CASES IN PUBLIC HEALTH COMMUNICATION & MARKETING
Volume IV, Summer 2010

One Tiny Reason to Quit:

A Coalition-based Smoking Cessation Campaign for Pregnant African American Women

Allison L. Sepulveda, MA [1]
Diane B. Wilson, EdD [2]
Sheryl L. Garland, MHA [3]
Susan E. Dubuque, MEd [4]
Rose Stith Singleton, MEd [5]
May G. Kennedy, PhD, MPH [6]

[1] Institute for Drug and Alcohol Studies at Virginia Commonwealth University (VCU)
[2] Department of Internal Medicine and the Massey Cancer Center at VCU School of Medicine
[3] Department of Community Outreach at the Virginia Commonwealth University Health System
[4] Neathawk Dubuque & Packett
[5] Richmond Healthy Start Initiative
[6] Social and Behavioral Health Department of the Virginia Commonwealth University School of Medicine

Corresponding Author:
Allison L. Sepulveda, Virginia Commonwealth University, P.O. Box 980343,
Richmond, VA 23298-0343. Email: alsepulveda@vcu.edu

Suggested citation: Sepulveda A; Wilson D; Garland S; Dubuque S; Singleton R; Kennedy M. One Tiny Reason to Quit: A Coalition-based Smoking Cessation Campaign for Pregnant African American Women. *Cases in Public Health Communication & Marketing*. 2010; 4: 28-56.
Available from: www.casesjournal.org/volume4.

www.casesjournal.org

THE GEORGE WASHINGTON UNIVERSITY
SCHOOL OF PUBLIC HEALTH AND HEALTH SERVICES

Peer-Reviewed Case Study

Abstract

Between 2000-2005, the rate of infant mortality in Richmond, Virginia was four to five times higher among African Americans than among Caucasians. A coalition-based campaign guided by the social marketing version of CDCynergy addressed IM in Richmond. The coalition undertook a three-phase strategic planning process that was informed by data accessed or collected by the planning team. The initial decision about which of a list of maternal risk behaviors to target was informed by: (1) a literature review, (2) rankings by research and community partners of seven potential campaign foci, and (3) a vital records analysis. Smoking emerged as the key risk factor and the need to address smoking cessation became the campaign's focus. Literature reviews and focus groups uncovered smoking determinants, national experts recommended effective and promising intervention models, and a secret shopper study assessed the accessibility and user-friendliness of local smoking cessation services. In a final step, potential message and messenger concepts were tested. The resulting campaign was called *One Tiny Reason to Quit*. It promotes calls to a free, evidence-based, smoking cessation counseling line (1-800-QUIT-NOW) through mass media and face-to-face outreach. The campaign's formative research, elements, and process data are described in this case.

Introduction

The infant mortality rate (IMR) of a country is a key indicator of its overall health status. The United States (U.S.) ranked 12th among all nations in infant mortality in 1960 and dropped to 30th place in 2005.[1] Approximately 28,000 infants under one year of age die each year in the U.S.[2] The IMR among African American (AA) women is disproportionately higher compared with other populations.[3]

Maternal risk factors for infant death include: age and socio-economic status, inadequate access to medical care, genetic predisposition, other biological factors, and maternal health status and health behaviors.[4] Maternal behaviors, such as smoking, illicit substance use and lack of obtaining prenatal care, account for a significant portion of the variance in birth outcomes.[5,3] Interventions are needed to address the high rates of infant mortality (IM).[6]

Background

Richmond, Virginia is a mid-sized city in which African Americans represent approximately 55% of the population. Between 2000-2005, the IMR was three to five times higher among AA women living in Richmond than among white women.[7] To address this disparity, a coalition-based, participatory social marketing campaign was undertaken in 2007. It was supported by a modest level of funding from an infant mortality research center grant awarded to Virginia Commonwealth University (VCU) by the National Center for Minority Health and Health Disparities at NIH. The specific aim of the project was to "establish partnerships to enhance the delivery of culturally competent health education messages" that would contribute to the reduction of infant mortality in Richmond. The activities described below were conducted in years one through three of the five-year project.

The Social Marketing edition of CDCynergy (CDCynergy-SM) (http://www.orau.gov/cdcynergy/demo/), version 2.0, a free, online program planning support tool, guided the coalition's work. CDCynergy-SM has six phases: (1) Problem description, (2) Market Research, (3) Market Strategy, (4) Interventions, (5) Evaluation, and (6) Implementation. Each of the phases contains several steps and related resources. This paper summarizes the iterative campaign planning process in terms of the phases and steps of CDCynergy and describes the resulting campaign products.

Methods

Phase 1: Problem Description

The first Phase of CDCynergy-SM involved writing a statement of the health problem that identifies the groups affected, the major causes of the problem, and potential audiences for the campaign. Another Phase-1 step was creating an initial planning team to address the health problem of interest. Work in this phase relied on existing literature, applicable behavioral theories, and existing best practice program models. The last step in Phase 1 was conducting a "SWOT" analysis, an exploration of the team's strengths and weaknesses and the environmental opportunities and threats that may influence the success of various potential approaches to the problem.

