ACKNOWLEDGEMENTS

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Background and Motivation

- Large expansion of Medicaid to previously ineligible adult populations starting in 2014
- Expansion populations likely to churn between Medicaid, exchanges, and group market
- Resulting issue: “no history”
- Consequences: inability to prospectively profile “no history” population
  - Case finding for care coordination and/or intensive case management initiatives

Managing the Medicaid Enrollment Surge Starts Today

Predictive analytics help states plan and create targeted programs for 2014
States have an abundance of data. Even as they work on connecting systems, a variety of data exists today in Medicaid systems and related health and human services. Predictive analytics can be an important strategy in planning for 2014 populations. Predictive modeling uses data-driven decision-support tools to estimate an individual’s future potential health care costs and is viewed as a viable tool to help states make educated estimates about future enrollment needs.

Medicaid Best Buys: Using Predictive Modeling to Pinpoint “High-Opportunity” Medicaid Beneficiaries
Can Self-Reported Health Measures Serve as an Alternative for the “No-History” Population?

- **Necessary condition #1**: Measures must be predictive
- **Necessary condition #2**: Insurers have desire and ability to collect information

The Wisconsin Case Study

- Recent pilot data collection effort among newly eligible adults in Medicaid
- Embedded short self-reported Health Needs Assessment (HNA) in the Medicaid application
- Data were meaningfully predictive of high health care needs
- Proof-of-concept study motivating the current work
Please check the box for any medical condition that John has right now.

- [ ] Asthma
- [ ] Emphysema
- [ ] Cancer
- [ ] Heart Problems
- [ ] COPD (Chronic Obstructive Pulmonary Disease)
- [ ] High Blood Pressure
- [ ] Depression
- [ ] Stroke
- [ ] Diabetes

* Does John feel that he/she has a problem with his/her use of alcohol or drugs?  
  - [ ] Yes  
  - [ ] No

* In the last two years, has John been hospitalized or had other medical care for emotional or psychiatric reasons?  
  - [ ] Yes  
  - [ ] No

* Does John take more than 5 prescription medications?  
  - [ ] Yes  
  - [ ] No

* Does John use tobacco?  
  - [ ] Yes  
  - [ ] No

* Does John have a regular doctor?  
  - [ ] Yes  
  - [ ] No

* Does John have a regular clinic or hospital?  
  - [ ] Yes  
  - [ ] No

You told us that John has asthma.

* Has John been to the emergency room in the past 12 months because of asthma?  
  - [ ] Yes  
  - [ ] No

* Has John been hospitalized in the past 12 months because of asthma?  
  - [ ] Yes  
  - [ ] No
Innovation

• Contribute new knowledge regarding a key question:
  o Which measures should be included in an HNA designed to be predictive of high need?

• Test performance of *multiple dimensions* of self-reported measures using a *nationally representative* sample of ACA expansion population

• Examine outcomes of interest to state Medicaid agencies to identify “high opportunity” Medicaid beneficiaries

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Data, Sample, and Outcome Measures

• 1997-2008 rounds of National Health Interview Survey (NHIS) linked with 1998-2009 rounds of the Medical Expenditure Panel Survey (MEPS)

• Sample chosen to approximate the ACA adult Medicaid expansion population
  o \( n = 6,615 \) adults ages 19-64 with family incomes <138% FPL

• Outcome measures: any inpatient visit; top ER utilization decile (2+); top cost decile
Study Design

Baseline Predictors: NHIS interview

Baseline: sociodemographic characteristics collected as part of the Medicaid application

Candidate Domains:
- Presence of health conditions
- Mental health
- Access to care
- Health-related behaviors
- Health-related quality of life
- Prior year’s medical care utilization

Predictors

Overview of Results

• Prior year’s health care utilization most predictive
  o Followed by:
    ▪ Self-reported conditions
    ▪ Health related quality of life (HRQOL)

• Model comprised of these 3 measures exceeds established statistical threshold for predictive performance

• Performance approaches, if not quite meets, that of published claims-based algorithms

Take-Away for Policymakers

• Medicaid stakeholders can use simple, self-reported health measures to prospectively profile members by likely need of care coordination/case management

• Our method is simple and can be done internally by agency staff
  o No proprietary algorithms (and their associated costs) are required
  o Can be used even in the absence of recent claims history

• We are committed to making our suggested measures and methodology publicly available (for free!)
Supporting Slides

The following questions ask about how you have been feeling during the past 30 days. For each question, please circle the number that best describes how often you had this feeling.

Q1. During the past 30 days, about how often did you feel...

- very fatigued?
- a lot
- some
- a little
- none

Q2. How many days during the past 30 days was your health behavior (weight, exercise, etc.) poorer than usual due to feeling...

- very fatigued?
- a lot
- some
- a little
- none

Q3. How many days during the past 30 days were you unable to work or carry out your usual activities because of feeling...

- very fatigued?
- a lot
- some
- a little
- none

Thank you for completing this questionnaire.
HAlex scores are composed of two major components or health dimensions (7,9). One is the patients’ perceptions of their overall health status. In the H-Alex scoring system, there are five levels of perceived health status ranging from excellent (score = 1) to poor (score = 5). The second is the patients’ functional status. Patients with the most limited function require assistance with basic, daily life functions and are assigned a single attribute score (SAS) of 5. Those who are completely independent and report no limitation of activities receive an SAS of 1. For the H-Alex, there are six levels of functional capacity. The five levels of perceived health status and six levels of functional limitations create a matrix. Each unique combination of these 30 possible health states is assigned an index value from the matrix that serves as the H-Alex QOL score (8).

NHS question PHSSTAT was used to numerically scale the perceived health status (PHS). Patients were asked: "Would you say (your) health in general is excellent (score = 1), very good (score = 2), good (score = 3), fair (score = 4), or poor (score = 5)?" The average of the 25 scores was calculated for each BMI category used for this study. For calculation of the U, a response of excellent was assigned a PHS coefficient of 1.0, very good = 0.86, good = 0.7, fair = 0.3, and poor = 0. Table 1 summarizes the NHS questions, variables containing the responses to these questions, and the SAS assigned for affirmative answers to each question.

<table>
<thead>
<tr>
<th>NHS Question</th>
<th>NHS Variable</th>
<th>Halex coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Because of a physical, mental, or emotional problem do you need the help of other persons with personal care needs, such as eating, bathing, dressing, or getting around inside the home?</td>
<td>PUAADDL</td>
<td>0.0</td>
</tr>
<tr>
<td>Because of a physical, mental, or emotional problem do you need the help of other persons in handling routine needs, such as everyday household chores, doing necessary business, shopping, or getting around for other purposes?</td>
<td>PUAADDL</td>
<td>0.2</td>
</tr>
<tr>
<td>Does a physical, mental, or emotional problem NOW keep you from working at a job or business?</td>
<td>PUAADNOW</td>
<td>0.4</td>
</tr>
<tr>
<td>Are you limited in the kind OR amount of work you do because of physical, mental, or emotional problems?</td>
<td>PUAADLIM</td>
<td>0.65</td>
</tr>
<tr>
<td>Are you LIMITED IN ANY WAY in any activities because of physical, mental, or emotional problems?</td>
<td>PUAADMAN</td>
<td>0.95</td>
</tr>
<tr>
<td>None of the above limitations</td>
<td>PUAADD</td>
<td>1.0</td>
</tr>
</tbody>
</table>

NHS, National Health Interview Survey; H-Alex, Health and Activities Limitation Index.

When two or more questions had an affirmative response, the lowest possible SAS was assigned.