Quality Measurement for Ranking vs Change – Implications on Expense and Burnout

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Quality Science
Disclosures

I receive a monthly retainer as a part time (3 days / month) senior advisor for Health Catalyst. I also own (a small amount of) Health Catalyst stock.

Other than that, neither I nor any family members have any relevant financial relationships to be directly or indirectly discussed, referred to or illustrated within the presentation, with or without recognition.
Aim defines the system.

Dr. W. Edwards Deming
Two possible primary aims –

- **Outside in: selection / ranking**
  - focus on the person, a.k.a. Taylorism, judgment
  - top-down
  - accountability
  - unfunded data mandates
  - Internal aim: motivate/incentivize care providers

- **Inside out: change / improvement**
  - focus on the process; internal operational data
  - bottom up
  - integrated data capture
  - internal aim: make it easy to do it right
Purpose

Goals

Results (Performance)

Selection & Accountability

Measurement for improvement

Pathway 1: Selection

Knowledge about Performance

Consumers

Purchasers

Regulators

Patients

Contractors

Referring Clinicians

Motivation

Pathway 2: Change

Knowledge about Process and Results

Care Delivery Organizations

Care Delivery Teams and Practitioners

Measurement for Selection / Ranking

- **Cannot rank accurately** – it’s an underlying mathematical problem, reflected in very wide confidence intervals.
- **Shifts focus to manipulation of documentation.**
- **Rarely includes all needed measures essential for change** (execution and improvement).
- **Consumes large amounts of resources**, often through “after the fact” data abstraction;
- **leaving no resources for actual performance management and improvement.**

Thus,

**Selection measures, imposed in the name of accountability and quality, often actively damage quality and block improvement**
Measurement for Change / Learning

1. **Generates very different data sets** than Selection
   - strong, evidence-based method derived from RCT data design
   - intermediate and final clinical, cost, and satisfaction outcomes
   - optimized for process management and improvement
   - more extensive, clinically focused than typical Selection measures

2. **Is parsimonious** (no “recreational data collection” while avoiding availability bias)

3. **Minimizes burden** - integrates into clinical workflow; tends to be what clinical teams must generate to deliver care

4. **"Contains" selection measures** - produces robust patient outcomes measures suitable for public accountability

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A series of registries
(we had 57, which covered about 80% of all care delivered in the system)

- **Disease specific** (e.g., Type II diabetes mellitus, heart failure, pregnancy/labor/delivery, acute myocardial infarction (AMI – heart attack))
- **System wide** – captures data from all care delivery locations
- **Intermediate and final clinical and cost outcomes** – need both clinical and cost outcomes to measure “value”
- **Primary aim: support care delivery**
- **Secondary aim: accountability**
Case study

- *Type II diabetes mellitus*
- ~60,000 patients
- 90+% of all care delivered by primary care
- Supported by 6 specialists (diabetic endocrinologists, aided by diabetic educators based in their offices)
- A fragmented system – more than half of participating primary care physicians were independent; they used many different electronic medical record systems
Poor HbA1c control

% diabetic patients with HgA1c > 9

(All patients)

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Diabetes trial – reduced mortality

Complex diabetes patients - mortality rates

Diabetes trial – lower cost of care

**Complex diabetes patients - hospitalization rates**

<table>
<thead>
<tr>
<th></th>
<th>1 year</th>
<th>2 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>26%</td>
<td>39%</td>
</tr>
<tr>
<td>Care management</td>
<td>21%</td>
<td>31%</td>
</tr>
</tbody>
</table>

Four decision support tools:

1. Action lists
2. Patient worksheets
3. Comparative outcomes
4. Financial incentives
## 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>
<th>14 Patients That Need Follow-up</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SelectHealth Patients - 21</strong></td>
<td><strong>SelectHealth Incentive Benchmark Goals:</strong></td>
</tr>
<tr>
<td><strong>SelectHealth Current Diabetes Performance:</strong></td>
<td><strong>Blood Pressure</strong></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>50% to 90%</strong></td>
</tr>
<tr>
<td><strong>Blood Pressure</strong></td>
<td><strong>BP &lt;=130/80</strong></td>
</tr>
<tr>
<td><strong>Last Office Visit</strong></td>
<td><strong>Date</strong></td>
</tr>
</tbody>
</table>

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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 not 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.