Problem Statement

The overall problem statement appears in *Table 1*. The problem statement did not initially include smoking statistics, but was updated as the behavioral objective of the campaign became clearer. Having a common understanding of the nature and extent of the problem served to unify and motivate the planning team and facilitated briefing new team members, e.g., the advertising agency that was hired.

Table 1. Problem Statement

The United States had a national infant mortality rate (IMR) of 6.69 per 1,000 live births in 2006.[8] In 2007 in Virginia, the IMR was 7.7, while in the City of Richmond, the rate was even higher at 12.4 deaths per 1,000 births.[9] The Healthy People 2010 goal is to reduce the national IMR to 4.5.

Alarming disparities exist between the IMR of African American (AA) women and those of white women, with national estimates that the AA IMR is twice as high as that of whites. In 2007 in Virginia, the IMR for AA women was 15.5 infant deaths per 1000 live births as compared to 6.0 infant deaths for whites. The disparity is even higher in the City of Richmond, with the 2007 rate for AA women at 18.9 deaths per 1,000 births vs. 3.7 for whites according to VDH Division of Health Statistics.[9] The nationwide gap between AA and whites has not decreased since 1990.

Leading causes of IM include congenital malformations, prematurity, low birth-weight, and Sudden Infant Death Syndrome.[10] Maternal lifestyle factors such as smoking increase the risk of low birth-weight. Smoking is associated with increased risk for premature rupture of membranes, placenta previa, preterm delivery, and low birth-weight. Risk of SIDS is also higher for babies of women who smoke during pregnancy. It is estimated that eliminating maternal smoking could lead to a 10% reduction in all infant deaths and a 12% reduction in deaths from perinatal conditions.[11] The maternal smoking rate in Virginia for 2006 was 6.5%.[12] National data show the African-American maternal smoking rate was 10.1% in 2005.[13] There were an estimated 16 infant deaths in Virginia in 2004 that could be attributed to maternal tobacco use.[14]

Mapping causes of the problem

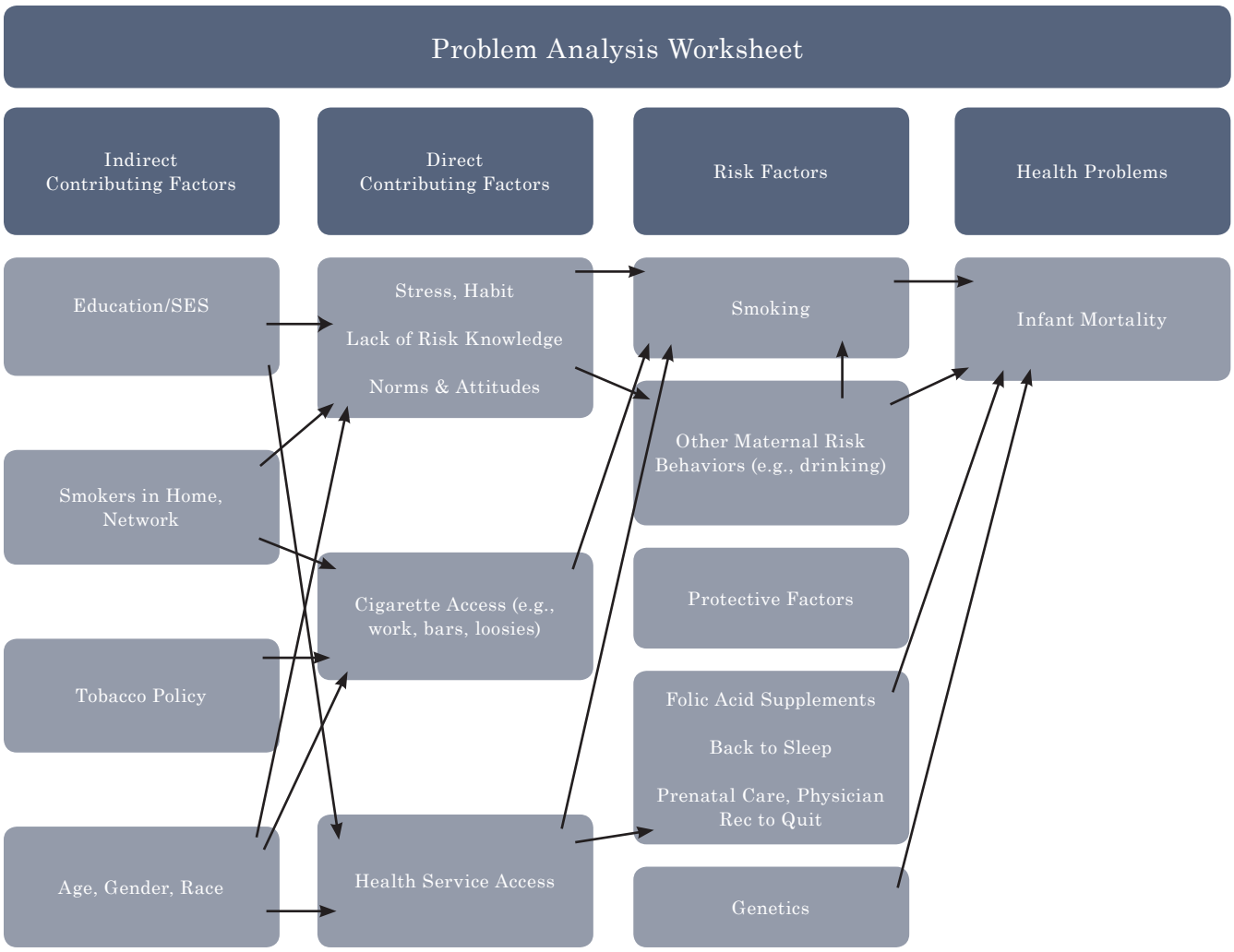
To gain a deeper understanding of the problem, the planning team conducted an extensive literature review and obtained an unpublished analysis of Richmond vital records linking births and deaths.

