

## Using Continuous Process Improvement Tools to Increase Organizational Efficiency—Lessons Learned from Three Community Health Centers

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## Presentation Learning Objectives

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- Identify three Lean tools applicable for community health center settings.
- Describe major lessons learned, including shared barriers, facilitators and initial outcomes, from the use of Lean tools in the three community health centers studied.
- Discuss the implications of lessons learned for other community health centers contemplating the use of continuous improvement methods, such as Lean tools and techniques.

## Project Background

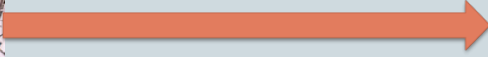
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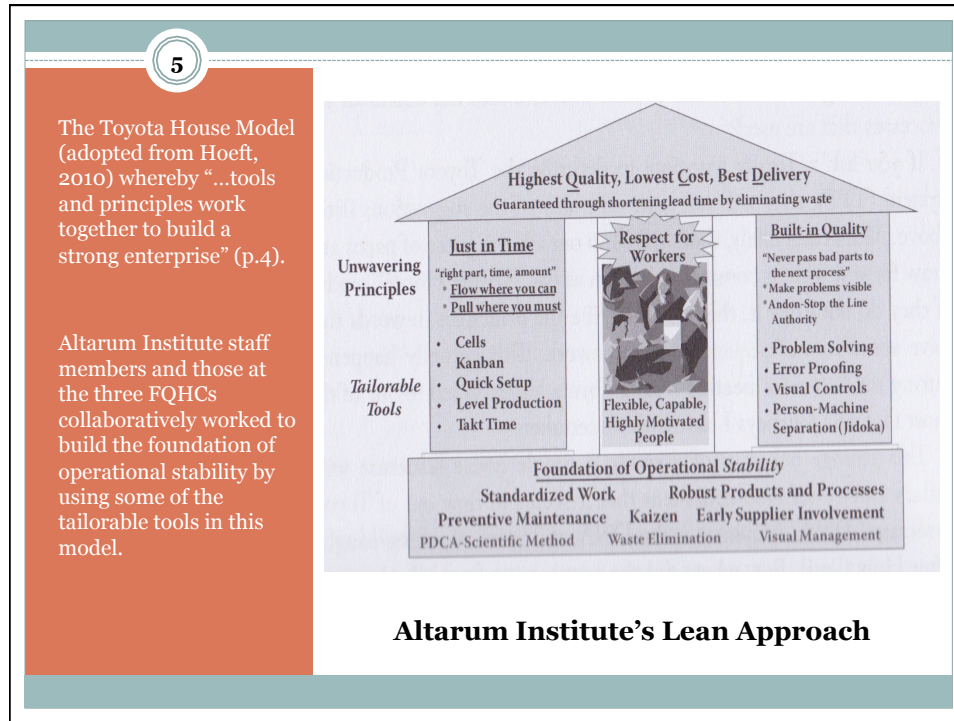
- In 2009, Altarum Institute established partnerships with three federally qualified health centers (FQHCs) to support innovation and improve health care delivery as part of the Community Health Center Innovation Mission Project.
  - Drawing on its areas of expertise, Altarum Institute provided training and technical assistance in the utilization of Lean tools and techniques at these FQHCs during an 18-month period.
  - A qualitative study of common barriers, facilitators and initial outcomes (i.e., value added) related to the use of Lean in these FQHCs was simultaneously conducted.

## Lean Overview

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- Lean originated in the automotive manufacturing industry from the early to mid 20<sup>th</sup> century.
- Lean is generally viewed as a set of principles intended to reduce waste, increase efficiency and maximize the value of a given product among its customer base (Womack, Byrne, Flume, Kaplan, & Toussaint, 2005).
  - ✦ Toward this end, various tools and techniques have been developed and employed.
- During the past 20 to 30 years, Lean tools and techniques have been increasingly adapted by the health care sector in efforts to continuously improve quality, increase safety and decrease costs.





## Lean Tools used to Build the "Foundation"

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- The following Lean tools\* were adapted by the three FQHCs to enact changes primarily related to the patient visit process:
  - Value Stream Mapping (VSM)
    - ✦ Near the beginning of the project period, each of the three FQHCs mapped the current and future/ideal states of the patient visit process to generate action items to reach the ideal state.
  - Standard Work
  - 5 Whys
  - 5S (Sort, Straighten, Shine, Standardize and Sustain)
  - Visual Management
  - Lean Layout
  - Error Proofing
  - A3 Problem Solving

\*For more information on each Lean tool listed, please see the first supplemental material slide.

