Introduction to the Science of Improvement

Presented

Jane Taylor, EdD

Improvement Advisor

Institute for Healthcare Improvement

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Newport Beach, California

Objectives

- Provide an overview of the Model for Improvement
- **Specify the differences between testing, implementing and spreading.**
- Identify key concepts and tools that should be part of your QI toolkit.

IS LIFE THIS SIMPLE?

Patient encounter with physician

A healthy and satisfied patient

(If only it was this simple!)

The Messiness of Life!

"Some problems are so complex that you have to be highly intelligent and well informed just to be undecided about them."

--Laurence J. Peter

A good reference on this topic is "Wicked Problems and Social Complexity " by Jeff Conklin, Ph.D., Chapter 1 in Dialogue Mapping: Defragmenting Projects through Shared Understanding. For more information see the CogNexus Institute website at http://cognexus.org , 2004.

The Quality Pioneers

W. Edwards Deming
(1900 – 1993)

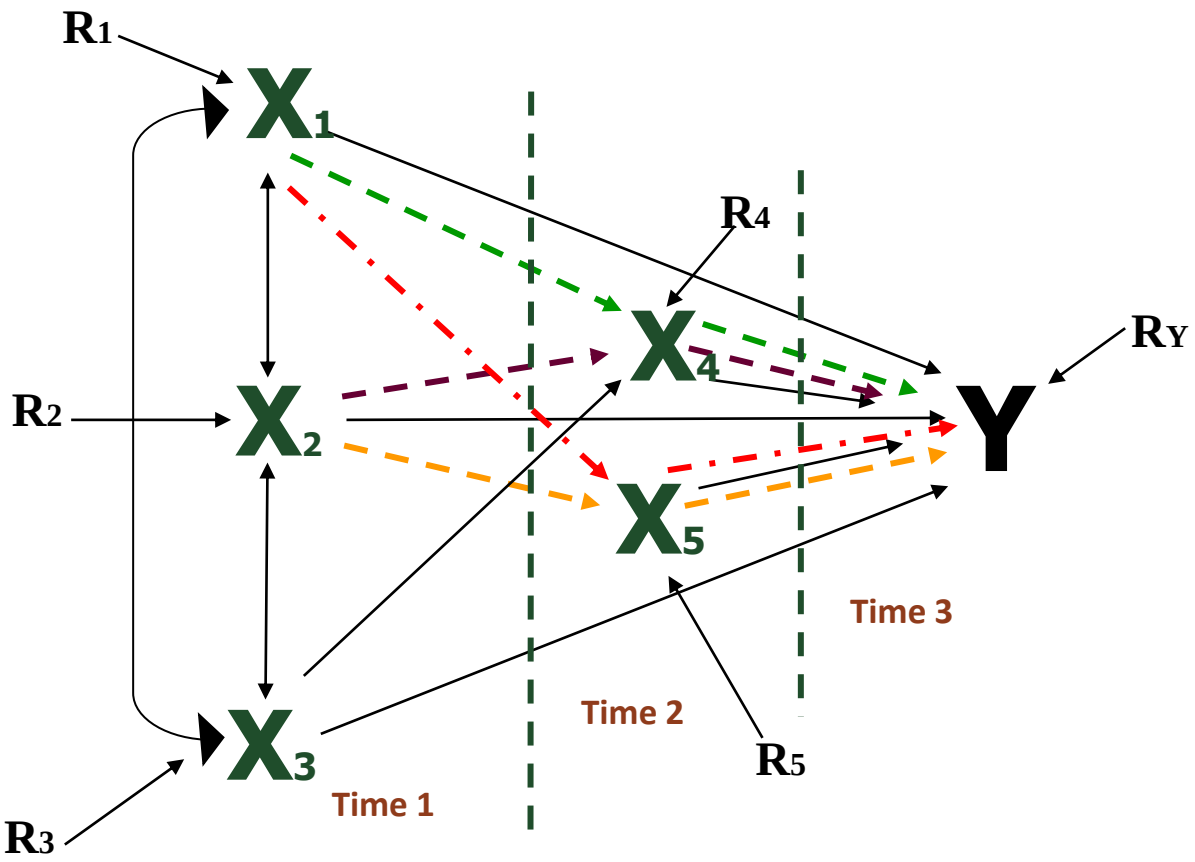
Walter Shewhart
(1891 – 1967)

Joseph Juran
(1904 - 2008)

Dr. Walter Shewhart

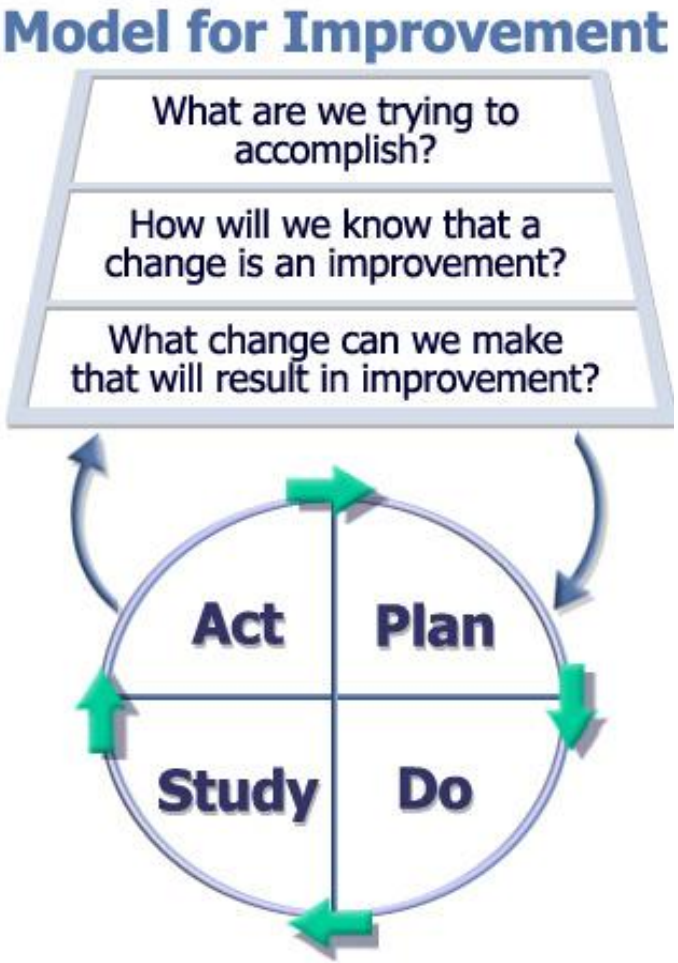
"Both pure and applied science have gradually pushed further and further the requirements for accuracy and precision. However, **applied science**, is even more exacting than pure science in certain matters of accuracy and precision."

The messiness of life requires applied science



A Model for Learning and Change

When you combine the 3 questions with the…

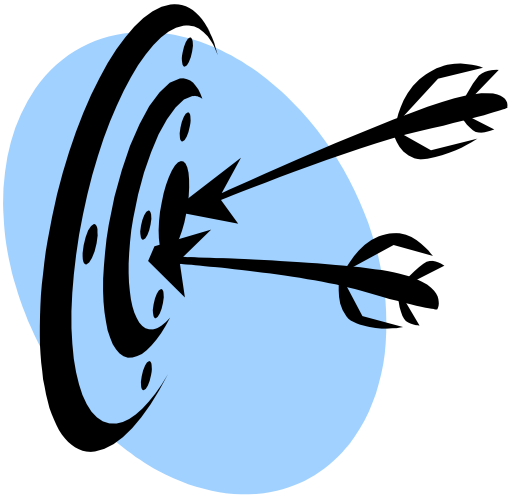


PDSA cycle, you get…

…the Model for Improvement.

The Improvement Guide, API, 1996

Question #1:
What are We Trying to Accomplish?



Developing the team's
Aim Statement

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Constructing an Aim Statement

- **Boundaries**: the *system* to be improved (scope, patient population, processes to address, providers, beginning & end, etc.)
- Specific **numerical *goals*** for ***outcomes***
  - Ambitious but achievable
- Includes ***timeframe*** *(How good by when?)*
- Provides ***guidance*** on sponsor, resources, strategies, barriers, interim & process goals

Constructing an Aim Statement

- **Involve senior leaders**
  - Obtain sponsorship (geared to the project's complexity)
  - Provide frequent and brief updates (practice the 2 minute elevator speech)

- **Focus on issues that are important to your organization**
  - Connect the team Aim Statement to the Strategic Plan
  - Build on the work of others (steal shamelessly!)

Example #1 of an Aim Statement

Aim Statement for the IHI Hospital Acquired Infections Community:

Overall, to reduce infections from MRSA, VRE and *C. diff* by 30% within 12 months.

How good? By When?

Hope is not a plan!

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Example #2 of an Aim Statement

In a pilot population, our hospital will decrease peri-operative harm by 25% within 1 year by focusing on prevention of surgical site infection (SSI) and implementation of pre-procedural briefings in orthopedic and vascular surgery.

Team: Leadership: VPMM
Technical: Orthopedic surgeon
Day-to-day: OR manager, surgical technician
Additional members: Safety specialist, nursing

- *System*: perioperative harm in pilot population
- *Goal*: 25% reduction
- *Timeframe*: 1 year
- *Guidance:* Team membership

Example #3 of an Aim Statement

In the pilot units, we will reduce the incidence of Ventilator Acquired Pneumonia by 50% within 3 months and to zero within 1 year. Within one year, reduce VAP incidence by 50% system-wide, and to zero within 2 years.

We will ensure that our work contributes to a sustainable QI infrastructure to support future projects.

- *System*: ventilator care in pilot units, all hospitals – (all drivers?)
- *Goal*: Reduce VAP "by 50%", "to zero"
- *Timeframe*: 3 months, 1 year, 2 years
- *Guidance:* Build QI infrastructure

Aim Statement	Good	Bad	Ugly
We aim to reduce harm and improve patient safety for all of our internal and external customers.			
By December of 2012 we will reduce the incidence of pressure ulcers in the critical care unit by 50%.			
Our outpatient testing and therapy patient satisfaction scores are in the bottom 10% of the national comparative database we use. As directed by senior management, we need to get the score above the 50th percentile by the end of the 1st Q of 2013.			
We will reduce all types of hospital acquired infections.			
According to the consultant we hired to evaluate our home health services, we need to improve the effectiveness and reliability of home visit assessments and reduce rehospitalization rates. The board agrees, so we will work on these issues this year.			
Our most recent data reveal that on the average we only reconcile the medications of 35% of our discharged inpatients. We intend to increase this average to 50% by 10/1/12 and to 75% by 3/31/12.			

Check Points in Developing an Aim Statement

AIM Content

- Explicit overarching description
- Specific actions or focus
- Goals

AIM Characteristics

- Measurable (How good?)
- Time specific (By when?)
- Define participants and customers

Exercise: Aim Statement

- If you are already on an improvement team and have an Aim Statement, then review your Aim for clarity, performance expectations, and completion date.
- **If you are not on an improvement team, create an Aim Statement for a team you would like to start.**
- Spend about 10 minutes working on this exercise, then compare your statement with your neighbors.
- Use the ***Aim Statement Worksheet*** to create or revisit your an Aim Statement.

Aim Statement Worksheet

Team name: _____

Aim statement
(What is the problem? Why is it important? What are we going to do about it?)

See Worksheet Packet

How good? _____

By when? _____

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Question #2: How Do We Know that a Change is an Improvement?

"When you can measure what you are speaking about and express it in numbers, you know something about it; but when you cannot measure it, when you cannot express it in numbers, your knowledge is of a meager and unsatisfactory kind."

"In God we trust.
All others bring data."

W. E. Deming

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How do we know if a change is an improvement?

"You can't fatten a cow by weighing it."

- Palestinian Proverb

Improvement is *NOT* just about measurement!

However, without measurement you will never be able to know the answer to question #2 in the MFI.

Measurement is Central to the Team's Ability to Improve

- The purpose of measurement in QI work is for *learning, not judgment!*
- **All measures have limitations, but the limitations do not negate their value for learning.**
- You need a balanced set of measures reported daily, weekly or monthly to determine if the process has improved, stayed the same or become worse.
- **These measures should be linked to the team's Aim.**
- Measures should be used to guide improvement and test changes.
- **Measures should be integrated into the team's daily routine.**
- Data should be plotted over time on annotate graphs.
- **Focus on the Vital Few!**

The Quality Measurement Journey

Source: R. Lloyd. *Quality Health Care: A Guide to Developing and Using Indicators.* Jones and Bartlett Publishers, 2004.

A Family of Measures

- **Outcome Measures:** Voice of the customer or patient. How is the system performing? What is the result?
- **Process Measures:** Voice of the workings of the system. Are the parts/steps in the system performing as planned?
- **Balancing Measures:** Looking at a system from different directions/dimensions. What happened to the system as we improved the outcome and process measures (e.g. unanticipated consequences, other factors influencing outcome)?

An Operational Definition...

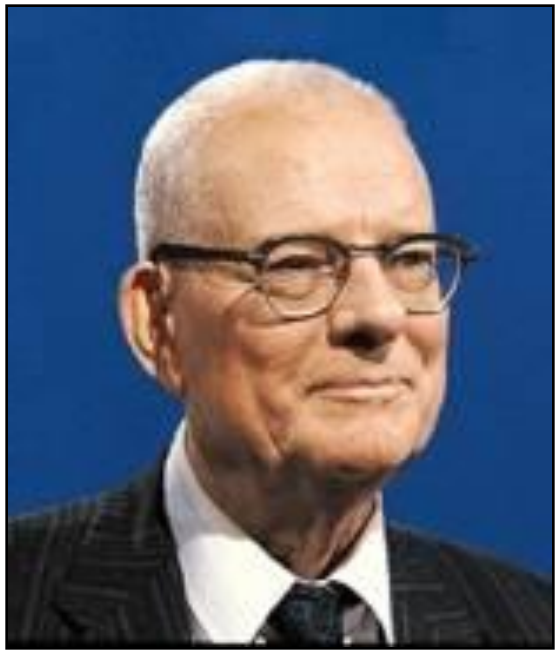
… is a description, in quantifiable terms, of what to measure and the steps to follow to measure it consistently.

