

# 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



# Report Documentation Page

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# 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...

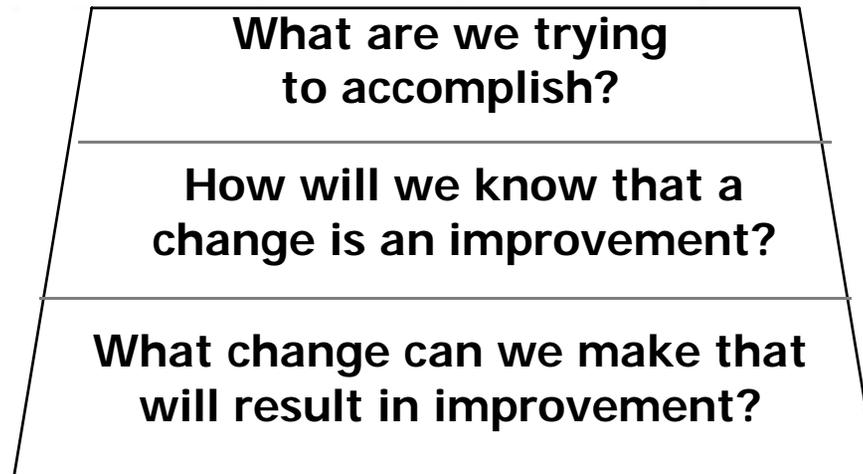


- 100,000 and 5 Million Lives Campaigns
- IHI Open School for Health Professions
- The Triple Aim
- The Improvement Map & Passport
- STAAR (STate Action on Avoidable Rehospitalizations)
- TCAB (Transforming Care at the Bedside)
- Safer Patients Initiative (UK)
- Scottish Patient Safety Programme
- Chronic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



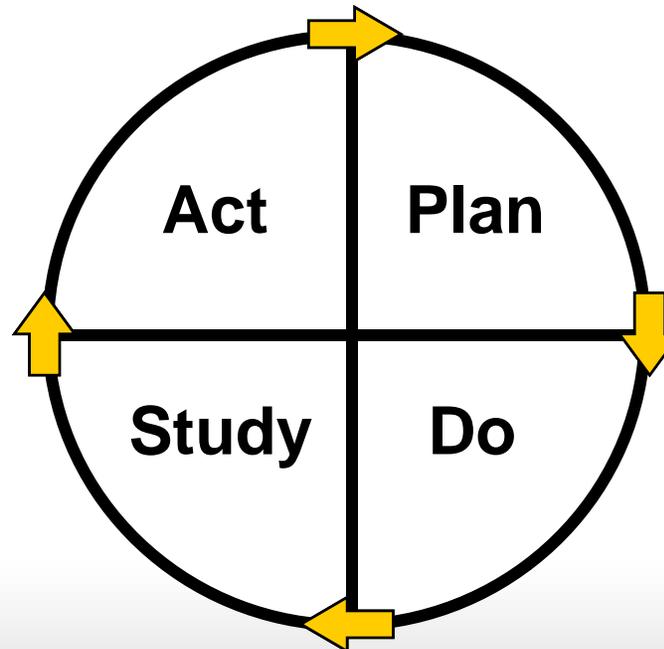
# IHI CORE APPROACH

# Model for Improvement



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?

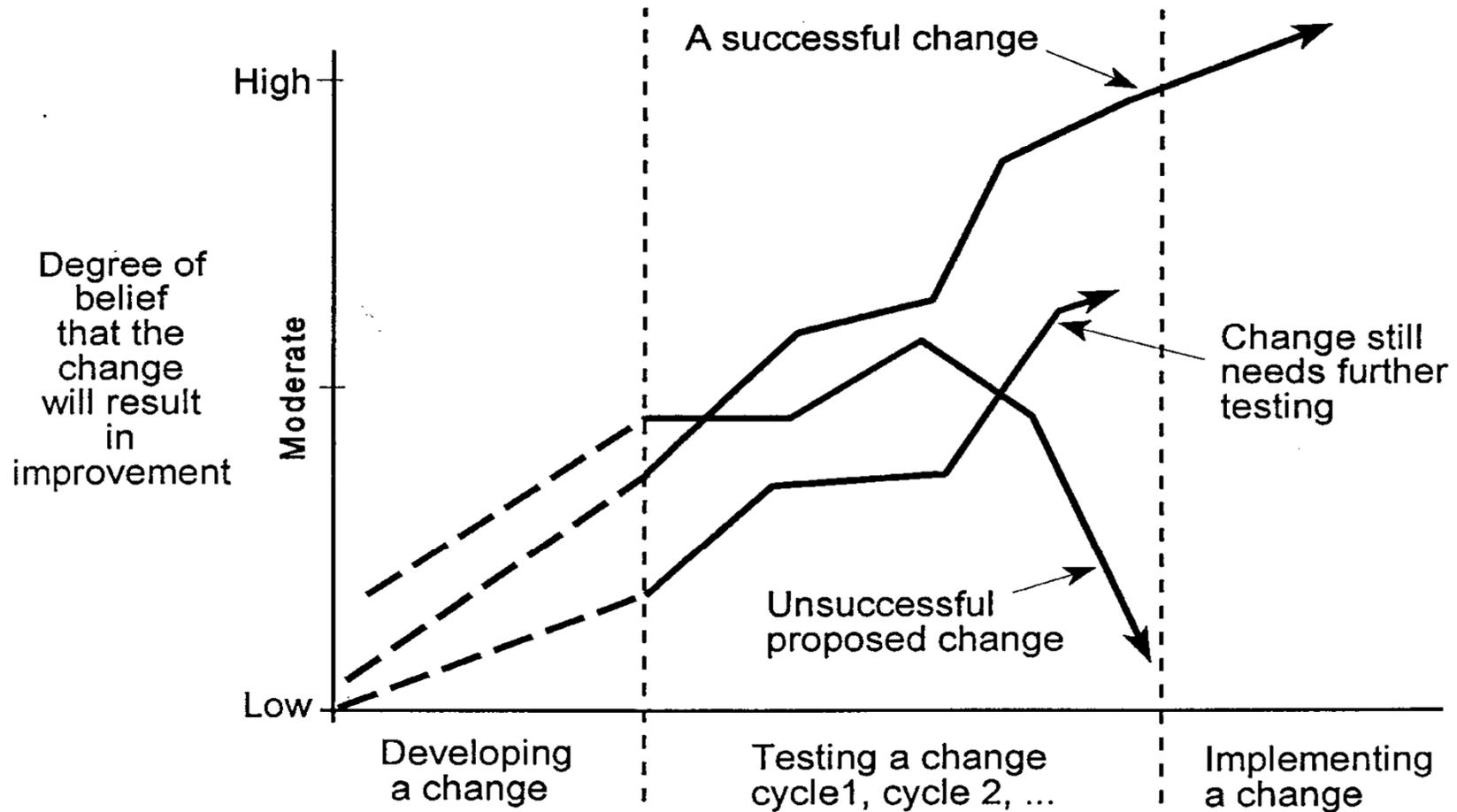
*High* degree of belief → adapt and spread ideas

