Effectiveness of Colorectal Cancer Screening Messaging Among Individuals Non-Compliant with Guidelines

Background
As the third most common cancer diagnosis and third most common cause of cancer death, colorectal cancer (CRC) represents a significant health problem for Americans.1 Based on studies showing a substantial reduction in CRC mortality attributable to screening, the U.S. Preventive Services Task Force (USPSTF) recommends periodic screening for colorectal cancer between the ages of 50 and 75, using fecal occult blood testing, sigmoidoscopy, or colonoscopy.2 However, only 50% of U.S. adults age 50 and older received a CRC screening in 2010.3 CRC screening is considered one of 26 Leading Health Indicators—high priority issues—for the Centers for Disease Control and Prevention. Healthy People 2020 initiative.4

Objective
To assess the impact of a CRC outreach campaign in a Medicare Advantage population.

Methods
Study Design: Randomized controlled trial
Data Source: Administrative medical claims and enrollment data for individuals with Medicare Advantage coverage obtained from Humana Inc., a healthcare company providing insurance for more than 2.4 million Medicare Advantage members as of December 31, 2014.

Inclusion Criteria:
• Eligibility for CRC screening, as defined by the American Cancer Society. Colorectal Cancer Facts & Statistics

Exclusion Criteria:
• Non-response to one-time screening reminder in 2012-2013

Interventions: Participants were assigned to one of two trial groups according to whether they had an attributed provider and within each trial were randomized to an outreach or control group. Rather than a typical ratio such as 2:1, the randomization design maximized the number of people receiving outreach letters while maintaining 80% statistical power to detect a 1.75% absolute improvement in screening, assuming a 10% rate in control (no letter) groups. Different types of outreach letter were sent on September 25, 2014 to the two trial groups:
• Provider Outreach: For all eligible individuals with an attributed provider. The letter mentioned the provider’s name and encouraged the recipient to make an appointment for screening or to call Humana to report screening already obtained.
• FIT Outreach: For individuals without an attributed provider. The letter encouraged the recipient to call the provider to schedule a screening, to request a free fecal immunochemical test (FIT) kit for home testing, or to use a response card to notify Humana that screening had already been obtained.

Outcome: Participation in screening or communication of previous screening

Statistical Analyses: Chi square for comparing screened proportions between letter and control groups. Fisher’s exact test for differences in rates between groups.

Figure 1. Study Time Frame

Figure 2. Participant Flow Diagram Overall

Results

Table 1. Participant Characteristics

<table>
<thead>
<tr>
<th>Measure</th>
<th>Letter</th>
<th>Control</th>
<th>Provider</th>
<th>FIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>CRC Screening Rate</td>
<td>4.1% (17,602)</td>
<td>3.9% (15,939)</td>
<td>4.9% (2,483)</td>
<td>4.3% (17,602)</td>
</tr>
</tbody>
</table>

Table 2. CRC Screening Rate

<table>
<thead>
<tr>
<th>Participant Group</th>
<th>Letter, % compliant [*]</th>
<th>Control, % compliant [*]</th>
<th>Absolute Difference (P value)</th>
<th>FIT, % compliant [*]</th>
<th>Control, % compliant [*]</th>
<th>Absolute Difference (P value)</th>
</tr>
</thead>
</table>

Study Period: Jan 1, 2012 to Dec 31, 2014

Conclusions
• A campaign consisting of educational letters encouraging CRC screening or correction of screening noncompliance resulted in improved CRC screening compliance in a Medicare Advantage population with a two-year history of CRC screening noncompliance.
• The lack of a consistent detectable effect in some subpopulations warrants further investigation.

Strengths and Limitations
• This study was sufficiently powered to detect a significant effect and because of randomized treatment assignment was subject to minimal selection and performance bias with respect to the outcome as measured.
• Some instances of screening recorded after campaign launch for the outreach groups were corrections of missing information; thus, results represent the impact on documented screening.
• Some individuals in the control groups may have actually been screened but did not communicate this because they did not receive letters. Thus, some degree of effect overestimation is possible.
• Because of the number of comparisons, the overall probability of a type I error (false positive) that some instances of statistical significance were due to chance alone.

References

Humana Inc., Louisville

Figure 3. Overall CRC Screening Rates

414 screenings were attributed to the campaign, resulting in a compliance increase of 1.3% to 1.2.13 percentage points for each of the four outcomes.

Figure 4. Screening Rate by Age and Gender

Table 3. CRC Screening Rate by Age and Gender

<table>
<thead>
<tr>
<th>Age</th>
<th>Male</th>
<th>Female</th>
<th>Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤65 years</td>
<td>4.6% (1,177)</td>
<td>5.3% (1,649)</td>
<td>4.9% (1,350)</td>
</tr>
<tr>
<td>&gt;65 years</td>
<td>5.6% (1,187)</td>
<td>6.1% (1,241)</td>
<td>5.9% (1,428)</td>
</tr>
</tbody>
</table>

*Statistically significant at the 0.05 level.