Literature review: An extensive review of the behavioral science and medical literatures was conducted with assistance from a Reference Services Librarian at Tompkins McCaw Medical Library at VCU. Health behaviors that were related to risk for IM were used as key search terms, given that the campaign would target a modifiable maternal behavior. Among such risk factors, e.g., illicit drug use, alcohol use, infant sleep positioning/bed sharing, poor nutrition and body weight, lack of prenatal care, and cigarettes, smoking accounted for the largest share of variance in IM.[15] For example, one study estimated that approximately 29% of all cases of low birth weight could be attributed to maternal smoking.[16] In addition, a study by Visscher et al.[5] reported that smoking during pregnancy is a more significant determinant of low birth weight than use of alcohol or other substances.

Linked birth-death certificate data: The perinatal periods of risk (PPOR) procedure[17] had been recently used by a VCU colleague to analyze causes of local fetal-infant deaths beyond 24 weeks gestational age. The PPOR analysis indicated that maternal health (a coding category comprising maternal lifestyle factors such as smoking and drinking alcohol) had the greatest single impact on risk of the 186 fetal-infant deaths examined. The study attributed 50% of the deaths in Richmond City from 2001-2005 to maternal health/lifestyle.[7]

From these sources, the planning team derived a flow chart depicting a complex web of causal pathways to IM (see *Figure 1*, Problem Analysis Worksheet, next page). The chart delineated the multiple causes of IM and was used to direct the coalition's campaign.

Figure 1. Infant Mortality and Causal Pathways



Potential Audiences

The next step in Phase 1 was outlining potential target audiences and audience segments. At this stage, potential primary audiences for the IM prevention campaign included pregnant women, pre-conception women, or inter-conception women, i.e., women with a child age two or younger. Prenatal care providers and individuals in the social networks of women of child-bearing age were potential secondary audiences. In fact, the original grant proposal had provisionally named the campaign Grandma Says, because it was hypothesized that older, AA females would be influential messengers.

Forming a Strategy Team

The planning team consisted of the director of the VCU Center on Health Disparities, project director, social marketing consul-

tant, and lead community partner volunteer. The community-based organization participated in the campaign by:

- Attending regular strategic planning meetings
- Serving as key informant interviewees and referring other community partners for this role
- Supplying staff to be trained as focus group facilitators and to conduct the groups
- Supplying staff to conduct messaging and copy-testing with representatives of the target audience
- Interviewing candidate advertising agencies
- Linking the planning team to organizations who employed potential outreach workers (OWs)
- Hosting the kick-off press conference
- Advising on appropriate incentives for OWs and hosting a "thank-you" brunch after the campaign

Graduate and undergraduate student interns and administrators at the VCU Center on Health Disparities provided additional support. From the outset, it was determined that the team would function in partnership with the Promoting Healthy Pregnancies Coalition (PHPC), an existing coalition of approximately 30 members including research scientists, representatives of organizations that serve pregnant women in Richmond, and community members. The PHPC meets on a quarterly basis, with the objective of reducing racial and ethnic disparities in perinatal health. The PHPC provided input and feedback to the planning team from the very first stages of the formative research through campaign implementation. The planning team met weekly and presented its findings and various program options to the PHPC at key planning junctures. This planning process was designed to move forward efficiently, ensure the incorporation of stakeholder input, and garner in-kind resources for the campaign.

SWOT Analysis

CDCynergy-SM suggested conducting a SWOT (Strengths, Weaknesses, Opportunities and Threats) analysis during Phase 1 to consider factors in the broader situation that could impact the implementation of the program or its ultimate success. However, the program team conducted a formal SWOT in Phase 3, believing it was more useful after the behavioral objective had been determined. CDCynergy-SM describes the planning process as iterative, but it should also be understood to be flexible. The team discussed environmental realities--e.g., the state health director making infant mortality prevention her top priority--from the outset of the planning process. Postponing the SWOT analysis enabled the team to focus on factors relevant to our specific behavioral objective and target audience, not just the global initial "infant mortality prevention" charge, and to carry out the analysis jointly with the full PHPC (see *Table 2*, next page, for the SWOT analysis).

Table 2. SWOT Analysis

Factors/Variables	Internal	External
Positive	Strengths	Opportunities
	1. Existing community partnerships 2. Focus groups with target audience 3. Clear, simple goal 4. Media campaign to keep message in the forefront	1. Pregnant women want to have healthy babies 2. VDH already pays for quitline services; high quitline success rates 3. Quitline is proactive to call women back
Negative	Weaknesses	Threats
	1. Community partners have a tendency to use negative messages/ scare tactics 2. Campaign is time-limited	1. Peers and family also smoke 2. Nicotine addiction is hard to break and takes time 3. Lack of trust by women in the community of VCU physicians 4. Pregnancy is a high-stress time 5. Misconceptions (other children are "ok" — why quit this time)

Phase 2: Market Research

Essentially, the audience research and environmental assessment conducted in Phase 2 of CDCynergy-SM has two purposes: (a) filling in relevant gaps in existing literature, and (b) confirming any assumptions planners have made about the health problem of interest. In this case, the necessary market research took months and required the collection of several types of data.

