

# Denver Health's Lean Journey of Transformation

*Lean: Saving Lives, Saving Money, Saving Jobs*

Jessica Vastola  
Associate Director of  
Lean Systems Improvement



# What is Lean?



Lean can be defined as a systematic approach of continuous improvement, based on the Toyota Production System (TPS) of lean principles and lean tools, used for the identification and elimination of waste.

# Principles of Lean

- The customer defines value
- Deliver value to the customer on demand and without waste
- Standardize to solve and improve
- Transformational learning requires a deep personal experience
- Mutual respect and shared responsibility enable higher performance



# Lean Pillars of Transformation

## ***Two Pillars***

**Respect for  
People**

**Continuous  
Improvement**

# Lean Tools

## Lean Tools for Identifying Waste

- Process Mapping
- Spaghetti Diagram
- Time Observation
- Waste Walk
- Communication Circle
- Cycle Time Bar Chart
- Ask Why 5 Times
- Fishbone Diagrams
- Root Cause Analysis

## Lean Tools for Fixing Waste

- Standard Work
- Mistake Proofing
- Pull Systems
- Level Loading
- Visual Management
- Quick Change
- Andon (Stop the line!)
- Quality at the Source
- Just in Time Inventory



# Lean Values

- **WASTE IS DISRESPECTFUL OF SOCIETY BECAUSE IT WASTES SCARCE RESOURCES**
- **WASTE IS DISRESPECTFUL OF INDIVIDUALS BECAUSE IT ASKS THEM TO DO WORK WITH NO VALUE**

- President Toyota

- **WASTE IS DISRESPECTFUL TO PATIENTS BY ASKING THEM TO ENDURE PROCESSES WITH NO VALUE**



# Lean Deployment at Denver Health



- DH Black Belts (BBs):
- 48 hours lean training
- Day to day lean
- RIE team leads
- Bi-Monthly reports
- BBs embedded throughout clinical and non-clinical areas

- Rapid Improvement Events (RIEs)
- Utilize Simpler SBS® Methodology
- RIEs based on Value Stream Analysis
- 18 Value streams, 10 RIEs per month
- 7-9 members per team
- RIEs coordinated by 9 Lean Facilitators

## Denver Health Black Belts

Cheri Adams	Tim Brannigan	Ivor Douglas	Pete Gutierrez	Mary Kilfoyle
Richard Albert	Patty Brewis	Cindy Duff	Maureen Guy	Nancy Klock
Mark Anderson	Daniella Brown	James Duke	James Haenel	Steven Kolpak
Valerie Archuletta	Jennifer Brown	Andrea Ellis	David Hak	Teresa Kukolja
Morris Askenazi	Gary Bryskiewicz	Robin Engleberg	Simon Hambidge	David Kvapil
Peggy Baikie	Eliza Burelle	Julie Entwistle	Pamela Hammond	Diane Lamon-Anich
Holly Batal	Annette Callahan	Linda Fielding	Michael Hanley	Patricia Lanius
Kathy Beauchamp	Margie Campbell	Nettie Finn	Mario Harding	Eric Lavonas
Louis Beauchamp	Ingrid Cannon	Rachel Fisher	Karl Haught	Stephen Lasky
Mike Benedict	Chris Carey	Rebecca Fox	LaVonna Heath	Stewart Layhe
Matt Beno	Wendy Carlton	Richard French	Sara Henderson	Jay Lee
Jennifer Bishop	Kim Carroll	Amy Friedman	Jean Holzwart	Vickie Lesnansky
Andrew Bjork	Betsey Chambers	Kenneth Fuller	Scott Hoye	Deborah Linehan
Robert Blechar	Sharon Chamness	Jeremy Garcia	Marcia Humphress	Julie Liston
Heide Bliss	Tammy Chasteen	Mark Genkinger	Stephen Jackamore	Jeremy Long
Shannon Block	Eugene Chu	Joseph Gerardi	Fred Kampe	Lucy Loomis
Greg Bogdan	Jonathan Clark	Mary Gillman	Lee Ann Kane	Carol Lovseth
Mark Bollig	Chris Colwell	Philip Goodman	Teresa Karre	John Lundin-Martinez
Scott Bookman	Debbie Crawford	Scott Gorseigner	Carmen Kassatly	Ingrid Luszko
Kathy Boyle	Quin Davis	Jody Green	Linda Kaufman	Stephen MacClod
Jeff Brandt	Shirlee Davis	Patrick Green	Pat Keller	Chryss MacGowen
	Niall Doherty	Daniel Grossman	Angela Keniston	Thomas MacKenzie
	LeAnn Donovan	Triche Guenin		Mary Magee
		Craig Gurule		

