Putting Episode of Care Variability To Work

Bundled Payment Summit Pre-Conference
June 3rd, 2015
About HCI$^3$

- Not-for-profit that designs and implements programs to improve the quality and affordability of health care in the US by modifying the current incentives driving provider and consumer behaviors.
Agenda and Presenters

• Introduction – Francois de Brantes
• Episode Variability as Opportunity for Health Plans – Stacey Eccleston
• Episode Variability as Opportunity for Providers – Dr. Amita Rastogi and Andrew Wilson
• Episode Variability as Opportunity for Consumers – Douglas Emery
Understanding Manageable Variability

5th Bundled Payment Summit
June 3rd 2015
Agenda

• HCI³ – Who we are and what we do
• The basics of medical episodes and bundles
• Methodological and policy considerations
What Is Manageable Variability?

Chronic Illness, Acute Conditions, Procedures

The Manageable Zone

Number of Plan Members

Average Costs Per Member Per Year

Total Cumulative Costs
What is an Episode of Medical Care?

• Components of an Episode
  – Starts with one or more signals – triggers
  – Time delimited
  – Includes all services deemed relevant to that episode
    • Defined and vetted by clinicians
    • Based on evidence informed practice guidelines or expert opinion
    • Modifiable based on empirical analysis
The Basics

• A bundled payment is (usually) a prospective *budget* for a group of services that define a specific episode of medical care
• The budget can be paid up front, or simply act as a target against which actual is compared in an account reconciliation
  – Either way, the risk of a variable episode cost is transferred
• A consumer-transparent bundled price can become the unit of accounting and accountability for health care services around which a market can form
Important Considerations in Building Episodes/Bundles

- Adjusting for patient severity
- Minimizing false positives and false negatives
- Balancing “lumping” v. “splitting”
- Keeping the focus on provider locus of control
- Determining the boundaries of upstream and downstream accountability
Is This Variability Manageable?

Service Type as % of Total Costs

High Cost Episodes

Average Cost Episodes

Ratio of High Cost Episodes (Top Quintile) to Avg Cost Episodes (Median Quintile)

Service Type | Ratio
---|---
IP | 426.20
OP | 0.77
PB | 2.68
RX | 0.88
Important Truisms

• The more you split episodes into smaller fragments (e.g. an acute phase of a chronic condition, or the post-acute phase of a procedure), the less variability in total episode costs
  – You end up in a price war

• The more you aggregate heterogeneous patients and episodes into a global payment, the more total cost is dependent on the right tail of the distribution
  – You end up in an insurance game
What You’ll Learn Today

• Why potentially avoidable complications are often the reason for excessive episode cost variability
• How to understand the relative contribution of price, use and mix of services to total cost variability
• How manageable variation can be converted to financial opportunity
Putting Variability To Work For A Health Plan

Stacey Eccleston
Why Measure Episode Cost Variation?

- **Unwarranted variation in episode costs** is an indicator that incentives aren’t working:
  - Lack of compliance from plan members – manifests in volume and mix of services
  - Lack of adherence to clinical guidelines from providers – manifests in service mix
  - No transparency in price leading to excess variation in prices of services
What Metrics Inform Health Plan Policy Decisions?

• Compare episode costs and potentially avoidable complication (PAC) rates
  – Where are opportunities

• Evaluate the potential savings from reducing variation
  – Know potential yield

• Analyze additional drivers of cost variation—Is it price, volume or service mix?
  – Target your efforts
Understanding Cost Variation

What makes costs in the tail different from “average” episodes??

- Prices
- Overuse
- Financial incentives
- Misuse
- Intensity of services

- Unnecessary services
- Patient severity
- Fragmentation
- Etc.
Savings Simulation Across All Episodes Yields Substantial Savings

Reduce episode costs down to $X\%$* above expected.

Total Savings = $304$ million

Percent Savings Range $2\%$ to $33\%$

* Set at $80^{th}$ percentile of ratio of actual to expected for each episode—assume stop loss at $98^{th}$ percentile.