## Additional Support Provided

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- The following types of training and technical assistance were also provided:
  - Regular teleconferences
  - Intensive Lean training
  - Additional Lean training, VSM events and coaching
  - Research support
    - ✦ Open access scheduling
    - ✦ Use of care teams
    - ✦ Cycle time measurement
  - Assessment of existing capacity
    - ✦ Electronic medical records (EMR) system

## Relevant Research Questions

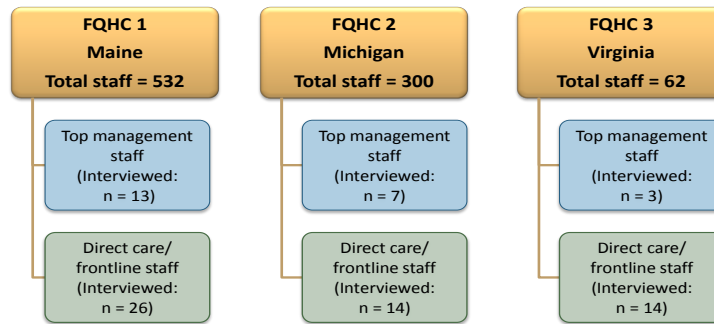
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- What were the main factors that helped or hindered the use of Lean at the FQHCs?
- How, if at all, did the use of Lean add value to the FQHCs?

## Study Design

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- A multiple-case study design was used with two embedded units of analysis:
  - Top management staff members, and
  - Direct care/frontline staff members.



## Data Collection

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<b>Sample</b>	77 staff members, all of whom were involved with the utilization of Lean tools, were purposively sampled.*
<b>Method</b>	Semi-structured, in-person interviews were conducted by a team of Altarum Institute staff members. <ul style="list-style-type: none"> <li>• Interviews were audio recorded for subsequent transcription.</li> <li>• Interviews lasted between 45 and 90 minutes, depending on each staff members' level of involvement with the initiative.</li> </ul>
<b>Schedule</b>	Interviews were conducted six to 12 months following each center's completion of the first VSM event (from fall 2009 to spring 2010).
<b>Location</b>	All interviews were conducted onsite in staff members' clinics or administrative offices.

\*Thirteen of the 77 staff members sampled were interviewed twice (four at the Virginia center and nine at the Maine center). These 13 staff members were selected based on their high level of involvement in the project throughout its lifespan.

## Qualitative Data Analysis

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- A coding team of four Altarum Institute staff members managed and analyzed the data using QSR NVivo 8 software.
  - An inductive content analysis approach was employed.
- Coding confusion and the creation of new nodes was collectively resolved on a routine basis. A reliability test was conducted to ensure high coding consistency among team members.
- Matrix queries were run to identify the most frequently sourced themes across all FQHC staff members interviewed as well as between the top management and direct care/frontline staff members interviewed.

## Facilitators Most Commonly Perceived among FQHC Staff Members

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Theme	Dimensions
<b>Buy-In</b>	<ul style="list-style-type: none"> <li>• Recognition of the value added through change</li> <li>• Familiarity with methods to enact change</li> <li>• Positive attitudes/enthusiasm toward change</li> </ul>
<b>Leadership</b>	<ul style="list-style-type: none"> <li>• Providing direction and exercising decision-making authority as needed</li> <li>• Encouraging staff to enact change through personal example, routine communication with staff and recognition of those who initiated change</li> <li>• Holding staff accountable for change by making assignments and following-up</li> </ul>
<b>Use of Teams</b>	<ul style="list-style-type: none"> <li>• Ability of staff members to regularly communicate and collaborate in testing changes</li> <li>• Trust and mutual respect among team members</li> </ul>

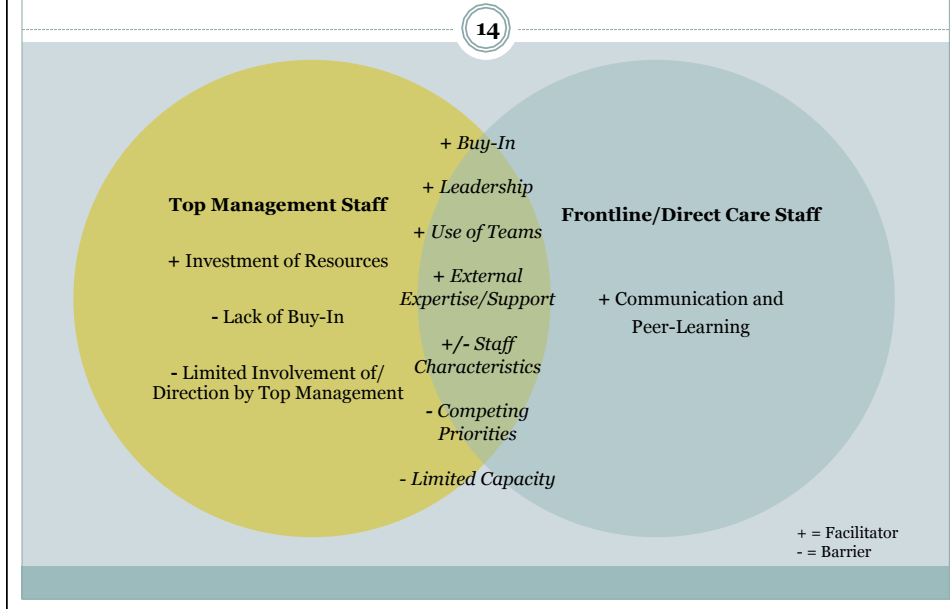
## Barriers Most Commonly Perceived among FQHC Staff Members