*Moderate* degree of belief → test promising ideas

*Low* degree of belief → generate new ideas



# Degree of Belief that Changes Will Result in Improvement



*The Improvement Guide, page 97*

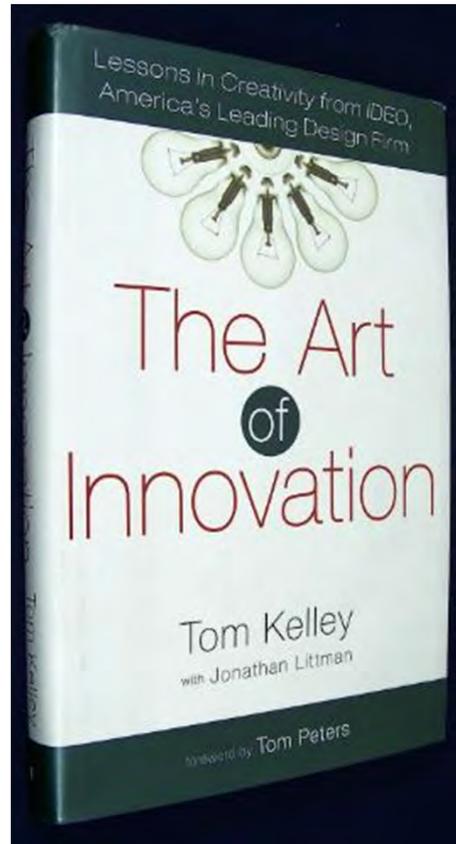
2011 MHS Conference

# 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

*(The Improvement Guide, p. 293-359).*



- 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



Specific Ideas, Actionable

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

# 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



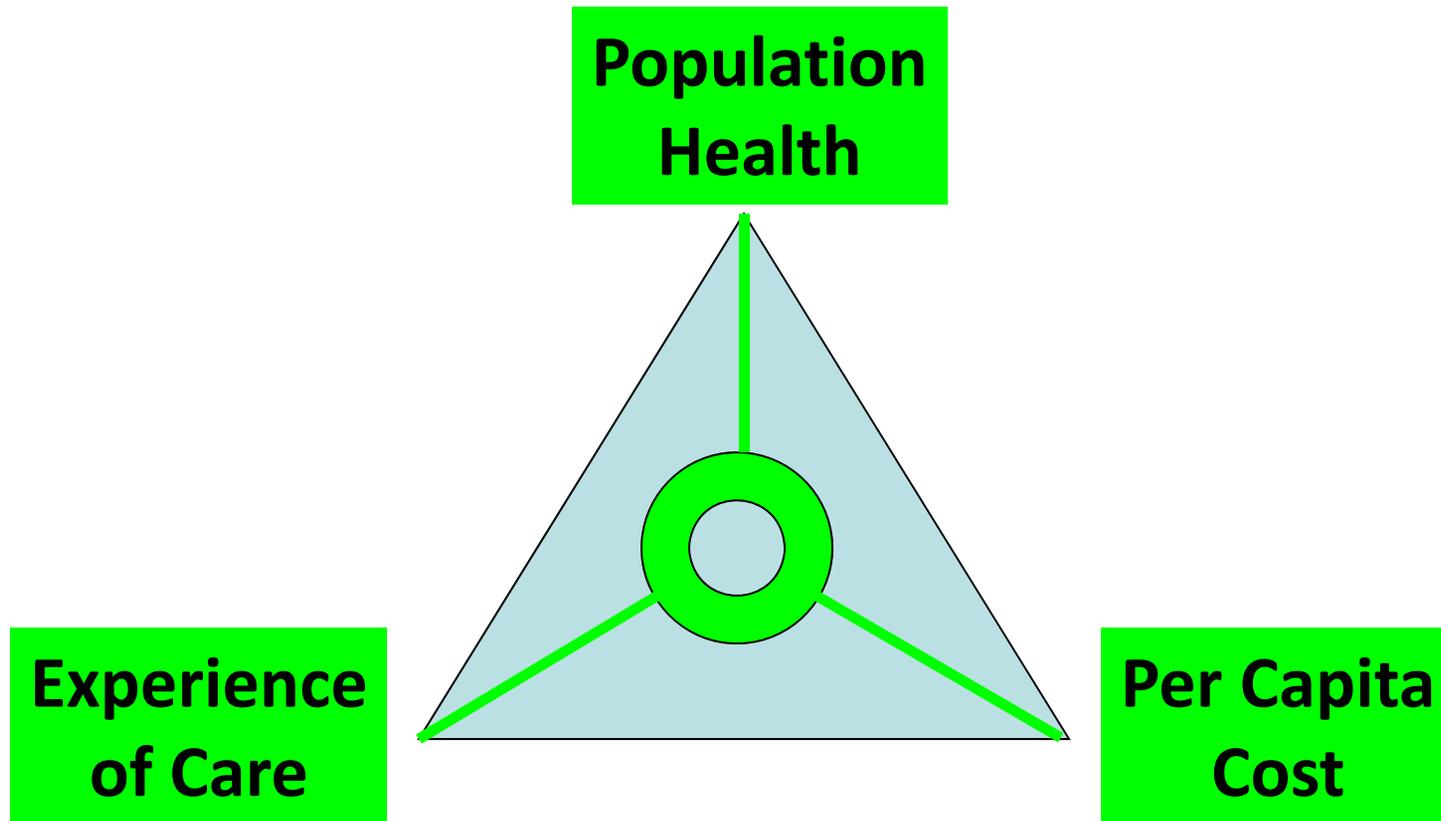
Make beepers available to families of all surgery patients next week.

|                                      | <b>Building Will</b>  | <b>Developing Ideas</b>   | <b>Execution</b>   |
|--------------------------------------|---|---|--|
| <b>R&amp;D /<br/>Prototype Phase</b> |   | <b>Concept Design / Driver<br/>Diagram, Diagnostic<br/>Tools, Measures &amp;<br/>Design Targets,<br/>Prototype Testing Plan</b> |  |
| <b>Early Pilot<br/>Testing Phase</b> | <b>New Concepts and<br/>Innovative Ideas: focus<br/>on building will in the<br/>innovators and early<br/>adopters (need 8 to 10<br/>sites/orgs)</b> | <b>Promising Change Ideas<br/>(to reach the Aim /<br/>Design Targets)</b>   | <b>Testing Components of the<br/>Concept Design and<br/>Testing Clusters of<br/>Components (may need<br/>more R&amp;D)</b> |
| <b>Pilot Testing<br/>Phase</b>       | <b>Promising Results:<br/>focus on building will of<br/>the early adopters<br/>(need 25 to 50<br/>sites/orgs)</b>                                   | <b>Change Packages &amp;<br/>Measures</b>   | <b>Collaborative Learning<br/>(testing under a variety of<br/>conditions)</b>  |
| <b>Spread Phase</b>                  | <b>Success Stories: focus<br/>on will of the early<br/>adopters and early<br/>majority</b>  | <b>How-to Guides &amp;<br/>Protocols</b>  | <b>Collaborative Learning<br/>(BTS Model), Spread Model,<br/>Scale-up Model, Campaign<br/>Model</b>                        |
| <b>Full Scale</b>                    | <b>Policies and<br/>Regulations: focus on<br/>building will for the late<br/>majority and laggards<br/>(All)</b>                                    | <b>How-to Guides &amp;<br/>Protocols</b>  | <b>Policies, Regulations and<br/>Payment Reform + Spread<br/>Resources and Models</b>                                      |

