The Excess Costs of Low Vision and Blindness: Medical Care, Informal Care, and Quality of Life

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June 20, 2012
Focus on Eye Health: A National Summit
Outline

• Definition of the burden of disease
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• Data used to produce the estimate
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• Methods used to produce the estimate
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• Results of the analysis
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• What comes next?
Burden of Disease

- The economic impact from a condition in a year
Economic Impact

- Medical care
- Informal care
- Quality of life
Condition

• Low vision
• Blindness
Data for Per Person Estimates—Medical Expenditure Panel Survey

- Overlapping panel, each person in for two years
- Use as pooled cross-sectional, time series data
- Weighted to be nationally representative
- Allows for the estimation of medical care costs, informal care costs, and aspects of quality of life
Longitudinal Data to Obtain a Sufficient Sample of Blind Individuals

• Seven years
  – Previous work used 1996-2002 data
  – Current work used 2003-2009 data
  – Costs inflation adjusted to 2011
Data for National Estimate

- Prevalence figures
- Since the last update of the national burden estimates has been updated for population and any new data on prevalence
Methods—Regression analysis

- Same as method use in previous work
- Linear regression
- Survey methodology
  - MEPS uses a complex survey approach
  - Regression analysis used techniques to obtain regression results that are nationally representative
    - Account for the weighting of observations
    - Account for the manner in which having multiple observations per strata affects variance
Methods—Dependent Variables

• Total medical care expenditures
Methods—Dependent Variables

- Total medical care expenditures
- **Subsets of medical care expenditures**
  - By category of expenditures
  - By who is paying
Methods—Dependent Variables

- Total medical care expenditures
- Subsets of medical care expenditures
  - By category of expenditures
  - By who is paying
    - Value of days of informal care provided by individuals who list outside the household
Methods—Dependent Variables

- Total medical care expenditures
- Subsets of medical care expenditures
  - By category of expenditures
  - By who is paying
    - *Value of days of informal care* provided by individuals who list outside the household
    - *Quality of life measure translated into quality adjusted life years* and the associated dollar value
Methods—Categories of Expenditures and Who is Paying

- Home health care agency costs
Methods—Categories of Expenditures and Who is Paying

- Home health care agency costs
- Prescriptions
Methods—Categories of Expenditures and Who is Paying

• Home health care agency costs
• Prescriptions
• Out of pocket expenses
Methods—Value of Informal Care

• Apply the average wage of a home health worker reported by the Bureau of Labor Statistics
  – $9.70
Methods—Value of Informal Care

- Apply the average wage of a home health worker reported by the Bureau of Labor Statistics
  - $9.70
- Assume that each day of informal care is 8 hours
Methods—Quality Adjusted Life Years

• Combines any type of morbidity (through health utility) and mortality into a single metric

• Frequently used in cost-effectiveness
  – As a decision tool, often assume it is worth paying $50,000 to gain a QALY in the population
    • Other figures are sometimes used
    • No governmental agency uses to implement policy
    • Use it as we did last time

• MEPS used the SF-12 which can be converted into QALYs and then converted into dollars
Independent Variables—The Condition

- Low vision and blindness identified by self-report
Independent Variables—The Condition

• Low vision and blindness identified by self-report
• Response to vision question has 5 categories
  – No problem seeing
  – Problem seeing newsprint
  – Problem seeing faces across the street
  – Both problems listed above but not legally blind
  – Legally blind
Independent Variables—The Condition

• Low vision and blindness identified by self-report
• Response to vision question has 5 categories
  – No problem seeing
  – Problem seeing newsprint
  – Problem seeing faces across the street
  – Both problems listed above but not legally blind
  – Legally blind

• Middle three are grouped as low vision
Other Potential Confounders

- Health insurance
- High blood pressure & Diabetes
- Sex
- Age
- Self-reported health status
- White/Non-White
- Education
- Income
- Marital status
- Family size
Results—Per Person Excess Total Medical Care Expenditures

• Without regression adjustment
  – Low Vision—$3800
  – Blindness—$8171
Results—Per Person Excess Total Medical Care Expenditures

- Without regression adjustment
  - Low Vision—$3800
  - Blindness—$8171
- With regression adjustment
  - Low Vision—$633
  - Blindness—$2803
Results—Per Person Excess Pharmaceutical Costs

- Low Vision—$148
- Blindness—$577 (not statistically significant in the regression analysis)
Results—Per Person Excess Home Health Care Agency Costs

- Low Vision—$143 (not statistically significant in the regression analysis)
- Blindness—$623
Results—Per Person Excess Out-of-Pocket Costs for Medical Care

- Low Vision—$152
- Blindness—$46 (not statistically significant in the regression analysis)
Results—Per Person Excess Days of Informal Care

- Low Vision—1.0
- Blindness—1.2
- In this analysis, neither was statistically significant in the regression analysis
Results—Health Utility Loss

- Low Vision—0.046 units
- Blindness—0.068 units
## Cumulative Results Applied to National Prevalence Figures

### Summary

<table>
<thead>
<tr>
<th></th>
<th>Low Vision</th>
<th>Blindness</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Excess Medical Care</strong></td>
<td>$1,840,568,423</td>
<td>$3,611,033,562</td>
<td>$5,451,601,986</td>
</tr>
<tr>
<td><strong>Informal Care</strong></td>
<td>$225,636,824</td>
<td>$119,964,126</td>
<td>$345,600,950</td>
</tr>
<tr>
<td><strong>Direct + Indirect</strong></td>
<td>$2,066,205,247</td>
<td>$3,730,997,688</td>
<td>$5,797,202,936</td>
</tr>
<tr>
<td><strong>Quality of Life</strong></td>
<td>$6,687,689,374</td>
<td>$4,380,133,468</td>
<td>$11,067,822,842</td>
</tr>
<tr>
<td><strong>Total Including Intangible</strong></td>
<td>$8,753,894,621</td>
<td>$8,111,131,157</td>
<td>$16,865,025,778</td>
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</tbody>
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