Healthcare Systems and Their Use of Operations Management and Decision Sciences Techniques at *Mental Health Center of Denver*

Annual Meeting of the Decision Sciences Institute

November 17, 2013, Baltimore, MD

Linda LaGanga, Ph.D., Director of Quality Systems & Operational Excellence

Jim Linderman, M.A., Program Evaluator

Craig Iverson, M.A., Manager of Lean Six Sigma Process Improvement

CJ McKinney, Ph.D., Manager of Analytics

Cathie McLean, M.A., Manager of Clinical Quality Improvement

Wes Williams, Ph.D., Director of Research & Development

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Enriches Lives and Minds by Focusing on Strengths and Recovery

- Private, not-for-profit 501(c)(3)
- Community Mental Health Center
- Serving Denver City & County residents since 1989
- Serve an average of 16,500 people per year
- Approximately 8,250 active consumers at a time
- 600 employees; about 400 are clinical staff

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Variety of Services

- Prevention
- Psycho-education
- Group & Individual Treatment
- Intensive Case Management
- Resource Center
- Pharmacy

Evidence Based Practices

- Early Childhood Intervention
- Integrated Primary Care
- Substance Use Treatment
- Supported Employment

Variety of Settings

- Schools
- Outpatient Clinics
- Nursing Homes
- Correctional Facilities
- Residential Services

Culturally Competent

- Bi-Lingual Services
- Deaf/Hard of Hearing
- Living with HIV/AIDS

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Settings and Perspectives Considered

- Outpatient Behavioral Health
- Current emphasis on *Integrated* care
  - **National report finds one-in-five Americans experienced mental illness in the past year** (Substance Abuse and Mental Health Services Administration, 2012)
  - Primary care providers not trained in behavioral health
  - 25-year reduced lifespan for those with severe mental illness (Colton and Manderscheid, 2006)
  - Challenges in access, coordination, payment, information

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Quality Systems and Operational Excellence