- **Gives communicable meaning to a concept**
- **Is clear and unambiguous**
- **Specifies measurement methods and equipment**
- **Identifies criteria**

How do you define the following healthcare concepts?

- World Class Performance
- Alcohol related admissions
- Teenage pregnancy
- Cancer waiting times
- Health inequalities
- Asthma admissions
- Childhood obesity
- Patient education
- Health and wellbeing
- Adding life to years and years to life
- Children's palliative care
- Safe services
- Smoking cessation
- Urgent care
- Delayed discharges
- End of life care
- Falls (with/without injuries)
- Childhood immunizations
- Complete maternity service
- Patient engagement
- Moving services closer to home
- Successful breastfeeding
- Ambulatory care
- Access to health in deprived areas
- Diagnostics in the community
- Productive community services
- Vascular inequalities
- Breakthrough priorities

What do you do with data once you have it?



"If I had to reduce my message for management to just a few words, I'd say it all had to do with reducing variation."

W. Edwards Deming

The Problem

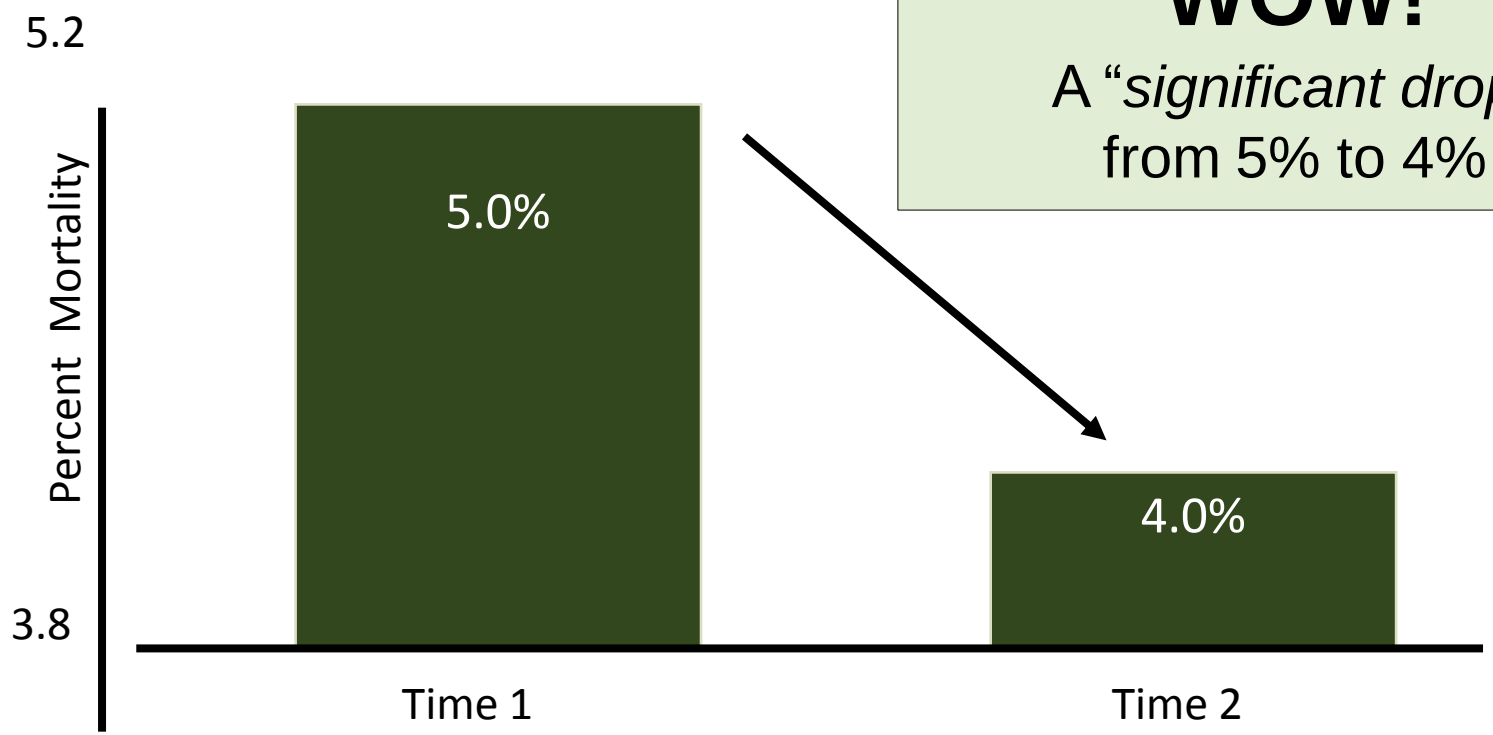
Aggregated data presented in tabular formats or with summary statistics will not help you measure the impact of process improvement efforts. Aggregated data can only lead to judgment, not to improvement.

Average CABG Mortality

Before and After the Implementation of a New Protocol

WOW!

A "*significant drop*" from 5% to 4%



Conclusion -The protocol was a success!
A 20% drop in the average mortality!

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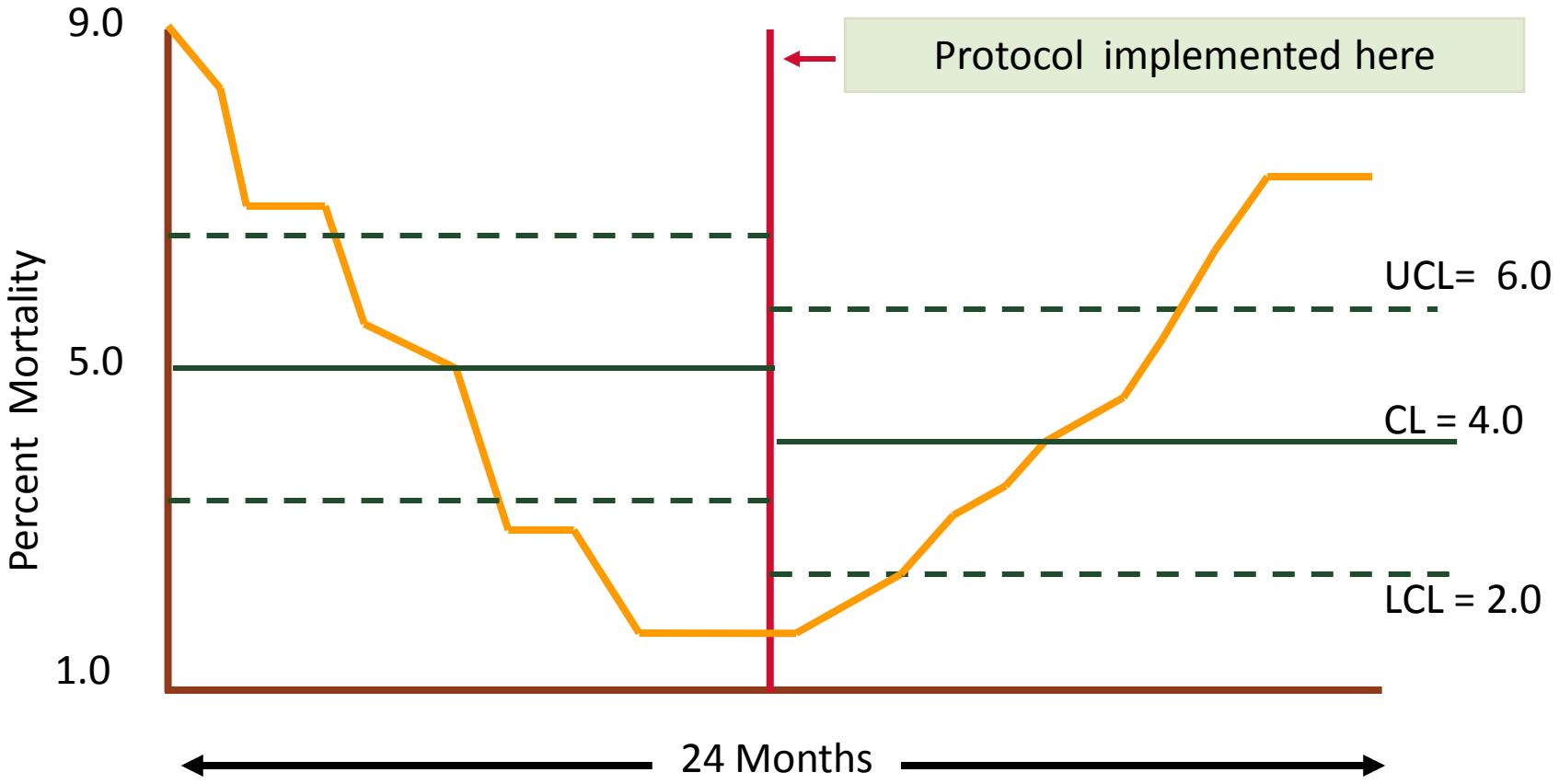
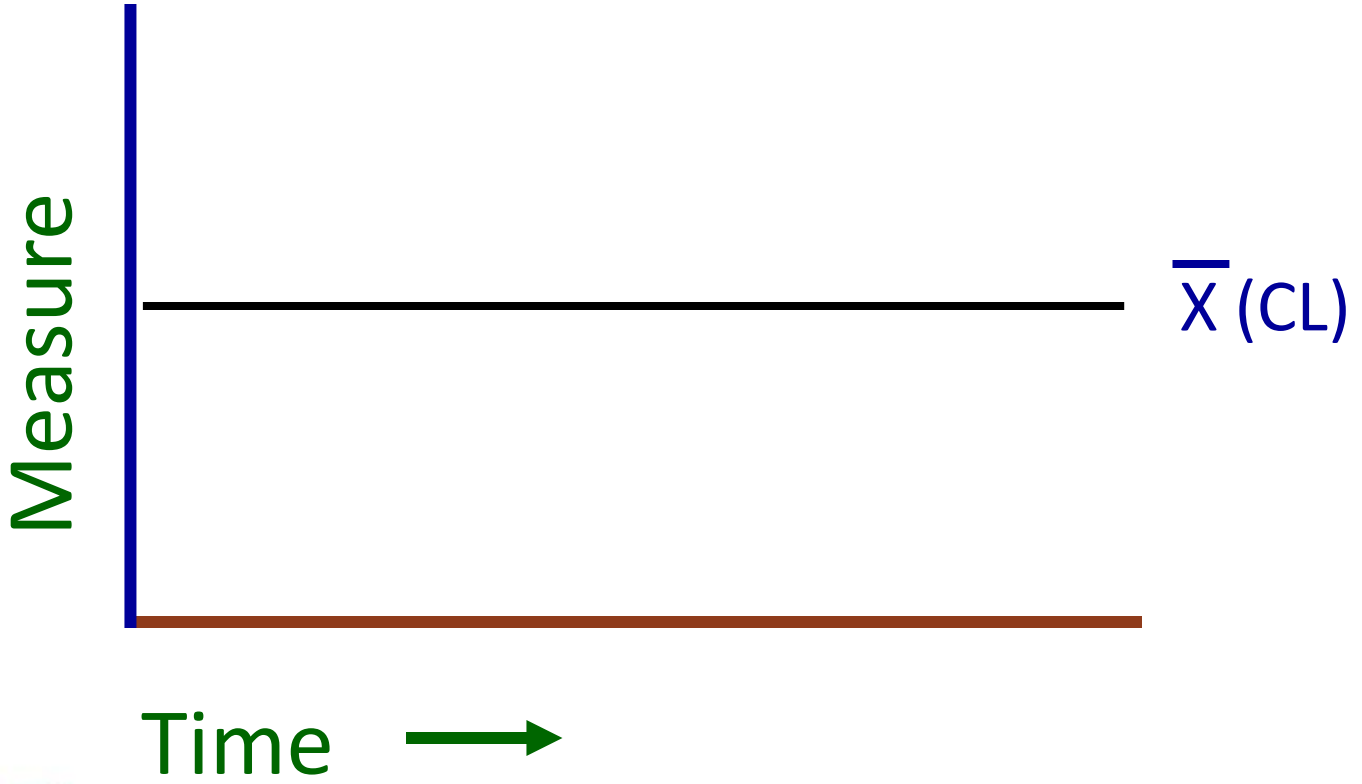
Average CABG Mortality

Before and After the Implementation of a New Protocol
A Second Look at the Data



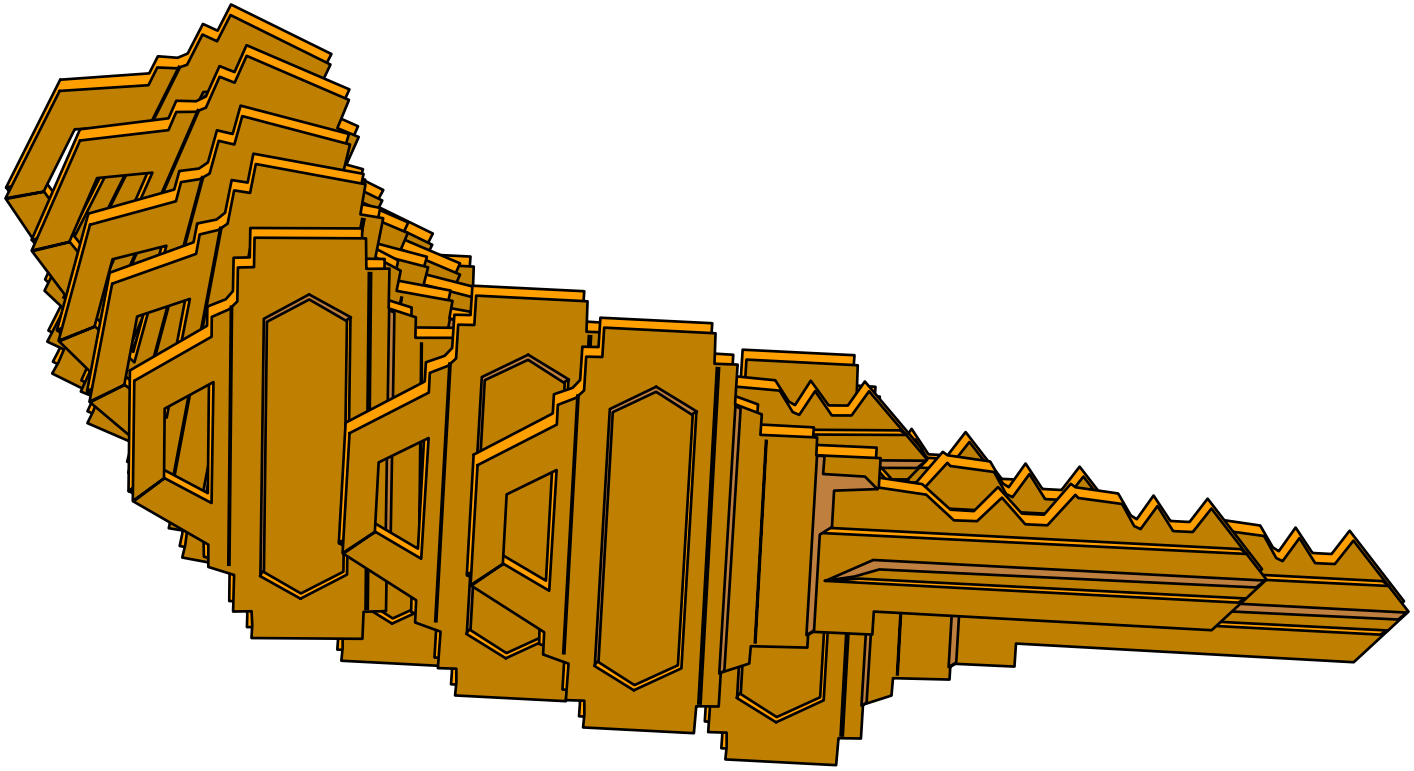
Now what do you conclude about the impact of the protocol?