The planning team had three major formative research questions:

- What is the key modifiable maternal risk factor for low birth weight and IM?[18]
- Does room for improvement exist in this risk behavior among pregnant AA women in Richmond?
- Are there evidence-based prevention models to build on?

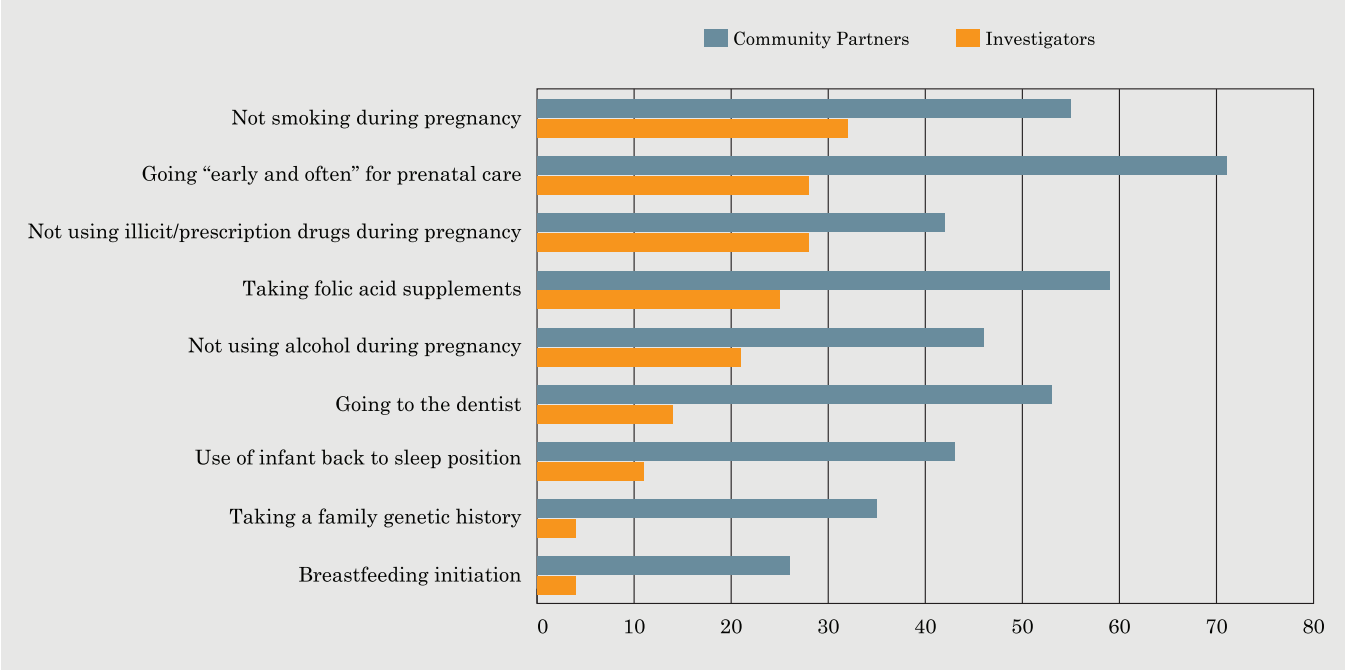
The formative studies conducted or accessed to answer the research questions included: risk behavior rankings by local key informants, a clinic survey, an additional round of literature review, telephone interviews with leading national tobacco researchers, focus groups, and a "secret shopper" study. Details of these formative studies are provided on the next page.

Investigator / Community Partner Rankings

Key informants rank-ordered nine behavioral campaign focus alternatives. Ranking forms were sent to the 5 VCU Principal Investigators (PIs) of the infant mortality research center studies and the 23 members of the PHPC to tap both scientific and community provider expert opinion. The behaviors included: not smoking during pregnancy; going early and often for prenatal care; not using illicit/prescription drugs during pregnancy; taking folic acid supplements; going to the dentist; not using alcohol during pregnancy; using infant back-to-sleep positioning; breastfeeding initiation; and taking a family genetic history. This list was ranked three times for pregnant women and three times for non-pregnant women. For each of these two segments, respondents were first asked to rank the behaviors with regard to mortality burden, then with respect to behavior change feasibility, and finally in light of overlap with existing programs. To improve response rates (PIs 100%, PHPC members 43%), additional hard copies were hand-delivered.

When PI rankings were summed across importance and feasibility, stopping or reducing smoking ranked highest for both pregnant and non-pregnant women. Community providers agreed that tobacco use was the key issue for non-pregnant women, but their rankings were different for pregnant women. Tobacco use ranked lower than

Figure 2. Key Informant Rankings of Potential Campaign Foci: Maternal Behaviors Likely to Reduce IM Rates in Richmond, VA



prenatal care, folic acid, and putting babies on their backs to sleep for pregnant women (see *Figure 2*, previous page). However, community providers commented that access to care may be beyond a woman's control, neural defects due to lack of folic acid account for few if any infant deaths in Richmond, and a "back-to-sleep" campaign was already underway. Overall, stopping or reducing tobacco use was the highest-ranked message.

