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PEPFAR | Care that Counts Initiative

Quality Improvement Advisor Training for Programs Serving Orphans and Vulnerable Children (OVC)

June 7–9, 2010
Kampala, Uganda

JUNE 2010

This training workbook was prepared by the Institute for Healthcare Improvement (IHI) for review by the United States Agency for International Development (USAID) and was authored by Brandon Bennett of IHI. The Quality Improvement Advisor Training course is implemented by IHI for the USAID Health Care Improvement Project, which is made possible by the generous support of the American people through USAID.

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DISCLAIMER
The views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

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Table of Contents

Course Purpose and Overview 1

Day 1 Agenda and Slides 2

Day 2 Agenda and Slides 22

Run Chart Rules 43

Plan-Do-Study-Act (PDSA) Worksheet 49

Driver Diagram and Tree Diagram 50

Day 3 Agenda and Slides 52

Resource Materials Included in the Course CD-ROM 65

Recommended References for Further Reading 66

Africa Regional Quality Improvement Advisor Training for Programs Serving Orphans and Vulnerable Children (OVC)

Kampala, Uganda
June 7-9, 2010

Purpose of the Course:

To build the capacity of OVC QI advisors in the use of Quality Improvement methods and techniques with a focus on: improving their theory based knowledge, their ability to apply methods in their day to day work, their ability to help others learn how to conduct improvement initiatives and their ability to work with senior leaders focused on the health outcomes of their communities.

The course offering will reflect adult learning principles with an emphasis on participative learning, real time application to current work and interactive discussions, leveraging people's experiences and work to date.

Facilitator:

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Overview of Topics Addressed:

Day 1, June 7:	System of Profound Knowledge Systems Thinking Setting Aims Process Mapping Measurement and Data for Improvement
Day 2, June 8:	Making Run Charts/Present Data Model for Improvement Generating Change Ideas Innovation/Testing/Implementation Driver Diagrams
Day 3, June 9:	Leading Change Working with Leaders Consultation Skills

Day 1, June 7, 2010

System of Profound Knowledge

Description: W. Edwards Deming laid out the foundations of Quality Improvement with his "System of Profound Knowledge". This part of the day will set the stage for learning improvement, understanding the differences between improvement knowledge and content knowledge (knowledge specific to a work area, like OVC). It will focus on Deming's four areas: Appreciation of the system, Understanding Variation, Psychology of Change, and Theory of Knowledge. Each of these, and taken together, act as a critical "lens" for examining any system, looking for where improvement can/should occur and where it is likely to succeed.

Learning Objective: Appreciation of the Science of Improvement, understanding historical context, and evolution over time – introduction to use of the system as a foundation for viewing improvement initiatives.

Skill: Application of the System of Profound Knowledge when evaluating or planning an improvement initiative.

Systems Thinking

Description: Focus on understanding outcomes in the context of whole systems. Builds knowledge on how system design can precipitate outcomes despite the effectiveness or ineffectiveness of individual components of the system.

Learning Objective: Participants will be able to describe the power of many factors in defining the outputs of a given system.

Skill: Participants will come away with two activities they can use to demonstrate the power of a system to control outcomes despite intent or commitment.

Setting Aims

Description: This session will focus on developing practical Aim statements with the intention of helping participants to understand critical components of excellent aims.

Learning Objective: Participants will focus on two key questions every aim should answer as well as other important aspects defining good aim statements.

Skill: Participants will have had the chance to write at least one aim statement directly related to their work environment and will understand what defines a good aim on leaving.

Process Mapping

Description: During this session participants will explore how to create a general process map and in break-out sessions will spend time developing a process maps detailing at least one important process of their work.

Learning Objectives: Participants will come away with a deep understanding of how steps in a process interact. They will have developed a visual image of a detailed process from start to finish.

Skill: Participants will have learned how to develop a specific process map in a team environment using probing questions. They should be able to replicate this skill once they return to their normal work.

Measurement and Data for Improvement

Description: This session will focus on where measures come from, building upon the mapping tool learned below. Types of measures will also be covered, including their importance and why different types of measures can be complimentary in building the case of improvement.

Learning Objective: Participants should understand the differences between three types of measures.

Skill: Attendees will know where to look for data relevant to their improvement initiative and will have spent some time brainstorming what data they currently have and what data they will need to generate a successful improvement initiative.

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Care that Counts Initiative Quality Improvement Training Course

Brandon Bennett
Institute for Healthcare Improvement

Agenda

Day 1

- System of Profound Knowledge
- Systems Thinking
- Setting Aims
- Process Mapping
- Measurement and Data for Improvement

Day 2

- Making Run Charts/ Presenting Data
- Model for Improvement
- Generating Change Ideas
- Innovation/Testing/ Implementation
- Driver Diagrams

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Agenda continued

Day 3

- Leading Change
- Working with Leaders
- Consultation Skills

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Introductions

- What is your name?
- What country are you working in?
- Which organization(s) are you working with?
- What is your favorite television program?

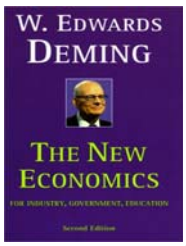
Quality Improvement – A brief History

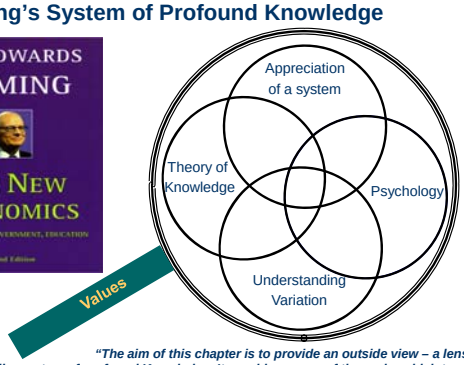
- **Two key influences:**
- **W.E. Deming's - System of Profound Knowledge**

- **Walter Shewhart's – understanding variation through Statistical Process Control**

System of Profound Knowledge – an introduction

Deming's System of Profound Knowledge





"The aim of this chapter is to provide an outside view – a lens – that I call a system of profound Knowledge. It provides a map of theory by which to understand the organizations that we work in."

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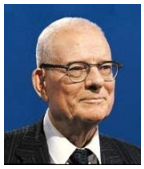
Deming's System of Profound Knowledge



"One need not be eminent in any part of profound knowledge in order to understand it and to apply it. The various segments of the system of profound knowledge cannot be separated. They interact with each other. For example knowledge about psychology is incomplete without knowledge of variation."

Profound - having intellectual depth and insight (Webster)

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Development of Profound Knowledge

1900 1920 1940 1950 1960 1970 1980 1990 2000

Variation

- Shewhart Control Chart 1924
- Design of Experiments Sir Ronald Fisher, 1925
- Shewhart's 1931 and 1939 Books on Quality Control*
- Sampling methods Developed, H. F. Dodge
- Lectures at The USDA, 1938, organized By Deming*
- Use of statistical methods to support the war effort 1941 - 1945
- Enumerative vs Analytic Studies in Statistics, Deming

Systems

- F. Taylor, Frank & Lillian Gilbreth, Scientific Management
- General Systems Theory Ludwig von Bertalanffy, 1949
- Principles of Systems Jay Forrester, 1968 Holistic Management, Stafford Beer, 1959
- The Goal 1984 Open Systems Fred Emery
- Theory of Constraints E. Goldratt, 1990 5th Discipline Peter Senge 1990

Psychology

- Hawthorne Experiments Plant, Elton Mayo, 1927 B - f(p,e) Kurt Lewin 1920 Participatory Management Mary Parker Follett, 1925
- Anthropology Experts apply theory to business
- Tavistock institute 1951 Eric Trist Socio-technical System
- Organization Development D. McGregor
- Maslow – Hierarchy of Needs1962
- Human Side of Enterprise D. McGregor, 1960
- Motivation Theory Herzberg, 1968

Knowledge

- John Dewey Realism of Pragmatism, 1905
- Mind & The World Order, C.I. Lewis 1929*
- How We Think Dewey, 1933
- Double Loop Learning in Organizations Chris Argyris, 1977

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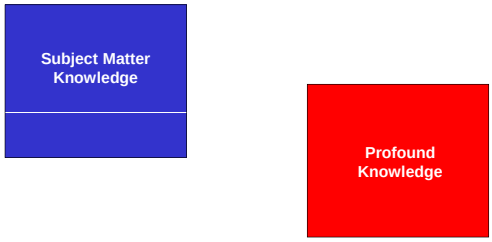
Langley: 86-87

Two Types of Knowledge

Subject Matter Knowledge: Knowledge basic to the things we do in life. Professional knowledge.



Profound Knowledge: The interaction of the theories of systems, variation, knowledge, and psychology.

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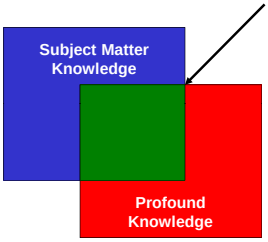
Knowledge for Improvement



***Improvement*: Learn to combine subject matter knowledge and profound knowledge in creative ways to develop effective changes for improvement.**

Langley: 76

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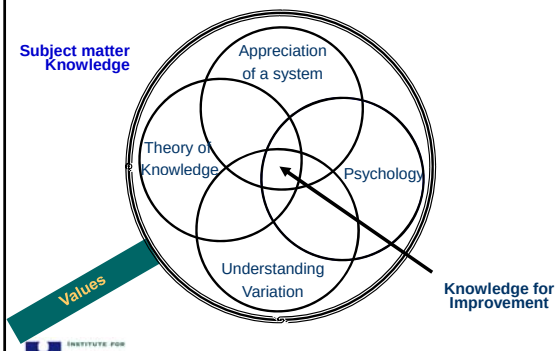
Knowledge for Improvement



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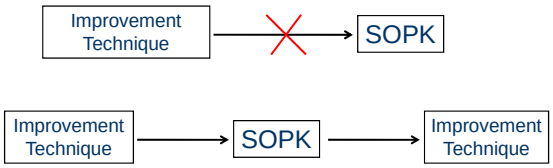
On using the System of Profound Knowledge

Common Trap – a technique does not work, and so the method is discounted/blamed



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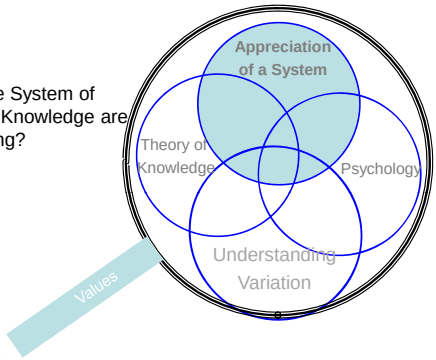
Systems Thinking

Where in the System of Profound Knowledge are we learning?



