proximate) causes of the problem
2. Failure mode and effects analysis (FMEA): a prospective problem solving technique that identifies potential failure modes in a process and prioritizes them based upon likelihood of occurrence (1-10), detectability (1-10), and severity (1-10) which multiplied together equals the risk priority number (RPN)

Once the appropriate process is mapped, identify the problems:

3. Theory of Constraints (1986):

a. Identify the constraint or bottle neck

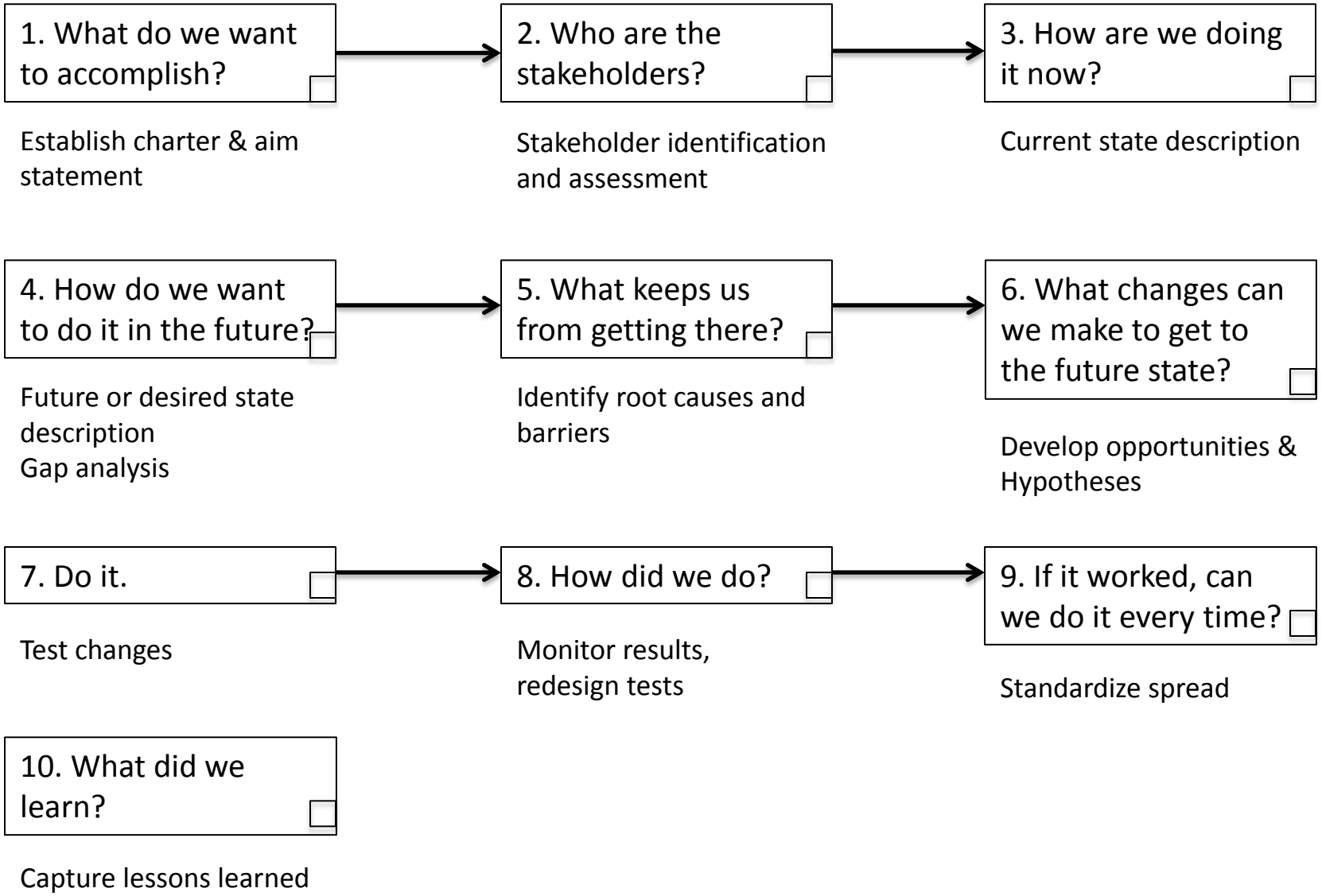
b. Exploit it

c. Subordinate everything else to the constraint (synchronize other actions to it)

