A Look at the Model for Improvement

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Disclosure

Kevin Little, Ph.D. has used the Model for Improvement in his work since 2000; he has served as an Improvement Advisor for the Institute for Healthcare Improvement since 2001. He knows several of the API consultants as colleagues and friends.
How can you get to your destination?
Today’s Session

• A basic description of the Model
• Brief history
• When should the Model be used?
• Advantages and disadvantages
• Resources and sample team selection
• Model Details
• Lean and Six Sigma connections
• Top learning resources
The Model for Improvement
Basic Description

Developed by
Associates in Process Improvement (API)
Three Fundamental Questions 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?
A Test Cycle

Act

Plan

Study

Do
The Questions + The Cycle

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?

Act

Plan

Study

Do

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Brief History
Roots in W.E. Deming’s Contributions

• Plan-Do-Study-Act cycle (Walter Shewhart 1939 and Deming’s courses in Japan, 1950)

• Theory of Profound Knowledge (1992)
  - Appreciation for a system
  - Knowledge about Variation
  - Theory of Knowledge
  - Psychology

1900-1993
API Consultants developed the Model for Improvement in the late 1980’s and early 1990’s

- Wide improvement experience in the 1980’s
- Motivated by Deming’s theories
- Pushed by Deming to get to the core of improvement thinking
- Worked with Don Berwick from the start of the Institute for Healthcare Improvement (IHI)


![Model for Improving Quality](image)
Design Criteria used to create the Model for Improvement

1. It works
2. Applies to products and processes, from simple to complex
3. Quick to apply
4. Success by a variety of users, in all environments
5. Fun to use
6. Promotes learning

Engine for change used by IHI in...

• Breakthrough Series Collaboratives starting 1995
• Breakthrough Series College
• IMPACT Communities, e.g.
  - Improving Flow through Acute Care Settings
  - Improving Outcomes for High-Risk and Critically Ill Patients
• 100,000 Lives campaign
• 5,000,000 Lives campaign
• System interventions (VA, Community Health Centers, U.K. National Health Service, Indian Health Service)
• Etc.
When should the Model for Improvement be used?
One-time Journey or a Trekking Service?
A General Method!

- Any improvement effort
- Individuals, teams and whole organizations
- Formality and structure vary, not concepts
Three Uses of the Model

1. Develop new knowledge
2. Test (adapt) ideas*
3. Implement (deploy) ideas*

*Typical uses in “improvement collaboratives”
Scope of Improvement Projects

- Personal improvement
- Test of a clinical change
- Reduce Hospital Acquired Infections
- Improve ED flow across a set of hospitals
- Indian Health Service Primary Care System Improvement
Example: Reducing Hospital Acquired Infections

St. John’s Regional Health Center, Springfield, MO

Improvement Report on IHI website

What Are We Trying to Accomplish?

**Aim:** To sustain 30 percent reduction of surgical site infections (SSIs), bloodstream infections (BSIs), and healthcare-associated pneumonia (HAP) due to methicillin-resistant *Staphylococcus aureus* (MRSA) by focusing on prevention of transmission on 7C Surgical Unit. Sustain compliance at greater than or equal to 90 percent on process measures for reliable hand hygiene, contact precaution for isolation patients, and appropriate room cleaning/disinfections on 7C Surgical Unit. Achieve 98 percent compliance obtaining admission active surveillance cultures (ASC) in adult intensive care units (ICU), pediatric ICU, and the burn unit.
How will we know that a change is an improvement?

Measures

Process Measures:
• % targeted patients with admission active surveillance culture collected
• % environmental cleanings completed appropriately
• % patient encounters with compliance for contact precautions
• % patient encounters with compliance for hand hygiene

Outcome Measures:
• Days between MRSA infections
• Rate of occurrence of MRSA SSI, BSI, and HAP per 1,000 patient days
What change(s) can we make that will lead to improvement(s)?

**Hand Hygiene:**
- Provide alcohol-based hand rub for patients on bedside table
- Implement “hands up” campaign — the standard phrase or action to use if you observe another co-worker NOT performing hand hygiene when appropriate

**Contact Precautions:**
- Identify isolation patients by placing a sticker on patient menu and placing in designated area for dietary staff
- Visual aid placed on isolation holders as a reminder to encourage hand hygiene prior to donning PPE

**Room Cleaning and Disinfection:**
- Identify clean equipment with red “door knocker” tag
- High touch cleaning checklist provided to workers
The team reports:
The project ‘tipping point’ occurred when we began to culture hands and equipment of workers [see image at left depicting culture on worker's hand and culture on stethoscope equipment]
Performance Measures

Process Measures

Outcome Measure
Example: System-scale improvement

Indian Health Service Primary Care Initiative

N. L. Kuchar et al., “The Indian Health Service Chronic Care Initiative: Innovations in Planned Care for the Indian Health System”, *IHS Provider*, April 2009, 112-114

To improve health and promote wellness for American Indians and Alaska Natives across all ages. The redesigned system of care will be grounded in the values and culture of the community served. It will focus on strengthening the positive relationships between the healthcare system/care team and the community, family, and individual. The adapted Care Model* serves as a framework to guide the creation of an efficient and accessible system of care that provides safe, timely, effective, equitable, and patient-centered care.