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Theme	Dimensions
<b>Competing Priorities</b>	<ul style="list-style-type: none"> <li>• Meeting increasing patient demands</li> <li>• Involvement with other initiatives, such as:                             <ul style="list-style-type: none"> <li>✧ Site expansion/acquisition</li> <li>✧ Transitioning to electronic health records (EHR) systems</li> <li>✧ Accreditation</li> <li>✧ Increasing the array of health services provided</li> <li>✧ Improving the coordination/integration of care delivery</li> </ul> </li> </ul>
<b>Limited Capacity</b>	<ul style="list-style-type: none"> <li>• Lack of fiscal resources/budgetary constraints</li> <li>• Staff turnover and shortages</li> <li>• Lack of space and other physical resources</li> </ul>

## Intersection and Discrepancies between FQHC Staff Members' Perceptions of Barriers and Facilitators

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## Initial Outcomes Associated with the use of Lean Tools among Staff Members at the Three FQHCs

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- The following interrelated improvements associated with the use of Lean tools were the most commonly observed among the FQHC staff members:
  - Standardization of operational processes
  - Patient flow/cycle time
  - Communication among staff members
  - Collaboration among staff members
  - Staff satisfaction
  - Empowerment to initiate change among staff members
  - Patient access to care
  - Patient satisfaction

## Lean Tools Applied to FQHC Problems: Barriers, Facilitators and Initial Outcomes

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**Problem:** High no-show rate  
**Tools:** VSM and standard work  
**Action Items:** Front desk checklist including verification of patient phone numbers and reminder calls  
**Barriers:** Limited capacity—staff turnover, competing priorities, lack of management follow-up/involvement  
**Facilitators:** Communication and teamwork among front-desk staff members  
**Initial Outcome:** Reduced no-show rate



**Problem:** Inefficient workflow, duplicative documentation  
**Tools:** VSM and standard work  
**Action Items:** Computers on Wheels (COWs), EMR templates w/provider team training  
**Barriers:** Staff resistance, limited capacity—training with a new EMR system  
**Facilitators:** Leadership, investment of resources, positive staff characteristics  
**Initial Outcomes:** Reduced cycle time, increased provider satisfaction and EMR meaningful use



**Problem:** Chaotic check-in process due to large volume of walk-in patients  
**Tools:** VSM, visual management and standard work  
**Action Items:** Electronic number system w/front desk checklist  
**Barriers:** Lack of buy-in, competing priorities  
**Facilitators:** Leadership, investment of resources, positive staff characteristics  
**Initial Outcomes:** Improved patient/staff satisfaction and check-in process flow



## Lessons Learned

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- **As the adage goes, change is hard...**
  - Especially for FQHCs, because they have a growing patient population to serve with limited resources.
- **Conducting a readiness assessment\* may help to determine whether or not undertaking this type of initiative is worth the investment of resources.**
  - It may also help the organization to anticipate challenges that may lie ahead in order to better circumvent them.
- **The commitment of organizational leaders to this type of initiative by viewing it as contributing to positive organizational transformation more broadly is paramount.**
  - Although Lean along with other types of quality improvement tools (e.g., Plan Do Study/Check Act Cycles) are commonly used as labels to describe these types of endeavors; these tools stem from the general philosophy that improvement is a necessary and continuous process.
- **Dedicated time, resources and training are essential if direct care staff members are expected to engage in, sustain and spread the use of Lean tools within their organization.**
  - External technical assistance, training and coaching may be particularly valuable at the beginning of this type of initiative, so long as actions to build internal capacity and expertise are concurrently prioritized (e.g., the use of train the trainer type models).
- **Using Lean tools to build a foundation of operational stability is an incremental, iterative process.**
  - Though striking a balance between quick fixes (i.e., “the low hanging fruit”) and longer-term improvements may boost buy-in and morale among those staff members involved.
  - To the extent possible, changes should be evidence based.

\* For more information, please see the second supplemental material slide.