Smoking Rates Survey Data

To confirm the need for smoking cessation services among pregnant AA women in Richmond, the planning team accessed data collected previously from a local convenience sample in an urban, hospital-based obstetrics clinic setting. Participants (n=412) were pregnant women and predominantly AA (64.7%). Forty-one percent of the women surveyed reported lifetime daily use of tobacco and 39.3% of the AA women reported smoking cigarettes in the past three months, indicating significant room for improvement.[19]

At this point in the planning process, reducing maternal smoking became the global behavioral objective. Additional formative research was conducted to narrow the target audience and behavioral objective even further.

Round II Literature Review

A second round of scientific literature review identified determinants of smoking among high-risk African-American women and model anti-smoking programs. Major determinants for smoking included stress,[20] cravings and pleasure,[21] mental illness such as anxiety or depression,[22] use of alcohol or other drugs,[5] physical abuse,[23] less spirituality,[23] and young age of smoking initiation.[24] Factors that were deterrents for cessation included smoking menthol cigarettes,[25,26] smoking within 30 minutes of waking or smoking 20 or more cigarettes daily,[27] internal locus of control (LOC) for smoking and external LOC for stress,[28] and low socio-economic measures, e.g., low financial resources and lack of stable housing.[29] According to authoritative research synthesis reports by the Guide to Community Preventive Services Task Force and the Cochrane Collaboration[30,31] several smoking cessation interventions have scientifically credible evidence of effectiveness. The Cochrane Collaboration reported that supportive, cognitive-behavioral interventions (face-to-face or by phone) are effective and work as well or better than nicotine replacement therapy (NRT) among pregnant women.[31] Among cessation interventions at the individual and community levels, the Guide to Community Preventive Services concluded that there is sufficient evidence to recommend mass media campaigns combined with other activities and multi-component interventions that include telephone support.[30] The effectiveness and cost-effectiveness of telephone based counseling has also been demonstrated specifically for underserved pregnant smokers.[32]

Telephone interviews with national experts

In addition to reviewing the published literature, the planning team gained insight

on promising interventions by interviewing 11 national experts in smoking prevention and/or cessation, particularly cessation among minority women. The interviews were semi-structured and administered over the telephone. The experts endorsed approaches including tailored modification of the Five A's approach (Ask, Advise, Assess, Assist, Arrange)[33] for clinical health service providers, home visiting programs, nurse telephone interventions, motivational incentives, and nicotine replacement therapy in combination with cognitive behavioral therapy. One expert the team interviewed indicated that his research group had found motivational interviewing to be ineffective among smokers already motivated to quit, and pregnant women are known to be motivated to quit. The experts advised utilizing real success stories and personalized message sources. They also cited evidence that mass media messages that focus on negative emotions and consequences of smoking are more effective than humorous ads.

Focus groups

To inform development and/or selection of elements of a campaign that would target smoking, 5 focus groups (N=22; mode number of participants per group = 4) with questions informed by the Theory of Reasoned Action[34] and the 4 P's of marketing (product, price, place and promotion) were conducted with target audience members. Participants were AA women between the ages of 18-44 who were pregnant or up to 24 months postpartum. The groups were led by peer facilitators nominated by a community partner and trained by the social marketing consultant and project director.

Focus groups results suggested that smoking during pregnancy was most commonly associated with reducing stress. The baby's health was identified as the most important reason for quitting. While many network members, e.g., female family members, friends, and baby's father, were said to have strong negative opinions about her smoking, a woman's own opinion on the matter and those of her children were described as most important. The latter theme was especially significant to the planning team who had assumed that an older, AA female would be the most salient spokesperson and had initially called the project *Grandma Says*.

Education and support groups were endorsed as quitting aids, but the women did not think such services were offered in Richmond. Recommendations for information channels for obtaining health information were collected; these included media placements.

Secret shopper

In another illustration of the iterative nature of the social marketing planning process, the availability of an undergraduate intern from the target demographic prompted a "secret shopper" study of the smoking cessation resources in the Richmond area, while consensus around the behavioral objective of the campaign was still emerging. The intern posed as a pregnant smoker as she attempted to navigate through and experience first-hand the resource feasibility of seven known smoking cessation resources in the Richmond area. She reported that two of the resources were expensive (starting at $45 per session), two were no longer

in service, and two were not user-friendly. From her perspective (which project staffing limitations did not allow us to confirm independently), one particular resource stood out -- the toll-free quitline, 1-800-QUIT-NOW, which is a protocol for pregnant smokers funded by the Virginia Department of Health. The secret shopper described the quitline counselor she spoke with as friendly yet persistent. The intern discovered that once a pregnant woman calls and indicates interest in cessation counseling services, the quitline staff takes the initiative to call her back for additional counseling sessions. The staff also mailed smoking cessation materials as additional resources.

Phase 3: Market Strategy

The steps in Phase 3 constitute the "big decisions" that will shape the outline of the campaign. They include selecting the target audience segment(s), defining the desired behavior, and selecting the intervention components.

