The Impact of CalPERS Long-Term Care Program on End-of-Life Medical Care Costs

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LTCG
Agenda

• Background
• Study Hypothesis
• Study Design
• Sampling methodology
• Results
• Significant Findings
• Implications
Chronic Conditions Drive Cost and Utilization

Total Annual Healthcare Expenditures

<table>
<thead>
<tr>
<th>Number of Chronic Conditions</th>
<th>Average Annual Healthcare Expenses Per Person</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>$1,702</td>
</tr>
<tr>
<td>1</td>
<td>$2,315</td>
</tr>
<tr>
<td>2</td>
<td>$3,096</td>
</tr>
<tr>
<td>3</td>
<td>$3,977</td>
</tr>
<tr>
<td>4</td>
<td>$4,993</td>
</tr>
<tr>
<td>5+</td>
<td>$7,374</td>
</tr>
</tbody>
</table>

Increasing Complexity Drives Utilization/Cost

Impact of Functional Disability and Comorbidity on Health Care Costs

Number of Comorbid Conditions

- **No ADL Limitations**
- **With ADL Limitations**

Average Annual Health Care Cost Per Person

- $781
- $2,592
- $1,785
- $3,006
- $4,599
- $8,955
- $6,573
- $10,519
- $7,510
- $15,298
If you meet their needs, treat their pain, treat their depression, get them some help in the home, your costs plummet.” – Dr. D. Meier, Committee Member

Over 13% of the more than $1.6 trillion spent on healthcare in the USA is spent during the last year of life and 61% of that cost is borne by Medicare.
End of Life Studies

- Significant medical costs at the end of life
  - In 1978: 28.3% of total Medicare expenditures incurred by 5% in last year of life;
  - Despite advanced directives, hospice and palliative care, end of life expenditures between 1978-06 have remained stable and substantial
  - Recent studies have shown that hospice has an impact on end of life costs

- Today, a significant share of health care resources consumed in the last months of life
  - End of Life: 10-20% of overall health expenditures and 25-27% of Medicare Expenditures
  - More than 30% of Medicare resources are consumed by 5% of beneficiaries who die each year.
  - Medicare expenditures in the last year of life average 5 time greater than in nonterminal year
End of Life Studies

• Disability versus Compression of Morbidity
  – Significant compression occurs – e.g., cancer and heart disease
  – Prolonged periods of disability are still possible in the diseases of older age such as Parkinson’s, dementia, arthritis, organ failure, debility (and MS)

• Little is known about the impact of long term personal care at end of life
  – Instrumental activities of daily living (ADL) and activities of daily living (ADL) assistance, supervision for cognitive impairment
  – Socialization, medication management
  – Increasing need for paid and unpaid care as chronic diseases such as prevalence of Parkinson’s, Alzheimer’s dementia and MS increases
Yet Another End of Life Study

Impact of Paid Personal Care at the End of Life

The CalPERS Outcome Study
Study Hypothesis

Availability of CalPERS LTCP paid Long-Term Care services and Care Management at the end of life will have a positive impact on health care utilization and cost of care as compared to those without access to reimbursed personal care services.
Study Design and Methodology

- Select a common event: last year of life
- Draw study participants from CalPERS self-insured health plan
- Select high frequency conditions causing dependency
  - Dementia, Stroke, Parkinson’s disease, etc.
- Identify CalPERS LTCP members using LTC benefits during their last year of life (treatment group)
- Develop Propensity Model based upon patient characteristics and utilization at 13-24 months prior to death
- Identify *similar* CalPERS self-insured health plan members without CalPERS LTCP coverage (control group)
- Adjust for differences & compare healthcare utilization & costs
Sample Selection

- CalPERS health plan members age ≥ 65 years who died between in 2007-2011 (21,220)
  - CalPERS health plan decedents who purchased LTCP (1,961)
    - Decedents who used LTC Services (830)
    - Decedents who did not use LTC Services (1,131)
  - CalPERS health plan decedents who did not purchase LTCP (19,259)
### Sample Selection

CalPERS health plan members age ≥ 65 years who died between in 2007-2011 (21,220)

- CalPERS health plan decedents who purchased LTCP (1,961)
- CalPERS health plan decedents who did not purchase LTCP (19,259)

