

## **Introduction**

Denver Health started its Lean journey in 2005 in response to the need and opportunity for a systematic transformation of the American health care delivery model.

### **Denver Health**

Denver Health (DH), founded 150 years ago, serves Denver, the state of Colorado and the Rocky Mountain region. The system, which integrates acute and emergency care with public and community health, includes the Rocky Mountain Regional Trauma Center, Denver's 911 EMS system, 8 family health centers, 13 school-based health centers, the Rocky Mountain Poison and Drug Center, NurseLine, Correctional Care, Denver CARES, Denver Public Health, and the Rocky Mountain Center for Medical Response to Terrorism, Mass Casualties and Epidemics.

Denver Health delivers 37% of Denver's babies, cares for 40% of Denver's children, and is the largest provider in the state of care to the uninsured and Medicaid populations, as well as a major provider for the Child Health Plan. Forty-two percent of Denver Health patients are uninsured. Uncompensated care for uninsured patients totaled \$388 million in 2010, and more than \$4.0 billion since 1992. Denver Health's integrated health care delivery system serves 164,000 individual patients every year, most of them in a high quality primary care program called Denver Health Community Health Services.

### **Community Health Services**

Community Health Services (CHS) represents a significant component of Denver Health's integrated delivery system with 12% of the work force, or 650 individuals. It serves approximately 60% of the poorest citizens of Denver providing more than 375,000 annual clinical encounters.

CHS is a network of 8 Community Health Centers, 13 School-based Health Centers and an Urgent Care Center. This network sees 113,000 unique patients annually, most from underserved populations. Thirty-eight percent of CHS patients are uninsured, 47% are Medicaid, 6% Medicare and 9% private insurance. Services include all primary care disciplines (pediatric care, family medicine and internal medicine), dental services and OB/GYN specialty services. All medical records and clinical registries are electronic and available to any provider anywhere in the system.

## **Cultural Enablers – People**

CHS has dramatically changed the way physicians, allied health practitioners, nurses, managers and staff are trained, and coached.

- ✓ 350 physicians, nurses, allied health practitioners and staff have participated in Lean activities, with 19 becoming Black Belts, and 2 Master Black Belts.
- ✓ Lean introduction to employees at new employee orientation.
- ✓ Job role competency checklists for all CHS support staff.
- ✓ Regular evaluation of staff productivity and performance through quality scorecards and measurements, and annual performance evaluation with peer comment.
- ✓ Key strategic plan metrics cascaded down throughout CHS in the form of monthly and quarterly score cards.
- ✓ Implementation of Flow Cells to look for new ways to see the waste in motion within the clinics.
- ✓ Commitment to "Do No Harm," mistake proofing and reducing defects to patients with monthly meetings to address matters of the "Environment of Care (EOC)."
- ✓ Unannounced "Gemba-walk-throughs" 3 times per month by EOC team members.
- ✓ CHS use of 3P in the design and transition to new clinical space, including 2 "greenfield" and 6 "brownfield" events in the past 5 years.
- ✓ New construction of CHS facilities that meet LEED Certification standards.

## **Continuous Improvement - Process**

- ✓ In 2005 Denver Health adopted Lean as its performance improvement approach and created the CHS Value Stream to improve processes in primary care clinics through the creation of standard work including an RN Productivity Tool and the elimination of tons of clutter and unneeded material across the 8 CHS sites and the administration offices.
- ✓ In 2006, CHS held 6 RIE events resulting in significant impact at most of the 8 CHS clinic facilities through the implementation of Visual Management systems. Common wastes were identified at all sites including lack of standard work, lack of transparency, frequent interruptions for providers, and wasted motion.
- ✓ In 2007, CHS implemented pull systems to further synchronize and link clinic flow and improve access, focusing on provider/health care partner flow cells and standard work for medication refills. Cycle time, telephone abandonment rate, no-show rate, and serving more patients all improved.