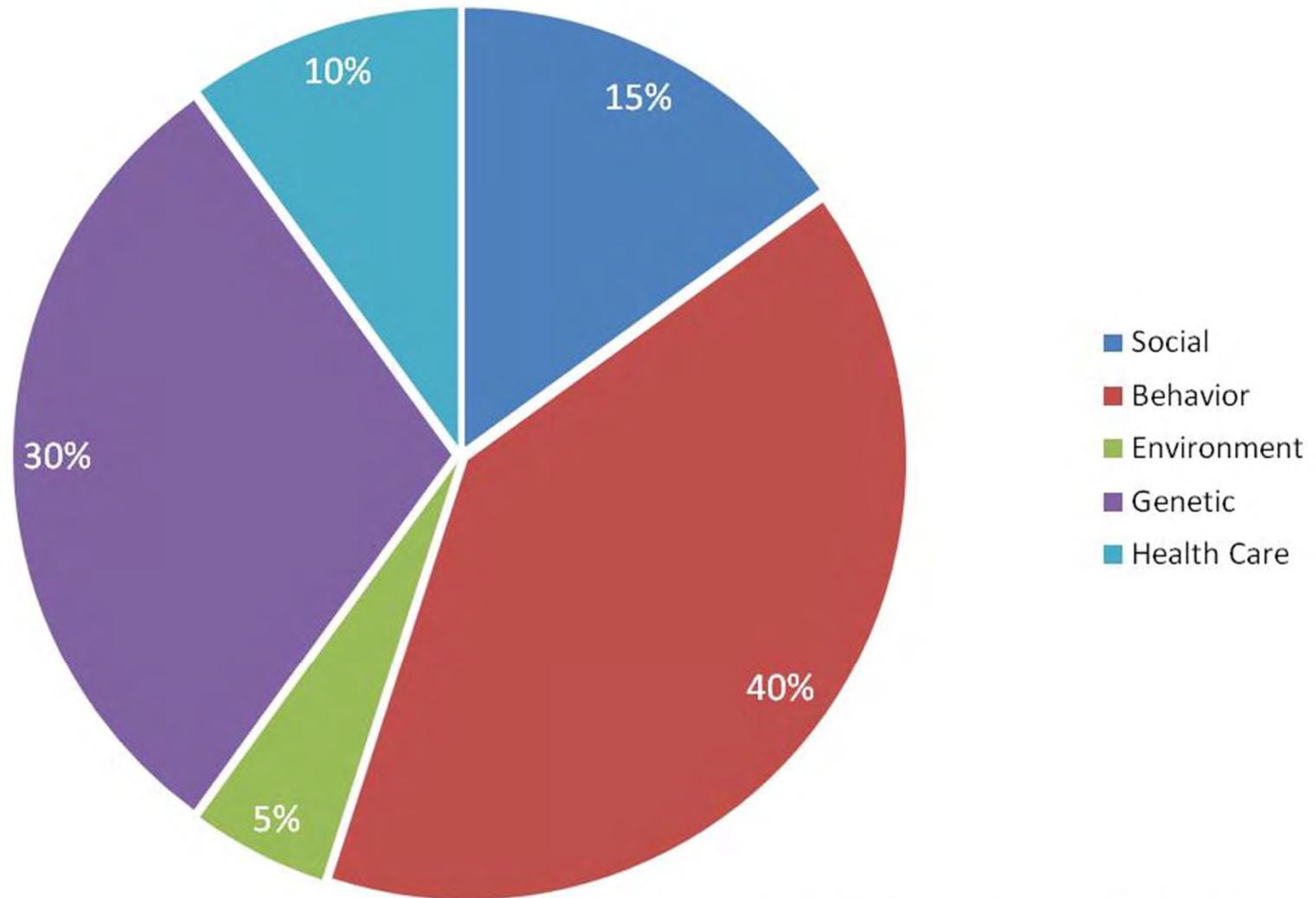


# PILOT TESTING AND LEARNING SYSTEM

# Three Dimensions of Value

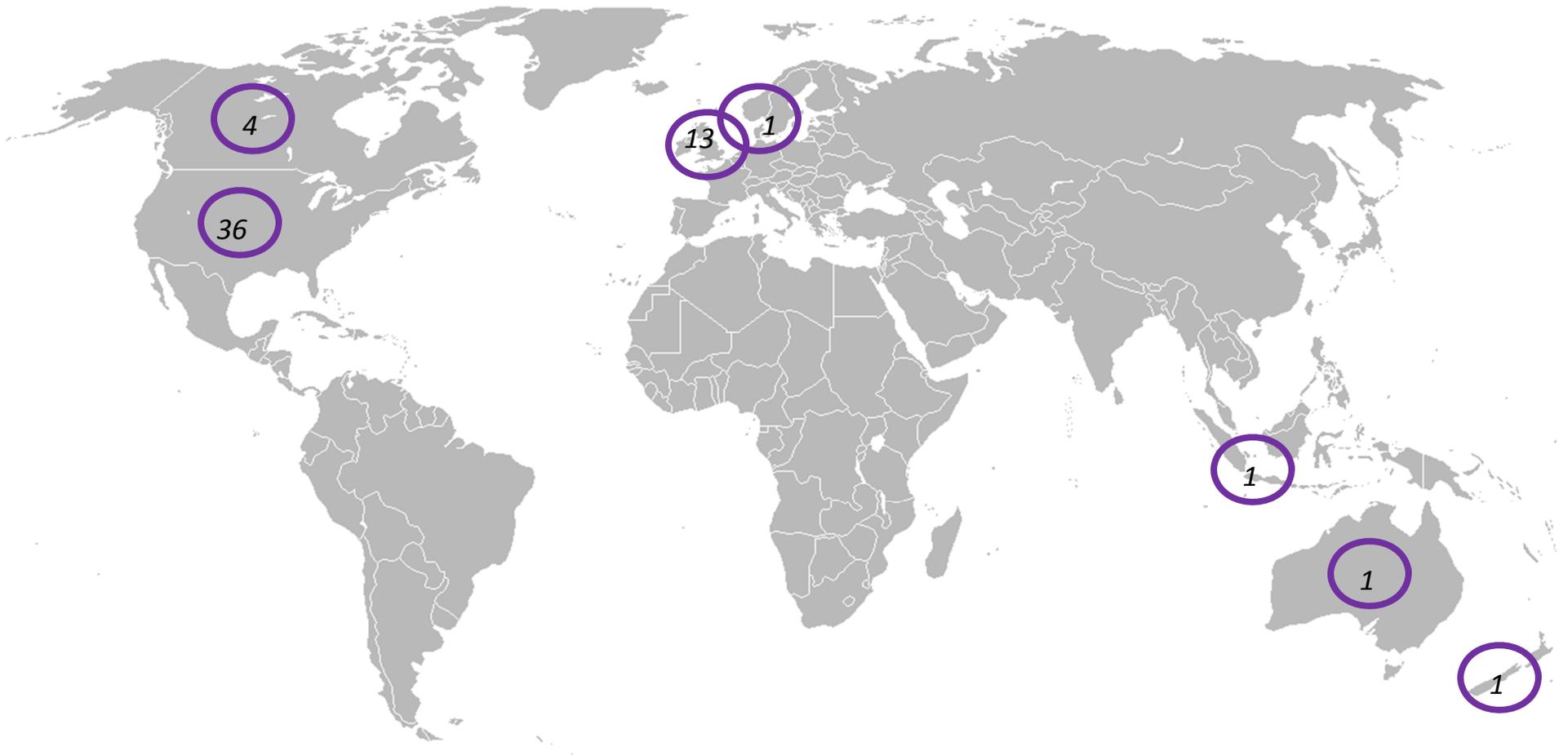


# Leading Determinants of Health



Source: McGinnis, JM et al Health Affairs  
Apr2002

# Triple Aim Prototyping Sites



# 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

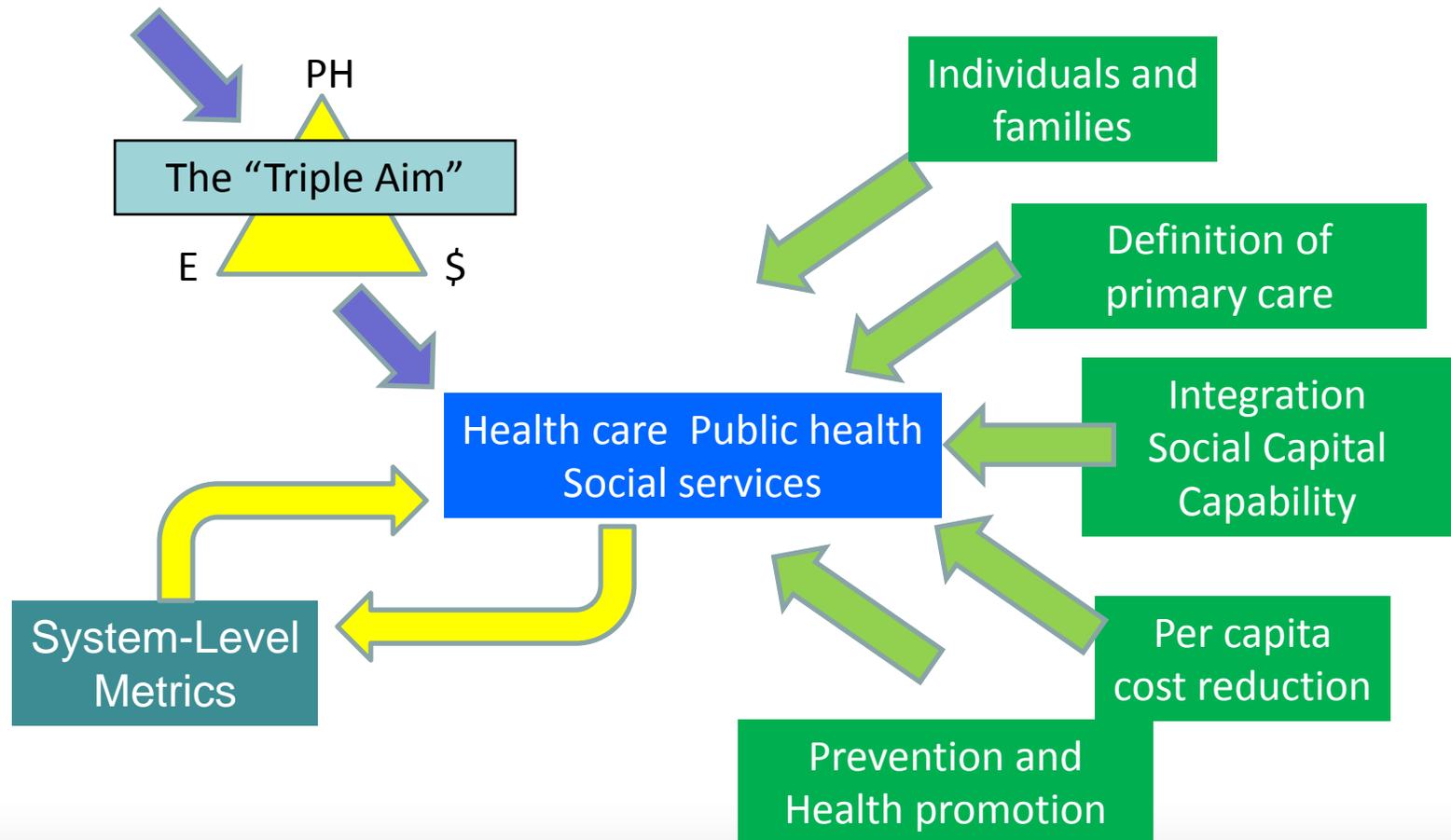
# Potential Triple Aim Outcome Measures 11/09

| Dimension                 | Measure  |
|---------------------------|--|
| <b>Population Health</b>  | 1. Health/Functional Status: single-question (e.g. from CDC HRQOL-4) or multi-domain (e.g. SF-12, EuroQol)   |
|                           | 2. Risk Status: composite health risk appraisal (HRA) score  |
|                           | 3. Disease Burden: Incidence (yearly rate of onset, avg. age of onset) and/or prevalence of major chronic conditions; summary of predictive model scores   |
|                           | 4. Mortality: life expectancy; years of potential life lost; standardized mortality rates. <i>Note: Healthy Life Expectancy (HLE) combines life expectancy and health status into a single measure, reflecting remaining years of life in good health. See <a href="http://reves.site.ined.fr/en/DFLE/definition/">http://reves.site.ined.fr/en/DFLE/definition/</a></i> |
| <b>Patient Experience</b> | 1. Standard questions from patient surveys, for example:<br>-Global questions from US CAHPS or How's Your Health surveys<br>-Experience questions from NHS World Class Commissioning or CareQuality Commission<br>-Likelihood to recommend   |
|                           | 2. Set of measures based on key dimensions (e.g., US IOM Quality Chasm aims: Safe, Effective, Timely, Efficient, Equitable and Patient-centered)   |
| <b>Per Capita Cost</b>    | 1. Total cost per member of the population per month   |
|                           | 2. Hospital and ED utilization rate  |