Decedents who used LTC Services (830)
Decedents who did not use LTC Services (1,131)

**Compare Groups on over 70 variables using the ACG® System**
- Age
- Gender
- Diagnosis, diagnoses directly related to use
- Frailty Burden
- Number of medications
- Probability of inpatient admission, both due to injury (short) and extended LOS
- Etc.
Sample Selection

CalPERS health plan members age ≥ 65 years who died between in 2007-2011 (21,220)

- CalPERS health plan decedents who purchased LTCP (1,961)
  - Decedents who used LTC Services (830)
  - Propensity modeling to identify significant differences

- CalPERS health plan decedents who did not purchase LTCP (19,259)
  - Decedents who did not use LTC Services (1,131)
  - LTC use prediction based upon 24 months of health care claims and ACG analysis identified 17 variables
Sample Selection

CalPERS health plan members age ≥ 65 years who died between in 2007-2011 (21,220)

CalPERS health plan decedents who purchased LTCP (1,961)
Decedents who used LTC Services (830)
Propensity modeling to identify significant differences
Treatment Group (830)

CalPERS health plan decedents who did not purchase LTCP (19,259)
Decedents who did not use LTC Services (1,131)

LTC use prediction based upon 24 months of health care claims and ACG analysis identified 17 variables

Control Group Selection

Control Group (6,870)
## Sample Characteristics: Last Year of Life

<table>
<thead>
<tr>
<th></th>
<th>Total Study Population</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total Healthcare Payments</strong></td>
<td><strong>$33,238/patient</strong></td>
</tr>
<tr>
<td>Inpatient Admits</td>
<td>64/1000</td>
</tr>
<tr>
<td>Inpatient Payments</td>
<td>$22,975/patient</td>
</tr>
<tr>
<td>Home Care Visits</td>
<td>4,863/1000</td>
</tr>
<tr>
<td>Home Care Payments</td>
<td>$665/patient</td>
</tr>
<tr>
<td>Skilled Nursing Facility Admits</td>
<td>227/1000</td>
</tr>
<tr>
<td>Skilled Nursing Facility Days of Care</td>
<td>829/1000</td>
</tr>
<tr>
<td>Skilled Nursing Facility Payments</td>
<td>$922/patient</td>
</tr>
<tr>
<td>Emergency department Visits</td>
<td>1,078/1000</td>
</tr>
<tr>
<td>Emergency Department Payments</td>
<td>$477/patient</td>
</tr>
<tr>
<td>Hospice Admits</td>
<td>19/1000</td>
</tr>
<tr>
<td>Hospice Days of Care (Average LOS)</td>
<td>8,335/1000 (19.4 days)</td>
</tr>
<tr>
<td>Hospice Payments</td>
<td>$81/patient</td>
</tr>
</tbody>
</table>
## Subject Characteristics

<table>
<thead>
<tr>
<th></th>
<th>Treatment</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Subjects</td>
<td>830</td>
<td>6,870</td>
</tr>
<tr>
<td>Age (years)</td>
<td>83.2</td>
<td>83.9</td>
</tr>
<tr>
<td>Gender (percentage female)</td>
<td>50%</td>
<td>54%</td>
</tr>
<tr>
<td>Frailty Burden*</td>
<td>44%</td>
<td>42%</td>
</tr>
<tr>
<td>Dementia</td>
<td>46%</td>
<td>45%</td>
</tr>
<tr>
<td>Depression</td>
<td>49%</td>
<td>48%</td>
</tr>
<tr>
<td>Count of conditions directly related to use (mean)</td>
<td>4.8</td>
<td>4.9</td>
</tr>
<tr>
<td>Diagnoses used (mean)</td>
<td>31.5</td>
<td>31.4</td>
</tr>
<tr>
<td>Major procedures performed</td>
<td>16%</td>
<td>17%</td>
</tr>
<tr>
<td>Nursing Services received</td>
<td>37%</td>
<td>34%</td>
</tr>
<tr>
<td>Medication counts (13-24 months, mean)</td>
<td>11.8</td>
<td>11.6</td>
</tr>
<tr>
<td>Probability of injury-related hospitalization (mean)</td>
<td>0.04</td>
<td>0.04</td>
</tr>
<tr>
<td>Probability of extended hospitalizations (mean)</td>
<td>0.14</td>
<td>0.14</td>
</tr>
<tr>
<td>Probability of using LTC services (propensity score, mean)</td>
<td>0.62</td>
<td>0.62</td>
</tr>
</tbody>
</table>

