Lean Process Improvement in Outpatient Clinics

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Additional information available at:
http://www.outcomesmhcd.com/pubs/publications.htm
http://Leeds.colorado.edu/ApptSched
Agenda

1. Background on the Organization
2. Lean Approaches
3. The Lean Improvement Projects
4. Insights and Recommendations
5. Contributions and Future Directions
1. Background on the Organization
The Mental Health Center of Denver (MHCD) is a private, not-for-profit, 501 (c) (3), community mental health care organization

- Providing comprehensive, recovery-focused services to more than 11,500 residents in the Denver metro area each year. Founded in 1989, MHCD is Colorado’s leading provider and key health care partner in the delivery of outcomes-based mental health services.

- “Enriching lives and minds by focusing on strengths and recovery.”
MHCD Recent Innovation Awards

- **Effective Programs**
  - The U.S. Department of Health and Human Services Substance Abuse and Mental Health Services Administration (SAMHSA)
  - Science to Service Award 2009
    - GROW (Growth and Recovery Opportunities for Women) program.
    - Evidence-based interventions shown to prevent and/or treat mental illnesses and substance abuse.

- **Efficient Systems**
  - Our Lean Process Improvement in Outpatient Healthcare Project won recognition of the Colorado Behavioral Healthcare Council (CBHC) and received the 2009 Golden Abacus Award for Best practices in the Non-Clinical Arena [www.cbhc.org](http://www.cbhc.org).

- **Environment Leadership**
  - MHCD and its Together Green Team were nominated by the Governor’s Energy Office for a Colorado Environmental Leadership Program and were named a Bronze Award winner for its commitment to environmental leadership. Visit [http://www.cdphe.state.co.us/oeis/elp/index.html](http://www.cdphe.state.co.us/oeis/elp/index.html)

- **Awards based on measurable results and outcomes**

- **Services, Evaluation & Research, Quality & Operational Excellence**
Healthcare: Research and Operational Excellence

- Accountability
- Tracking and data availability
- Outcomes
- Quality management
- Efficiency
- Effectiveness
- Evidence-based practices
Research Capacity

■ Clinical and Rehabilitation Service Effectiveness

■ Quality Systems & Operational Excellence
  ▸ Ph.D. Staff: 4 + 1 Ph.D. Candidate
  ▸ OR, Statistics, Psychology
  ▸ Master-level Licensed / Certified Clinicians
  ▸ Evaluation & Research Team
  ▸ Sponsor and analysis of Lean Process Improvement
  ▸ Action Research
Action Research

“Research in action, rather than research about action; participative; concurrent with action; a sequence of events and an approach to problem solving.” (Coughlan and Coghlan, 2002)

Field study situation in which there was active communicating with practitioners, reporters, and the public in response to the initial study (LaGanga and Lawrence, 2007 & 2008)

Concurrently applying the emerging recommendations and insights to a real change process -- the lean process improvement program

The author was a direct sponsor and active participant in solving an operational problem and effecting change in an actual organization
2. Lean Approaches
Motivation

- **Healthcare Capacity**
  - Funding restrictions
  - Demand exceeds supply
  - Serve more people with limited resources

- **Manufacturing Scheduling**
  - Resource utilization
  - Maximize throughput

- **Healthcare Scheduling** as the point of access

- Maximize appointment yield
2007 *Consumer Reports* survey of 39,000 patients and 335 primary care doctors (Hitti, 2007)

- Top patient complaint was about time spent in the waiting room (24% of patients)
- Followed by 19% of patients who complained that they couldn’t get an appointment within a week
- Fifty-nine percent of doctors in the survey complained that patients did not follow prescribed treatment and 41% complained that patients waited too long to schedule appointments.
Literature: Access to Healthcare

- Institute of Medicine (2001)
  - *Crossing the quality chasm: A new health system for the 21st century.*