# Design of a Triple Aim Enterprise

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



# Components of a Learning System for Pilot Testing



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# Frank



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

| Sub population  | Primary care   | Role of patients & families  | Cost control  | Prevention and health promotion   | Integration Micro & Macro   |
|---|--|--|---|---|---|
| Robust  | <ol style="list-style-type: none"> <li>1. Everyone attached to PCP</li> <li>2. Early warning system for change in category for patients</li> </ol>   | Implementation of programs that promote social gatherings for individuals with similar age, etc.   | Early discharge planning  | <ol style="list-style-type: none"> <li>1. Flu/Influenza-H1N1 Programs</li> <li>2. Silver Sneakers</li> </ol>  | Shared Care FP's and Psych Specialists  |
| Major Chronic Condition                               | <ol style="list-style-type: none"> <li>1. Registries with use of chronic care model</li> <li>2. Up-skilling of primary care around geriatrics</li> <li>3. Planned care around specific goals</li> </ol>  | <ol style="list-style-type: none"> <li>1. Chronic disease self management training program</li> <li>2. Family Caregiver Training</li> <li>3. Social network assessment and support system</li> </ol> | <ol style="list-style-type: none"> <li>1. Medication Management- Therapeutic pharmacy intervention</li> <li>2. Project At Home'- hospital level care delivered in home</li> </ol> | Home safety survey  | <ol style="list-style-type: none"> <li>1. Medication reconciliation</li> <li>2. Community Health team</li> <li>3. Post discharge follow up calls</li> </ol>       |
| Advanced Illness (Chronic disease plus organ failure) | <ol style="list-style-type: none"> <li>1. Transitions Programs</li> <li>2. Complex Case Management/High Risk</li> <li>3. Palliative Care Programs</li> <li>4. Geriatric Assessment Units at Hospital and at Home</li> </ol>  | <ol style="list-style-type: none"> <li>1. Respite Care</li> <li>2. The patient never visits health care alone</li> </ol>   | Long term care-lowest care level assessment through social work   | <ol style="list-style-type: none"> <li>1. Registry of home-bound elders to access them for public health campaigns (i.e., vaccination) and emergency situations</li> <li>2. Support for staying in the home if desired</li> </ol> | <ol style="list-style-type: none"> <li>1. Coordination of specialty care</li> <li>2. Coordination of roles of long term care, hospital, HHA and family</li> </ol> |
| Severe Frailty or End of Life                         | <ol style="list-style-type: none"> <li>1. Home based multidisciplinary primary care including; SNF, ALF, Foster Care</li> <li>2. Comprehensive palliative care-inpatient consult, ambulatory counseling home-based</li> <li>3. Guideline based GP practice support for EOL care</li> </ol> | Reimbursement for family members who care for this group   |   |   | EOL Liverpool Care Pathway-Identify patient in acute setting to ensure 'appropriate' patient centered care  |

# Components of a Learning System for Pilot Testing



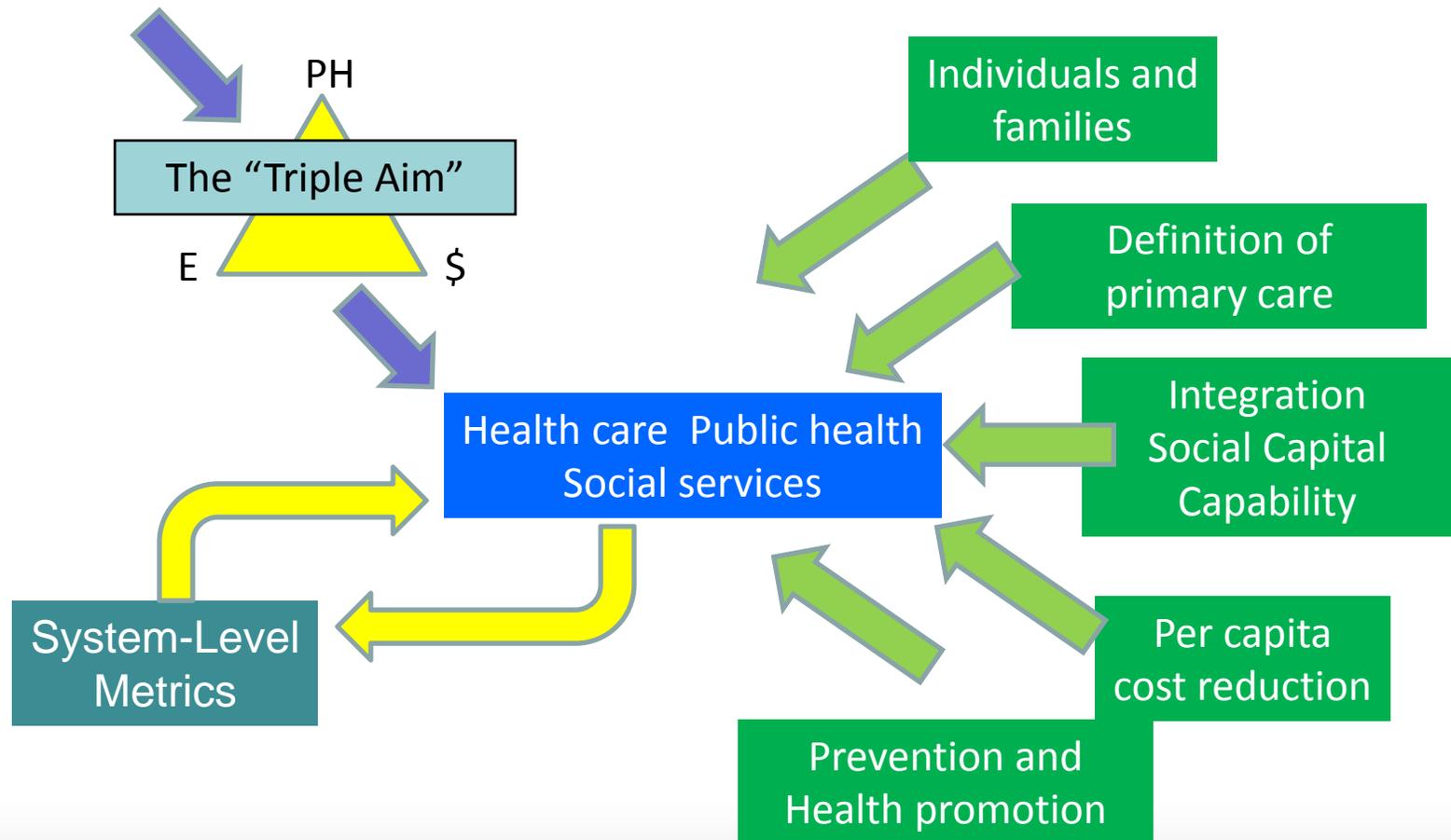
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# Design of a Triple Aim Enterprise

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



## SYSTEM INTEGRATION

- Community Systems of Care: ACOs and the Triple Aim
- Regional Health Improvement Initiatives
- Applying the Triple Aim to a Region
- Regional Information Technology (IT)

## PER CAPITA COST REDUCTION

- Specialty Waste and Overuse
- No New Money
- Reducing Clinical Variation
- Delivering within a 15% Cost Savings
- Ambulatory care sensitive conditions

# 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

# Health Partners

## Topics

P P P

## Measures

## Interventions

Diabetes

Community  
4.5 million

↳ Plan

730,000

↳ Plan/HPMG

320,000

1. Per capita cost/  
pmpm

2. Equitable care  
• economic  
• race

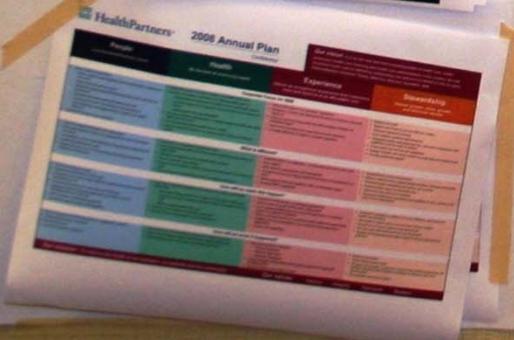
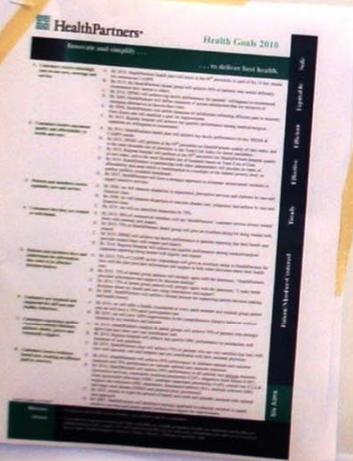
3. Experience