Operational Excellence:
Linda LaGanga

Consumer Advocacy:
Steve Baumer

Clinical Quality Improvement:
Cathie McLean

Faith & Spirituality:
Denny Middel

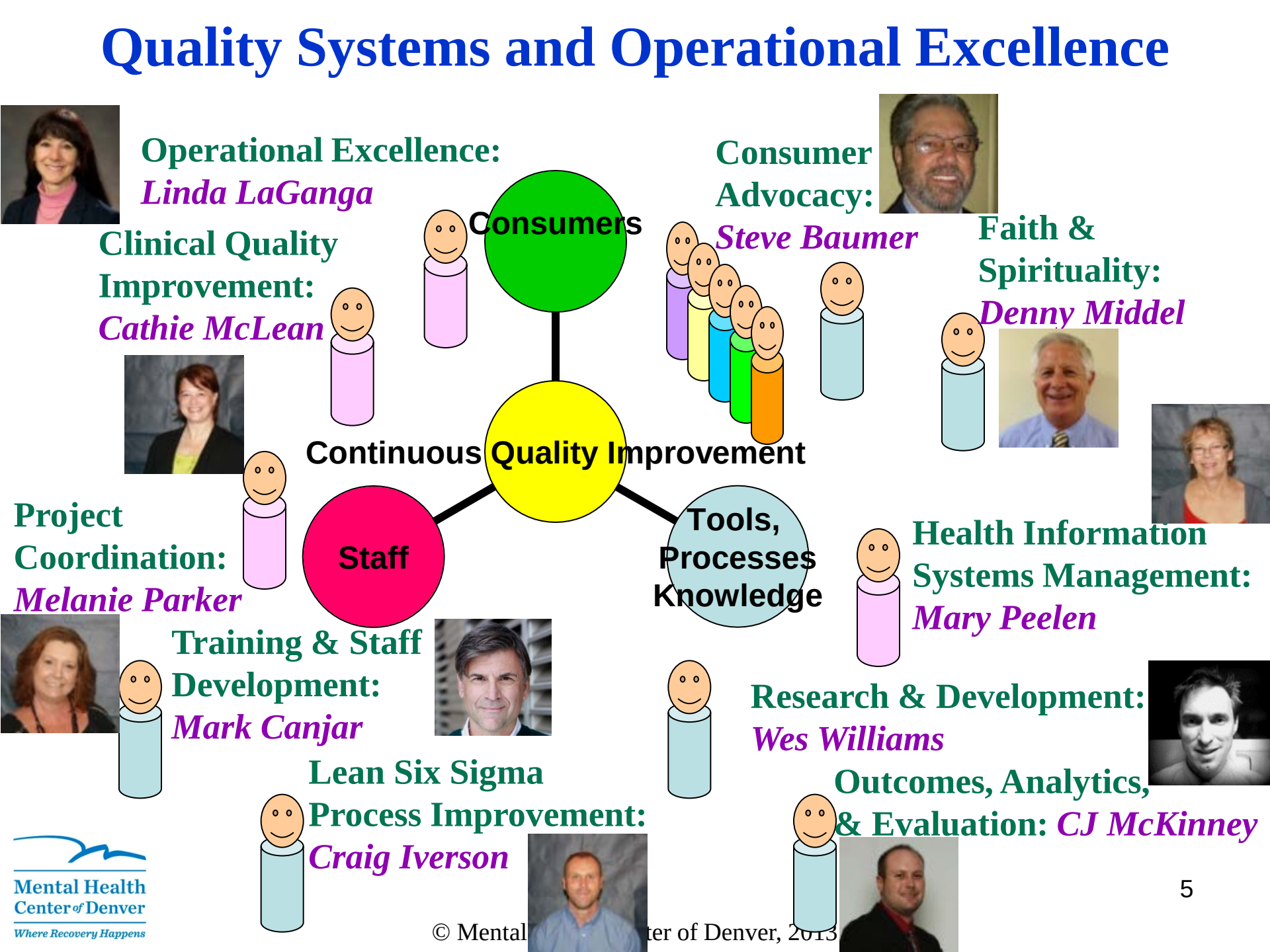
Project Coordination:
Melanie Parker

Training & Staff Development:
Mark Canjar

Research & Development:
Wes Williams

Lean Six Sigma Process Improvement:
Craig Iverson

Outcomes, Analytics, & Evaluation: ***CJ McKinney***



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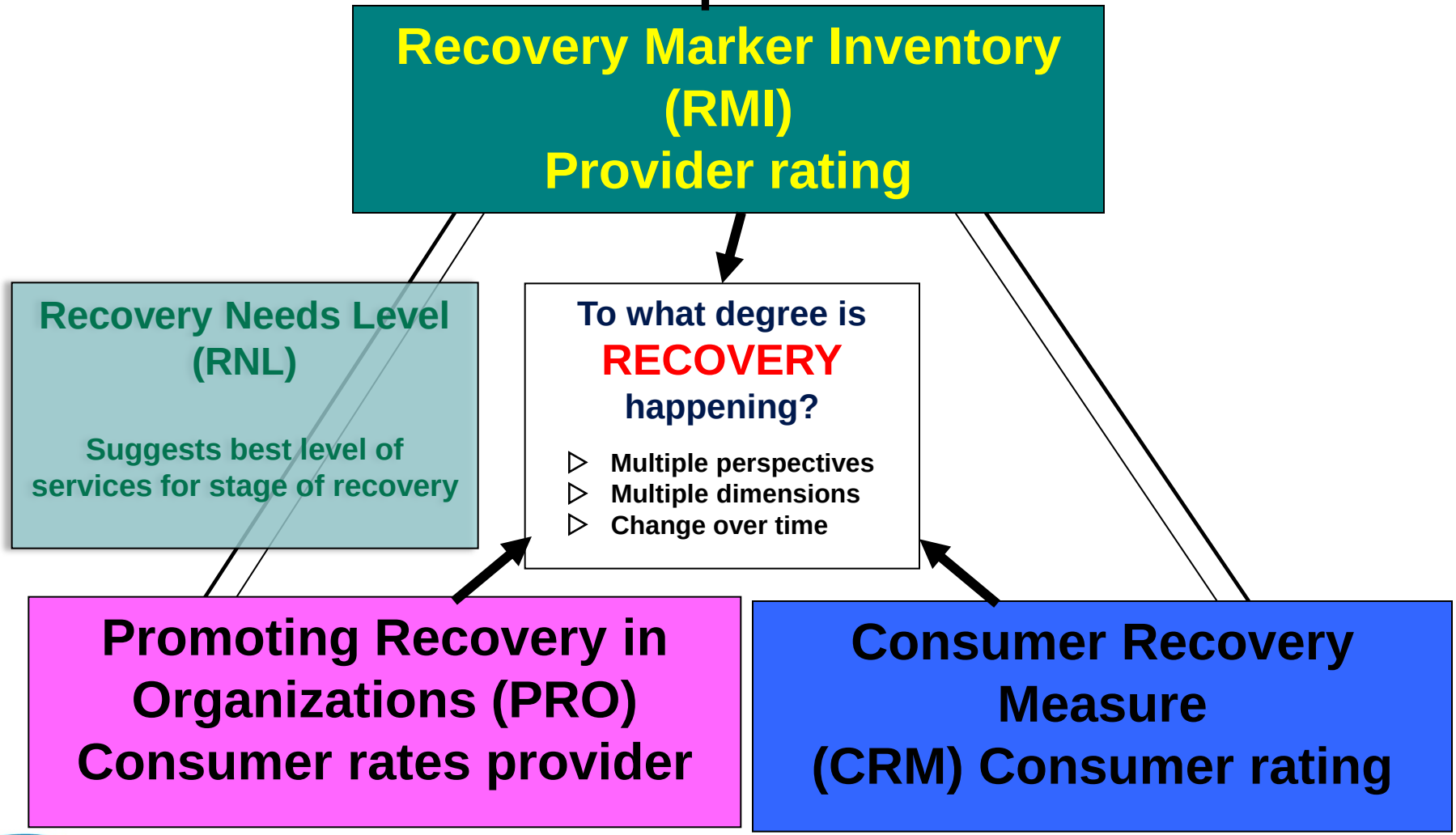
We change lives, we measure it and prove it!



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Recovery Marker Inventory measures recovery from clinicians' observations

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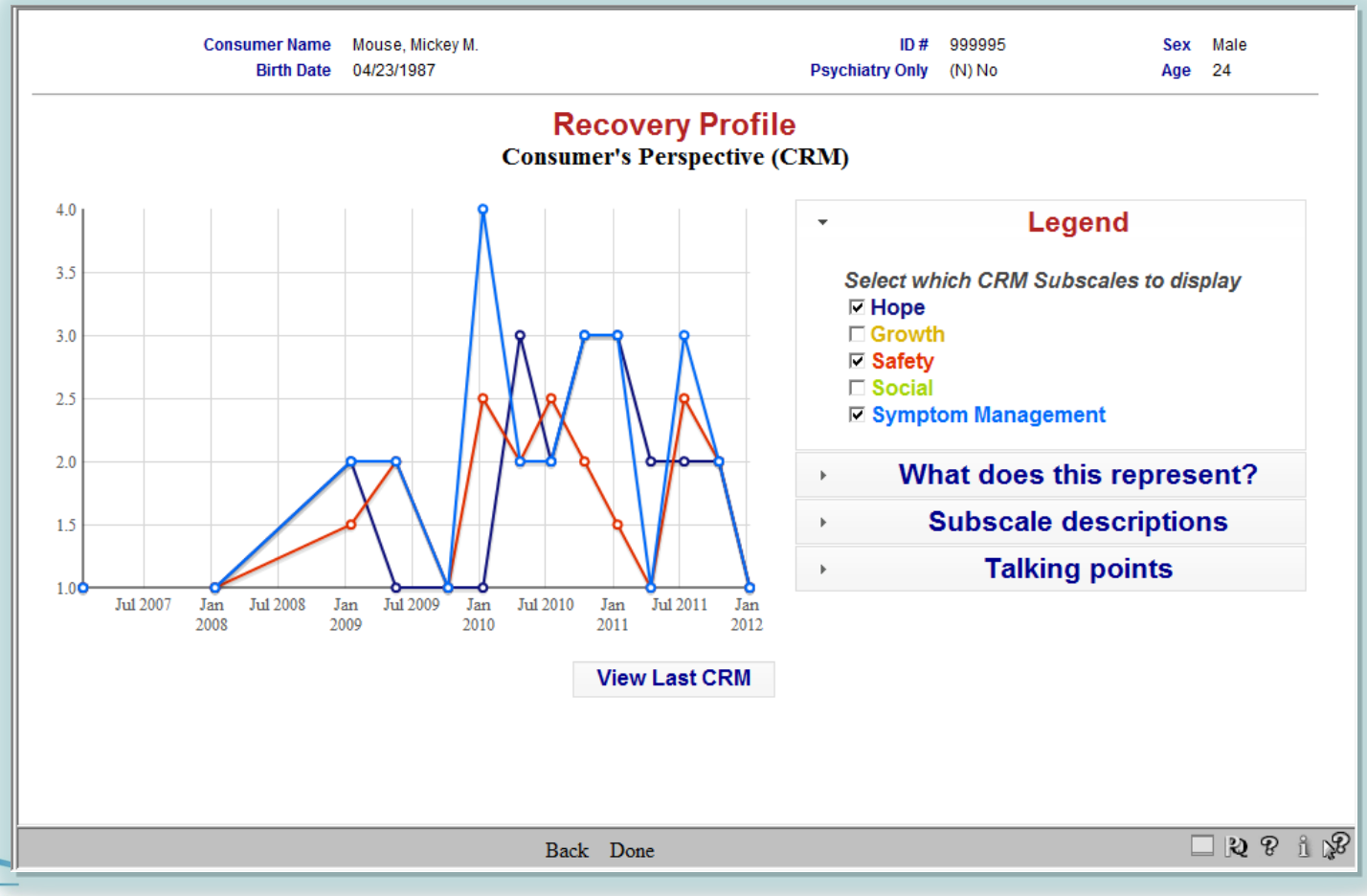
Consumer Recovery Measure captures consumers' perspectives



