Lean Healthcare Lessons from Leading Hospitals

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Montréal, Quebec
This Is An Interactive Session

- 1 Interactive Breakout Session
- Groups of 3-4
- 2-3 minute discussion in groups
- 1-2 minute follow up
- 1 session, 2 questions

HEC Montréal

- 39 management study programs
- 50 research chairs, groups and centers
- 250 career professors and 400+ part-time lecturers
- 3 teaching languages
  - French, English, and some Spanish
- 12,000 students (6,000 full-time) from 60 countries
- 65,000+ graduates (alumni)
- International ranking
Agenda

• Definition, background, and a few key notions
• Profiles of four North American and European hospitals that have taken a lean approach
  – Centre Hospitalier Universitaire de Sherbrooke (CHUS) (Quebec)
  – St. Boniface Hospital (Manitoba)
  – ThedaCare (Wisconsin)
  – CHU Mont-Godinne (Belgium)
• Insights and key success factors
• Conclusion

Lean Healthcare: Definition

• A quality and process improvement management system based on the Toyota Production System that emphasizes customer needs, improving quality, and reducing time delays and costs through continuous improvement and employee involvement

Adapted from Graban, Lean Hospitals, 2009
Toyota and Healthcare

“The industrialization of healthcare is the only way to humanize healthcare.”

Markus Froehling, MD
The Complexity of the Hospital Sector and the DNA of the Lean System

- The complexity of the healthcare system can bring a great deal of ambiguity to everyday tasks.
- People often handle these ambiguities by attacking the immediate problem without looking at the bigger picture. The “system” expects the professionals to find a lasting solution to the problem.
- However, the professionals do not have the time to examine the source of the problem if no continuous improvement process exists (e.g., active involvement by a unit head or a formal improvement process): second-order problem solving.

Second-order Problem Solving Process

Problem resolution process where an attempt is made to find an immediate solution to the problem without going back to its source in order to find a permanent solution.

First-order problem solving

Problem resolution process where an attempt is made to not only find an immediate solution to the problem, but to also apply corrective measures to prevent a recurrence of the problem.

Second-order problem solving
Problem Solving and Continuous Improvement

Plan-Do-Study-Act (PDSA) – A3 thinking

A3 and Problem Solving

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<thead>
<tr>
<th>Title/subject</th>
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<tbody>
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Every problem has its tool/method

<table>
<thead>
<tr>
<th>Problems (healthcare)</th>
<th>Tools and methods</th>
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<tbody>
<tr>
<td>Flawed processes; time lost; wastage; communication breakdowns; etc.</td>
<td>Process mapping</td>
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<tr>
<td>Time lost searching for supplies; hygiene and public health problems; frequent</td>
<td>5S - visual management</td>
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<tr>
<td>workplace accidents; unclear processes; etc.</td>
<td>5S - visual management</td>
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<tr>
<td>Stacks of pending files; full waiting rooms; prescriptions not filled; test samples</td>
<td>U-shaped cell</td>
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<tr>
<td>sent to laboratory in batches; etc.</td>
<td>Unit flow</td>
</tr>
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<td>Unnecessary stock combined with frequent stockouts; expired products; valuable</td>
<td>Kanban/two-bin</td>
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<td>clinical time spent looking for and managing supplies; unnecessary staff movements;</td>
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<td>etc.</td>
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<tr>
<td>Errors that are chronically repeated (wrong medications, missing supplies and</td>
<td>Poka-yoke</td>
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<tr>
<td>instruments, wrong files, etc.). Ill-fitting or poorly adapted equipment that leads</td>
<td>Jidoka</td>
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<tr>
<td>to errors or causes supplies to be wasted; shortages that are not communicated;</td>
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<tr>
<td>errors and incidents that are not communicated; etc.</td>
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<tr>
<td>Preparation time that is too long between surgical procedures; between two X-rays;</td>
<td>SMED</td>
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<tr>
<td>between two cases; etc.</td>
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<tr>
<td>Frequent work interruptions and stoppages due to missing supplies.</td>
<td>Pre-trip inspection (PTI)</td>
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<tr>
<td></td>
<td>and checklists</td>
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In collaboration with Jean-Marc Legentil, Bell Nordic Consulting

Agenda

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• Insights and key success factors
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This case study presentation was prepared in collaboration with Sylvain Chaussé, CHUS

Overview

- Public institution
- 822 beds (two sites: Hôtel-Dieu and Fleurimont)
- 5,915 employees (most are unionized)
- 622 doctors (fee for service payment or mix) and pharmacists
- 616 professors; 2,631 residents, interns, and students
- Annual budget of C$415,000,000 (historical data)
- Operational overview:
  - 31,735 admissions (69% short-term adult; 26% mother/child; 5% mental health)
  - 87,264 ER visits (54% of patients under observation)
  - 26,478 OR users (65% day surgery and ambulatory patients; 35% hospitalized)
  - 27,200 tests and specialized procedures (PET, gamma knife surgery, hemodynamics, interventional electrophysiology and endoscopy)
Lean Implementation in Three Phases: 2005-2013