The average of a set of numbers can be created by many different distributions



If you don't understand the variation that lives in your data, you will be tempted to ...

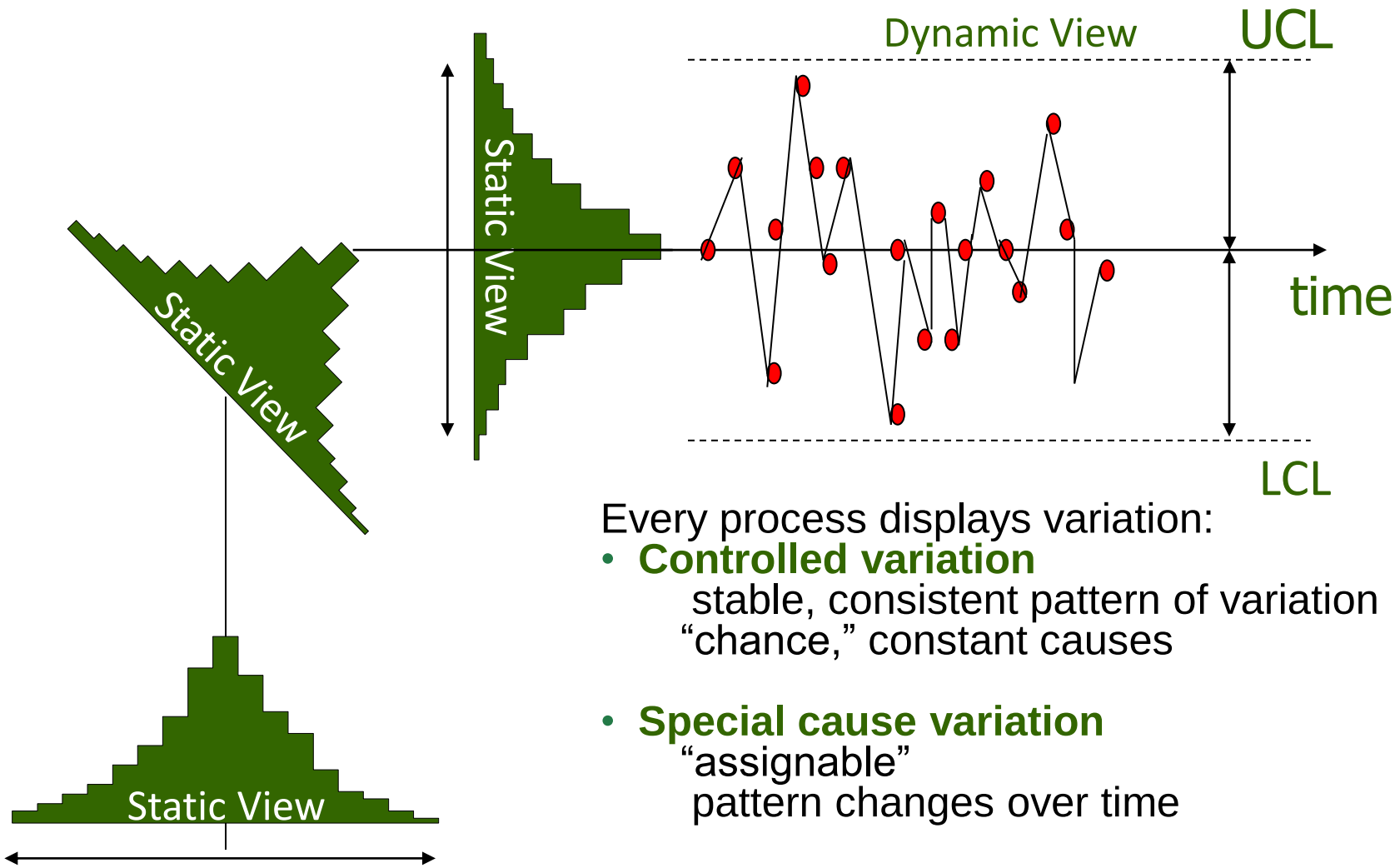
- **Deny the data (It doesn't fit my view of reality!)**
- See trends where there are no trends.
- **Try to explain natural variation as special event**s.
- Blame and give credit to people for things over which they have no control.
- **Distort the process that produced the data.**
- Kill the messenger!

The 

to understanding quality performance, therefore, lies in understanding variation over time not in preparing aggregated data and calculating summary statistics!

“What is the variation in one system over time?”

Walter A. Shewhart - early 1920’s, Bell Laboratories



Every process displays variation:

- **Controlled variation**
  stable, consistent pattern of variation
  “chance,” constant causes

- **Special cause variation**
  “assignable”
  pattern changes over time

Types of Variation

Common Cause Variation

- Is inherent in the design of the process
- Is due to regular, natural or ordinary causes
- Affects all the outcomes of a process
- Results in a "stable" process that is predictable
- Also known as random or unassignable variation

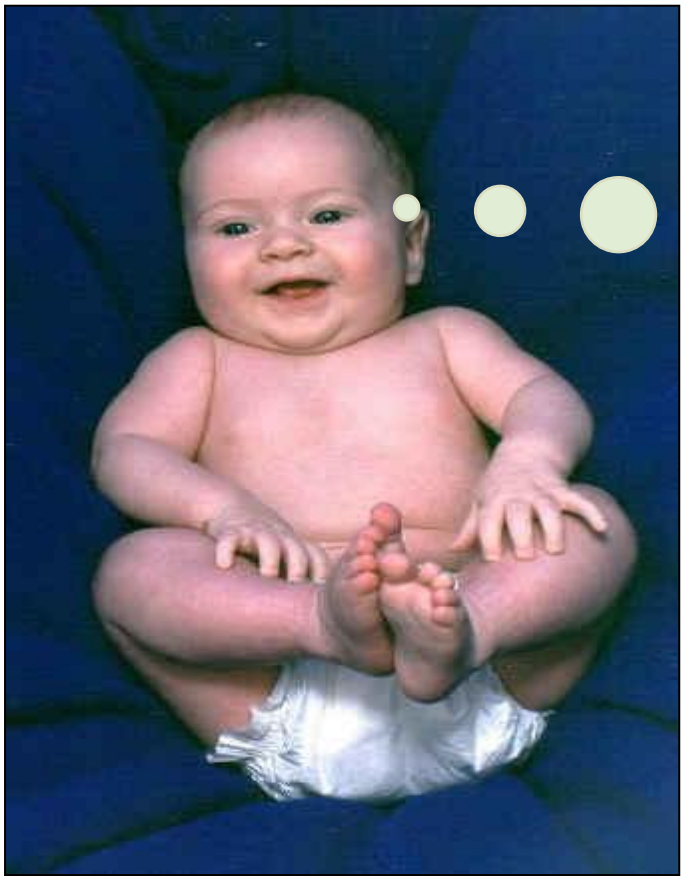
Special Cause Variation

- Is due to irregular or unnatural causes that are not inherent in the design of the process
- Affect some, but not necessarily all aspects of the process
- Results in an "unstable" process that is not predictable
- Also known as non-random or assignable variation

How do we analyze variation for quality improvement?

Run and ***Control Charts*** are the best tools to determine if our improvement strategies have had the desired effect.

Question #3: What Changes Can We Make that will Result in Improvement?



OK, I'm ready for a change now…any time would be fine!

"Nobody really looks forward to change, except a wet baby!"

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On the Nature of Change

"All improvement will require change, but not all change will result in improvement!"

G. Langley, et al *The Improvement Guide.* Jossey-Bass Publishers, San Francisco, 1996: xxi.

The Model for Improvement (MFI) provides an approach to help increase the odds that the changes we make will result in lasting improvement.

So, how do you generate change concepts and come up with new ideas?

Creative Thinking

- **Creativity implies having thoughts that are outside the normal pattern.**
- **What can you do to have "new" thoughts?**
- **How do we "provoke" new thinking?**

Change Concepts: A Good Place to Start

"A general notion or approach to change that has been found to be useful in developing specific ideas for changes that lead to improvement."

Nine general groupings of change concepts

- Eliminate waste
- Improve workflow
- Optimize inventory
- Change the work Environment
- Producer/customer interface
- Focus on time
- Focus on variation
- Mistake proofing
- Focus on product or service

Source: The Improvement Guide, p. 293

Change Concepts Related to Eliminating Waste and Improving Work Flow

A. Eliminate Waste

1. Eliminate things that are not used
2. Eliminate multiple entry
3. Reduce or eliminate overkill
4. Reduce controls on the system
5. Recycle or reuse
6. Use substitution
7. Reduce classifications
8. Remove intermediaries
9. Match the amount to the need
10. Use sampling
11. Change targets or set-points

B. Improve Work Flow

12. Synchronization
13. Schedule into multiple processes
14. Minimize handoffs
15. Move steps in the process close together
16. Find and remove bottlenecks
17. Use automation
18. Smooth work flow
19. Do tasks in parallel
20. Consider people as in the same system
21. Use multiple processing units
22. Adjust to peak demand

Source: The Improvement Guide, p. 295

Exercise:
Developing Change Concepts

- Develop several ***Change Concepts*** and ***Ideas to Test*** for your project.
- Use the ***Developing Ideas for Change Worksheet*** to record your ideas.
- Be sure to explore your theories and predictions about each change concept with those at your table.
- Spend 10 minutes on this exercise.

Developing Ideas for Change

Work Area or Project: _____

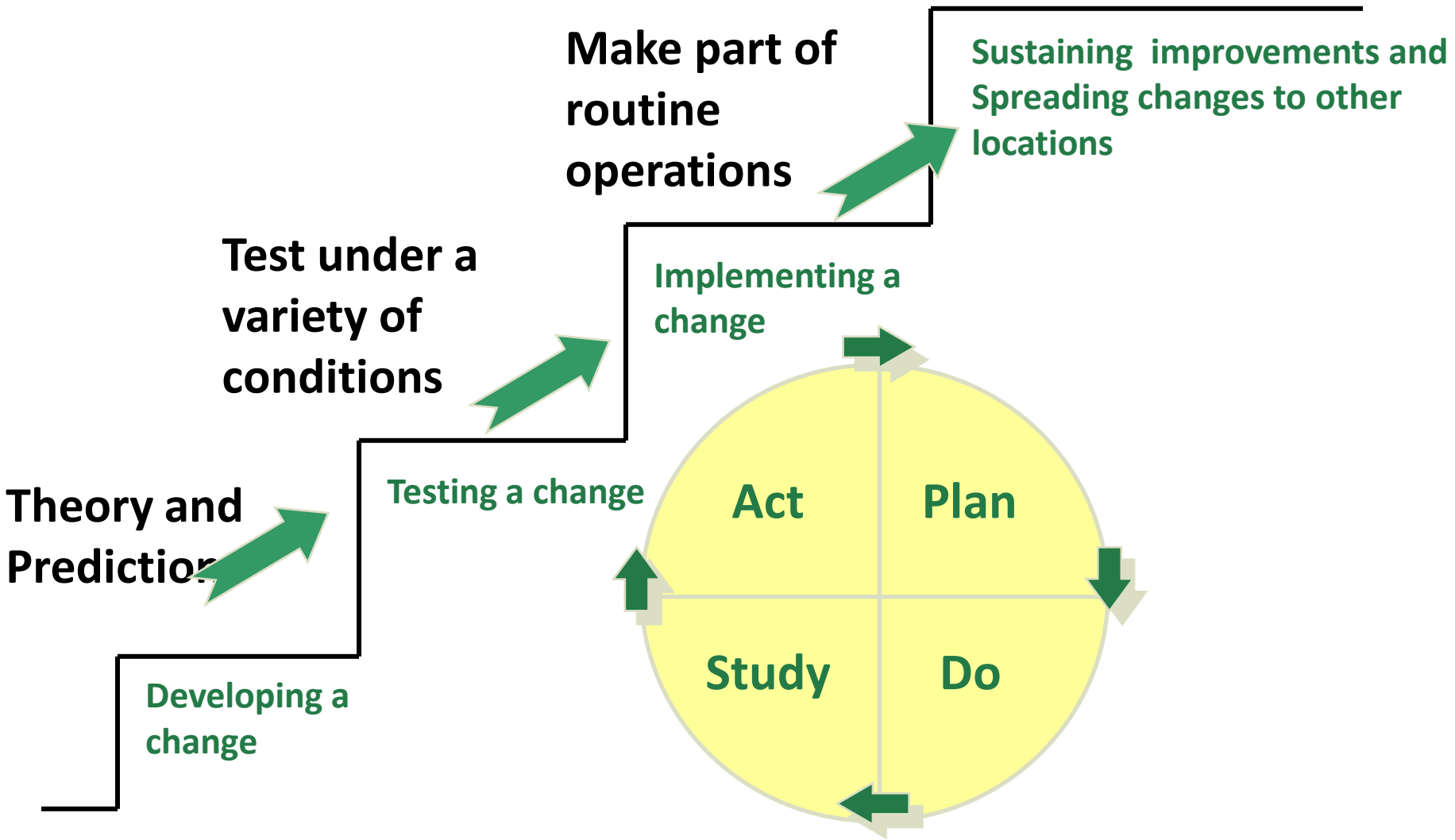
Change Concept	*Specific Ideas to Test*	*Theories and Predictions as to how or why this idea will achieve the Aim*