Understanding Systems

- **What is a system?**
- **How do we define a system?**

Understanding Systems

- **What is a system?**
  - System = a collection of processes working together to produce a defined output
- **"Every system is perfectly designed to achieve the results it gets"**
  - » Paul Batalden

Understanding Systems

- **How is a process different from a system?**
- **Can we brainstorm some of the processes which make up the systems we work within?**

Complex Dynamic Systems Exercise

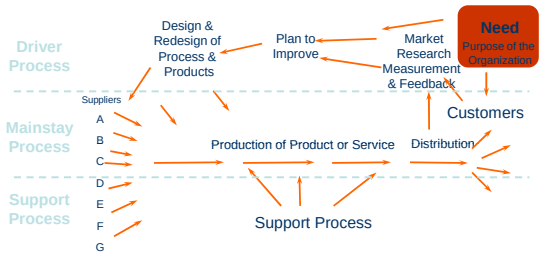
- **What realizations did you have about the systems?**
- **Can you illustrate a similar experience with in your organization or organizations you work with?**

Understanding the Power of a System - Exercise

- **What are the implications of understanding the power of systems in determining outcomes?**
- **How does appreciating what a system is capable of change how you might make management decisions?**

An Organization Viewed as a System

Three Classifications of Processes to View a System

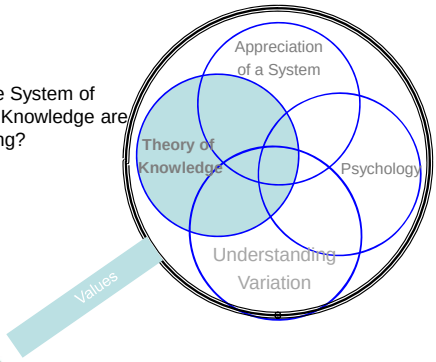


Deming: 1950

When constructing a linkage of processes, it may be useful to think about different groups of processes. The figure above shows the "Organization Viewed as a System" diagram with the location of the three classifications of processes identified.

Setting Aims

Where in the System of Profound Knowledge are we learning?



Defining our terms

- **Which term are people most comfortable with?**
  - Aim
  - Goal
  - Target
  - Need
  - Other???
- **What is our operational definition of each of these?**

Setting Aims

- **Should be impossible within the current framework of how our system functions**

Should embody these key elements

- **Ambitious**
- **Measurable**
- **Time Limited**
- **Very Specific**

Setting an Aim

- **First answering the Question**
  - "What are you trying to accomplish?"
- **Appreciation of the destination**
  - Take advantage of these questions
  - "How much?"
  - "By when?"

Langley et. al.

Example Aim – What do you think?

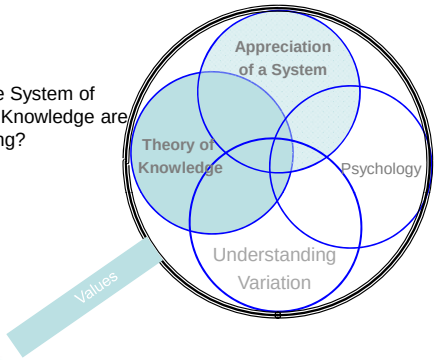
- **ensure *at least 70%* of ALL woman falling pregnant in our catchment area (define) attend a minimum of 4 antenatal visits before they give birth by March 2009**

Homework Assignment

- **Each Participant to develop and write two aim statements tonight that relate to your current work**
- **We will review these aim statements tomorrow morning**

Process Mapping

Where in the System of Profound Knowledge are we learning?



Process Mapping

- **What is a process map?**
- **Simply put, it is a way of visualizing all the steps which make up a process**

Process Mapping Exercise

- **As a whole group lets spend the next few minutes creating a process map for getting to work in the morning**

Process Map Analysis

- Time – How long?
- Space – Where did the step take place?
- Human Resources – Who did it?
- Geography – How far is the journey?
- Financial Resources – What is the cost and to whom?

Process Map Analysis

- How many steps are in the process?
- Examine the order of the steps in the process – are they ideally placed?
- How many transfers occur in the process?
- Where do delays occur in the process?
- Can you identify know bottlenecks in the process?

Process Mapping

- **Two levels of skill for the advisor**
  - Working with Improvement Teams
    - Looking at the practical, seeing the big picture
    - Identifying key gaps, challenge areas, bottlenecks
  - Skill of the Improvement Leader
    - Understanding the role of time, patient flow, waste, etc.
    - Data, how the process map reveals the data needed to improve
    - Current vs. Ideal Process Maps

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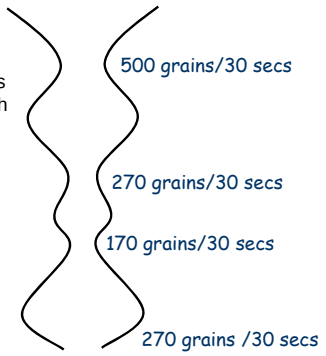
Process Mapping – Understanding Bottlenecks

- How fast will grains of sand run through this bottle?



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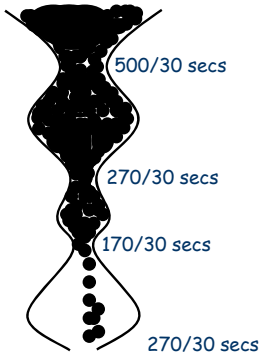
Process Mapping – Understanding Bottlenecks

- The answer is: 170 grains/30 secs



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Process Mapping – Managing Bottlenecks

- Stop sending work to the bottleneck
- Ensure there are no delays at the bottleneck
- Make sure the bottleneck is occupied only by work which is causing the constraint
- Shorten the time it takes the constraint to complete its task (increase throughput)
- Increase capacity at the bottleneck

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Process Mapping Exercise

- **Within your groups:**
  - Choose 1 person and together map a process they work with (draw the process out)
  - Spend time as a group analyzing the process, asking each of the questions listed above
  - Make notations on the map indicating key learning, important constraints
  - Time permitting begin to think about how you would redesign this process (possibly draw an idealized map)

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Measurement and Data for Improvement

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Measurement: Improvement and Research

Aspect	Improvement	Research
Philosophy of Science	Scientific method	
Aim	Improvement of care	New knowledge
Principles for design	Build knowledge sequentially Collect data over time Include a wide range of conditions in the tests	
Design & Analysis	Time Series (Run charts or Shewhart control charts)	Hypothesis, statistical tests (t-test, F-test, chi square), p-values
Bias	Acceptable consistent bias	Design to eliminate bias
Sample size	Just enough data	Just in case data
Confidentiality of the data	Data used only by those involved in the improvement	Research subjects' identities' protected

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Three types of Measures to be aware of

- **Outcome Measures**
- **Process Measures**
- **Balance Measures**

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Outcome Measures

- **How do we define outcome measures?**
- **Deming described these measures as the "voice of the customer"**
- **What are some of the outcome measures for your work?**

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Process Measures

- How do we define process measures?
- Deming described these measures as the "voice of the system"
- What are some of the process measures for your work?

Balance Measures

- How do we define balance measures?
- For Deming these measures were also described as the "voice of the system"
- What are some of the balance measures for your work?

Weight loss and developing Measures exercise Two (multiple) Team Exercise: Developing a Set of Measures

- Background: A friend has come to you and asked you to help develop measures for a group she is working with
- Aim: The aim of the improvement project is for participants to lose weight. They need regular feedback to keep them on task
- Develop a Family of 4 to 6 measures that could be for the project:
  - Outcome Measures – 1-2 measures
  - Process Measures – 2 measures
  - Balancing Measures – 1 or 2 measures

Overall Project Aim: Lose Weight

Type	Name of Measure	Definition, how to collect data	Weekly summary statistic

Where do measures come from?

- Data Elements – raw information already (or in need of) being collected your organization or organizations you work with
- Usually found in registers, summary forms or centralized information systems
- Can you give some examples of raw data your process is currently collecting?

How do we use data to develop measures?

- Data flows sequentially through a process
- Data from one step often can be used to estimate what the output of the next step in a process should be
- Rates (one form of measure) can be developed for each step

Process Measure Summary

- Measure the success of each step in a process of care
- Every step can be measured with a count in participation
- Reveal high leverage steps were we are currently facing gaps or the process is failing

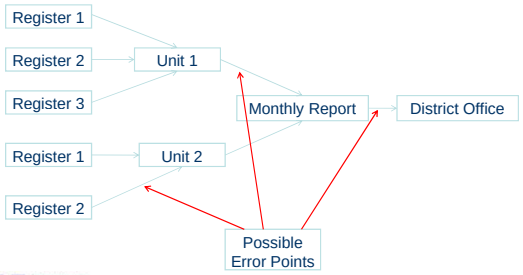
Data Quality

- Developing trust in a given measures ability to reveal what really happens in our projects
- Improving data first, to direct improvement, reveal the true picture and focus the project at a local level

Data Quality

- **Completeness**
  - It fully meets your needs for your goals
- **Accuracy**
  - Getting it right
- **Reliability**
  - Getting it right **every time**

Understanding how data moves through a system



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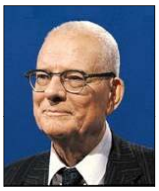
Measurement and Data for Improvement

"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

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References – Recommended Further Reading

Langley G, Nolan K, Nolan T, Norman C, Provost L. (1996, 2009) The Improvement Guide: A practical approach to enhancing organizational performance. Jossey-Bass Publishers.

Institute for Healthcare Improvement – www.ihi.org – Recommended IHI white papers:
- The Breakthrough Series: IHI's Collaborative Model for Achieving Breakthrough Improvement (No. 3)
- Improving the Reliability of Health Care (No. 4)
- Seven Leadership Leverage Points for Organization-Level Improvement in Health Care (Second Edition) (No. 6)
- Planning for Scale: A Guide for Designing Large-Scale Improvement Initiatives (No. 17)

Deming WE. (2000) Out of the Crisis. Cambridge, MA: MIT Press.

Lloyd R. (2004) Quality Health Care: A guide to developing and using indicators. Jones and Bartlett Publishers.

Donabedian A. (1980) Explorations in Quality Assessment and Monitoring. Volume 1: The definition of Quality and Approaches to Its Assessment. Ann Arbor, MI: Health Administration Press.

Mate KS, Bennett B, Mphatswe W, Barker P, Rollins N. (2009) Challenges for Routine Health System Data Management in a Large Public Programme to Prevent Mother-to-Child HIV Transmission in South Africa. PLoS ONE 4(5): e5483. doi:10.1371/journal.pone.005483.