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Combining Costs, Variation and PACs to Target Opportunity

Asthma
CV: 2.7
Cost: $89m
PAC: 35.6%

Lumbar Lam.
CV: 1.1
Cost: $69m
PAC: 4.0%

Knee Repl.
CV: 0.5
Cost: $69m
PAC: 2.3%
Observing Variation In Lumbar Laminectomy

- Savings can come from reducing price and/or use of resources and manifest in typical costs and complications
- Comparison of risk adjusted expected costs to actual quantifies the opportunity to do both
- Assume that well targeted interventions can reduce costs of episodes that are well above expected cost
  - E.g. 80th percentile ratio of actual to expected costs
Episode Costs Range from $10k to $140k

There is apparent opportunity to reduce PACs across all episodes (in particular for highest cost episodes)

Savings may come from reducing typical costs (prices and utilization patterns)
Variation is Not Driven by Patient Acuity

Patients at Upper End are Consistently Above Expected

Patients with lower costs may still be above expected if acuity is low

Patients with average costs may be under expected if acuity is higher
Focus on Episodes Well Over Expected Costs

Distribution of Episodes Under/Over Expected Costs

>$4 million in potential savings
Variation Can Be Caused By Different Factors

- Maintenance
- PACs/exacerbations
- Price differentials

Asthma

Knee Replacement

Price differentials
Intra-Episode Variability Analysis (IEVA)

- A method for decomposing variation in a given episode (AMI, CHF, etc.) into three broad categories:
  - Price
  - Volume
  - Service-Mix
- Across episodes and within types of service
  - IP, OP, PB, RX
- Trace drivers down to the level of the individual service
- Provides a basis for deeper investigation and develop of highly targeted interventions
Overview of IEVA Process

1. Compare episodes in 3rd (median) and 5th (high cost) quintiles, arranged total by episode costs
2. Examine services and claims within “market basket”
   • Most costly services common to each group
   • 80% of total costs within each service type
3. Compare median price and quantity in each group for every service
4. Decompose contribution of price, volume, and mix to cost difference between the groups
   - Within each individual service type
   - Across all services by weighting individual service type level contributions by % of total cost difference between high and median cost group
# Price and Quantity Definitions

<table>
<thead>
<tr>
<th>Type of Service</th>
<th>Servicer Identifier</th>
<th>Quantity Definition</th>
<th>Price Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>IP</td>
<td>Bed type revenue codes</td>
<td>Total hospital days</td>
<td>Per diem cost</td>
</tr>
<tr>
<td>PB</td>
<td>CPT code</td>
<td># of claims</td>
<td>Allowed amount on claim</td>
</tr>
<tr>
<td>OP</td>
<td>Revenue, HCPCS code</td>
<td># of claims</td>
<td></td>
</tr>
<tr>
<td>RX</td>
<td>National Drug Code (NDC)</td>
<td># of claims on 30-day standardized costs</td>
<td></td>
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</tbody>
</table>
Drivers of Variability for Knee Replacement Procedures

Total Episode Variability

<table>
<thead>
<tr>
<th>Service Type</th>
<th>% of Tot Cost Diff</th>
<th>Weighted Contribution</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Price</td>
</tr>
<tr>
<td>IP</td>
<td>86%</td>
<td>66%</td>
</tr>
<tr>
<td>OP</td>
<td>1%</td>
<td>0%</td>
</tr>
<tr>
<td>PB</td>
<td>12%</td>
<td>4%</td>
</tr>
<tr>
<td>RX</td>
<td>1%</td>
<td>2%</td>
</tr>
</tbody>
</table>

For IP stays, semi-private 2 bed rooms accounted for 97% of all IP related costs

Among highest cost episodes:
- 70% higher avg price/day
- 16% more hospital days
### Condition Episodes: Asthma

#### Total Episode Variability

<table>
<thead>
<tr>
<th>Service Type</th>
<th>% of Total Cost Diff</th>
<th>Weighted Contribution</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Price</td>
</tr>
<tr>
<td>IP</td>
<td>24%</td>
<td>8%</td>
</tr>
<tr>
<td>OP</td>
<td>5%</td>
<td>1%</td>
</tr>
<tr>
<td>PB</td>
<td>21%</td>
<td>3%</td>
</tr>
<tr>
<td>RX</td>
<td>50%</td>
<td>7%</td>
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</table>

Volume of Rx and professional services appear to be driving variability.
Small Number Typical Services Driving Asthma Volume

- **Professional Services**
  - 3 services accounted for 97% of PB cost differences
  - # of E&Ms for Levels 3 & 4 established office visits was 83% higher in high cost episodes
  - Oxygen equipment (DME) claims were 132% higher

- **Pharmacy**
  - Bronchodilator claims ~1/3 of Rx cost differences
  - 600% more claims in high cost episodes

- **Why the large differences?**
  - Poor management? Overuse?
Asthma Costs Vary Substantially by Provider

Provider may be an outlier on PACs or Costs or both

Drill down to patients to find patient level drivers
Many Asthma Patients Have High PACs and Total Costs

The average PAC rate was 26%.

