Patient-Centered Medical Homes and Annual Healthcare Expenditures among Children with Special Health Care Needs

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Outline

• Background on CSHCN & PCMH
• Data & methods
• Results
• Conclusions
• Discussions
• Future directions
Some Background on Children with Special Health Care Needs (CSHCN)

- Had physical, developmental, emotional or behavioral chronic condition resulting in elevated health care service use\(^1\)

**Population Size**\(^2,3\)

- 13-19%

**Expenditures**\(^3\)

- 42%
Some Background on Patient-Centered Medical Home (PCMH)

- Innovative primary care delivery model
- Associated with higher odds of accessing outpatient care & prescription for CSHCN – But, no changes in expenditures when accessing care & overall expenditures for all type of services
  - 2003-2008 Medical Expenditure Panel Survey (MEPS)
Study Objective

• To examine the effect of having a PCMH on healthcare expenditures for CSHCN in the US in 2008-2012
  – Total expenditure: changes?
  – By type of services
    ◆ For example, we distinguish office-based care from hospital outpatient care, unlike prior work
CSHCN in MEPS

• Nationally representative survey of US civilian non-institutionalized population\(^6\)
  – Healthcare use, costs, and experience of healthcare received
  – Identified by the CSHCN Screener\(^7\)

• \( N = 6,595 \) CSHCN in 2008-2012
  – Newborn were excluded
  – Randomly selected 1 record for those with 2 years of observations
Constructing PCMH Indicator in MEPS

• 22 parent-reported survey items translating into a PCMH indicator\(^5\)
  – 45.5% of CSHCN had a PCMH

• Predictors & covariates
  – Demographic factors
  – Family factors & maternal education
Statistical Analysis

• Cross-sectional observational data
• IPTW: inverse probability treatment weighting
  – Balances treatment and control groups
• 2-part model for expenditures
  – Part 1: logistic regression
  – Part 2: OLS on ln(expenditure)
### CSHCN Characteristics

<table>
<thead>
<tr>
<th>Selected Characteristics (%)</th>
<th>Baseline sample</th>
<th></th>
<th></th>
<th>IPTW sample</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PCMH</td>
<td>No PCMH</td>
<td>P</td>
<td>PCMH</td>
<td>No PCMH</td>
<td>P</td>
</tr>
<tr>
<td>Male</td>
<td>57.2</td>
<td>60.7</td>
<td>0.005</td>
<td>59.1</td>
<td>59.1</td>
<td>0.995</td>
</tr>
<tr>
<td>Insurance- Any private</td>
<td>48.7</td>
<td>39.0</td>
<td>&lt;0.001</td>
<td>43.5</td>
<td>43.6</td>
<td>0.991</td>
</tr>
<tr>
<td>Public only</td>
<td>48.5</td>
<td>56.9</td>
<td></td>
<td>52.9</td>
<td>52.9</td>
<td></td>
</tr>
<tr>
<td>Uninsured</td>
<td>2.9</td>
<td>4.0</td>
<td></td>
<td>3.6</td>
<td>3.5</td>
<td></td>
</tr>
<tr>
<td>Language- English</td>
<td>89.5</td>
<td>83.8</td>
<td>&lt;0.001</td>
<td>86.2</td>
<td>86.3</td>
<td>0.980</td>
</tr>
<tr>
<td>Spanish</td>
<td>9.4</td>
<td>14.6</td>
<td></td>
<td>12.4</td>
<td>12.3</td>
<td></td>
</tr>
<tr>
<td>Others</td>
<td>1.1</td>
<td>1.6</td>
<td></td>
<td>1.5</td>
<td>1.4</td>
<td></td>
</tr>
<tr>
<td>Had functional or sensory limitation</td>
<td>7.0</td>
<td>9.2</td>
<td>0.001</td>
<td>8.2</td>
<td>8.2</td>
<td>0.962</td>
</tr>
</tbody>
</table>
## Adjusted Annual Expenditures: 2-Part Model

<table>
<thead>
<tr>
<th>Type of expenditures</th>
<th>Part 1: Adjusted OR</th>
<th>Part 2: ( \beta )</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Probability (accessing care)</td>
<td>% changes when accessing care</td>
</tr>
<tr>
<td>Total</td>
<td>1.813 **</td>
<td>0.083 **</td>
</tr>
<tr>
<td>Inpatient</td>
<td>1.100</td>
<td>0.199</td>
</tr>
<tr>
<td>Emergency room</td>
<td>0.985</td>
<td>0.080</td>
</tr>
<tr>
<td>Hospital outpatient</td>
<td>1.070</td>
<td>0.240 **</td>
</tr>
<tr>
<td>Office-based</td>
<td>1.454 **</td>
<td>0.012</td>
</tr>
<tr>
<td>Prescription</td>
<td>1.389 **</td>
<td>0.093 *</td>
</tr>
</tbody>
</table>

* p-value < 0.05; ** p-value < 0.01
2-Part Impacts of PCMH

<table>
<thead>
<tr>
<th></th>
<th>Total</th>
<th>Inpat’t</th>
<th>ER</th>
<th>Outpat’t</th>
<th>Office-based</th>
<th>Rx</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCMH</td>
<td>$3,554</td>
<td>$1,030</td>
<td>$154</td>
<td>$274</td>
<td>$742</td>
<td>$948</td>
</tr>
<tr>
<td>No PCMH</td>
<td>$3,198</td>
<td>$778</td>
<td>$144</td>
<td>$204</td>
<td>$695</td>
<td>$806</td>
</tr>
</tbody>
</table>

In 2012 US dollars.  * p-value < 0.05; ** p-value < 0.01
Conclusions

- PCMH was associated with higher total expenditure and expenditures in hospital outpatient, office-based, & prescriptions for CSHCN

<table>
<thead>
<tr>
<th>Increase in:</th>
<th>Accessing care</th>
<th>Average spending when accessing care</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospital outpatient</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Office-based</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Prescriptions</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>
• Compared to evidence on 2003-2008\textsuperscript{5}:
  – The impact of PCMH on expenditures has not dramatically changed in magnitude
  – But we have been able to piece together a more precise picture of what is going on

• Limitation in IPTW sample
  – Unable to include all confounders → Potential endogeneity problem
Future Directions

• Is PCMH related to better quality of care?
  – Improve access to care & appropriate utilization
  ➔ Examine quality of care measures

• Will the effects change if CSHCN constantly receiving care in PCMH?
  – Longer exposure time may matter
  ➔ Examine outcomes using longitudinal data, such as insurance claims, with advanced econometric model


