The Model for Improvement

Kevin Little, PhD
Jill Duncan, RN, MS, MPH

Tuesday, October 9, 2012
Today’s presenters have nothing to disclose

WebEx Quick Reference

- Welcome to today’s session!
- Please use Chat to “All Participants” for questions
- For technology issues only, please Chat to “Host”
- WebEx Technical Support: 866-569-3239
- Dial-in Info: Communicate / Join Teleconference (in menu)
When Chatting…

Please send your message to All Participants

If you’re joining with colleagues, please type the organization you represent & the number of people joining from your organization.

Example: Midwest Health Alliance – 3

Please type your name and the organization you represent in the chat box!

Example: Chris Jones, Midwest Health Alliance
IHI Expedition Team

Kayla DeVincentis
Project Coordinator, IHI

Jill Duncan, RN, MS, MPH
Director, IHI

Faculty

Kevin Little, PhD, is a statistician specializing in the use of information to study, understand, and improve system performance. His experience in application of statistical methods includes direct work with scientists and engineers in a range of disciplines. He has also coached improvement teams in a range of industries. Dr. Little served as an Improvement Advisor (IA) to the National Health Disparities Collaboratives from 2001 to 2006, and he presently serves as IA for projects in IHI's hospital portfolio of work. Recently, he worked on the measurement strategy for the Healthier Hospitals Initiative.
Agenda

• Welcome
• Session 1 ‘Homework’ Review
• The Model for Improvement
  —Kevin Little, Improvement Advisor, IHI, & Principal, Informing Ecological Design
• Resources
• Next steps

Expedition Objectives
Participants will be able to . . .

• Describe the similarities and differences among Lean, Six Sigma (which includes DMAIC) and the Model for Improvement.
• Determine which approach(es) are most appropriate for their organization.
• Initiate a plan to build an integrated quality improvement strategy.
• Define a customized approach for crafting projects and hardwiring discipline into improvement processes across participant’s organization.
• Plan small tests of change they can test throughout the Expedition.
Ground Rules

We learn from one another – “All teach, all learn”

Why reinvent the wheel? - Steal shamelessly

This is a transparent learning environment

All ideas/feedback are welcome and encouraged!

Session 1 Homework

• Complete the IHI Improvement Capability Self-Assessment Tool
  – Does your assessment suggest one or more actions you can take now to increase your hospital's capabilities?
  – Does your assessment suggest a need for more information to help you determine specific actions to help you increase your improvement capabilities?

Send ‘Tweet-like’ summary of 140 characters or less to Jill at jduncan@ihi.org by Friday, October 5th
IHI Improvement Capability Self-Assessment Tool

**DIRECTIONS FOR USE**

I. For each of the six areas, place an "X" below the level of capability that you think best fits your hospital's current improvement capability and briefly describe the data/evidence you used to inform your choice. Descriptions for each level of capability can be found on pages 3-9.

<table>
<thead>
<tr>
<th>Level of Capability</th>
<th>1) Leadership for Improvement</th>
<th>2) Results</th>
<th>3) Resources</th>
<th>4) Workforce and Human Resources</th>
<th>5) Data Infrastructure and Management</th>
<th>6) Improvement Knowledge and Competence</th>
</tr>
</thead>
</table>

Please provide a brief description of the type of data or other evidence you used to inform your choice.

II. Reflect on the results of your assessment:

- Does your assessment suggest one or more specific actions you can take soon to increase your hospital's capability? Note these actions and who you would need to collaborate with to move ahead.
- Does your assessment suggest a need for more information to help you determine specific actions to increase your hospital's capability? Note these needs.

http://www.ihi.org/knowledge/Pages/Tools/IHIImprovementCapabilitySelfAssessmentTool.aspx

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*Homework Example*
We determined we have made significant improvement in developing and tracking quality measures in the last five years. We do have significant opportunities in the resource category and find many areas do not have dedicated resources for quality improvement. We also find opportunities with the alignment of goals/measure by key stakeholders.

Heather Mann, MSPH, CPHQ - Palmetto Health

VCUHS can increase its capabilities by utilizing additional methodologies for PI projects, replacing the FADE model currently being used, and training department-level staff in these new methodologies. This will help to both increase our resources for completing PI projects and develop the skills of our workforce. We can also do a much better job in creating expectations for long term sustainability of project metrics by the process owner once the project team disbands.

Shelly van’t Riet, MSHA, RD, CPHQ, PMP - VCU Health System

Our organization is making progress with Leadership, Resources, Workforce and knowledge with significant data and results.

Terry Cousins - Munson Medical Center

I have noticed the development of the culture in the hospital over the last period of time especially the last 5 years when the management started to use the Model of Improvement, which had an impact on the improvement of good leadership models in the hospital from the top management to the unit based leaders.

I can feel and see the improvement in the organization, from the resources being used and updated, knowledge all around the organization, as well as the workforces and human resources being introduced.