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Day 2, June 8, 2010

Making Run Charts/Presenting Data

Description: This session has the intention of introducing a level of statistical rigor in data analysis using time which is not present otherwise. What it has the power to do is to illustrate for participants when change is attributable to the interventions they have been testing.

Learning Objective: Exposure to the use of data over time as a comprehensive way of narrating changes made and impact observed.

Skill: Participants will be able to generate a Run Chart and will have resources to take home to aid them in the interpretation of their data.

Model for Improvement

Description: This session will introduce participants to the primary mode of introducing change to any system, the Model for Improvement. Focus will be placed on description the three questions as well as the PDSA cycle.

Learning Objective: Understanding the three questions and the PDSA cycle including how cycles build on one another, why predictions are important and how specificity improves learning within cycles.

Skill: Participants will have planned at least one PDSA cycle associated with their work and should be able to plan future cycles with the teams they work with in the field.

Generating Change Ideas

Description: This session will focus on the discipline of creativity. Learning how to apply creativity methods alongside traditional approaches to finding change ideas will be covered.

Learning Objective: Exposure to key thinkers in creativity methods as well as to the methods themselves

Skill: Participants will have the opportunity to practice the use of a few creativity methods and they will be provided with preferences about where they might seek out more information.

Innovation/Testing/Implementation

Description: Building upon learning gained during the session on the Model for Improvement this session will take participants one step deeper with the intention of exploring the differences between innovating change ideas, testing change ideas and when it is appropriate to implement a change idea.

Learning Objective: Distinguish the differences between innovation, testing, and implementation with a view on knowing when engaging in one of these is appropriate.

Skill: Participants should be able to examine their improvement initiatives, critically analyzing when they have enough evidence to engage in implementation of a new idea meant to improve their system.

Driver Diagrams

Description: This session builds on and pulls together other components of the course (aim setting, the Model for Improvement, measurement for change, etc.) A focus will be on understanding Primary and Secondary drivers in moving an improvement intervention forward.

Learning Objective: Explore what a driver diagram is and how it can be used to describe factors which will influence the outcome of any improvement initiative.

Skill: Participants will have developed at least one driver diagram as a large group and will leave with a template which they can use to develop driver diagrams with their teams once they return to their home offices.

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Care that Counts Initiative Quality Improvement Training Course

Brandon Bennett
Institute for Healthcare Improvement

Agenda

Day 1

- System of Profound Knowledge
- Systems Thinking
- Setting Aims
- Process Mapping
- Measurement and Data for Improvement

Day 2

- Making Run Charts/ Presenting Data
- Model for Improvement
- Generating Change Ideas
- Innovation/Testing/ Implementation
- Driver Diagrams

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Agenda continued

Day 3

- Leading Change
- Working with Leaders
- Consultation Skills

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Quick Review of Day 1

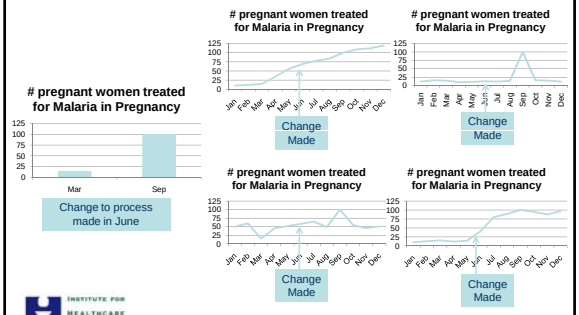
- What do you remember most about yesterday?
- What questions still remain about what was covered?
- What did you find most helpful/useful from the day?

Reviewing our Homework

- Are the key questions addressed (how much and by when?)
- Is the aim specific?
- Is it ambitious?
- Is it clear to anyone who will read it?
- Where could it be made better?

Presenting Data

Why use a line graph or look at data graphed over time?



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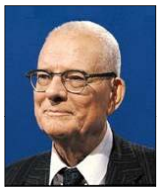
Understanding Variation and the use of data

"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



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Making Run Charts

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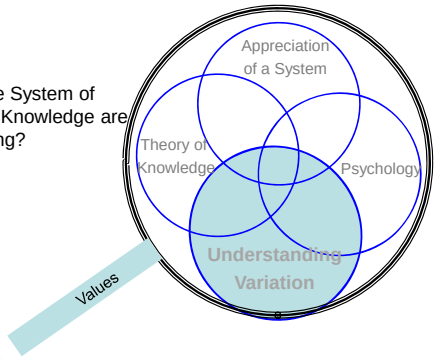
Where in the System of Profound Knowledge are we learning?



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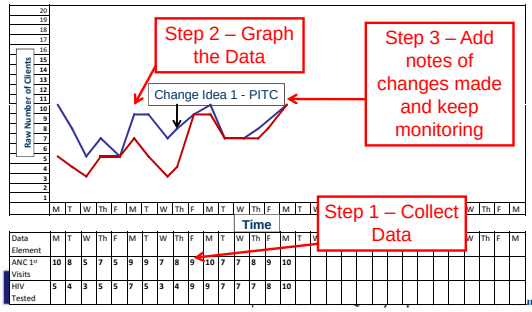
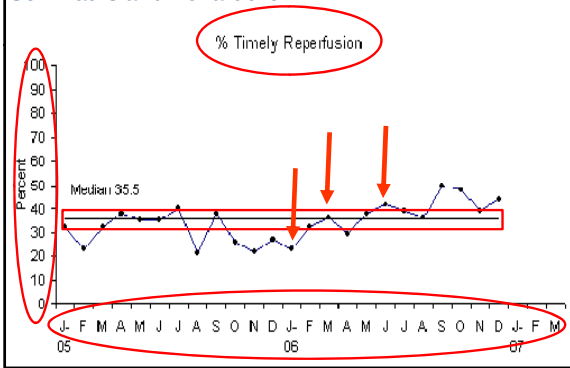
How to make an annotated line graph



So what is a run chart then?



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Key Elements of a Run Chart

- contains at least 12 data points
- contains only one line on the graph
- must have a median
- usually time is represented on the x-axis
- tells the story through use of careful annotation

Why we want to annotate our charts…

'And this is the period when the cat was away.'

Why we want to annotate our charts…

- One of the most powerful tools for improvement
- Describe a process captured over time (as opposed to being a single sample)
- Reveal any trends a process might be experiencing
- When combined with careful annotation they track the impact of change

Understanding when performance of a given process is stable

- The use of all statistical process control methods is based on this principle of stability
- When a process is stable it is said to be "in control" and therefore has predictable performance
- When a process is unstable it is said to be "out of control" and so is not predictable and thus more difficult to manage
- The introduction of ideas to improve a process will have the intended effect of "pushing" the process out of stability toward a new, better level of performance

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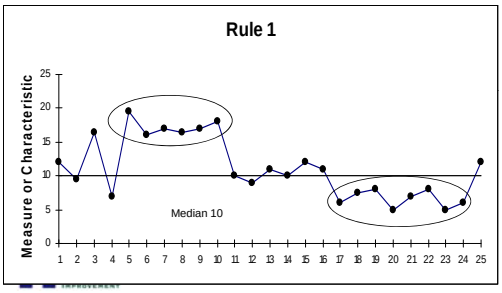
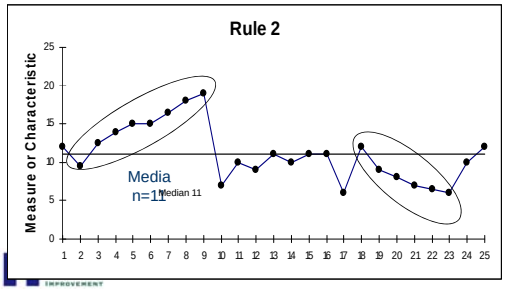
Rules For Determining Probability Based Signals of Change

Rule 1 (Shift) : Six or more consecutive POINTS either all above or all below the median. Skip values on the median and continue counting points. Values on the median DO NOT make or break a shift.



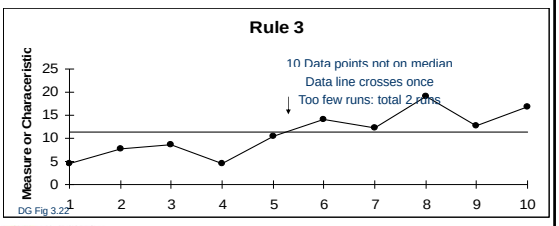
Rules For Determining Probability Based Signals of Change

Rule 2 (Trend): Five points all going up or all going down. If the value of two or more successive points is the same, ignore one of the points when counting; like values do not make or break a trend.



Rules For Determining Probability Based Signals of Change

Rule 3 (Too many or too few runs) To Determine The Number of Runs Above and Below the Median:
A run is a series of points in a row on one side of the median. Some points fall right on the median, which makes it hard to decide which run these points belong to. So, an easy way to determine the number of runs is to **count the number of times the data line crosses the median and add one.**
Statistically significant change signaled by too few or too many runs.



DG Fig 3.22

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Rule 3: # of Runs

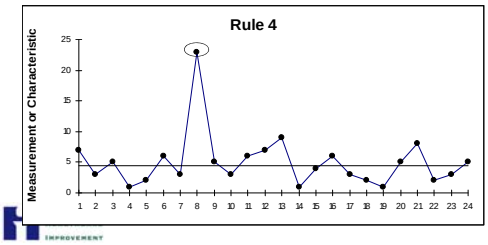
Table for Checking for Too Many or Too Few Runs on a Run Chart

Total number of data points on the run chart *that do not fall on the median*	Lower limit for the number of runs (< than this number of runs is "too few")	Upper limit for the number of runs (> than this number of runs is "too many")
10	3	9
11	3	10
12	3	11
13	4	11
14	4	12
15	5	12
16	5	13
17	5	13
18	6	14
19	6	15
20	6	16
21	7	16
22	7	17
23	7	17
24	8	18
25	8	18

Table is based on about a 5% risk of failing the run test for random patterns of data.
Adapted from Swed, Feda S. and Eisenhart, C. (1943). "Tables for Testing Randomness of Grouping in a Sequence of Alternatives. Annals of Mathematical Statistics. Vol. XIV, pp.66 and 87. Tables II and III.