d. Elevate the constraint until it is no longer the constraint

e. Repeat the process for the new constraint

Allina Health Improvement Model
Ten Step Quality Improvement Process



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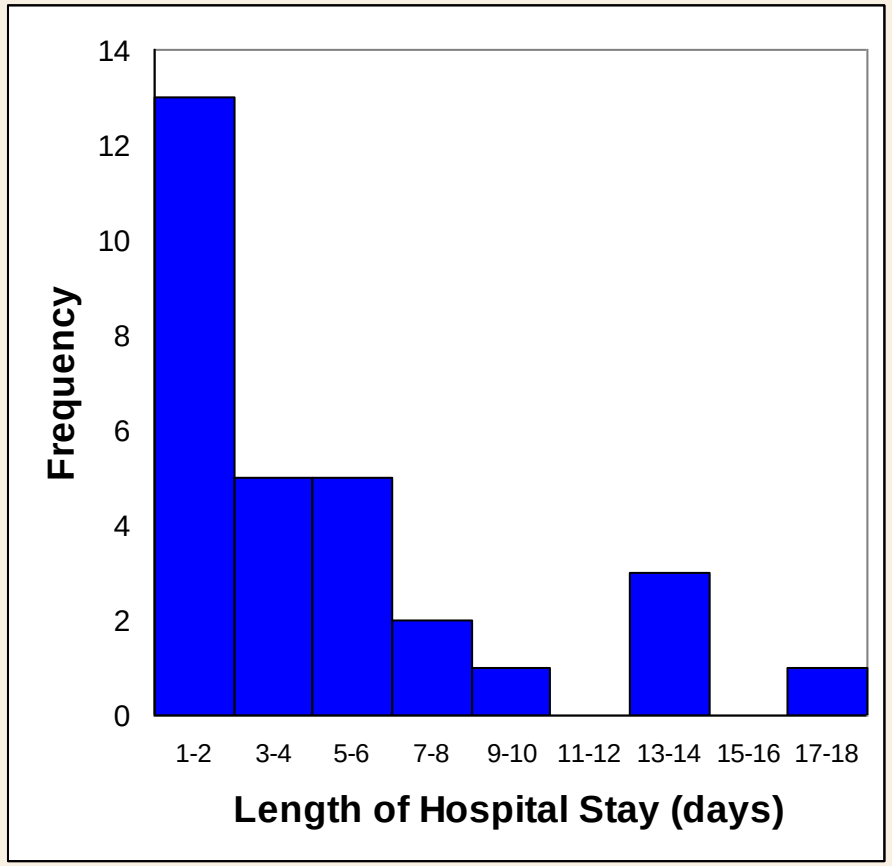
IV. Once the problems are identified, measure and analyze them utilizing graphic tools:

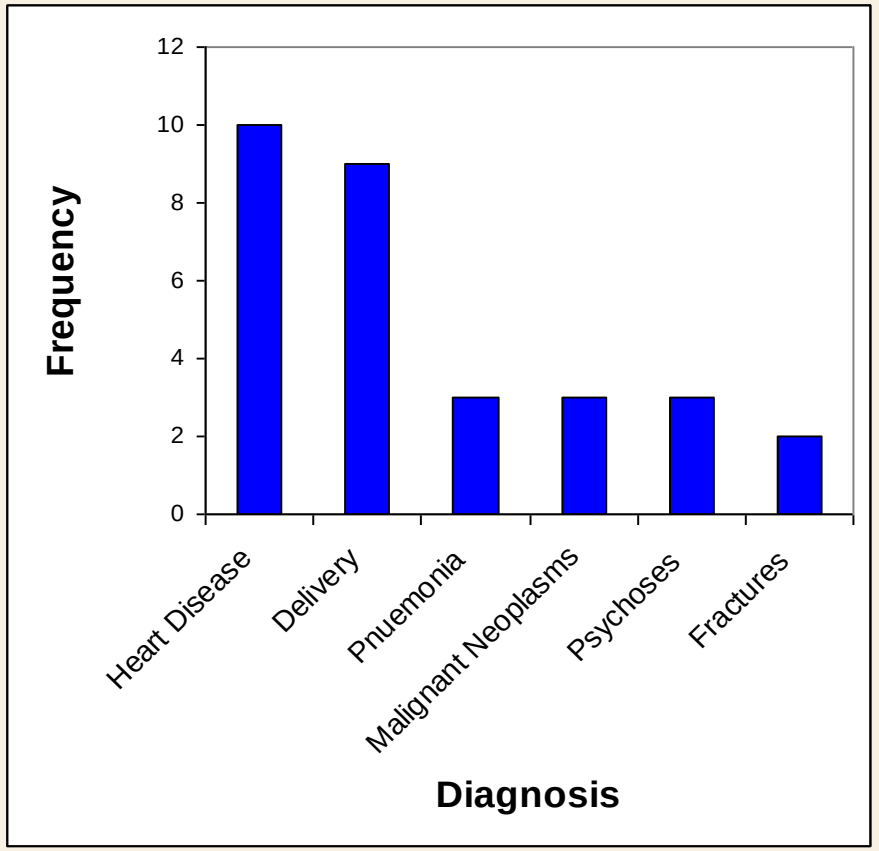
- Mind maps
- Check sheets
- Histograms and Pareto Diagrams
- Dot Plots
- Scatter Plots