Using a decision aid from CDCynergy-SM called the "Wizard," the planning team led the larger PHPC coalition in numerically rating a series of audience segments matched with specific behavioral objectives, e.g., women planning to become pregnant/quit smoking. Using a 10-point scale, each potential audience/behavior pair was rated on risk/prevalence, potential health impact, behavior modification feasibility, resource feasibility, and political feasibility. Some of the potential audience groups considered were pregnant women, pre-conception or inter-conception women, family members, male partners, and prenatal care providers. The behaviors considered included not starting to smoke, smoking cessation, calling the quitline, avoiding secondary smoke, telling others to quit or call the quitline, and consistent use of the Five A's method. At the completion of the rating process, the "Wizard" sums ratings and rank orders the alternative segment/behavior dyads. The highest rated pair was currently pregnant women/call the tobacco user quitline. Although there was some regret about alternatives not chosen, the coalition expressed satisfaction with the decision about the target audience and the "call to action." At this point, the "My Model" feature of CDCynergy-SM (see *Table 3*, next page) was partially completed. Details about the intervention components were fleshed out during Phase 4 planning.

Table 3. My Model, Taken from CDCynergy-SM

Target Audience	**In order to help this specific target audience:** • Pregnant African American women in the Richmond, VA area who smoke (especially those in high-risk zip codes)
Behavior Change	**Do this specific behavior:** • Call 1-800-QUIT-NOW for free smoking cessation telephone counseling • (secondary) Tell friends who smoke to call
Exchange/ Benefits	**We will offer these benefits that the audience wants:** • Protection of their babies' health • Evidence-based help and interpersonal support for quitting smoking • Tips about stress relief • A little substitute treat
Strategy	**And lower these barriers, address these 'Ps':** • Reduce the barrier of lack of awareness of cessation services (Promotion) • Ensure that the services are tailored for pregnant women (Product/Price) • Offer ready, adequate service availability and address any lack of telephone access (Product/Place/Price) • Use targeted mass media to maximize exposure to prevention messages (Promotion) • Reinforce the prevention messages interpersonally & with branded give-aways (Product, Place, Promotion)

Through these intervention activities and tactics:

Behavior Change Goals	Activites & Tactics	Program Delivery & Reach Objectives	Outcome Objectives	Resources Needed
Pregnant African American women will call 1-800-QUIT-NOW	30-second PSA on Urban Contemporary radio station	>20 impressions per woman	Significant increase in calls to the quitline	Volunteer outreach workers from partner organizations
Pregnant women will pass along the message to their friends	Billboards	>20 impressions per woman	Significant increase in calls to the quitline	Pro bono creative services
	Small media	More than 100 venues	Significant increase in calls to the quitline	Donated billboard space
	Outreach worker message delivery	5 women per each of 50 trained outreach workers	Significant increase in calls to the quitline	Support from agencies who employ outreach workers who already encounter this audiece
	Free phone forms	Distribution as needed	Significant increase in calls to the quitline	No cost
	Branded Cell-phone-shaped tins of mints, mint-flavored lip balm, magnetized picture frames, business cards, informational brochures	5 women per each of 50 trained Outreach Workers	Significant increase in calls to the quitline	Funding for radio, printing and give-away production (approximately $16,000 of program costs per year plus 1 FTE staff support)

Phase 4: Interventions

In this phase, the selected intervention evolves from a broad outline to a specific operational plan. As best practice recommendations suggest,[30,35] the team set out to employ an integrated set of channels and/or intervention components. The services of an award-winning advertising agency, Neathawk, Dubuque and Packett, were secured at a pro-bono rate. Draft message concepts and creative copy were tested with members of the target audience. A second round of copy testing occurred after revisions were made to the original creative concepts. Details of these testing steps are provided below. In the end, it was decided that the campaign would be called *One Tiny Reason to Quit* and that messages would come from a child's perspective.

Concept test surveys

Forty-two AA women (pregnant or up to 24 months postpartum), between the ages of 18-44 completed a structured, oral intercept interview. They were classified as either a current smoker or recent quitter (had smoked within the past two years). Women were asked to indicate the most compelling messages and to select preferred messages for radio and face-to-face message delivery. They were also asked to rate the clarity, salience, information value and motivational value of seven possible messages.

After two-thirds of the data had been collected, a lack of interest in the message "the call is free and easy" was apparent. To determine whether this message was redundant with the "800" in the quitline number, two questions were added for the last 13 respondents.

When asked which of four possible voices in a radio message about calling a smoking cessation counseling line would best capture their attention and motivate them to call, half of the women chose the voice of a child. A pregnant woman was the next most commonly endorsed messenger. For both questions, a female health provider was the third choice and an older female was endorsed least often.

When participants were asked whether each of seven messages about calling the quitline was clear, spoke to them, and would encourage them to call the quitline, 75% affirmed these statements. On average, however, they were most likely to agree with these descriptions when they pertained to messages promoting the benefits that calling the quitline could have for their children. A similar pattern emerged when the women were asked to rank the strength of the seven reasons for calling the quitline (see *Table 4*, next page).

