21st Century Care: Redesigning Pediatric Care at Denver Health

Designing Systems that Work for Children with Complex Health Care Needs
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Disclaimers

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• The Colorado Multiple Institutional Review Board determined this project to be Quality Assurance, Not Human Subject Research.

• Dr. Hambidge has no conflicts of interest/disclosures.
Overview

• Introduction to Denver Health and Denver Community Health Services
• Demonstrate a model for identifying patients of different complexity and risk within an integrated system (risk stratification)
• Overview of care models and care coordination for different risk populations in the medical home
• Discuss sustainability of the 21st Century care model
Denver Health
An innovative healthcare system that is a model of success for the nation.

**Our Areas of Focus**

**Clinical Care**
Highest quality, low cost provider

**Education**
Academic center teaches the next generation of healthcare workers.

**Research**
Ongoing, leading-edge research

**Community Health Centers**
Offering total family care in 8 neighborhood centers where families need it the most.

**Rocky Mountain Regional Trauma Center**
Region’s top Level I Trauma Center for adults and Level II Center for children – whole family care

**School-Based Health Centers**
Keeping kids in school by providing vital health care to DPS students through 15 in-school clinics, free of charge

**Denver Health Medical Center**
One of Colorado’s busiest hospitals, ranked in top 5% for infant survival annually since 2011

**Top 5% in the Nation**
Regional Poison Control Center
Trusted experts for multiple states and over 100 national and international brands

911 Response
Operates Denver’s emergency medical response system, the busiest in the state

**NurseLine**
Registered nurses advising on medical information, home treatment, and when to seek additional care, giving patients peace of mind 24/7

**Denver Health Medical Plan, Inc.**
Keeping our community healthy by providing healthcare insurance to 77,000+

**Denver Cares**
Provides a safe haven and detox for public inmates

**Denver Health Foundation**
Provides additional resources that bridge the gap financially to fund special projects and specific needs

**Public Health**
Keeps the public safe through tracking communicable diseases and promoting healthy behaviors

**Rocky Mountain Center for Medical Response to Terrorism**
Working every day to plan for the “What If” for the state

**Correctional Care**
Providing medical care to prisoners in Denver’s jails and via telemedicine
Community Health Services

- Network of 8 Federally Qualified Community Health Centers, 17 School-based Health Centers, Urgent Care
- 430,000 visits in 2014; 140,000 unique patients (over 65,000 children and adolescents)
- Underserved population:
  - Almost all below 200% Federal Poverty Level
  - Serve over ½ of Medicaid patients in Denver
- Resident training in almost all services but not all sites
- Integrated medical record and clinical registries
Pediatrics at Denver Health

- 3 Pediatric Clinics
- 5 Family Medicine Clinics
- 17 School-Based Health Centers
- Pediatric Specialty Services
- Family Crisis Center
- Pediatric Urgent Care Clinic and Emergency Department
- Pediatric Ward and ICU
- Newborn Nursery and NICU
21st Century Care Goals

Over three-year period, ensure:

• Better Access:
  o Increase access to care by 15,000 people

• Better Care & Health:
  o Improve patient satisfaction with care delivered between visits by 5% without decreasing satisfaction with visit-based care
  o Improve overall population health for DH patients by 5%

• Lower Cost:
  o Decrease total cost of care by 2.5% relative to trend
  o Reduce CMS spending by $12.8 million relative to trend
# 2013 21st Century Care Population

<table>
<thead>
<tr>
<th>Gender</th>
<th>Peds (N = 76,371)</th>
<th>Adults (N = 83,549)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>Male</td>
<td>34,425</td>
<td>45%</td>
</tr>
<tr>
<td>Female</td>
<td>34,054</td>
<td>45%</td>
</tr>
<tr>
<td>Unknown</td>
<td>7,892</td>
<td>10%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Age (yrs)</th>
<th>Peds (N = 76,371)</th>
<th>Adults (N = 83,549)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 5</td>
<td>18,984</td>
<td>25%</td>
</tr>
<tr>
<td>5-10</td>
<td>22,241</td>
<td>29%</td>
</tr>
<tr>
<td>11-18</td>
<td>26,890</td>
<td>35%</td>
</tr>
<tr>
<td>19 - 34</td>
<td>364</td>
<td>0%</td>
</tr>
<tr>
<td>35-49</td>
<td></td>
<td></td>
</tr>
<tr>
<td>50-64</td>
<td>18,503</td>
<td>22%</td>
</tr>
<tr>
<td>&gt;= 65</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unknown</td>
<td>7,892</td>
<td>10%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Population</th>
<th>Peds (N = 76,371)</th>
<th>Adults (N = 83,549)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Empaneled</td>
<td>62,424</td>
<td>65,375</td>
</tr>
<tr>
<td>Nonempaneled High Utilizer</td>
<td>320</td>
<td>6,437</td>
</tr>
<tr>
<td>Nonempaneled Managed Care</td>
<td>13,627</td>
<td>11,737</td>
</tr>
</tbody>
</table>
Risk Stratification Approach