Graphical Tools: Histograms and Pareto Charts

Length of Hospital Stay

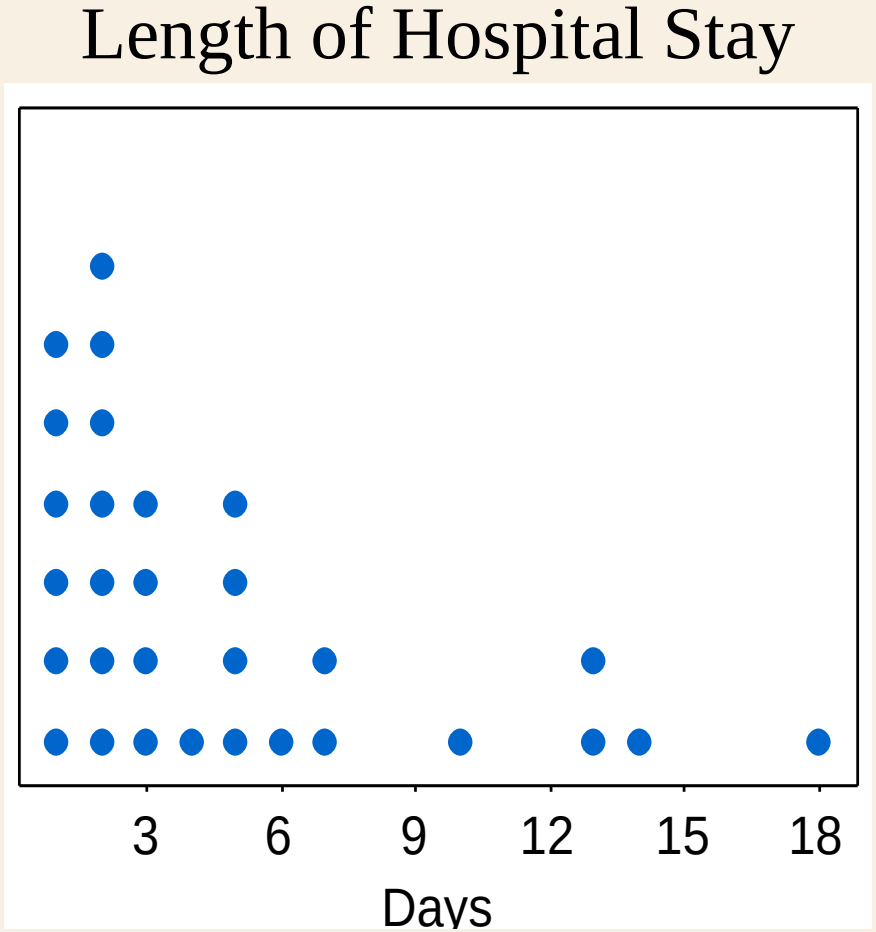


Diagnosis Category



Microsoft Excel screen shots reprinted with permission from Microsoft Corporation.

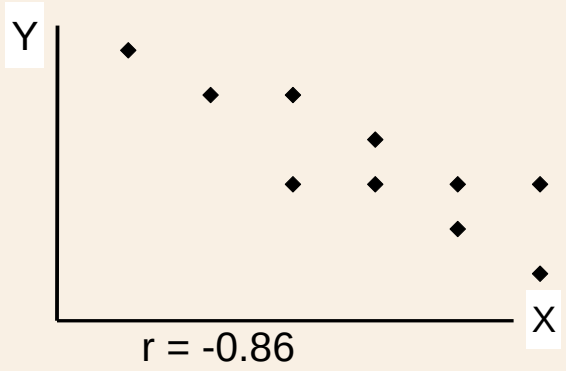
Graphical Tools: Dot Plots



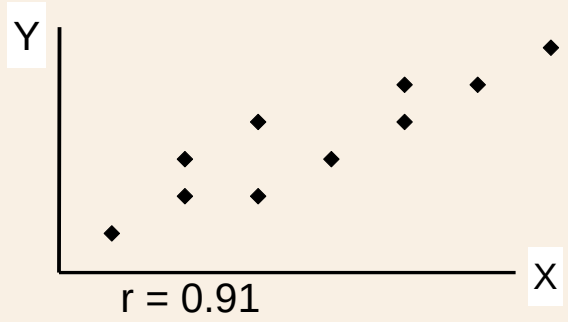
Produced with Minitab statistical software

Graphical Tools: Scatter Plots

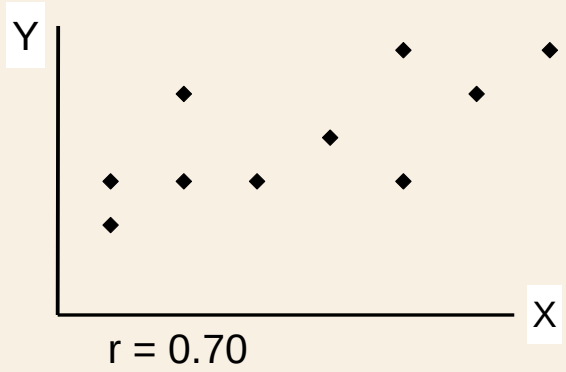
Strong Negative Correlation



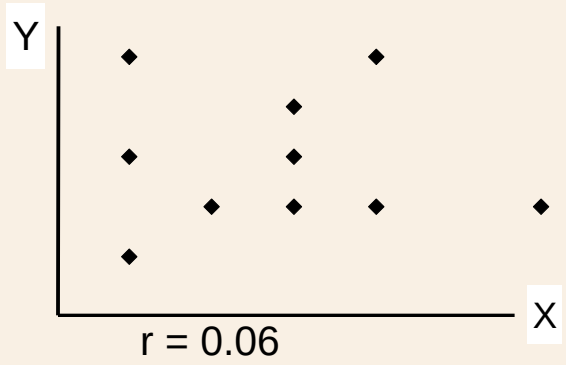
Strong Positive Correlation



Positive Correlation



No Correlation



Utilize Lean Management Techniques to eliminate ‘waste’ and make the process more efficient

