

# Behavioral Interventions to Increase Flu Vaccination

## PURPOSE OF THE STUDY

This research seeks to increase flu vaccination rates among health plan members. Centene Center researchers from Duke University's Center for Advanced Hindsight are partnering with Centene to design and test a number of novel flu vaccination interventions.

## STUDY DESCRIPTION

Using evidence from behavioral science, the research team has prioritized strategies that are likely to increase flu vaccination. Four pilots testing different behavioral interventions will be conducted with health plan members from Louisiana Healthcare Connections and Health Net of California. A total of 14,000 Louisiana members and 6,000 California members will be part of the pilot samples.

Following the pilots, all research findings will be disseminated to participating plans and submitted to academic research journals or popular press for publication. These interventions are designed to be cost-effective, high-impact and scalable.

## PILOTS

### Pilot 1: Emotional Arousal + Implementation Intentions

#### *Pilot Concept*

Flu vaccination may not feel like a top priority when getting sick is abstract, distant and probabilistic. Using emotionally evocative, vivid messaging may help make vaccine-preventable illness feel more real and salient. In this experiment, we test flu messaging that uses high-arousal emotions (fear, disgust, anxiety) vs. low-arousal emotions (exhaustion, disappointment, sadness).

Further, emphasizing a negative consequence is most effective when paired with a solution to directly prevent the consequence and alleviate fear of the consequence. Thus, this intervention is most likely to be effective when members are prompted to create a specific plan about when and where they will get vaccinated (i.e., an implementation intention) after receiving disease-salient information.

#### *Pilot Design*

Approximately 8,790 Medicaid members from Louisiana Healthcare Connections will participate in the pilot. Participants will be randomized to one of the following interventions:

- ▶ High arousal only.
- ▶ Low arousal only.
- ▶ High arousal + implementation intention.
- ▶ Active control (basic flu reminders using language adapted from the CDC).
- ▶ No-message control.
- ▶ Low arousal + implementation intention.

Interventions are delivered via email messages, mailers and robocalls.

The chart below describes the touch points that members will receive throughout the study period.

	High arousal only	Low arousal only	High arousal + implementation intention	Low arousal + implementation intention	Generic reminder	No message (control)
<b>Week 1</b>	Email	Email	Email	Email	Email	
<b>Week 2</b>	Robocall	Robocall	Robocall	Robocall	Robocall	
<b>Week 3</b>	Mailer	Mailer	Mailer	Mailer	Mailer	
<b>Week 4</b>	Email	Email	Email	Email	Email	
<b>Week 5</b>	Robocall	Robocall	Robocall	Robocall	Robocall	
<b>Week 6</b>	Mailer	Mailer	Mailer	Mailer	Mailer	
<b>Week 7</b>	Email	Email	Email	Email	Email	
<b>Week 8</b>	Robocall	Robocall	Robocall	Robocall	Robocall	
<b>Week 9</b>	Follow-up survey	Follow-up survey	Follow-up survey	Follow-up survey	Follow-up survey	Follow-up survey

### Study Metrics

Flu Pilot interventions will be evaluated using member vaccination rates, as recorded in claims data.

## Pilot 2: Social Pressure + Implementation Intentions

### Pilot Concept

Social pressure can be a strong motivator to vaccinate, especially when people are not worried about getting vaccinated for their own sake. Members who are reminded about spreading the flu to vulnerable children and elderly people (and about being responsible for their illnesses) may feel a stronger pull to get vaccinated. Thus, this intervention compares the impact of emphasizing the consequences of getting vs. spreading the flu.

This intervention is paired with a prompt to set an implementation intention (a specific plan about when and where they will vaccinate) to put persuasion into concrete action.

### Pilot Design

Approximately 8,719 Medicaid members from Louisiana Healthcare Connections will participate in the pilot. Participants will be randomized to one of the following interventions:

- ▶ Personal responsibility (emphasizes member can catch the flu).
- ▶ Social responsibility (emphasizes member can spread the flu to others).
- ▶ Personal responsibility + implementation intention.
- ▶ Social responsibility + implementation intention.
- ▶ Active control (basic flu reminders using language adapted from the CDC).
- ▶ No-message control.

Approximately Interventions are delivered via email messages, mailers and robocalls.

The chart below describes the touch points that members will receive throughout the study period.

	Personal responsibility	Social responsibility	Personal responsibility + implementation intention	Social responsibility + implementation intention	Generic reminder	No message (control)
<b>Week 1</b>	Email	Email	Email	Email	Email	
<b>Week 2</b>	Robocall	Robocall	Robocall	Robocall	Robocall	
<b>Week 3</b>	Mailer	Mailer	Mailer	Mailer	Mailer	
<b>Week 4</b>	Email	Email	Email	Email	Email	
<b>Week 5</b>	Robocall	Robocall	Robocall	Robocall	Robocall	

<b>Week 6</b>	Mailer	Mailer	Mailer	Mailer	Mailer	
<b>Week 7</b>	Email	Email	Email	Email	Email	
<b>Week 8</b>	Robocall	Robocall	Robocall	Robocall	Robocall	
<b>Week 9</b>	Follow-up survey	Follow-up survey	Follow-up survey	Follow-up survey	Follow-up survey	Follow-up survey

### Study Metrics

Pilot interventions will be evaluated using member vaccination rates, as recorded in claims data.