Rules For Determining Probability Based Signals of Change

RULE 4:Astronomical
For detecting unusually large or small numbers:
Data that is Blatantly Obvious different value
Everyone studying the chart agrees that it is unusual
Remember:
Every data set will have a high and a low - this does not mean the high or low are astronomical



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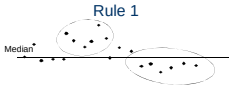
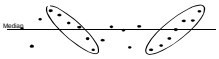
Run Chart: Rules for Identifying Statistically Significant Change

Rule 1



Shift: 6 points in row on same side of the median Note: A point exactly on the centerline does not cancel or count towards a shift

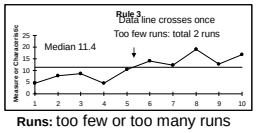
Rule 2



Trend: 5 points in row headed in same direction

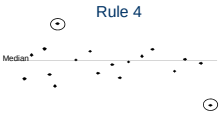
Note: Ties between two consecutive points don't cancel or add to a trend

Rule 3



Runs: too few or too many runs

Rule 4



Astronomical Point: a obviously, even blatantly different value

Note: Every set of data will have a highest and lowest data point. This does not mean the high or low are astronomical

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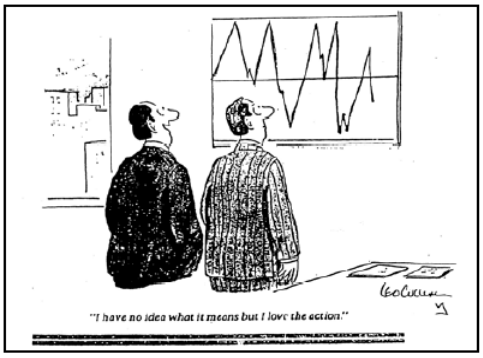
Provost and Murray



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Other Types of Charts you are likely to see

- Histograms
- Pie Charts
- Scatter Plots
- Control Charts

- When to use these instead of a run chart?

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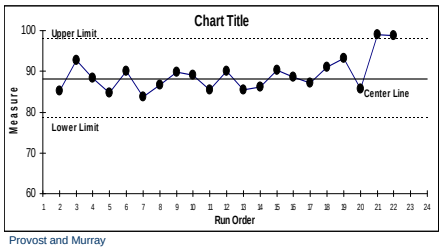
Histogram (Bar Chart)

- Allow comparison across an entire process for a moment in time
- Good way to summarize process performance when aggregating data
- Outcome Data can be displayed alongside corresponding process data

What a Shewhart Chart looks like

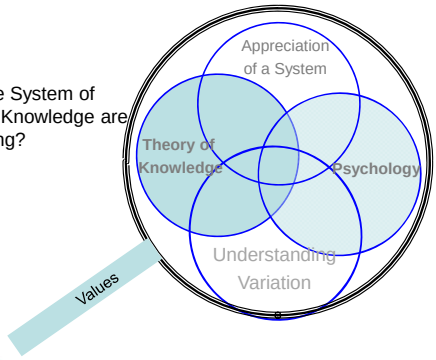


Provost and Murray

The Model for Improvement

Shewhart
Deming
Langley et. al.

Where in the System of Profound Knowledge are we learning?

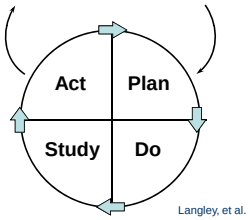


Model for Improvement

What are we trying to accomplish?

What change can we make that will result in improvement?

How will we know that a change is an improvement?



Langley, et al.

Question 1: What are we trying to accomplish?

- In the context of project planning this might be your overall aim, however, when used to introduce a change through the PDSA cycle, a PDSA specific aim should be identified
- As with setting our initial aim, we should answer this question as specifically as we can

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Question 2:
What change can we make that will result in an improvement?

Sources of Change Ideas

- people providing the service
- Clients
- best practice
- Guidelines
- change ideas/concepts
- novel ideas developed through creativity methods
- identifying underlying challenges (root cause analysis)

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Question 3:
How will we know a change is an improvement?

Measurement is critical to tracking change

- "no data, no improvement"
- measurement may differ from process/outcome measures, meaning an individual PDSA may capture data about performance at one step in a process that you normally do not collect

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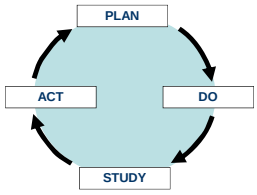
PDSA Cycle



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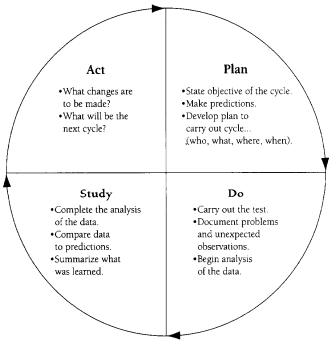

Figure 4.1. Elements of the PDSA Cycle.

Langley et. al

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New Technology Exercise

- **A new technology is available, that if you can figure out how to use, can provide substantial benefit to your organization. You will need to decide whether or not to implement this technology as a team**
- **Options**
  - A – you run a test and learn only – cost 10% of resources – benefit 0% improvement in production
  - B – you run a small scale test on production – cost 30% if you fail – benefit 10% if you succeed
  - C – you implement the technology – cost 100% if you fail – benefit 30% if you succeed

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Learning to use PDSA

	Team 1		Team 2		Team 3		Overall
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							

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PDSA Cycles

- Gives you a way to try out your ideas to improve the system before deciding to implement
- Allows you to know quickly whether your change will work
- Gather data to convince your colleagues that the change will work
- Focus on small steps (will not disrupt your work)

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Key Points in PDSA cycles

- **Every plan has a prediction – what you think will happen**
- **Be as specific and as small as possible**
- **Should be measurable with data collection being very important**
- **Should be analyzed for success and acted upon through a new plan or a scaled up cycle**

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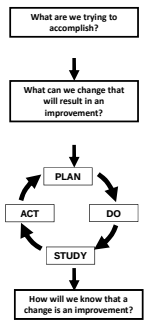
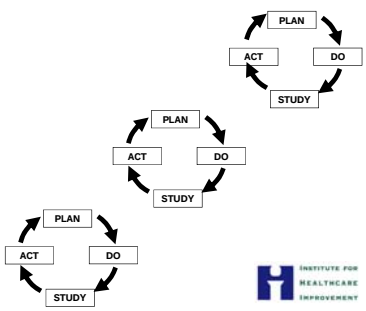
Rapid Cycle Change





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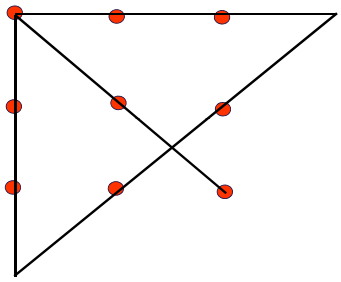
Generating Change Ideas

Creativity: an introduction



Tools to facilitate creativity

- Brainstorming
- Affinity Diagrams
- Random Word
- Use of provocations
- Use of Change Concepts
- Ask why 5 times

Rules for Brainstorming and Exercise

- Everything is acceptable – there will be time later to cull ideas
- Everyone contributes ideas
- Keep the ideas flowing until you run out of energy before beginning the organization process

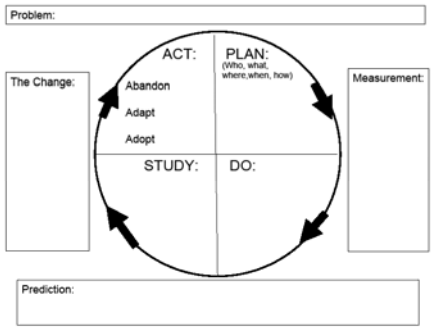
Affinity Diagram Exercise

- Organize idea by clustering them
- Categorize idea once in clusters
- Prioritize ideas within categories
- Prioritize categories if need be

Random Word Exercise

- What are we trying to accomplish?
- Choose a page number from a book
- Chose a line number and word number
- Find the Random Word
- How can this word help us accomplish what we want?
- What do you think of when you think this "word"?

Revisit the PDSA cycle



Breakout Session

- As a team revisit your Process Map
- Identify a step in the process within your control to change next week
- Spend 15 minutes generating change ideas (use the tool of your choice)
- Develop the change idea into a PDSA cycle you can test right away

Breakout Session

- **Return to your groups and now think about how you would use the PDSA cycle method to build confidence**
- **Think 2 or 3 cycles ahead – what problems might you anticipate?**
- **Will this change work only for a few patients or for all patients?**
- **Who needs to be engaged from leadership for this to succeed?**

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Homework

- Develop a change idea and the Plan portion of a PDSA cycle you can execute next week in your organization
- Provide as much specificity and detail as possible, including who will do it (by name), when it will be done (day and time), etc.
- We will review these first thing in the morning

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Knowing when to implement a change

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Developing/Testing/Implementing Change Ideas

- As with our card deck exercise it is important to know when more testing is needed, if will is present for change and what the known impacts will be on the system if a change is implemented

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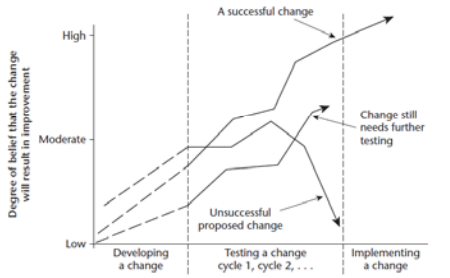
Degree Belief and Next PDSA Cycle

FIGURE 7.1. DEGREE OF BELIEF WHEN MAKING CHANGES TO IMPROVE.



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Improvement Guide, 2009, p. 144

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PDSA Cycle: Deciding on Scale of Test

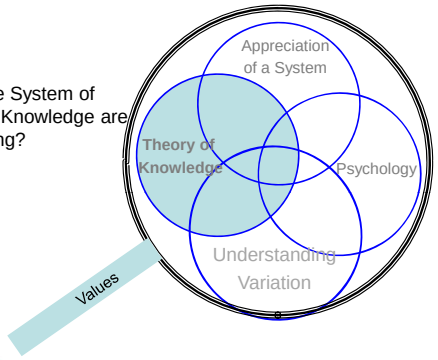
People Readiness to Test Changes

Current Situation		Resistant (No commitment)	Indifferent (some commitment)	Ready (strong commitment)
Low Degree of Belief that change idea will lead to Improvement	Cost of failure large	Very Small Scale Test	Very Small Scale Test	Very Small Scale Test
	Cost of failure small	Very Small Scale Test	Very Small Scale Test	Small Scale Test
High Degree of Belief that change idea will lead to Improvement	Cost of failure large	Very Small Scale Test	Small Scale Test	Large Scale Test
	Cost of failure small	Small Scale Test	Large Scale Test	Implement

The Improvement Guide

Driver Diagrams

Where in the System of Profound Knowledge are we learning?

