Lean at the Department of Public Health
Presentation to the San Francisco Health Commission

Joanna Omi and Craig Vercruysse, Rona Consulting Group
What we’ll cover

• Background
• Taking a systems approach
• Introduction to Lean
• Lean in practice
• A3 Thinking – PDSA cycles
Background
Change curve

- Uninformed bliss
- Valley of despair
- Desert of disillusionment
- Continuous improvement
Executive leaders commit to an approach

If it were easy it would already be done
A compelling case for change
Affordable?

OECD Per Capita Health Care Costs and Life Expectancy

Per capita Health Care Costs  
Life Expectancy at Birth

Source: "OECD Health Data 2014," Organization for Economic Co-operation and Development
Waste in healthcare

"Eliminating Waste in US Healthcare" by Dr. Don Berwick and Andrew Hackbarth JAMA, April 11, 2012
The essence of lean in healthcare

Lean management system.
Taiichi Ohno

“You should submit wisdom to the company. If you don’t have any wisdom to contribute, submit sweat. If nothing else, work hard and don’t sleep. Or resign.”
### Recent results – clinical value streams

<table>
<thead>
<tr>
<th>Improvement</th>
<th>ER</th>
<th>OR</th>
<th>Inpatient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access gain</td>
<td>5% (volume increase)</td>
<td>6 hrs./day or 1,500 hrs./yr.</td>
<td></td>
</tr>
<tr>
<td>Productivity gain</td>
<td>3,500 hrs. (nursing)</td>
<td>2,000 hrs. (nursing)</td>
<td>7,000 hrs. (nursing)</td>
</tr>
<tr>
<td>Unit cost reduction</td>
<td>6%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inventory reduction</td>
<td></td>
<td>$146K</td>
<td>$87K</td>
</tr>
<tr>
<td>Capacity gain</td>
<td>5%</td>
<td>40%</td>
<td></td>
</tr>
<tr>
<td>Defect reduction</td>
<td>&gt;50% (diversion hrs.)</td>
<td>35% (on-time starts)</td>
<td>$3.7M (coding)</td>
</tr>
<tr>
<td>Revenue increase</td>
<td>$500K</td>
<td>$1.3M</td>
<td></td>
</tr>
<tr>
<td>Length of stay reduction</td>
<td>40%</td>
<td></td>
<td>10%</td>
</tr>
</tbody>
</table>

*Select results from a sampling of RCG clients.*
Recent results – administrative value streams

<table>
<thead>
<tr>
<th>Improvement</th>
<th>Revenue Cycle</th>
<th>Patient Safety</th>
<th>Facilities Design</th>
</tr>
</thead>
<tbody>
<tr>
<td>Defect reduction</td>
<td>62% (coding)</td>
<td>77% (ommitted meds)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>78% (information)</td>
<td>70% (patient falls)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>95% (authorization)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Revenue increase</td>
<td>$7M (6mo)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lead time reduction</td>
<td>25%</td>
<td>90% (adverse + sentinel events)</td>
<td></td>
</tr>
<tr>
<td>Space reduction</td>
<td></td>
<td></td>
<td>15%/7.3M</td>
</tr>
</tbody>
</table>

*Select results from a sampling of RCG clients.*
Lean adoption is growing in the public sector

- San Joaquin General Hospital
- San Mateo Department of Health/Aging and Adult Services
- San Mateo Medical Center
- New York City Hospitals + Health
- Denver Health
- Veteran’s Health Administration
- US Army
Systemic Approach
Building Blocks

• Strategy Deployment
• Engagement
• Breakthrough Improvement
• Incremental Improvement
• Management System
True North

- Safety
- Quality
- Customer Experience
- Growing Our People
- Equity
- Financial Stewardship
Strategy Deployment

X Matrix: “What”

A3: “How”

Successive A3s cascade to the work area

Achieve the meaningful use financial target
F: Generate $95m in new revenue and recurring savings from Breakthrough activity (includes $20m related to surgical services)

F: Achieve $168.8m in new revenue/cost savings contained in the FY13 Adopted Financial Plan for Cost Containment and Restructuring Initiatives

T/D: Decrease med/surg ALOS by 5%

G/C: Increase M+ Medicare enrollment by 100%

T/D: Improve outpatient CAPS access score by 10%

HD: Increase engagement in Just Culture by 20%

Achieve the Triple Aim (better care, better health, lower cost) while maintaining our mission.

