Results from a Radical Makeover of a Care Coordination Program Show How Program Design Affects Success in Reducing Hospitalizations and Costs: Evidence from a Randomized Controlled Trial Before and After Key Changes in Program Design

June 27, 2010
Presentation at AcademyHealth Annual Conference
Thank you

- We appreciate financial support from
  - The Centers for Medicare & Medicaid Services
  - Robert Wood Johnson Foundation’s Health Care Financing Organization and the Medicare Chronic Care Practice Research Network for follow-up work
  - Mathematica Policy Research

- We appreciate invaluable assistance from
  - Washington University staff
  - Demonstration participants
Does a care coordination model using more individualized and in-person care, transitional care after hospitalizations, and medication management outperform a model provided largely by telephone?
I. Study Design

- Natural experiment built onto a randomized trial

- Medicare Coordinated Care Demonstration
  - 15 programs nationwide
  - Operated by Washington University from 8/02 to 8/08

- Measure program impacts before and after major change in intervention
  - Largely telephonic provision of disease management (8/02-2/06, n=2,144)
  - Local model (3/06-8/08, n=2,166)
  - 88% of beneficiaries included in analysis of outcomes after makeover enrolled before the makeover

- Medicare Part A and B claims measure hospitalizations and costs, with and without care coordination fees
II. Study Sample

- Chronically-ill Medicare beneficiaries in FFS who saw Washington University physicians

- Disease management firm (StatusOne) used proprietary algorithm to further select patients, approximated as:
  - Claims for 2 or more of 6 conditions: diabetes, CHF, COPD, asthma, neoplasms, or renal disease, or
  - 2 or more hospitalizations in prior year, or
  - 2 or more ER visits in the prior year AND 1 or more of the 6 conditions
## Enrollees sicker than average beneficiaries

<table>
<thead>
<tr>
<th>Patient Characteristic (% unless otherwise noted)</th>
<th>Washington University Enrollees</th>
<th>Medicare Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Congestive heart failure</td>
<td>46</td>
<td>15</td>
</tr>
<tr>
<td>Coronary artery disease</td>
<td>63</td>
<td>30</td>
</tr>
<tr>
<td>Chronic obstructive pulmonary disease</td>
<td>25</td>
<td>10</td>
</tr>
<tr>
<td>Diabetes</td>
<td>41</td>
<td>21</td>
</tr>
<tr>
<td>Black</td>
<td>38</td>
<td>9</td>
</tr>
<tr>
<td>Dually eligible</td>
<td>20</td>
<td>18</td>
</tr>
<tr>
<td>&lt; 65 years old</td>
<td>27</td>
<td>14</td>
</tr>
<tr>
<td>85+ years old</td>
<td>10</td>
<td>12</td>
</tr>
<tr>
<td>Mean monthly Medicare costs in prior year</td>
<td>$2,498</td>
<td>$552</td>
</tr>
<tr>
<td>Mean number of annualized hospitalizations in prior year</td>
<td>1.8</td>
<td>0.3</td>
</tr>
</tbody>
</table>
### III. Key Changes in Intervention

<table>
<thead>
<tr>
<th>Category</th>
<th>Telephonic model</th>
<th>Local model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient and provider contacts</td>
<td>By phone for 80% of beneficiaries</td>
<td>In-person and phone contacts for all enrollees</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Scheduled and tracked follow-up visits</td>
</tr>
<tr>
<td>Patient assessments</td>
<td>Mostly by phone, overly standardized</td>
<td>More in depth and tailored; more accurate acuity determinations</td>
</tr>
<tr>
<td>Use of clinical evidence</td>
<td>Extensive guidelines but limited use</td>
<td>Short and more usable guidelines incorporated into care plans</td>
</tr>
<tr>
<td>Transitional care</td>
<td>Limited: Calls to patient in hospital and within 2 weeks of stay</td>
<td>Stronger: In-person visits with patient and provider in the hospital; follow-up call within 48 hours of discharge</td>
</tr>
<tr>
<td>Medication management</td>
<td>Encouraged patients to develop medication list</td>
<td>Care coordinators maintained and updated list; shared list with patients and treating physicians; resolved polypharmacy</td>
</tr>
<tr>
<td>Psycho-social needs</td>
<td>Light attention</td>
<td>Coordinated referrals to community services</td>
</tr>
</tbody>
</table>

- Local model was more extensive, personal, and tailored
IV. Findings: Large impacts, but only after makeover

Impact on Hospitalizations
(T-C difference in # of hospitalizations/beneficiary/year)

(-0.16, -12%)

Before switch to local model

(-0.03, -3%)

After switch

* p <=0.05. Error bars = 90% confidence intervals.
Telephonic model increased net costs; local model was cost neutral

Impact on Medicare Part A and B Costs (T-C difference in $/beneficiary/month)

Before switch to local model
- Costs without fees
- Costs with fees (mean fee = $159)

After switch
- Costs without fees
- Costs with fees (mean fee = $159)

$69, +4%
$236, +12%
$600 - $400 - $200 - $0

$-66, -3%
$-217, -10%
$-400 - $200 - $0

*
10% savings for higher-risk subgroup with local model

- 58% of enrollees had 2+ hospitalizations in the 2 years before enrollment

- This group was at significantly higher risk of future hospitalizations
  - Annualized hospitalization rate among control group members in the follow-up period = 1.90 hospitalizations per beneficiary
  - 0.60 for the other 42% of enrollees

- Among this high-risk group, the local model
  - Decreased hospitalizations by 0.33/beneficiary/year (17%)
  - Decreased costs without fees by $435/beneficiary/month (15%)
  - Including fee, produced net savings of $286/beneficiary/month (10%)
  - 90% CI for net savings is wide: [-$567 to -$4]
Before the switch, average length of enrollment in the program was 27 months increased to 40 months after the switch.

Potential alternative explanation for larger impacts after makeover:
- Longer enrollment, not changes in program design, caused larger impacts.

To test this alternative, we examined impacts separately for a beneficiary’s 1st, 2nd, and 3rd year of follow-up in the period before the switch.
- If length of enrollment drove results, expect to see larger impacts in later years of follow-up.
Length of enrollment does not drive results

<table>
<thead>
<tr>
<th>Year of follow-up</th>
<th>T-C difference in # of hospitalizations/beneficiary/year (p-value)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st</td>
<td>0.06 (0.45)</td>
</tr>
<tr>
<td>2nd</td>
<td>-0.10 (0.31)</td>
</tr>
<tr>
<td>3rd</td>
<td>0.06 (0.61)</td>
</tr>
</tbody>
</table>

- In the pre-switch period, program impacts did not get larger for later years of enrollment
V. Conclusions and Implications

- Care coordination was successful after major design changes

- What changes likely mattered most?
  - In-person contacts with patients and physicians
  - Stronger transitional care
  - Stronger medication management

- Extremely promising for improving care and reducing Medicare FFS costs at other urban medical centers

- Medicare Chronic Care Research Network is developing protocols based on this and other evidence-based interventions to test replicability in other settings
For more information

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