Najla Fadel Abdulla, Mafraq Ambassador

The Improvement Capability Self Assessment Tool was very user friendly. The descriptions made the scoring very objective and easy to assign.

This team also shared an example from one of the facilities.

Denise Evans RN, MSN, Catholic Health Partners
The Model for Improvement

Kevin Little, PhD

Tuesday, October 9, 2012

Objectives

- Describe how the Model for Improvement can be used in crafting projects and hardwiring discipline into improvement processes across participant’s organization.
- Guide participants to think about a project or portfolio they are leading and how the Model for Improvement helps them to set up a project, collect data, follow up and make the improvement stick.
- Discuss what participants should consider as part of their culture, methodology and toolbox to achieve discipline using the Model for Improvement
- Plan small tests of change participants can test
LINKS FROM LAST WEEK

Six Sigma, Lean, MFI

Six Sigma
- Define
- Measure
- Analyze
- Improve
- Control

Lean
- Identify Value
- Understand Value Stream
- Eliminate Waste
- Establish Flow
- Enable Pull
- Pursue Perfection

Model for Improvement
- What are we trying to accomplish?
- How will we know that a change is an improvement?
- What change can we make that will result in improvement?

Source: The Improvement Guide, API
History of Six Sigma & Lean

Manufacturing Companies!

F. Taylor - The Principles of Scientific Management (1911)
Toyoda Family
Taichi Ohno 1950-1980
Toyota Production System
Womack & Jones

Reference: Wortman 2001

20th Century Process Engineering & Management

How can you make repetitive work uniform and cost-effective?

- Define and teach work tasks and responsibilities
- Design the work so that ordinary people can produce desired results
- Understand flow
- Observe process work to find and correct deviations from standards

Ford invented the assembly line to enable work to flow. The Toyota Production System is “a progressive enhancement.” (S. Shingo (1989), A Study of the Toyota Production System from an Industrial Engineering Point of View, Productivity Press: Cambridge MA, p. 95)
What are we trying to accomplish?
How will we know that a change is an improvement?
What change can we make that will result in improvement?

Recap: Three questions and a test cycle provide a general method to improve through iterative learning.

Poll Question

In the last 12 months, have you worked on:
- a) 1 PDSA cycle?
- b) 2 - 5 PDSA cycles?
- c) 6 – 10 PDSA cycles?
- d) More than 10 PDSA cycles?

Go to Poll
K2  go thru the questions per Jill
Kevin Little, 10/2/2012
Attributes of Model for Improvement

- Common roadmap for simple and also large-scale projects
- Useful for process and product improvement
- Applies to design of new processes and products
- Applies to all types of organizations and all groups and levels in an organization
- Facilitates use of teamwork in improvements
- Provides a framework to apply improvement tools and methods
- Encourages planning based on theory
- Emphasizes and encourages iterative learning
- Allows project plans to adapt as learning occurs
- Offers a simple way to empower people to take action


An Experimental Method for Senior Leaders

“...the manager of a corporation...is not accustomed to thinking that what he does is to inquire...discovering something about how a particular organization behaves in a certain type of environment when certain things happen to it....”


C. W. Churchman 1913-2004
Spehr et al. (2003) propose a mechanism by which human sperm detect a chemical gradient related to an egg’s location. The sperm changes direction in response to the chemical gradient, navigating toward increasing concentration.
### Model for Improvement Item

<table>
<thead>
<tr>
<th>What is our aim?</th>
<th>Maximize a function $F(x)$</th>
<th>$F(x)$ is the height of the function $F$ at the point $x$.</th>
</tr>
</thead>
<tbody>
<tr>
<td>How do we know a change is an improvement?</td>
<td>Given a current position $x_i$ and a new position $x_{i+1}$ we have an improvement if $F(x_{i+1}) &gt; F(x_i)$ and $</td>
<td>F(x_{i+1}) - F(x_i)</td>
</tr>
<tr>
<td>What change can we make?</td>
<td>Choose $x_{i+1} = x_i + \lambda_i \Delta F</td>
<td>_i$</td>
</tr>
</tbody>
</table>

#### Cycle 1 Plan
Choose $\lambda_0 = 1$ and some guess $x_0$. Predict that if we set $x_1 = x_0 + \lambda_0 \Delta F|_0$, then $F(x_1)$ will be greater than $F(x_0)$ and $|F(x_1) - F(x_0)| > \varepsilon$.

#### Cycle 1 Do
Calculate $F(x_0)$, $F(x_1)$, $\Delta F|_0$, and $|F(x_1) - F(x_0)|$.

#### Cycle 1 Study
Compare $|F(x_1) - F(x_0)|$ to $\varepsilon$ and compare $F(x_1)$ to $F(x_0)$. Do the predictions hold—is $F(x_1) > F(x_0)$ and $|F(x_1) - F(x_0)| > \varepsilon$?