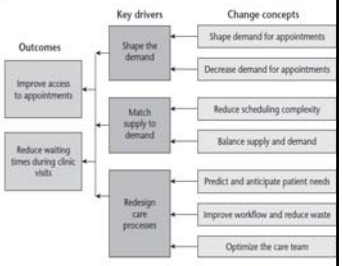


Driver Diagrams

A driver diagram is an approach to describing our theories of improvement:

- Used to help organize our theories and ideas in an improvement effort.
- The initial driver diagram for an improvement project might lay out the descriptive theory of improved outcomes that can then be tested and enhanced to develop a predictive theory.
- The driver diagram should be updated throughout an improvement effort and used to track progress in theory building.

FIGURE B.14. EXAMPLE OF A DRIVER DIAGRAM FOR AN ACCESS IMPROVEMENT PROJECT.



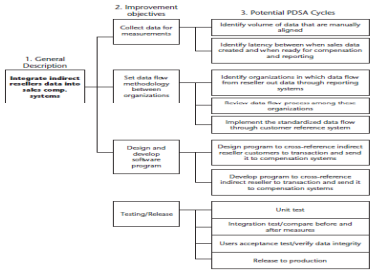
Langley et. al.

Driver Diagram Exercise

- Create a driver diagram with the whole group

Tree Diagram

FIGURE B.16. EXAMPLE OF TREE DIAGRAM TO ORGANIZE AN IMPROVEMENT PROJECT.



References – Recommended Further Reading

Langley G., Nolan K., Nolan T., Norman C., Provost L. (1996, 2009) The Improvement Guide: A practical approach to enhancing organizational performance. Jossey-Bass

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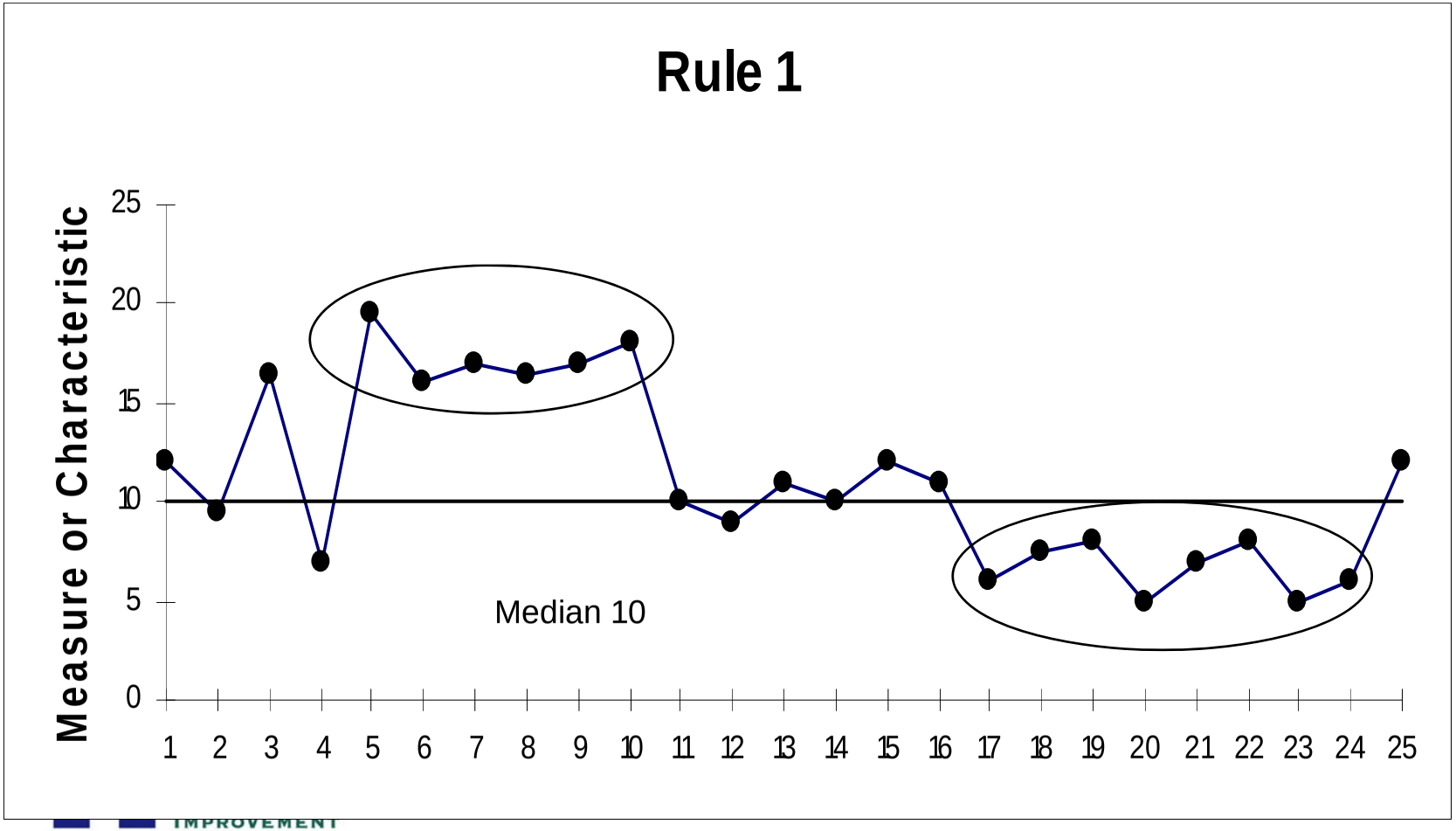
Provost L., Murray S., (2009) The Data Guide. Associates in Process Improvement and CT Concepts.

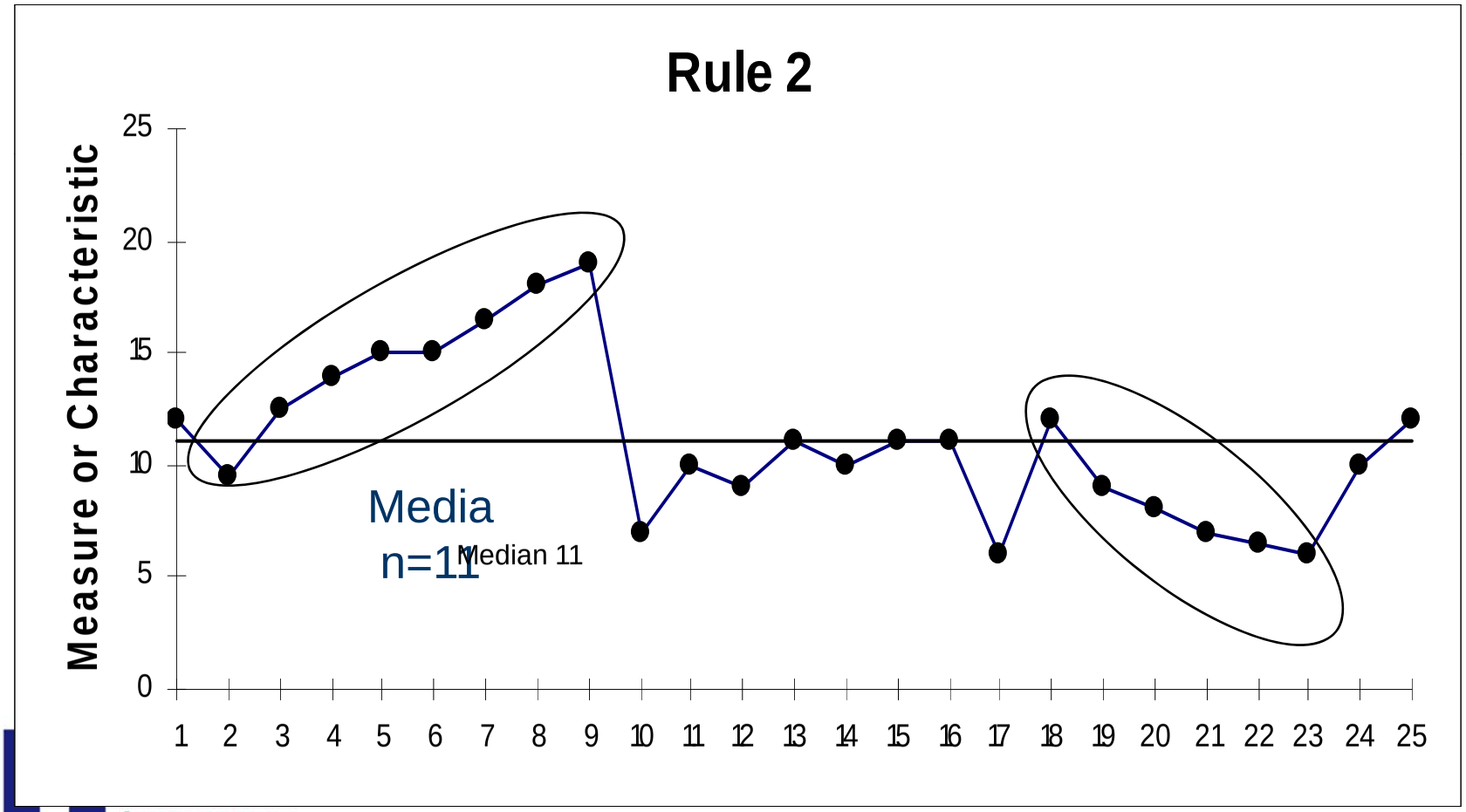
Rules For Determining Probability Based Signals of Change

Rule 1 (Shift) : Six or more consecutive POINTS either all above or all below the median. Skip values on the median and continue counting points. Values on the median DO NOT make or break a shift.



Rules For Determining Probability Based Signals of Change

Rule 2 (Trend): Five points all going up or all going down. If the value of <u>two or more successive points is the same</u>, ignore one of the points when counting; like values do not make or break a trend.