## Lessons Learned (Continued)

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- **Champions at each organizational level are necessary to spur improvement forward.**
  - Encourage staff members to lead by example and proactive knowledge transfer in staff meetings. Peer learning may be a very effective way to increase buy-in.
- **Mapping the initiative’s goals and objectives to the changes being made will help to clarify how what is being done may add value.**
  - This means that goals and objectives, like change, cannot remain static.
- **Measures that are Specific, Measurable, Achievable, Realistic, and Timely (SMART) make progress real.**
  - Metrics along with those changes being made should be linked to the initiative’s objectives and goals.
- **Celebrate successes.**
  - Failure should not be an option. Rather, ongoing evaluation of what is and what is not achieving the initiative’s objectives should be used to learn and redirect action if needed.
- **Once the house is built, its inhabitants will need to perform routine maintenance and make renovations.**
  - However, it may be necessary to call a “repair man” from time to time.

## Limitations and Implications

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- This was a qualitative study of three FQHCs using one type of continuous improvement approach.
- Nonetheless, these lessons may be helpful to other FQHCs or similar types of community-based health care organizations considering or launching a continuous improvement initiative.
- As population health needs change, ways to cost-effectively meet these needs and policies shaping health care systems evolve, continuous improvement initiatives may be a mechanism whereby FQHCs and other health care organizations may keep pace.
- Comparative effectiveness research of various continuous improvement methods in different health care settings is needed to further inform both policy and practice in this area.

### Supplemental Material: Description of Lean Tools Applied (adopted from Graig & Perosino, July 2011)

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Lean Tool	Description
<b>5S</b>	The following five-step process to create and maintain an orderly work area: <ol style="list-style-type: none"> <li>1. Sort and prioritize items</li> <li>2. Straighten the area using visual controls</li> <li>3. Scrub and clean the area</li> <li>4. Standardize across other areas</li> <li>5. Sustain improvements using audits</li> </ol>
<b>5 Whys</b>	Problem solving by asking and answering “Why is this problem happening?”
<b>A3</b>	A problem solving approach similar to the PDC/SA cycle (using larger 11 x 17” A3 size paper)—the scientific method.
<b>Error Proofing</b>	Redesign processes to reduce the probability of making an error (e.g., use of visual or audio warning signals).
<b>Lean Layout</b>	Configuration of a given process to promote the continuous flow of people, materials, and information with minimal movement and delays.
<b>Standard Work</b>	Written descriptions of well-defined, precise procedures for each step of a process (e.g., checklists, protocols, templates, standard operating procedures).
<b>VSM</b>	A team-based activity used to analyze the complete flow of a given process or value stream (see the previous slide for additional information).
<b>Visual Management</b>	The use of visual signals to manage and clarify processes (e.g., color coding, labeling, number systems, display boards/dashboards).

**Supplemental Material:  
Organizational Readiness Assessment Resources  
(adopted from the Health Resources and Services Administration, April 2011)**

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Readiness Tool	URL
Organizational Readiness Assessment Checklist	<a href="http://teamsteps.ahrq.gov/ahrqchecklist.html">http://teamsteps.ahrq.gov/ahrqchecklist.html</a>
The Patient Assessment of Care for Chronic Conditions (PACIC)	<a href="http://www.improvingchroniccare.org/index.php?p=PACIC_Survey&amp;s=36">http://www.improvingchroniccare.org/index.php?p=PACIC_Survey&amp;s=36</a>
Assessment of Chronic Illness Care (ACIC)	<a href="http://www.improvingchroniccare.org/index.php?p=Versions&amp;s=297">http://www.improvingchroniccare.org/index.php?p=Versions&amp;s=297</a>
Patient-Centered Medical Home Assessment	<a href="http://www.qhmedicalhome.org/safety-net/upload/PCMH-A_SNMHI_080410.pdf">http://www.qhmedicalhome.org/safety-net/upload/PCMH-A_SNMHI_080410.pdf</a>

## References

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- Graig, L., & Perosino, K. (July 2011). *Applying lean to improve the patient visit process at three federally qualified health centers*. Retrieved from <http://www.altarum.org/research-initiatives-health-systems-health-care/improving-human-health-systems-mission-projects/community-health-centers-reports>
- Hoefft, S. (2010). *Stories From My Sensei: Two Decades of Lessons Learned Implementing Toyota-Style Systems*. New York, NY: Taylor & Francis Group.
- U.S. Department of Health and Human Services Health Resources and Services Administration (April 2011). Readiness Assessment & Developing Project Aims. Retrieved from <http://www.msccinc.com/measuresQI/templates/Content.aspx?ID=127>
- Womack, J., Byrne, A., Flume, O., Kaplan, G., & Toussaint, J. (2005). *Going lean in health care*. Cambridge: Institute for Healthcare Improvement.

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