Performance of the Nation’s Hospitals on Medicare’s Outpatient Imaging Efficiency Metrics: A Five-Year Longitudinal Cohort Analysis

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Medicare established its Hospital Outpatient Quality Reporting Program (HOQRP) to provide publically available health care quality information to allow patients to make more informed decisions about their health care.
Medicare has developed a variety of metrics to assess health care quality
  • 6 of these specifically relate to imaging.

There is a paucity of information about whether public reporting and payment incentives have prompted hospitals to improve upon imaging metrics over time.
Our purpose in this study was to evaluate longitudinal performance of the nation’s hospitals on the HOQPR’s imaging efficiency metrics.
Methods

- 3,960 hospital outpatient departments that reported imaging metric outcomes in 2011 and 2016
- 6 imaging metrics were included
**Imaging Metrics**

- **MRI Lumbar Spine for Low Back Pain**
  - Outpatients with low-back pain who had an MRI without trying recommended treatments (such as physical therapy) first.

- **Mammography Follow-Up Rates**
  - Outpatients who had a follow-up mammogram, breast ultrasound, or breast MRI within the 45 days after a screening mammogram.

- **Thoracic Computed Tomography (CT) - Use of Contrast Material**
  - Outpatient CT scans of the chest that were “combination” (double) scans.
<table>
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<th>Imaging Metrics</th>
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<td><strong>Abdomen Computed Tomography (CT) - Use of Contrast Material</strong></td>
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<td>• Outpatient CT scans of the abdomen that were “combination” (double) scans</td>
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<td><strong>Cardiac Imaging for Preoperative Risk Assessment for Low-Risk Surgery</strong></td>
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<td>• Outpatients who got cardiac imaging stress tests before low-risk outpatient surgery</td>
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<td><strong>Simultaneous Use of Brain and Sinus CT</strong></td>
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<td>• Outpatients with brain CT scans who got a sinus CT scan at the same time</td>
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Descriptive Analyses

• Median proportions, ranges and histograms were calculated for each of the metrics.

Longitudinal Analyses

• Differences in each of the six imaging efficiency metrics over time were calculated using fixed effects linear regression models with analytic weights corresponding to baseline sample sizes.
• Lumbar spine MRI for low back pain increased by a median of 3.6% from 36.7% (2011) to 40.2% (2016) (p<0.001).

• For individual hospitals, this change varied from -27.9% to +31.4%.
  • 71.1% of hospitals reported an increased frequency of lumbar spine MRI for low back pain.
Mammography Follow-Up Rates

- Mammography follow up decreased by a median of 0.3% from 8.3% (2011) to 7.8% (2016) (p=0.03).

- For individual hospitals, this change varied from -69.5% to +62.6%.
  - 53.4% of hospitals reported a decreased mammography follow up rate.
• Abdomen double CT scans decreased by a median of 1.9% from 7.8% (2011) to 5.6% (2016) (p < 0.001).

• For individual hospitals, this change varied from -73.5 to +32.3.
  • 68.9% of hospitals reported decreases in abdomen double CT scans.
Thoracic CT – Use of Contrast Material

- Thoracic double CT scans decreased by a median of 0.4% from 1.6% (2011) to 0.7% (2016) (p < 0.001).
- For individual hospitals, this change varied from -73.2 to +28.0.
  - 60.5% of hospitals reported decreases in thoracic double CT scans.
Cardiac Imaging for Pre-Op Assessment

- Cardiac imaging for pre-op risk assessment decreased by a median of 0.7% from 5.2% (2011) to 4.6% (2016) ($p < 0.001$).
- For individual hospitals, this change varied from -10.0 to +9.9.
  - 72.0% of hospitals reported decreases in cardiac imaging for pre-op risk assessment.
Simultaneous Use of Brain and Sinus CT

- Simultaneous brain and sinus CT decreased by a median of 0.9% from 2.3% (2011) to 1.2% (2016) (p < 0.001).
- For individual hospitals, this change varied from -11.8 to +7.8.
  - 79.1% of hospitals reported decreases in simultaneous brain and sinus CTs.
Conclusions

• Hospital outpatient departments demonstrated slightly worse performance for lumbar spine MRI utilization from 2011 to 2016 and minimal changes for other imaging efficiency metrics.

• The results suggest the challenges of optimizing hospital outpatient imaging metrics in the absence of broader payment reforms.