## Denver Health Black Belts

Melinda Marcotte

Deb Markson

Dee Martinez

Mike McCarty

Tom McCloskey

Nancy McDonald

Dean McEwen

Maura McHugh

Tricia Mestas

Peter Metropulos

Howard Miller

Brian Milton

Kendra Moldenhauer

Trisha Muchow

Ellen Mulhern

Robyn Nagy

Benjamin Nelson

Kim Nelson

Polly Nelson

Scott Nimmo

Fred Novy

Kelly O'Brien

John Ogle

Mike O'Malley

Sue Parkins

Kelly Parnigoni

Pamela Paulson

Jeffrey Pelot

Lara Penny

Philip Pettigrew

Mary Pinkney

Luke Poppish

Julie Potocnik

Nicole Powell

Susan Proudfoot

Tina Quintana

Carmen Rael

Mark Reid

James Robinson

Kathryn Root

Denise Rosnick

Greg Rossman

Michelle Ryan

Elizabeth Ryder

Tom Sangster

Jeffrey Sankoff

Michael Sawyer

Deborah Scherger

Ann Schumann

Carrie Scott

Pamela Senneff

Lee Shockley

Nicole Stafford

Cheryl Stephenson

Sherry Stevens

Norma Stiglich

David Symonds

Jen Szczepanski

Deb Tackett

Jackye Thompson

John Thompson

Steven Thompson

Gregg Thress

Patricia Tillapaugh

Ron Townsend

Kathy Uran

Susan VanDyk

Anna Vance

Jessica Vastola

Audrey Vincent

Rachel Ward

Sueann Wittkopp

Bob Wolken

James Woods

Mark Wright

Karen Valentine

Peggy Wimmer

Robin Yasui

# Black Belt Projects



DH Black Belts are using lean everyday, in every way....here's a few examples:

- Engineering: \$428, 277 reduction in supply expenses
- Paramedics: \$11,760 reduction in detergent for washing ambulances (LEAN and GREEN!)
- Pharmacy/RT: \$363,000 savings for inhalers
- Occupational Health: Drug Screenings \$2,500 savings.... \$1 savings/rapid screen, 2500 rapid screens/year

# Rapid Improvement Event (RIE)

## –Using Lean Tools in Focused Manner

<b>Day 1 Mon</b>	<ul style="list-style-type: none"><li>• Examine a process/function or area</li><li>• Identify areas of waste, non-value added steps</li><li>• Identify metrics</li></ul>
<b>Day 2 Tues</b>	<ul style="list-style-type: none"><li>• Develop new process, standard work and communication to eliminate identified waste and increase value</li><li>• Design rapid experiments</li></ul>
<b>Day 3 Weds</b>	<ul style="list-style-type: none"><li>• Implement the new processes, standard work</li><li>• Monitor production board and communicate standards</li><li>• Observe new process and any change in metrics</li></ul>
<b>Day 4 Thurs</b>	<ul style="list-style-type: none"><li>• Adjust and fine tune new standard work</li></ul>
<b>Day 5 Fri</b>	<ul style="list-style-type: none"><li>• Celebrate!</li></ul>