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Doing it *Better*
Using Outcomes to Drive Recovery-Focused Practice

Development of Recovery-focused Outcomes

The Four Measures of Recovery

Using Data and Reporting To Drive Recovery Transformation

And tools of Quality/Process Improvement!

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Applied Lean, Six Sigma, and Quality/Process Improvement Models, building on:

- Initial Intake process: Realigning work by day of week and time of day to reduce no-shows and extend capacity (LaGanga, JOM, 2011)
- Integrated Care: Design for Six Sigma (Iverson, Kovach, Fredendall, POMS-CHOM Miniconference, 2013)
- Same-day Scheduling (Linderman et al., INFORMS 2013; Mock et al., POMS-CHOM Miniconference, 2013)
- Ideas to Action: Application of Quality Tools in Outpatient Healthcare (McLean et al., INFORMS 2013)

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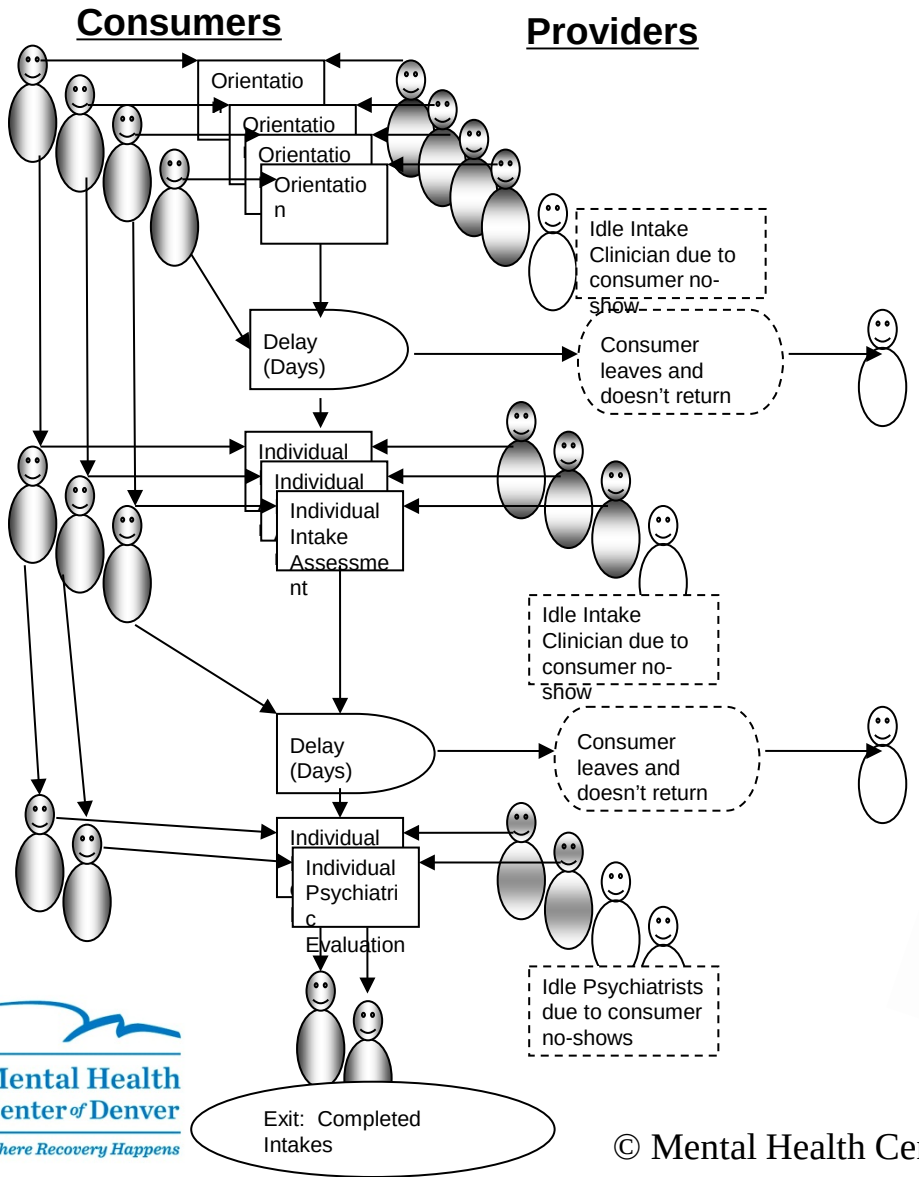
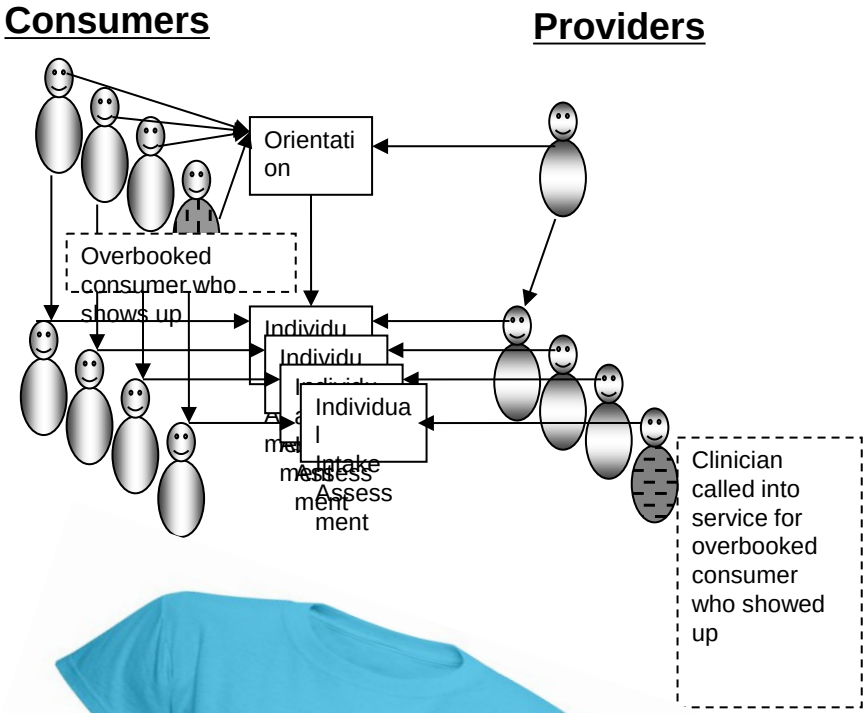
Access & Intake Process

