2011 Military Health System Conference

How IHI Promotes Learning Systems and Knowledge Management

The Quadruple Aim: Working Together, Achieving Success
Carol Beasley, Institute for Healthcare Improvement, Cambridge, MA
January 26, 2011
How IHI Promotes Learning Systems and Knowledge Management

Institute for Healthcare Improvement, 20 University Rd, Cambridge, MA, 02138

Presented at the 2011 Military Health System Conference, January 24-27, National Harbor, Maryland
Agenda

- A few words about IHI
- Learning strategies tied to stage of design
- Examples:
  - Pilot testing
  - Collaborative learning
  - Scale-up and spread
- Questions and discussion
Our Goals Are…

The IOM’s Six Aims for the Health Care System:

- **Safe** – no needless deaths
- **Effective** – no needless pain or suffering
- **Patient-Centered** – no helplessness in those served or serving
- **Timely** – no unwanted waiting
- **Efficient** – no waste
- **Equitable** – for all
We Do This By…

- Building the **Will** for Change
- Cultivate Promising Improvement **Ideas**
- Putting those ideas into action through effective **Execution**
Some of Our Groundbreaking Initiatives Are...

- 100,000 and 5 Million Lives Campaigns
- IHI Open School for Health Professions
- The Triple Aim
- The Improvement Map & Passport
- STAAR (STate Action on Avoidable Rehospitalizations)
- TCAB (Transforming Care at the Bedside)
- Safer Patients Initiative (UK)
- Scottish Patient Safety Programme
- Chronic Care Initiative (Indian Health Service)
- How Do They Do That?
- WIHI
IHI CORE APPROACH
## Model for Improvement

<table>
<thead>
<tr>
<th>What are we trying to accomplish?</th>
</tr>
</thead>
<tbody>
<tr>
<td>How will we know that a change is an improvement?</td>
</tr>
<tr>
<td>What change can we make that will result in improvement?</td>
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</table>

Also known as:
- Shewhart Cycle
- Deming Cycle
- Learning and Improvement Cycle
FROM PROTOTYPE TO SCALE
Where Should a Project Start?

- Do we have design targets?
- Do we have ideas that will achieve these design targets?
- What is our degree of belief that these ideas will give us the desired results?

*High* degree of belief → adapt and spread ideas
*Moderate* degree of belief → test promising ideas
*Low* degree of belief → generate new ideas
Degree of Belief that Changes Will Result in Improvement

A successful change

Change still needs further testing

Unsuccessful proposed change

Developing a change

Testing a change cycle 1, cycle 2, ...

Implementing a change

Degree of belief that the change will result in improvement

High

Moderate

Low
Methods for Generating New Ideas

- Change Concepts
- Using Technology
- Critical Thinking
- IDEO Brainstorming
- Metaphorical Thinking
- Observation
- Provocation
- Prototyping
- Idealized Design
Innovation and Work Redesign

http://theartofinnovation.com/purchase.htm
Change Concepts

A. Eliminate Waste
B. Improve Work Flow
C. Optimize Inventory
D. Change the Work Environment
E. Enhance the Producer/Customer Relationship
F. Manage Time
G. Manage Variation
H. Design Systems to Avoid Mistakes
I. Focus on a Product/Service
Moving from Concepts to Ideas

Conceptual, Vague, Strategic

- Improve
- Redesign process
- Move steps in the process closer together
- Move order receipt and warehouse closer together
- Move the fax that receives orders into the warehouse
- Write a work order to have the fax moved on Monday

Specific Ideas, Actionable
Moving from Concepts to Ideas

Conceptual, Vague, Strategic

Specific Ideas, Actionable

- Improve process to reduce anxiety
- Give patients and families access to information
- Use beepers for family and friends waiting
- Make beepers available to families of all surgery patients next week.
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<th>Developing Ideas</th>
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<td><strong>Full Scale</strong></td>
<td>Policies and Regulations: focus on building will for the late majority and laggards (All)</td>
<td>How-to Guides &amp; Protocols</td>
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PILOT TESTING AND LEARNING SYSTEM
Three Dimensions of Value

Population Health

Experience of Care

Per Capita Cost
Leading Determinants of Health

- Social: 30%
- Behavior: 40%
- Environment: 15%
- Genetic: 10%
- Health Care: 5%

Source: McGinnis, JM et al Health Affairs Apr2002
North American Triple Aim Prototyping Sites

- **Health Plans**
  - Blue Cross Blue Shield of Michigan (MI)
  - CareOregon (OR)
  - Essence Healthcare (MO)
  - Capital Health Plan