## Pilot 3: Narrative Persuasion + Active Choice

### Pilot Concept

Narrative persuasion through storytelling has been shown to make people more emotionally committed to a behavior by making it feel more vivid and real. Stories can frame the consequences of missing a vaccine as inflicting harm to others.

These stories may be leveraged further by asking people to make an active choice between getting the vaccination or making a different undesirable choice (e.g., causing a loved one to be hospitalized from the flu). The current process of vaccination pits the active, effortful choice to get vaccinated against the passive, easy option of not doing so. When both inaction and action carry a risk of harm, people tend to prefer inaction — a tendency known as the “omission bias.” By asking people to make an active choice between getting the vaccination and some other harmful consequence, this strategy pits action against action (rather than action against inaction), making vaccination the more appealing option. Including an active choice should make vaccination appear more desirable compared to forgoing the vaccination.

We will compare the impact of including an active choice prompt to no active choice prompt. Additionally, we will compare the effectiveness of the overall narrative persuasion materials to the previous social pressure materials.

### Pilot Design

Approximately 7,212 Medicaid members from Louisiana Healthcare Connections will participate in the pilot. Participants will be randomized to one of the following interventions:

- ▶ Personal responsibility (emphasizes member can catch the flu).
- ▶ “Risk to other” narrative (vividly describes what will happen to an individual with the flu).
- ▶ “Risk to other” narrative + active choice.
- ▶ Active control (basic flu reminders using language adapted from the CDC).
- ▶ No-message control.

Interventions are delivered via email messages, mailers and robocalls.

The chart below describes the touch points that members will receive throughout the study period.

	<b>Risk to other narrative</b>	<b>Risk to other narrative + active choice</b>	<b>Generic reminder</b>	<b>No message (control)</b>
<b>Week 1</b>	Email	Email	Email	
<b>Week 2</b>	Robocall	Robocall	Robocall	
<b>Week 3</b>	Mailer	Mailer	Mailer	
<b>Week 4</b>	Email	Email	Email	
<b>Week 5</b>	Robocall	Robocall	Robocall	
<b>Week 6</b>	Mailer	Mailer	Mailer	
<b>Week 7</b>	Email	Email	Email	
<b>Week 8</b>	Robocall	Robocall	Robocall	
<b>Week 9</b>	Follow-up survey	Follow-up survey	Follow-up survey	Follow-up survey

## Study Metrics

Pilot interventions will be evaluated using member vaccination rates, as recorded in claims data.

### Pilot 4: Mother/Child + Prevention/Promotion

#### Pilot Concept

Maternal vaccination rates for Tdap and the flu are only about 50 percent, though these shots are recommended for all pregnant women who do not have specific contraindications. Flu vaccination is usually thought of as a behavior to protect the mother; however, if a pregnant person catches the flu during pregnancy, there are serious negative repercussions for the baby as well. Our messaging tests the benefit of framing the flu shot as for the baby's sake versus the mother's, taking advantage of pregnant women's strong desire to protect their unborn children.

We are also testing the use of promotion and prevention-based messaging. Promotion-based messaging focuses on the benefits that can be pursued by taking an action, while prevention-based messaging focuses on the risks that can be avoided. Evidence suggests that individuals' mindsets can be changed from promotion to prevention by situational circumstances. We hypothesize that pregnancy should induce a prevention-based focus, orienting mothers toward potential harm to their children, and so a message that combines prevention with a focus on the baby's health is the most effective route to increasing flu vaccination uptake.

#### Pilot Design

Six thousand pregnant Medicaid members from Health Net of California who reside in Los Angeles will participate in the pilot. The pilot will involve four weeks of SMS messaging with participants assigned to one of six conditions. The control condition will receive no messages, the active control condition will receive basic informative messages, and the other four conditions will receive messages focused around the benefits or risks of the flu shot for either mothers or children.

The chart below describes the touch points that members will receive throughout the study period.

	Mother – promotion	Mother – prevention	Baby – promotion	Baby – prevention	Generic control	No message (control)
Week 1	SMS	SMS	SMS	SMS	SMS	
Week 2	SMS	SMS	SMS	SMS	SMS	
Week 3	SMS	SMS	SMS	SMS	SMS	
Week 4	SMS	SMS	SMS	SMS	SMS	
Week 5	Follow-up survey	Follow-up survey	Follow-up survey	Follow-up survey	Follow-up survey	Follow-up survey

## Study Metrics

The interventions will be evaluated using member vaccination rates per clinic, as recorded in claims data.

## FOLLOW-UP PILOT SURVEYS

### Background

Results from our Louisiana and California flu experiments can be better understood by surveying participants about the psychological aspects of flu vaccination. We will use these surveys to unpack the psychological mechanisms that may explain flu vaccination uptake.

### Design

At the end of the experiments, members in all pilots will be invited to participate in an online survey via email. Members who complete the survey will be entered into a lottery for a small incentive.

We will explore a number of psychological variables we expect to be related to flu vaccination uptake, including regulatory (promotion vs. prevention) focus, pain, emotional arousal, perceptions of pain severity, intentions to receive a flu shot, etc. The results will help us parse the effects from the experimental manipulations and understand why exactly certain communications worked better than others.

### Sample

All members in pilot samples: 14,000 Louisiana Healthcare Connections members and 6,000 Health Net members of California.