- The Toyota Production System (“The Machine that Changed the World”-1990) developed by Taiichi Ohno

- Optimizes quality and reduces costs by eliminating waste and inefficiency

Types of Waste (‘Muda’)=too much…

- Production
- Waiting
- Transportation
- Inventory
- Motion
- Processing (excessive non-value added steps/procedures)
- Defects (errors)

Key Philosophies and Approaches in "Lean"

- Kaizen and Kaizen Events: Continual improvement through-specify value (customer's prospective), map and improve the value stream, enhance flow, enable the customer to drive flow (pull or market driven), move towards perfection
- Measure takt time (speed that customers must be served to satisfy demand), cycle time (time to accomplish a task), throughput time (time to complete the entire process)

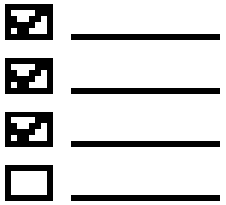
Key Philosophies and Approaches in "Lean"

- Standardize work (clinical/functional pathways)
- Jidoka: ability to stop a process when an error occurs)
- Andon: a visible signal utilized to signal an error or defect
- Kanban: a visible signal that triggers the movement of inventory/product in a system
- Rapid changeover (optimizing set ups)
- Heijunka: eliminating variations in volume and variety of production to reduce waste

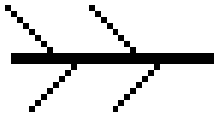
Utilize Six Sigma Techniques to Eliminate Defects through Removal of Non-Value Added Variance:

- Developed by Motorola and exploited by GE (1980s)
- Philosophy of constant change management
- Team based projects that address key (“Big Q”) strategic initiatives
- Utilizes Define/Measure/Analyze/Improve/Control (DMAIC) problem solving technique and quantitative measures of project success
- Visualizes problems with seven basic quality tools popularized by Kauro Ishikawa

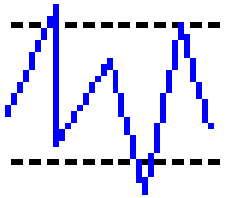
Seven Basic Quality Tools



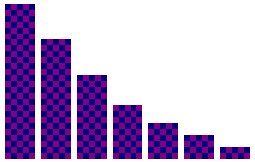
Check Sheet



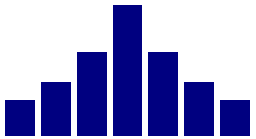
Fishbone Diagram



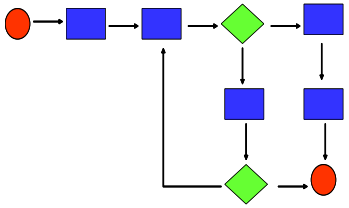
Run Chart



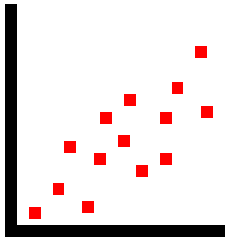
Pareto Chart



Histogram



Flow Chart



Scatter Diagram

Key Six Sigma Concepts:

- Taguchi methods: measure against an absolute standard (zero defects) rather than conformance to specifications and where variation is minimal
- Benchmark to the ‘best’
- Poka-yoke (prevent mistakes by making them immediately obvious or eliminating them)
- Measure the Process Capability: how well a process can produce output that meets desired specifications
- Measure the Rolled Throughput Yield (RTY): the probability that a unit of product/service will pass through the process free of defects