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## Problems and chronic conditions

### Medication profile

#### Preventive care summary

<table>
<thead>
<tr>
<th>Problems</th>
<th>Active Medications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thyroidism</td>
<td>Digitoxin, 0.1mg. Tablet: 3 TID</td>
</tr>
<tr>
<td>Hypertension</td>
<td>Entenox LA (Guaifenesin/PPhA) 400-240mg, once a day</td>
</tr>
</tbody>
</table>

#### Pertinent labs

<table>
<thead>
<tr>
<th>Clinical Laboratory Data</th>
<th>HgbA1c (&lt;7.0)</th>
<th>UA Protein</th>
<th>uAlb/Cre (&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>-</td>
<td>-</td>
</tr>
</tbody>
</table>

#### Pertinent exams

<table>
<thead>
<tr>
<th>Preventive Care</th>
<th>CV Risk</th>
<th>5%* <em>(1.4X)</em>*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-</td>
<td>No Data</td>
</tr>
</tbody>
</table>

#### Passive reminders

- Blood Pressure measurement is suggested for adults every two years.
- Suggested follow-up for missing data: - Pap Smear
- Suggested follow-up for missing data: - Pneumovax suggested for all patients age 65 and above, and all patients over age 2 with systemic chronic disease

## General patient status information

### Disease specific information

#### Pertinent labs

<table>
<thead>
<tr>
<th>Clinic Data</th>
<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>
<td>-</td>
</tr>
<tr>
<td>Last foot exam:</td>
<td>No Data</td>
<td></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>
<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

## Diabetes

- Suggest repeat Urine Albumin Test more than (>1) year since last test.
- Suggested follow-up for missing data: - HgbA1c - Dilated Retinal Exam - Foot Exam - Weight

### Hypertension

- ACE Inhibitors (ACEI) 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.
Diabetes Summary Report
Provider: Towner, Steven (168)
Period: Oct 2008 - Sep 2009

Patients Tested (Prop of Tot Pts%) - All Patients

<table>
<thead>
<tr>
<th>Test</th>
<th>Provider</th>
<th>Region</th>
<th>System</th>
</tr>
</thead>
<tbody>
<tr>
<td>HbA1c</td>
<td>234(96%)</td>
<td>1,787(94%)</td>
<td>38,127(83%)</td>
</tr>
<tr>
<td>LDL</td>
<td>215(88%)</td>
<td>1,642(87%)</td>
<td>31,764(71%)</td>
</tr>
<tr>
<td>Eye Exam</td>
<td>37(70%)</td>
<td>182(52%)</td>
<td>5,448(39%)</td>
</tr>
<tr>
<td>Microalbuminuria</td>
<td>203(83%)</td>
<td>1,468(77%)</td>
<td>25,157(56%)</td>
</tr>
<tr>
<td>Blood Pressure</td>
<td>243(100%)</td>
<td>1,870(99%)</td>
<td>29,655(94%)</td>
</tr>
<tr>
<td><strong>Total Patients</strong></td>
<td><strong>244</strong></td>
<td><strong>1,897</strong></td>
<td><strong>44,705</strong></td>
</tr>
</tbody>
</table>

1. LDL measures represent two years ending in the chosen period. 2. Eye exam % calculated using SelectHealth patients only. 3. Includes spot microalbumin, 24 hour urine for protein and microalbumin/creatinine ratio within the reporting period, or any history of treatment for nephropathy.
4. 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.

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Steven Towner - Intermountain Salt Lake Clinic - Intermountain Medical Group
# Intermountain Primary Care Clinical Programs: Adult Diabetes Medical Director Summary Report

**Reporting Period:** 01-Jul-08 To 30-Jun-09

### Medical Director:

#### Intermountain Medical Group

<table>
<thead>
<tr>
<th>Clinic Location</th>
<th>Clinic Name: Teton Taylorsville Clinic</th>
<th>Provider Name</th>
<th>Hemoglobin A1c Summary: 12 Months</th>
<th>LDL Summary: 12 Months</th>
<th>Blood Pressure:</th>
<th>MA:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Percentages based on only those with available A1c results</td>
<td>Percentages based on only those with available LDL results</td>
<td>BP Results If Available</td>
<td>BP In Control</td>
</tr>
<tr>
<td>Clinic Location</td>
<td></td>
<td></td>
<td>A1c&lt;7.0</td>
<td>7.0&lt;=A1c&lt;8.0</td>
<td>A1c&gt;8.0</td>
<td>Tested</td>
</tr>
<tr>
<td>SelectHealth</td>
<td>98</td>
<td>88 (90%)</td>
<td>1 (1%)</td>
<td>40 (46%)</td>
<td>26 (30%)</td>
<td>21 (24%)</td>
</tr>
<tr>
<td>All Other Payers</td>
<td>209</td>
<td>184 (88%)</td>
<td>4 (2%)</td>
<td>94 (52%)</td>
<td>29 (16%)</td>
<td>57 (32%)</td>
</tr>
<tr>
<td>Combined</td>
<td>307</td>
<td>272 (89%)</td>
<td>5 (2%)</td>
<td>134 (50%)</td>
<td>55 (21%)</td>
<td>78 (29%)</td>
</tr>
</tbody>
</table>