Before and *After*

Lean Process Improvement





27% More Intakes!

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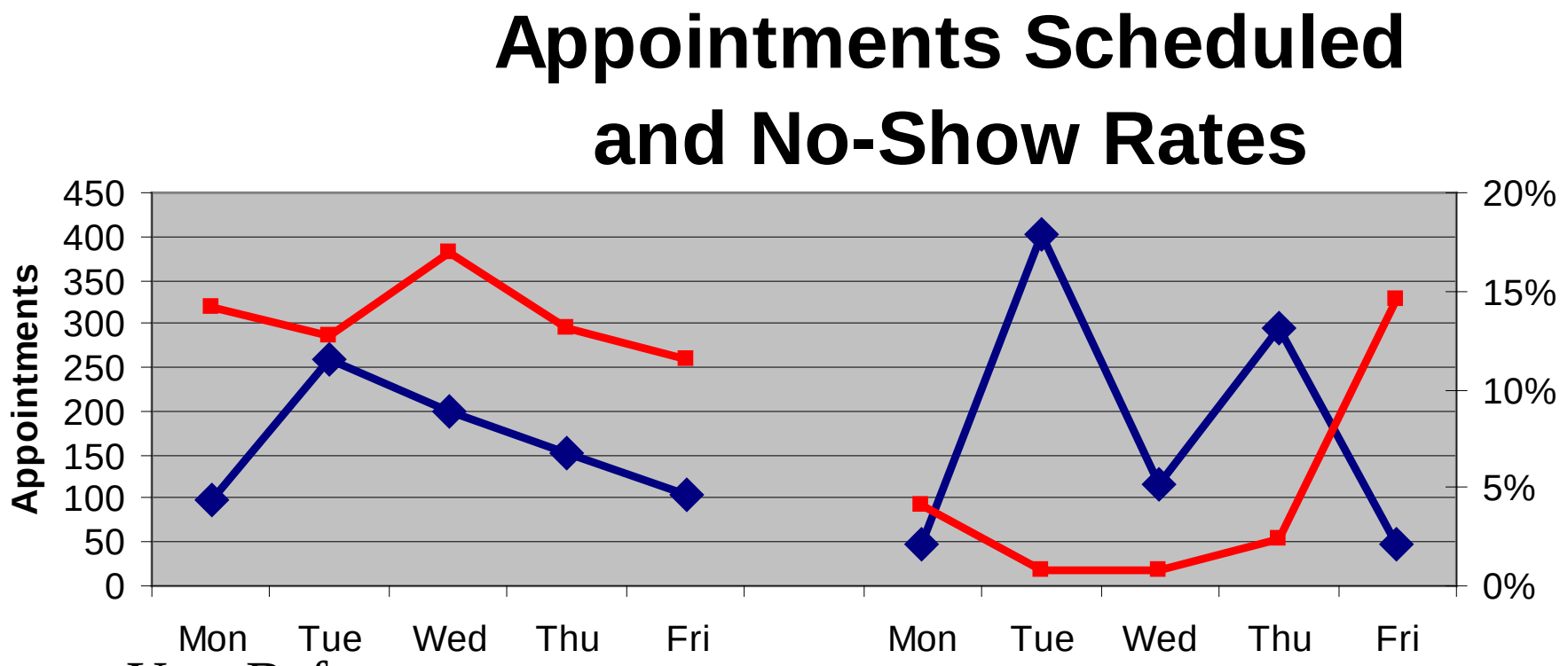
Rapid Improvement Capacity Expansion
Increased Intakes 27%, Served 187 more people



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Focus: Creating More Capacity

- Lean Approaches
  - Hire and onboard clinical staff more quickly to have servers ready and available (Two Lean event completed, December, 2012): Decrease leadtime 43%!
  - Same-day Scheduling National Learning Collaborative (August, 2012 – July, 2013)
    - Monitored and changed behavior of consumers and providers
    - Reduced no-shows and cancellations
    - Reduced non-productive documentation time and enhanced the service experience
  - How?

