Project Description: Air Quality Information Initiative

December 20, 2017

Introduction

Exposure to indoor and outdoor air pollutants—such as wildfire smoke, industrial particle pollution, and ozone—is a significant public health concern and can have especially adverse effects on individuals with asthma, cardiovascular disease, chronic obstructive pulmonary disease (COPD), and other respiratory illnesses. Even short-term exposure to air pollution can cause symptoms, including both respiratory effects (e.g., coughing, wheezing, shortness of breath) and cardiovascular effects (e.g., chest pain, fatigue, palpitations), and prolonged exposure can lead to premature death among individuals already suffering from respiratory illnesses (Cohen et al., 2017; Johnson et al., 2017).

Fortunately, access to information about air pollution and air quality has improved substantially in the past decade. Both the U.S. Centers for Disease Control and Prevention (CDC) Air Pollution and Respiratory Health Branch (APRHB) and the U.S. Environmental Protection Agency (EPA) have developed multiple resources to educate consumers about the effects of air pollution and alert them to current air quality in their area. This includes resources such as the EPA's AirNow.gov interactive real-time database of air quality information as well as multiple CDC toolkits, flyers, and educational materials.

Despite the availability of these resources, most consumers—including those with respiratory illnesses—are unaware that they exist or are unsure how to access them. Thus, CDC's current challenge is to ensure that vulnerable populations are aware of the tools and resources available and use these tools to adopt protective behaviors that can prevent additional respiratory symptoms (e.g., changing physical activity routine, moving activities indoors, deactivating air intake on air conditioning units).

Background and Objectives

The purpose of this project is to leverage existing CDC and EPA resources for respiratory health by developing materials that connect individuals with asthma, COPD, or heart failure with those resources. CDC and its partners will develop these new communication materials and then employ an iterative process to test the materials with individuals who have respiratory illnesses and refine them based on audience feedback. By developing and testing new communication materials, CDC can ensure that consumers take advantage of existing resources and can help vulnerable populations to reduce the negative effects of air pollution on their health.

To accomplish these objectives, CDC has contracted with Better World Advertising (BWA), a creative design firm, and RTI International, a non-profit research institute. BWA will develop the communication materials, and RTI will test the materials with consumers.

Methods and Study Population

RTI will conduct 9 one-hour focus groups with consumers (n=3 per group; n=27 total) recruited in Atlanta, GA; Detroit, MI; and Denver, CO to test

prototype education materials (see Table 1.). RTI will conduct the focus groups with consumers who have been medically diagnosed with one of the following health conditions:

- Asthma (3 groups)
- Chronic obstructive pulmonary disease (3 groups)
- Heart failure (3 groups)

RTI will conduct and moderate the focus groups in the selected cities. One of two trained moderators will facilitate each discussion (both of whom have more than 15 years of experience in qualitative research). During each group, the moderator will provide a brief explanation of the study, administer written informed consent (***Attachment B***), and lead the participants through an interactive group discussion using a semi-structured moderator guide (***Attachment C***). During the groups, CDC staff will observe either via phone link or via a live audio recording.

Throughout the discussion, the moderator will document major themes in participant responses as well as reactions to the prototype materials. The moderator will audio record the sessions, and RTI will produce verbatim transcripts of each session that will be used for later analysis. At the end of each 60-minute focus group, the moderator will provide participants with a token of appreciation for their time and travel.

Table 1. Focus Group Locations

WAVE	REGION	CITY
1	South	Atlanta, GA
2	Midwest	Detroit, MI
3	West	Denver, CO

Recruitment Plan and Screening Procedure

RTI will work closely with local market research firms in each city to recruit individuals who meet the study's eligibility criteria. Recruiting staff may use media advertisements or healthcare provider referrals to identify potential participants.

Once the market research firms have contacted individuals, they will assess their eligibility using a telephone screener (***Attachment A***). If eligible, participants will be invited to participate in the focus groups.

Incentives

RTI will provide eligible participants who complete the focus groups with a $40 token of appreciation for their time (see Table 2). The incentive amounts were identified based on (1) the level of involvement needed to participate in the 60-minute focus group; (2) the sensitive nature of the discussion topics regarding personal health; and (3) the potential recruiting difficulties with identifying potential respondents who fit the inclusion criteria and are willing to share their personal experiences. The proposed amount will be provided to participants for their entire burden time, which includes screening time, obtaining informed consent, and participating in the 60-minute focus group session. In the context of this project, the target population is considered

a harder-to-recruit population than the general public because of the screening criteria (i.e., medically diagnosed with asthma, COPD, or heart failure) and the absence of an existing research panel from where potential participants could be recruited.

This incentive amount will be consistent across all three cities. We will provide the token of appreciation directly to participants at the conclusion of each focus group.

Table 2. Recommended Incentive Amounts

LOCATION	INCENTIVE
Atlanta, GA	$40
Detroit, MI	$40
Denver, CO	$40

Because participants often have competing demands for their time, incentives are an effective strategy for encouraging participation in projects. When reasonable in amount, incentives treat participants with respect, and they recognize and acknowledge the time and effort individuals expend to participate in the research. Evidence suggests that providing incentives reduces the likelihood of no-shows, decreases recruiting efforts and costs, and improves data quality by ensuring that participants reflect a diverse cross-section of the study population (Castiglioni & Pforr, 2007; Groves et al., 2006; Guyll et al., 2003; Singer, 2006). In this particular information collection, we will be asking respondents to share personal experiences and perspectives as well as provide thought-intensive, open-ended responses that require a high level of participation.

