Using Data to Lower Costs: California’s Reference-Based Payment Experience and Implications for Other States

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Acknowledgements

Funding
- Laura and John Arnold Foundation

Data Access, Support, and Assistance
- Health Care Cost Institute
- University of Chicago NORC

Research Assistance
- Matthew Jones
Overview

- **Context:** California Public Employees’ Retirement System (CalPERS) faced unsustainable healthcare cost increases and implemented a Reference Based Payment (RBP) program to curb costs

- **Study Objective:** To assess whether RBP program would successfully reduce costs outside of California

- **Research Questions**
  1. What are the lessons learned from California’s experience?
  2. If other states used RBP, how much savings can be expected?
     - Where would the savings occur?
     - What drives the effectiveness of RBP?
  3. Is there a potential for unintended quality and patient safety outcomes?
Background: California’s Problem

- **CalPERS** is third largest purchaser of health services in U.S.

- During the great recession, rising health care costs and budget shortfalls led to two choices:
  1. Increase deductible
  2. Try something innovative
Background: CalPERS’ Proposed Solution

- CalPERS sought input from member constituencies and attempted to find innovative ways to
  1. Reduce costs
  2. Without increasing beneficiary spending
  3. Maintain cost reductions over time

Decided to implement a Reference-Based Payment (RBP) program
Background: How RBP Works

- Payer sets **maximum reimbursable amount** (the “Reference Price”) based on patient access to high-quality providers.

- If patient receives care from a provider that charges above reference price* then the patient is responsible for difference in between the two prices.

*“Price” refers to negotiated price, not listed charges.
Background: How CalPERS Implemented RBP

- Starting in 2012, RBP was applied to several outpatient surgeries.
  - Arthroscopy, cataract, and colonoscopy
  - “Shoppable” services with wide variation in prices.
- For CalPERS, RBP only applies to colonoscopies received at Hospital Outpatient Departments (HOPDs).
  - Ambulatory Surgical Centers (ASCs) are exempted.
- For this analysis, we focus on RBP for colonoscopies because colonoscopies are a common, clinically important service.
Why RBP Was the Solution: Prices For Same Service Are Highly Variable

Range in Colonoscopy Prices Across California HOPDs and ASCs in 2011

Why RBP Was the Solution: Evidence that RBP Lowered Prices for Colonoscopies

Payment per Procedure for Colonoscopy Before and After Implementation of Reference-Based Payments by CalPERS

Why RBP Was the Solution: Bottom Line—RBP Saved CalPERS Money for Many Procedures

Reduction in CalPERS spending in first two years after implementation of reference pricing, compared to what spending would have been if choices and prices for CalPERS had followed the trends experienced by Anthem control group, whose members were not subject to reference pricing

<table>
<thead>
<tr>
<th>Procedure</th>
<th>CalPERS Savings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knee/hip replacement&lt;sup&gt;1&lt;/sup&gt;</td>
<td>$6 million</td>
</tr>
<tr>
<td>Cataract removal&lt;sup&gt;2&lt;/sup&gt;</td>
<td>$1.3 million</td>
</tr>
<tr>
<td>Knee/shoulder arthroscopy&lt;sup&gt;3&lt;/sup&gt;</td>
<td>$2.3 million</td>
</tr>
<tr>
<td>Colonoscopy&lt;sup&gt;4&lt;/sup&gt;</td>
<td>$7 million</td>
</tr>
</tbody>
</table>

Can RBP Work for Everyone? Evidence that Savings Vary by Market

Colonoscopy RBP Savings

Palm Springs
Los Angeles
Fresno
Sacramento
San Francisco

Source: C Whaley, TT Brown, JC Robinson., Berkeley Center for Health Technology, University of California, Berkeley, calculations using CalPERS medical claims data
While California is Different From Other States....
...Price Variation is a Nationwide Problem

Source: C Whaley, TT Brown, JC Robinson,, Berkeley Center for Health Technology, University of California, Berkeley, calculations using HCCI medical claims
Basic Idea: For factors that influence RBP savings, is a given non-California market more like Palm Springs ($445 savings) or Santa Barbara ($95 increase)?