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Scheduling, Capacity, and Throughput Models

- Adult clinic implemented same-day scheduling based on direct clinical knowledge, not simulation
- Worked to expand capacity by driving down unused appointments caused by cancellations and no-shows
- Increased effective service capacity by reducing overproduction of documentation
  - Concurrent, collaborative documentation

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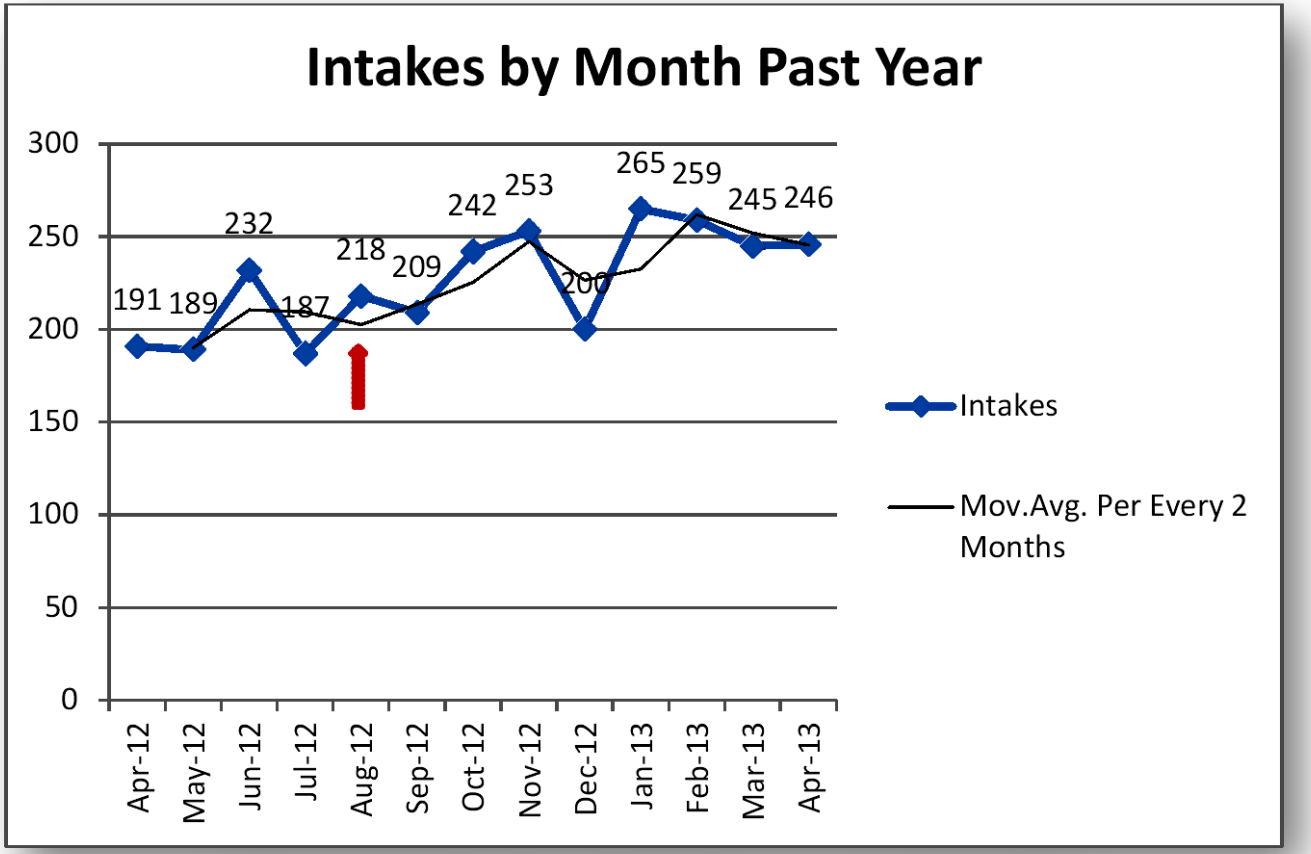
New Consumers Admitted Increased 16%



*Apr 12-Aug 12 Pre NC and Same Day Access Implementation
*Aug 12-Apr 13 Post NC and Same Day Access Implementation

Changes from April 12' to April 13' Intakes per Month (Oct being 7th month or halfway point)

Apr 12-Oct 12 Avg	Oct 12-Apr 13 Avg	% Increase	Consumers Per Month Increase (on Avg)
210 Intakes/Month	244 Intakes/Month	16%	34

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Results from Same-Day Access Project

- Average time from first call to intake was reduced
  - Appointments offered 6 days earlier on average
    - 9-day lead time reduced to 3 days (67% improvement)
  - Actual arrival for intake occurred 7 days earlier on average
    - 12-day lead time reduced to 5 Days (58% improvement)
- Staff kept rate is ideal (92% overall)
- Target no-show rate (better but currently 17% overall).
- Capacity appears to have increased
- 34 consumers more per month from Oct 2012 to Apr 2013 compared to previous 7 month period.
- Successful pilot. Try with more staff.