- ✓ In 2008, CHS implemented a CHS-wide centralized phone call routing system to better balance capacity at each facility. CHS also implemented a centralized prescription refill system, resulting in a decrease in turnaround time by 80%, and a reduction from 10.0 RN FTEs to 2 RN FTEs to process Rx refills.
- ✓ In 2009, CHS changed focus to using Lean production tools to implement the Primary Care Medical Home Model and conducted RIEs at 3 of the CHS sites. Improvements in access and quality were realized.
- ✓ In 2010, CHS continued to develop processes and systems to support the Primary Care Medical Home and build on past improvements. CHS worked with the Clinical Process Value Stream to focus on cancer screening and anticoagulation services. CHS increased transparency of CHS metrics via an electronic quality scorecard to report more than 100 quality, safety and operational measures. CHS developed the use of a Quality/Function/ Deployment Matrix to rank potential workgroup efforts in relation to feasibility and value at the institution, patient community and provider levels.

### Enterprise Alignment

The focus of CHS is on high quality health care delivered to the patient in the right setting, at the right time strategically aligns with the mission, vision and values of Denver Health and the Enterprise Transformation Plan of Care owned by DH's CEO.

- ✓ The Director of CHS is a member of the Executive Staff of Denver Health and participates in all the strategy development and policy deployment at the system level.
- ✓ CHS Value Stream aligns with established DH True North metrics.
- ✓ Annual strategic planning cycle to ensure access and appropriate utilization of CHS primary care services.
- ✓ From 2005 to 2010, 26 CHS RIEs were conducted in the Gemba, "on the ground," or "in the clinic," and focused on how to improve the patient experience.
- ✓ Use of Ambulatory Quality Scorecard and Access Scorecard, part of the overall DH Quality Scorecard, to display benchmarked quality health indicators.

### Accomplishments and Results

CHS is committed to creating value for the customer by providing services that improve the lives of individuals and families. CHS is proud of the many accomplishments it has achieved through the use of Lean principles, systems and tools.

### Quality

Lean efforts in CHS have improved clinical quality and created value for CHS patients in terms of improved chronic disease management and preventive screening health outcomes.

- ✓ Patient Access – 12% increase in the number of people seen annually from 101,000 in 2006, to 113,000 in 2009, with no increase in resources.
- ✓ Diabetic Control – increase from 41% to 48% in the percent of diabetic patients who achieved 2 of 3 diabetic control targets (HgbA1c < 7%, LDL < 100 mg/dL and blood pressure < 130/80 mm HG). Improvements of this magnitude will translate into fewer heart attacks, less kidney failure, and fewer overall complications of diabetes, resulting in improved life span, increasing quality of life and reducing costs.
- ✓ Outpatient Cancer Screening – increase from 29% to 52% of eligible patients (age 50-74 with at least one visit to a primary care clinic in the prior 18 months) with up-to-date evidence-based colorectal screening tests.
- ✓ Hypertension and diabetes management – increase from 56% to 67% of active CHS patients with diagnosed hypertension whose last blood pressure value was below the evidence-based threshold of 140/90 mmHg.
- ✓ Anticoagulation care – increase from 36% to 66% in the proportion of anticoagulation patients managed within the anticoagulation clinic. Decrease from 27 days to 22 days in median time between INR testing.

### Cost/Productivity

CHS tracks and monitors all facets of cost and productivity within its facilities. The result of seeing more patients, holding cost per visit steady, increasing revenue per visit, when public sources of funding for the uninsured or under-insured are flat or decreasing, is a direct result of CHS Lean initiatives.

- ✓ 10% increase in overall growth from 2005 to 2009, with a 4.3% increase in total visits during the same period.
- ✓ Continued increase in the difference between the cost per visit and revenue per visit between 2005 and 2009.
- ✓ 20% increase in overall total budget for CHS has been covered by the increase in patient visits and associated revenue as well as the improvements to the revenue cycle to capture charges more accurately and quickly.
- ✓ \$5.0 million of documented financial benefit to date.

For more information, visit [www.denverhealth.org](http://www.denverhealth.org), or call 303-602-7032.