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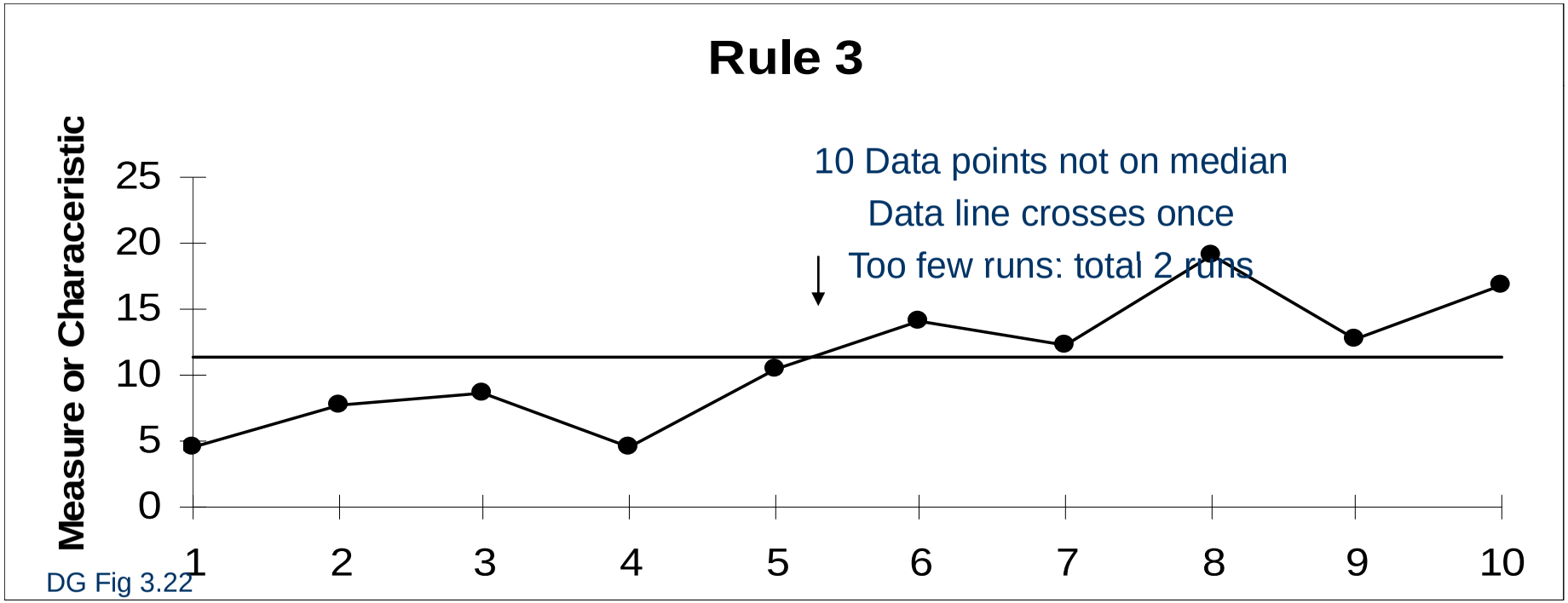
Rules For Determining Probability Based Signals of Change

Rule 3 (Too many or too few runs) To Determine The Number of Runs Above and Below the Median:

A run is a series of points in a row on one side of the median. Some points fall right on the median, which makes it hard to decide which run these points belong to. So, an easy way to determine the number of runs is to **count the number of times the data line crosses the median and add one.**

Statistically significant change signaled by too few or too many runs.



DG Fig 3.22

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Rule 3: # of Runs

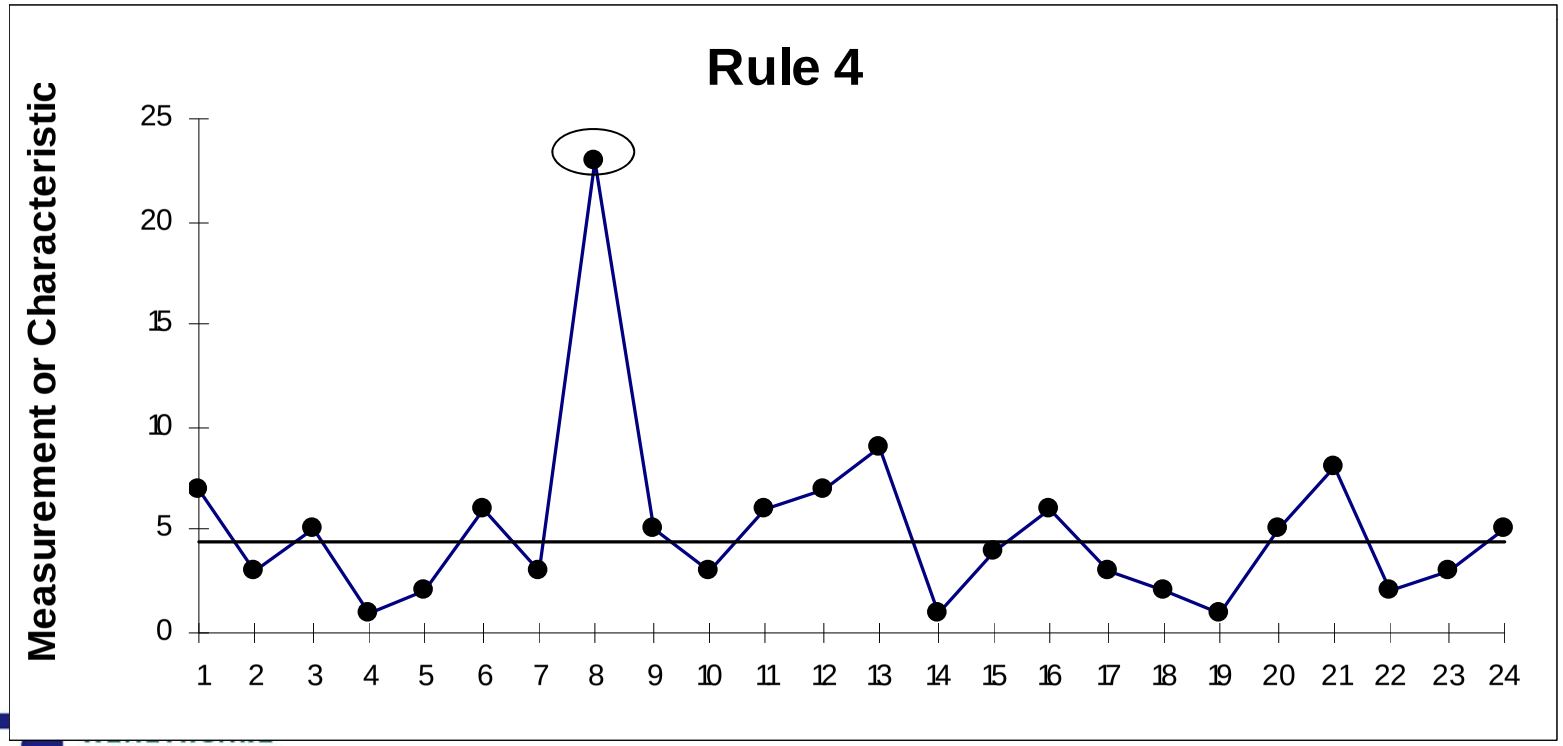
Table for Checking for Too Many or Too Few Runs on a Run Chart

Total number of data points on the run chart *that do not fall on the median*	Lower limit for the number of runs (< than this number of runs is "too few")	Upper limit for the number of runs (> than this number of runs is "too many")
10	3	9
11	3	10
12	3	11
13	4	11
14	4	12
15	5	12
16	5	13
17	5	13
18	6	14
19	6	15
20	6	16
21	7	16
22	7	17
23	7	17
24	8	18
25	8	18

Table is based on about a 5% risk of failing the run test for random patterns of data.
Adapted from Swed, Feda S. and Eisenhart, C. (1943). "Tables for Testing Randomness of Grouping in a Sequence of Alternatives. Annals of Mathematical Statistics. Vol. XIV, pp.66 and 87, Tables II and III.

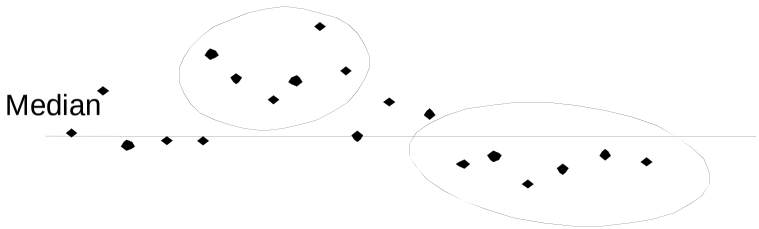
Rules For Determining Probability Based Signals of Change

RULE 4:Astronomical
For detecting unusually large or small numbers:
Data that is <u>Blatantly Obvious</u> different value
Everyone studying the chart agrees that it is unusual
Remember:
Every data set will have a high and a low - this does not mean the high or low are astronomical



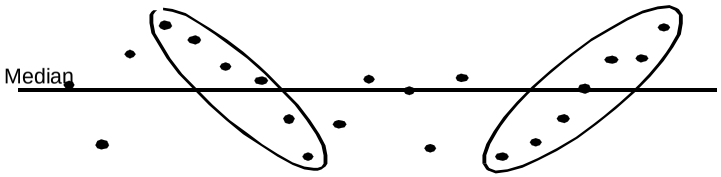
Run Chart: Rules for Identifying Statistically Significant Change

Rule 1



Shift: 6 points in row on same side of the median Note: A point exactly on the centerline does not cancel or count towards a shift

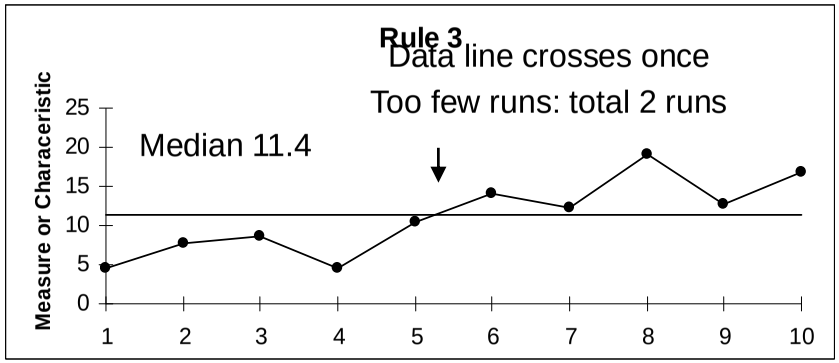
Rule 2



Trend: 5 points in row headed in same direction

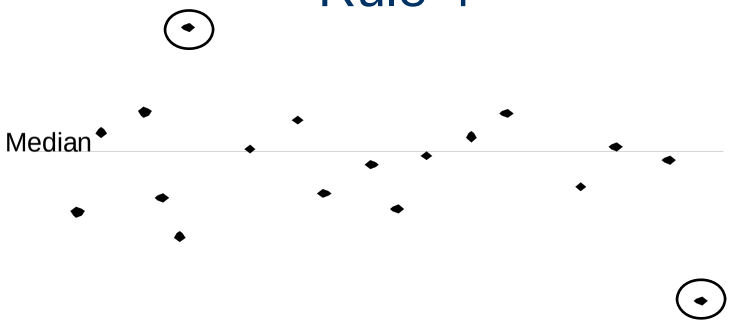
Note: Ties between two consecutive points don't cancel or add to a trend

Rule 3



Runs: too few or too many runs

Rule 4



Astronomical Point: a obviously, even blatantly different value

Note: Every set of data will have a highest and lowest data point. This does not mean the high or low are astronomical