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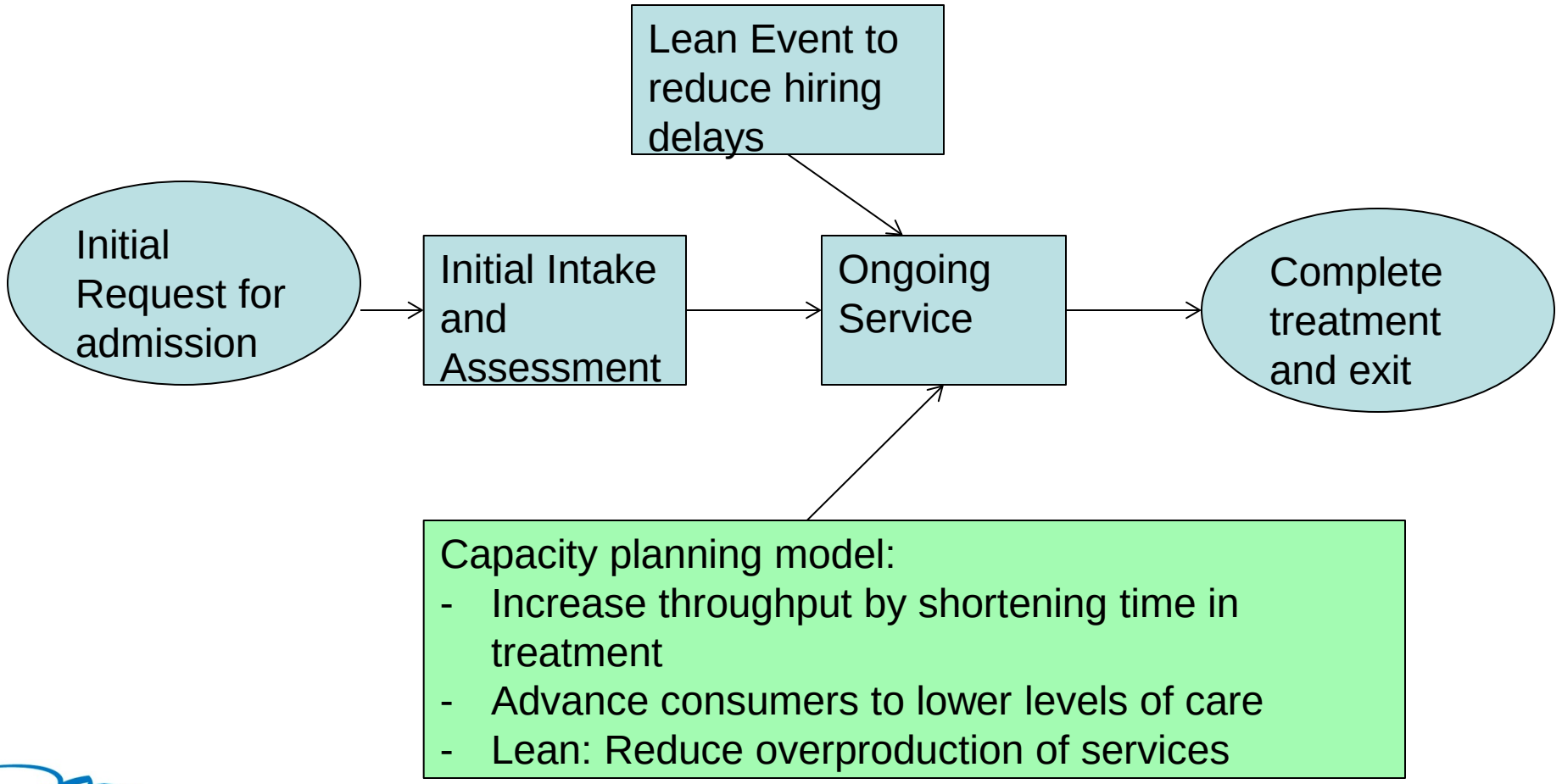
Keep consumers moving, serve more



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Lean as a Pillar in Our Wellness Culture

What are my natural strengths?
Strengths Finder

Putting my strengths to work:
Catalytic Coaching

Engaging Everyone!

Beliefs

Behavior

Best!

Better

Measuring Results:
Staff Engagement
Staff Satisfaction
Consumer Metrics

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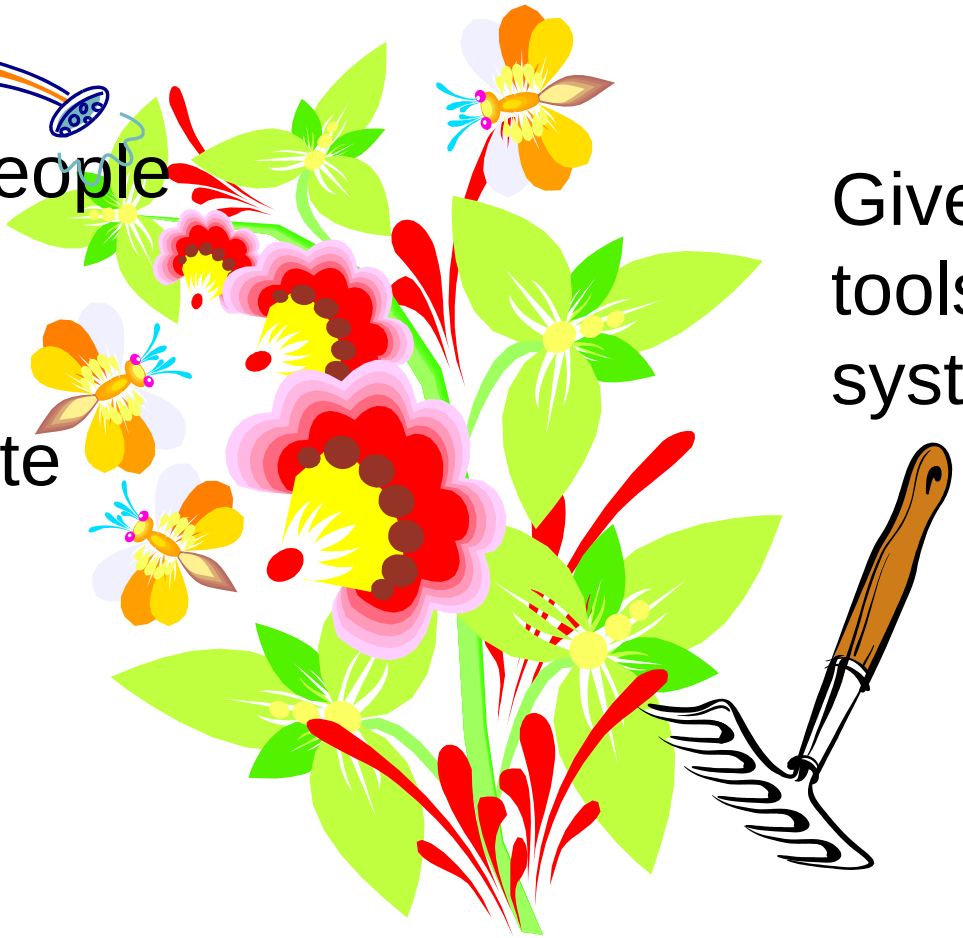
Cultivating a culture of operational improvement