See Worksheet Packet

Discussion Questions:

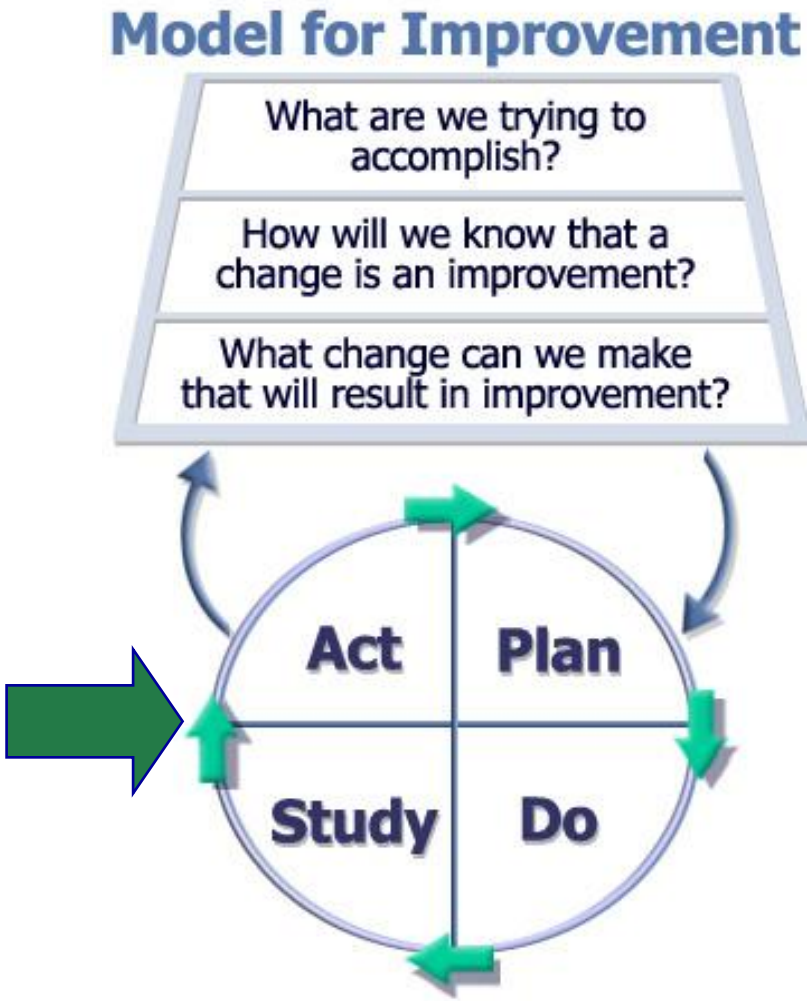
- What specific change concepts and related ideas will achieve the Aim?
- What theories and predictions can you make about how these change concepts and ideas will cause improvement?
- Use Force Filed Analysis to evaluate the ideas

The Sequence for Improvement



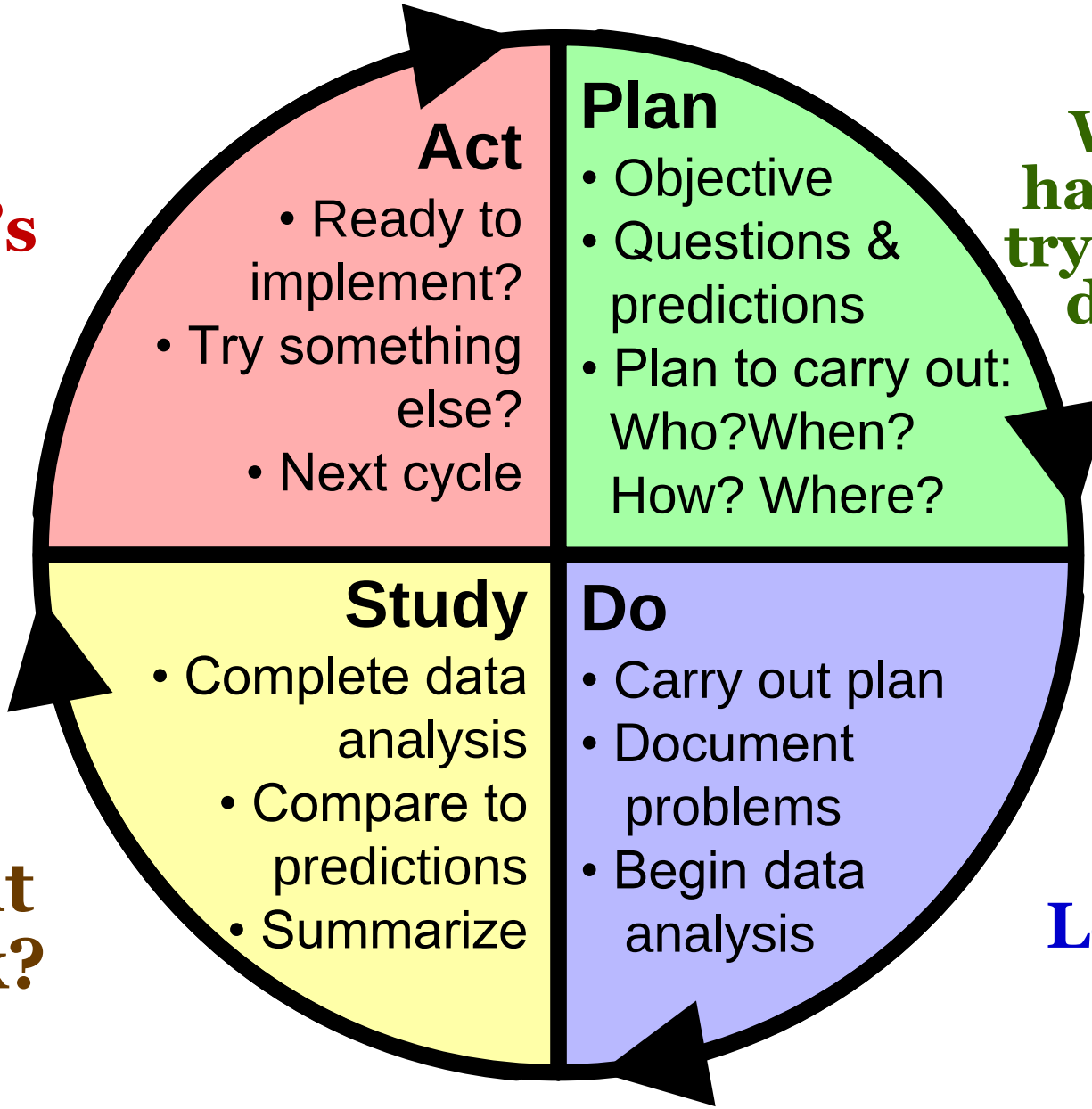
Model for Improvement

Now, let's focus on the PDSA part of the MFI and tests of change



Source: The Improvement Guide, API

The PDSA Cycle for Learning and Improvement



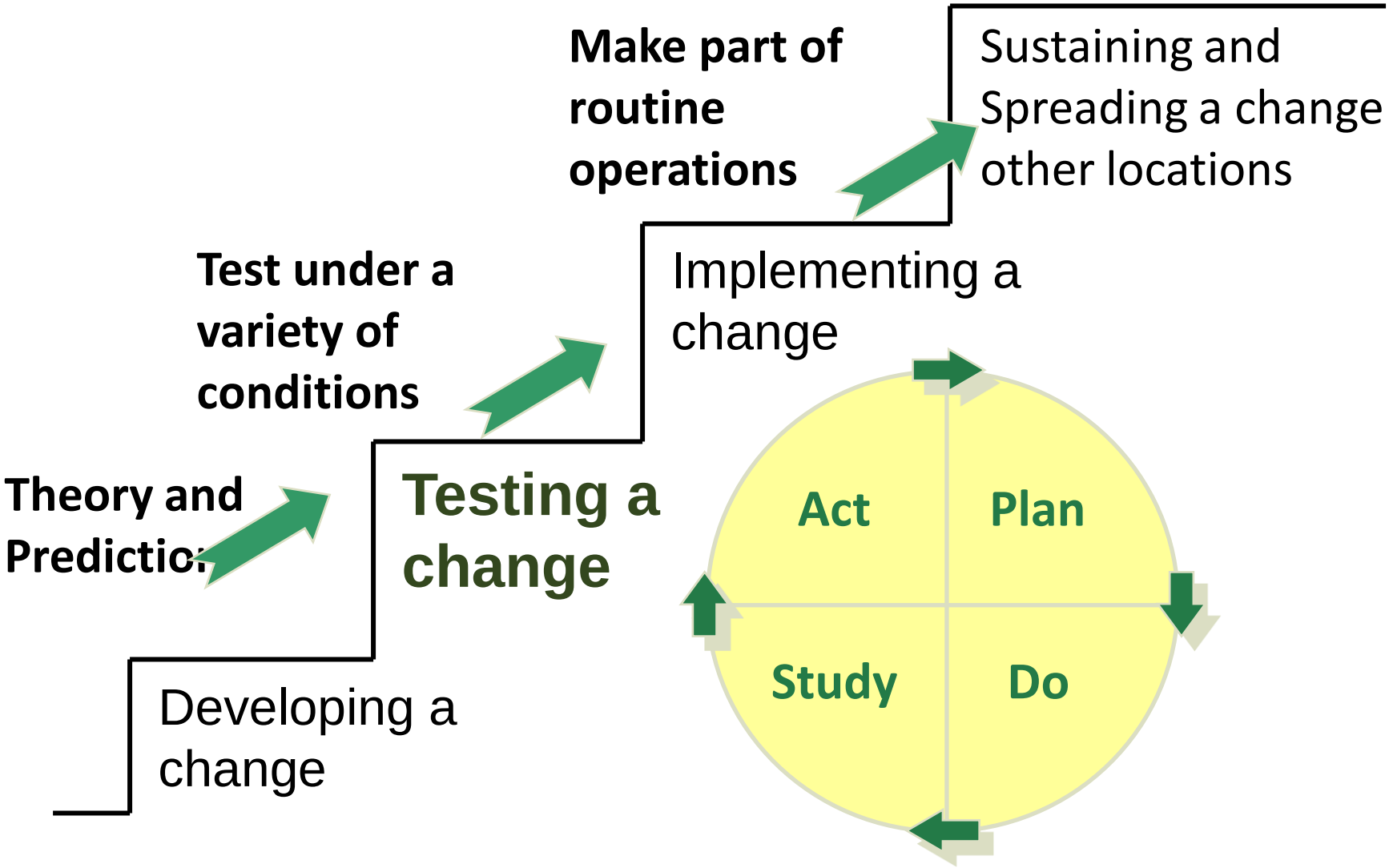
What's next?

What will happen if we try something different?

Did it work?

Let's try it!

The Sequence for Improvement



To Be Considered a Real Test

- Test was planned, including a plan for collecting data
- **Plan was carried out and data were collected**
- Time was set aside to analyze data and study the results
- **Action was based on what was learned**

Guidance for Testing a Change Concept

- A test of change should answer a specific question!
- A test of change requires a **theory** and a **prediction**!
- Test on a small scale and collect **data over time.**
- Build knowledge **sequentially** with multiple PDSA cycles for each change idea.
- Include a **wide range of conditions** in the sequence of tests.
- Don't confuse a **task** with a **test!**

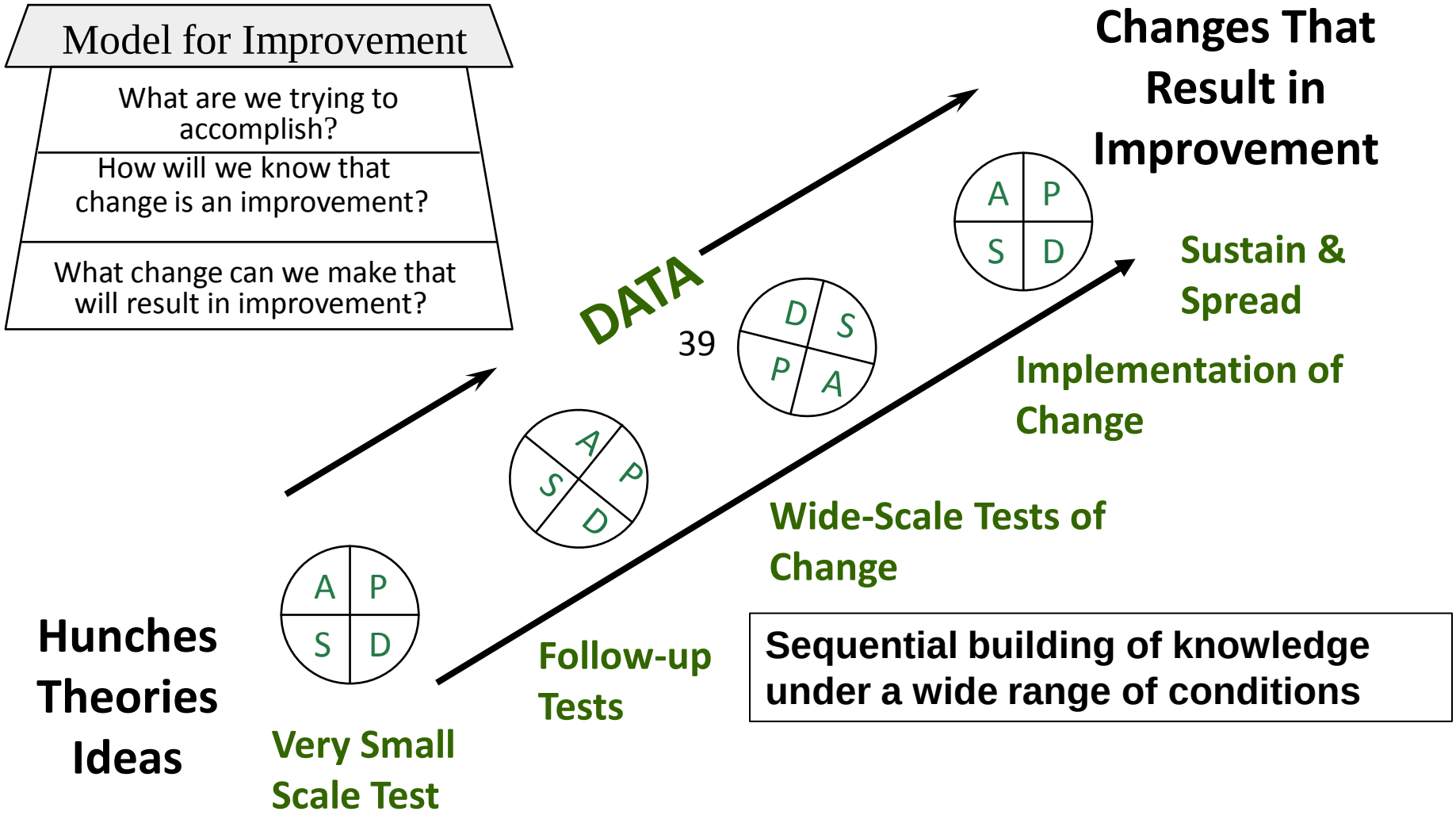
Tips for Testing

"What tests can we complete by next Tuesday?"