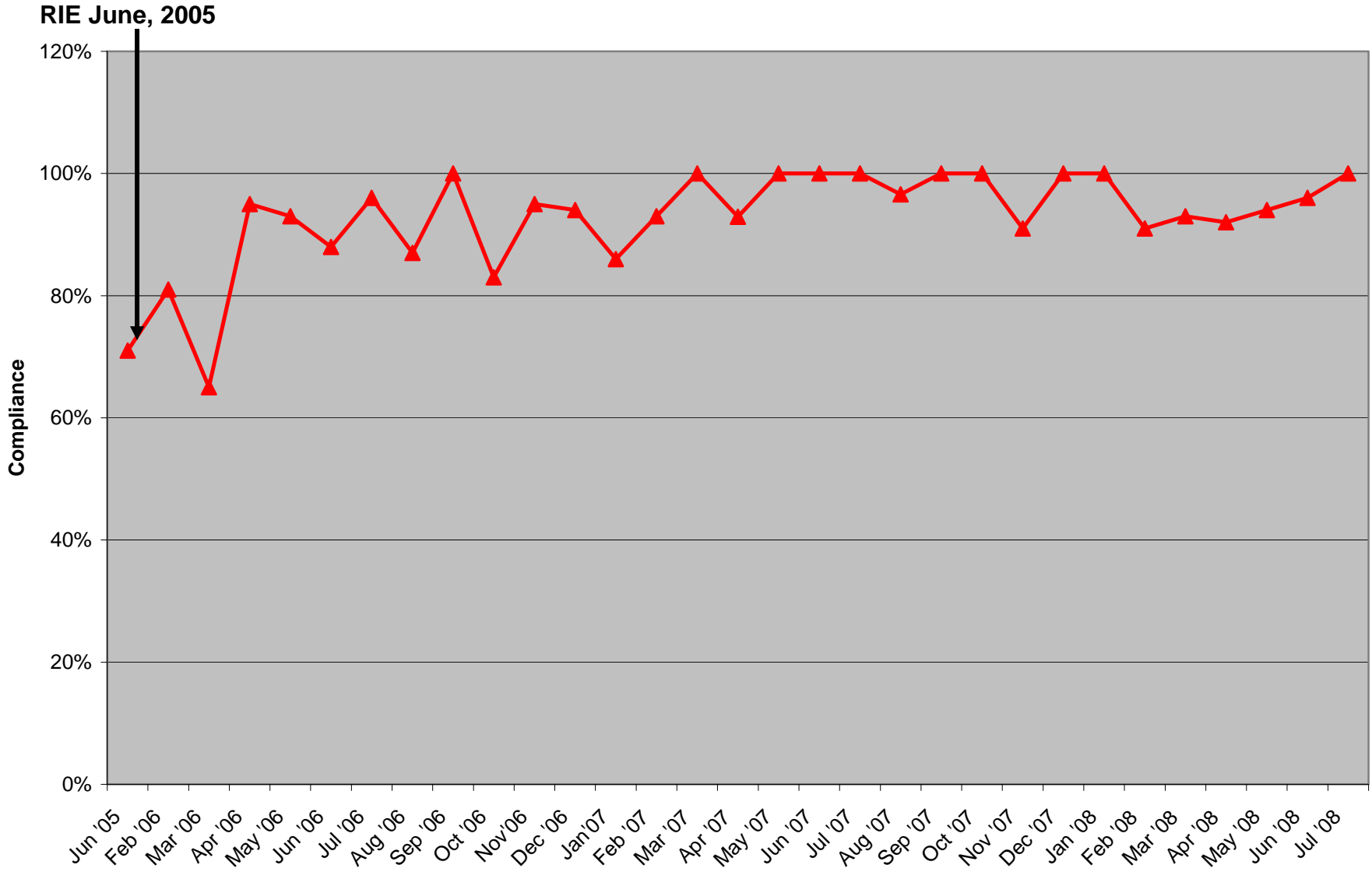
# RIE Example: Surgical Site Infection Prevention

