Association Between Additional Primary Care Services and Healthcare Expenditures

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Background

- Health care expenses have risen steadily in recent decades and in 2009 represented approximately $2.5 trillion or 17% of the nation's total economy. (1)
- Cost escalation will continue to outpace normal inflation. This is driven by numerous factors such as the increasing age of the population, technological advances, and increases in the prevalence of certain chronic conditions, etc.
- Numerous strategies have been developed in an attempt to curtail rising health care costs in those with chronic diseases, with mixed success. (2-5)
- Recently, health care policy reform has focused on coordination of care. Examples include the use of more primary care physician services, to increase efficiencies while maintaining quality of care and patient satisfaction.
  - –For example, Health and Human Services Secretary Kathleen Sebelius announced in September 2010 that $253 of $320 million in grants would go to improve and expand the primary care workforce under the Prevention and Public Health Fund of the Affordable Care Act (ACA). (6)
- However, little is known about what impact such programs will have on costs. (7)

Objective

- The object of this study was to predict the impact of using more primary care services on healthcare expenditures for those with selected chronic conditions.
  - –We examined the extent to which having more primary care services was associated with total health care expenditures, and expenditures for inpatient, outpatient, emergency room, pharmacy, and ancillary treatment.

Data Sources

- Data were from the Ingenix IMPAQ Research and Development database.
- This database includes enrollment, medical, and pharmacy claims data for 53 million members for 2005 - 2008.

Patient Inclusion Criteria

- Age 18-64
- Continuously enrolled during January 1, 2005 - September 30, 2008
- Had claims data linkable to zip code information about socioeconomic factors
- Had one or more of the following seven chronic conditions:
  - –Diabetes
  - –Coronary artery disease
  - –Congestive hearth failure
  - –Chronic obstructive pulmonary disease (COPD)
  - –Asthma
  - –Depression
  - –Chronic renal failure

Grouping Methods

- The Symmetry Episode Treatment Group (ETG) software was used to find patients with the conditions of interest and the Symmetry Episode Risk Group (ERG) software was used to estimate their health status.
- The ETG software used information about demographics and diagnosis codes to find patients with the seven chronic conditions of interest.
  - –ETGs are generated by combining demographic and diagnostic data from facility and professional claims into categories that describe episodes of treatment for many conditions.
- The ERG score is a variable that predicts how costly a patient is expected to be (relative to the average patient in a benchmark population) in the next year, based on his or her age, gender, and medical conditions.
  - –This variable provides a rough proxy for health status, under the assumption that healthier patients generally are expected to cost less in the future year.

Study Design

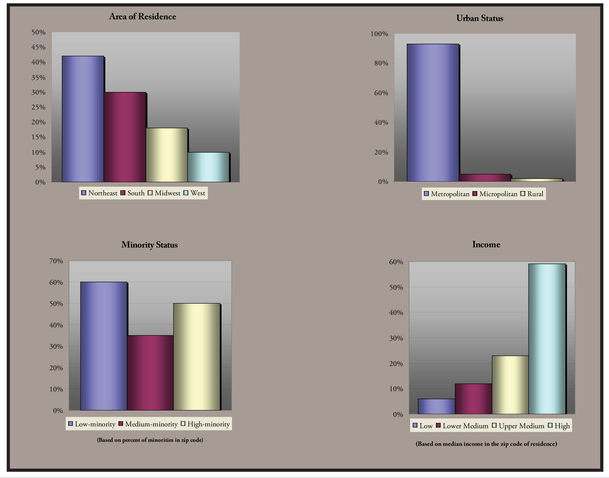
- After applying the inclusion criteria, medical claims from 409,717 continuously enrolled, chronically ill members were included in this study.
- Multiple regression analyses were used to estimate the impact of having more primary care services, controlling for socioeconomic factors, plan type, and health status.
- The regression analyses adjusted for the following independent variables: member demographics (age, gender, region of residence [Midwest, West, South, Northeast], urban-rural status, minority status, income status, existence or not of each of the chronic conditions of interest listed, ERG Risk Score, and diagnosis or not of obesity.
- The following were based on zip code of area of residence:
  - –Urban-rural status (micropolitan [10,000-50,000 inhabitants], metropolitan [50,000 or more inhabitants], or rural [below 10,000 inhabitants]).
  - –Minority status (high [60% or more non-white], medium [between 15%-60% non-white], or low [15% or less non-white]).
  - –Income status (low [less than $29,797], lower-medium [between $29,797-$36,250], upper-medium [between $36,250-$45,762], or high [$45,762 or more]).
- Primary care services were measured as the ratio of claims from primary care doctors to all provider outpatient claims in a year.

