Designing and Managing Improvement for Results

By Gareth Parry, PhD & David M. Williams, PhD

Faculty

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Description and Objectives

Applying improvement methods readily leads to great plans for improvement initiatives, but these plans cannot be implemented until colleagues reach a common understanding. This session will provide practical tools for putting an improvement plan into action. Participants will learn how these tools align with five core design components: setting an aim, defining a change theory and strategy for execution, identifying a measurement feedback system, and a plan to share learning.

Objectives
• Design a proper plan for an improvement initiative
• Use practical tools for managing the execution of the plan and the work
• Create a method for sharing key learnings from their work

Agenda

- Intro – 5 mins
- Aims – 10 mins
- Content Theory – 15 mins
- Execution Theory – 15 mins
- Measures – 10 mins
- Dissemination – 10 mins
- Discussion – 10 mins
Definition of Improvement Science

The science of improvement applies system thinking, understanding variation, psychology of change, and the theory of knowledge to develop, test, implement, and spread changes to improve the performance of process and organizations. The application of this science is always done with expert subject knowledge, incorporating a set of improvement methods and tools empirically developed from previous applications of the science.

Science of Improvement rooted in System of Profound Knowledge

A Model for Learning and Change

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?

Core Component

1) Goals
   Aim Statement

2) Content Theory
   Driver Diagram or Change Package

3) Execution Theory
   Logic Model

4) Data Measurement & Learning
   Measurement Plan

5) Dissemination
   Dissemination Plan

Five Core Components: The Model for Improvement

Core Component

1) Goals
   *Aim Statement*

2) Content Theory
   *Driver Diagram or Change Package*

3) Execution Theory
   *Logic Model*

4) Data Measurement & Learning
   *Measurement Plan*

5) Dissemination
   *Dissemination Plan*

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Core Component 1: Aim Statement

- **Aspirational aims** are stretch goals used to inspire.
  - Examples: 100,000 Homes Campaign; Equitable care for all

- **Achievable goals** are measurable targets believed to be achievable during a project's timeframe.
  - Answers “What are we trying to accomplish?”
  - Captured in “aim statements”
Constructing an Aim Statement

“Hope is not a plan;
Some is not a number;
Soon is not a time”

A strong aim statement includes:

- **Numeric goals** for outcomes (how much)
- **Timeframe** (by when)
- **Boundaries** of the system being improved (where, who)

*Example:* By Oct. 1, 2015, Most Excellent Health System will reduce hospital readmissions by 25 percent through engaging 10 cross-continuum teams of hospital, primary care, and post-acute providers.

Aims in Practice

We know what we are doing (and not doing)
Aims in Practice

Supports planning backwards (what needs to get done when)

Aims in Practice

What does scale look like?
Aims in Practice

What does good look like?
Requires different system!

Image Source: WE Deming, New Economics, Ch. 2, Fig 5

Five Core Components: The Model for Improvement

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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?
Content Theory (The What)

*What changes will be made that result in improved outcomes?*

- Content theory describes the processes or behaviors that, if adopted, we predict will improve patient outcomes.
- A driver diagram is a visualization of this shared theory, depicting areas in the system that improvement teams can modify to drive improvement.