- Use a form to document your test.
- Scale down – think "Drop Two"
- Oneness
  - 1 patient
  - 1 day
  - 1 admit
  - 1 physician
- Make changes in parallel
  - Year
  - Quarter
  - Month
  - Week
  - Day
  - Hour

- Know the situation in your organization

Repeated Use of the PDSA Cycle



South Devon Healthcare NHS
NHS Foundation Trust

PDSA Worksheet for Rapid Cycle Testing

Team Name: Falls Group **Date: 11th March**

Project Aim: To reduce the number of falls on the ward by 10% as compared with the baseline data from the same time period the previous year

Cycle 1 Aim: To reduce the number of falls on X ward in bay 4 by 10% over a 3 month period (as compared to the corresponding previous 3 month period) by using Intentional Rounding (IR) as a process tool in that bay. IR may spread organically on the ward to the other bays but Bay 4 will remain the measure

Plan for the Test of Change: Introduce the concept of IR to the staff on the ward via the lead Staff Nurse through Safety Briefings, notices and 1-1 sessions in which the theory and documentation will be shown and explained. The process will be supported by the Ward Manager, Falls Nurse and Safety Lead.

The Trusts definition of Intentional Rounding (IR) is to go to each patient in the given bay/area and ask is 'everything alright' and can the nurse assist in any way with nutrition, comfort, toileting etc. This will be done every two hours during the day and at night except when the patient is asleep or when a risk assessment indicates a different time period is needed.

South Devon Healthcare NHS
NHS Foundation Trust

What is the test or change to be tried?

The first change is to introduce IR to the bay and record its frequency over a 24 hour time period.

What is your prediction about what will happen when this test is completed?

For compliance over a 24 hour period to be at 40%

What exactly will be done to test the change?

IR tool to be completed every two hours and recorded including why it was not offered

When will it be conducted? Week commencing 16th March

Where will it take place? *X ward Bay 4*

What is the plan for data collection? (Who, what, when, where?)

Information recorded by Nurses allocated to that bay, data to be checked at every handover time by Ward Manager or Senor Nurse on Duty.

How will the data be sampled? Record Sheet as attached

South Devon Healthcare NHS
NHS Foundation Trust

DO: (Carry out the test, collect data. Display data on chart)

Results will be presented as a Run Chart highlighting Total Compliance Definition: Opportunities to IR and IR completed by bay for 1 day expressed as a percentage

and IRs completed by hour over a 24 hour period.

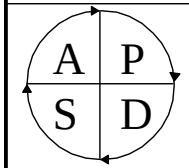
STUDY: (Complete the analysis of the data, summarize what was learned.)

Were the results as you predicted?

How does the data compare to baseline?

ACT: (What is the plan for the next cycle? Is this change ready to be spread?)

MODEL FOR IMPROVEMENT CYCLE:____DATE:____



Objective for this PDSA Cycle

See Worksheet Packet

PLAN:

QUESTIONS:

PREDICTIONS:

PLAN FOR CHANGE OR TEST: WHO, WHAT, WHEN, WHERE

PLAN FOR COLLECTION OF DATA: WHO, WHAT, WHEN, WHERE

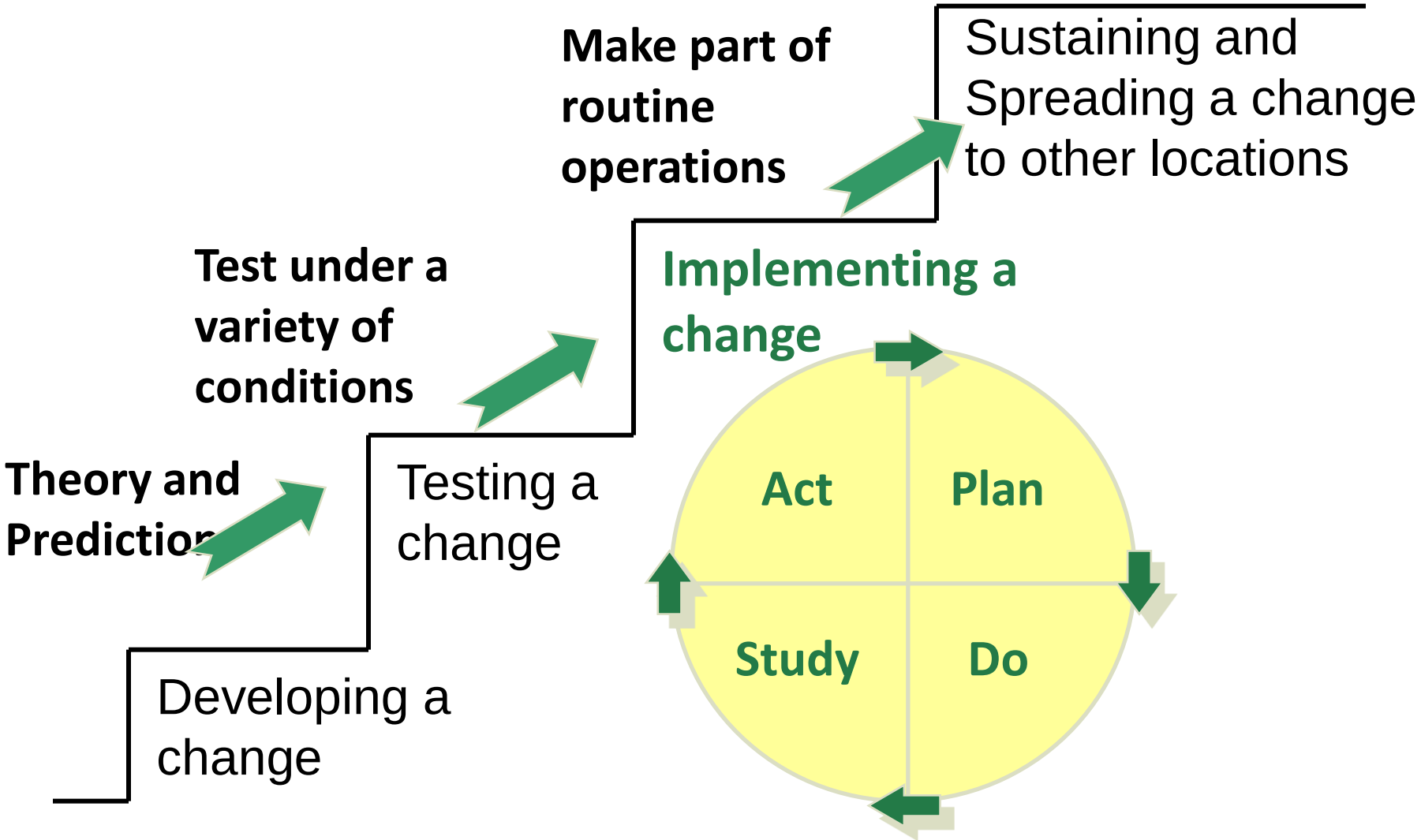
DO: CARRY OUT THE CHANGE OR TEST; COLLECT DATA AND BEGIN ANALYSIS.

STUDY: COMPLETE ANALYSIS OF DATA; SUMMARIZE WHAT WAS LEARNED.

ACT: ARE WE READY TO MAKE A CHANGE? PLAN FOR THE NEXT CYCLE.

Notes

The Sequence for Improvement



Testing v. Implementation

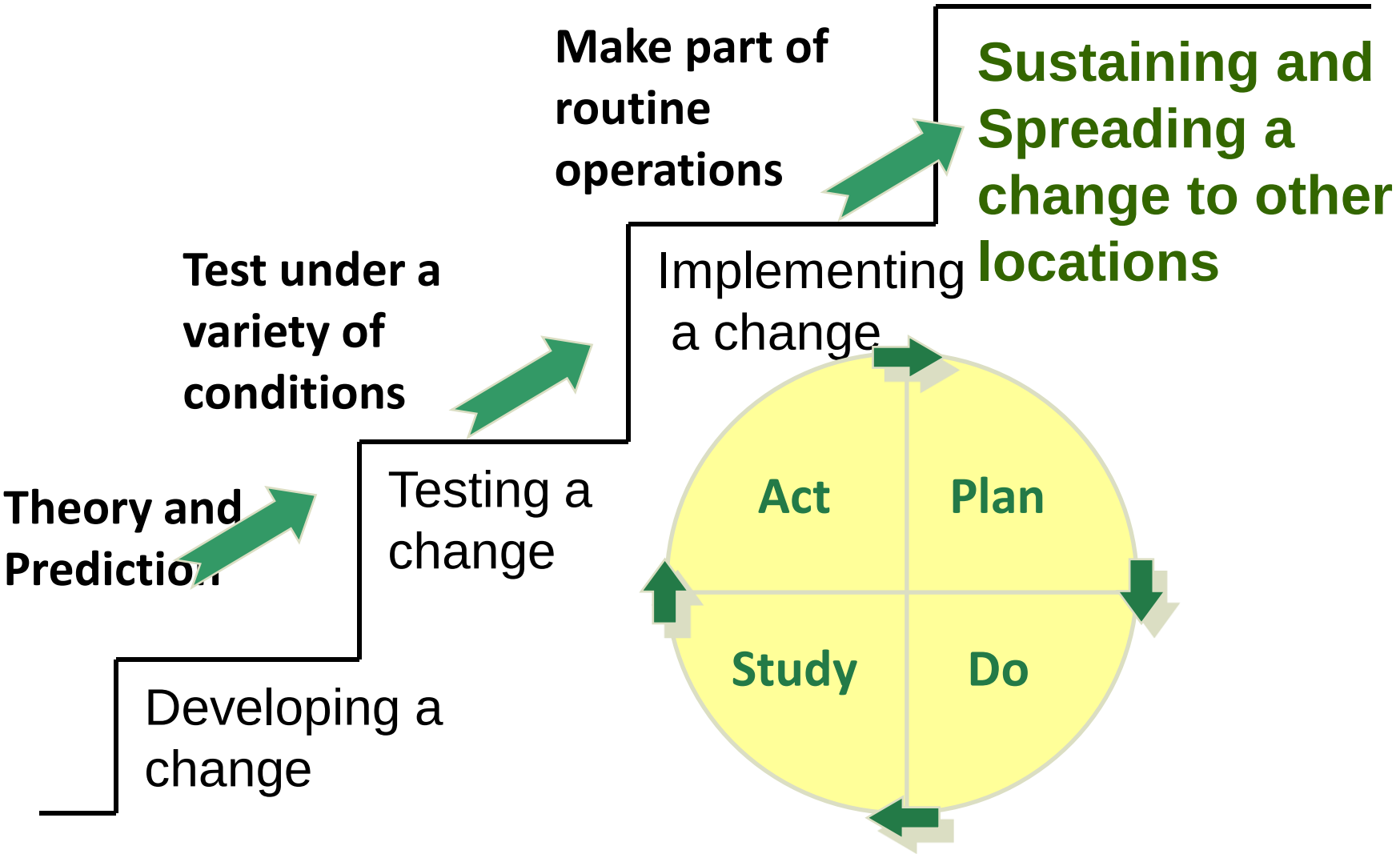
- **Testing** – Trying and adapting existing knowledge on small scale; learning what works in your system

- **Implementation** – Making this change a part of the day-to-day operation of the system
  - Would the change persist even if its champion were to leave the organization?

Implementation

- The change is **permanent** - need to develop all support infrastructure to maintain change
- High **expectation** to see improvement (no failures)
- Increased scope will lead to increased **resistance** (Value of evidence from successful tests)

The Sequence for Improvement

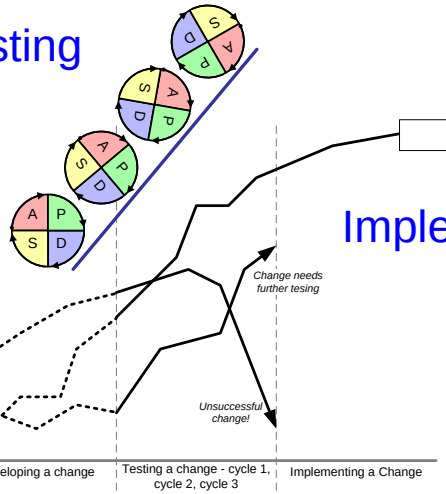


From Implementation to Spread

Local System: Unit, Sub-population, etc

Global System: Hospital, Network, Health System, All patients, etc.

Testing



Implementation

Innovation

Spread

success

success

success

success

success

The Seven *Spreadly* Sins

(If you do these things, Spread efforts will fail!)

Step #1 Start with large pilots.

Step #2 Find one person willing to do it all.

Step #3 Expect vigilance and hard work to solve the problem.