Grow our own people

Train and educate them



Give them tools and systems

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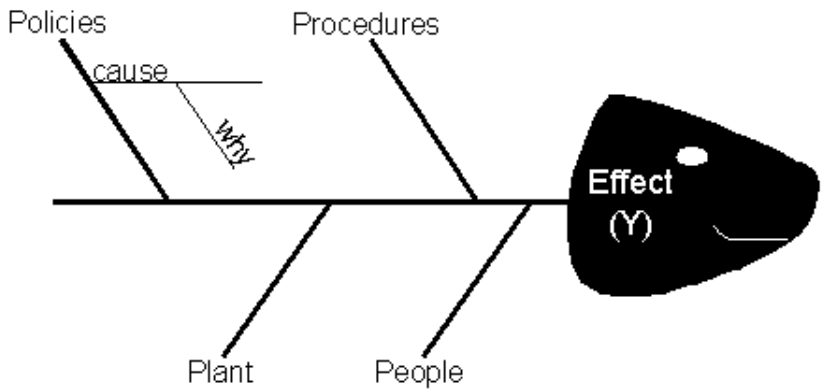
We build on staff strengths

- Recent Lean Six Sigma Workshop for Colorado Behavioral Healthcare Council conference:
  - Overview of principles and hands-on use of affinity diagrams, flow charts and root-cause analysis
  - "This was my first formal exposure to Lean and Six Sigma. The very next day I applied something I learned in your workshop in a meeting. I could see an immediate application of the tools."
- The proof is in the *Fishbone* pudding!



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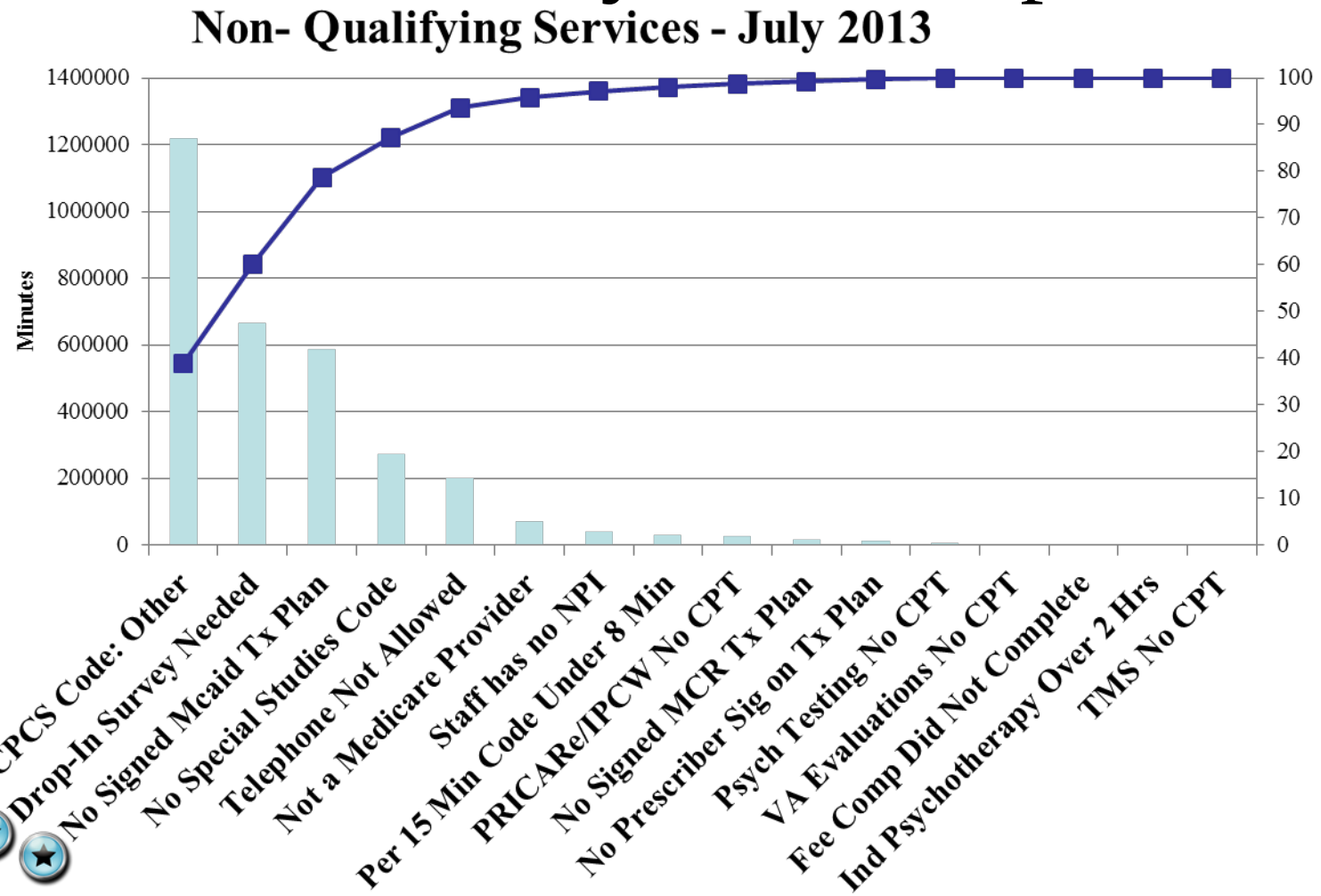
Everyone engaged in Quality Systems Tools of Quality Workshop