**Figure A.1 Complete List of Change Concepts**

1. Eliminate things that are not used
2. Eliminate multiple entry
3. Reduce or eliminate overkill
4. Reduce controls on the system
5. Recycle or reuse
6. Use substitution
7. Reduce classifications
8. Remove intermediaries
9. Match the amount to the need
10. Use Sampling
11. Change targets or set points
12. Synchronize
13. Schedule into multiple processes
14. Minimize handoffs
15. Move steps in the process close together
16. Find and remove bottlenecks
17. Use automation
18. Smooth workflow
19. Do tasks in parallel
20. Consider people as in the same system
21. Use multiple processing units
22. Adjust to peak demand
23. Match inventory to predicted demand
24. Use pull systems
25. Reduce choice of features
26. Reduce multiple brands of the same item
27. Give people access to information
28. Use proper measurements
29. Take care of basics
30. Reduce de-motivating aspects of pay system
31. Conduct training
32. Implement cross-training
33. Invest more resources in improvement
34. Focus on core process and purpose
35. Share risks
36. Emphasize natural and logical consequences
37. Develop alliances/cooperative relationships
38. Listen to customers
39. Coach customer to use product/service
40. Focus on the outcome to a customer
41. Use a coordinator
42. Reach agreement on expectations
43. Outsource for "Free"
44. Optimize level of inspection
45. Work with suppliers
46. Reduce setup or startup time
47. Set up timing to use discounts
48. Optimize maintenance
49. Extend specialist’s time
50. Reduce wait time
51. Standardization (Create a Formal Process)
52. Stop tampering
53. Develop operation definitions
54. Improve predictions
55. Develop contingency plans
56. Sort product into grades
57. Desensitize
58. Exploit variation
59. Use reminders
60. Use differentiation
61. Use constraints
62. Use affordances
63. Mass customize
64. Offer product/service anytime
65. Offer product/service anywhere
66. Emphasize intangibles
67. Influence or take advantage of fashion trends
68. Reduce the number of components
69. Disguise defects or problems
70. Differentiate product using quality dimensions
71. Change the order of process steps
72. Manage uncertainty, not tasks

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**Completed driver diagram / FIGURE 1**


“Ideas for your Theory?”, Quality Progress, Bennett and Provost, ASQ, Milwaukee, July, 2015
What’s Next?
Prioritize Your Drivers!

Limitations of resources, attention, and will usually mean we cannot work on everything.

- Which drivers do we believe will deliver the biggest impact?
- Which ones will be easiest to work on? (Factors include personnel, culture, resources)
- What is our current level of performance on these drivers?
- What is your level of ambition?

What is your level of ambition?

Adapted from Richard Scoville.
Oral Health Clinic Project

At OHC over 16 months, we will
1) increase the % of pts completing
caries control within 2 month by
X% and
2) decrease the % of “risk
management” pts who need
treatment for new caries by Y%
(active pt = 18+ w/ >=1 visit in past 2
years, not withdrawn)

Source: Richard Scoville, Ph.D.

Oral Health Care Prioritisation

Process WELL
defined

Process NOT
defined

Low Impact

High Impact
## What’s The Status of This Driver/Process?

<table>
<thead>
<tr>
<th>LEVEL</th>
<th>DEFINITION</th>
<th>APPROXIMATE RELIABILITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Driver is not defined or status is unknown</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>There is an informal understanding about the driver by some of the people who do the work. No widely recognized or formal written description of the driver.</td>
<td>50%</td>
</tr>
<tr>
<td>2</td>
<td>Driver is documented. Driver description includes all required participants (including families where appropriate). The driver is understood by all.</td>
<td>80%</td>
</tr>
<tr>
<td>3</td>
<td>The driver is well-defined, and enacted reliably. Quality measures are identified to monitor outcomes of the driver and may be in use by few/some.</td>
<td>90%</td>
</tr>
<tr>
<td>4</td>
<td>Ongoing measures of the driver are monitored routinely by key stakeholders and used to improve the driver. Documentation is revised as the driver is improved.</td>
<td>95%</td>
</tr>
<tr>
<td>5</td>
<td>Driver outcomes are predictable. Drivers are fully embedded in operational systems. The driver consistently meets the needs and expectations of all families and/or providers.</td>
<td>99%</td>
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## What Is It’s Predicted Impact?

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<tr>
<td>0</td>
<td>This driver has no impact or does not apply to our system of care.</td>
</tr>
<tr>
<td>1</td>
<td>This driver has only minimal or indirect impact on patient services and outcomes.</td>
</tr>
<tr>
<td>2</td>
<td>This driver will improve services for our patients, but other drivers are more important.</td>
</tr>
<tr>
<td>3</td>
<td>This driver has significant impact on outcomes for our patients.</td>
</tr>
<tr>
<td>4</td>
<td>This is necessary for delivering patient services. It has a major, direct impact on the outcomes.</td>
</tr>
<tr>
<td>5</td>
<td>This driver is absolutely essential for achieving results. Improvement in this driver alone will have a direct, immediate impact on outcomes.</td>
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Results of OHC Prioritisation

Process WELL defined

Process NOT defined

Low Impact

High Impact

Which cell should they focus on?