Establish and achieve designation as an ACO with an initial patient cohort

Reduce nosocomial infection rates below national benchmarks

Restructure and align services to optimize cost-efficient, needed capacity, increase patient satisfaction and reduce the deficit

Q: Reduce CLABSI rates by 15%

Successfully execute the cost containment, restructuring and meaningful use plans

Ensure sustainability and spread of Breakthrough improvements

Reduce non-value added facility and system variation

Create the foundation for the ACO care model of the future

Improve quality across the 6 IOM aims

Engage and train employees in the redesign of our system.

Reduce pneumonia 30-day readmissions by 10%

Q: Reduce AMI 30-day readmissions by 10%

Q: Reduce CHF 30-day readmissions by 10%

Q: >95% of Heart Failure patients will be discharged with appropriate discharge instructions

Q: 90% of primary care visits will be provided by patients' assigned PCP team

Q: Increase the % of patients in the Cardiovascular Risk Registry with BP <140/90 by 10%

Q: Reduce UTI rates by 15%

HD: Increase engagement in Breakthrough by 20%

HD: Increase engagement in Team STEPPS by 20%

G/C: Expand primary care access by 5%; target seniors and M+ patients

HD: Increase HCAHPS scores to the national median

RESOURCES

Caroline Jacobs

Tamiru Mammo

Caroline Jacobs

Level 0 X-Matrix: Alan Aviles

Updated October 22, 2012

Objectives and Targets

Primary Measures and Targets

Primary Dimensions of Measurement
Q: Quality/Safety
HD: Human Development
F: Financial
T/D: Throughput/Delivery
G/C: Growth/Capacity

Primary Strategic Initiatives

0 Year Goals

1 Year Goals

3 Year Goals

Level 0 X-Matrix: Alan Aviles

Updated October 22, 2012

Successive A3s cascade to the work area
Leader’s Role

- Clarifying, not leading, questions: “Help me understand…”

- Constructive coaching to prompt further thought: “Are the results clear? Are you getting where you want to go?”

Go See.
Ask Why.
Show Respect.

- Fujio Cho, Toyota
Humble inquiry - catchball

A3 Owner

Stakeholders

A3-T

WHAT
Catchball

A3-T

A3 Owner

Stakeholders

Howard
We provide high quality healthcare that enables all San Franciscans to live vibrant, healthy lives.

To be every San Franciscan’s first choice for healthcare and well-being.
Defining True North

- Equity
- Growing our People
- Quality (outcomes)
- Safety (prevention)
- Financial Growth
- Care Experience
Visually Managing with Visibility walls

Frontline leader visibility wall

Process owner visibility wall

Executive sponsor visibility wall
Introduction to Lean
What is lean?

- A system for leading, managing and continuously improving the work that we do and the services we provide.
Lean is the means to:

- Ensure achievement of strategic priorities
- Create a standardized method for planning, implementing and improving that engages everybody, everyday
- Provide development and promotional opportunities for staff
- Eliminate waste and improve efficiency and performance
Lean Values

Best Quality - Lowest Cost - Shortest Lead Time
Best Safety - Highest Morale

Continuous Improvement

Respect for People

PDCA Learning Cycles
# Toyota management system

<table>
<thead>
<tr>
<th>Just in time</th>
<th>Hoshin kanri</th>
<th>Jidoka</th>
</tr>
</thead>
<tbody>
<tr>
<td>people</td>
<td>standard work</td>
<td>takt time production</td>
</tr>
<tr>
<td>materials</td>
<td>standard WIP</td>
<td>flow production system</td>
</tr>
<tr>
<td>equipment</td>
<td>andon &amp; availability</td>
<td>pull system production</td>
</tr>
</tbody>
</table>

