Making It Easy to Do It Right: Improving Health Outcomes to Reduce Care Delivery Costs

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Disclosures

Neither I, Brent C. James, nor any family members, have any relevant financial relationships to be discussed, directly or indirectly, referred to or illustrated with or without recognition within the presentation.

I have no financial relationships beyond my employment at Intermountain Healthcare.
Core idea behind variation research

Apply rigorous measurement tools developed for clinical research to routine care delivery performance
The opportunity (care falls short of its theoretic potential)

1. **Massive variation in clinical practices** (beyond even the remote possibility that all patients receive good care)

2. **High rates of inappropriate care** (where the risk of harm inherent in the treatment outweighs any potential benefit)

3. **Unacceptable rates of preventable care-associated patient injury and death**

4. **Striking inability to "do what we know works"**

5. **Huge amounts of waste, leading to spiraling prices that limit access to care**
W. Edwards Deming

All value-added human work takes place through processes; therefore

Organize everything around value-added (front line) work processes
Quality improvement is the science of process management
NIH-funded randomized controlled trial assessing an Italian "artificial lung" vs. standard ventilator management for acute respiratory distress syndrome (ARDS)

discovered large variations in ventilator settings across and within expert pulmonologists

created a protocol for ventilator settings in the control arm of the trial

implemented the protocol using Lean principles

(Womack et al., 1990 - The Machine That Changed the World)
- built into clinical workflows - automatic unless modified
- clinicians encouraged to vary based on patient need
- variances and patient outcomes fed back in a Lean Learning Loop
Problems with “best care” protocols

- **Lack of evidence for best practice**
  - Level 1, 2, or 3 evidence available only about 15-25% of the time

- **Expert consensus is unreliable**
  - experts can't accurately estimate rates relying on subjective recall
    (produce guesses that range from 0 to 100%, with no discernable pattern of response)
  - what you get depends on whom you invite (specialty level, individual level)

- **Guidelines don't guide practice**
  - systems that rely on human memory execute correctly ~50% of the time (McGlynn: 55% for adults, 46% for children)

- **No two patients are the same; therefore, no guideline perfectly fits any patient** (with very rare exception)
Shared Baseline “Lean” protocols (bundles)

1. **Identify a high-priority clinical process** (key process analysis)

2. **Build an evidence-based best practice protocol**
   (always imperfect: poor evidence, unreliable consensus)

3. **Blend it into clinical workflow**
   (= clinical decision support; don't rely on human memory; make "best care" the lowest energy state, default choice that happens automatically unless someone must modify)

4. **Embed data systems to track (1) protocol variations and (2) short and long term patient results**
   (intermediate and final clinical, cost, and satisfaction outcomes)

5. **Demand that clinicians vary based on patient need**

6. **Feed those data back** (variations, outcomes) in a **Lean Learning Loop** - constantly update and improve the protocol
Results:

- **Survival** (for ECMO entry criteria patients) *improved from 9.5% to 44%*
- **Costs fell by ~25%** (from ~$160,000 to ~$120,000 per case)
- **Physician time fell by ~50%** (a major increase in physician productivity)
-- 2002 --

Patient-Centered Medical Home
(from back before the name “PCMH” had even been coined)

Level 1
Chronic Disease Management

## Diabetes Patient Follow-Up Worksheet: All Patients

**Report Period April-01-2008 to March-31-2009**

Patients that need follow-up are those whose average Blood Pressure > 130/80, last A1c value was > 8.0, last LDL > 100, and/or Triglycerides > 400, or any of the aforementioned tests were not performed during the reporting period. Please remember "credit" can be given to improve individual scores if patients are contacted by your office but are not compliant or lab information is incorrect.

<table>
<thead>
<tr>
<th>Provider Name (Provider ID) - Clinic Name</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total SelectHealth Patients - 21</strong></td>
</tr>
<tr>
<td>SelectHealth Incentives Benchmark Goals:</td>
</tr>
<tr>
<td>SelectHealth Current Diabetes Performance:</td>
</tr>
<tr>
<td>50% to 90%</td>
</tr>
<tr>
<td>100%</td>
</tr>
<tr>
<td>76% to 91%</td>
</tr>
<tr>
<td>77%</td>
</tr>
<tr>
<td>85% to 90%</td>
</tr>
<tr>
<td>92%</td>
</tr>
<tr>
<td>54% to 59%</td>
</tr>
<tr>
<td>62%</td>
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</table>

<table>
<thead>
<tr>
<th>Provider Name (Provider ID) - Clinic Name</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>14 Patients That Need Follow-up</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SelectHealth Patient Name</th>
<th>IDX MRN</th>
<th>Birthdate</th>
<th>Phone</th>
<th>Last Office Visit</th>
<th>Blood Pressure Date</th>
<th>BP &lt;=130/80</th>
<th>Lipid Management Date</th>
<th>LDL</th>
<th>HDL</th>
<th>Trig</th>
<th>HGA1c Date</th>
<th>MicroAlbuminuria Date</th>
<th>MicroAlb</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corrections</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>12/18/2006</td>
<td>12/18/2006</td>
<td>130/80</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Administrative (HEDIS) criteria for diabetes (at least 2 face-to-face contacts in an outpatient facility and an ICD-9-CM code 250.xx; or at least 1 inpatient stay and an ICD-9-CM code 250.xx; or at least 1 prescription for insulin or an oral hypoglycemic agent) in the current measurement period or prior measurement periods.