Table 4. Rank Order of Strength of Campaign Messages to Call the Smoking Quitline (1=strongest to 7=weakest)

Message	Mean Score
1. Smoking risks the health of a baby	2.73
2. The child wants to live a long and healthy life and have mother around to share it	2.83
3. Quitting sets a good example for the child	3.33
4. Getting help to quit is taking care of yourself; you can't take care of your children if you don't take care of yourself	3.5
5. Quitline counseling is a good source of suggestions for stress-reduction	4.4
6. The quitline service offers a live person (counselor) to speak with	5.4
7. It is free and easy to access	5.8

All three of their top-ranked reasons to call were child-centered: (1) smoking risks the baby's health, (2) the child wants to live a long and healthy life and share it with his/her mother, and (3) quitting sets a good example for the child. The next two highest ranked messages focused on the woman: (4) getting help to quit is taking care of yourself; you can't take care of your children if you don't take care of yourself, and (5) quitline counseling is a good source of suggestions for stress-reduction. The lowest ranked messages concerned attributes of the quitline: (6) offers a live person to speak with and (7) is free and easy to access. Of the 13 women who were asked whether the call would be free, all but one said they thought it would be, and 10 assumed the counseling would be as well.

Second round copy testing

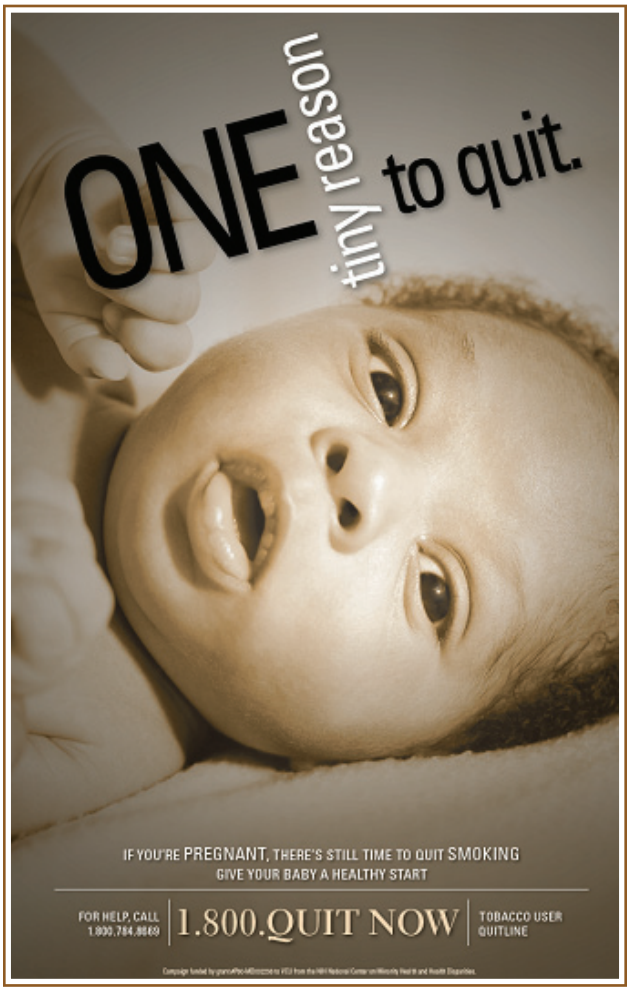
Now in a position to develop creative con-

cepts, the ad agency developed three potential radio spots and several print options. A convenience sample of women recruited from area clinics and social service waiting rooms provided feedback on the options and clear favorites emerged. Some of the campaign planners had different preferences, but became reconciled to following the wisdom of the audience representatives once the photo in the option preferred by women in the clinic had been modified a bit.

Final strategy

The campaign took a two-pronged "military" approach with mass media (billboards, radio ads, bus ads, print ads) for "air cover" and outreach workers trained to deliver campaign messages face-to-face serving as the "boots on the ground." Outreach workers were recruited from several organizational members of the PHPC that serve pregnant women in the City of Richmond. Radio ads were placed on the station most frequently endorsed in the focus groups and rated highest by Arbitron for our target audience. See *Picture 1* for the final creative copy.

Picture 1. Final Creative Copy



Phase 5: Evaluation

Phase 5 of CDCynergy-SM focused on planning the campaign evaluation. Recommended steps include listing key evaluation questions, selecting data gathering methods to answer the evaluation questions, and determining how the data should be analyzed.

For the *One Tiny Reason to Quit* campaign, the major evaluation question was whether the number of calls to the cessation counseling line would increase significantly during the three-month campaign period. Calls are tallied routinely by Free & Clear, Inc., the counseling service vendor. Information about caller demographics and how the caller learned about the quitline, e.g., on the radio or from a friend, is also collected. Through a special arrangement with the VDH, which funds the quitline services available to Virginia residents, Free & Clear, Inc. counselors also asked callers if they had seen or heard the slogan "*One Tiny Reason to Quit*." These data are being made available to our campaign team later for the outcome evaluation. The number of calls made by pregnant women from the intervention area during the three-month campaign will be compared to the number of calls from pregnant women: (1) in the rest of the state during that period, (2) the three months before and the three months after the campaign, and (3) the same three months the previous year to control for seasonal variation in calls, e.g., lower rates during summer vacation.