High impact, not well defined processes are key targets for improvement!
Five Core Components: The Model for Improvement

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Execution Theory (The How)

*What will the improvement initiative do that will lead teams to adopt process changes?*

Execution theory describes the rationale for how the experience provided by the improvement initiative, the improvement methods taught and other activities delivered, and the learning applied leads to improvement in the process or outcome measures.
Why describe your execution theory?

- Clarifies theory and strategy
- Gets everyone on the same page
- Increases intentionality and purpose, sets priorities
- Identifies measures that matter to us
- Helps identify standard work
- Allows for comparison across programs
- Many funders require this

Using Logic Models

Source: WK Kellogg Foundation, Logic Model Development Guide

### Inputs
- What resources will be used to support the project?

#### HIAE
- Senior Sponsor: Clinical Director
- Manage logistics
- Finance the Collaborative
- Electronic questionnaire

#### Clinical Training
- Attend LS and Webex calls
- Site visits for the 28 hospitals

#### Clinical Experts
- Site visits
- Develop driver diagram, change package, measurement strategy, dissemination plan

#### ANS
- Senior Sponsor: Select and invite hospitals
- Discuss the regulatory environment with the ANS
- Convene stakeholders to discuss DD, change package and measures

### Activities
- What are you doing? (e.g. training, coaching, expert meeting)

#### Steering committee meetings to plan and execute and assess progress
- Inform results, successes and barriers
- Teams: Attend LS and Webex calls
- Upload data and monthly report
- Plan, test implement and report changes
- Inform results, success and barriers
- Steering committee meetings to plan and execute and assess progress
- Develop driver diagram, change package, measurement strategy, dissemination plan
- Site visits
- Site visits
- ANS: Select and invite hospitals
- Discuss the regulatory environment with the ANS
- Convene stakeholders to discuss DD, change package and measures

### Outputs
- What is your reach and what are the products of the activities? (e.g. 20 leaders trained in X topic)

#### DD, change package, measurement strategy document agreed by stakeholders
- Newsletters and reports
- 28 hospitals trained in the MFI
- 5 LSs
- 17 Webex calls
- 28 hospitals visited by HIAE to instruct about adequate infrastructure to assist natural birth
- Newsletters and reports

### Short-Term Outcomes
- What changes in attitude, knowledge, skill will be needed to move forward?

#### IF... THEN
- Providers apply best-practice in maternal care
- Build skill in using MFI and measurement
- Teams using QI methods to improve processes of maternal care
- Inclusion of engagement of patients & families
- Effective use of MFI in all areas

### Mid-Term Outcomes
- Did behavior and/or process measure change?

#### IF THEN
- Hospitals actively working on safety and quality in maternal care reducing morbidity for mothers and babies
- Teams using QI methods to improve processes of maternal care
- Improve experience of care – natural birth as a positive and desirable experience
- Hospitals actively working on safety and quality in maternal care reducing morbidity for mothers and babies
- Increase in engagement of patients & families
- Improve experience of care – natural birth as a positive and desirable experience

### Long-Term Outcomes
- Did the outcome improve?

#### IF THEN
- Hospitals actively working on safety and quality in maternal care reducing morbidity for mothers and babies
- Improve experience of care – natural birth as a positive and desirable experience
- Hospitals actively working on safety and quality in maternal care reducing morbidity for mothers and babies
- Increase in engagement of patients & families
- Improve experience of care – natural birth as a positive and desirable experience

### Contextual and External Factors:
Brazil has the highest C-section rate in the planet. In the last decade the C-section rate increased despite the efforts of ANS, the regulatory Agency for the private sector: published rules and recommendations – no effect!!!! Before 2012 no demonstrations to reduce CS rates private sector was acknowledged. First Pilot 2012 – Unimed Jaboticabal from 0% to 40% NB in 9 months using MFI, 3 more cities with same results. Public prosecutor sued ANS. ANS ask for IHI help. Obstetrician don’t see the high C-section rate as a problem.