*Frailty burden is extremely high for these groups (typical Medicare cohort :~4%)
### Utilization and Cost Comparisons

Relative percent difference between comparison and treatment groups for each outcome

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Percent Difference*</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total medical costs</td>
<td>-13.8%</td>
<td>0.006</td>
</tr>
<tr>
<td>Total pharmacy costs</td>
<td>-13.2%</td>
<td>0.014</td>
</tr>
<tr>
<td>Inpatient admission costs</td>
<td>-34.0%</td>
<td>0.000</td>
</tr>
<tr>
<td>Emergency department costs</td>
<td>-0.1%</td>
<td>NS</td>
</tr>
<tr>
<td>Outpatient visit costs</td>
<td>-16.2%</td>
<td>0.005</td>
</tr>
<tr>
<td>Skilled nursing facility bed days</td>
<td>11.3%</td>
<td>0.046</td>
</tr>
<tr>
<td>Skilled nursing facility costs</td>
<td>16.0%</td>
<td>NS</td>
</tr>
</tbody>
</table>

*A negative value means the treatment group utilized fewer services or had lower costs

Note: A linear regression model adjusted for 17 covariates was ran for each outcome variable.
Utilization and Cost Comparisons

Final regression results for comparison and treatment groups after adjusting for 17 Covariates

<table>
<thead>
<tr>
<th>Service Category</th>
<th>Beta*</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inpatient admission count (sq rt)</td>
<td>-0.06</td>
<td>0.001</td>
</tr>
<tr>
<td>Inpatient bed day count (sq rt)</td>
<td>-0.10</td>
<td>0.003</td>
</tr>
<tr>
<td>Outpatient visit count (sq rt)</td>
<td>-0.04</td>
<td>NS</td>
</tr>
<tr>
<td>Skilled nursing facility admission counts (sq rt)</td>
<td>0.04</td>
<td>NS</td>
</tr>
</tbody>
</table>

*A negative beta coefficient means the treatment group utilized fewer services

Note: A linear regression model adjusted for 17 covariates was ran for each outcome variable.
Analytic Results

- In the last year of life, individuals using LTC insurance benefits for personal care and care management differed significantly from those without reimbursable LTC services:
  - 13.8% lower overall total healthcare costs
  - 34% lower inpatient costs
  - Significantly fewer inpatient admissions and days of care
  - 13.2% lower pharmacy costs
  - 16.2% lower outpatient visit costs
Analytic Results

• Subgroup analysis looked end of life medical costs and utilization for those with dementia and those without dementia
  – For those without dementia
    • Significantly lower overall total medical costs, lower total pharmacy costs, lower inpatient admissions and inpatient costs, lower outpatient costs and lower skilled nursing facility admissions and days of care.
  – For those with dementia
    • Significantly fewer inpatient days of care.
Conclusions

• Evidence from this study suggests that the use of CalPERS LTCP reimbursed services and care management have a significant favorable impact on a number of health care utilization and expenditures during the last year of life.

• The positive impact was across a number of key components of utilization and costs including a number of measures of inpatient utilization and cost as well as pharmacy costs and outpatient costs.
Caveats

• This is a retrospective claims based study
• Unable to truly match on level of functional and cognitive disability
• True cost of personal care is unknown
• Unable to quantify out-of-pocket costs from both groups
• Unable quantify the amount of voluntary care provided
Implications

- This study provides evidence that the addition of paid, formal Long Term Care services and Care Management have a positive impact by reducing both health care utilization and costs for complex, chronically ill individuals at the end of their lives.

- The combination of long term care services with acute care services in dual eligible populations is a sound strategy to control costs and utilization.

- Broad promotion of long term care insurance is an important strategy in national efforts to control healthcare utilization and cost for complex, chronically ill individuals.
Questions?

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