#### Cycle 1 Act
a. If $|F(x_1) - F(x_0)| \leq \varepsilon$, then stop. $x_1$ is at least a local maximum.
b. If $F(x_1) > F(x_0)$, then let $\lambda_1 = \lambda_0$ and $x_2 = x_1 + \lambda_1 \Delta F|_1$. Go to Cycle 2 Plan.
c. If $F(x_1) \leq F(x_0)$, then let $\lambda_1 = \lambda_0 / 2$ and let $x_2 = x_0$ and $x_3 = x_1 + \lambda_1 \Delta F|_1$. Go to Cycle 2 Plan.

a. Properties of $F$ (e.g. concavity) may indicate that the local maximum is a global maximum.

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**DOWN FROM THE MOUNTAIN:**
**IMPROVING YOUR WORK SYSTEMS**
What are we trying to accomplish?

*Improve responsiveness to patients who call us so we can deliver more timely care.*

Example

Managers have patient survey data as well as their staff’s daily experience that tells them there are problems!
Patient Survey Q1 2012

1. How would you rate the experience of calling to make an appointment with your regular doctor?
   - Poor: 15% (15 responses)
   - Fair: 13% (13 responses)
   - Good: 20% (20 responses)
   - Very Good: 4% (4 responses)
   - Excellent: 10% (10 responses)
   - Total Responses: 58
   - Mean: 2.53, Standard Deviation: 1.25

3. How would you rate the experience of calling for medical advice?
   - Poor: 8% (8 responses)
   - Fair: 12% (12 responses)
   - Good: 12% (12 responses)
   - Very Good: 2% (2 responses)
   - Excellent: 13% (13 responses)
   - Total Responses: 39
   - Mean: 2.59, Standard Deviation: 1.25

Patient Experiences

- When leaving a message for the doctor, the response time is late — usually 3 days.
- Would like direct email access to MD rather wait 48 hours for clinic response.
- Impossible to get through to MD "Sometimes on the line forever."
- Cancelled appointments still generate reminder calls.
- Would be better to have a human being answer your call. Automated system doesn’t work as well as a human being. Spend money and get a receptionist to answer the phone.
- Messages never confirmed by clinic.
- Would like to call clinic directly. Can’t return calls from clinic. Should have a nurse you can call directly.
- The system 5-7 years ago for leaving messages was much better than present system for leaving a message for doctors. They seem to never return calls. Should learn what made the past system better and apply it to the new one.

Institute for Healthcare Improvement
How will we know that a change is an improvement?  

- Direct feedback from patients
- Decrease in number of faxed messages from call center
- Decrease in number of unused same day slots
- Decrease in number of walk-ins
- Decrease in response time
  - Manual tally – from receipt to acknowledgment of the message

What change(s) can we make that will result in improvement?  

- Define a process (steps, methods, and support) to do the work
- Designate a TEAM that will handle these tasks
  - Ideally, the team shall consist of two front-staff-(HSRs) and Medical Assistant. Team will be supervised by RN three days a week.
- Train Team members to handle incoming messages and on customer service skills
- Reconfigure staffing, align responsibilities- 1 MA, 1 RN, 2 HSR
- Get fax machine closer to the work
- Reduce disruptions
Basic components of each step

**Act**
- What changes are to be made?
- Next cycle?

**Plan**
- Objective
- Questions and predictions (why)
- Plan to carry out the cycle (who, what, where, when)
- Plan for data collection

**Study**
- Complete the analysis of the data
- Compare data to predictions
- Summarize what was learned

**Do**
- Carry out the plan
- Document problems and unexpected observations
- Begin analysis of the data

**Why Test?**
- Increase your belief that change(s) will work
- Predict expected improvement
- Learn how to adapt to the local environment
- Evaluate costs and side effects
- Minimize resistance upon implementation
What’s the big deal? We already do PDSA all the time!

…To Be Considered a PDSA Cycle

• The test or observation was **planned**
  • including a **plan for collecting data** and a **prediction** about results
• The plan was attempted (**do** the plan).
• Time was set aside to analyze the data and **study** the results.
• **Action** was rationally based on what was learned.
Poll Question

In your most recent PDSA cycle,
a) did you predict results in the Plan step?
b) did you compare predictions to actual results in the Study step?

Why Predict?