4. Health

- Diabetes-optimal care
- Cancer - tbd

- Exception reporting & follow-up
- Care Model Process (CMP)
- 10 case review & follow-up
- Community outreach/communication
- Diabetes Inertia Project
- **CMP**
- **EMR module** (customize with stage & tumor size)
- **Disease Management Program**
- 10 case review
- **Case Management**

Cancer



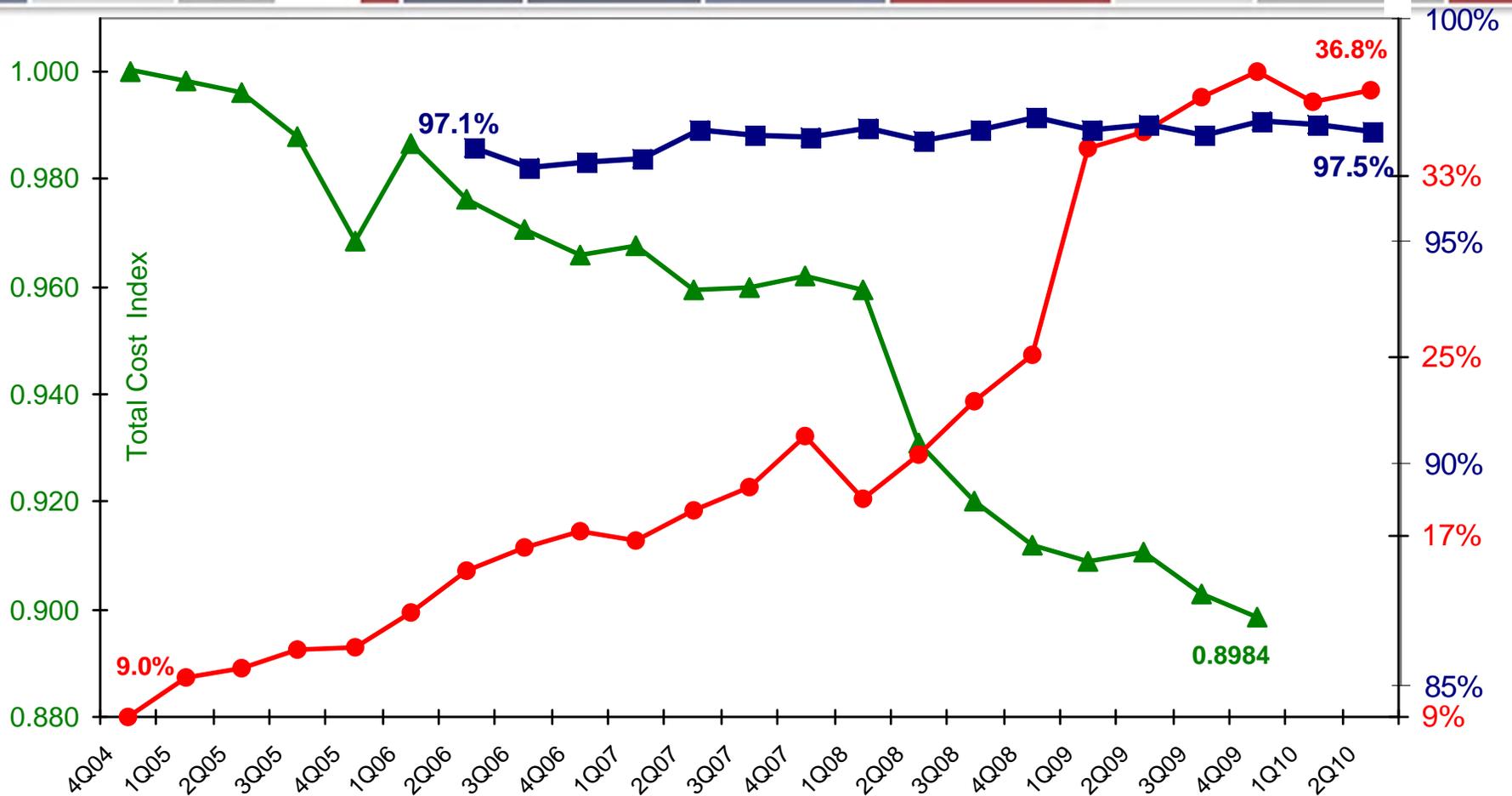
# Partners for Better Health Goals 2014



| <b>Health Success</b>   | <b>Experience Success</b>  | <b>Affordability Success</b>   |
|---|--|--|
| <p><b>Improved health for our customers and community as measured by:</b></p> <ul style="list-style-type: none"><li>• Better well being, more satisfied and healthy lives.</li><li>• The best local and national health outcomes and the best performing health care costs in the region.</li></ul> | <p><b>Deliver an exceptional experience that customers want and deserve at an affordable cost as measured by:</b></p> <ul style="list-style-type: none"><li>• The best performance on customer's willingness to recommend our clinics, hospitals and health plan to family and friends.</li><li>• Feeling well-supported, respected and cared for throughout life.</li></ul> | <p><b>Lower health care costs for our customers as measured by:</b></p> <ul style="list-style-type: none"><li>• Cost trends that are at or below general inflation (Consumer Price Index, a leading economic indicator).</li><li>• The best performing overall health care costs in the region.</li><li>• HealthPartners clinics and hospitals will be in the best 10 percent in the region in overall costs of health care.</li></ul> |

# TRIPLE AIM: Health-Experience-Affordability

## HealthPartners Clinics



**▲ Total Cost Index**  
*(compared to statewide average)*  
*< 1 is better than network average*

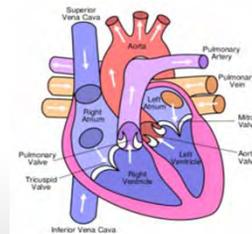
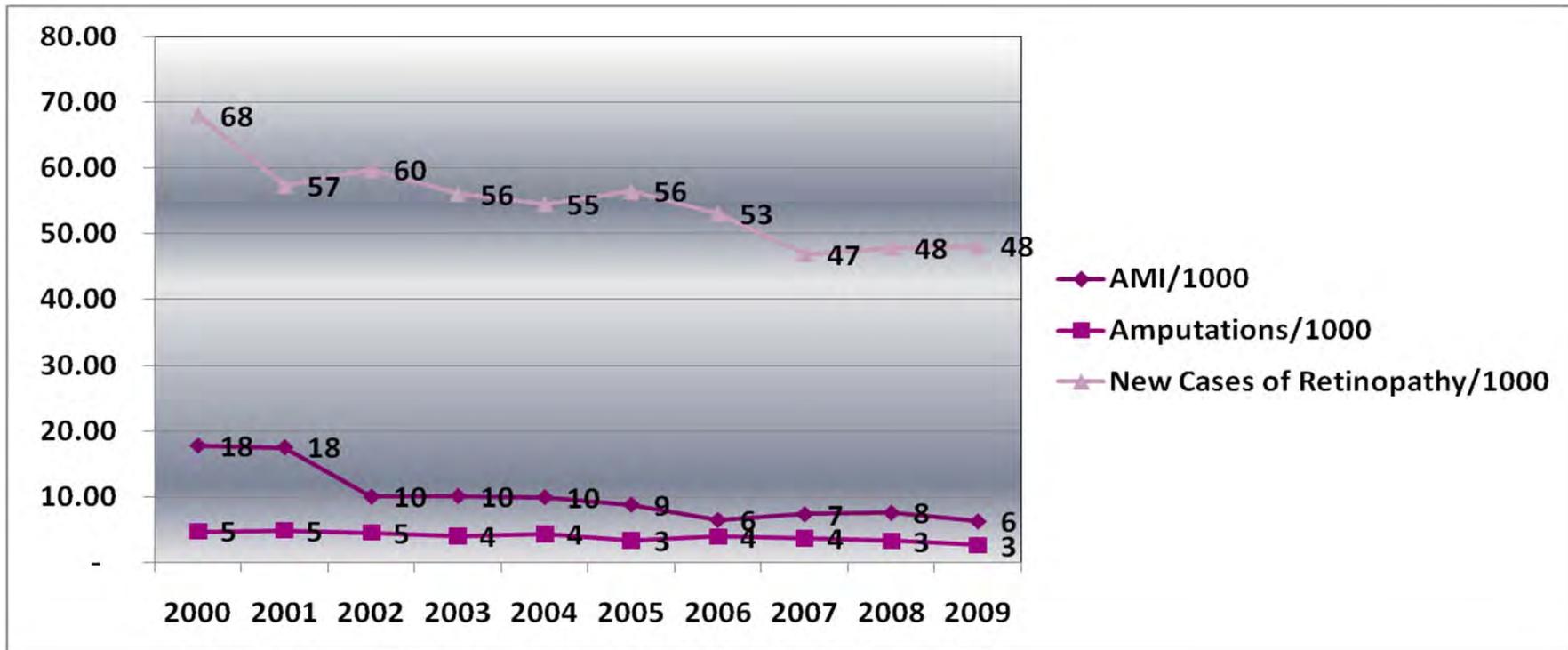
**● % patients with Optimal Diabetes Control \***  
*\* controlled blood sugar (per ICSI guideline A1C changed from < 7 to < 8 in 1<sup>st</sup> quarter 2009), BP & cholesterol, AND daily aspirin use, AND non-tobacco user*