- Green, Savin, & Murray (2007)
Lean Approaches

- Reducing Waste
  - Underutilization
  - Overtime
  - No-shows
  - Patient Wait time

- Customer Service
  - Choice
  - Service Quality
  - Outcomes
Lean Process Improvement in Healthcare

- Documented success in hospitals
  - ThedaCare, Wisconsin
  - Prairie Lakes, South Dakota
  - Virginia Mason, Seattle
  - University of Pittsburgh Medical Center
  - Denver Health Medical Center

- Influences
  - Toyota Production System
  - Ritz Carleton
  - Disney

- Hospitals to Outpatient
  - Clinics run by hospitals
  - Collaborating outpatient systems
3. Lean Projects

Lean Process Facilitator and Sponsor at Lean Program Exhibit Booth, October, 2009
Lean Event Process at the Mental Health Center of Denver

Field Work: Interviews

11/14/2009

Kovach & Fredendall - DSI
Lean Projects Overview

- Rapid Improvement Capacity Expansion
- Express Intake
- Human Resources Hiring Process
- Grants Financial Management
- New Clinician Training
First Lean Project

Rapid Improvement Capacity Expansion (RICE) Team
January, 2008
Lean Process Improvement: One Year After Rapid Improvement Capacity Expansion

RICE Results

- Analysis of the 1,726 intake appointments for the one year before and the full year after the lean project
- **27% increase in service capacity**
  - from 703 to 890 kept appointments) to intake new consumers
- **12% reduction in the no-show rate**
  - from 14% to 2% no-show
- **Capacity increase of 187 additional people** who were able to access needed services, without increasing staff or other expenses for these services
- **93 fewer no-shows** for intake appointments during the first full year of RICE improved operations.

- **Annual cost savings (avoidance): $90,000 - $100,000** for staffing and space
Lean Process Improvement: 
**RICE Project System Transformation**

### Appointments Scheduled and No-Show Rates

#### Year Before Lean Improvement
- Appointments: [Graph Data]
- No-Show Rate: [Graph Data]

#### Year After Lean Improvement
- Appointments: [Graph Data]
- No-Show Rate: [Graph Data]
How was this shift accomplished?

- Day of the week: shifted and added
  - Tuesdays and Thursdays
- Welcome call the day before
- Transportation and other information
- Consolidated steps
  - Orientation to Intake Assessment
  - Eliminated an opportunity for no-show
- Group intakes
  - Overbooking
  - Flexible capacity
Lean Scheduling Challenge

- Choice versus Certainty
- Variability versus Predictability
- Sources of Uncertainty / Variability
  - No-shows
  - Service duration
  - Customer (patients’) Demand
- Time is a significant factor
- Airline booking models?
Second Lean Project

Express Intake Team
August, 2008
Motivation for Fast Track Intake

- More rapid access to targeted populations
  - Special grants and contract funding
  - No state CCAR needed
    - 7 pages
    - 25 outcome domains
- Scarcity of intake appointment slots
- Lengthy intake process
  - Average 2.07 hours
  - Many forms
    - 17 for adults
    - 19 for children/adolescents
Current State (Before Lean Event)

- Approximately 2/3 seeking services turned away
- If admitted, up to two week wait for intake appointment
- All slots filled early in the week
- Three or more staff required
  - Access center clinical / call taker
  - MIS staff
  - Intake clinician
Target State

- Provide high-quality services
- Provide access to more people seeking services
- Start service delivery promptly
- Match work time to reimbursement rate
- Positive consumer experience
- Valuable clinical outcomes
Gaps

- Treatment delays
- Perception that center is not accessible
- Inadequate reimbursement
- Redundant data collection
- Unnecessary work and data collection
- Errors in recording and processing data
Solutions

- Identify appropriate payer/contract sources
- Identify value-added intake information
- Reduced data items/forms from 17 (or 19) to 4
- No state CCAR outcome form
- Focus on appropriate outcome measures
Solutions