- Enhances learning*
- Forces use of test cycle measures
- Adds fun to your improvement work

*Discrete Coding of Reward Probability and Uncertainty by Dopamine Neurons
Christopher D. Fiorillo, Philippe N. Tobler, Wolfram Schultz, SCIENCE
21 MARCH 2003 VOL 299
## PDSA Worksheet for Testing Change

**Aim:** (overall goal you wish to achieve)

<table>
<thead>
<tr>
<th>Every goal will require multiple smaller tests of change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Describe your first (or next) test of change:</td>
</tr>
<tr>
<td>---------------------------------------------------------</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

### Plan

<table>
<thead>
<tr>
<th>List the tasks needed to set up this test of change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Person responsible</td>
</tr>
<tr>
<td>---------------------------------------------------</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

### Do

<table>
<thead>
<tr>
<th>Predict what will happen when the test is carried out</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measures to determine if prediction succeeds</td>
</tr>
</tbody>
</table>

### Study

| Describe what actually happened when you ran the test |

### Act

| Describe the measured results and how they compared to the predictions |

| Describe what modifications to the plan will be made for the next cycle from what you learned |

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## PLAN EXAMPLES FROM CLINIC
Clinic Fax messages PDSA

WORK FLOW VERSION 1

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LOG SHEET--DRAFT

Example

Informing Ecological Design, LLC
Clinic has a rough baseline—good enough to get started

- For CLINICAL
  - messages need to be triaged by RN within half day – based on RN clinical experience, no established protocols

- CLERICAL
  - needs further clarification of the message, needs additional info – done by UAP 24-72 hours cycle time, 50% patients not notified of status.

PDSA Worksheet for Testing Change

Aim: To facilitate better communication between Clinic patients and providers by increasing the number of acknowledged messages and reducing response time on faxed messages sent from call center.

Cycle M1: Can we follow the flow and can we use the log sheet?

Every goal will require multiple smaller tests of change

<table>
<thead>
<tr>
<th>Describe your first (or next) test of change:</th>
<th>Person responsible</th>
<th>When to be done</th>
<th>Where to be done</th>
</tr>
</thead>
<tbody>
<tr>
<td>Try out the new flow</td>
<td>A.L., RN</td>
<td>9/4/12</td>
<td>Clinic</td>
</tr>
<tr>
<td>Try out the log sheet</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Plan

List the tasks needed to set up this test of change

<table>
<thead>
<tr>
<th>Person responsible</th>
<th>When to be done</th>
<th>Where to be done</th>
</tr>
</thead>
<tbody>
<tr>
<td>Team</td>
<td>9/4/12</td>
<td>Clinic</td>
</tr>
<tr>
<td>A.L., RN</td>
<td>From 8 AM – noon</td>
<td></td>
</tr>
<tr>
<td>UAP</td>
<td></td>
<td></td>
</tr>
<tr>
<td>UAP</td>
<td></td>
<td></td>
</tr>
<tr>
<td>UAP</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>UAP</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Predict what will happen when the test is carried out

<table>
<thead>
<tr>
<th>Measures to determine if prediction succeeds</th>
</tr>
</thead>
<tbody>
<tr>
<td>A.L. and UAP discuss flow: did it work and do we need to change?</td>
</tr>
<tr>
<td>A.L. and UAP discuss log sheet: did it work and do we need to change?</td>
</tr>
</tbody>
</table>
### PDSA Worksheet for Testing Change

**Aim:** To facilitate better communication between Clinic patients and providers by increasing the number of acknowledged messages and reducing response time on faxed messages sent from call center.

**Cycle M2** Can we follow the flow and can we use the log sheet for the next five messages.

<table>
<thead>
<tr>
<th>Describe your first (or next) test of change</th>
<th>Person responsible</th>
<th>When to be done</th>
<th>Where to be done</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use the process and data sheet for 5 consecutive faxes</td>
<td>A L RN</td>
<td>9/4/12, pm</td>
<td>Clinic</td>
</tr>
</tbody>
</table>

**List the tasks needed to set up this test of change**

<table>
<thead>
<tr>
<th>Person responsible</th>
<th>When to be done</th>
<th>Where to be done</th>
</tr>
</thead>
<tbody>
<tr>
<td>Team A L RN UAP UAP UAP</td>
<td>From noon – 4 PM</td>
<td>Clinic</td>
</tr>
</tbody>
</table>

**Predict what will happen when the test is carried out**

<table>
<thead>
<tr>
<th>Measures to determine if prediction succeeds</th>
<th>Person responsible</th>
<th>When to be done</th>
<th>Where to be done</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increased in number of acknowledged messages in half day (estimated baseline is 30% response same day)</td>
<td>Team A L RN UAP UAP</td>
<td>9/4/12</td>
<td>Clinic</td>
</tr>
<tr>
<td>OK to handle 5 faxes in a row</td>
<td>A L RN UAP</td>
<td>Clinic</td>
<td></td>
</tr>
</tbody>
</table>

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**Example**

**PDSA Worksheet for Testing Change**

**Cycle M3** Can we follow the flow and can we use the log sheet for the next full day?

<table>
<thead>
<tr>
<th>Describe your first (or next) test of change</th>
<th>Person responsible</th>
<th>When to be done</th>
<th>Where to be done</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apply process and log sheet for a full clinic day.</td>
<td>A L RN</td>
<td>9/5/12</td>
<td>Clinic</td>
</tr>
</tbody>
</table>