June 6-10, 2005



Surgical Site Infection Prevention Rapid Improvement Event		
Day 1	Day 2	Days 3 & 4
<p>Developed current state map indicating the pre-operative process for administration of prophylactic antibiotics.</p> <p>Identified major hurdles to achieving the goal of administering antibiotics within one hour of the initial surgical incision.</p> <p>Reviewed 10 cases to help establish baseline "success rate" (80%).</p> <p>Went to "Gemba"-walked through the process, ie., (waste walk", and confirmed current state map.</p> <p>Established goal of 100% compliance.</p>	<p>Discussed issues with front-line RNs and physicians in the OR, APC, and PACU</p> <p>Developed "ideal and future state maps.</p> <p>Brought in experts for development of antibiotic selection guidelines.</p> <p>Developed communication plan.</p> <p>Confirmed with key stakeholders: Nursing staff, surgeons, anesthesiologists, and pharmacy.</p> <p><i>Changed OCTOR practice to "In the OR"</i></p>	<p>Implemented new process.</p> <p>Observed new process in place.</p> <p>Received positive feedback from APC nursing staff!</p> <p>Continued to modify Antibiotic guidelines.</p> <p>Established methods for monitoring ongoing metrics.</p> <p>Created standard work for new process.</p> <p>Day 5 Report of issues, interventions, and results to executive staff.</p>

# Antibiotic Prophylaxis



# RIE Employee Engagement YTD June 30, 2011



- 365 Rapid Improvement Events
- 1,675 Employees participated on RIEs, representing 220 Departments
- 18 value streams

# 2011 Value Streams



Revenue Cycle	1 <sup>st</sup> Floor
Managed care	Education
RMPDC	OB/Gyn
Paramedics	Primary Care
e-Health Services	Human Resources
Nursing	Behavioral Health
Laboratory Services	Supply Chain
Pharmacy	Perioperative Services