- **Integrated Delivery Systems (w/ Health Plans)**
  - HealthPartners (MN)
  - Martin’s Point Health Care (ME)
  - Presbyterian Healthcare (NM)
  - Southcentral Foundation (AK)
  - Vanguard Health System
  - Wellstar Health System (GA)

- **Public Health Department**
  - *Pueblo Health Department (CO)

- **Social Services**
  - Common Ground (NY)

- **State Initiative**
  - Vermont Blueprint for Health (VT)

- **Regional Partner**
  - Cedar Rapids, Iowa
  - Michigan Health Information Alliance

- **Independent Physician Association**
  - Taconic IPA (NY)

- **Employers/Businesses**
  - QuadGraphics/QuadMed (WI)

- **Integrated Delivery Systems (w/o Health Plans)**
  - Allegiance Health (MI)
  - Bellin Health (WI)
  - Caldwell Memorial Hospital (NC)
  - CaroMont Health System (NC)
  - Cape Fear Valley (NC)
  - Cincinnati Children’s Hospital Medical Center (OH)
  - Erlanger Health System (TN)
  - Fort Healthcare (WI)
  - Genesys Health (MI) (Ascension)
  - *Palmetto Health (South Carolina)
  - St. Charles Health System (formerly Cascade) (OR)
  - *Sinai Health System (IL)

- **Safety Net**
  - Contra Costa Health Services (CA)
  - Health Improvement Partnership of Santa Cruz County (CA)
  - Hidalgo Medical Services (NM)
  - North Colorado Health Alliance (CO)
  - Primary Care Coalition Montgomery County (MD)
  - Queens Health Network (NY)
  - Regional Primary Care Coalition (MD)

- **Canada**
  - Central East Local Health Integration Network (LHIN)
  - Hamilton Niagara Haldibrand Brant (LHIN)
  - Saskatchewan Ministry of Health
  - British Columbia Partners
Components of a Learning System for Pilot Testing

1. System level aims and measures
2. Explicit theory or rationale for system changes
3. Segmentation of the population
4. Use informative cases: “Act for the individual learn for the population”
5. Learn by testing changes sequentially
6. Learning during scale-up and spread
7. Periodic review

From Tom Nolan PhD, IHI
## Potential Triple Aim Outcome Measures

<table>
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<tr>
<th>Dimension</th>
<th>Measure</th>
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<tr>
<td><strong>Population Health</strong></td>
<td>1. Health/Functional Status: single-question (e.g. from CDC HRQOL-4) or multi-domain (e.g. SF-12, EuroQol)</td>
</tr>
<tr>
<td></td>
<td>2. Risk Status: composite health risk appraisal (HRA) score</td>
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<tr>
<td></td>
<td>3. Disease Burden: Incidence (yearly rate of onset, avg. age of onset) and/or prevalence of major chronic conditions; summary of predictive model scores</td>
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<tr>
<td><strong>Patient Experience</strong></td>
<td>1. Standard questions from patient surveys, for example:</td>
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<td>-Global questions from US CAHPS or How’s Your Health surveys</td>
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<td></td>
<td>-Experience questions from NHS World Class Commissioning or CareQuality Commission</td>
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<tr>
<td></td>
<td>-Likelihood to recommend</td>
</tr>
<tr>
<td></td>
<td>2. Set of measures based on key dimensions (e.g., US IOM Quality Chasm aims: Safe, Effective, Timely, Efficient, Equitable and Patient-centered)</td>
</tr>
<tr>
<td><strong>Per Capita Cost</strong></td>
<td>1. Total cost per member of the population per month</td>
</tr>
<tr>
<td></td>
<td>2. Hospital and ED utilization rate</td>
</tr>
</tbody>
</table>
Design of a Triple Aim Enterprise

Define “Quality” from the perspective of an individual member of a defined population

The “Triple Aim”

Health care  Public health  Social services

System-Level Metrics

Individuals and families

Definition of primary care

Integration Social Capital Capability

Per capita cost reduction

Prevention and Health promotion

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From Tom Nolan PhD, IHI
Frank is a 79 year old widower with Chronic Obstructive Pulmonary Disease (COPD), Heart Failure, and Diabetes. He lives alone. Frank is very anxious as he is often very breathless and feels unable to manage. He has phoned the practice of his primary care physician on several occasions requesting a home visit and over the last year he has frequently been taken to the local emergency department, after he has dialed 911. He has been admitted to hospital on 7 occasions in the last year and now keeps a small packed suitcase by his chair.
Frank’s Diagnosis