**List the tasks needed to set up this test of change**

<table>
<thead>
<tr>
<th>Person responsible</th>
<th>When to be done</th>
<th>Where to be done</th>
</tr>
</thead>
<tbody>
<tr>
<td>Team A L RN UAP UAP UAP</td>
<td>From 8 AM – 4 PM</td>
<td>Clinic</td>
</tr>
</tbody>
</table>

**Predict what will happen when the test is carried out**

<table>
<thead>
<tr>
<th>Measures to determine if prediction succeeds</th>
<th>Person responsible</th>
<th>When to be done</th>
<th>Where to be done</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increased in number of acknowledged messages in full day (compared to estimated baseline 30%)</td>
<td>Team A L RN UAP UAP UAP</td>
<td>9/5/12</td>
<td>Clinic</td>
</tr>
<tr>
<td>Reduce response time to faxed messages done by UAP</td>
<td>A L RN UAP</td>
<td>Clinic</td>
<td></td>
</tr>
<tr>
<td>May need to adjust the logging procedure—see what measurement burden is.</td>
<td>A L RN UAP UAP</td>
<td>Clinic</td>
<td></td>
</tr>
</tbody>
</table>

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Features of the Clinic Plans for PDSA cycles

• Elapsed time short:
  — one morning, one afternoon, one whole day
• Sequential:
  — plan for a series (ready to move quickly if predictions hold!)
• Scale up:
  — 1 fax, 5 faxes, all faxes one day (10+)

PRINCIPLES FOR TESTING CHANGES
Three Principles for Testing a Change

1. Test initially on a small scale
2. Collect data over time
3. Build knowledge sequentially

What’s small?

- In terms of your work:
  - Test your change on ONE UNIT (one patient interaction, one care round, one shift hand-off, one leadership round, etc.)
- In terms of time:
  - What can you learn in one day, one morning, one hour, five minutes? (shorter the better)
Collect Data Over Time

The ‘Plan’ step includes plan to collect data for each PDSA Cycle.

- Useful data beat perfect data
  - Pencil and paper system is OK!
  - Qualitative data *now* beats quantitative data *later*
- Record what went wrong during the data collection
- Sampling can reduce data burden

Check sheet for test of Physician Communication Behaviors

<table>
<thead>
<tr>
<th>Step</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Knock, wait for a response</td>
<td>Yes</td>
</tr>
<tr>
<td>2. Warmly greet patient and family; introduce yourself and your role; smile; apologize if patient kept waiting</td>
<td>Yes</td>
</tr>
<tr>
<td>3. Sit, face the patient, make eye contact</td>
<td>Yes</td>
</tr>
<tr>
<td>4. Break the ice, be friendly, make the personal connection</td>
<td>Excel lent</td>
</tr>
</tbody>
</table>

For 2nd Farmer, V22, 20 (000)

<table>
<thead>
<tr>
<th>Step</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Knock, wait for a response</td>
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</tbody>
</table>

3rd Farmer: V31, 20 (000)

<table>
<thead>
<tr>
<th>Step</th>
<th>Notes</th>
</tr>
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<tbody>
<tr>
<td>1. Knock, wait for a response</td>
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</tbody>
</table>
Rapid Improvement Event: Results

AED to Ward - Patient Transfer Times
From Ward Bed Ready to ED Discharge

Minutes (Weekly Average)

<table>
<thead>
<tr>
<th>Date</th>
<th>Minutes</th>
</tr>
</thead>
<tbody>
<tr>
<td>28-Dec-09</td>
<td>70</td>
</tr>
<tr>
<td>22-Feb-10</td>
<td>65</td>
</tr>
<tr>
<td>21-Mar-11</td>
<td>50</td>
</tr>
<tr>
<td>16-May-11</td>
<td>40</td>
</tr>
</tbody>
</table>

Our Goal = 30 Min

Low Is Good

Admit Week Beginning Monday

Repeated Use of the Cycle

Changes That Result in Improvement:
After cycles have demonstrated that the change CAN work, use more cycles to help you figure out how the change WILL work, every day.

Hunches Theories Ideas
Investigation → Demonstration → Implementation

Institute for Healthcare Improvement
Two Paths at Act Step

Does your prediction match the results?

a) If YES, expand your test:
   - **Scale**: keep the same conditions, just do more units
   - **Scope**: change the conditions
   - **Scale and Scope**: increase units, change the conditions

b) If NO, what data do you have to distinguish two cases
   - (1) did your method of testing the change fail?
   - (2) is the change itself, as designed, not effective?

Prediction Matches Actual Results

- **Scale up**: rule of 5
  EXAMPLES
  - If you start with 1 encounter or one patient or 1 fax, go to 5
    (Clinic cycle 1 -> cycle 2)
  - If you start with 1 hour, go to a half day
  - If you have succeeded for one day, go to 1 week.