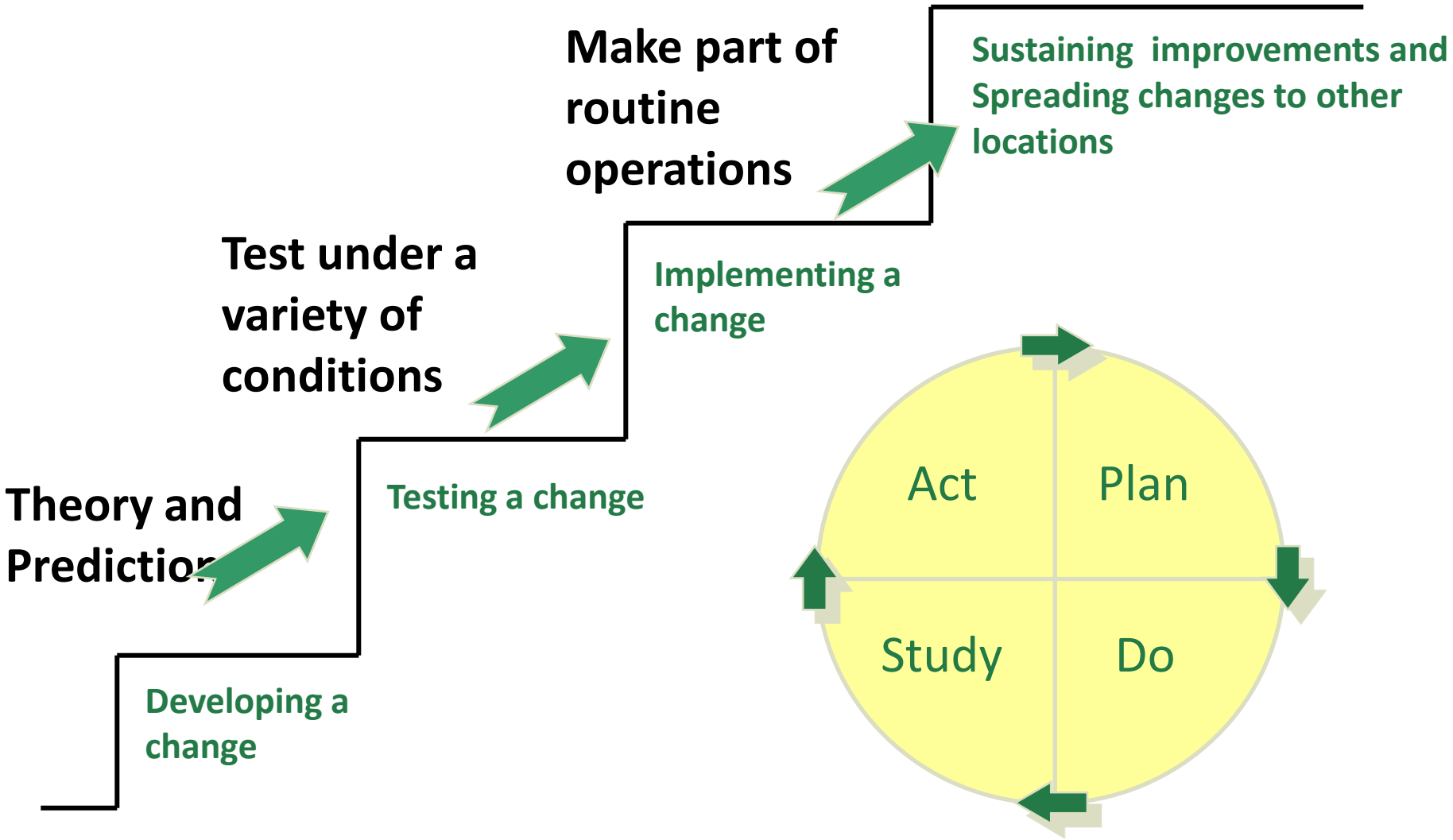
Step #4 If a pilot works, then spread the pilot unchanged.

Step #5 Require the person and team who drove the pilot to be responsible for system-wide spread.

Step #6 Look at process and outcome measures on a quarterly basis.

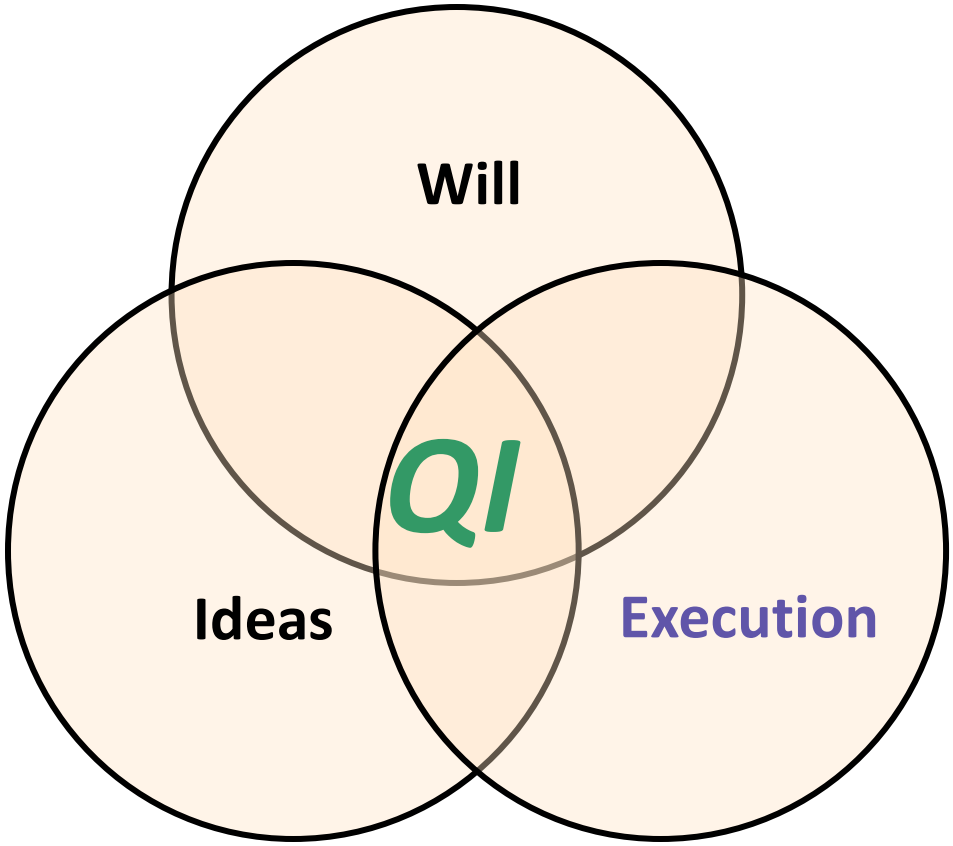
Step #7 Early on expect marked improvement in outcomes without attention to process reliability.

The Sequence for Improvement



The Primary Drivers of Improvement

Having the *Will* (desire) to change the current state to one that is better



Developing *Ideas* that will contribute to making processes and outcome better

Having the capacity to apply CQI theories, tools and techniques that enable the *Execution* of the ideas

How prepared is your Organization?

Key Components*

- Will (to change)
- Ideas
- Execution

Self-Assessment

- Low Medium High
- Low Medium High
- Low Medium High

***All three components MUST be viewed together. Focusing on one or even two of the components will guarantee sub-optimized performance. Systems thinking lies at the heart of CQI!**

Appendices

- Appendix A: The QI Tool Box
- Appendix B: Force Field Analysis
- Appendix C: Driver Diagrams
- Appendix D: Control Chart Decision Tree
- Appendix E: General References on Quality
- Appendix F: References on Measurement
- Appendix G: References on Spread

Thank you!

Good luck with your Quality Journey!

Jane Taylor

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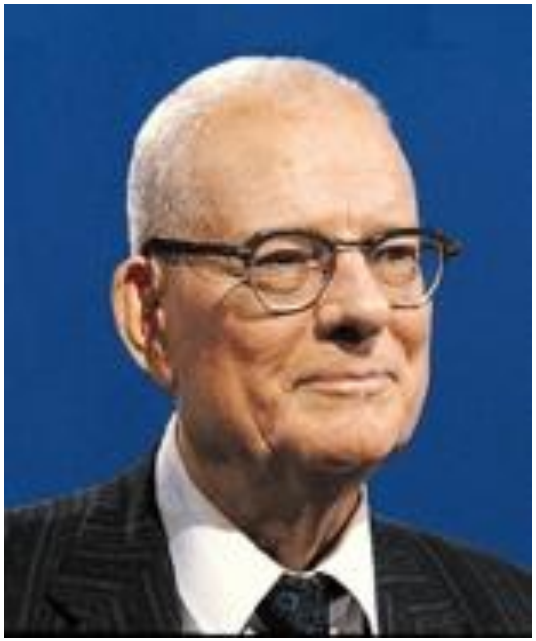
In Partnership with AHA



Quality begins with intent, which is fixed by management."

W. E. Deming, *Out of the Crisis*, p.5

Appendices

- Appendix A: The QI Tool Box
- Appendix B: Force Field Analysis
- Appendix C: Driver Diagrams
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- Appendix F: References on Measurement
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Appendix A:

The Quality Improvement Tool Box

Seven Basic Tools

Creativity Tools

Measurement Tools

Design Tools

Statistical Tools

Seven Management Tools

Source: Oakes, D. “Organize Your Quality Tool Belt” *Quality Progress,* American Society for Quality, July, 2002:25-29.

The Primary CQI Tools…

The Seven Basic Tools

- Flowchart
- Cause & effect diagram
- Pareto chart
- Check sheet
- Run and control charts
- Histograms
- Scatter diagrams

The Seven Management Tools

- Affinity diagrams
- Interrelationship digraphs
- Matrix diagram
- Priorities matrix
- Activity network diagrams
- Tree diagrams
- Process decision program charts

CQI Tools by Function

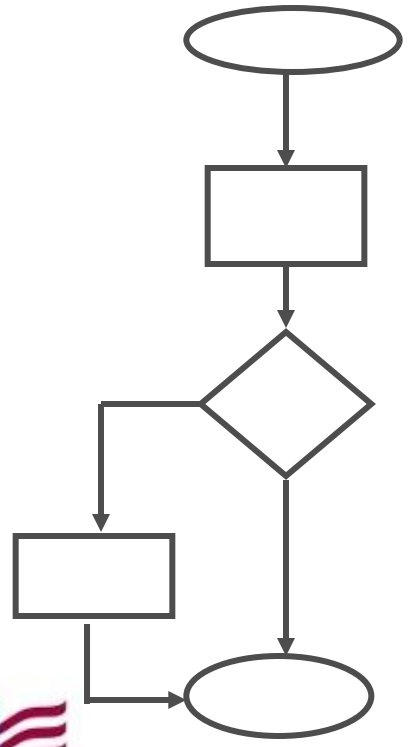
Creativity Tools	Measurement Tools
• Brainstorming • Mind mapping • Six thinking hats • Innovation/IDEO	• Cost of quality analysis • Benchmarking • Dashboards/indicators • Survey analysis
Design Tools	**Statistical Tools**
• QFD • House of quality • FMEA • Hoshin planning	• SPC • DOE • Descriptive statistics • Multivariate statistics

Methods and Tools for Improvement

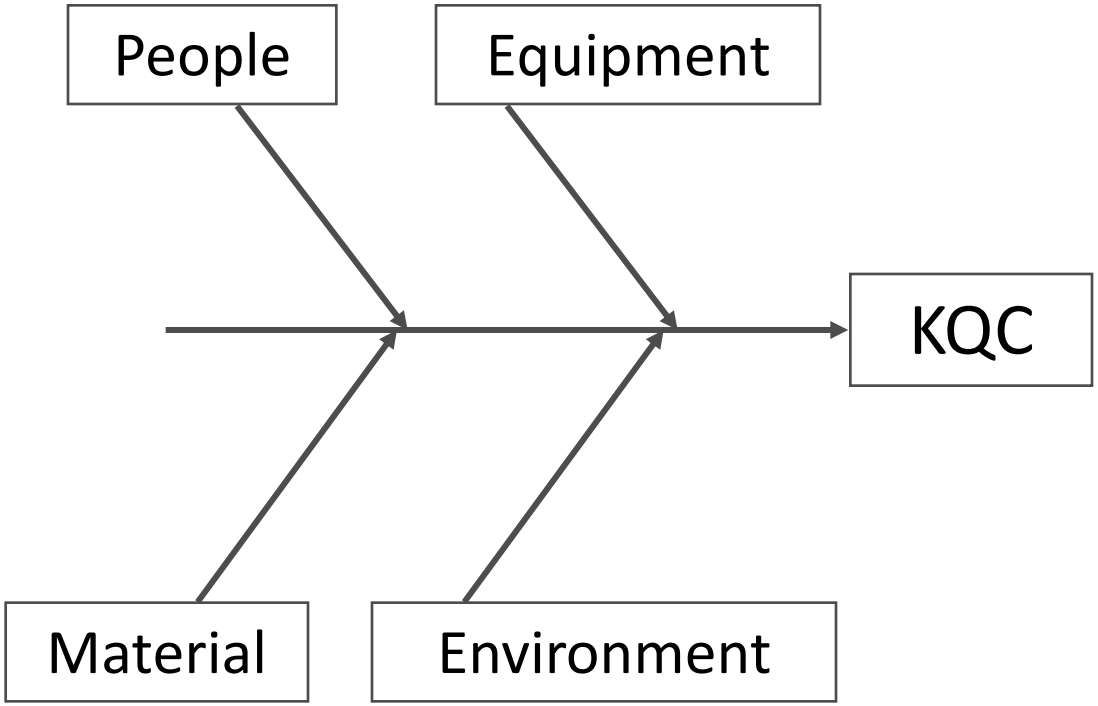
Category	Method or Tool	Typical Use of Method or Tool
Viewing Systems and Processes	**1. Flow Diagram**	**Develop a picture of a process. Communicate and standardize processes.**
	2. Linkage of Processes	**Develop a picture of a system composed of processes linked together.**
Gathering Information	3. Form for Collecting Data	Plan and organize a data collection effort.
	4. Surveys	Obtain information from people.
	5. Benchmarking	Obtain information on performance and approaches from other organizations.
	6. Creativity Methods	Develop new ideas and fresh thinking.
Organizing Information	**7. Affinity Diagram**	**Organize and summarize qualitative information.**
	8. Force Field Analysis	**Summarize forces supporting and hindering change.**
	9. Cause and Effect Diagram	**Collect and organize current knowledge about potential causes of problems or variation.**
	10. Matrix Diagram	**Arrange information to understand relationships and make decisions.**
	11.Tree Diagram	**Visualize the structure of a problem, plan, or any other opportunity of interest.**
	12. Quality Function Deployment (QFD)	**Communicate customer needs and requirements through the design and production processes.**
Understanding Variation	13. Run Chart	Study variation in data over time; understand the impact of changes on measures.
	14. Control Chart	Distinguish between special and common causes of variation.
	15. Pareto Chart	Focus on areas of improvement with greatest impact.
	16. Frequency Plot	Understand location, spread, shape, and patterns of data.
Understanding Relationships	**17. Scatterplot**	**Analyze the associations or relationship between two variables; test for possible cause-and-effect.**
	18. Two-Way Table	**Understand cause-and-effect for qualitative variables.**
	19. Planned Experimentation	**Design studies to evaluate cause-and-effect relationships and test changes.**