Steps

1. Estimate RBP savings in each California Market.
2. Use predictive analytics to find what market characteristics drive RBP savings (e.g. average prices, price variation, availability of providers, etc).
3. “Match” California savings to similar non-California markets.
Methodology for Estimating RBP Savings in Other States: Data

Data Source: Health Care Cost Institute (HCCI), along with companies providing data to it—Aetna, Humana, and UnitedHealthcare

Steps
1. Identify colonoscopy procedures using HCCI database.
   - Nationwide database of de-identified medical claims from several large insurers covering approximately 50 million individuals.
   - **3.3 million colonoscopies** between 2010-2013.
2. Use HCCI data to construct market-level colonoscopy price index and calculate distribution of prices.
3. Identify relevant market characteristics using HCCI data and external data.
High Nationwide Variation
In Colonoscopy Prices

Average Colonoscopy Price by Hospital Referral Region

Source: C Whaley, TT Brown, JC Robinson, Berkeley Center for Health Technology, University of California, Berkeley, calculations using HCCI medical claims
Also High Within-Market Variation in Prices

Ratio of 75th and 25th Percentile Prices by Hospital Referral Region

Source: C Whaley, TT Brown, JC Robinson., Berkeley Center for Health Technology, University of California, Berkeley, calculations using HCCI medical claims
Estimated Savings If Other States Implemented RBP for Colonoscopy

*Predicted RBP Savings by Hospital Referral Region*

Source: C Whaley, TT Brown, JC Robinson, Berkeley Center for Health Technology, University of California, Berkeley, calculations using HCCI medical claims
## Closer Look At Estimated Savings

<table>
<thead>
<tr>
<th>HRR</th>
<th>Estimated RBP Savings</th>
<th>Notable Market Characteristic</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>3 Markets with Largest Estimated Savings</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Los Angeles, CA</td>
<td>-$327</td>
<td>75th percentile cost is 5.2 larger than 25th percentile cost</td>
</tr>
<tr>
<td>Chicago, IL</td>
<td>-$289</td>
<td>94% of colonoscopies performed at HOPDs</td>
</tr>
<tr>
<td>Manhattan, NY</td>
<td>-$281</td>
<td>12th largest variation in costs</td>
</tr>
<tr>
<td><strong>3 Markets with Smallest Predicted Savings</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lynchburg, VA</td>
<td>$89</td>
<td>Median price less than reference price</td>
</tr>
<tr>
<td>Terre Haute, IN</td>
<td>$87</td>
<td>Very concentrated market</td>
</tr>
<tr>
<td>Bend, OR</td>
<td>$77</td>
<td>ASCs more expensive than HOPDs</td>
</tr>
</tbody>
</table>

Source: C Whaley, TT Brown, JC Robinson, Berkeley Center for Health Technology, University of California, Berkeley, calculations using HCCI medical claims.

*Preliminary results: Please do not cite without authors’ permission.*
RBP Estimated Savings Summary

- Equivalent to $95 million / year if implemented by all payers in HCCI data.\(^1\)
- Equivalent to $3.6 billion if applied to all colonoscopies in U.S.\(^1,2\)

- RBP works best in markets with high prices but need to have enough low-price providers.

1. Preliminary results: Please do not cite without authors’ permission.
2. Source: Calculations using Census and CDC data.

Source: C Whaley, TT Brown, JC Robinson, Berkeley Center for Health Technology, University of California, Berkeley, calculations using Census and CDC data.

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Relationship Between Colonoscopy Cost and Quality

- Use HCCI data to identify rates of colonoscopy-related procedural complications.
  - **Cardiovascular** (e.g. heart failure, shock), **serious gastrointestinal** (e.g. bleeding and perforation), **non-serious gastrointestinal** (e.g. nausea, abdominal pain).

- Use statistical techniques to examine association between cost and procedural complications.

- Risk-adjust and control for patient characteristics to control for patient differences.
Results: No Relationship Between Colonoscopy Cost and Quality

- A $1,000 increase in colonoscopy cost is associated with a 3% increase in risk of any procedural complication.
  - Translates into increase from 3.74% to 3.85%.
    - Really small effect!
- Small negative association between receiving care at ASC and quality.

Source: C Whaley, TT Brown, JC Robinson, Berkeley Center for Health Technology, University of California, Berkeley, calculations HCCI medical claims.

Preliminary results: Please do not cite without authors’ permission.
Considerations for Implementing RBP

- Only applicable for "shoppable" services.
- **Consumers must be informed** about program and must have information about provider prices.
- **Exemption process** must be in place to protect consumers who don’t have access to low-cost providers or need to see expensive providers.
  - CalPERS exempts patients from RBP if:
    1. No low-priced provider in 30 miles.
    2. Doctor recommends care from specific provider.
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