• Initial risk stratification tool did not work well for children
• Incorporated 3M Clinical Risk Groups (CRGs), based on prior research experience: 9 strata of risk
• Every CRG assigned to 1 of 4 “Tiers” by 2 pediatricians and 1 data analyst
• Additional criteria then used to over-ride CRG-assigned tier for some children:
  – CSHCN Registry (ICD-9 and pharmaceutical based)
  – Some mental health diagnoses
  – History of premature birth: mother targeted for intervention
  – High hospital or ED use (whether empanelled patient or not)
Population Health “Tiered” Delivery of Enhanced Care Management Services

<table>
<thead>
<tr>
<th>Patients MMs</th>
<th>Baseline PMPMs</th>
<th>Staffing Model</th>
<th>Enhanced Clinical &amp; HIT Services</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Tier 4</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adult 73%</td>
<td>Adult: $7,801</td>
<td>Multidisciplinary High Risk Health Teams and Clinics</td>
<td>High Intensity Treatment Clinics</td>
</tr>
<tr>
<td>Peds 27%</td>
<td>Peds: $4,552</td>
<td>PN, RN CC, PharmD, BHC, SW, HIT</td>
<td></td>
</tr>
<tr>
<td><strong>Tier 3</strong></td>
<td>$6,919</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adult 80%</td>
<td>Adult: $3,449</td>
<td>PN, RN CC, PharmD, BHC, SW, HIT</td>
<td>Complex Case Management</td>
</tr>
<tr>
<td>Peds 20%</td>
<td>Peds: $1,410</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Tier 2</strong></td>
<td>$3,035</td>
<td>PN, BHC, SW, HIT</td>
<td>Care Management for Chronic Disease</td>
</tr>
<tr>
<td>Adult 82%</td>
<td>Adult: $614</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peds 18%</td>
<td>Peds: $314</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Tier 1</strong></td>
<td>$560</td>
<td>PN, BHC, SW, HIT</td>
<td>Panel Management</td>
</tr>
<tr>
<td>Adult 27%</td>
<td>Adult: $137</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peds 73%</td>
<td>Peds: $76</td>
<td></td>
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Notes: Baseline period is July 2010 through June 2011. This initial "proof of concept" tiering algorithm was implemented by Milliman using CDPS predictive modeling tool thresholds to define tiers. Tier sizes were pre-determined according to estimated resource capacity. The attributed managed care population was identified through membership files, whereas the fee-for-service population was selected at a single point in time at the beginning of the time period and fixed for the duration. All attributed individuals were tiered. MM: Member months, PMPMs: Per member per month, PN: Patient Navigator, RN CC: Nurse Care Coordinators, PharmD: Clinical Pharmacist, BHC: Behavioral Health Consultant, SW: Social Worker, HIT: Health Information Technology.

Goal to achieve practice transformation by integrating new staff with existing staff to provide team-based care, especially to high opportunity patients.
Redesigned Health Care Teams

Additional team members:
• Patient navigators
• Clinical pharmacists
• Behavioral Health Clinicians
• Pediatric RN coordinators

High intensity treatment teams:
• Intensive Outpatient Clinic (IOC)
• Children with Special Health Care Needs
• Mental Health Center of Denver
Staffing Model

Peds High Risk (CSHCN) Clinic
- 0.5 LCSW
- 0.5 Nutritionist
- 0.2 Physical Therapist*
- 1.0 Navigator
- 0.25 Pediatrician*
- 0.2 Child Psychologist*
- 1.0 RN*
- 0.2 Speech therapist*
- 1.0 Medical Assistant*

Peds High-Risk Between-Visit Care
- 2.2 additional FTE of RN Care Coordinators
Outcomes: Preliminary Actuarial Findings

• Population: 21CC managed care populations
• Baseline period (11/1/11-10/31/12)
• Program implementation (11/1/12-9/30/13) – 11 months
• Cost Avoidance = (Expected spending - Observed spending), or
  ((baseline spending*trend) - program spending)
  – $7.0 million in cost avoidance (with trend) for Medicaid
  – Reductions in Adult Tier 4 utilization was a major driver of
    overall cost avoidance
  – Tier 4 pediatric populations also saw utilization reductions

“Trend”= inflation+policy changes. Milliman assumed a 5.8% trend factor for CHP and a 3.7% trend factor for Medicaid, consistent with annual rate setting practices. In addition, it assumed a 2.3% trend for Medicare, based on the National Health Expenditures projections report.
Next Steps

• Tiering 4.0
  – Behavioral health
  – Social determinants of health
• Continuous process improvement for care models
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Questions

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