Essential Tools

Flowcharting

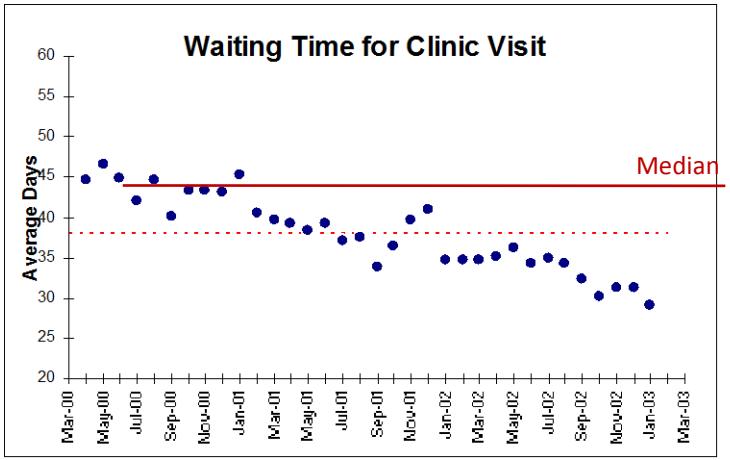


Cause & Effect Diagrams

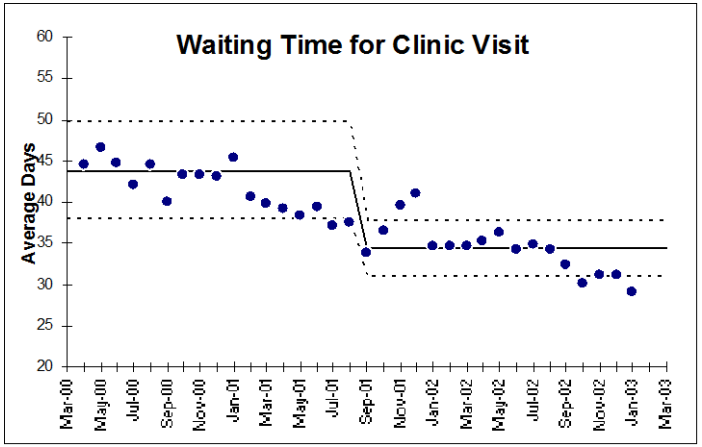


Tools to Understand Variation in Data

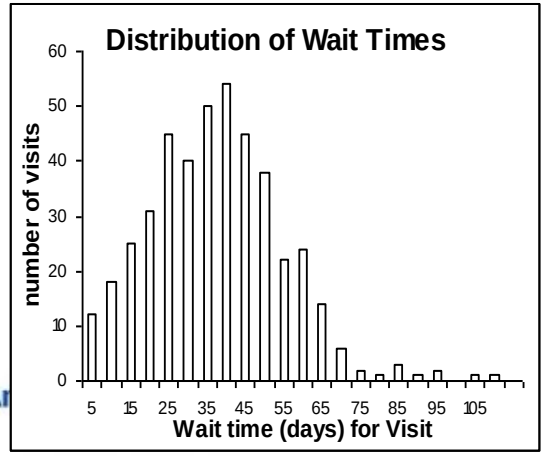
Run Chart



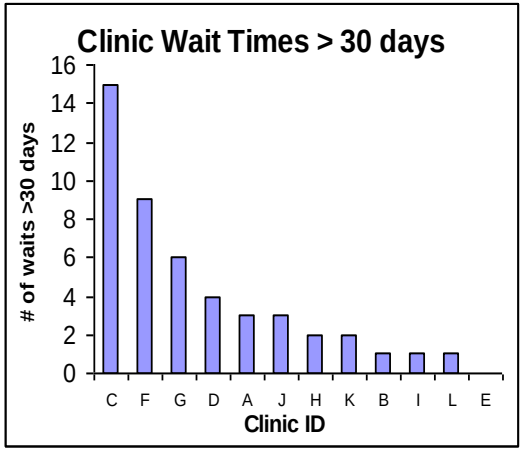
Shewhart Chart



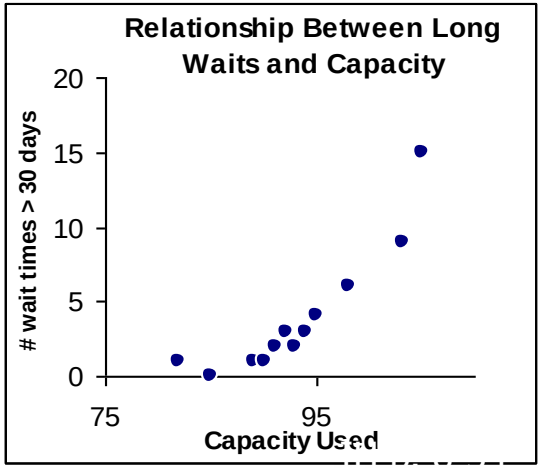
Frequency Plot



Pareto Chart



Scatterplot



Appendix B:
Force Field Analysis

What is it?

Force Field Analysis is a QI tool designed to identify driving (positive) and restraining (negative) forces that support or work against the solution of an issue or problem.

When the driving and restraining forces are identified, steps can be taken to reinforce the driving forces and reduce the restraining forces.

What does the Force Field do?

Allows comparisons of the “positives” and “negatives” of a situation

Enables easy comparisons

Forces people to think together about all the aspects of making the desired change a permanent one

Encourages people to agree about the relative priority of factors on each side of an issue

Supports the honest and open reflection on the underlying root

causes of a problem and ways to break down barriers

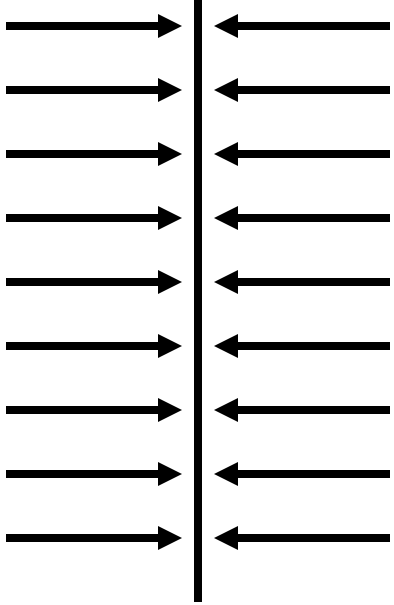
How do I set up a Force Field Analysis?

1. Draw a letter “T” on a flipchart page.
2. Write the name of the issue or project across the top of the page.
3. Label the left column “Driving Forces” and the right column the “Restraining Forces.”
4. Use brainstorming or nominal group technique (NGT) to generate the list of forces or factors that are driving the issue or project and those that are restraining or holding things back.
5. Eliminate duplicate ideas and clarify any ideas that are vague or not specific.
6. If the team feels the need, they can use rank ordering to set priorities for the driving and restraining forces.
7. Generate a list of ideas about actions that can be taken to reduce the restraining forces.

Force Field Analysis Worksheet

Issue or Project: _____

Driving Forces (+) **Restraining Forces (-)**



Actions to reduce the Restraining Forces:

-
-
-

Appendix C:
Driver Diagrams

Driver Diagrams,
a tool to help us understand the system and the messiness of life.

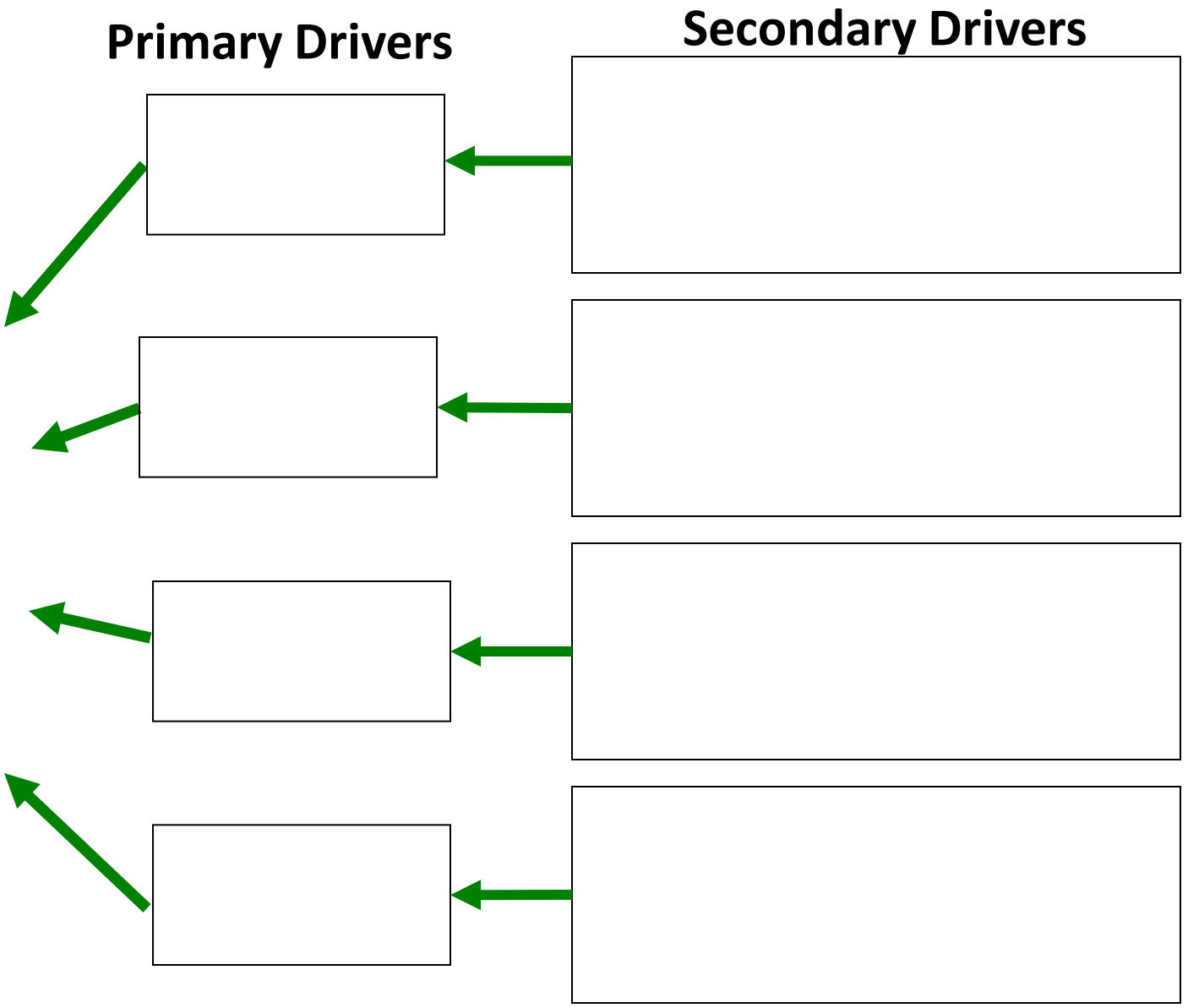
Aim:

Outcome Measures:

1.

2.

3.



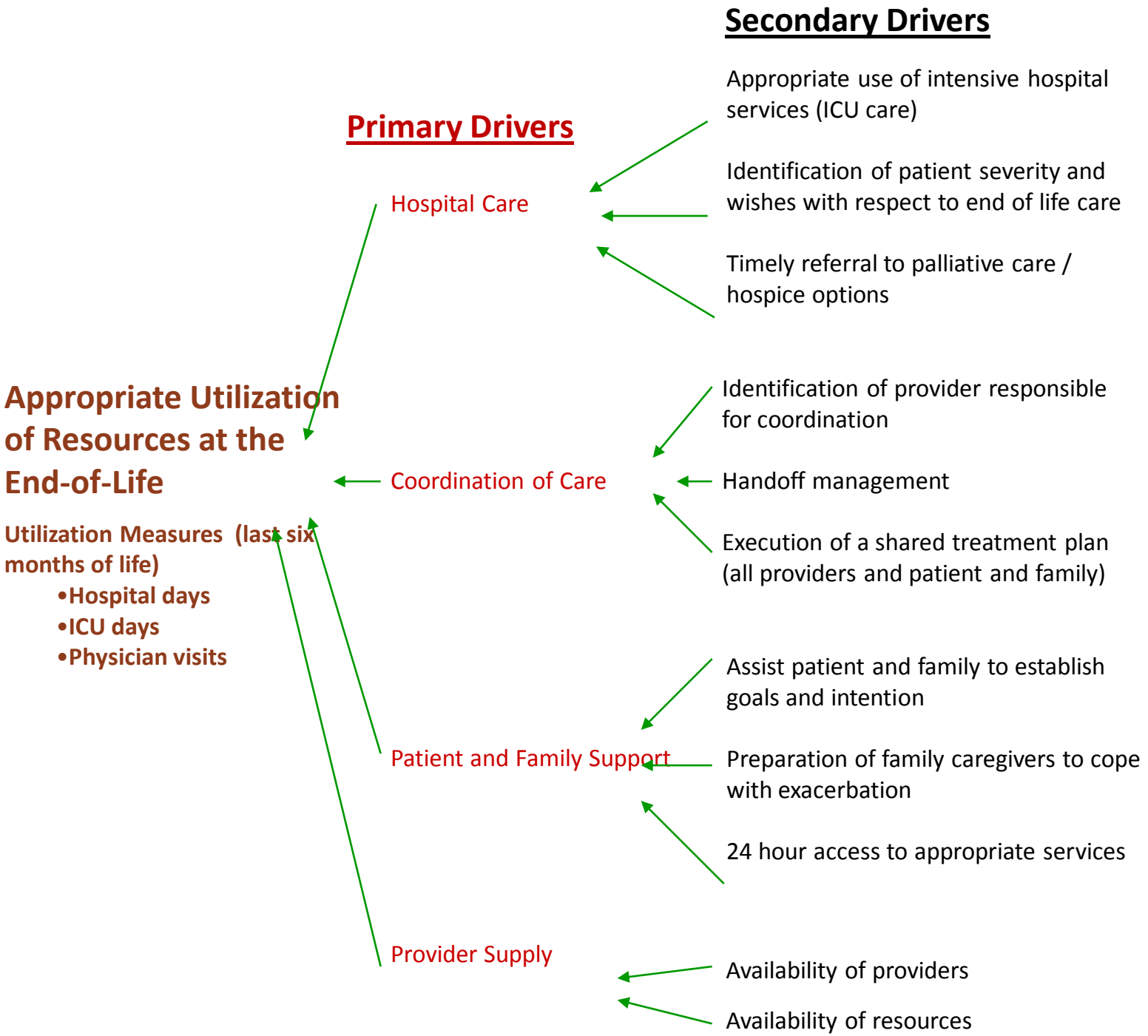
What Changes Can We Make?

