Process Improvement Theory and Application

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Agenda

• Brief History of Quality Improvement
• System of Profound Knowledge
• Systems thinking
• Model for Improvement
Quality Improvement – A brief History

Three key influences:

• W.E. Deming’s - System of Profound Knowledge

• Walter Shewhart’s – understanding variation through Statistical Process Control

• Joseph Juran – Juran’s Quality Trilogy
“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.”
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.
Knowledge for Improvement

**Improvement:** Learn to combine subject matter knowledge and profound knowledge in creative ways to develop effective changes for improvement.
Activity 1

Step 1: Pick a number from 3 to 9
Step 2: Multiply your number by 9
Step 3: Add 12 to the number from step 2
Step 4: Add your 2 digits together
Step 5: Divide # from step 4 by 3 to get a 1 digit number
Step 6: Convert your Number to a letter:
1=A  2=B  3=C  4=D  5=E  6=F  7=G  8=H  9 = I
Step 7: Write down the name of a country that begins with your letter
Step 8: Go to the next Letter: A to B, B to C, C to D, etc.
Step 9: Write down the name of an animal (not bird, fish, or insect) that begins with your letter from Step 8
Step 10: Write down the color of your animal

Output:
Color__________
Animal__________
Country__________
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 – Dartmouth
Linkage of Process
Organization as a System

Need
Purpose of the Organization

Plan to Improve
Market Research
Measurement & Feedback

Outcome for Clients

Driver Process

Design & Redesign of Processes, Products & Services

Plan to Improve

Production of Product or Service

Support Process

Supports Process

Outcome for Clients

Suppliers

A
B
C
D
E
F
G

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Process Mapping

• What is a process map?

• Simply put, it is a way of visualizing all the steps which make up a process
Process Map

• Related Terms/Tools
  — Flow Chart/Diagram
  — Causal Loop Diagram
  — Value Stream Analysis
  — Swim Lane diagram (Matrix/Group Flow Diagram)
  — Others?
Nomenclature

A Rectangle indicates that an activity is being performed. A description is usually displayed inside the rectangle.

A Diamond represents a decision point in the process. Usually a question is displayed inside the decision symbol. Possible answers to that question then form exit routes from the diamond.

A Document symbol represents a document that is either an input or an output of a process. A description of the document is displayed inside the symbol.

A Terminal symbol identifies the “Start” or “End” of a process.

A Connector Symbol is used to show a branch or extension of a flow diagram.

Arrows represent the direction of flow for a process.
Simple Example

Counsel and testing of mother

CD4 count

DT to mother

DT to baby

ART to mother

PCR Testing for the Infant
Data Flow Diagram

Possible Error Points in Data Transfer

Register 1

Register 2

Unit 1

Register 3

Unit 1

Register 1

Unit 2

Register 2

Monthly Report

District Office
Setting Aims
Where in the System of Profound Knowledge are we learning?
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?”
With Your Project Teams

• Each Team could develop and write an aim statement related to your project
Reviewing our Aim Statements

• 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 improved/made more simple?
The Model for Improvement

Shewhart
Deming
Langley et. al.
Where in the System of Profound Knowledge are we learning?
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?

Model for Improvement

Act
Plan
Study
Do

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.
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)
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
PLAN:
• State objective of the cycle.
• Make predictions.
• Develop plan to carry out cycle...(who, what, where, when).

DO:
• Carry out the test.
• Document problems and unexpected observations.
• Begin analysis of the data.

STUDY:
• Complete the analysis of the data.
• Compare data to predictions.
• Summarize what was learned.

ACT:
• What changes are to be made?
• What will be the next cycle?
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)
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
With your team

• Develop your first PDSA

• Create a plan for your initial PDSA Cycle, something you can test next week
  — What do you believe about why things are the way they are?
  — What do you want to learn?
  — What can you test quickly?
Prediction:
Rapid Cycle Change

What are we trying to accomplish?

What can we change that will result in an improvement?

PLAN

DO

STUDY

ACT

How will we know that a change is an improvement?

PLAN

DO

STUDY

ACT
Eshowe, KZN, South Africa
With your Team

• With your team 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?
Knowing when to implement a change
Degree Belief and Next PDSA

FIGURE 7.1. DEGREE OF BELIEF WHEN MAKING CHANGES TO IMPROVE.
## Appropriate Scope for a PDSA Cycle

### Staff Readiness to Make Change

<table>
<thead>
<tr>
<th>Current Situation</th>
<th>Resistant</th>
<th>Indifferent</th>
<th>Ready</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Low Confidence</strong> that change idea will lead to Improvement</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cost of failure large</td>
<td>Very Small Scale Test</td>
<td>Very Small Scale Test</td>
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<td>Cost of failure small</td>
<td>Small Scale Test</td>
<td>Large Scale Test</td>
<td>Implement</td>
</tr>
</tbody>
</table>
Final Thoughts and Questions

**Questions for Discussion:**

- What are the most significant barriers to improvement in health-care organizations?
- What is the PDSA cycle?
- What are the key ingredients for success in making rapid cycle change?
Some References


Institute for Healthcare Improvement – [www.ihi.org] – Recommended IHI white papers

Deming W.E. Out of the Crisis (1982)…..