* Indicates a new patient on the list from last reporting period.

** Avg BP: measure is an average of the last three EMR recorded blood pressure results from home or clinic. Blood pressure data only available for physicians with access to Intermountain EMR.

□ Indicates a patient that has been noted in the EMR as having an in-control blood pressure within the last six months.

† Indicates a SelectHealth patient who has a pharmacy benefit, is over 40 years old with an LDL test above 100, and is on a lipid lowering medication.

‡ Indicates a SelectHealth patient who has a pharmacy benefit, a positive microalbuminuria test and is not on ACEI or ARB medication.

CONFIDENTIAL: This material is prepared pursuant to Utah Code Ann. 26-30-1 et seq., Idaho Code Ann. 90-1102 et seq., for improvement of the quality of hospital and medical care rendered by hospitals or physicians.
### Problems and chronic conditions

#### Active Medications

1. Digitoxin, 0.1mg. Tablet: 3 TID
2. Entex LA (Guaifenesin/PPP) 1 Teaspoon qid: 4 TID

#### Preventive Care

**CV Risk**

Pap Smear

5%* (1.4%)**

No Data

#### Preventive care summary

#### Clinical Laboratory Data

<table>
<thead>
<tr>
<th>HgBA1c (&lt;7.0)</th>
<th>UA Protein</th>
<th>uAlb/Cr (&lt;30)</th>
<th>24 Urine Albumin (&lt;30)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Data</td>
<td>-</td>
<td>No Data</td>
<td>No Data</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Serum Cr</th>
<th>Serum K</th>
<th>Creatinine</th>
<th>Albumin</th>
<th>Albu/Cre</th>
<th>24 Urine Albumin</th>
<th>HDL (&lt;40)</th>
<th>LDL (&lt;100)</th>
<th>Triglycerides (&lt;200)</th>
<th>HDL (&gt;40)</th>
<th>CHOL (&lt;200)</th>
<th>CHOL (&gt;200)</th>
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</thead>
<tbody>
<tr>
<td>04/29/2003</td>
<td>1.1</td>
<td>-</td>
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<td>No Data</td>
<td>No Data</td>
<td>102</td>
<td>154</td>
<td>85</td>
<td>81</td>
<td>212</td>
<td>220</td>
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<td>10/25/2002</td>
<td>2.0</td>
<td>-</td>
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<td>No Data</td>
<td>No Data</td>
<td>102</td>
<td>154</td>
<td>85</td>
<td>81</td>
<td>212</td>
<td>220</td>
</tr>
<tr>
<td>02/27/2003</td>
<td>1.6</td>
<td>02/09/2003</td>
<td>60</td>
<td>04/06/2003</td>
<td>154</td>
<td>85</td>
<td>41</td>
<td>232</td>
<td>81</td>
<td>212</td>
<td>220</td>
</tr>
<tr>
<td>10/30/2003</td>
<td>2.3</td>
<td>01/29/2003</td>
<td>6.1</td>
<td>02/06/2003</td>
<td>149</td>
<td>85</td>
<td>41</td>
<td>232</td>
<td>81</td>
<td>212</td>
<td>220</td>
</tr>
</tbody>
</table>

#### Pertinent labs

<table>
<thead>
<tr>
<th>TCHDL Ratio</th>
<th>HCT</th>
<th>hsCRP</th>
<th>Homocysteine</th>
<th>Fasting Glucose</th>
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<tbody>
<tr>
<td>04/29/2003</td>
<td>3.5</td>
<td>04/06/2003</td>
<td>0.6 mgdl</td>
<td>04/06/2003</td>
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<tr>
<td>04/09/2003</td>
<td>5.2</td>
<td>02/24/2003</td>
<td>1.2 mgdl</td>
<td>02/22/2003</td>
</tr>
<tr>
<td>02/24/2003</td>
<td>5.4</td>
<td>02/24/2003</td>
<td>1.2 mgdl</td>
<td>02/22/2003</td>
</tr>
<tr>
<td>02/09/2003</td>
<td>7.2</td>
<td>07/19/2002</td>
<td>29.9 %</td>
<td>127</td>
</tr>
</tbody>
</table>

#### Clinic Data

<table>
<thead>
<tr>
<th>Date</th>
<th>Weight</th>
<th>BMI (&lt;25)</th>
<th>Weight Class</th>
<th>Blood Pressure (&lt;130/80)</th>
<th>Heart Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Data</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Last foot exam:</td>
<td>No Data</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Last dilated retinal exam:</td>
<td>No Data</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

#### Reminders

**Preventive**

* Predicted % Risk over 10 years of a cardiovascular event (MI, revascularization, CVA, death).