- COPD
- CHF
- Diabetes

Frank’s Healthcare providers
- Primary Care, Cardiologist, Pulmonologist, Endocrinologist, Nutritionist, Physical Therapist, Pharmacist, Home Health.
Another View of Frank

- **Primary Diagnosis**
  - Anxiety, loneliness/isolation, insecurity, confusion, dependency, lack of confidence

- **Secondary Diagnosis**
  - COPD, CHF, Diabetes

- **Primary interventions**
  - Personal care coordination, integration of care by PCP team, determination of motivators, behavioral based motivational interventions, consolidation of meds/therapies
<table>
<thead>
<tr>
<th>Sub population</th>
<th>Primary care</th>
<th>Role of patients &amp; families</th>
<th>Cost control</th>
<th>Prevention and health promotion</th>
<th>Integration Micro &amp; Macro</th>
</tr>
</thead>
<tbody>
<tr>
<td>Robust</td>
<td>1. Everyone attached to PCP 2. Early warning system for change in category for patients</td>
<td>Implementation of programs that promote social gatherings for individuals with similar age, etc.</td>
<td>Early discharge planning</td>
<td>1. Flu/Influenza-H1N1 Programs 2. Silver Sneakers</td>
<td>Shared Care FP’s and Psych Specialists</td>
</tr>
<tr>
<td>Advanced Illness (Chronic disease plus organ failure)</td>
<td>1. Transitions Programs 2. Complex Case Management/High Risk 3. Palliative Care Programs 4. Geriatric Assessment Units at Hospital and at Home</td>
<td>1. Respite Care 2. The patient never visits health care alone</td>
<td>Long term care-lowest care level assessment through social work</td>
<td>1. Registry of home-bound elders to access them for public health campaigns (i.e., vaccination) and emergency situations 2. Support for staying in the home if desired</td>
<td>1. Coordination of specialty care 2. Coordination of roles of long term care, hospital, HHA and family</td>
</tr>
<tr>
<td>Severe Frailty or End of Life</td>
<td>1. Home based multidisciplinary primary care including; SNF, ALF, Foster Care 2. Comprehensive palliative care-inpatient consult, ambulatory counseling home-based 3. Guideline based GP practice support for EOL care</td>
<td>Reimbursement for family members who care for this group</td>
<td></td>
<td>EOL Liverpool Care Pathway-Identify patient in acute setting to ensure ‘appropriate’ patient centered care</td>
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From Tom Nolan PhD, IHI
Define “Quality” from the perspective of an individual member of a defined population.
Workgroups 2007-2011

INDIVIDUALS AND FAMILIES
- Children and Families
- Employed Population
- Individuals 65+
- Socially Complex
- Patient and Family Experiences
- Maximizing long term health for children

PRIMARY CARE
- Co-creation of health
- Medical Home and Primary Care Redesign
- Primary care 3.0
## Workgroups 2007-2011

<table>
<thead>
<tr>
<th>SYSTEM INTEGRATION</th>
<th>PER CAPITA COST REDUCTION</th>
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<tbody>
<tr>
<td>▪ Community Systems of Care: ACOs and the Triple Aim</td>
<td></td>
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<tr>
<td>▪ Regional Health Improvement Initiatives</td>
<td></td>
</tr>
<tr>
<td>▪ Applying the Triple Aim to a Region</td>
<td></td>
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<tr>
<td>▪ Regional Information Technology (IT)</td>
<td></td>
</tr>
<tr>
<td>▪ Specialty Waste and Overuse</td>
<td></td>
</tr>
<tr>
<td>▪ No New Money</td>
<td></td>
</tr>
<tr>
<td>▪ Reducing Clinical Variation</td>
<td></td>
</tr>
<tr>
<td>▪ Delivering within a 15% Cost Savings</td>
<td></td>
</tr>
<tr>
<td>▪ Ambulatory care sensitive conditions</td>
<td></td>
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Workgroups 2007-2011

PREVENTION AND HEALTH PROMOTION
- Population Health Management
- Prevention & Health Promotion, including Social Marketing
- Successful Coalitions and Population Health