• 2005-2009: Start-up
  – Hiring of a director of finance from the manufacturing sector
  – “Mandate” by Board of Directors: undertake kaizen projects
  – Hiring of a continuous improvement specialist/manager in 2008
  – Pharmacy project (first dose delivery)

• 2009-2010: Consolidation
  – Introduction of a formal eight-step kaizen approach to lean project management

• 2010 and beyond: Expansion
  – Hiring of three process improvement specialists
  – Outpatient ED project in 2011 – first “transversal” project
  – Lean training of residents (ED and OR) – 2011+
  – Creation of community of practices; first “lean” forum held in January 2012
  – Visit to ThedaCare – Fall 2012
  – Launch of daily huddles in one nursing unit (3 shifts) – Fall 2012
  – No-meeting zone from 8:00 am to 9:00 am
  – Establishment of mission control room – 2013
  – Gemba walk by senior management – 2013
St. Boniface Hospital
Winnipeg, Manitoba

This case study was prepared in collaboration with Dr. Cyril Foropon, Asper School of Business, and includes excerpts from a presentation by Dr. Michel Tétreault, President & CEO, St. Boniface Hospital

Overview

- Public institution
- Founded in 1844
- 7 buildings on 20 acres
- 180 departments
- 517 beds
- 4,000 employees (most are unionized)
- 461 doctors (fee for service payment)
- 160,302 patient days (annual)
- 22,933 admissions (annual)
- 221,377 outpatients (annual)
- Annual budget of C$280,000,000 (historical base)
Lean background

- 2005: Dr. Michel Tétreault named head of the institution in February
- 2005: Participation in the IHI Executive Quality Academy; meeting with John Toussaint (ThedaCare) and Rob Colones (McLeod Health System)
- 2005: Visit to Standard Aero (Winnipeg) by executive team
- 2007: Presentation to the Board of Directors
- 2008: First RIE in the Emergency Department (September)

True North Strategic Objectives

- Satisfy patients
- Engage staff
- Do no harm
- Manage resources
<table>
<thead>
<tr>
<th>Date</th>
<th>Department</th>
<th>Area</th>
<th>Improvement activities</th>
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</thead>
<tbody>
<tr>
<td>Sep 08</td>
<td>Emergency</td>
<td>Acute coronary syndrome</td>
<td>- Acute coronary syndrome/non-admitted patients</td>
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<tr>
<td>May 09</td>
<td>Surgical</td>
<td>Movement/capacity/productivity</td>
<td>- Movement/capacity/productivity/2P process</td>
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<tr>
<td>Sep 09</td>
<td>Clinical supply chain</td>
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<td>- Clinical supply chain</td>
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<tr>
<td>May 10</td>
<td>Medicine</td>
<td>Movement/capacity/productivity</td>
<td>- Medicine – Movement/capacity/productivity</td>
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<tr>
<td>Sep 10</td>
<td>Planning and coordination of</td>
<td></td>
<td>- Planning and coordination of staff schedules</td>
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<tr>
<td>Apr 11</td>
<td>Clinical documentation</td>
<td></td>
<td>- Clinical documentation</td>
</tr>
<tr>
<td>Oct 11</td>
<td>Cardiology</td>
<td></td>
<td>- Cardiology</td>
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<tr>
<td>Jan 13</td>
<td>Inpatient Flow</td>
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<td>- Inpatient Flow</td>
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**Mission Control Room: Strategic Plan, True North, Directors’ A3**

- **Strategic plan**
- **True North**
- **Breakthrough**
- **Program directives**
Rapid Improvement Events (5 days)

- Preparation (spread over 12 weeks)
  - Mapping and boxes 1, 2 and 3 of A3 form completed
  - Identification of members of 8-person team + 1 facilitator
    - Department + patient + objective view
    - Those with prior experience + those new to RIE

- RIE: Day 1, Day 2... Day 5

- Implementation
  - Measurement of results at 30, 60 and 90 days

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Transformation support team

- 9 people, including 7 facilitators (3 in the residence program)

- Bring structure to transformation process
  - Guide the person responsible for RIEs in the data gathering and preparation stages
  - Lead RIE workshops
  - Deliver training
Examples of Initiatives

- Triage to EKG interpretation
- Surgery on the move
- Transfer of cardiac patients from the Operating Room to Cardiac Intensive Care
- Surgical safety checklist
- White boards in patient rooms and nurse-to-nurse shift reporting at bedside
- Gemba visits by all executive team members