### Internal Medicine

<table>
<thead>
<tr>
<th>Clinic Location</th>
<th>Clinic Name: Teton Holladay Clinic</th>
<th>Provider Name</th>
<th>Hemoglobin A1c Summary: 12 Months</th>
<th>LDL Summary: 12 Months</th>
<th>Blood Pressure:</th>
<th>MA:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Percentages based on only those with available A1c results</td>
<td>Percentages based on only those with available LDL results</td>
<td>BP Results If Available</td>
<td>BP In Control</td>
</tr>
<tr>
<td>Clinic Location</td>
<td></td>
<td></td>
<td>A1c&lt;7.0</td>
<td>7.0&lt;=A1c&lt;8.0</td>
<td>A1c&gt;8.0</td>
<td>Tested</td>
</tr>
<tr>
<td>SelectHealth</td>
<td>48</td>
<td>48 (100%)</td>
<td>0 (0%)</td>
<td>31 (65%)</td>
<td>6 (13%)</td>
<td>11 (23%)</td>
</tr>
<tr>
<td>All Other Payers</td>
<td>247</td>
<td>240 (97%)</td>
<td>0 (0%)</td>
<td>161 (67%)</td>
<td>49 (20%)</td>
<td>30 (13%)</td>
</tr>
<tr>
<td>Combined</td>
<td>285</td>
<td>288 (98%)</td>
<td>0 (0%)</td>
<td>192 (67%)</td>
<td>55 (19%)</td>
<td>41 (14%)</td>
</tr>
</tbody>
</table>

| SelectHealth    | 48                                 | 48 (100%)     | 0 (0%) | 31 (65%) | 6 (13%) | 11 (23%) | 47 (98%) | 1 (2%) | 26 (57%) | 13 (28%) | 6 (13%) | 48 (100%) | 31 (65%) | 31 (65%) |
| Internal Medicine Summary: | All Other Payers | 247 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Combined        | 285                                | 288 (98%)     | 0 (0%) | 192 (67%) | 55 (19%) | 41 (14%) | 284 (96%) | 1 (0%) | 188 (66%) | 63 (22%) | 27 (10%) | 295 (100%) | 194 (66%) | 196 (66%) |

| SelectHealth    | 146                                | 136 (93%)     | 1 (1%) | 71 (53%) | 32 (24%) | 32 (24%) | 139 (95%) | 1 (1%) | 86 (62%) | 30 (22%) | 20 (14%) | 145 (99%) | 75 (52%) | 98 (67%) |
| All Other Payers | 458                                | 424 (93%)     | 4 (1%) | 255 (61%) | 78 (19%) | 87 (21%) | 415 (91%) | 4 (1%) | 248 (60%) | 100 (24%) | 52 (13%) | 448 (98%) | 237 (53%) | 275 (60%) |
| Medical Director Summary: | Combined | 602 | 560 (83%) | 5 (1%) | 326 (59%) | 110 (20%) | 119 (21%) | 554 (92%) | 1 (0%) | 334 (60%) | 130 (24%) | 72 (13%) | 593 (99%) | 237 (53%) | 373 (62%) |

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1.) Diabetes, HbA1c Testing
The percent of patients with diabetes who had a HbA1c test within the last 12 months.

Your Achievement: 78%
System Goal: 80%
Managed Care Incentive Goal: 85%
Your Score in this area is: 0%

2.) Diabetes, LDL Testing
The percent of patients with diabetes who had a LDL test within the last 24 months.

Your Achievement: 94%
System Goal: 80%
Managed Care Incentive Goal: 85%
Your Score in this area is: 100%

3.) Urine Microalbuminuria Screen
Number of patients with diagnosis of diabetes who had appropriate urine screen in last 12 months.

Your Achievement: 72%
Goal: 45%
Managed Care Incentive Goal: 55%
Your Score in this area is: 100%

4.) Asthma Care
Percent of patients in your Internal Medicine Group with "higher risk asthma" who filled at least one prescription for a controller in the last year.

Your Group Achievement 94%
Goal: 82%
Managed Care Incentive Goal: 97%
Your Score in this area is: 100%

5.) Clinical Learning Day

Your Score in this area is 100%

Managed Care Incentive Summary
Your total score is computed using the following weighting:
- 25% from Item 1 Diabetes (HbA1c Testing)
- 25% from Item 2 Diabetes (LDL Testing)
- 10% from Item 3 Urine Microalbuminuria Screen
- 15% from Item 4 Asthma Care
- 25% from Item 5 Attend Clinical Learning Day

Your Total Managed Care Incentive Score is: 75%

Please fax corrections to this report to: Steven Towne 355-3748
Employed
Of the 4 measurement tools shown, which was most effective in driving change?