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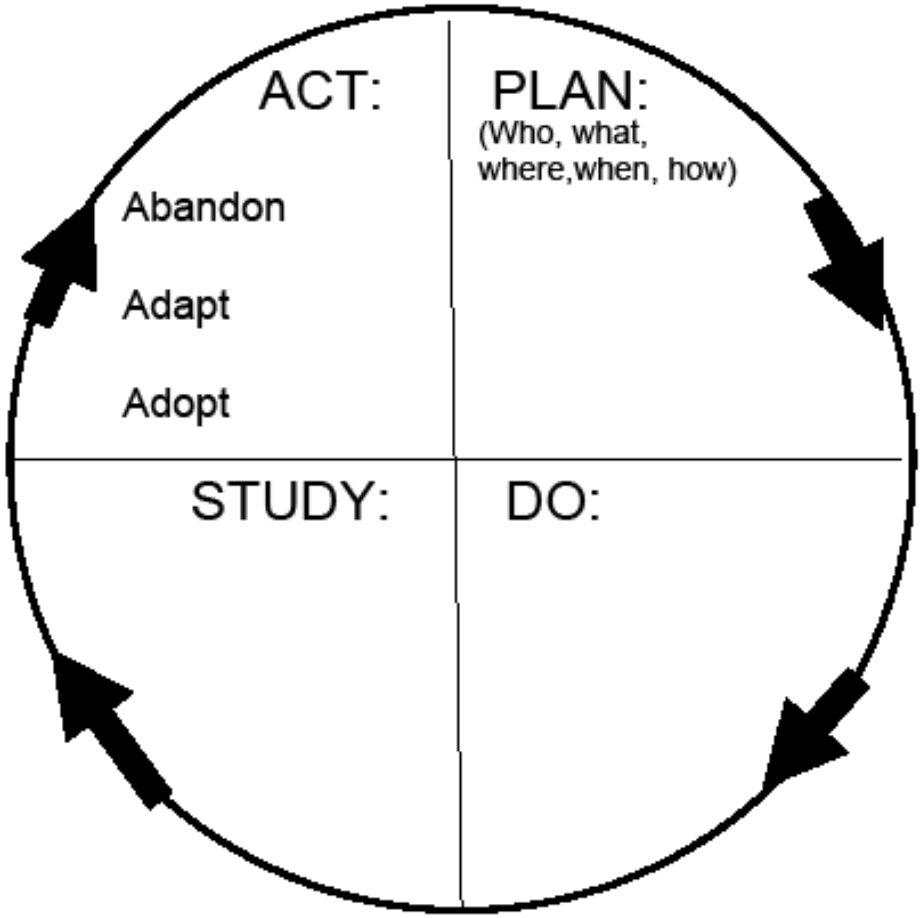
Provost and Murray

Problem:

The Change:



Measurement:

Prediction:

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Driver Diagrams

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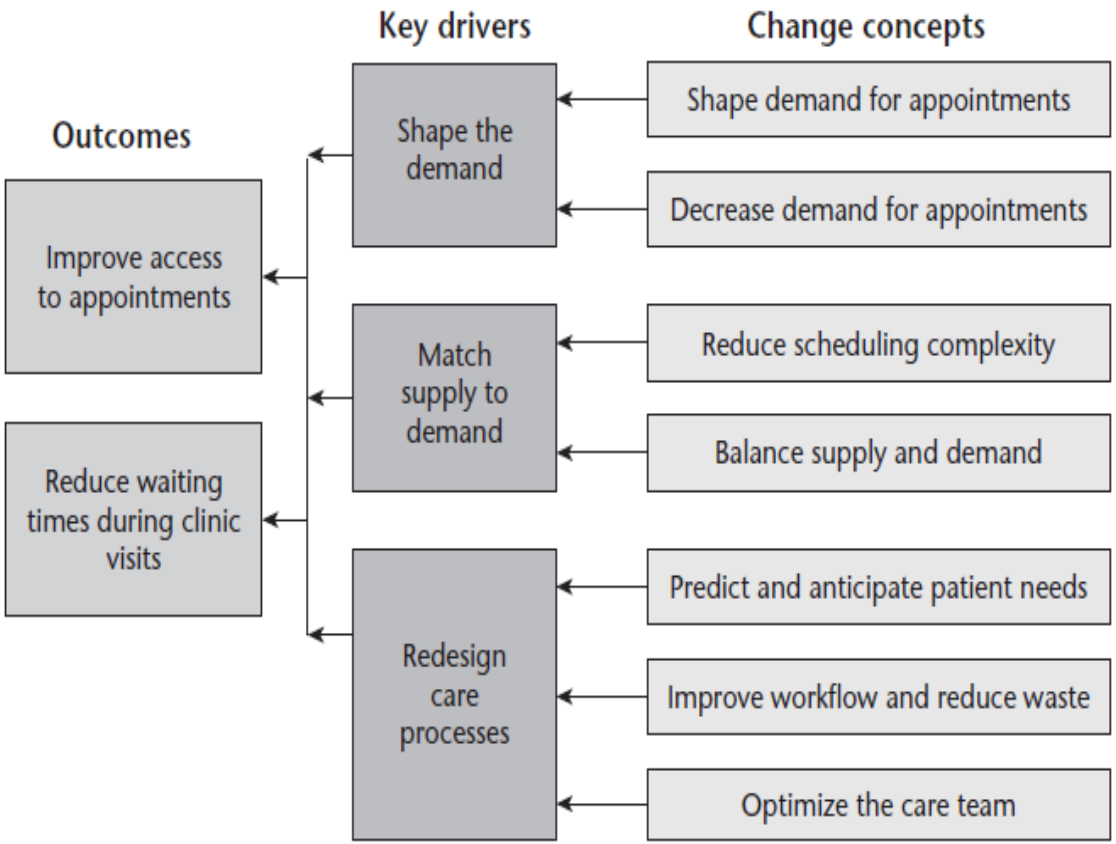

Langley et. al.

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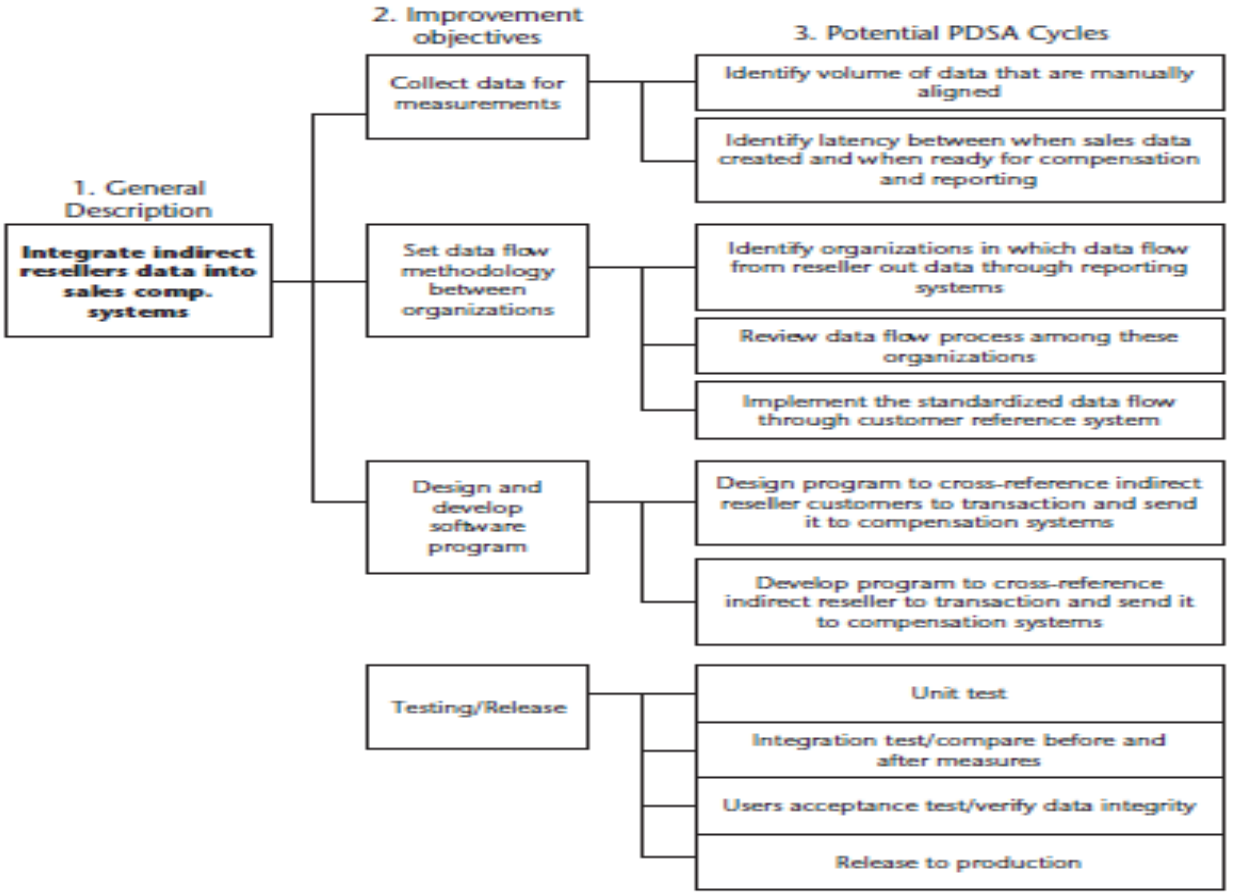

Day 3, June 9, 2010

Leading Change

Description: This session will focus on the management skills needed to lead others through an improvement initiative. A framework for change will be presented which leaders can use to assess readiness to engage the skills covered during the first two days of the course.

Learning Objective: Presentation of the Will, Ideas and Execution framework with a focus on when to use which skills as a leader.

Skill: Participants will have resources in the form of an IHI whitepaper to reflect on and will have spent time applying the framework to their own projects during break-out sessions.

Working with Leaders

Description: During this session the course will explore the language of leadership including what topics are important to leaders and how quality improvement initiatives can be framed in a way which makes sense for leaders when they are looking to change their system.

Learning Objective: Understanding how process performance integrates with the whole systems view leaders must take to manage an organization.

Skill: Participants should come away with some key issues to listen for and potentially focus on when they are presenting quality improvement results or initiatives to leaders.

Consultation Skills

Description: Highly interactive, this section of the course will focus on practicing the skills gained during the two and half days together. Participants will be presented with brief case studies and asked to interact with each other applying the skills discussed.

Learning Objective: Practice of improvement skills in a safe place where participants can receive constructive feedback on their use of various methods.