Examples of SCM Initiatives

- A number of RIEs have been conducted in SCM using 5S and home-grown manual kanban/two-bin systems

When a bin is empty, remove the KanBan card and place the card in the white container.
Examples of SCM Initiatives

- While gains were achieved through multiple RIEs and maintained in most areas, challenges remain
  - No integration with the ERP system
  - Little data available in order to implement performance indicators or a dashboard
  - High replenishment frequency to compensate for the unavailability of information, which increases the movements of staff, supplies and equipment
- There is a need to move forward and achieve new gains through the implementation of an automated point of use replenishment system

ThedaCare
Appleton, Wisconsin

This case study presentation was prepared in collaboration with Stéphane Lemire, MD
ThedaCare Improvement System

- Transformational improvements - strategy deployment (SD) and value stream (VS) (objective = 20%)
  - A3/PDSA
  - Transformation team (TIS): 24 to 38 facilitators
    - Permanent team + managers and professionals
  - Just do it (JDI)
  - Projects
  - Rapid improvement events (RIE)
    - Workshops of 5 consecutive days
    - Objectives: gains of 50%
    - Presentations: Friday morning report out
  - Today, ThedaCare conducts 300+ RIEs per year vs. approx. 30 for St. Boniface and 10 for the CHUS (in order of size)

Strategy Embodied in the True North Objectives

True North Metrics

Safety/Quality
- Preventable Mortality
- Medication Errors

Customer Satisfaction
- Access
- Turnaround Time
- Quality of Time

People
- OSHA Recordable Injuries
- HAT Scores
- Employee Engagement Index

Financial Stewardship
- Operating Margin
- Productivity

THEDA CARE
ThedaCare Business Performance System

- TBPS: Continuous daily improvement (Objective = 80%)
  - A3/PDSA
  - No meetings between 8 a.m. and 10:00 a.m.
  - Gemba
  - Daily meetings (Daily huddle) – Leader standard work + status sheet
  - 2300+ employees; 45 departments (June 2012)
Continuous improvement actions

Prioritization board

Institutional objectives (True North)

A3 project underway

Actions underway

Celebration

Training

Team and recognition

Source: Ariane Bouzette, CHU Mont-Godinne

Visual board and continuous daily improvement

What is the problem?
Why is it happening?
What is the potential solution?
What is its impact on the objectives of the organization (True North)?
Owner? Deadline?
**Daily Performance Huddle - Standard Work**

**Date Updated:** 6/2/2013  |  **Owner:** Karen Feng, et al.  |  **Performed By:** Managing, Supervising, Leads and Staff

**Time:** 10:15 am  |  **Tag:** Summery

**Standard Work Purpose:** The daily performance huddle is focused on improving performance by daily task-based knowledge. It is meant to establish the daily schedule of identifying and resolving defects, assigning resources, and reviewing work in process through completion.

<table>
<thead>
<tr>
<th>Action</th>
<th>Details (If applicable)</th>
<th>Time Diagram, Work Flow, Pictures, Time Study</th>
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<tbody>
<tr>
<td>1. Establish routine for the present.</td>
<td>- Number of defect per person (recommendation: ≤ 8 defects)</td>
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<tr>
<td>2. Begin with any prior improvement opportune identified, including resolving those identified from the audit sheet.</td>
<td>- Early improvement ideas or defect must be recorded on an Improvement Opportunity log, completed from Problem to Solution.</td>
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</table>

**IMPROVEMENT OPPORTUNITY**

- **Problem:**
- **Name:** [Name]
- **Date:** [Date]
- **Location:** [Location]
- **Problem:** [Problem]
- **Suggestions:** [Suggestions]

- **Owner:** [Owner]
- **What:** [What]
- **By When:** [By When]

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**Daily Work Observation Card**

| Role: Processor | Location: 8101 North 160th East (Olsby) / (Collaborative Care Adm) | Owner: 8016 / S506

**Process:** [Process]

**Start:** [Start Time]

**End:** [End Time]

**Comments:** [Comments]

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**Process:** [Process]

**Start:** [Start Time]

**End:** [End Time]

**Comments:** [Comments]
For its SCM, ThedaCare favors point of use storage in renovated nursing units

- 80% of needed supplies are stored in adjacent nurse server shelving
- White board used to communicate changes
- Milk run twice daily to replenish shelf when kanban switch is on (missing products must be found based on memory)
This case study presentation was prepared in collaboration with Ariane Bouzette and Patrick De Coster, MD

Collaborators:  more than 1,750 employees
Billings 155 million euros
Beds 445
Operating theaters 14
Admissions 17,500 (87% bed occupancy rate)
Consultations 200,000

“Work differently, work together”
The LEAN Journey began in October 2009

- September - October 2009
  - Total > 800 people from all domains (of 1,750 employees) directly "informed" (business board (unions), medical board, management, annual meetings, board of directors, education board, etc.)
  - Posters displayed in the hospital and articles published in employee newsletter
- Today
  - Total > 1,300 people have taken part in a training session (2-hour awareness training)
  - Total > 350 people have taken a 1-day training session
  - Strategic A3 and Hoshin Kanri (X matrix)
  - Gemba…internally…and externally!