Several patients have substantially higher PAC rates for this provider.

What are major drivers of PACs in chronic care?
Potentially Avoidable Complications in Chronic Care

• PACs are largely comprised of services related to treatment of disease exacerbation
  – ED visits
  – IP admits

• Analysis of ED and IP use can isolate intervention opportunities for “Super-Utilizers” of these and other conditions

• Definition of “Super-Utilizers”
  – 6+ ED visits over a two-year period
  – 3+ inpatient stays over a two-year period
  – Both
## Distribution of Super-Utilizers (% of all members)

<table>
<thead>
<tr>
<th># ED Visits</th>
<th># Admissions</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>0 – 1</td>
</tr>
<tr>
<td>0 – 3</td>
<td>86.6%</td>
</tr>
<tr>
<td>4 – 5</td>
<td>0.6%</td>
</tr>
<tr>
<td>6+</td>
<td>0.3%</td>
</tr>
</tbody>
</table>

- 22% of total health spending
- 6% of total health spending

Opportunity to address ~1/3 of total spend simply by reducing unnecessary IP stays and ED visits among ~7% of all members!

Based on a Sample of Medicare patients
Strong Relationship Between Chronic Disease and ED/IP Use
What Metrics Inform Health Plan Policy Decisions?

• Compare episode costs and potentially avoidable complication (PAC) rates
  – Identify the drivers of variation

• Evaluate the potential savings from reducing variation
  – Know potential yield

 ➔ Analyze additional drivers of cost variation—Is it price, volume or service mix?
  – Target your efforts
Translate Results into Actionable Strategies for Health Plans

• Potential solutions may involve:

  Where price is the driver, solutions may include:
  – reference pricing
  – pricing transparency
  – formulary management
  – tiered networks to guide patients to efficient providers

• Where service mix and/or volume is driver, solutions may include:
  – bundled payments
  – gain sharing
  – P4P
  – Reducing co-pays for high valued services
Takeaways

- IEVA can help shed light on important underlying drivers of cost variation between episodes
- Drivers unique to episode
  - Knee Replacement and other procedures
    - IP prices matter
  - Asthma and chronic conditions
    - Variation in volume of typical services
    - Variation in PACs
- Provides a starting point for deeper investigation and/or development of targeted interventions
  - Price: Reference pricing, network tiering
  - Volume: Bundled Payments, gainsharing, etc.
Putting Variability To Work For Providers

Amita Rastogi, MD, MHA
Medical Director, Cost of Care Programs

Andrew Wilson, PhD (Candidate), MPH, MA
Research Leader
Agenda

• Episode-based Analytics:
  – To make data actionable
  – To target process re-engineering efforts

• Closing the gap:
  – In misuse: using potentially avoidable complications (PACs) costs to provide margins
  – In overuse:
    • Avoiding inappropriate services to create savings
    • Avoiding inappropriate episodes at the population level
  – In underuse: proactive services to achieve high quality, patient-centered coordinated care
    • Preventive care services
    • Following evidence-informed guidelines
Combining Costs, Variation and PACs to Target Opportunity

Asthma
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Cost: $89m
PAC: 35.6%

Lumbar Lam.
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Components of ECRs

- Episodes split between two types of costs
  1. Typical and routine services
  2. Potentially avoidable complications (PACs)
What are PACs?

- **Misuse:** Failures to implement clinical care plans and procedures properly (IOM)
- **Negatively effect patients and (potentially) avoidable**
  - Errors, readmissions, etc.
- **ECR Analytics distinguish between two types of PACS:**
  1. Type 1: Related to index condition
  2. Type 2: Patient safety failures
- **Identified on inpatient, outpatient, and professional claims**
The Value Equation

• PACs represent (potential) waste in the system

• Under value-based payment models (bundled payment, global budgets), PACs represent for many providers the “low-hanging fruit” to capture savings.
Hypothetical Case

- Single hospital system
  - 3 acute facilities of varying sizes and case-mix
- Apply analytics to understand the extent and nature of PACs and ID targets for PAC reduction
  - Focus on procedures and acute events
  - Understand the different signals created by the total costs associated to PACs and the frequency of PACs
  - Two different metrics that can be combined
Comparison of PAC Costs by Facility