- Bypass Access Team
- Direct to designated clinicians
- Continuity of care
- Contact & Triage form
  - Halved from 4 to 2 pages
  - Completed by clinicians
  - Eliminate waiting for MIS staff to complete form
  - Use for all new intakes, not just special grants and contracts
Electronic Health Record

- Opportunities to streamline clinical work flow
- Improve quality of care
- Structures and standardizes work processes
  - Menus
  - Programmed logic and forms
  - Data validation and feedback
- Lean Paradox
  - Bottleneck in programming
  - Implementation delays in some projects
- New forms and intake processes within 90 days
Results with Department of Corrections

- Prison parolees
- Rate of intakes *tripled*
- Duration appeared unchanged
- Standard versus actual time recorded
  - 3 hours > 2.07 average of other clinicians
Lean Process Improvement: (First 3 months)

Express Intake: Fast Track Project

![Graph showing Clinician Time to do Intake](image)
Summary of Results

- In the first three months of operation, the average service time decreased from 2.06 to 1.98 hours.
- Effect small but significant (p < .05).
- More encouraging is the change in the distribution of service time,
- Percentage of total intakes that were completed within two hours increased from 67.5% to 75%
- so the percentage of intakes exceeding two hours decreased from 32.5% to 25%. 
Results

- Service times shortening
- Decreased range and variability
- Room for more intakes
- Increased access to services
Other Efficiencies

- Elimination of “Hidden factory” of MIS
  - Not captured in EHR system
  - Data entry
  - Checking and correcting clinician errors
  - Not visible in productivity measures

- More profitable enrollment
  - Ensure correct billing to appropriate payers

- Appropriate outcome measures
Third Lean Project

Human Resources Hiring Project
October, 2008
Hiring: Improving a Business Process

- Delays and bottlenecks in communication
- Automated communication
- Built on Electronic Health Record
- Required systems analysis and programming
- Six months to implement
- Reduced time to fill positions by 3 days
- Harder to measure than clinical improvement
Fourth Lean Project

Grants Financial Management Team
December, 2008
Financial Management: A Business Process

- Initial state: Lack of feedback and reporting
- Requires technology and programming
- About a year to implement
- Dependent on completion of prior lean project for staff tracking and allocation
Fifth Lean Project

New Clinician Training Team
January, 2009
New Clinician Training: A Business Process

- Target State: Clinicians trained to be productive within 3 days of hire
- Job requires use of Electronic Health Record
- Quickly determined how to achieve target
- Designed new training program
- Implemented initial computer training within 1 month
- Development of on-line training modules: Little progress due to other staff commitments
4. Insights and Recommendations
The Right People

- Talents
- Credibility
- Stakeholders
- Ownership
- Motivation
  - “People are our product”
  - What’s in it for me?
  - “Why am I being punished?”
  - “Can I come back tomorrow, too?”
The Right Problems

- The first project was a perfect fit
  - Immediate change
  - Energized and committed participants
  - Technology was valuable for measurement
  - Didn’t require reprogramming EHR
  - Success fueled interest

- Not everything could or should be a lean project

- Lean paradox
  - Bottlenecks
  - Rapid improvement: Not!
The Lean Paradox: Projects by Functional Area

Electronic Health Record Programming and Enhancements
Project Management and Organizational Discipline

- Assigning ownership and follow-through
- Critical mass
  - Project management systems
- Selective about lean projects
- Improving measurement processes
- Working on financial analysis
7. Contributions & Future Directions
Contributions

- Outpatient services crucial to cost-effective healthcare delivery
- Lots of hospital research but little in outpatient
- Lean can greatly expand direct service capacity
- Room to leverage lean outpatient business process improvement
Future Work

- Ongoing analysis and improvement of lean approaches
- Continued action research on Quality Improvement in outpatient settings
- Lean Learning Collaborative
  - Find other outpatient organization using lean
  - Gather and share ideas through on-line group
    - Lean Leaders and Catalysts for Improvement on LinkedIn
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