Continuous Improvement: Applying Lean Principles in Healthcare

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Continuous Improvement in Healthcare

Why?

• Over 210,000 patients / year die as a result of preventable medical errors according to a 2013 study by the Journal of Patient Safety

• The Institute of Medicine reports that the US healthcare system wastes 30 cents / dollar spent - $750 billion annually

• Labor productivity in US healthcare *decreased* by 0.6% per year between 1990 and 2010. Over the same period of time, labor productivity in US manufacturing *increased* by 4.7% per year

• The World Bank reports that the US spends 17.9% of its GDP (2012) on healthcare, 80% higher than Canada

Despite our best efforts, healthcare in the United States is in dire need of improvement
Continuous Improvement in Healthcare
Overview of Keynote

• Systems approach to continuous improvement in healthcare: corollary to leadership in cancer care

• Continuous improvement background, current state

• Applications of Lean to cancer care

• Closing thoughts: some guiding principles to systems thinking
Continuous Improvement in Healthcare  
A Systems Approach: Corollary to Cancer Care

• Hypothesis: Michigan Cancer Consortium’s leadership in cancer care requires building and maintaining systems that improve the care of patients

• Systems, to stay relevant, must be improved continuously

• Continuous improvement, like cancer care, is fundamentally a set of systems, grounded in correct principles, that improve processes

Let’s Start With Some Background…
Continuous Improvement

Background

• Continuous Improvement: a long, varied history
  • Early work: Walter A. Shewhart, W. Edwards Deming
    – statistical process control, PDCA
  • Toyota / Toyota Production System (Lean)
  • Six Sigma
  • Others: QFD, TQM, Quality Circles

• Modern practice of the Lean generally espouses these four systems:
  • Strategy Deployment – aligning resources to top strategies
  • Visual Management – facilitating workplace management
  • Daily Problem Solving – engaging all team members
  • Standard Work – creating the foundation for improvements

• Some additional Lean tools and concepts: waste Vs value, kaizen, value stream mapping
Continuous Improvement Background

Tools Vs Systems

• Tools – exclusive implementations of continuous improvement methodologies litter the landfills of history. Why?
  • Six Sigma at Motorola, GE
  • Lean at US automotive manufacturers

• Is healthcare any different? Is cancer care?

• For systems to maximize effectiveness, they and the tools they utilize should be:
  • Inter-related
  • Synergistic
  • Based on correct principles
  • Supportive of right behaviors

Tools support systems that encourage desired behaviors based on correct principles
Continuous Improvement Systems Application to Cancer Care

• Some Lean systems, concepts and tools to consider for application to improving cancer care

  • Kaizen and Daily Problem Solving in cancer clinical trials

  • Waste Vs Value and Value Stream Mapping in reducing barriers to cancer genetic services

  • Standard Work and Leadership Standard Work in cancer screening programs

  • Value Stream Mapping and Transactional Lean in optimizing survivorship journeys
Continuous Improvement Systems
Kaizen and Daily Problem Solving

• Consider some thoughts from Steven Spear and H. Kent Bowen, long time students and experts in Lean, from their seminal 1999 paper “Decoding the DNA of the Toyota Production System”

• In cancer care, let’s discuss how these rules apply to involving patient families and advocates

• Starting with some background…

The Four Rules

The tacit knowledge that underlies the Toyota Production System can be captured in four basic rules. These rules guide the design, operation, and improvement of every activity, connection, and pathway for every product and service. The rules are as follows:

Rule 1: All work shall be highly specified as to content, sequence, timing, and outcome.

Rule 2: Every customer-supplier connection must be direct, and there must be an unambiguous yes-or-no way to send requests and receive responses.

Rule 3: The pathway for every product and service must be simple and direct.

Rule 4: Any improvement must be made in accordance with the scientific method, under the guidance of a teacher, at the lowest possible level in the organization.
What is kaizen?

Continuous Improvement… “Make for the better”
- Go to the GEMBA (where the action is)… clinical trial, genetic testing lab, CT screening suite, etc.
- Try-storming… don’t let “perfect” get in the way of “better”
- Ideas are cheap and endless

Typical Kaizen Events
- ½ - 5 days long. Depends what problem we are trying to solve…
- Empowered team of people who “do the work”
- Tight scope, and action-oriented

“Fast And Crude Is Better Than Slow And Fancy”
Kaizen events with patient families, advocates

• Example: Spectrum Health, Grand Rapids, MI, courtesy of Deb Sprague, Program Manager, Patient and Family Services

• Patient Family Advisory council engaged families in the kaizen event to design a new clinic space that maximize patient comfort

Post – kaizen event, engagement in the Daily Problem Solving system sustains the results and continues the cycle of continuous improvement.

Let’s look at that system…
Why Do We Need the Daily Problem-Solving System?