Success Factors

- Not Guilty Charter
- Coordination of projects by the Chief Operations Officer (COO)
- Dedicated Lean team
- Training of all personnel…by the CEO and COO
- “Lean” Thursday lunch (initially in the CEO’s office)
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Insights and Key Success Factors

• Commitment and leadership from the top
  – Long-term vision + Patient focus
  – 4 P: President’s Passion, perseverance, patience - Dave Leschasins (DRH, St. Boniface)
  – Strategic management of priorities; make choices!
    • “Hospitals are working on so many things that they can’t get anything done” – John Toussaint (ThedaCare)
    • “Our job as leaders is to prioritize work” - Kim Barnas (ThedaCare)
    • “Deselect” – Dr. Tétreault (St. Boniface)
  – “Serene impatience”– Dr. Tétreault
  – “Success in a lean conversion ends up depending on those who lead the organization” - David Mann, 2005, p. 160
Insights and Key Success Factors

• Manage the processes, not the people/activities
  – The CEO is the sole owner of the horizontal or cross-functional processes

• Gemba
  – “Reducing the distance between those who establish the context and those who give care” – D. Berwick
  – It also means looking beyond … “steal as many ideas as possible and adapt” – J. Toussaint
  – Finding inspiration in the industrial sector

• Measurement and follow-up
  – Strategic alignment
  – Set a few major mobilizing objectives - True North.
    Target a single, major objective (e.g., patient safety)
  – Standard work for everything
  – Daily audits
  – Report out

• Change management
  – Gemba: to listen and communicate
Human resources
- Clear initial message: no layoffs
- Training and coaching of middle managers and professionals
- Respect for others…listening comes first
- Participation of everyone…physicians are real people!
- Hands + brain (“human power”: translated from Landry, 1996)
  - ThedaCare targets having 6,000 problem solvers

Physicians
- Patients first
- Evidence-based data and scientific problem solving method (PDSA-A3 thinking)
- Ensure that doctors’ concerns will be addressed by the proposed change

Structure and management of improvement projects
- Problem solving process (PDSA)
  - A3 thinking
  - Learning to learn
- Limit the size of the initial projects and, at the beginning, don’t try to go too fast
- Core improvement team
  - Develop lean skills internally rather than depending on consultants to do the work
  - A consultant can help to structure the process and can provide external/objective advice (sensei)
- RIE (5-day) is one method, but not the only one
- Patients participate in RIEs when possible
- Integrate improvement initiatives into daily activities
- Continuous daily improvement
Continuous Daily Improvement vs. Projects/RiEs

Lean team
- Reporting to the executive
- Permanent team
- Managers and professionals released for one or two years
- Support the process
- Steer the projects and RiEs
- Guide managers and supervisors in continuous daily improvement
- Train managers, professionals and employees

Insights and Key Success Factors
- Project structure and management
  - Integrate continuous improvement into day-to-day routine and improvement projects /RIEs

Continuous improvement and innovation

Continuous improvement

Innovation

Time
Participant questions (interactive session)

- Does lean, which emphasizes value creation for the patient, overemphasize time to bedside to the detriment of logistics processes (frequency of replenishments and decoupling of inventory next to patient rooms)?

- Are kaizen-type projects sufficient to improve the internal supply chain, or should automation also be part of the equation?

Lean, Transforming Care at Bedside, and Logistics?

[Graph showing the relationship between costs, order frequency, and inventory holding costs, with the optimal inventory level indicated.]
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Lean: The Sense, Essence, and Essentials

• Sense
  – **Significance**: Refers to applying TPS principles to healthcare
  – **Feed the senses**: Use tools that draw on the sense of sight, hearing…
• Essence
  – Problem solving approach
  – Standardization of processes
• Essentials
  – Follow-up
  – People
### Acting lean | Living lean
---|---
**Objective** | Reduce costs | Improve processes to benefit patients and employees
**Leadership** | Delegated to middle managers | Senior management provides constant reinforcement to all employees and professionals
**Unit of analysis** | Project | All processes and value streams
**Methodology** | Reference to the approach and tools applied as part of projects | Approach and tools applied by everyone every day. The emphasis is put on the problem solving process
**Performance measurement** | Complex and many | Simple, visual, and linked to strategic objectives
**Paradigm** | Lean yet? | Never-ending…

In collaboration with Stéphane Lemire, MD; adapted from ThedaCare

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**Don’t wait for the perfect conditions, new systems, or new resources…**

**Just do it!**