- **Scope change**: change the conditions
  EXAMPLES
  - If you start testing with English speakers, now go to Vietnamese speakers
  - Have Spanish speaking HSR use process
Repeated Use of the Cycle

To hold the gain, you need a process management system that defines standard work, reviews performance and acts to enable staff to use the standard work.

Hunches 
Theories 
Ideas

Changes That Result in Improvement:

After cycles have demonstrated that the change CAN work, use more cycles to help you figure out how the change WILL work, every day.

Investigation → Demonstration → Implementation

APPLYING MODEL FOR IMPROVEMENT AT HOME
Links to DMAIC and Lean

- Applications of designed experiments in the IMPROVE step in DMAIC—MFI as framework for designed experiments

- Enhancing Standardized Work: Front line people continually have the opportunity to try new ideas to improve standard work. MFI provides a core method of testing compatible with Lean principles.

Ideas to Consider

- Use the Model for Improvement to improve your quality improvement approach. Examples:
  — Improving 5/6 S events
  — Improving success rate of DMAIC projects

- If your organization lacks a method to define and maintain standard “daily” work on core processes, you won’t be able to hold the gain-- no matter what your method of improvement.
Resources & References

- Resources on the www.ihi.org site: Search for PDSA

Questions?

Raise your hand

Use the Chat
**Homework for Next Session**

- If your organization is using MFI, look at five recent examples.
  - Did the examples show use of prediction?
  - Did the examples use multiple cycles?
  - If the examples targeted improvement in core work processes, how did people tackle implementation?
- Apply MFI to improve some aspect of your current QI application
  - Create a plan connected to a small test of change that aims to improve your QI performance.

Send ‘Tweet-like’ summary of 140 characters or less to Jill at jduncan@ihi.org by Friday, 19th.

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**Upcoming Calls**

- **Session 3** – Tuesday, October 23rd 1:00 – 2:00 ET
  - Lean
  - Helen Zak, President and COO, Healthcare Value Leaders Network
- **Session 4** – Tuesday, November 6th 1:00 – 2:00 ET
  - Six Sigma
  - Dennis Deas, Senior Director Clinical and Operational Improvement Implementation Team, The Center for Health System Performance, Care Management Institute, Kaiser Permanente
- **Session 5** – Tuesday, November 20th 1:00 – 2:00 ET
  - Sustaining an Effective Quality Improvement Strategy
  - Robert Lloyd, Executive Director of Performance Improvement, IHI
Expedition Listserv

We have set up a listserv for participants in this Expedition to share improvement strategies, and pose questions to one another and faculty.

To use the listserv, address an email to improvementapproaches@ls.ihi.org

If you would like additional people to receive session notifications please send their email addresses to info@ihi.org

Thank You

Please let us know if you have any questions or feedback following today’s Expedition webinar

Kevin Little
klittle@iecodesign.com

Jill Duncan
jduncan@ihi.org
LINKS TO LEARN MORE

Resources & References

- Resources on the [www.ihi.org](http://www.ihi.org) site: Search for PDSA
Contact Information

Kevin Little, PhD
Informing Ecological Design LLC, Madison, WI
608-251-4355
klittle@iecodesign.com

APPENDIX:
MORE ON MODEL FOR IMPROVEMENT
Humans and Other Systems

“Complex, adaptive systems … are characterized by individuals who can learn, inter-connect, self-organize, and co-evolve with their environment in nonlinear and dynamic ways. A step-by-step framework associated with many improvement roadmaps may not support this way of thinking.” The Improvement Guide (2009), 2nd ed, p. 455.

Complex Adaptive Systems of Systems

“The Model for Improvement encourages nonlinear learning and adaptation suggested by complexity science.”
(The Improvement Guide, 2nd ed., p. 455)
Guidance on Scale of a Test

<table>
<thead>
<tr>
<th>Deciding on the Scale of a Test</th>
<th>Current Commitment within Your Organization</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Belief in effectiveness</strong></td>
<td><strong>Failure Cost</strong></td>
</tr>
<tr>
<td>Low degree of belief that change idea will lead to improvement</td>
<td>Cost of failure large</td>
</tr>
<tr>
<td></td>
<td>Cost of failure small</td>
</tr>
<tr>
<td>High degree of belief that change idea will lead to improvement</td>
<td>Cost of failure large</td>
</tr>
<tr>
<td></td>
<td>Cost of failure small</td>
</tr>
</tbody>
</table>


APPENDIX:
CLINIC DO-STUDY-ACT CYCLES
# CYCLE 1

## PDSA Worksheet for Testing Change

**Aim:** To facilitate better communication between Clinic patients and providers by increasing the number of acknowledged messages and reducing response time on faxed messages sent from call center.