Managers… *know general data*

“We lost 4% productivity in April”
“Turnaround-time was 95.6% last week”

Staff… *know the facts*

“I lost two hours today because I couldn’t log-in to the system”
“The centrifuge I use is making a strange vibration”

Friedrich August Von Hayek: "*We need decentralization because only thus can we insure that the knowledge of the particular circumstances of time and place will be promptly used.*"
Idea Generation… *How We Get the Facts*

- Simple, visible way to identify problems, opportunities, and ideas
- Staff-initiated
- Supported by manager
- Prioritized by team during team ‘huddle’

Method to highlight opportunities… and engage staff
Post Kaizen Event, Process Improvement Continues

**IMPROVEMENT OPPORTUNITY**
Name: Candi  Date: 5/8/12
What is the Problem? People cannot tell when call center staff are on the phone, causing frequent interruptions during customer calls
Why is it Happening? Headsets are always on their heads
Potential Solution: Buy headsets with indicator lights
Impact (circle one): Patient  People  Quality  Innovation  Stewardship

Owner: Linda
Who  What  By When
Investigate options. 5/17/12
Pilot solution. 5/31/12
Buy headsets. 6/6/12
Done Date: 6/6/12

1. Document problem & potential solution
2. Discuss and prioritize during team huddle
3. Take action

Idea slips keep problems & ideas visible

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Prioritizing Opportunities During Huddles

“just do it”

Project

Kaizen event

Focus above the first

IMPROVEMENT OPPORTUNITY
Name: Tom L Date: 1/13/13

What is the Problem?
Month-end reports have been late 2 of the last 3 months

Why is it Happening?
No written process to generate and no back-up person

Potential Solution:
Write the process down and train a back-up person

Impact (circle one): Patient People Quality Innovation Stewardship

Owner:
Who What By When

Done Date:

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Continuous Improvement Systems
Waste Vs Value and Value Stream Mapping

• The most important concept in Lean is the identification and elimination of waste

• An important tool to visualize waste is a Value Stream Map

• In cancer care, let’s discuss how this concept and tool apply to reducing barriers to cancer genetic services

• Starting with some background…

Common Wastes
• Waiting
• Transportation
• Discarded Knowledge
• Motion
• Inventory
• Defects
• Overproduction
• Over-processing
Adding Value & Eliminating Waste

Value-Added Activity
Any activity that changes the form, fit, or function of materials or information to meet customer requirements.
- OR -
Something customers are willing to pay for…

Non-Value Added Activity
Everything else!

Identify, Eliminate Non-Value Added Activity

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Value Adding

• Work can only be defined as “Value-adding” by the Customer

• **How long will you spend at the Hospital?**
  • Registration
  • Triage
  • Waiting
  • Pre Screen
  • Diagnosis

• **How long will you be at the Park?**
  • Ride the Rides
  • Wait in Line
  • Eat the Food
  • Play the Games

What is the ‘Value’?
What is a Value Stream?

Customer experiences this timeline

- Admission
- Rooming
- Labs
- MD, RN interventions
- Discharge

TOTAL VALUE STREAM

- A Value Stream shows all the tasks (Value and Waste) required to bring a product, service, or capability from start to customer delivery
- Value Streams go across functions
- Typical value-add time is 1-5%

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Value Stream Map Example:
Paul’s Annual Check Up

**Key Problems:**
- Silo’d operations (Administration, labs, primary care)
- Lab lead times
- Patient motion and transport

**TOTAL:**
- 57 minutes of value
- 17,358 minutes of waste
Value Stream Map Example:
Annual Check Up Future State

Key solutions:
• On site mini-lab for immediate results. Labs run concurrently with interview
• Single patient rooming, all functions performed in room

TOTAL:
55 minutes of value
26 minutes of waste
Waste Vs Value, Value Stream Mapping
Applied to Genetic Testing in Cancer Care

• What are some wastes that interfere with care when genetic testing is involved?
  • Waiting – for initial results, repeat test results
  • Transportation – for follow up visits to personalize the care with approved therapies, relevant clinical trials
  • Discarded Knowledge – unknown clinical data

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Waste Vs Value, Value Stream Mapping
Applied to Genetic Testing in Cancer Care

• Lean solution developed at BloodCenter of Wisconsin to reduce waste, increase value to the patient and care team: Next Generation Sequencing HemOnc Panel

• Report includes:
  • Positive biomarkers
  • Actionable biomarkers/pathways
    • Biomarker results summary
    • Sample relevant therapies
    • Sample clinical trials
    • Appendix of biological and clinical data

• Another example of a Lean solution: Novartis SIGNATURE Trial: assignment to clinical trial by biomarker or pathway activation, rapid enrollment, few geographical constraints.
Continuous Improvement Systems
Standard Work and Leadership Standard Work

- Application to cancer screening programs
- Recall Spear’s Rule #1
- The standardization of work is the basis for all continuous improvement efforts
- Standard work is not a new concept in healthcare… guidelines, protocols