CAPABILITY BUILDING
- Predictive Modeling
- Measurement
- Execution and the Triple Aim
<table>
<thead>
<tr>
<th>Topics</th>
<th>P P P</th>
<th>Measures</th>
<th>Interventions</th>
</tr>
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<tbody>
<tr>
<td>Diabetes</td>
<td>Community 4.5 million</td>
<td>1. Per capita cost/ pmpm 2. Equitable care - economic - race 3. Experience 4. Health - Diabetes - optimal care - Cancer - tbd</td>
<td>• Exception reporting - follow-up • Care Model Process (CMP) • 10 case review &amp; follow-up • Community outreach / Communication • Diabetes Inertia Project • EMP • EMR module (customize with stage &amp; tumor size) • Disease Management Program • 10 case review • Case Management</td>
</tr>
<tr>
<td>Cancer</td>
<td></td>
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## Partners for Better Health Goals 2014

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<th>Health Success</th>
<th>Experience Success</th>
<th>Affordability Success</th>
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<tr>
<td>Improved health for our customers and community as measured by:</td>
<td>Deliver an exceptional experience that customers want and deserve at an affordable cost as measured by:</td>
<td>Lower health care costs for our customers as measured by:</td>
</tr>
<tr>
<td>• Better well being, more satisfied and healthy lives.</td>
<td>• The best performance on customer’s willingness to recommend our clinics, hospitals and health plan to family and friends.</td>
<td>• Cost trends that are at or below general inflation (Consumer Price Index, a leading economic indicator).</td>
</tr>
<tr>
<td>• The best local and national health outcomes and the best performing health care costs in the region.</td>
<td>• Feeling well-supported, respected and cared for throughout life.</td>
<td>• The best performing overall health care costs in the region.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• HealthPartners clinics and hospitals will be in the best 10 percent in the region in overall costs of health care.</td>
</tr>
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</table>
% patients with Optimal Diabetes Control*

* controlled blood sugar (per ICSI guideline A1C changed from < 7 to < 8 in 1st quarter 2009), BP & cholesterol, AND daily aspirin use, AND non-tobacco user

% patients "Would Recommend" HealthPartners Clinics

TRIPLE AIM: Health-Experience-Affordability
HealthPartners Clinics

2011 MHS Conference
Saves 364 Hearts, 68 Legs & 625 Pairs of Eyes Each Year (Diabetic Population)

HealthPartners

![Graph showing AMI, Amputations, and New Cases of Retinopathy rates from 2000 to 2009]
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COLLABORATIVE MODEL
Degree of Belief that Changes Will Result in Improvement

- High
- Moderate
- Low

Degree of belief that the change will result in improvement

A successful change

Change still needs further testing

Unsuccessful proposed change

- Developing a change
- Testing a change cycle 1, cycle 2, ...
- Implementing a change

The Improvement Guide, page 97

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Why Test?

- Possible Objectives of PDSA Cycles for Testing
  - Increase your belief that the change will result in improvement
  - Opportunity for learning from “failures” without impacting performance
  - Document how much improvement can be expected from the change
  - Learn how to adapt the change to conditions in the local environment
  - Evaluate costs and side-effects of the change
  - Minimize resistance upon implementation
## Deciding on the Scale of the Test

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<tr>
<th>CURRENT SITUATION</th>
<th>CURRENT COMMITMENT WITHIN ORGANIZATION</th>
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<tr>
<td></td>
<td>NO COMMITMENT</td>
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<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>
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<td>Cost of failure small</td>
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Source: Langley et al., Improvement Guide
Multiple PDSA Cycle “Ramps”

Testing and adaptation

Work Down Backlog  Match Supply and Demand  Manage the Constraint  Optimize Room and Equipment

Change Concepts
IHI Breakthrough Series
(6 to 18 Months Time Frame)

Select Topic (Develop Mission)

Expert Meeting

Planning Group

Develop Framework & Changes

Participants (10-100 teams)

Prework

LS 1

AP 1

LS 2

AP 2

LS 3

AP 3

Supports

Email (listserv) Phone Conferences

Visits Assessments

Monthly Team Reports

Dissemination
Holding the Gains
Publications Congress etc.

LS – Learning Session

AP – Action Period

2011 MHS Conference
SPREAD AND SCALE-UP
Developing a Spread Aim

- Spread What:
- Target Goals:
- Spread to Whom:
- Time Frame:
Sample Spread Aim: Prevent Ventilator Associated Pneumonia

- Spread What: Ventilator Bundle
- Target Goals: Zero Cases of VAP
- Spread to Whom: All ICUs in our 10 hospital system
- Time Frame: By September 2011
Adoption is a DOING thing!

