Exploring the relationships between health-related quality of life and health conditions, costs, resource utilization and quality measures.

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October 21, 2015
Outline

1. Introduction
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Introduction

- Humana’s goal is to help make the communities we serve 20% healthier by 2020
  - Healthy Days\(^1\)
    - Validated health-related quality of life instrument developed by the U.S. Center for Disease Control and Prevention
    - 4 survey questions assessing physically and mentally unhealthy days

- Objective
  - To examine the relationship between healthy days survey responses and the following health-related measures:
    - Prevalence of specific chronic conditions
    - Medical and pharmacy costs
    - Healthcare resource utilization
    - Healthcare Effectiveness Data and Information Set (HEDIS) quality measures compliance

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• Traditional Payer Sources:
  - Administrative medical and pharmacy claims
  - HEDIS data (e.g., breast cancer screening, screenings for diabetics)

• Voice Activated Technology (VAT) Survey
  - Administered via phone, computer operated
  - Data collection November 24, 2014 – December 24, 2014
  - 166,000+ respondents across the United States
  - Included 2 HD questions
Analyses included individuals who met the following criteria:

- Completed the survey (N=47,910)
- Persons 18+ years old enrolled in an employer based, or individually purchased health plan
- Continuously enrolled in health plan for all 12 months (2014)

Number meeting criteria, n = 22,667
• Measure of interest - **Total Unhealthy Days**, defined as the combined number of *physically* and *mentally* unhealthy days within the past 30 days

• Assessed the relationship between total Unhealthy Days and the following:

  **Disease prevalence**
  - Cardiovascular conditions: Hypertension, CAD, CHF
  - Other conditions: COPD, Diabetes, Depression
    - Wald Chi Square

  **Healthcare utilization**
  - Medical and Pharmacy Costs
  - Inpatient and Outpatient Visitation
    - Student’s *t*-test

  **HEDIS quality measures**
  - Women’s cancer screenings
  - Screenings for patients with diabetes
    - Descriptive statistics
HOW CAN PEOPLE HAVE UP TO 60 UNHEALTHY DAYS IN A 30-DAY PERIOD?

Physically unhealthy days and mentally unhealthy days are different domains of health that may occur simultaneously.

**José**
35 years old; diabetes

**Stephen**
45 years old; diabetes and depression

**Janice**
65 years old; diabetes, depression and amputation

### 8 Unhealthy Days
- Physically unhealthy days = 5
- Mentally unhealthy days = 3

### 30 Unhealthy Days
- Physically unhealthy days = 15
- Mentally unhealthy days = 15

### 55 Unhealthy Days
- Physically unhealthy days = 28
- Mentally unhealthy days = 27
Results
Average Unhealthy Days by disease

Patients with chronic disease reported significantly more unhealthy days

<table>
<thead>
<tr>
<th>Disease</th>
<th>Unhealthy Days</th>
<th>Mentally Unhealthy Days</th>
<th>Physically Unhealthy Days</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAD*</td>
<td>6.1</td>
<td>3.5</td>
<td>2.6</td>
</tr>
<tr>
<td>CHF*</td>
<td>9.2</td>
<td>4.3</td>
<td>4.9</td>
</tr>
<tr>
<td>COPD*</td>
<td>8.7</td>
<td>5.0</td>
<td>3.7</td>
</tr>
<tr>
<td>Diabetes*</td>
<td>5.5</td>
<td>3.4</td>
<td>2.1</td>
</tr>
<tr>
<td>Hypertension*</td>
<td>5.0</td>
<td>3.0</td>
<td>2.0</td>
</tr>
<tr>
<td>Depression*</td>
<td>6.8</td>
<td>2.5</td>
<td>4.3</td>
</tr>
</tbody>
</table>

*CAD, coronary artery disease; CHF, congestive heart failure; COPD, chronic obstructive pulmonary disease

* p < 0.05 for both physically and mentally unhealthy days
Among persons with more unhealthy days we see higher prevalence of disease

Test for trend $p < 0.01$
Unhealthy Days and costs

A higher number of Unhealthy Days was associated with greater medical and pharmacy costs.

Medical Claims

Rx Claims

Unhealthy Days

PMPM, per member per month

Test for trend p < 0.01
Increased Unhealthy Days was associated with greater healthcare utilization.

*Test for trend p < 0.01*
Healthy Days and HEDIS measures of quality

Increasing Unhealthy Days was associated with a slight decrease in compliance, potentially driven by competing health priorities.

- **Cancer screenings for women**
  - Breast Cancer
  - Cervical Cancer

- **Comprehensive care for patients with diabetes**
  - Retinopathy
  - LDL Cholesterol
  - Hba1c
  - Nephropathy

*HbA1c, glycated hemoglobin; LDL, low-density lipoprotein*
Limitations

• This study used data from a population insured by a single health insurer and may not be generalizable to other populations

• Limitations common to claims data apply to this study (e.g., coding errors, missing data, fixed variables)

• The cross-sectional design of this study limits us from inferring any type of temporal or causal relationship between the variables
Conclusions

• Healthy Days is well correlated with many important objective health measures in a population of 18-65 year olds

• Realizing this relationship allows us to better understand our patients’ physical and mental health

• Future research
  - Determine the pathways between unhealthy days and objective measures of health
  - Determine if Healthy Days interventions result in corresponding improvements in health
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