**Cycle M1**

**Can we follow the flow and can we use the log sheet?**

**Every goal will require multiple smaller tests of change**

<table>
<thead>
<tr>
<th>Describe your first (or next) test of change:</th>
<th>Person responsible</th>
<th>When to be done</th>
<th>Where to be done</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Try out the new flow</td>
<td>A.L., RN</td>
<td>9/4/12</td>
<td>Umc</td>
</tr>
<tr>
<td>• Try out the log sheet</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Plan**

<table>
<thead>
<tr>
<th>List the tasks needed to set up this test of change</th>
<th>Person responsible</th>
<th>When to be done</th>
<th>Where to be done</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Draft the workflow attachment</td>
<td>Team</td>
<td>9/4/12</td>
<td>Umc</td>
</tr>
<tr>
<td>2. Assigning UAP to acknowledge faxed message</td>
<td>A.L., RN</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Providing action plan on each encounter with the patient</td>
<td>UAP</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Pick up ONE faxed message - Team</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Sorting - RN</td>
<td>UAP</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Review of sorted messages</td>
<td>UAP</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Acknowledge with action plan (call patient)</td>
<td>UAP</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Log encounter - see the log attached</td>
<td>UAP</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. End of day tally - ONE FAX</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Predict what will happen when the test is carried out**

<table>
<thead>
<tr>
<th>Measures to determine if prediction succeeds</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Flow easily followed</td>
</tr>
<tr>
<td>• Log sheet easy</td>
</tr>
</tbody>
</table>

**A.L. and UAP discuss flow: did it work and do we need to change?**

**A.L. and UAP discuss log sheet: did it work and do we need to change?**
**Do Describe what actually happened when you ran the test**
- 1 FAX machine (TEAM A), 1 Sorted Message, and the USE of our LOG/SCORE SHEET.
- The below circumstances, lead to the late start:
  - There were sick calls
  - The clinic had to be prepared for inspection visits
  - The patient feedback was not collected at the first cycle

**Study Describe the measured results and how they compared to the predictions**
- The flow was easily followed and the HSR had an easy time filling out the excel form.
- There were minor changes to the log.

**Act Describe what modifications to the plan will be made for the next cycle from what you learned**
- The columns on the log will be modified to assure the right sequence and capture of the time at each point.
- Do five more faxes with the modified log
- Collect the feedback at the following cycles

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Receipt</th>
<th>Design on file</th>
<th>Inspec</th>
<th>Time/Start</th>
<th>Sorted</th>
<th>Time/End</th>
<th>Time/Retake</th>
<th>Time/Retake</th>
<th>Time/Retake</th>
<th>Time/Retake</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>8/23 AM</td>
<td>1245</td>
<td>16124</td>
<td>10:21:00 AM</td>
<td>10:05 AM</td>
<td>10:00 AM</td>
<td>10:30 AM</td>
<td>10:35 AM</td>
<td>10:35 AM</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8/23 AM</td>
<td>1245</td>
<td>16124</td>
<td>10:21:00 AM</td>
<td>10:05 AM</td>
<td>10:00 AM</td>
<td>10:30 AM</td>
<td>10:35 AM</td>
<td>10:35 AM</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8/23 AM</td>
<td>1245</td>
<td>16124</td>
<td>10:21:00 AM</td>
<td>10:05 AM</td>
<td>10:00 AM</td>
<td>10:30 AM</td>
<td>10:35 AM</td>
<td>10:35 AM</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8/23 AM</td>
<td>1245</td>
<td>16124</td>
<td>10:21:00 AM</td>
<td>10:05 AM</td>
<td>10:00 AM</td>
<td>10:30 AM</td>
<td>10:35 AM</td>
<td>10:35 AM</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8/23 AM</td>
<td>1245</td>
<td>16124</td>
<td>10:21:00 AM</td>
<td>10:05 AM</td>
<td>10:00 AM</td>
<td>10:30 AM</td>
<td>10:35 AM</td>
<td>10:35 AM</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

New column here

Change in Template
# CYCLE 2

## NO BIG CHANGES from initial plan—ready to go!!

**PDSA Worksheet for Testing Change**

**Aim:** To facilitate better communication between Clinic patients and providers by increasing the number of acknowledged messages and reducing response time on faxes sent from call center.

**Cycle M2** Can we follow the flow and can we use the log sheet for the next five messages.

### Plan

<table>
<thead>
<tr>
<th>Describe your first (or next) test of change</th>
<th>Person responsible</th>
<th>When to be done</th>
<th>Where to be done</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use the process and data sheet for 5 consecutive faxes</td>
<td>A.L., RN</td>
<td>9/4/12, pm</td>
<td>Clinic</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>List the tasks needed to set up this test of change</th>
<th>Person responsible</th>
<th>When to be done</th>
<th>Where to be done</th>
</tr>
</thead>
<tbody>
<tr>
<td>See the workflow attachment</td>
<td>Team</td>
<td>9/5/12, from noon - 4 PM</td>
<td>Clinic</td>
</tr>
<tr>
<td>Pick up five consecutive faxes - Team</td>
<td>A.L., RN, UAP</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sorting - RN</td>
<td>UAP</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Review of sorted message</td>
<td>UAP</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acknowledge with action plan (call patient)</td>
<td>UAP</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Log encounter, see the log attached</td>
<td>UAP</td>
<td></td>
<td></td>
</tr>
<tr>
<td>End of day tally: FIVE FAXES</td>
<td>UAP</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Predict what will happen when the test is carried out</th>
<th>Measures to determine if prediction succeeds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increased in number of acknowledged messages in half day (estimated baseline is 30% response same day)</td>
<td>Log-time study</td>
</tr>
<tr>
<td>OK to handle 5 faxes in a row</td>
<td>Check with UAP and RN—any changes?</td>
</tr>
</tbody>
</table>
**Do** Describe what actually happened when you ran the test