# Non-Clinical Lean Events

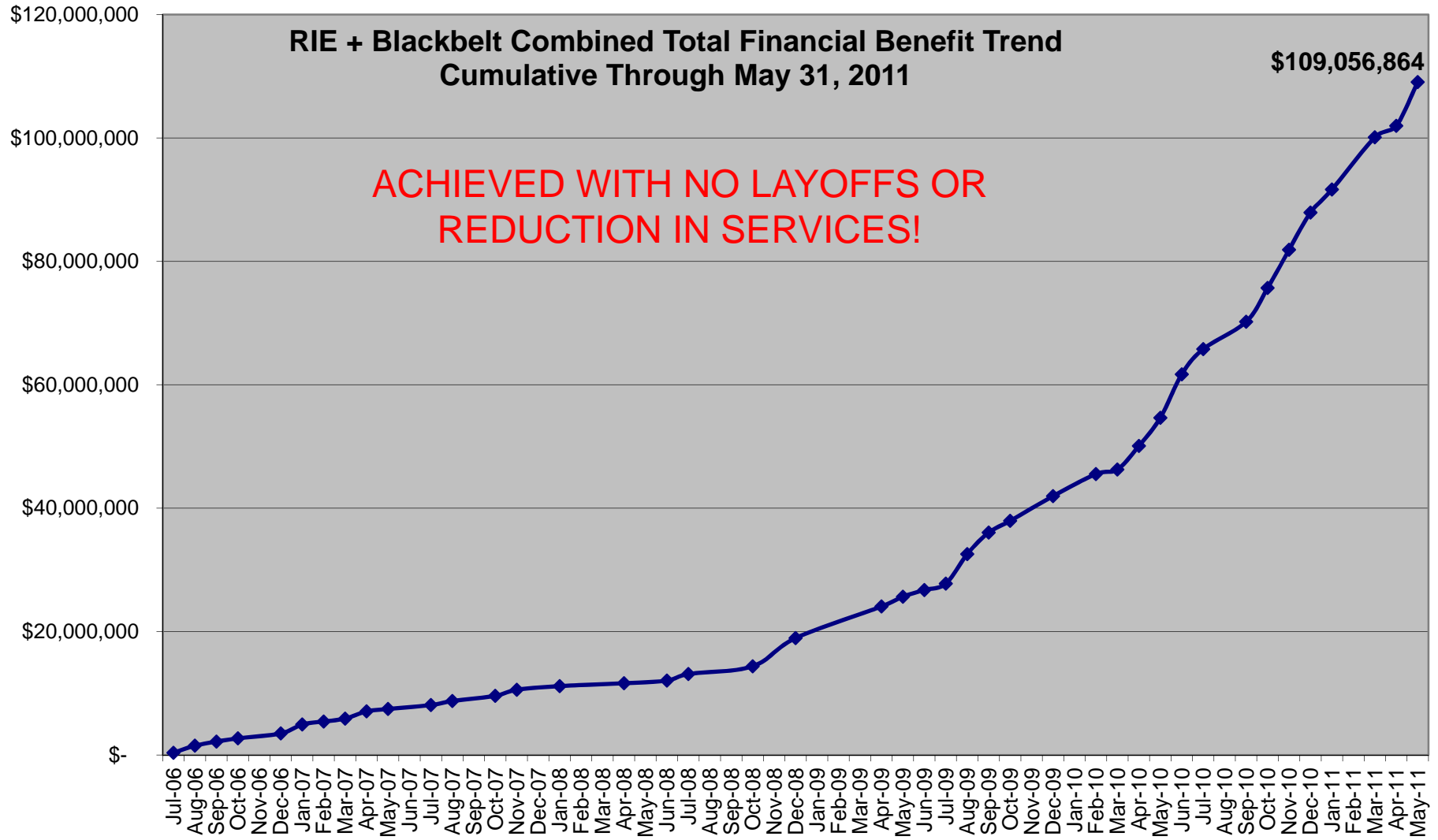


Financial Counseling	Physician Billing
Specialty Clinic Charge Capture	Facility Bill Clean Claim Rate
Physician Credentialing	2nd Pass-Improve turnaround time on accounts holding for coding edits
Enrollment Appointments	Improve Internal Processing turnaround time for Medicaid Pending accounts
Grant Billing	Reduce # of accounts on front end work lists due to authorization or referral requirements
Commercial Insurance AR Days	Co-pays with No Charge
In Patient Enrollment	OP Pharmacy Billing
Address Verification	Insured Patient Access Specialty Clinics
ED Charge Capture	CHS Charge Capture
Ortho Clinic Charge Capture	Un-sponsored/Out of County Patient Access
Specialty Clinic Registration	MAK Cart Levels
Financial Counseling (2 <sup>nd</sup> Pass)	Med Assets

# Clinical Lean Events



VTE Prophylaxis	D/C Pharmacy
Cancer Screening	Specialty Bed Surfaces
OB Fastrack Discharge	D/C Planning
Surgical Site Infection	PES ETOH Pts
Geographic Rounding	Psyche Consults
Provider Flow Cells	Venous Access
ED to Floor Handoff	OR Lost Instruments



# Standard Work: Metric Monitoring







# Summary Timeline

Five initial VSA's  
spring, 2005

1<sup>st</sup> RIE's  
June, 2005

1<sup>st</sup> Internal BB  
Training  
Spring, 2007

\$109 million net  
confirmed from  
Lean May 31,  
2011

## Denver Health's Lean Journey of Transformation

First DH  
BB Training  
January, 2005

LSI Dept  
May, 2006

First RIE financial  
returns confirmed  
August 2006

30% of  
employees on  
RIEs April 2011

March, 2011: DH first  
HC Organization  
recipient of Shingo  
Prize for Operational  
Excellence



**THE SHINGO PRIZE**  
for OPERATIONAL EXCELLENCE™  
a world standard...for a global economy

# Summary



- Lean is a philosophy and tool set that fits for healthcare
- Eliminating waste improves quality of care
- Lean tools are intuitive
- Frontline staff must be respected because they understand where the waste exists and how best to eliminate it
- Lean has the power to change culture because it truly empowers employees to break down silos, rapidly implement change and own the process!