Building an Integrated Approach to Lean and the Model for Improvement

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The presenters have nothing to disclose

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"Do not seek to follow in the footsteps of the old masters. Seek instead what the old masters sought."

–Basho (1644-1694)

Describing IHI-QI
The Model for Improvement

- **What it’s NOT:**
  - The (entire) IHI-QI approach to improvement
  - A project plan
  - Engineering
  - A ‘toolkit’
  - A collaborative

- **What is IS:**
  “A heuristic for learning from experience and guiding purposeful action.”

- At all levels of scale...
“An algorithm for achieving an aim at any scale”

AIM: What are we trying to accomplish?

MEASURES: How will we know if a change is an improvement?

CHANGE: What changes can we make that will result in improvement?

Knowledge for Improvement

Subject Matter Knowledge:
Knowledge basic to the things we do in life. Professional knowledge.

QI:
Combining subject matter knowledge with improvement science to develop effective changes.

Profound Knowledge
The interaction of the theories of systems, variation, knowledge, and psychology.
“All Improvement Takes Place Project by Project. There is no such thing as improvement generally. All improvement takes place project by project and in no other way.

As used here, “improvement project” means “a chronic problem scheduled for solution.” Since improvement project has multiple meanings, the company glossary and training manuals should define it.”

Systems Theory

“Without theory, there are no questions; without questions, there is no learning.”

W. Edwards Deming
The New Economics

Domains of Profound Knowledge

• Appreciation of a System
  “System” = an interdependent group of items, people or processes working together to a common purpose

• Psychology
  How do people respond to change? How can we encourage constructive change and commitment to excellence? How does human perception and decision making shape process design?

• Understanding Variation
  How should we interpret and act on the variation that continually occurs in every system?

• Theory of Knowledge
  How can we learn to make valid predictions about the impact of planned changes?
Theory of Improvement

Outcomes

Primary Drivers

Secondary Drivers

P1 The system of care reliably identifies patients with advanced illness

Reliable process for early identification of patients with advanced illness via standard criteria

Patients of the NSLIJ system with advanced illness reliably receive care that

- Is trustworthy
- Aligns with their needs & preferences
- Avoids unneeded or undesired tests and treatments
- Engages with patients and families as respected partners in care
- Encourages patient and family responsibility

Measure Concepts:

- Patient/family satisfaction
- ICU days in last X months of life
- Acute admissions in last X months
- Cost of care in last X months
- Patient/family satisfaction

P2 Informed patient preferences and hopes are understood by families and clinicians

Informed, recurring Conversations (2) occur at critical times (starting early) and include key elements

Preferences are reliably documented and communicated multiple ways

Care is provided by identified (3) interdisciplinary team, with ‘navigator’ or care manager for pt/fam and PCP ‘in drivers seat’

Home, family caregivers are assessed and supported

Team provides curative and palliative care

P3 Services align with patients’ needs and preferences: accessible, appropriate, respectful, coordinated across time and place

Care is continuous across settings, mediated through shared information (both manual and Information Technology platform)

Services, advice and facilities available to patients for appropriate care 24/7

Business models are explicit and include supporting care and services outside the hospital

P4 Financial and payment arrangements support the aim

Services, advice and facilities available to patients for appropriate care 24/7

Business models are explicit and include supporting care and services outside the hospital

Changes

Elements & structure of Conversations, e.g., Presence-eliciting, Planning, Guidance cycle

Advanced directives, personal health records, electronic sharing of patient data

Elements included and selected for Conversations

Process to assemble individual care team and communicate to families

Care is provided by identified (3) interdisciplinary team, with ‘navigator’ or care manager for pt/fam and PCP ‘in drivers seat’

Team provides curative and palliative care

Source: The Improvement Guide p. 359

Figure A.I 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. Us 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 options
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 pay attention
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 inspections
45. Work with suppliers
46. Reduce setup time and startup
47. Set up timing to use discounts
48. Optimize maintenance
49. Extend specialist’s time
50. Optimize inspection
51. Stop tampering
52. Standardization (Create a Formal Process)
53. Improve predictions
54. Develop operation definitions
55. Develop contingency plans
56. Sort product into grades
57. Desensitize
58. Exploit variation
59. Use estimates
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

Change concepts compatible with Lean production
Building Belief

Tests increase in scope and scale. Learning from data

Change ideas, suggestions, intuition

System changes that will result in improvement

IHI-QI Roadmap

- Plan the Initiative
  - Content Theory and Aim
  - Execution Theory and Plan
- Develop, test, and pilot changes
- Implement, sustain and control
- Spread throughout the System
- Evaluate results and ‘pass forward’
Standard Approach: Scale Up & Spread

- Prerequisites for change
- Develop a change
- Test under a variety of conditions
- Implement a change
- Embed in daily operations
- Spread throughout the system

Describing Lean
Some Healthcare QI Milestones

Frederick Taylor
- Experiments in workplace
- Process analysis, measurement
- Top-down design: unskilled labor
- Japanese trainees visit U.S.