<table>
<thead>
<tr>
<th>Facility</th>
<th>Total Acute PAC Costs ($10,000)</th>
<th>Total Procedure PAC Costs ($10,000)</th>
<th>Total Episodes (Thousands)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospital A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hospital B</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hospital C</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Acute Episode Total Risk Adj PAC Costs

Procedural Episode Total Risk Adj PAC Costs

Total Episodes by Facility

Episode Type
- Acute
- Procedural
The View Looking At Costs

Risk Adjusted PAC Costs by Facility

Acute Episodes

Procedural Episodes
The View Looking At Frequency

Risk Adjusted PAC Rates by Facility

Acute Episodes

Procedural Episodes

Hospital A

Hospital B

Hospital C

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The Combined View – Acute Episodes

Risk Adj PAC Costs Indexed to Market Average

PAC Rate Indexed to Market Average

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The Combined View – Procedural Episodes

What’s driving Hospital B’s PAC Costs on hip replacements??

PAC Rate Indexed to Market Average

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Root Cause: Readmissions

3 patients accounted for just 9% of Hospital B’s total episode costs, but 53% of total PAC costs...

...Each had a readmission with costs ranging from $18,000-$52,000
Asthma PACs Caused By ED Visits and Hospitalizations

Provider Risk Adj Asthma Episode Costs (>=50 patients)

These providers had high rates of hospitalizations and ED visits among their patients.
Reasons for Hospitalization

- Acute Flare-up of Index Condition
- Hospital Acquired Infections
- Diabetic Emergency, Hypo- Hyper-Stroke, CVA, other Nervous System
- Blood and Cardiovascular Problems
- Pneumonia, Lung Complications,
- Acute Renal Failure, Other kidney
- Gastritis, Ulcer, GI disorders,
- Mental and Behavioral Health
- Cellulitis, Skin Infections, Skin
- Falls, Orthopedic problems
- Phlebitis, DVT, Pulm Embolism,
- Adverse Drug Events, Complications

Asthma PAC Stay Costs

- PAC Occurrences
- Occurrence
- Cost

Costs:
- Acute Flare-up of Index Condition: $451,597
- Hospital Acquired Infections: $34,217
- Diabetic Emergency, Hypo- Hyper-Stroke, CVA, other Nervous System: $23,820
- Blood and Cardiovascular Problems: $175,241
- Pneumonia, Lung Complications: $74,594
- Acute Renal Failure, Other kidney: $142,654
- Gastritis, Ulcer, GI disorders: $6,548
- Mental and Behavioral Health: $298,167
- Cellulitis, Skin Infections, Skin: $92,369
- Falls, Orthopedic problems: $62,471
- Phlebitis, DVT, Pulm Embolism: $63,634

Total Costs: $559,300
### PACs on Professional Claims

#### Asthma Professional PACs

<table>
<thead>
<tr>
<th>Condition</th>
<th>Occurrence</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emergency Room Visits</td>
<td></td>
<td>$644,482</td>
</tr>
<tr>
<td>Acute Flare-up of Index Condition</td>
<td></td>
<td>$795,764</td>
</tr>
<tr>
<td>Urinary Tract and other Hospital Acquired Infections</td>
<td></td>
<td>$252,922</td>
</tr>
<tr>
<td>Diabetic Emergency, Hypo- Hyper-Glycemia</td>
<td></td>
<td>$107,865</td>
</tr>
<tr>
<td>Subarachnoid And Intracerebral Hemorrhage (Stroke, CVA)</td>
<td></td>
<td>$63,641</td>
</tr>
<tr>
<td>Cardiac Dysrhythmias, cardiovascular problems</td>
<td></td>
<td>$436,009</td>
</tr>
<tr>
<td>Pneumonia, Lung Complications, Respiratory Failure</td>
<td></td>
<td>$240,381</td>
</tr>
<tr>
<td>Acute Renal Failure, Other Kidney Problems</td>
<td></td>
<td>$509,547</td>
</tr>
<tr>
<td>Gastritis, Ulcer, GI Hemorrhage, Abdominal Pain</td>
<td></td>
<td>$3,301</td>
</tr>
<tr>
<td>Syncope, Hypotension, Dizziness</td>
<td></td>
<td>$117,250</td>
</tr>
<tr>
<td>Cellulitis, Skin Infections</td>
<td></td>
<td>$318,602</td>
</tr>
<tr>
<td>Phlebitis, DVT, Pulm Embolism, Decubitus Ulcer</td>
<td></td>
<td>$181,536</td>
</tr>
<tr>
<td>Adverse Drug Events, Complications of Medical Care</td>
<td></td>
<td>$230,894</td>
</tr>
</tbody>
</table>