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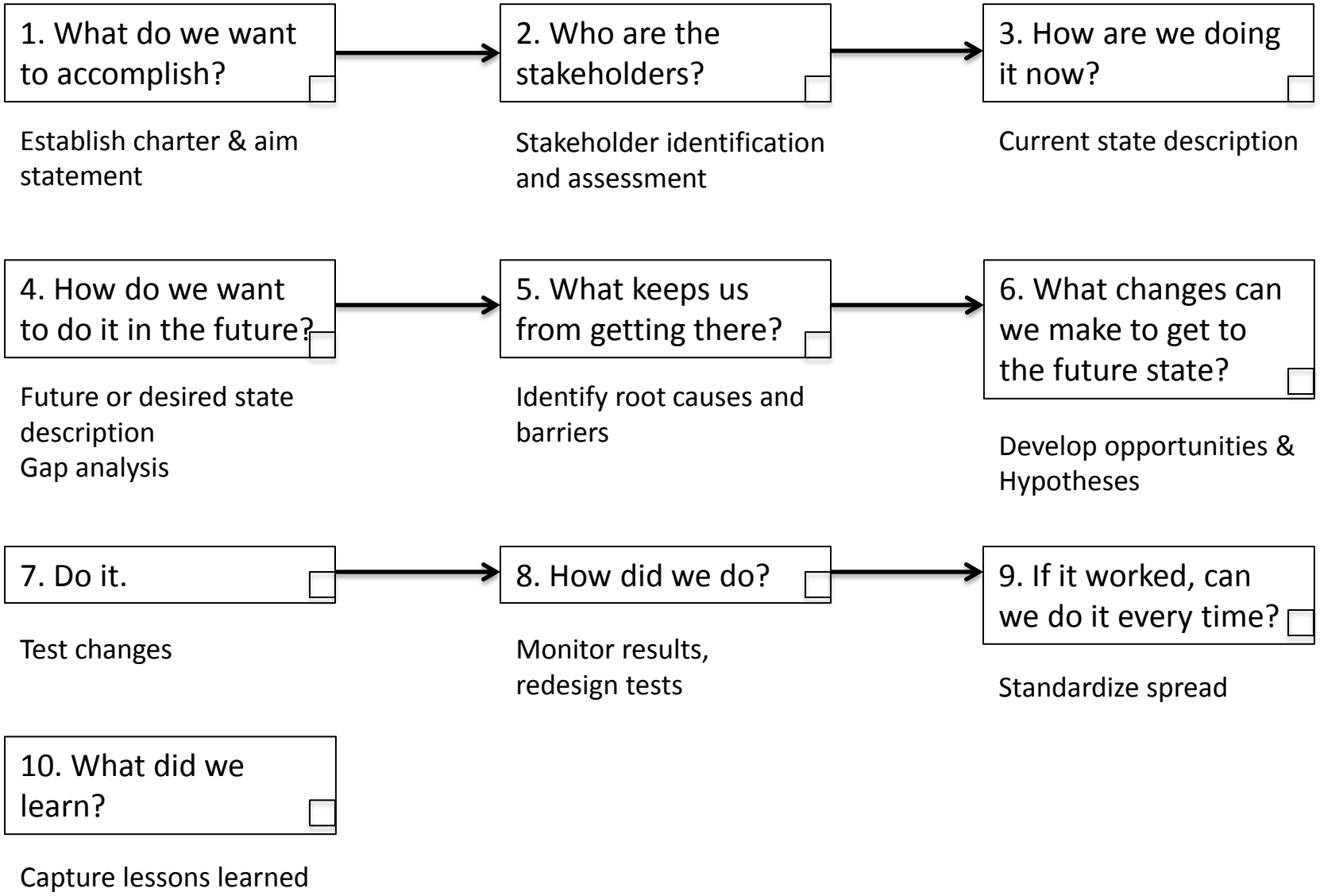

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V. Once the problem is solved…

- Continue to monitor to hold the gains
- If the problem relapses, consider digging deeper into the problem
- Measure the quality/financial implications of solving the problem (Cost/Volume/Profit analysis)
- Continue the improvement process based upon strategic importance

Ancient Wisdom:

“Quality is not an act; it is a habit.”

----Aristotle (346 BC)

Thank You for Joining Us!

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