### What do we need to manage?

#### Improvement Team Meetings
- Reporting
- Milestone Review
- Learning Events
- Coaching
- Planning for Spread & Scale

#### Production of Stuff
- Reporting
- Milestone Review
- Learning Events
- Coaching
- Planning for Spread & Scale
### Five Core Components: The Model for Improvement

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### Data, Measurement & Learning

1. Do we have measures for all goals?
2. When and how will various data be collected, including quantitative and qualitative data?
3. How often will data be analyzed? By what methods?
4. How will we use data to inform course corrections?
5. What do we want to learn over time?
<table>
<thead>
<tr>
<th>Types of Measures</th>
<th>Description</th>
<th>The Surgical Sight Infection FOM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outcome</td>
<td>The voice of the customer or patient. How is the system performing? What is the result?</td>
<td>Surgical Sight Infection Rate</td>
</tr>
<tr>
<td>Process</td>
<td>The voice of the workings of the process. Are the parts or steps in the system performing as planned.</td>
<td>Percentage of appropriate prophylactic antibiotic selection. Percentage of on time administration of prophylactic antibiotics. Percentage of a safety climate score great than 4.</td>
</tr>
<tr>
<td>Balancing</td>
<td>Looking at a system from different directions or dimensions. What happened to the system as we improved the outcome and improvement measures?</td>
<td>Patient satisfaction Cost per case</td>
</tr>
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System of Feedback

![Diagram of System of Feedback]

- **Measure Types**
  - O = Outcome Measure
  - P = Process Measure
  - P_b = Balance Measure
  - S = Process Step Measure

Source Brandon Bennett, Improvement Science Consulting
Display using time series charting


Annotated Time Series

Medication Errors per Day

- Test IV Protocol
- 100% IV Protocol
- Formulary changes
- Floor mixing eliminated
- Single concentrations on units

Average MED

Month


Jun-99 | Jul-99 | Aug-99 | Sep-99 | Oct-99 | Nov-99 | Dec-99 | Jan-00 | Feb-00 | Mar-00 | Apr-00 | May-00 | Jun-00 | Jul-00

3.0 | 3.5 | 4.0 | 4.5 | 5.0 | 5.5 | 6.0 | 6.5
Assessing Progress on a BTS Collaborative
Family of Measures (a small multiple)
Average Waiting Times: All Primary Care Clinics in VA System

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Dissemination Plan

“It depends. If I am to speak ten minutes, I need a week for preparation; if fifteen minutes, three days; if half an hour, two days; if an hour, I am ready now.”

The Framework

Leadership, communication, social networks, culture of urgency and persistence

Learning systems, data systems, infrastructure for scale-up, human capacity for scale-up, capability for scale-up, sustainability
Start Small, Scale up Rapidly with Change Package

<table>
<thead>
<tr>
<th>Total Pop’n:</th>
<th>350,000</th>
<th>5 million</th>
<th>11 million</th>
<th>22 million</th>
</tr>
</thead>
<tbody>
<tr>
<td>Under 5 Pop’n:</td>
<td>60,000</td>
<td>500,000</td>
<td>1.7 million</td>
<td>3.3 million</td>
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<table>
<thead>
<tr>
<th>Wave 1:</th>
<th>Wave 2:</th>
<th>Wave 3:</th>
<th>Wave 4:</th>
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<tbody>
<tr>
<td>months</td>
<td>months</td>
<td>months</td>
<td>months</td>
</tr>
<tr>
<td>9 – 22</td>
<td>23 – 63</td>
<td>24 – 89</td>
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|-----------|----------|-----------|----------|----------|

Start-up: months 1 – 8

No of. QI Teams: 30 258 350 >1,046

Other Examples of Spreading Knowledge

50