**PAC Occurrences**

- Emergency Room Visits: $644,482
- Acute Flare-up of Index Condition: $795,764
- Urinary Tract and other Hospital Acquired Infections: $252,922
- Diabetic Emergency, Hypo- Hyper-Glycemia: $107,865
- Subarachnoid And Intracerebral Hemorrhage (Stroke, CVA): $63,641
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- Gastritis, Ulcer, GI Hemorrhage, Abdominal Pain: $3,301
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- Cellulitis, Skin Infections: $318,602
- Phlebitis, DVT, Pulm Embolism, Decubitus Ulcer: $181,536
- Adverse Drug Events, Complications of Medical Care: $230,894
Breaking Down Typical Care

• The IEVA helps identify the variability in all services
  – Adjusted for severity, the patients with high variability in services can be investigated for root cause analysis

• HCl³’s ECRs further classify services as:
  – Core – to determine the potential for underuse of recommended services
  – Overuse – leveraging the ABIM Foundation’s Choosing Wisely campaign, and identifying other overtreatment
Opportunities To Reduce Variability in Typical Care

• Potentially avoidable services identified as overused services by the Choosing Wisely campaign are flagged within specific ECRs.

• Core services for certain conditions based on evidence-informed guidelines or expert opinion
  – help identify gaps in care or underuse in the management of an episode.

• Episodes are associated to one another based on their clinical relevance
  – Allows inferences about appropriateness of procedural episodes in managing conditions
# Underuse: Defining Core Services

## Table: Core Services

<table>
<thead>
<tr>
<th>Category</th>
<th>CAD</th>
<th>CHF</th>
<th>HTN</th>
<th>Arrhythmias / Heart Block</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physician Services</td>
<td>4</td>
<td>6</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Preventive Medicine, Counseling, Coordination</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Chest X-Ray</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heart Echo / Ultrasound</td>
<td>1</td>
<td>2</td>
<td></td>
<td>0.2</td>
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<tr>
<td>Electrocardiogram - EKG monitoring</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
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<tr>
<td>Cardiovascular Stress Testing</td>
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<td>Coumadin (anti-coagulant) Management</td>
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<tr>
<td>CBCs</td>
<td></td>
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<tr>
<td>Metabolic panel</td>
<td>1</td>
<td>1</td>
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</tr>
<tr>
<td>Lipid Level Monitoring</td>
<td>1</td>
<td>1</td>
<td>1</td>
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</tr>
<tr>
<td>Urine Protein</td>
<td></td>
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<tr>
<td>Thyroid Function Test</td>
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<td></td>
<td>0.5</td>
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<tr>
<td>Pacemaker Check</td>
<td></td>
<td></td>
<td></td>
<td>0.3</td>
</tr>
</tbody>
</table>
Underuse by Provider

- Due to multi-assignment of claims into concurrent episodes, we avoid the potential to undercount relevant services within episodes.
- On average, high volume providers seem to be providing needed core services for CAD patients.

<table>
<thead>
<tr>
<th>Physician ID</th>
<th>Number of Episodes</th>
<th>Avg # PHYS SERVICES</th>
<th>Avg # PREVT SERVICES</th>
<th>Avg # HEART ECHO</th>
<th>Avg # EKG</th>
<th>Avg # Stress Tests</th>
<th>Avg # Lipid Panels</th>
<th>Avg # Metabolic Panels</th>
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<tbody>
<tr>
<td>Guidelines</td>
<td>4.00</td>
<td>2.00</td>
<td>1.00</td>
<td>1.00</td>
<td>0.50</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
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<tr>
<td>Phys # 1</td>
<td>118</td>
<td>4.59</td>
<td>0.52</td>
<td>0.88</td>
<td>1.38</td>
<td>1.57</td>
<td>1.39</td>
<td>2.16</td>
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<tr>
<td>Phys # 2</td>
<td>110</td>
<td>6.18</td>
<td>38.35</td>
<td>0.98</td>
<td>5.72</td>
<td>1.99</td>
<td>1.43</td>
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<td>2.86</td>
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<td>2.72</td>
<td>0.97</td>
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</table>
Gaps in Care in Some CAD patients