*http://www.improvingchroniccare.org/index.php?p=The_Chronic_Care_Model&a=2
Example Measures

**Clinical Prevention**
Keeping current on Preventive screenings
Keeping current on Cancer-related screenings

**Management and Prevention of Chronic Conditions**
Control of Blood Pressure
Control of Lipids

**Costs**
Revenue Generation
Staff Satisfaction and other workforce measures

**Patient Experience**
Experience and Efficiency
Patient Activation
Patient Satisfaction
Building relationships for care
Access – Primary Care and Dental
Example Change Ideas

• Empanelling
• Care team
• Use data to drive improvement
• Optimize use of HIT
• Remove waste
• Plan for every patient
• Segment care
• Reminders system
• Move work to appropriate licensure
• Reliable follow-up
• Max packing
When is the Model for Improvement not applicable?
Two Limiting Situations

• Insufficient will to improve
• An alternative improvement method is already embedded
Advantages and Disadvantages of Using the Model for Improvement
Advantages of the Model

• Applies to all levels of an organization
  – well-defined, high volume processes to informal, low-volume processes
  – Executives, providers, support staff
• Minimally prescriptive, maximally adaptive
• Formality can vary
• Stresses user empowerment, learning and growth of knowledge
• Advanced skills not a requirement for use

See The Improvement Guide, 2nd edition, p. 455
Disadvantages?

• No cookbook
• Expect and manage some failures in testing
• Data-driven
Resources Needed to Use the Model for Improvement
Ingredients Needed to Change

Will to Change

Execution

Ideas for Change

Education and Training Topics

• Team organization
• Overview of the Model
• Decision-making in Teams
• Planning initial PDSA cycles
• Change concepts and change ideas
• Measures for a project
• Planning a sequence of PDSA cycles

Source: The Improvement Guide, 2nd ed. p. 348-349
Sample Team Roster

- Clinical champion
- Day-to-day leader
- Data analyst
- Team members from the area targeted by the aim
- Improvement advisor
Details of the Model for Improvement
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?

Tools you may use

- Aim Statement (Charter) with goals (targets)
- Description of Key Measures
- Change Concepts and Ideas organized in a rational way

PDSA Document forms
MODEL FOR IMPROVEMENT Cycle # __DATE__

Change or Idea evaluated

Objective for this PDSA Cycle:

What question(s) do we want to answer with this PDSA cycle?

Plan:

*Plan to answer questions* (test the change or evaluate the idea): What, Who, When, Where

*Plan for collection of data* needed to answer questions: What, Who, When, Where

Predictions (For each question listed above, what will happen when plan is carried out? Discuss theories):

Do: Carry out the plan; document problems and unexpected observations; collect data and begin analysis.

Study: Complete analysis of data; what were the answers to the questions in the plan (compare to predictions)? Summarize what was learned.

Act: What changes are to be made? Plan for the next cycle.
Try Before You Buy

Adapt ideas to your setting by a series of test cycles
The PDSA Cycle for Learning and Improvement

**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
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.
Why Predict?

• Enhances learning
• Forces use of test cycle measures
• Adds fun to your improvement work
Use the PDSA Cycle for:

• Testing or adapting a change idea
• Implementing a change
• Spreading a change
Why Test?

• Increase the belief in the change
• Predict expected improvement
• Learn how to adapt to the local environment
• Evaluate costs and side effects
• Minimize resistance upon implementation
Three Principles for Testing a Change

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

• Feasibility review by local experts
• Team as guinea pigs
• Parallel trial: regular way and test way
• Short test time
• Rule of ONE to start (one cycle, one patient, one appointment....)
• Use volunteers
• Simulate the change
Decrease the Time Frame for a PDSA Test Cycle

- Years
- Quarters
- Months
- Weeks
- Days
- Hours
- Minutes

Your initial scope can almost always be reduced. Drop down “two levels” to plan a Test Cycle!
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
When tests fail to deliver predicted results...

- Celebrate a chance to learn
- Recognize different reasons for failed tests
  1. Change was not executed well
  2. Support processes inadequate
  3. Hypothesis/hunch wrong

You need to collect **data** during the **Do** phase of the Cycle to help identify which reason applies in your situation.
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.

**Diagam:**
- **Investigation**: Hunches, Theories, Ideas
- **Demonstration**: Data
- **Implementation**: Analysis, Planning, Action, Data
Change Concept: Use evidence-based guidelines in patient visits by incorporating a standard DM flow sheet.

**Improved care**

- **Cycle 1E:** Implement and monitor flow sheet use.
- **Cycle 1D:** Use flow sheet with all of Dr B’s DM patients for a month.
- **Cycle 1C:** Apply flow sheet to all of Dr B’s DM patients for one week.
- **Cycle 1B:** Use edited flow sheet with all Dr. B’s DM patients on Monday.
- **Cycle 1A:** Try recommended flow sheet with one of Dr. Burton’s patients on Thursday.

Use of flow sheet will catch needed tests.
Overall Aim: Improve Primary Care (IHS example)

Strategies for Dimensions of a Primary Care Intervention
How the Model for Improvement complements other methodologies
Model for Improvement and Lean

• Micro:
  - Lean concepts are Change Ideas (answer to Question Three)
  - Flow improvement projects in hospitals and clinics use Model for Improvement framework

• Macro: Use Model for Improvement by senior managers to deploy Lean
Information Board—Flow Project
Model for Improvement and Six Sigma

• Micro: I and C steps should use testing approach

• Macro: Use Model for Improvement by senior managers to deploy Six Sigma
Key References


The IHI’s *Open School* courses:
- Q101: Fundamentals of Improvement
- Q102: The Model for Improvement: Your Engine for Change
- Q103: Measuring for Improvement

*How to register*: follow the directions on the next slide
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