- Leveled production (*heijunka*)
- Cost reduction through the elimination of *muda*

5S
Approach

- Plan
- Engage People
- Right Approach, Right Tools, Right Place
  - Set the stage with learning and doing – just in time
  - Learn to see and eliminate waste
  - Create flow
  - Reduce non-value added variation
  - Reduce the opportunity for mistakes
  - Plan Do Check Act (PDCA cycles of improvement)
Implementing the Toyota Management System

value

perfect

map

pull

flow
Seek and Eliminate Waste

- Learn to see waste
- Learn to eliminate waste
7 (+1) Wastes

- Transportation
- Inventory
- Motion
- Waiting
- Overproduction
- Overprocessing
- Defects
- (Not Using Human Potential)
A community of problem-solvers

“No one has more trouble than the person who claims to have no trouble.”

Taiichi Ohno
Create Flow – the absence of waste
Elements of Flow

**1 by 1 Simple Flow**
- Standard Work
- Lowest Cost

**6S Defect Free**
- Pull
- On Demand

**Visual Management**

- Only handle information once
- Only move the patient once
- No batching

- Optimize the environment:
  - Sort
  - Set for flow
  - Scrub
  - Safety
  - Standardize
  - Sustain

- Reduce variation and errors:
  - Optimal work sequence
  - Produce at the pace of demand
  - Resource to demand

- Produce only when the next step in the process is ready
  - No “pushing”
  - Tight connections between steps

- Make normal vs abnormal visible:
  - Transparency in expectations and results
  - Ongoing tracking and improvements
Lean in Practice – Improvement Workshops
Develop infrastructure

- Fully engaged leaders
- Dedicated lean staff
- Gradual transfer of lean knowledge and responsibility to managers and staff
- Training –
  - Didactic, simulations, in the work-site
  - Just in Time
  - Learn as you go
- Space for collaborative team work and idea generation
A community of problem solvers
What needs to flow

Patients.
Providers.
Supplies.
Medications.
Information.
Process.
Equipment.
Value as defined by the customer or client

- Externally determined.
- Customer driven.
- Improves the current state

- Speak to me in my primary language
- Treat me with respect
- Make me feel better
- Clean facilities
Wasteful processes

95% waste

5%
Map to understand what we do

- process step
- wait time
- process step
- wait time

CT = 47:36
LT = 117:15

process cycle times

process cycle times

process lead time
Level out the workload

- Level out the workload (heijunka). “Work like a tortoise, not the hare.”
- One by one without batching
Understand the pace of demand

• How much of what do we need to provide?
• How much time do we have to do it
Ideas for Improvement
Future State
Primary Care Visit
Standardized, not “robotized”, work

<table>
<thead>
<tr>
<th>step no.</th>
<th>process</th>
<th>operation sequence</th>
<th>time observation form</th>
<th>standard work combination sheet</th>
<th>percent load chart</th>
<th>standard work instruction</th>
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</thead>
<tbody>
<tr>
<td>area/location:</td>
<td>date of observation:</td>
<td>operation being observed:</td>
<td>start time:</td>
<td>end time:</td>
<td>observation time:</td>
<td>observations:</td>
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<tr>
<td>subject observed:</td>
<td>start time:</td>
<td>preparation time:</td>
<td>observation time:</td>
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<tr>
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<td>work description:</td>
<td>time:</td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>item name:</td>
<td>takt time:</td>
<td>required:</td>
<td>operation time (seconds / minutes):</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>no.</td>
<td>work description:</td>
<td>time:</td>
<td></td>
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<tr>
<td>quality check:</td>
<td>safety precautions:</td>
<td>standard WP:</td>
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<tr>
<td>notes:</td>
<td>Add notes about related policies or any acceptable exceptions in sequence of steps.</td>
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</tr>
<tr>
<td>remarks:</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Standard Work Sheet