- But analysis of individual patients demonstrated significant gaps in care across the seven categories of services.
- Physicians could use this type of analysis to identify which patients to target to provide more optimal care.
Too Many Services For Other CAD Patients

Core Services in CAD patients by Provider

<table>
<thead>
<tr>
<th>Physician</th>
<th>Avg # Metabolic Panels</th>
<th>Avg # Lipid Panels</th>
<th>Avg # Stress Tests</th>
<th>Avg # EKG</th>
<th>Avg # HEART ECHOS</th>
<th>Avg # PREVT SRVICES</th>
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<td>116</td>
<td>117</td>
<td>118</td>
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</tbody>
</table>
### Overuse of Services in CAD

- 15,347 Patients had CAD
- Of these – 1,749 (11.40%) had one or more PCI (Angioplasties)
- And 897 (5.84%) had CABG (coronary artery bypass) procedure
- 69 (0.46%) patients had both (CABG and Angioplasty)

<table>
<thead>
<tr>
<th>Patients with CAD = 15,347</th>
<th>Number of tests</th>
<th>Average Number per patient</th>
<th># CAD Patients who had a test</th>
<th>% CAD Patients who had a test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heart Echo</td>
<td>23,464</td>
<td>1.53</td>
<td>6,986</td>
<td>45.5%</td>
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<tr>
<td>Cardiac Stress Test</td>
<td>35,225</td>
<td>2.30</td>
<td>7,611</td>
<td>49.6%</td>
</tr>
<tr>
<td>Cardiac Cath and Angiography</td>
<td>9,927</td>
<td>0.65</td>
<td>3,621</td>
<td>23.6%</td>
</tr>
<tr>
<td>Other Cardiac Imaging</td>
<td>100</td>
<td>0.01</td>
<td>57</td>
<td>0.4%</td>
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<tr>
<td>Any Cardiac Imaging Test</td>
<td>68,716</td>
<td>4.48</td>
<td>10,774</td>
<td>70.2%</td>
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</table>
Overuse of Imaging tests in CAD

Cardiac Imaging Tests in 2 years

Number of Patients

Number of Tests per Patient

- Other Cardiac Imaging Tests
- Cardiac Cath and Angiography
- Cardiac Stress Test
- Heart Echo
### Super-utilizers of CAD Services

<table>
<thead>
<tr>
<th>Member ID</th>
<th># of Heart Echos</th>
<th># of Cardiac Stress Tests</th>
<th># of Cardiac Cath &amp; Angiography</th>
<th>Total Cardiac tests</th>
<th>Had PCI</th>
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<tr>
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</table>

In 2 years, these patients had ridiculously high volume of cardiac tests – WHY ??
Appropriateness of Procedures

Variability in Rates of Procedures in CAD patients Across Provider Groups

Incidence of CABG in US population = 1.57% and of PCI is 7.34%

Procedures per 100 Condition Episodes

Condition Episode N

Patients with CAD

Procedure Rate Per 100 Condition Episodes

Group 1
Group 2
Group 3
Group 4
Other

CABG, Valve Rep, Complex Heart Surg
Coronary Angioplasty (PCI)
Pacemaker / Defibrillator

Number of Patients
### Low Back Pain and Lumbar Laminectomy Sub-Analysis

- 775,866 population – 57,812 had Low Back Pain (7.45%)
- 2,275 had Lumbar Laminectomies (3.94% of LBP patients)
- Of all patients w LBP: 41.0% had X-Ray Spine and
- 31.6% had either an MRI or CT Spine
- 16% had one MRI Spine & 13.73% had 2 or more MRI Spine

<table>
<thead>
<tr>
<th># LBRLAM</th>
<th>Patients w LBRLAM</th>
<th>Average # X_RAY SPINE</th>
<th>Average # MRI SPINE</th>
<th>Average # CT SPINE</th>
</tr>
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<tbody>
<tr>
<td>0</td>
<td>55,537</td>
<td>0.66</td>
<td>0.43</td>
<td>0.04</td>
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<tr>
<td>1</td>
<td>2,121</td>
<td>4.69</td>
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<td>0.53</td>
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<td>5</td>
<td>1</td>
<td>17.00</td>
<td>10.00</td>
<td>3.00</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>57,812</strong></td>
<td><strong>0.82</strong></td>
<td><strong>0.49</strong></td>
<td><strong>0.06</strong></td>
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</table>
### Example Drill Down Report