**■ % patients "Would Recommend" HealthPartners Clinics**

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



## HealthPartners



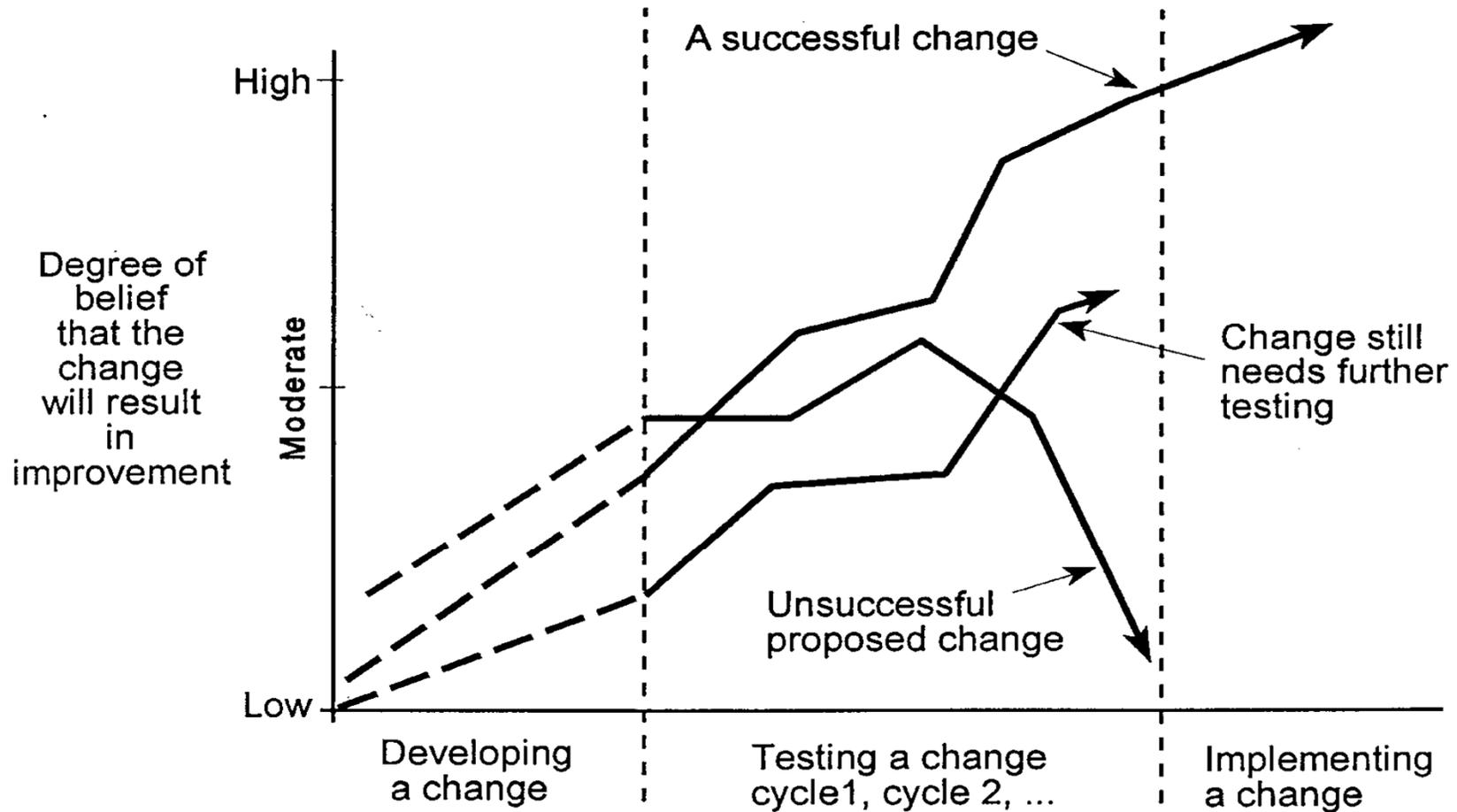
|                                      | <b>Building Will</b>  | <b>Developing Ideas</b>   | <b>Execution</b>   |
|--------------------------------------|---|---|--|
| <b>R&amp;D /<br/>Prototype Phase</b> |   | <b>Concept Design / Driver<br/>Diagram, Diagnostic<br/>Tools, Measures &amp;<br/>Design Targets,<br/>Prototype Testing Plan</b> |  |
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| <b>Spread Phase</b>                  | <b>Success Stories: focus<br/>on will of the early<br/>adopters and early<br/>majority</b>  | <b>How-to Guides &amp;<br/>Protocols</b>  | <b>Collaborative Learning<br/>(BTS Model), Spread Model,<br/>Scale-up Model, Campaign<br/>Model</b>                        |
| <b>Full Scale</b>                    | <b>Policies and<br/>Regulations: focus on<br/>building will for the late<br/>majority and laggards<br/>(All)</b>                                    | <b>How-to Guides &amp;<br/>Protocols</b>  | <b>Policies, Regulations and<br/>Payment Reform + Spread<br/>Resources and Models</b>                                      |



# COLLABORATIVE MODEL



# Degree of Belief that Changes Will Result in Improvement



*The Improvement Guide, page 97*

2011 MHS Conference

# 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



CURRENT SITUATION

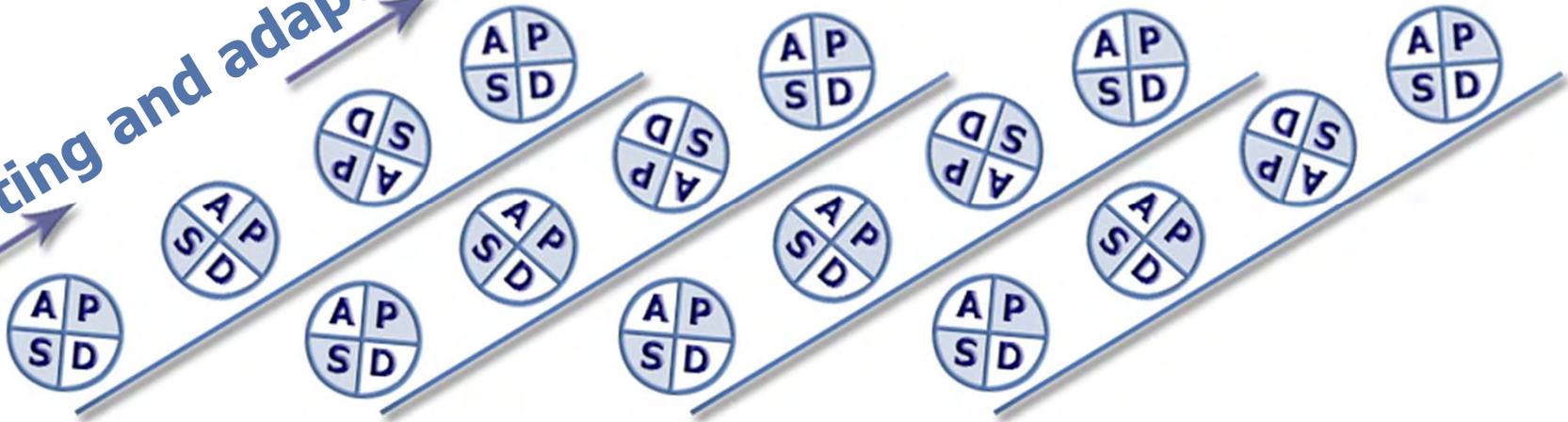
CURRENT COMMITMENT WITHIN ORGANIZATION

|   |                       | NO COMMITMENT                | SOME COMMITMENT              | STRONG COMMITMENT            |
|---|-----------------------|------------------------------|------------------------------|------------------------------|
| Low degree of belief that change idea will lead to Improvement  | Cost of failure large | <i>Very small-scale test</i> | <i>Very small-scale test</i> | <i>Very small-scale test</i> |
|   | Cost of failure small | <i>Very small-scale test</i> | <i>Very small-scale test</i> | <i>Small-scale test</i>      |
| High degree of belief that change idea will lead to Improvement | Cost of failure large | <i>Very small-scale test</i> | <i>Small-scale test</i>      | <i>Large-scale test</i>      |
|   | Cost of failure small | <i>Small-scale test</i>      | <i>Large-scale test</i>      | <i>Implement</i>             |