Henry Ford
- Assembly line
- Standard product
- Vertical integration

Walter Shewhart
- At Western Electric
- Statistical process control
- PDSA cycle

Walter Shingo
- Toyota Motors founded 1937
- TPS rapid turnover
- Kanban, andon, JIT, 'pull', Kaizen
- Workers solve problems

Joseph Juran
- Student of Shewhart
- Quality as a system of management
- Lectures to JUSE 1954

Edward Deming
- Student of Shewhart
- Statistician/mathematician
- SPC lectures in Japan 1950

Ford Motors
- Invests in SPC
- Vertical integration
- Mazda Lean Lessons

Deming Consults in U.S.
- APRI: Tom Nolan, Lloyd Provost are QI mentors

Taiichi Ohno
- Toyota Production System 1950s-70s
- Kanban, andon, JIT, 'pull', Kaizen
- Workers solve problems

Shigeo Shingo
- TPS rapid turnover
- Kanban, andon, JIT, 'pull', Kaizen
- Workers solve problems

Kiichiro Toyoda
- Toyota Motors founded 1937
- TPS rapid turnover
- Kanban, andon, JIT, 'pull', Kaizen
- Workers solve problems

Virginia Mason, Seattle
- Adopts Lean methods
- "Virginia Mason Production System 2000"

Don Berwick founds IHI
- "Curing Healthcare 1984"
- "API: Tom Nolan, Lloyd Provost are QI mentors"


The Lean Ideal (Aim)
- The output is defect free.
- The product or service is delivered in response to customer need (pull, on demand).
- The response is immediate.
- Products or services are provided 1x1 in the unit size of use [i.e. tailored to the identified needs of the consumer –the authors].
- Work is done without waste.
- Work is done safely.
- Work is done securely.

Two Systems

Deming: “By What Means” the ideal?
• Production System
• Management System

The Production System

Two fundamental operating principles to achieve the ideal
• **Jidoka**: Highlight and visualize problems—stop when defects are detected, continuous inspection at all levels.
• **Just In Time**: each process produces only what is needed by the next process in a continuous flow.

http://www.toyota-global.com/company/vision_philosophy/toyota_production_system/
Concepts To Support Lean Production

- Value versus waste
- Kaizen
- Value stream:
  - Production stream: customer desire ⇝ production ⇝ consumption
  - Information flows to control production
- A few Lean change concepts
  - Standard work • Flow • Load leveling • Poke-yoke • Kanban • Andon • Visual control

Value Stream Map of Current State: Phlebotomy

Source: AHRQ Publication # 05-0108-EF
Waste = ‘Negative Value’

Source: Virginia Mason Health System

Lean Production Roadmap

- Specify value in the eyes of the customer
- Map the value stream
- Eliminate waste and variation
- Make value flow at the pull of the customer
- Continuously improve in pursuit of perfection

Management System

Ideal management system to support value-based production:
- Leader standard work
- Visual controls
- Daily accountability and planning
- Respect for people who do the work
- Unity of purpose


Source: Virginia Mason Health System
Standard Work for Managers

Managers have standard work processes, primary role as coaches for front line staff. Improvement is integrated with standard work.
Daily Management

Comparing Lean and IHI-QI
For IHI-QI, What is Lean?

“Lean is, in a sense, a complex and deep ‘application’ of Profound Knowledge, a particular deployment of improvement in the realm of production systems... The TPS package of interdependent change concepts ... represents a ‘template’ for improving [production] systems, with a set of predefined aims, change concepts, implementation roadmap, and tools.”

Scoville & Little 2014 - Comparing Lean and QI p. 18

Key Similarities

- Purpose of the system guides improvement: Aim / Value
- Change Concepts
- Continuous Quality Improvement at the front line
- Simplified heuristic for problem solving: MFI, A3
- Measured feedback
- Emphasis on analytical, blame-free culture
Key Differences

- Organizing for improvement
  - IHI-QI: Improvement based in projects & initiatives
  - Lean: Improvement focuses on production and management standard work
- Approach to reducing variation (‘what do think of first?’)
  - IHI-QI: SPC, distinguish common from special causes
  - Lean: Standardized work with kaizen
- Role of leaders
  - IHI-QI: Sponsors, resources, accountability
  - Lean: Coaching, standard work, accountability

Complementary Benefits

**IHI-QI**
- Go to gemba
- “Bring the improvement initiative to the workplace”
- Management system improvement is essential for sustainable results

**Lean**
- Key concepts (e.g. “value”, “flow”) must adapt to healthcare.
- Diverse conceptual frameworks offer valuable change concepts for Lean healthcare
- Project formats as a method for Lean deployment
Waste = ‘Negative Value’

**Dimensions of Care Value**

- Safe
- Effective
- Efficient
- Timely
- Pt Centered
- Equitable

**Overproduction**
- Producing more than required, whether in quantity, volume, time, or resources

**Transportation**
- Waste associated with moving people, equipment, or information in excess that is not productive

**Waste**
- Waste is anything that is done purposefully or unnecessarily that adds no value to the healthcare system

**Wasteful Health Care**

**Unsafe**
- Care that causes harm
- Infections
- Falls and injuries

**Ineffective**
- Care that does not conform to protocol
- Unnecessary care
- Insufficient care

**Untimely**
- Waiting for information
- Scheduling problems
- Time for people, equipment

**Inefficient**
- Unnecessary tests, procedures
- Unnecessary transport or motion
- Inspection
- Reports that are not used
- Readmissions

**Inequitable**
- Care based on ability to pay
- Care is based on ethnicity, language, culture

**Not-Pt-Centered**
- Unwanted care
- Care is disrespectful
- Patients not informed
- Families not included
- Unsuitable care
The Model for Improvement

AIM: What are we trying to accomplish?

MEASURES: How will we know if a change is an improvement?

CHANGE: What changes can we make that will result in improvement?

“Deploy a Lean production system in our multi-site health care system.”

Sustained adoption of Lean production and management systems

Improvement in process, outcome metrics

Use a BTS collaborative format focused on process flow, management system

Questions
Thank You!

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