Some Patients received as many as 16 MRI spine in 2 years

<table>
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<tr>
<th>Member_ID</th>
<th>MRI_SPINE_CNT</th>
<th>CT_SPINE_CNT</th>
<th>X_RAY_SPINE_CNT</th>
<th>Total Imaging</th>
<th>Had LBRLAM</th>
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</table>
Super Utilizers in LBP

- 283 patients w LBP (0.5%) were considered as Super-Utilizers of services, with at least 10 count of imaging services of the spine over the 2 year period
- Interestingly some of the super-utilizers of services received up to 5 lumbar laminectomy procedures over 2 years

<table>
<thead>
<tr>
<th># LMBLAM</th>
<th>Patients w LBRLAM</th>
<th>X_RAY SPINE</th>
<th>MRI_SPINE</th>
<th>CT_SPINE</th>
<th>Total Imaging</th>
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<td>0</td>
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<td>9.74</td>
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<td>30.00</td>
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<td>Total</td>
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<td>11.73</td>
<td>3.14</td>
<td>1.54</td>
<td>16.41</td>
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</table>
Appropriateness of Procedures

Lumbar Laminectomy Rates By Provider Groups in LBP

Procedures Per 100 Condition Episodes

Number of Patients

Group 1 | Group 2 | Group 3 | Group 4 | Other

Procedures per 100 Condition Episodes

Condition Episode N
Observed Costs vary due to complexity of procedures performed within a lumbar laminectomy episode

Risk-adjustment eliminates differences due to complexity of procedures and patient comorbidities, and reveals true differences across facilities.
In Summary

• Understanding the causes of variability creates opportunities for providers
  – Reducing PACs improves patient care
  – Reducing underuse reduces the potential for avoidable complications
  – Reducing overuse generates significant Savings

• Current ECR definitions embed tags that can help create powerful feedback reports for providers and help them manage patients better
Using Variability To Activate Consumers

Doug Emery
What is the Goal?

Holding providers and patients responsible for costs between the 80th and 98th percentile of episode costs would save 30%
Consumer Activation: State of the Art is Very Problematic

- Quality tools are scattered, indistinct and methods difficult to interpret (example: US News and World Report Hospital Rankings)
- Transparency tools are incomplete and ambiguous (example: crude FFS methods for estimating OOP costs, either by episode or within deductible)
- Current FFS benefits plans make activation almost impossible
- Result: low uptake by employees and consumers
What is Needed?

The CTQs – Critical to Quality consumer parameters

• Simple – a child could understand it
• Unambiguous – cost, for example, is not fuzzy, it is fixed and known *upfront*
• Searchable – the ability to drill down into increasingly complex pieces of information, *if consumers so choose*
Where Do We Start?

• Evolutionary Psychology – there are least 200 hard-wired intuitive cognitive biases in the human brain – take advantage of it!

• Prospect Theory – losses loom larger than gains (Daniel Kahneman and Amos Tversky)

A Simple, Intuitive Method: Red Bar / Green Bar Gateway

Potential to harm me

Cost

A

B
Example – Joint Replacement Procedure

- John Jackson
- Age 55
- Manchester, NH
- Spending Allowance for Knee Replacement Procedure: $24,000
John’s In-Network Providers for Total Hip Replacement

FFS Contracts and Benefits

Provider A: $3,500
Provider B: $4,000
Provider C: $5,000
Provider D: $5,500

Bundled Payment with Reference Benefit

Provider E: $500
Provider F: $600
Provider G: $1,000
The Problem: Indiscriminant FFS Sick Plans (unilateral deductible)

Annual Deductible: *In-network* $500 Individual / $1,500 Family *Out-of-Network* $5,000 Individual / $15,000 Family

Annual Out-of-Pocket Maximum: *In-network* $1,500 Individual / $3,000 Family *Out-of-network* $7,500 Individual / $15,000 Family

Co-Insurance/Co-Pay: *In-network* 80% *Out-of-network* 60%

Primary Care Physician Services: *In-network* $25 Primary Care $80 Specialist *Out-of-network* Deductible, 60%

Other Physician Services: *In-network* Deductible, 80% *Out-of-network* Deductible, 60%