# Multiple PDSA Cycle “Ramps”



Testing and adaptation



Work Down  
Backlog

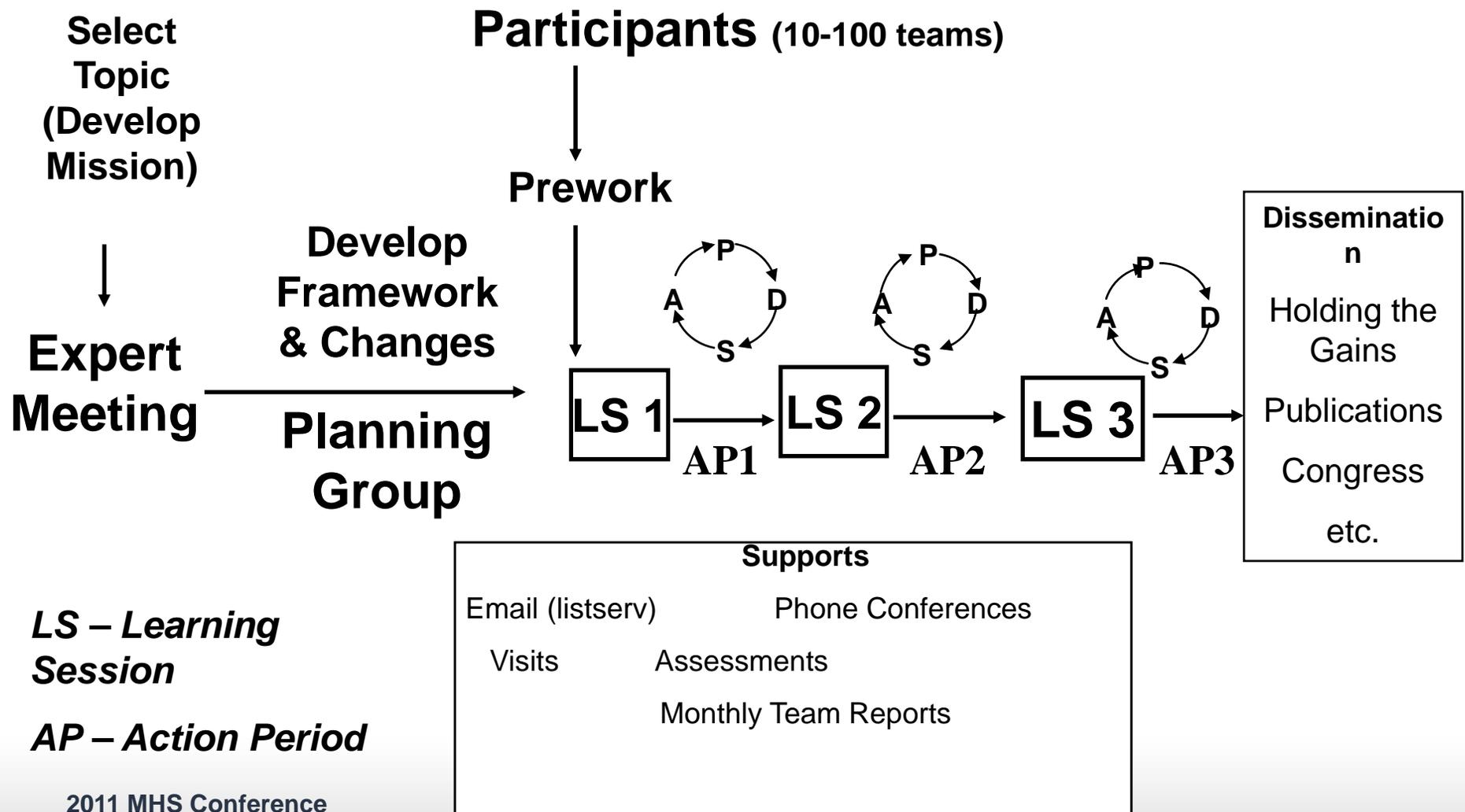
Match  
Supply and  
Demand

Manage the  
Constraint

Optimize Room  
and Equipment

## Change Concepts

# IHI Breakthrough Series (6 to 18 Months Time Frame)





# 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”**

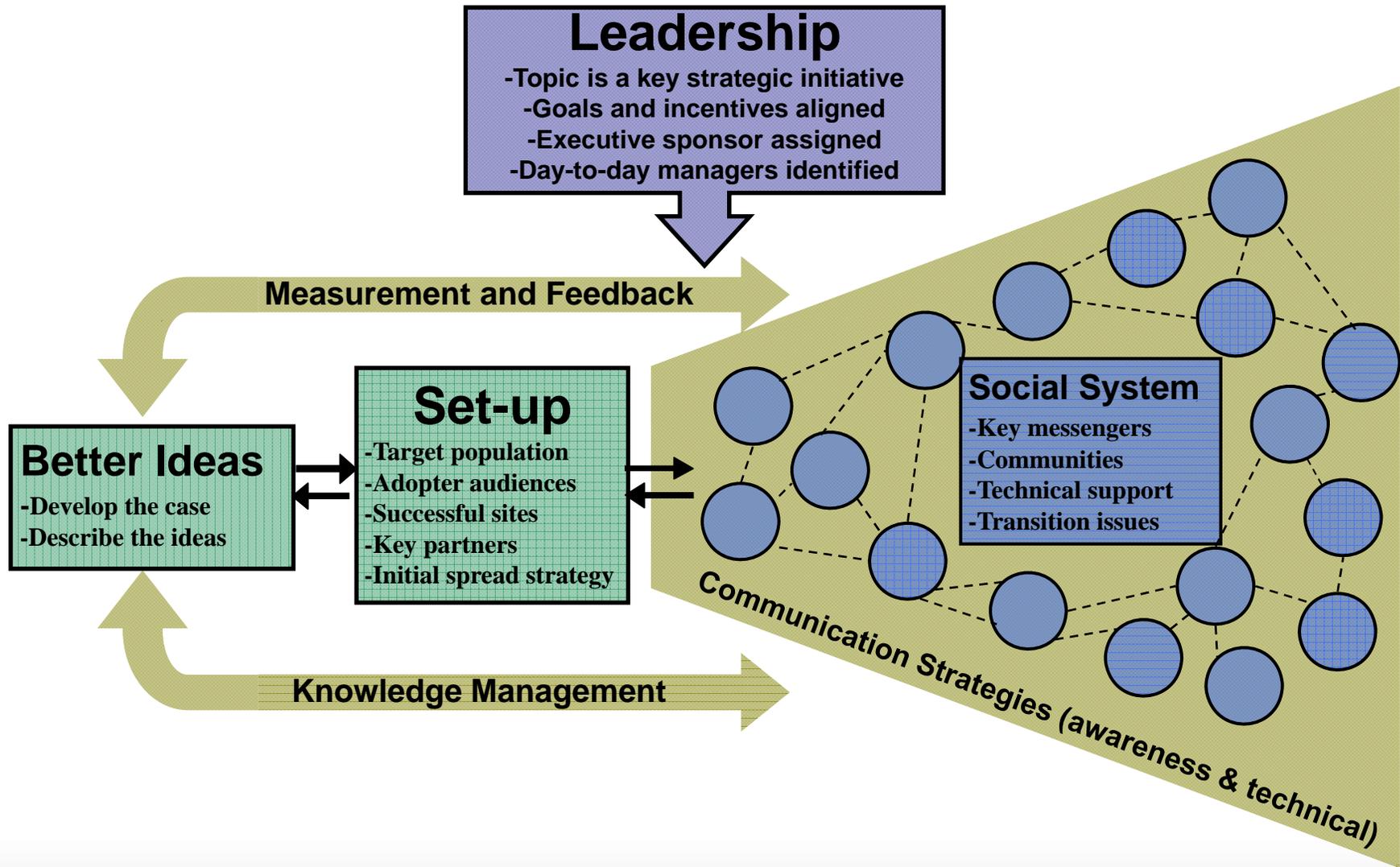
**COMMUNICATED**  
In a certain way



**Happens  
over time**

**Thru a social system**

# A Framework for Spread



# 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

## SHAPE BEHAVIOR



General  
Publications  
flyers  
newsletters  
videos  
articles  
posters

Personal  
Touch  
letters  
cards  
postcards

Interactive  
Activities  
telephone  
email  
visits  
seminars  
learning sets  
modeling