Skill: Participants will be able to apply various skills to life like scenarios associated with the work they do for Orphans and Vulnerable Children.

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Care that Counts Initiative Quality Improvement Training Course

Brandon Bennett
Institute for Healthcare Improvement

Agenda

Day 1

- System of Profound Knowledge
- Systems Thinking
- Setting Aims
- Process Mapping
- Measurement and Data for Improvement

Day 2

- Making Run Charts/ Presenting Data
- Model for Improvement
- Generating Change Ideas
- Innovation/Testing/ Implementation
- Driver Diagrams

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Agenda continued

Day 3

- Leading Change
- Working with Leaders
- Consultation Skills

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Quick Review of Day 2

- What do you remember most about yesterday?
- What questions still remain about what was covered?
- What did you find most helpful/useful from the day?

Reviewing our Homework

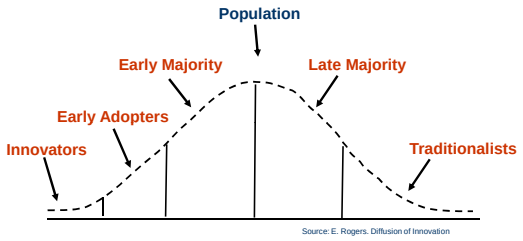
- Is the aim or problem clearly articulated?
- Is the change idea very specific and small in scale?
- Is the plan comprehensive, with clear responsibilities laid out?
- Is it clear to anyone who will read it?
- Where could it be made better?

Leading Change

Forming a Multi-Disciplinary Team

- **Ideally no greater than 7 people**
- **Participants would be specific to Task**
  - And they would come from all relevant areas of the organization(s)
- **What Characteristics?**
  - No Traditionalists, only Innovators and Early Adopters, people who want to be there, people who are likely to stick around

Spreading Innovation



Building a Regular Agenda

- **Why?**
  - Helps with relationship building
  - Helps develop "good" expectations
- **What should it look like?**
  1. Review with a purpose
     - Previous minutes/assignments
     - Data
  2. Act
     - Follow up PDSA, what have you learned, what will you do now
  3. Next Steps
     - Expectations for next time

Identify Clear Communication Pathways

- **Encourage Atmosphere of openness**
- **What Barriers exist to open communication?**
  - Hierarchal relationships
  - Political
  - Interpersonal Relationships
- **Why important?**
  - Improves Team Morale
  - Speeds up ability to change the system
- **Consider Developing Team Norms**

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Identify a Leader or Champion

- **Likely this person will be an Innovator**
- **Qualities of a Champion**
  - Long term – at least 1 year commitment
  - Passionate and caring
  - Interested in change
  - Interested in your methods

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Site Mentoring Skills

- **Group Facilitation**
  - Laying down some ground rules for the group
  - Maintaining Time
    - Facilitating Pace
    - Improvement Mentors are responsible to allow enough time to complete tasks in improvement team meetings
  - Maintaining Agenda/Focus
    - Keeps improvement momentum
    - Provides continuity for the team

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Site Mentoring Skills

- **Side Tracks and Tangents**
  - Maintain perspective – guide back to focus or purpose
  - Do this respectfully, acknowledging points with willingness to return to them later
- **Guiding Questions**
  - Brings self discovery
  - Helps with buy in and execution

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Teaching Skills

- **Facilitating Self Discovery**
- **Have confidence in yourself and the methods you use**
- **Ask Probing Questions**
- **Be Creative**
  - Multiple ways of exploring issues – analogies, pictures, data, stories, role play, questions, etc.

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Listening Skills

- **What makes a good listener?**
  - No interruptions/allow to finish
  - Doesn't need to offer solutions
  - Acknowledging what you say
  - Show interest
  - Paraphrase
  - Eye contact
  - Provide perspective
  - Empathizes
  - Probing questions
  - Engaged and Present in the conversation

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Listening Skills

- **Looking for Non verbal queues**
  - Tone of voice
  - Body Language
  - Tension/Vibe
  - Cultural Relevance

Learning Conversations

- See each opportunity as a chance to discover why from "their" perspective
- This helps build will be showing that you care what others think

Motivational Skills

- Building on small success
  - Herzberg "Accomplishment and Recognition two most motivating factors"
- Find the good
- "Water runs downhill" – improvement works by pursuing improvement in the path of least resistance – as some improve others will naturally follow
- Sometimes the "best" change is not the best change – pursuing change they want will help to build will and is sometimes better than a really necessary change

Time Management

- **Time with Teams**
  - Negotiate with each team what they can give and what you need to be effective
  - More time is generally better (but a rule of thumb – up to one hour a week maximum unless they have staff wholly devoted to improvement)
- **Leveraging High Impact Sites**
  - Spend time and energy on sites which serve a disproportionately high percentage of the population
  - Alternatively work with truly motivated teams to achieve fast results which will motivate others

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Working with Leaders

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Identifying Different Types of Leaders

- Brainstorm who the leaders are with whom you work
- What type of organization do they work for?
- What is there purpose? What are they trying accomplish?
- Where do they have the ability to institute improvement efforts and make changes?

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Engaging Leaders

- How can what you are doing help them to accomplish their purpose
- Rather than asking them what they can do for you
- Speak the language of leadership

Speaking the language of leadership

- What are the topics which weigh on leaders?
- Often they are not technical in nature but rather relate to:
  - Finances
  - Whole systems outputs/population based outcomes
  - Targets
  - Time and Efficiency
  - Big picture thinking

SBAR - Communicating Concisely

- Situation
- Background
- Analysis
- Recommendations

Use of Will, Ideas and Execution

- Will
  - Does the mandate exist for change?
  - Is there a "burning platform" ?
  - Are we empowering people to do things differently?
- Ideas
  - Do we have ideas for how to change and/or do we know where to look to find them?
- Execution
  - Do we have a plan for getting things done?

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Managing Political Relationships

- What is your expereince working in political environments?
- What are the do's and don'ts of maintaining a successful program?
- Understanding context beyond what the perceived need is critical when working with leaders

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Tips for working with Senior Leaders

- Get results
- Keep the burden when assigning something to an executive
- Understand the short term issue and address it
- Connect to the business case
- Be helpful
- Be a good listener
- Be grateful and encouraging
- Look and act the part
- Work with the senior leaders learning style
- Be prepared with the end of the meeting in mind
- Strive to understand the complexity of the leaders environment
- Be succinct and direct with comments and answers

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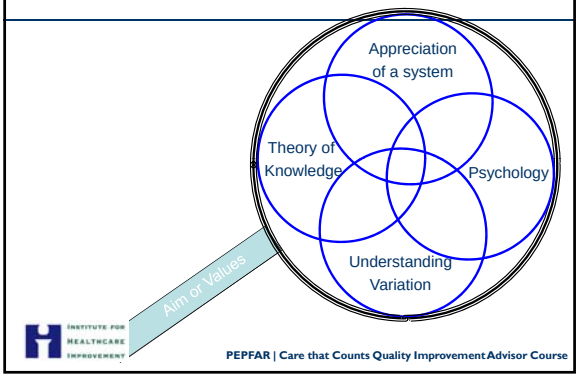
Consultation Skills

Using the Lens of Profound Knowledge



Use of Questions in Consulting

- **Socratic method -- a method of inquiry using questions to guide someone to a solution.**
- **Thinking is not driven by answers but by questions.**
- **Questions that stimulate our thought promote deeper thinking about the issue.**
- **Questions help define tasks, express problems and delineate issues.**
- **Answers on the other hand, often signal a full stop in thought.**
- **Only when an answer generates a further question does thought continue its life as such.**
- **Provide knowledge through answers when the team asks for them (pull).**

Key Elements Required for Improvement

Will **to do what it takes to change to a new system**

Ideas **on which to base the design of the new system**

Execution **getting results on a portfolio of projects**

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Model for Improvement

Langley et. al.

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Assignment: Consulting Scenario

- **Purpose: practice some improvement consulting skills on some likely scenarios**
- **Your job:**
  - You and your partner(s) have been assigned a consulting scenario
  - Your job is to role play this scenario
  - The objective is to meet the customer need…hit the target
- **Other info:**
  - One Improvement Advisor as consultant the other as the client
  - Even though role playing both Advisors are inputting to consultant's role as you prepare for this scenario
  - Will have up to 4 minutes to role play
  - After your role playing you may ask other Advisors questions, they may offer suggestions (5 min per scenario)

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Report out on experiences

Key points to cover:

- How did you integrate your learning about the System of Profound Knowledge?
- What Improvement tool(s) or technique did you feel would be the most valuable to meet your customers demand?
- **What skill did you feel like you needed more practice on or would have liked to know more about?**

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Resource Materials Included in the Course CD-ROM

PEPFAR | Care that Counts Initiative Publications

Applying the Science of Improvement to Achieving Quality Care for Vulnerable Children in Ethiopia (October 2009)

Communities in Action: Improving Quality in Service Delivery for Enhanced Wellbeing of Children in Ethiopia (October 2009)

Quality Improvement for OVC Services: Changing Youth Participation from a "Token Voice" to a Key Actor (April 2009)

Testing Service Standards and Developing Best Practices for Reaching Standards in OVC Programs (December 2008)

Quality Programs for Orphans and Vulnerable Children: A Facilitator's Guide to Establishing Service Standards (November 2008)

USAID Health Care Improvement Project Publications:

Results of Collaborative Improvement: Compliance with Evidence-based Standards in 27 Applications in 12 Countries. Collaborative Evaluation Series (December 2009)

Evaluating Health Care Collaboratives: The Experience of the Quality Assurance Project. Collaborative Evaluation Series (June 2008)

The Improvement Collaborative: An Approach to Rapidly Improve Health Care and Scale Up Quality Services (June 2008)

Le collaborative d'amélioration : une approche pour l'amélioration rapide des soins de santé et la mise à l'échelle des services de qualité (June 2009)

A Modern Paradigm for Improving Healthcare Quality (2001)

Un Paradigme Moderne de l'Amélioration de la Qualité des Soins de Santé (2002)

Sustaining Quality of Healthcare: Institutionalization of Quality Assurance (2002)

Pérenniser la Qualité des Soins de Santé : L'institutionnalisation de l'Assurance de Qualité (2002)

Institute for Healthcare Improvement White Papers:

Planning for Scale: A Guide for Designing Large-Scale Improvement Initiatives (2008)

Seven Leadership Leverage Points for Organization-Level Improvement in Health Care, Second Edition (2008)

Improving the Reliability of Health Care (2006)

The Breakthrough Series: IHI's Collaborative Model for Achieving Breakthrough Improvement (2003)

Recommended References for Further Reading

Quality Improvement

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