1. **Action lists** *(tools to move from episodic to continuous care)*

2. **Patient worksheets** *(targets of opportunity - embedded, evidence based reminders at every point of contact)*

3. **Comparative outcomes** *(what is possible, who to ask)*

4. **Financial incentives** *(see: Drive by Daniel Pink; intrinsic vs extrinsic motivators, algorithmic vs heuristic work settings)*
Team-Based Care
(3rd generation patient-centered medical home)

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

An investment of $22 per-member-per year (PMPY) decreased medical expenses by $115 PMPY

What does “transparency” mean?

Institute of Medicine x2:

*a situation in which those involved in health care choices (patients, health professionals, payers) have sufficiently accurate, complete, and understandable information about expected clinical results to make wise decisions.*

- Such choices involve not just the selection of a hospital or a physician, but also the series of testing and treatment decisions that patients routinely face as they work their way through diagnosis and treatment.

- Most patients consume medical information in the context of a relationship with a trusted clinician (wise counselor, trusted advisor).

- Most clinicians don't know (don't measure, or have easy access to) their own short- and long-term clinical outcomes. As a result, they cannot accurately advise patients regarding treatment choices.
The key functional element was **transparency at the front line**;

That transparency depended on data systems designed primarily for execution / improvement, with a secondary aim of **accountability**.
Extra slides – just in case related questions arise
In other industries (e.g., the SEC / stock market)

Financial data are generated as part of internal operations; then used for external reporting.

It does require an audit function:
- GAAP (generally-accepted accounting principles)
- GAAS (generally-accepted accounting standards)
- an independent, certified CPA uses GAAS to audit financial reports
The care generates the data –
- it identifies useful and necessary data
- then generates and captures those data
(data capture integrated into care delivery processes)
Identifying data to track

3 general methods:

1. **Use what we have** – mostly financial claims data; called “availability”

2. **Ask the experts** – assemble a group of specialists, and ask them what is important; major risk of **recreational data collection** (missing critical cofactors and entry, exclusion, and stratification elements; other data elements that turn out to have no utility)

3. **Structured expert opinion** – derived from proven methods to design data systems for randomized, controlled, trials
Measures for clinical management

- We already had "sophisticated" automated data
  - financial systems (claims data)
  - time-based Activity Based Costing (since 1983)
  - clinical data for government reporting (JCAHO, CMS Core Measures, etc.)
  - other automated data (first in nation continuous EMR: lab, pharmacy, blood bank, etc.)
  - Danger! Availability bias!

- Still missing 30 - 50% of data elements essential for clinical management (and the primary reason that the 2 initial Intermountain initiatives for clinical management failed)

- We deployed a methodology to identify critical data elements for clinical management, then built them into clinical workflows (Danger! Recreational data collection!)
Structured expert opinion

1. **Build a conceptual model**

2. **Generate a list of desired reports**
   - use conceptual model plus outcomes heuristic
   - format: annotated run charts / SPC charts
   - **test** with target end users

3. **Generate a list of data elements**
   - use list of desired reports; think numerators and denominators
   - format: coding manual --> self-coding data sheets
   - **test** (crosswalk) final self-coding data sheets against report list
   - **test** manually, at front lines

4. **Negotiate what you want with what you have**
   - identify data sources for each element: existing/new, automated/manual
   - consider value of final report vs. cost of getting necessary data

5. **Design EDW structure** *(data marts, data flows, manual data, etc.)*

6. **Program analytic routines, display subsystems**

7. **Test final reporting system**
Ties very closely to EMR

*We were not able to show a return on investment for our electronic medical record systems* until we

*combined them with our clinical improvement*

*Informatics builds the tools; Clinical quality improvement builds the content.*
Enterprise Data Warehouse (EDW)

- 58 clinical registries aligned to specific conditions representing about 80% of all care delivered within Intermountain.

- Follows every patient longitudinally over time condition-specific clinical, cost, and service intermediate and final outcomes.

- About 3 petabytes (million gigabytes) of storage.

- Primary use: routine clinical management.
The Learning Health Care System

1. **Build a system to manage care**

2. **Justify the required major financial investment on the basis of care delivery performance** -- "the best clinical result at the lowest necessary cost"

3. **Use the resulting clinical management data system to:**
   (a) Generate true transparency at the clinician-patient level, rolling up to the national level
   (b) "Learn from every patient" - integrate clinical effectiveness research into front-line care

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2015 “Type 1” learning production

- **Women & Newborn:** 84 peer-reviewed articles

- **Cardiovascular** (2103 data):
  - 64 peer-reviewed articles
  - 67 abstracts
  - 15 "other" - book chapters, editorials, etc.

- Other Clinical Development Teams also published
  (just not as prolific as Women & Newborn and CV -- ~400 total articles)

- Cumulative impact on cost of operations: ~$688 million

**Goal:** 1,000 peer-reviewed Type 1 publications in a single year