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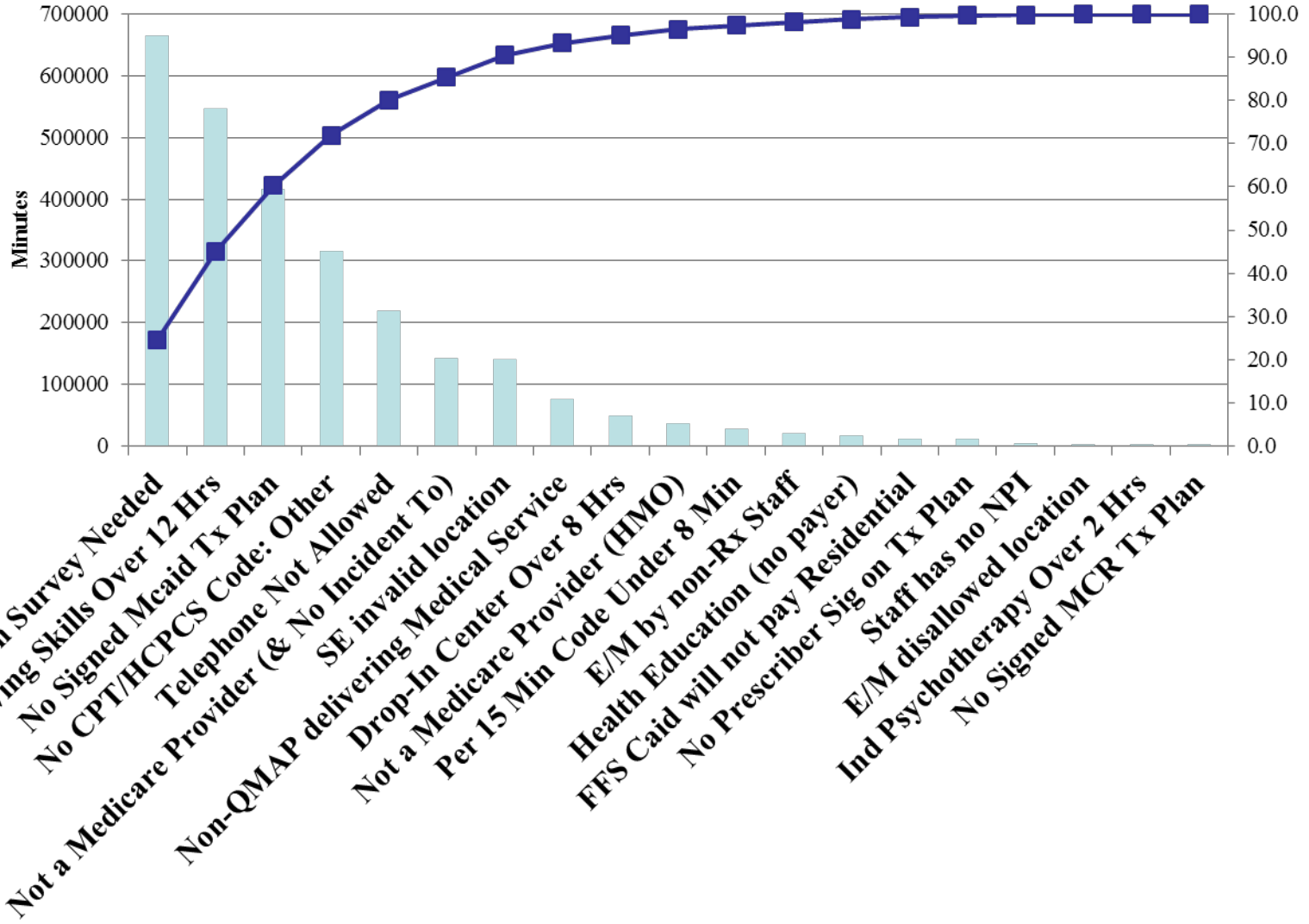
Non-Qualifying Services - Aug 2013



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Count Type	Service Provided	Billable Code Used	Claim Submitted	Payment Received
Billable	✔	✔	✔	✔
Non-Qualifying	✔	✔	**"DEFECT"**	
Never Billable	✔			

What are the most frequent "defects"?

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Within just one month…

Outcomes

- **2%** of these items **moved to the billable category**
- **Prioritized interventions** despite a complex array of issues impacting billing
- **Gained granular understanding** about “defects”
- **Created a comprehensive report** that allows us to **monitor these business interests** and work towards **identification of target states**

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Count Type	Service Provided	Billable Code Used	Claim Submitted	Payment Received
Billable	✔	✔	✔	✔
Non-Qualifying	✔	✔	**"DEFECT"**	
Never Billable	✔	**"DEFECT?"**		

Is cost of doing business accurately represented?

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Recent Lean Project at MHCD

- Hiring new staff
- Reduced from 89 to 51 days (average), median 46.5
- Reduction of mean = 43% = 38 days faster!
- Estimated savings for one Case Management position:
- Vacant position cost: CM 1 salary $30,888.x3(average cost of position to company)= $92,664 divide by 52 weeks= $1,782.00 cost per week.
- Above data suggests a ***5.5 week decrease in hiring time***.
- ***5.5x $1,782.00 = $9,801.00*** savings in one CM position by hiring faster. Source: LasoCareers.com

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Tools of Quality Add Focus

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Tangibles and Action Trumps Theory

- Appointment Scheduling and Lean Research
  - LaGanga & Lawrence, DSJ (2007).
  - LaGanga, JOM (2011)
  - LaGanga & Lawrence, POM (2012)
  - LaGanga & Lawrence, EurOMA (2012)
  - Lean for Dummies case study (2012)

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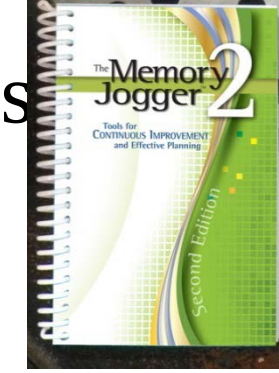
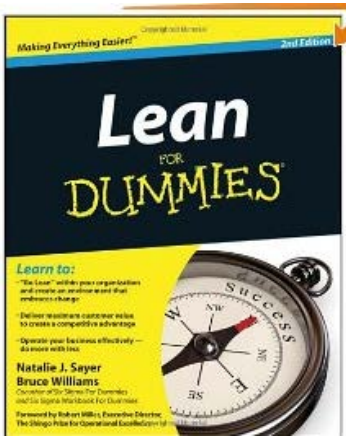
Tools we Use for Focus, Fun, and Results



- Books and Printed Materials
  - The Memory Jogger 2: Tools for Continuous Improvement and Effective Planning, ISBN 978-1-57681-113-9 or see www.MemoryJogger.org
  - Lean for Dummies, Second Edition, by Natalie J. Sayer and Bruce Williams
    - Chapter 15, Real-Life Lean, Getting New Consumers to Show-up to Scheduled Appointments, pages 327-331



- Web sites
  - The American Society for Quality: www.asq.org
  - Tools of Quality: http://asq.org/learn-about-quality/seven-basic-quality-tools/overview/overview.html
  - www.isixsigma.com Tools and Templates
- Add structured process analysis and simulation

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Linda LaGanga, Director of Quality Systems & Operational Excellence
linda.laganga@mhcd.org

Cathie McLean, Quality Improvement Manager
cathie.mclean@mhcd.org

Craig Iverson, Manager of Lean Six Sigma Process Improvement
craig.iverson@mhcd.org

Wes Williams, Director of Research & Development
wesley.williams@mhcd.org

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