To be effective, incentive amounts must be high enough to equalize the burden on participants (e.g., time, travel costs) as well as motivate them to participate in the study rather than another activity (Russell, 2000). If the incentive amount is too low, individuals may agree to participate but ultimately not show up or cancel. An insufficient number of participants may result in poor data quality or loss of government funds associated with recruitment, facility fees, and moderator and observer time (Morgan, 1998). Incentives also are necessary to ensure adequate representation among hard-to-recruit populations, such as adults with serious health conditions (Guyll et al., 2003).

Assurance of Privacy Provided to Participants

At the beginning of each focus group, the moderator will explain to participants the importance of protecting one another's information. The moderator also will make sure participants understand that their participation is voluntary and that they can decide to skip questions or stop participating at any time. RTI will protect participants' information by not using names in the notes and by storing all notes and recordings in a locked filing cabinet in the project director's office (hardcopy) or on a password protected project server (electronic). The moderator also will assure participants that project findings and reports will not contain any personal information.

The recruitment facilities will store screening information in locked file cabinets (hardcopy) or on a password protected computer (electronic) in order to invite respondents and send them reminder letters and calls. Only the recruitment facilities will have access to this information; RTI and CDC will be provided de-identified screening data for participants (i.e., first names

only, no other contact info). Names of participants will be used solely to facilitate contact. After the study is complete, the facilities will destroy the screening responses and will be permitted to keep only participant demographic information on file (i.e., age, sex, race, education).

RTI and CDC will not have the full names or any contact information for any of the participants. Therefore, there will be no link between the data collected and the participants' identities.

Justification for Sensitive Questions

RTI and CDC do not plan to ask any questions that would elicit sensitive information. During the focus groups, we will ask participants about their current health condition, their understanding of how air quality affects their health, and their feedback on the prototype materials. Although we do not anticipate that participants will perceive these questions as intrusive, it is possible that some participants may be reluctant to talk about their health. Consequently, we will remind participants—at the time of consent and during the group—that they are welcome to skip any questions that they find uncomfortable.

These questions are necessary to gain insight into participants' understanding of air quality and their feedback on the educational materials.

Data Analysis

When summarizing the findings from each round of materials testing, RTI will conduct thematic analysis to identify trends in participant responses, including comprehension, credibility, relevance, and other feedback on the prototype materials. RTI will create a meta-matrix that organizes participant responses by audience segment and topic (e.g., COPD x comprehension), and they will populate the matrix with responses from the verbatim transcripts. The moderators will then analyze responses to determine what perceptions and reactions are consistent across the entire audience and which differ by population.

After completing analysis, RTI will develop and submit to CDC a topline memo summarizing the purpose, methods, findings, illustrative quotations, and recommendations from each round of testing. This memo will summarize both quantitative results (e.g., receptivity rankings) as well as qualitative feedback on the materials, and RTI will especially focus on recommendations for refining the materials before the next round of testing. RTI will send draft memos to CDC for review and will revise them based on CDC's written and verbal comments.

Assessment and Reporting of Protocol Deviations and Adverse Events

The RTI and CDC team leads will ensure that appropriate oversight systems are in place to monitor all project activities and identify any adverse events or deviations from the study protocol. Because this is a low-risk study, the team does not anticipate any adverse events or unintended consequences.

All protocol deviations will be reviewed by CDC to assess whether participant safety or study integrity has been affected and to what extent the deviation has affected the project. If the deviation is a protocol violation, appropriate measures will be taken to address the occurrence,

which may include the development of a corrective action plan. Participant privacy and data security breaches are serious risks and will be reported within one hour of discovery to CDC.

References:

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Cohen, A.J., Brauer, M., Burnett, R., et al. (2017). Estimates and 25-year trends of the global burden of disease attributable to ambient air pollution: An analysis of data from the Global Burden of Diseases Study 2015. *Lancet*, 389(10082), 1907-1918.

Groves, R., Couper, M., Presser, S., Singer, E., Tourangeau, R., Acosta, G., & Nelson, L. (2006). Experiments in producing nonresponse bias. *Public Opinion Quarterly*, 70(5), 720-736.

Guyll, M., Spoth, R., & Redmond, C. (2003). The effects of incentives and research requirements on participation rates for a community-based preventive intervention research study. *Journal of Primary Prevention*, 24(1), 25-41.

Johnson, J.E., Bael, D.L., Sample, J.M., Lindgren, P.G., & Kvale, D.L. (2017). Estimating the public health impact of air pollution for informing policy in the Twin Cities: A Minnesota tracking collaboration. *Journal of Public Health Management and Practice*, 23(Suppl 5), S45-S52.

Morgan, D.L., & Scannell, A.U. (1998). *Planning Focus Groups*. Thousand Oaks, CA: Sage.

Russell, M.L., Moralejo, D.G., & Burgess, ED. (2000). Paying research subjects: Participants' perspectives. *Journal of Medical Ethics, 26*(2), 126–130.

Singer, E. (2006). Nonresponse bias in household surveys. *Public Opinion Quarterly*, 70(5), 637-645.

List of Study Material Attachments:

Attachment A – Recruitment Screener

Attachment B – Informed Consent Form

Attachment C – Moderator Guide