

Developing Tailored Health Content to Promote Colorectal Cancer Screenings Using Longitudinal Health Data

Background

- Colorectal cancer is the third-most common cancer in the U.S. as well as the second leading cause of cancer mortality.^{1,2}
- Colorectal cancer screenings decrease the mortality, as well as the cost, associated with the disease. ^{1,2}
- Despite the proven benefits of a colorectal cancer screening (CRCS), only 58.6% of the HEDIS-eligible U.S. population completes a CRCS.³
- The typical CRCS communication intervention is not achieving its goal.³

Opportunity

- 98% of all medical claims are processed within a month of receipt.⁴
- Tailored health content can be crafted based on the behavioral segments since prior studies suggest a benefit from tailored health communications.⁵
- Data within insurance claims can provide a longitudinal view of members' health episodes and health behaviors.
- Insurer's have an opportunity to create an up-to-date behavioral segmentation scheme based on a population's health episodes and health behaviors.⁶

Hypothesis

Delivering tailored health messages that promote colorectal cancer screening, based on a propensity measure to complete a screening as well as demographic and health characteristics, will yield higher colorectal cancer screening completion rates when compared to delivering a generic health message to an entire population.

Program Description

- Using a variety of data sources including medical claims, HEDIS summary, and third party demographic data, we developed tailored communication outreaches for six different subpopulations overdue for a colorectal cancer screening.
- The six subpopulations emerged from a data modeling exercise and are ranked from least likely to most likely to complete a colorectal cancer screening and are separated by gender when the health practice varies by gender.⁶
- Each of the six tailored messages reflects the specific health characteristics associated with the corresponding segment. Each differs in framing (positive vs. negative), referencing (self, self and others) and argument (one-sided vs. two-sided) tactics.
- The demographic profile and preventive care practiced by the subpopulations vary dramatically by subpopulation.⁶

Description of the Outreach Subpopulations

Achievers

gage in healthy behavior in spite of health issues



- Focused on cancer prevention and/or abdominal issues.
- 1.15 times more likely to be a college graduate
- 1.6 times more likely to have a PSA screening
- Higher percent with heart disease, high cholesterol, and hypertension

Mixed gender: Men, 23%; Women, 77%

4% of noncompliant population

^oopulation percentage predicted to complete screening: 68%-95%

WOMEN

- 8.7 times more likely to have a personal or family history of CRC
- 93 out of 100 women have at least one chronic condition
- Tend to have highest claims and out-of-pocket expenses
- Knows what needs to be done – trying to make time to do it

Study Process Flow

Outreach: Noncompliant CRC Screening

Population (N = 46,777)

Groups:

- 32,898 receive 'targeted' message
- 75% of the segmented population
- 10,982 receive 'general' message
- 25% of segmented population
- 2,000 randomly selected (400 from each segment) as holdout group from the automated voice call
- 2,897 members not assigned to a segmented population due to missing data



* if member is eligible for the screening as defined by the HEDIS measure definition

Strivers

Engage in healthy behavior



Women Only Segment 11% of noncompliant population

Population percentage predicted to complete screening: 50%-68%

WOMEN

- Focused on preventive care
- 95% have had a breast cancer screening*
- 71% have had a cervical cancer screening*
- 100% have had a wellness visit
- Low hospital and emergency room usage

Partway There

cused on other health issues



Men Only Segment 13% of noncompliant population

Population percentage predicted to complete screening: 50%-68%

- Focused on other health conditions
- 1.5 times more likely dealing with three or more chronic conditions
- 1.5 times more likely to utilize behavioral health facilities
- 88 out of 100 have at least one chronic condition

Distracted Women Reactively engage in healthy behavior Women Only Segment



WOMEN

- Relatively healthier, older cohort none are eligible for HEDIS cervical cancer screening due to age
- 2 times more likely to be in the lowest claims spending band
- 1.9 times less likely to complete a breast cancer screening
- Lack of focus on health screenings, more focus on other health condition(s)

Automated Voice Call Flow





- I Not in Study (67%) No direct contact: after 2 attempts
 - (N=23,063) (50%)
- Contacted but did not listen to content (N=3,228) (7%)
- Holdout group (N=2,000) (4%)
- No propensity segment assignment due to missing data (N=2,897) (6%)

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16% of noncompliant population

Population percentage predicted to complete screening: 27%-52%



MEN

- Relatively healthier cohort
- 1.9 times less likely to have a documented chronic condition

Men Only Segment

15% of noncompliant

Population percentage

predicted to complete

screening: 33%-43%

population

- 2.7 times less likely to visit a doctor's office in last two years
- 100% have lower than average claims spending
- 70% have lower than average out of pocket expenses
- No emergency or hospital admission for two years

Disengaged ot involved in health or any health screenings



MEN

- 1.2 times more likely education is limited to high school
- 2 times more likely to not be documented with a chronic condition
- 1.4 times more likely to be an African American
 - 5.8 times less likely to visit an OB/GYN

No l don't know **CRC** Content Yes

Results

		Completion Rates			Count	
Segment	Gender	Tailored Message	General Message	Significance p value	Tailored Message	General Message
Disengaged	Mixed	4.21%	3.06%	p = .09	3,516	1,176
Distracted	Male	5.42%	4.48%	p =.42	1,810	536
Distracted	Female	3.62%	5.31%	p = .057	1,812	697
Partway There	Male	7.61%	5.79%	p =.15	1,420	673
Strivers	Female	6.98%	6.27%	p =.70	1,376	399
Achievers	Mixed	8.64%	10.97%	p =.11	1,782	392

- Mixed gender Men: 50% Women: 50%
- 30% of noncompliant population
- Population percentage predicted to comp creening: 3%-31%

WOMEN

- 3 times less likely to have a breast cancer screenir
- 2.8 times less likely to have a cervical cancer screening*
- 3.5 times less likely to have a wellness visit
- 1.3 times less likely to be documented for a chronic condition

Conclusions

- The outcomes suggest the utility of tailored health content and indicate opportunity for further refinement of the tailored content for the documented intervention.
- Refining the content will require an iterative "test-and-learn" approach to evaluate the effects of changes in messaging tactics to changes in outcomes.
- The significant result for the lowest ranked subpopulation indicates this methodology may reduce CRC health disparities within this population.
- The general message, which is the 'CRCS best practice' message content, may have unintentionally evolved to appeal and motivate members more engaged in their health.

Potential Benefits

- Increase colorectal cancer screening rates.
- Reduce the disparities of colorectal cancer screening rates and colorectal cancer health disparities among the insurer's population.
- Enable health plans to reduce health communications costs as specific subpopulations receive fewer, but more relevant, communications.
- Reduce the cost of colorectal cancer in the insured population.
- Improve the member experience by identifying timely, relevant health messages.

Future Work

- Remove two-sided argument from the distracted content
- Use the 'CRCS best practice' message content (general message) for the 'Achiever' subpopulation
- Additional touch points for the 'Disengaged' and the 'Distracted' segments
- Vary the frequency and the communication mode in order to amplify the tailored communication strategy, which in turn will increase rates⁹
- Add vivid, concrete, and visual tactics for members in the lower graded segments¹⁰

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