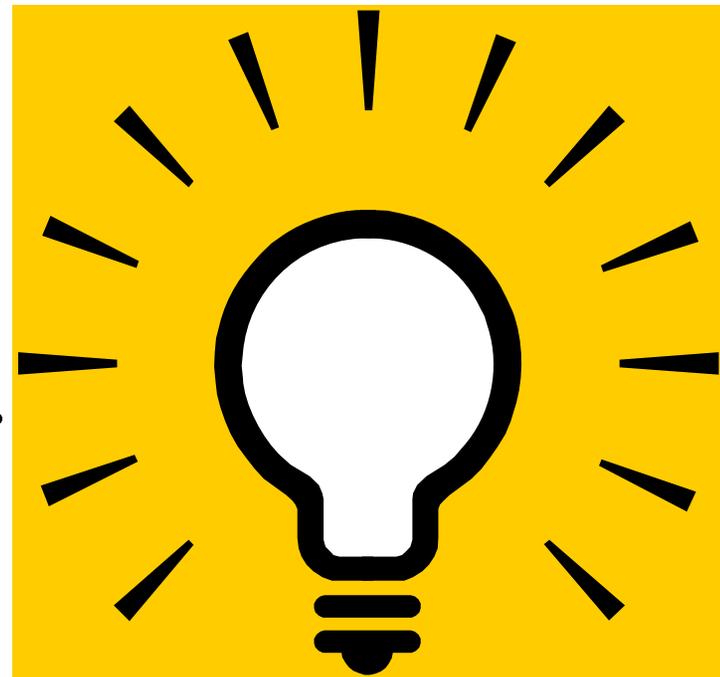
Public  
Events  
road shows  
fairs  
conferences  
exhibitions  
mass mtgs

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

# What's the Message?



- Relative advantage
- Compatibility
- Complexity
- Trialability
- Observability



Better Ideas

# Spread Tracker



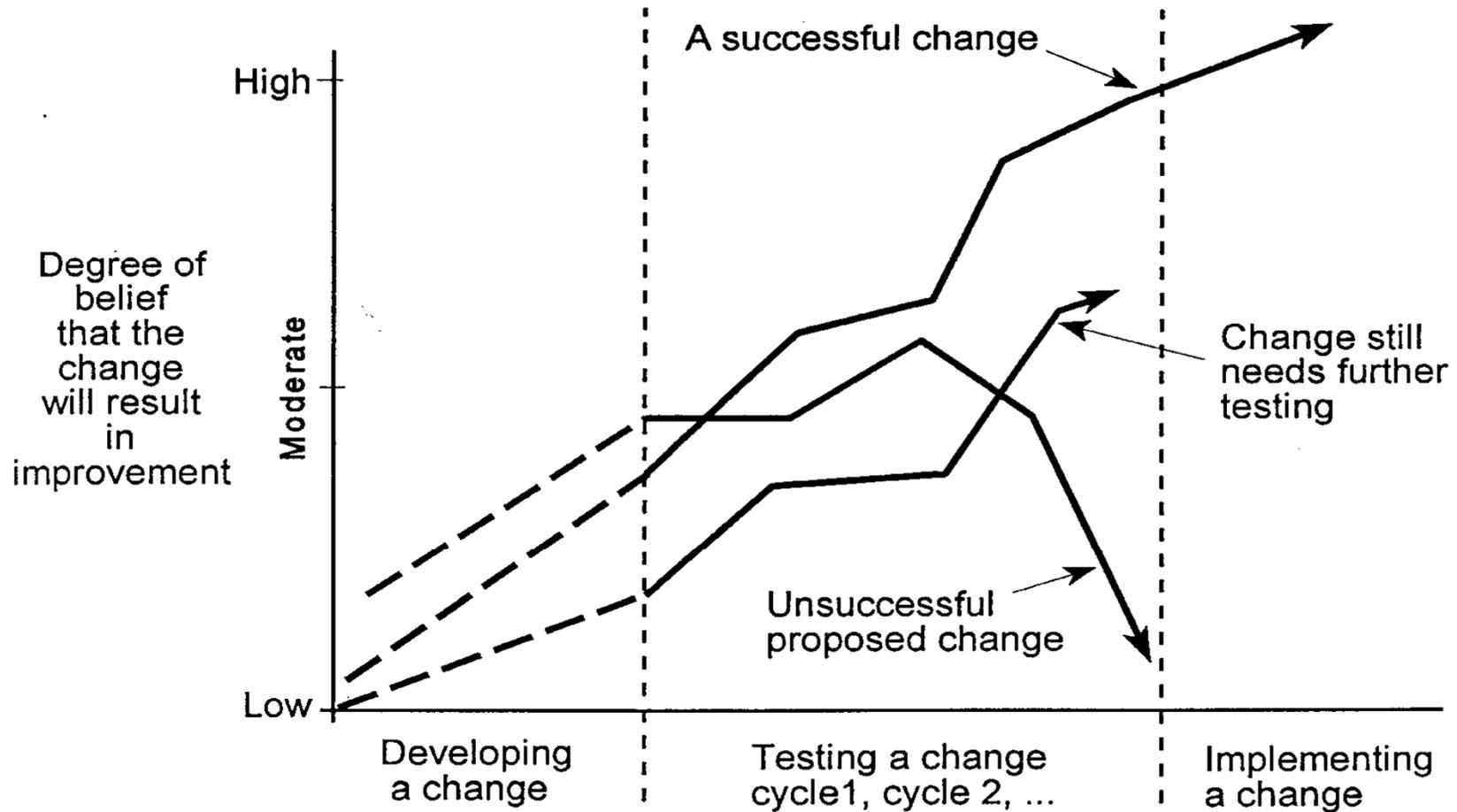
*A=Planning B=Start C=In Progress D=Fully Implemented*

|          | Pilot Unit<br>1 | Pilot Unit<br>2 | Spread<br>Unit 1 | Spread<br>Unit 2 | Spread<br>Unit 3 |
|----------|-----------------|-----------------|------------------|------------------|------------------|
| Change 1 | D               | C               | A                | B                | C                |
| Change 2 | D               | C               | B                | B                | C                |
| Change 3 | A               | C               | D                | A                | C                |
| Change 4 | D               | C               | B                | A                | B                |
| Change 5 | C               | A               | C                | C                | D                |
| Change 6 | C               | D               | C                | C                | A                |
| Change 7 | C               | D               | A                | C                | A                |
| Change 8 | C               | B               | A                | C                | D                |

|                                      | <b>Building Will</b>  | <b>Developing Ideas</b>   | <b>Execution</b>   |
|--------------------------------------|---|---|--|
| <b>R&amp;D /<br/>Prototype Phase</b> |   | <b>Concept Design / Driver<br/>Diagram, Diagnostic<br/>Tools, Measures &amp;<br/>Design Targets,<br/>Prototype Testing Plan</b> |  |
| <b>Early Pilot<br/>Testing Phase</b> | <b>New Concepts and<br/>Innovative Ideas: focus<br/>on building will in the<br/>innovators and early<br/>adopters (need 8 to 10<br/>sites/orgs)</b> | <b>Promising Change Ideas<br/>(to reach the Aim /<br/>Design Targets)</b>   | <b>Testing Components of the<br/>Concept Design and<br/>Testing Clusters of<br/>Components (may need<br/>more R&amp;D)</b> |
| <b>Pilot Testing<br/>Phase</b>       | <b>Promising Results:<br/>focus on building will of<br/>the early adopters<br/>(need 25 to 50<br/>sites/orgs)</b>                                   | <b>Change Packages &amp;<br/>Measures</b>   | <b>Collaborative Learning<br/>(testing under a variety of<br/>conditions)</b>  |
| <b>Spread Phase</b>                  | <b>Success Stories: focus<br/>on will of the early<br/>adopters and early<br/>majority</b>  | <b>How-to Guides &amp;<br/>Protocols</b>  | <b>Collaborative Learning<br/>(BTS Model), Spread Model,<br/>Scale-up Model, Campaign<br/>Model</b>                        |
| <b>Full Scale</b>                    | <b>Policies and<br/>Regulations: focus on<br/>building will for the late<br/>majority and laggards<br/>(All)</b>                                    | <b>How-to Guides &amp;<br/>Protocols</b>  | <b>Policies, Regulations and<br/>Payment Reform + Spread<br/>Resources and Models</b>                                      |



# Degree of Belief that Changes Will Result in Improvement



*The Improvement Guide, page 97*

2011 MHS Conference

# Thank You and More Information



- IHI: [www.ihl.org](http://www.ihl.org)
- The Improvement Guide, 2<sup>nd</sup> Edition, Langley, et al, John Wiley & Sons, 2009
- IHI White Papers:  
<http://www.ihl.org/IHI/Results/WhitePapers/>
  - 3. The Breakthrough Series
  - 11. A Framework for Spread
  - 17. Planning for Scale
- Guide to Idealized Design:  
<http://www.ihl.org/IHI/Topics/Improvement/ImprovementMethods/Literature/AGuideToIdealizedDesign.htm>