Examining the Relationship Between the Lean Management System and Quality Improvement Care Management Processes

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- Some of the data for this study comes from American Medical Association (AMA) Physician Masterfile.
Post-COVID-19 hospitals have pressure to improve quality and patient safety

Also need to constrain costs

Previous research has shown Lean to be associated with quality and efficiency metrics in healthcare
  - Main focus on adoption instead of looking at length or degree of Lean implementation

We examine the results of two surveys conducted in 2017 for insights how Lean management might help in this process
Goal

- To examine the association between hospital use of the Lean management system and recommended quality improvement care management processes
Data

- 2017 National Survey of Healthcare Organizations and Systems (NSHOS)
- 2017 National Survey of Lean/Transformational Performance Improvement in Hospitals (NSL)
- Analyzed the association between scores on the NSHOS with those on the NSL
- N=223 hospitals that responded to both surveys
Regression Analysis

- Measures of Lean implementation
  - Number of years doing Lean
  - Daily Management System (DMS) index
  - Lean education and training score

- Process measures
  - Care of complex, high need patients
  - Participation in quality-focused payment
  - Screening for clinical conditions
  - Screening for social needs
  - Use of evidence-based guidelines
  - Use of EHR-based decision support
  - Use of patient engagement strategies
  - Use of quality-focused information management
  - Support for care transitions

- Controls
  - Hospital ownership (public, not-for-profit, investor-owned)
  - Location
  - System or network membership
  - Membership in the Council of Teaching Hospitals
  - Hospital bed number (size)
## Outcomes

<table>
<thead>
<tr>
<th>Extent of Lean implementation measure</th>
<th>NSHOS domain, β and [95% CI]</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Care of complex, high need patients</td>
</tr>
<tr>
<td>Number of years doing Lean</td>
<td>0.003 [-0.007-0.014]</td>
</tr>
<tr>
<td>Daily Management System index</td>
<td>-0.003 [-0.022-0.016]</td>
</tr>
<tr>
<td>Education and training</td>
<td>-0.009 [-0.053-0.035]</td>
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</table>

*significant at the 0.10 level  
**significant at the 0.05 level

All associations were adjusted for our 5 control variables: (1) the type of authority responsible for establishing policy concerning the overall operation of each hospital (2) location in each core-based statistical area type as defined by the OMB, (3) system or network membership, (4) membership in the Council of Teaching Hospitals of the Association of American Medical Colleges, and (5) hospital bed size.
Key Findings

- Greater experience in using the Lean management system is positively associated with several recommended quality improvement care management processes.
- Negative association between education and training and screening for clinical conditions.
Limitations

- Possibility of response bias
- Findings are associations only, not causal
- Unsure if quality improvement or adoption of Lean occurred first, but there is an association between Lean and key process measures
- Benefits of Lean may only be realized with time
Discussion

- Some measures (such as greater use of EHR-based decision support) may facilitate the transition to greater use of telehealth and related changes in how care is delivered post-COVID-19.
- Hospitals that use Lean may be able to take more advantage of enhanced screening, education, and training to make key improvements in the aftermath of COVID-19.
Thank you! We welcome your questions and discussion.

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