** Relative Risk over 10 years of a cardiovascular event compared to lowest risk category.

Pap and pelvic suggested every 3 yrs.

For Patients with known Cardiovascular disease (CVD), Life insurance, and/or CVD risk factors:

Blood Pressure measurement is suggested for adults over the age of 2.

Suggested follow-up for missing data: Pap Smear

Pneumovax suggested for all patients over age 65 and above, and all patients over age 2 with systemic chronic disease.

#### Diabetes

Suggest repeat Urine Albumin Test more than (+) 1 year since last test.


Suggested follow-up for missing data: HgbA1c - Dialed Retinal Exam - Foot Exam - Weight

#### Hypertension

ACE inhibitors (ACE) or if ACEI intolerant, Angiotensin II Receptor Blockers (ARBs) or the combination of ACEI or ARBS and Diuretics are the recommended initial drug therapy for patients who are diagnosed with hypertension in conjunction with Diabetes.
CPM with clinic care managers

Complex diabetes patients - mortality rates

Proportion alive

0 0.7 0.75 0.8 0.85 0.9 0.95 1

0 1 2 3 4

Control  Care management
Lesson 1

We count our successes in lives
CPM with clinic care managers

Complex diabetes patients - hospitalization rates

- Control
- Care management

1 year:
- Control: 26%
- Care management: 21%

2 years:
- Control: 39%
- Care management: 31%
Physician productivity (WRVUs - work relative value units)

Physicians with embedded care management support were significantly (8%) more productive than controls.
Lesson 2

*Most often*  
*(but not always)*

*better care is cheaper care*
-- 2007 --

Patient-Centered Medical Home

Level 2

Mental Health Integration
Depression detection in adults

Pre-implementation Post-implementation

Implementation:
training, integration of MH as "usual care"
Change in depression scores

- Pediatric
  - First score: 77.4 (20% decline)
  - Last score: 66.7

- Adult
  - First score: 85.6 (14% decline)
  - Last score: 68.3

- Pediatric
  - First score: 84.5 (9% decline)
  - Last score: 76.6

- Adult
  - First score: 84.5
  - Last score: 76.6

MHI Clinic

Control Clinics
Total care costs in adults

Pre-implementation

Implementation:
training, integration of MH as "usual care"

Post-implementation
-- 2015 --
Patient-Centered Medical Home

Level 3
Team Based Care
Team-Based Care
(coordinated medical home)

- Emergency Visits: -11%
- Hospital Admits: -22%
- Avoidable Visits and Admissions: +4%
- Radiology Tests: +13%
- PCP Visits: -21%
- Urgent Care Visits: -11%

An investment of $22 per-member-per year (PMPY) decreased medical expenses by $115 PMPY
Without access, “quality” is meaningless;

**Accessible** means **Affordable**
Goal: Limit rate increases to CPI+1%

Net Revenue (in Millions)

<table>
<thead>
<tr>
<th>Year</th>
<th>Status Quo Net Rev</th>
<th>2011 5-Yr Plan Net Rev</th>
<th>Actual Net Rev</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>$5,000 (10%)</td>
<td>~$438.2MM (~10%)</td>
<td>~$700MM (~15%)</td>
</tr>
<tr>
<td>2012</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2013</td>
<td></td>
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<td></td>
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<td>2014</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2015</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2016</td>
<td></td>
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</tr>
</tbody>
</table>

Health Services
Process management is the key

- **better clinical results produces lower costs**

- **more than half of all cost savings will take the form of unused capacity** (fixed costs: empty hospital beds, empty clinic patient appointments, reduced procedure, imaging, and testing rates)

- **balanced by increasing demand:**
  - demographic shifts (Baby Boom);
  - population growth;
  - behavioral epidemics (e.g., obesity);
  - technological advances
A new health care delivery world ...

- **All the right care** *(no underuse)*, but
- **only the right care** *(no overuse)*;
- **Delivered free from injury** *(no misuse)*;
- **At the lowest necessary cost** *(efficient)*;
- **Coordinated along the full continuum of care** *(timely; "move upstream")*;
- **Under each patient's full knowledge and control** *(patient-centered; “nothing about me without me”)*;
- **With grace, elegance, care, and concern.**
Better has no limit ...

an old Yiddish proverb