Preventive Care (In-network coverage only)
Mammograms, Pap Smear, Prostate Screening, Well Child to Age 6, Physicals $25 Copay, then 100% 0%

Hospital / Skilled Nursing Facility Charges: *In-network* $100 Copay, 80% *Out-of-network* $500 Copay, 60%

Outpatient Facility Charges: *In-network* Deductible, 80% *Out-of-network* Deductible, 60%

Emergency Room: *In-network* Deductible, *Out-of-network* 80% Deductible, 60%

Ambulance: Deductible, 80%

Other Services (Outpatient Facility, Home Health, Physical Therapy, Mental Health): *In-network* Deductible, 80% *Out-of-network* Deductible, 60%

Prescriptions $10 (Generic) / $25 (Preferred) / $60 (Non-Preferred)

Lifetime Maximum $1,000,000
Blind "Coverage"

Across spectrum of care and benefits package

- Dark Zone of Full Coverage
  - Co-Insurance
  - Deductible
  - HSA

- $1,000,000
- $7,500 OPM
- $2,500
The Solution P4P = B4P: Medical Episode Savings Accounts/MESA

• A multilateral deductible system that distinguishes clinical nuance – that is, cost exposure is tuned to condition and patient response
• Rather than just generating a bill at the end of a care episode, a MESA gives the patient an allowance at the beginning.
• A MESA gives the patient a list of high-performing providers who can provide the needed care, each provider’s negotiated bundled price, and the quality recognitions they have earned.
• Armed with clear cost and quality information, the patient can then choose any provider on the list.
• A MESA can be linked to wellness programs so that patient consumption performance can be rewarded (B4P)
MESAs: Parsing Clinical Nuance

Diabetes MESA

- Full Coverage
- Co-Insurance
- Deductible

Wellness Allowance

- Wellness Programs Up to 30% of Premium
- Participatory
- Health Contingence
Example – Diabetes

- Mary Walsh
- Age 45
- Nashua, NH
- Spending Allowance for Annual Diabetes Care: $8,000
Mary’s In-Network Providers for Diabetes

Provider A

Provider B

Provider C

Provider D

FFS

PCMH Value Contract with MESA

Provider E

Provider F

Provider G
Mary – An Employee With Diabetes

- At the beginning of the year, she receives one allowance that covers preventive care and another allowance that covers diabetes care (and related conditions) for the year.
- She is given a list of doctors who can provide care, some with bundled fees.
- Once she chooses a doctor, she is given a schedule of recommended services for the year.
- If she does not get recommended services, or gets non-recommended services, she is assessed a penalty and her allowance amounts are reduced.
- “Use it or lose it” – any funds not used by year-end are forfeited.
Matching MESA with wellness and accountable care

The Scenario

- Mary selects Dr. James Younger practicing with Medical Partners
- Mary’s MESA for diabetes is $8,000 for 2015
- Medical Partners has a contract with her plan to manage her 2015 diabetes care for $7,000
## Mary’s Wellness Ledger

Mary’s MESA Budget: $8,000  HP Contract: $7,000  Mary’s Plan Cost: $17,000  
PWP $1,000  
HCWP  30% = $5,100  50% = $8,500

<table>
<thead>
<tr>
<th>Recognized Provider</th>
<th>HbA1c</th>
<th>Lipid</th>
<th>Blood Pressure</th>
<th>BMI</th>
<th>Smoking</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recommended OV</td>
<td>&lt; 7.0</td>
<td>&lt; 100mg / dl</td>
<td>&lt; 130 / 80</td>
<td>&lt; 20</td>
<td>Quitter</td>
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<td>Diabetes Education</td>
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<td>Nutritional Program</td>
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<td>Med Compliance</td>
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<td>Vaccinations</td>
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<tr>
<td>Gym Membership</td>
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The Takeaway…

Health *is* Wealth

The solution is to merge health benefits to one’s *sense of estate*

For Mary, over the course of her career, that’s $186,862 (@5%) added to her family’s savings!
In Summary

• Consumers have already transformed the low end of the market, but now we need to move the activation “up-market”

• A combination of value-based payments and value-based benefits can transform the market IF:
  – Consumers have simple to understand interfaces on provider price and quality (Red Bar / Green Bar Gateway)

• Wellness programs that rewards *results* can move patients to high value providers who have less variability (take out the 30% excess)
  – We need Congress to allow new wellness rewards to accrue to tax-deferred instruments (remember Mary!)