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Continuous Improvement Systems
Leadership Standard Work

- Leaders can improve their effectiveness through the application of Standard work as well

- Example: Daily Status Sheet. 10 minute discussion between manager and supervisor to assess organization’s health for the coming day

- Some daily questions to ask:
  - Any safety concerns?
  - Recognition given?
  - Feedback?
  - Follow up items?
Continuous Improvement Systems
Value Stream Mapping and Transactional Lean

• Optimizing survivorship journeys requires understanding of what constitutes value

• Similar to Patient Family Advisory Councils, involving the cancer survivor and their care team:
  • Creates the most accurate current state
  • Facilitates improvements to develop future state

• Let’s start with a little more background…
Value Stream Map (VSM) History

• Originated in Toyota referred…to as “Material and Information Flow Mapping”

• Used by Toyota to show both current and future states (6-9 months in future) as part of the lean deployment process

• Concept Introduced in “Lean Thinking”

• Further developed by the Lean Enterprise Institute in “Learning to See”
What is the purpose of a VSM?

- Identify how value flows to the customer
- Define relationships among key process points
- Tool to document the current state process
- Basis for developing a desired future state
- Helps us understand and improve big business processes…selling, creating, fulfilling, servicing…
- MAKES WASTE VISIBLE
- Forms the basis for an implementation plan

Tool to identify opportunities for improvement
What do We Get From a VSM?

- A Common Understanding of the Current State
- Understand ratio of value to waste
- Visualize and understand flow…or lack of it
- Makes Areas of Waste Visible
- Forms the foundation for Lean deployment

Tool to build consensus… accelerates change
Recall Common Wastes Identified in VSM

- Overproduction
- Waiting
- Transportation
- Over-processing
- Inventory
- Motion
- Defects
- Discarded Knowledge

Let’s discuss a VSM that addresses Discarded knowledge in information flows
Creating a Transactional Value Stream Map

“Without strong communication, the services cannot survive. Communication allows one to create a network with physicians, administrators and staff”. Metropolitan Detroit Chapter of the Oncology Nursing Society, Spring 2014 newsletter

R. Colombo
Transactional VSM example:
How might we build one for oncology rehab services?

- PT/OT visit
- Dietician visit
- Psych-Soc visit
- Exercise visit
- Individual Wellness Program

Information:
- Diagnosis code
- Generalized de-conditioning Note
- H & P
- Latest oncologist report

Etc.

Who should participate in creating this VSM?
- Primary care provider
- Surgeon
- Physical therapist
- Home health care provider
- Nurse navigator
- Dietetician
- Health coach
- Psychologist / Psychiatrist

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Common Lessons Learned from VSM events

• Many different points of view of the same process…hard to see when you’re in the middle

• “I had no idea you did that/needed that information”

• Power of questioning the status quo

• “I did not realize how messy and cumbersome our process was before we mapped it…

• I learned about tools to express my intuitions in a systematic method.”
Closing Thoughts –
A new way to lead
Dr. John Toussaint... From “On The Mend”

“The ultimate arrogance is to change the way people work without changing the way we manage them.”

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Traditional vs. Desired Culture

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<thead>
<tr>
<th>Traditional Culture</th>
<th>Desired Culture</th>
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<tbody>
<tr>
<td>Managements Direct</td>
<td>Managers Coach/Enable</td>
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<tr>
<td>Blame People</td>
<td>Root-Cause Analysis</td>
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<tr>
<td>Expert Driven</td>
<td>Process Driven</td>
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<tr>
<td>Internal Focus</td>
<td>Customer/Patient Focus</td>
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<tr>
<td>Functional Silos</td>
<td>Cross-Functional teams</td>
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<td>Volume Lowers Cost</td>
<td>Removing Waste Lowers Cost</td>
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<tr>
<td>Hide Problems</td>
<td>Celebrate Problems</td>
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<tr>
<td>Guard Information</td>
<td>Share Information</td>
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Source: Going Lean in Healthcare

Huge management paradigm shift: “Flipping the Pyramid”
Creating this culture requires “flipping the pyramid”

- Staff
  - Supervisors
    - Managers
      - Directors
        - Executives
          - “Surgeons”
            - Empowered
            - Engaged
            - Challenged
          - Passionate
          - Respectful
          - Humble
          - Hands-on
          - Set strategic focus
          - Align resources

- **Everyone** has role in continuous improvement
Example of ‘flipping the pyramid’ at BCW…

Idea Generation --- Huddle Board Process

- Daily team ‘huddle’
- Problems & ideas are encouraged from all team members
- Manager encourages, coaches, and helps team
- Ideas are prioritized and action-owners assigned
- ‘Experiments’ performed
- Success celebrated

Huddle system is the engine for daily problem solving
Questions?