Shifting from Volume to Value

Successful ACOs demonstrate lower year-over-year growth in imaging utilization

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Background – Healthcare Reform

- Current U.S. healthcare reform efforts focus on aligning financial incentives around high-value healthcare [1, 2].

- The Centers for Medicare and Medicaid Services (CMS) and commercial payers have developed various alternative payment models to achieve this goal [2,3].

- The Medicare Shared Savings Program (MSSP) for Accountable Care Organizations (ACOs) is one such program which was introduced by the Patient Protection and Affordable Care Act [4].
Background – Accountable Care Organizations

- ACOs are groups of physicians, other healthcare providers, and hospitals, who voluntarily work together to provide high-quality coordinated care to their assigned Medicare patients (beneficiaries) [4,5].

- ACOs are accountable for the quality, cost, and experience of care of their patient population.

- An MSSP-Participating ACO may succeed in sharing in the savings it generates if
  1) The ACO meets quality performance standards; and
  2) The ACO’s savings exceed an assigned minimum savings rate
Purpose

- There has been considerable interest in the impact of ACOs on imaging utilization in their efforts to achieve value [3,6,7].

- An initial analysis of imaging utilization and ACO performance in the early years of the MSSP found that increased program savings was associated with greater MRI utilization but not with increases or decreases in CT or MRI utilization [7].

- In the current study, we analyze newly available data on ACO performance in the MSSP through 2016. *We aimed to determine how successful and unsuccessful ACOs differ in their patterns of imaging utilization.*
Methods

- This study did not constitute human subjects research and did not require institutional review board approval.
  - This study utilized publicly available aggregate data on ACO performance. No patient-level identifiable protected health information was utilized.

- Data were obtained from MSSP ACO Public Use Files available at https://data.cms.gov/ for performance years 2013-2016

- Extracted variables included:
  - **Earned Savings / Losses**, representing the dollar amount of the ACO’s share of the total savings that it generated, or the share of losses the ACO owed
  - **CT or MRI events per 1000 person-years**
  - Additional descriptive variables extracted included:
    - Total Assigned Beneficiaries, Total Female Assigned Beneficiaries, Total Non-Hispanic White Assigned Beneficiaries, Average Hierarchical Condition Classification Risk Score for Aged Non-Dual Eligible Beneficiaries.
Methods

- **Study Sample:** For each performance year, ACOs were included in the study sample if they also existed in the prior year, so that change in imaging utilization could be determined.

- **Successful ACO:** Defined as an ACO that shared in the savings it generated (i.e. Earned Savings > $0)

- **Total Utilization:** CT or MRI events per 1000 person-years

- **Change in Utilization:** Percentage change in Total Utilization from the prior year for CT or MRI

- **Statistical comparison:**
  - In each performance year, Total Utilization and Change in Utilization was compared between successful and unsuccessful ACOs using a 2-sample t-test.
### Results

#### Characteristics of ACOs in Study Sample

<table>
<thead>
<tr>
<th></th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td># ACO, total</td>
<td>333</td>
<td>392</td>
<td>432</td>
</tr>
<tr>
<td># ACO, in sample †</td>
<td>214</td>
<td>303</td>
<td>332</td>
</tr>
<tr>
<td># Successful ACO, N (%)</td>
<td>65 (30%)</td>
<td>100 (33%)</td>
<td>116 (35%)</td>
</tr>
</tbody>
</table>

**ACO Characteristics (Mean ± SD)**

<table>
<thead>
<tr>
<th></th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Assigned Beneficiaries</td>
<td>17706 ± 17182</td>
<td>18554 ± 18450</td>
<td>19927 ± 19301</td>
</tr>
<tr>
<td>Gender (% Female ‡)</td>
<td>57.4% ± 2.0%</td>
<td>57.3% ± 2.4%</td>
<td>57.4% ± 1.9%</td>
</tr>
<tr>
<td>Race (% Non-Hispanic White ‡)</td>
<td>82.6% ± 17.2%</td>
<td>82.1% ± 15.5%</td>
<td>82.7% ± 15.7%</td>
</tr>
<tr>
<td>HCC Risk Score (for Aged, Non-Dual Eligible Beneficiaries ‡)</td>
<td>1.08 ± 0.11</td>
<td>1.07 ± 0.11</td>
<td>1.08 ± 0.11</td>
</tr>
</tbody>
</table>

ACO: Accountable Care Organization; HCC: Hierarchical condition category

† ACOs included in study sample are those for which data was available in consecutive years
‡ These categories represent the most prevalent category for gender, race, and enrollment type, respectively

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The rate of successful ACOs was 30% in 2014, 33% in 2015, and 35% in 2016.
## Results

### Comparison of Imaging Utilization in Successful vs. Unsuccessful ACOs

<table>
<thead>
<tr>
<th></th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
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</thead>
<tbody>
<tr>
<td><strong>CT Utilization</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Utilization</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(mean ± SD)</td>
<td>733 ± 124</td>
<td>699 ± 128</td>
<td>765 ± 139</td>
</tr>
<tr>
<td>% Change in utilization from prior year (mean ± SD)</td>
<td>2.7% ± 6.9</td>
<td>3.7% ± 6.6</td>
<td>3.2% ± 7.6</td>
</tr>
<tr>
<td></td>
<td>p=0.078</td>
<td>p=0.066</td>
<td>p=0.065</td>
</tr>
<tr>
<td><strong>MRI Utilization</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Utilization</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(mean ± SD)</td>
<td>298 ± 63</td>
<td>278 ± 62</td>
<td>305 ± 64</td>
</tr>
<tr>
<td>% Change in utilization from prior year (mean ± SD)</td>
<td>0.2% ± 7.8</td>
<td>1.2% ± 6.8</td>
<td>1.6% ± 7.1</td>
</tr>
<tr>
<td></td>
<td>p=0.038</td>
<td>p=0.003*</td>
<td>p=0.281</td>
</tr>
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ACO: Accountable Care Organization; Total Utilization: CT or MRI events per 1000 person-years

* Statistically significant at a threshold of p<0.004

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**Successful ACOs had greater total utilization of MRI.**
Statistically significant for 2015 (p=0.003) and nearly significant for 2014 (p=0.038)

**In 2016, successful ACOs had lower growth in imaging utilization.**
Statistically significant for CT (p<0.001) and nearly significant for MRI (p=0.036)
Successful ACOs demonstrate lower growth in imaging utilization.

*Statistically significant for CT in 2016 (p<0.001)
In 2016, successful ACOs demonstrated lower growth in imaging utilization relative to the prior year as compared to unsuccessful ACOs.

However, successful ACOs did not have lower absolute imaging utilization rates, and tended to have greater absolute utilization.

Advanced imaging can often influence management decisions and outcomes when used appropriately. Appropriate levels of utilization may be influenced by the ACO’s beneficiary makeup. Excessive growth from this baseline, however, may indicate inappropriate (low-value) utilization.

Limitations
• This comparison was not adjusted for other factors that may contribute to ACO success.
  – However, each ACO’s spending benchmark is itself adjusted based on the HCC risk score mix of it’s beneficiary population.
• This analysis utilized aggregate data on imaging utilization; a direct assessment of the appropriateness of individual imaging studies was not undertaken.
Conclusions

- The findings of this analysis suggest that ACO success is more strongly related to an ACO’s ability to control imaging growth rather than its ability to control absolute imaging volume.

- **Next steps**: Additional study is warranted to determine if a similar association exists with regards to imaging utilization in other alternative payment models. Such work would be important in order to understand the impact of these models on the future of radiology in the era of value-based healthcare.
References