Statistical Methods

- Expenditures were measured in terms of payments for
  - –All healthcare claims.
  - –Then separately for inpatient, outpatient, pharmacy, emergency room, and ancillary claims.
- Proxies of primary care service use were measured in each year and were based on services provided by "professionals" in "outpatient office" or "office visit" settings:
  - –Ratio of primary care physician (PCP) to all provider outpatient claims in a year.
  - –Ratio of primary care physician plus physician extender (nurse practitioner or physician's assistant) claims to all provider outpatient claims in a year (PCP + PE).
  - –Having at least 2 PCP outpatient claims in a year.
  - –Having at least 1 PCP and one PE outpatient claim in a year.
- The impact of primary care treatment on expenditures in 2007 and 2008 was estimated after using the regression analysis to adjust for the independent variables listed earlier.

Sample Characteristics

- The average age of the study sample was 47.9 years while 54% were female.
- Socioeconomic characteristics are shown below.
- ERG severity score and comorbidities are shown in the next column.



Health Status Measures

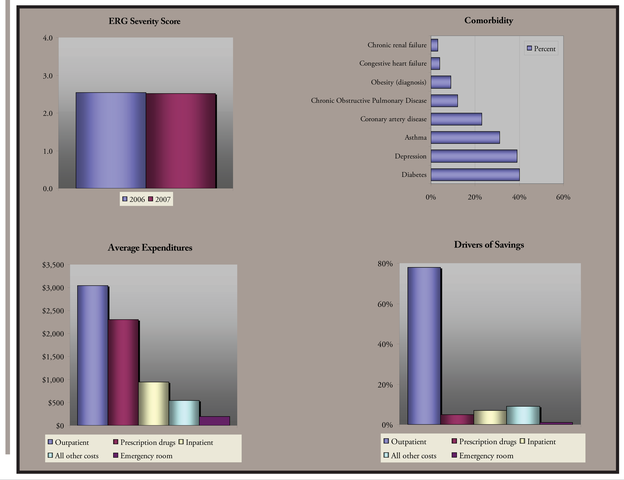
- Health status measures are shown below.
- These measure how much more costly the sample members were expected to be in the coming year, compared to a benchmark sample.
  - –Scores of 2.5 suggest that average expenditures for the sample members were expected to be that many times higher than average for everyone in the IMPAQ data base.

Average Expenditures

- The total average per member expenditure for 2007 was $7,032 as shown below.
- The average ratio of primary care to total outpatient claims in a year was 41%.
- Expenditure components are shown in the figure below.

Regression Results

- Regression results were obtained first from the analysis of total healthcare expenditures in 2008, using the ratio of PCP to all outpatient provider claims in each year as the primary care proxy.
- The ratio of primary care to total outpatient claims in the current year had a significant negative impact on expenditures.
- The 2008 primary care coefficient was -$31.84 ($p<0.001$).
  - –The negative sign means increased use of primary care services use in that year was associated with fewer expenditures in that year.
  - –The magnitude of the coefficient can be interpreted as follows:
  - –For a 10% increase in the ratio of primary care service use (e.g., from 41% [the sample average] to 51%) expenditures would decrease by about $318.50.
  - –As illustrated below, most of these savings would occur in the outpatient setting.
- Use of primary care services in previous years had a much smaller impact.
  - –The 2005, 2006, and 2007 primary care service use coefficients were -$2.91 ($p<0.001$), $0.48 ($p=0.19$), $1.57 ($p<0.001$) respectively.
  - –These would translate into a net decrease in year 2008 expenditures of $8.56 for every 10% increase in the proportion of claims accounted for by primary care doctors in 2005, 2006, and 2007.



Sensitivity Analyses

- Results obtained for 2007 were nearly identical to the results obtained for 2008.
- Using other proxies of primary care service utilization:
  - –The results obtained from models that also incorporated information about the use of physician extenders were very similar to the results obtained when physician extenders were not considered.
  - –Because adding physician extenders only increased the average rate of primary care service use by 4%.
  - –Using other proxies of primary care service utilization showed different results.
  - –When primary care service use was measured in binary (yes or no) terms, the results may be confounded by unmeasured severity of illness. In other words, one cannot easily tell whether the proxy variable is really measuring PCP-like treatment, or severity of illness.

Conclusions and Study Implications

- An increase in primary care service use was associated with significant expenditure savings in that current year.
- Higher use of primary care services in previous years had very little impact on expenditures in the coming years.
- This study supports the notion that better coordination of care can be obtained through increased utilization of primary care providers, which may lead to reduced costs.

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