Introduction
Behavioral economics is increasingly being used to understand and advance population health. This discipline looks to psychology rather than traditional economic principles to explain human behavior, including patient and physician decision making in health care. As a healthcare company providing medical and/or pharmacy benefits to over 13 million people, Humana regularly sends messages to people taking chronic maintenance medications to remind them to remain adherent with their medication. Since some members may view insurance companies skeptically, we hypothesized that similar messaging reminders from a third party other than the insurance company might be more effective, particularly if the third party was trusted by the member.

Objective
The primary purpose of this research was to test the relative impact of medication adherence messages emanating from different sources: celebrity, Humana pharmacist, and the patient’s primary care physician.

Methods
Study Design: Prospective, pseudo-randomized controlled study
Study Population: Patients from two populations were eligible for inclusion.
- Medicare Advantage: A national health insurance plan with 2.9 million Medicare Advantage members in 2014.
- Medical Clinic: A family-owned primary and specialty care practice providing care to Medicare-eligible seniors in Virginia.

The Medicare Advantage population permitted a large sample size for the study. The Medical Clinic offered a smaller sample size but permitted adherence messaging from a given patient’s primary care provider.

Inclusion Criteria:
- Patients who were non-adherent to medications used to treat hypertension (ACE inhibitors, ARBs, Diets), diabetes (oral antidiabetic agents), or dyslipidemia (statins) in the 6 months prior to the intervention were included in the study.
- Non-adherence was defined as the proportion of days covered (PDC) score between 0.60 and 0.85.

Intervention: Study participants received two medication adherence messages in November 2014. The first was a postcard about the importance of medication adherence. The second was a voice automated telephone call about the importance of medication adherence. Adherence messages are typically sent by the health plan to these populations; instead, the messages in the study were sent by a third party other than the health plan who was perceived to be trusted by patients: celebrity (Florence Henderson), a Humana pharmacist, or the patient’s physician. One study arm received cross messaging: a postcard from a celebrity and a voice automated call from the patient’s physician.

Outcomes and analyses:
- The differences in PDC between November 2014 and May 2015 were compared between the intervention and control arms using difference-in-differences. Results were compared using t-tests.

Results

Table 1. Study Population

<table>
<thead>
<tr>
<th>Trait</th>
<th>Medicare Advantage</th>
<th>Medical Clinic</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>6,936</td>
<td>8,066</td>
</tr>
<tr>
<td>Mean age, years</td>
<td>71.8±6.8</td>
<td>71.8±6.9</td>
</tr>
<tr>
<td>% Male</td>
<td>43%</td>
<td>43%</td>
</tr>
<tr>
<td>PDC</td>
<td>0.73±0.10</td>
<td>0.73±0.10</td>
</tr>
</tbody>
</table>

Table 2. Effect of Treatments by Gender, Age & Therapeutic Category

<table>
<thead>
<tr>
<th>Therapeutic Category</th>
<th>Female</th>
<th>Male</th>
<th>Subset of Population aged &gt;75</th>
<th>Physician</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypertension</td>
<td>4.5%</td>
<td>2.3%</td>
<td>4.5%</td>
<td>7.1%</td>
</tr>
<tr>
<td>Diabetes</td>
<td>2.5%</td>
<td>3.5%</td>
<td>5.5%</td>
<td>7.4%</td>
</tr>
<tr>
<td>Dyslipidemia</td>
<td>1.1%</td>
<td>1.4%</td>
<td>1.1%</td>
<td>0.7%</td>
</tr>
</tbody>
</table>

Figure 2. Effect of Treatments on Adherence

Table 2. Effect of Treatments by Gender, Age & Therapeutic Category

<table>
<thead>
<tr>
<th>Medication Therapeutic Category</th>
<th>Female</th>
<th>Male</th>
<th>Subset of Population aged &gt;75</th>
<th>Physician</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypertension</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diabetes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dyslipidemia</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Conclusions
- Messaging from celebrities alone did not affect adherence as much as messages from clinicians.
- The pharmacist/celebrity combo performed better than the celebrity alone; future work should investigate whether messages from multiple, distinct sources reinforce each other.
- Men and women responded differently. The only significant response for women was to the pharmacist-celebrity messaging, while men responded most strongly to pharmacist-messaging followed by physician then pharmacist-celebrity.
- The measured improvements in adherence were specific to medications used to treat hypertension and diabetes only.

Limitations
- Using medication claims refill history as a measure of adherence does not confirm that the patient actually took the medication.
- The generalizability of this study represents a Medicare Advantage plan population with a high concentration in the South and a single medical practice. These findings may not reflect other source populations.

Conclusion
A single celebrity was used for messaging, Florence Henderson, and results should not be generalized to other celebrities.

References

Quality of Care and Outcomes Research 2014 Scientific Sessions | Phoenix, Arizona February 28 – March 1, 2014 Poster #265 GCHJJQLEN

Figure 1. Adherence Before and After Messaging

Figure 2. Effect of Treatments on Adherence

Based on the PDC difference-in-difference from control, men in the Medical Clinic were more affected by the messaging than women, with the biggest increases (7.9%, absolute) in PDC in the pharmacist-messaging group. When the medications were assessed by therapeutic category, there were increases in PDC in hypertension and diabetes medications but decreases (although non-significant) in dyslipidia.

Poster #265

Poster #265

Poster #265

Poster #265

Poster #265

Poster #265

Poster #265

Poster #265

Poster #265

Poster #265

Poster #265