“BETTER IDEAS” communicates

COMMUNICATED
In a certain way

Thru a social system

Happens over time

(C) 2001, Sarah W. Fraser
A Framework for Spread

Leadership
- Topic is a key strategic initiative
- Goals and incentives aligned
- Executive sponsor assigned
- Day-to-day managers identified

Set-up
- Target population
- Adopter audiences
- Successful sites
- Key partners
- Initial spread strategy

Social System
- Key messengers
- Communities
- Technical support
- Transition issues

Better Ideas
- Develop the case
- Describe the ideas

Measurement and Feedback

Knowledge Management

Communication Strategies (awareness & technical)
Methods for Spread

- Natural diffusion
- Breakthrough Series Collaborative model
- Extension agents
- Emergency mobilization
- Campaign model
- Social movements
- Wave sequence (wedge and spread)
- Broad and deep
- Hybrid models
The WAY We Communicate Matters

SHARE INFORMATION

General Publications
- flyers
- newsletters
- videos
- articles
- posters

Personal Touch
- letters
- cards
- postcards

Interactive Activities
- telephone
- email
- visits
- seminars
- learning sets
- modeling

Public Events
- road shows
- fairs
- conferences
- exhibitions
- mass mtgs

SHAPE BEHAVIOR

Face-to-face one-to-one
- mentoring
- seconding
- shadowing

(C) 2001, Sarah W. Fraser

Adapted from Ashkenas, 1995
What’s the Message?

- Relative advantage
- Compatibility
- Complexity
- Trialability
- Observability

Better Ideas
### Spread Tracker

**Legend:**
- A = Planning
- B = Start
- C = In Progress
- D = Fully Implemented

<table>
<thead>
<tr>
<th>Change</th>
<th>Pilot Unit 1</th>
<th>Pilot Unit 2</th>
<th>Spread Unit 1</th>
<th>Spread Unit 2</th>
<th>Spread Unit 3</th>
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<tbody>
<tr>
<td>Change 1</td>
<td>D</td>
<td>C</td>
<td>A</td>
<td>B</td>
<td>C</td>
</tr>
<tr>
<td>Change 2</td>
<td>D</td>
<td>C</td>
<td>B</td>
<td>B</td>
<td>C</td>
</tr>
<tr>
<td>Change 3</td>
<td>A</td>
<td>C</td>
<td>D</td>
<td>A</td>
<td>C</td>
</tr>
<tr>
<td>Change 4</td>
<td>D</td>
<td>C</td>
<td>B</td>
<td>A</td>
<td>B</td>
</tr>
<tr>
<td>Change 5</td>
<td>C</td>
<td>A</td>
<td>C</td>
<td>C</td>
<td>D</td>
</tr>
<tr>
<td>Change 6</td>
<td>C</td>
<td>D</td>
<td>C</td>
<td>C</td>
<td>A</td>
</tr>
<tr>
<td>Change 7</td>
<td>C</td>
<td>D</td>
<td>A</td>
<td>C</td>
<td>A</td>
</tr>
<tr>
<td>Change 8</td>
<td>C</td>
<td>B</td>
<td>A</td>
<td>C</td>
<td>D</td>
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<td>Phase</td>
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<td>Promising Change Ideas (to reach the Aim / Design Targets)</td>
<td>Testing Components of the Concept Design and Testing Clusters of Components (may need more R&amp;D)</td>
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<td>Promising Results: focus on building will of the early adopters (need 25 to 50 sites/orgs)</td>
<td>Change Packages &amp; Measures</td>
<td>Collaborative Learning (testing under a variety of conditions)</td>
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<td>Success Stories: focus on will of the early adopters and early majority</td>
<td>How-to Guides &amp; Protocols</td>
<td>Collaborative Learning (BTS Model), Spread Model, Scale-up Model, Campaign Model</td>
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<td><strong>Full Scale</strong></td>
<td>Policies and Regulations: focus on building will for the late majority and laggards (All)</td>
<td>How-to Guides &amp; Protocols</td>
<td>Policies, Regulations and Payment Reform + Spread Resources and Models</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Degree of belief that changes will result in improvement:

- **High**: A successful change.
- **Moderate**: Change still needs further testing.
- **Low**: An unsuccessful proposed change.

Graph shows:
- Developing a change.
- Testing a change cycle 1, cycle 2, ...
- Implementing a change.

The Improvement Guide, page 97

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Thank You and More Information

- IHI: www.ihi.org
- IHI White Papers: http://www.ihi.org/IHI/Results/WhitePapers/
  - 3. The Breakthrough Series
  - 11. A Framework for Spread
  - 17. Planning for Scale