1 machine Received three faxes in pm (planned for 5)
1 out of three are clinical; 2 others are clerical
Added feedback from the patients for the completed tasks

**Study** Describe the measured results and how they compared to the predictions

- The HSR discovered that the time column was not necessary. It was more important to have a tally of faxes coming in.
- There was a need of including completing and pending columns for the follow up purposes

**Act** Describe what modifications to the plan will be made for the next cycle from what you learned

- Made modifications to the columns of the fax sheet
- Since there were only 3 faxes out of five, we now plan to include 3 fax machines
- There was an increase in acknowledged messages

---

**RESULTS** All 3 messages: Patient got acknowledged, cycle time to acknowledgement less than ~ 3 hours

<table>
<thead>
<tr>
<th>Time</th>
<th>Time Recpt</th>
<th>Receipt in the city</th>
<th>SRN</th>
<th>Time Pick up</th>
<th>Sorted due</th>
<th>Time Retrieved</th>
<th>Time Acknowledged</th>
<th>Type of message</th>
<th>Time Finalized</th>
</tr>
</thead>
<tbody>
<tr>
<td>9:00 AM</td>
<td>9:00 AM</td>
<td>9/4/2012</td>
<td>9/4/2012</td>
<td>2:10 AM</td>
<td>11:00 AM</td>
<td>2:40 PM</td>
<td>2:58 PM</td>
<td>A</td>
<td>Y</td>
</tr>
<tr>
<td>10:00 AM</td>
<td>10:55 AM</td>
<td>9/4/2012</td>
<td>9/4/2012</td>
<td>2:10 AM</td>
<td>11:30 AM</td>
<td>2:40 PM</td>
<td>2:50 PM</td>
<td>R/C</td>
<td>R/C</td>
</tr>
<tr>
<td>11:00 AM</td>
<td>11:07 AM</td>
<td>9/4/2012</td>
<td>9/4/2012</td>
<td>2:10 AM</td>
<td>11:30 AM</td>
<td>2:40 PM</td>
<td>2:50 PM</td>
<td>R/C</td>
<td>R/C</td>
</tr>
<tr>
<td>12:00 PM</td>
<td>2:35 PM</td>
<td>9/4/2012</td>
<td>9/4/2012</td>
<td>3:35 PM</td>
<td>3:50 PM</td>
<td>3:55 PM</td>
<td>4:05 PM</td>
<td>A</td>
<td>Y</td>
</tr>
<tr>
<td>TPD</td>
<td>TPD</td>
<td>TPD</td>
<td>TPD</td>
<td>TPD</td>
<td>TPD</td>
<td>TPD</td>
<td>TPD</td>
<td>TPD</td>
<td>TPD</td>
</tr>
</tbody>
</table>

**Column not necessary for time, change to message count**

- Made code for type of message
- Use this column for Y or P code, Time
- Acknowledgement column has end time for Clerical messages
Main change is that THREE fax machines will be checked, otherwise no big changes.
**Do Describe what actually happened when you ran the test**

- Using same log
- Increased number of fax machine to 3
- As a result there was an increase of the faxes
- Added locations of the machines
- Switched from electronic tool to a paper tool (Columnar book)
- Charge Nurses on those Suites are asked to do the first sorting, then placed on the designated boxes
- Rounding is done by HSR and RN every 30 - 60 minutes, rounding time and the no. faxes collected are also documented.

**Study Describe the measured results and how they compared to the predictions**

- Log is easy to follow, so no modifications are needed at this point
- There was an increase in acknowledged messages from baseline: 7 faxes came in 9/5, all acknowledged same day, only one pending.
- Increase in number of satisfied patients, whether the message was pending or completed
- Non-native speaking patients, were not able to take the patient surveys
- Started recording on the whiteboard the findings and then put in the book.

**Act Describe what modifications to the plan will be made for the next cycle from what you learned**

- Document the data in one place (decide: whiteboard or book, not both).
- For patient interview, keep to English speakers for next few cycles
  - Russian, Vietnamese, Spanish.....one HSR is Spanish speaking, candidate for next cycle after Melissa’s cycles.
- Increase to all 4 faxes machines
Delay over lunch hour noted

Patient feedback started on cycle 2