- **Primary Drivers**

  System components which will contribute to moving the primary outcome

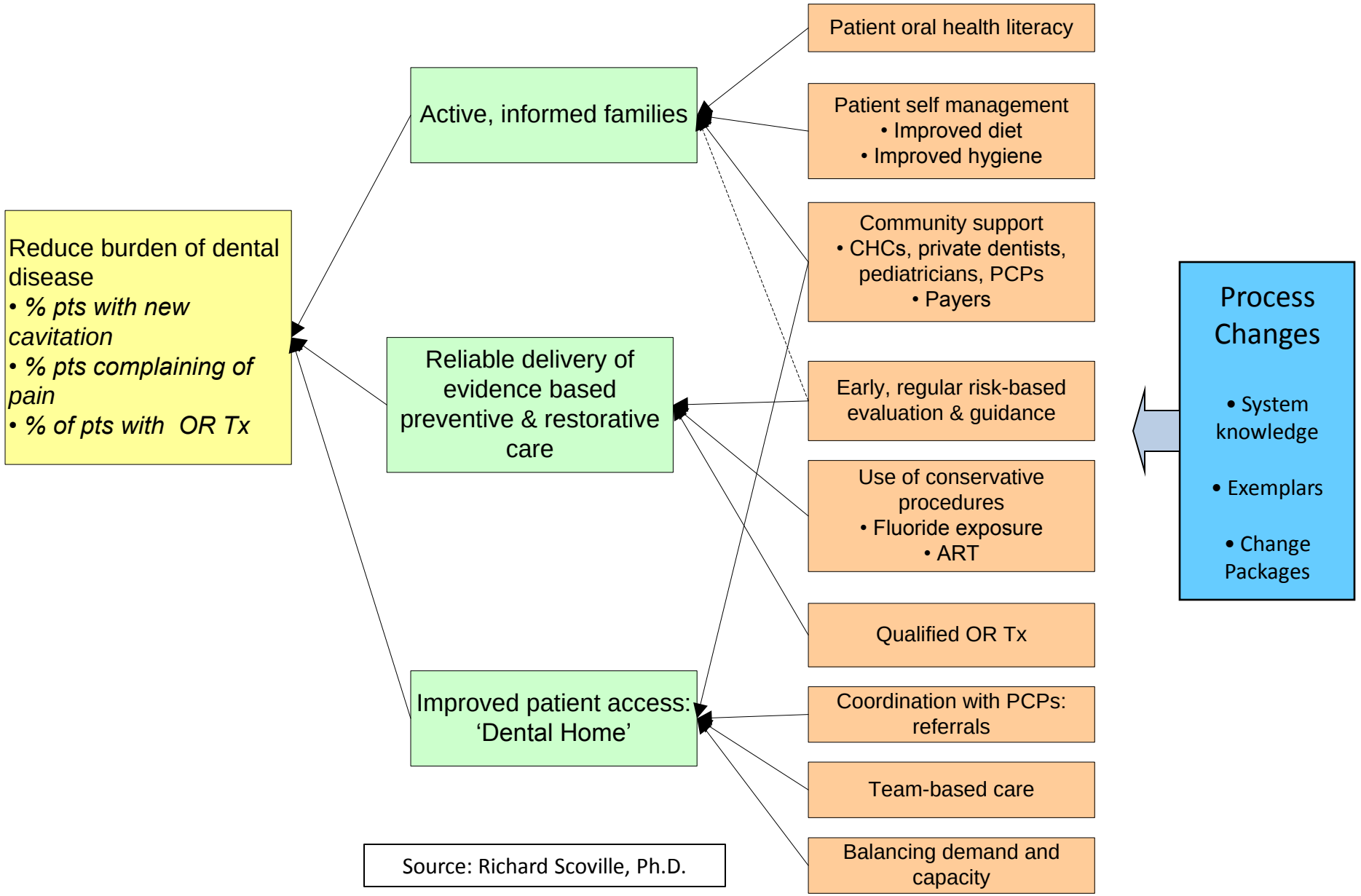
- **Secondary Drivers**

  – Elements of the associated Primary Driver- they can be used to create projects or a change package that will affect the Primary Driver


Secondary Drivers
Primary Drivers
Appropriate use of intensive hospital services (ICU care)
Identification of patient severity and wishes with respect to end of life care
Timely referral to palliative care / hospice options
Hospital Care
Appropriate Utilization of Resources at the End-of-Life
Utilization Measures (last six months of life)
•Hospital days
•ICU days
•Physician visits
Identification of provider responsible for coordination
Coordination of Care
Handoff management
Execution of a shared treatment plan (all providers and patient and family)
Assist patient and family to establish goals and intention
Patient and Family Support
Preparation of family caregivers to cope with exacerbation
24 hour access to appropriate services
Provider Supply
Availability of providers
Availability of resources

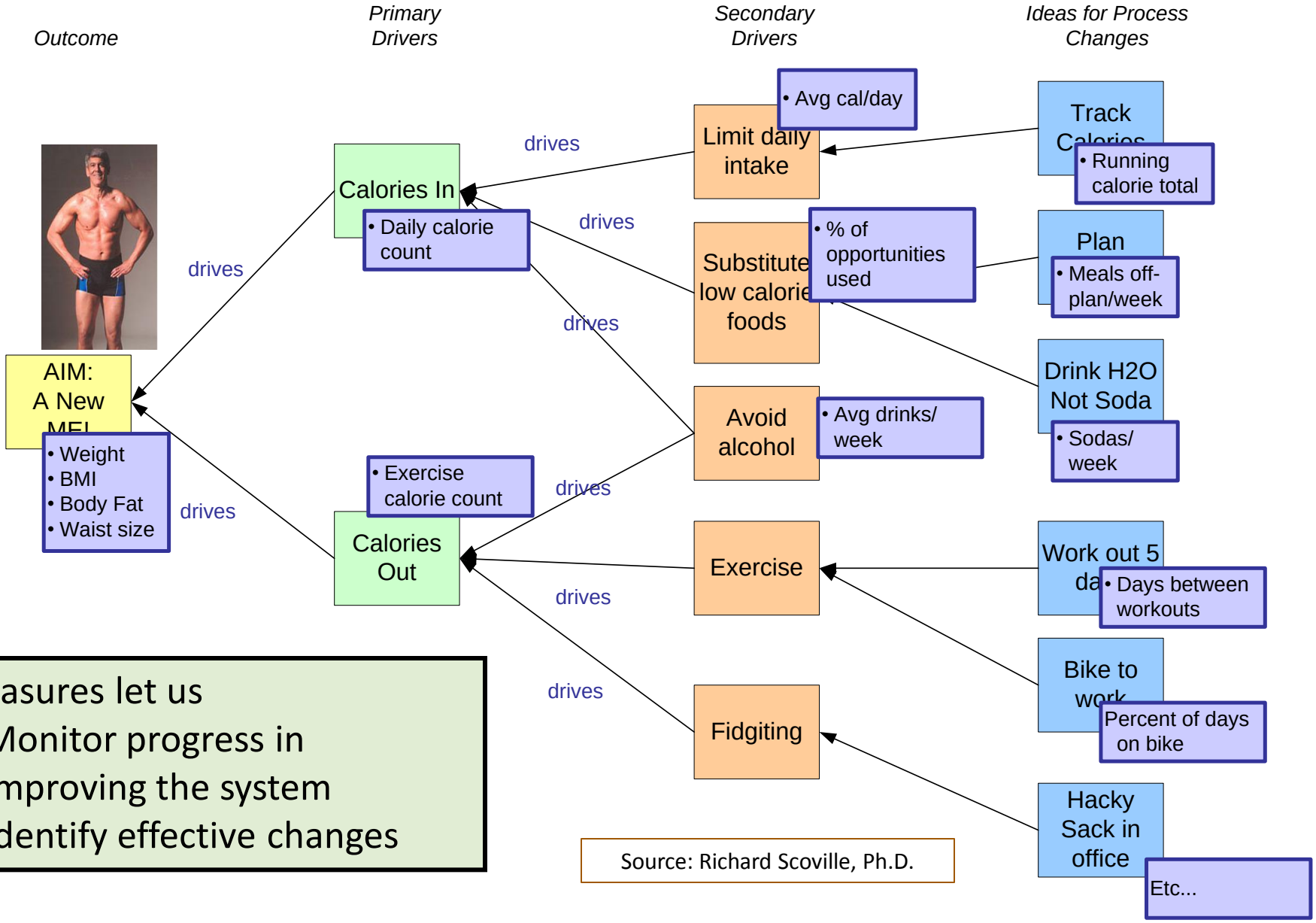
What Changes Can We Make?

Understanding the System for Improving Dental Health



How Will We Know We Are Improving?

Understanding the System for Weight Loss with Measures



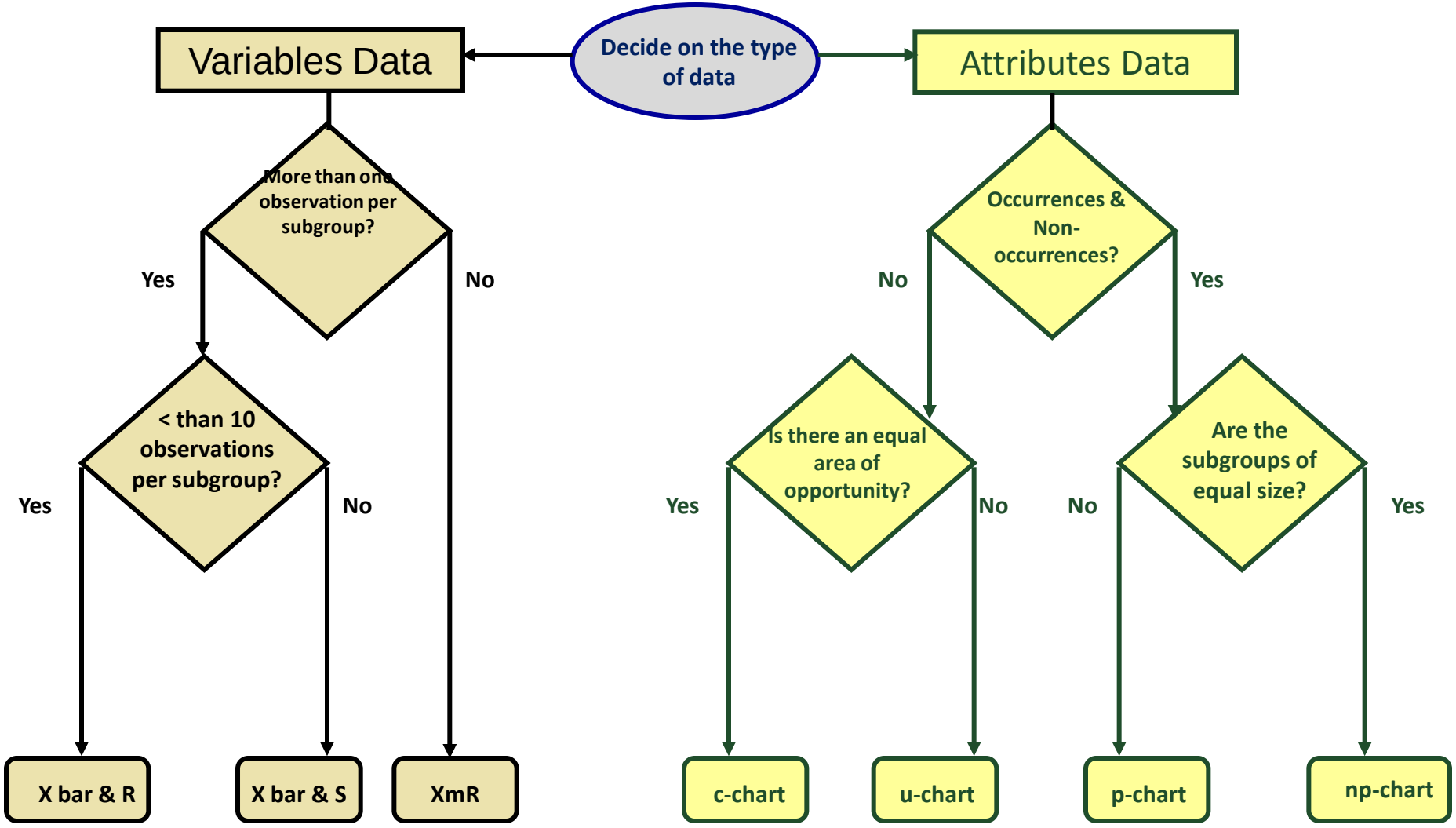
Measures let us

- Monitor progress in improving the system
- Identify effective changes

Source: Richard Scoville, Ph.D.

Appendix D:

The Control Chart Decision Tree



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General References on Quality

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Jane Taylor, EdD

THANK YOU!