- **Date of Observation:**
- **Operator Being Observed:**
- **Process:**
- **Item Name:**
- **Work Description:**
- **Time:**
- **Operation Time:**

### Time Observation Form

- **Area/Location:**
- **Date of Observation:**
- **Start Time:**
- **Start Time:**
- **Observation Time:**
- **Observations:**
- **Remarks:**

### Standard Work Combination Sheet

- **Area/Location:**
- **Operator Being Observed:**
- **Prepared By:**
- **Date Prepared:**
- **Process:**
- **No. Required Per Day / Shift:**
- **Item Name:**
- **Time:**
- **Operation Time:**

### Percent Load Chart

- **Process:**
- **Operation Sequence:**
- **Time:**
- **Operator Cycle Time:**

### Standard Work Instruction

- **Quality Check:**
- **Safety Precautions:**
- **Standard WP:**
- **Notes:**
- **Remarks:**

Total Time:

**Totals:**

**Operator Cycle Time:**
Castro Mission Health Center
Kaizen II – MEA Workflow

January 13 – 17, 2014
San Francisco General Hospital
Pharmacist Verification, Mistake Proofing & Pick Up Process

August 11-15, 2014
• Working in interdisciplinary teams
• Move noisy equipment out of work area
• Stock only what is needed, where it is needed
A3 Thinking
The PCDA Cycle

- **PLAN**
  - Step 1. Clarify the Problem
  - Step 2. Understand the Current State
  - Step 3. Target Setting
  - Step 4. Root Cause Analysis

- **DO**
  - Step 5. Develop Countermeasures
  - Step 6. Implement Countermeasures

- **CHECK**
  - Step 7. Evaluate Results & Processes

- **ACT**
  - Step 8. Standardize Successful Processes
PLAN

DO

CHECK / ACT

PLAN
A3 document system

Proposed team charter

Theme: Improve process reliability to decrease process lead times

**PROBLEM STATEMENT**

During the past three years, process reliability has declined by 10% and lead times have grown by 12%. This has contributed to a significant deterioration in customer experience and an estimated % increase per unit costs.

**TARGET STATEMENT**

We will increase process reliability and lead time by 15% by the end of the current fiscal year. This should contribute to yearly 7.5% (approximately) reductions in per unit costs and to similar cost reductions in sustaining costs.

**ANALYSIS**

Process lead time is a function of how quickly we find and remove the seven deadly wastes: overproduction, waiting, transportation, movement, inventory, overprocessing, and of course defects. The presence of these wastes greatly increases the transactions cost of health care, and can be measured in terms of extended lead times, as we wait or search for the people, medicines, materials, or information necessary to complete our work, or while we stop to rework errors and defects, or while we stop to deal with the collateral damage of such errors and defects. By systematically eliminating the seven wastes, we increase process availability, efficiency, and quality, promoting the flow of patients, medicines, materials, and information throughout the healthcare system.

**PROPOSED ACTION**

In the coming year, we propose that all service lines and departments, guided by their value stream maps, will work to promote process flow by eliminating the seven wastes in their most critical processes. Through the catchball process, service lines and departments will interpret the overall targets of 15% improvements in reliability and lead time by explaining how these improvements will be made in the context of their respective operations. Although all staff members should be involved in measuring their own process quality, it is recommended that a “control part,” i.e., a frequently repeating patient experience or (in the case of some services lines and departments) service be chosen as a representative measure at the service or department level. Where appropriate, service lines and departments are encouraged to employ the resources of the organization’s KPO.

**IMPLEMENTATION PLAN**

Progress toward our targets will be checked frequently on the shop floor through the systematic adoption of visual management systems and daily stand-up meetings. In addition, site managers will conduct weekly standup visual reviews with all managers in attendance. Furthermore, the President’s Diagnos is will be implemented, based upon the Transformation Ruler. Monthly local self-audits will be conducted. Once a year, the CEO and President will conduct a formal diagnosis and make visits to each site.

Date: Reporting Unit: Operations management team

A3-T
Hand-written in pencil...

Or more formally drawn...
Thank you