There is evidence, however, that the number of actual calls to a quitline underestimates quitline promotion campaign effects.[36] A population-based survey of the target area would be necessary to estimate the degree to which the campaign changed smoking norms and/or prompted spontaneous quitting or quit attempts, intentions to quit, or advising others to call or quit. Although several avenues for funding such a survey were pursued, the campaign launch schedule was fixed and allowed insufficient lead time to obtain the necessary funds.

In lieu of random sample survey data, a small number of intercept interviews will be collected with a convenience sample of pregnant women in clinic waiting rooms. Outreach workers who were trained to deliver campaign messages face-to-face will also be interviewed about their impressions of campaign effectiveness and their suggestions for future improvement and extension of the campaign.

Phase 6: Implementation

The *One Tiny Reason to Quit* campaign launched on June 17, 2009 with a press conference, held jointly between VCU and the Richmond Healthy Start Initiative, a key community partner and PHPC member.

Picture 2. Campaign Launch Press Conference

Picture 3. Keynote Speakers for the Press Conference

Picture 4. Billboard

Radio ads, billboards, and bus ads ran through the end of September 2009.

Fifty-two outreach workers were trained to deliver campaign messages and were equipped with posters and enough branded "give-away" products for six women from the target audience. The "give-away" products included mint-flavored lip balms (because most smokers in the target audience smoke menthol cigarettes), refrigerator magnet picture frames (for ultrasound pictures and eventually for pictures of the baby), brochures about the benefits of smoking cessation for pregnant women, and a tin of mints in the shape of a cell phone. These items were all inscribed with the campaign logo and quit-line phone number (see *Picture 5*); replacement materials were available upon request throughout the duration of the campaign. In addition, the nursing staff at the local health department OB/GYN clinic distributed campaign "give-away" products to patients who self-identified as current smokers. Outreach workers kept track of their contacts with a customized tally sheet and reported number of contacts to the program coordinator.

Picture 5. Outreach Worker Tote Bag

Process Evaluation

Based on the outreach worker tracking card data, there were 43 face-to-face contacts with pregnant, smoking women. Approximately 145 copies of the poster were displayed in community venues likely to be frequented by target audience members, e.g., laundromats, grocery stores, housing developments, OB clinic waiting rooms. However, when interviewed after the campaign, outreach workers reported speaking to many more women and failing to report these encounters by means of tracking cards.

The total number of media impressions (radio, print and billboards) for the campaign was estimated to be near 17 million (see *Table 5*, next page). The team does not have data to estimate the number of impressions per target audience member with a high degree of accuracy, but it is believed to be a mid-range double digit figure. One strategy yielded an estimate of 36 impressions per target audience member. This procedure started with rounding the gross media impressions down to the nearest million and then dividing that number in half because (a) the original total covered a 5-month period that included the two months after the campaign officially ended during which billboards and posters remained up, and (b) the leading local newspaper and the billboards on major streets reach a general audience, while only 31% of the Richmond metro area population is African American. Next, the team used 2000 U.S. Census data to determine that there are 225,097 African Americans in Richmond City and the adjacent suburban counties of Henrico and Chesterfield. We assumed that pregnant women had the same number of opportunities for media exposure as other African Americans in Richmond. Thus, we divided the number of impressions by the number of African Americans (8,000,000/225,097 = 35.54)

Preliminary Outcome Evaluation Results

Preliminary analyses suggested that there was a significant increase in calls to the quitline from pregnant women in the intervention area, at least during the first month of the campaign. The point of comparison was the same month last year. The number of calls from other kinds of callers did not increase during that period (June 2008 vs. June 2009).

Table 5. Media Impressions

			June			July				Aug					Sep				Oct		
MEDIA	**AD UNIT**	**IMPRESSIONS[a]**	15	22	29	6	13	20	27	3	10	17	24	31	7	14	21	28	5	12	19
Print																					
Richmond Times-Dispatch	1/2 page 4C	462,500													13						
Richmond Free Press	1/4 page 4C	150,000													10						
Richmond Voice	1/2 page 4C	110,000													9						
Radio																					
WBTJFM (The Beat)		2,186,500		22 -5				20 -2					24 -6				21 -4				
Billboards																					
Lamar	516 W Grace St. F/E Bottom #2	237,888																			
	402 W Brookland Pk Blvd F/W #3	220,255																			
	3505 Jeff Davis #3 F/S	2,207,401																			
	S/E Corner Hull & McGuire #4 F/W	1,477,497																			
	N/S Midlothian W/O Chippenham F/W #2	4,111,107																			
	W/S Westwood S/O Hamilton #1 F/S	385,728																			
	Commerce Rd & Porter St #1 F/S	1,204,049																			
	502 Hull St #2 F/W	705,376																			
	W/S Jeff Davis N/O Chippenham F/S #1	2,568,762																			
	1600 Broad Rock Rd #2 F/N	929,432																			
Grand Total Media		16,956,495																			

a. Vendor Estimates via Neathawk Dubuque & Packett

Discussion

Utilizing the social marketing version of CDCynergy-SM to structure the intervention planning process resulted in firm grounding of each planning step. What began as a daunting charge to impact infant mortality became the feasible task of encouraging pregnant women who smoke to call 1-800-QUIT-NOW. Moreover, the evolution of the campaign slogan from *Grandma Says* to *One Tiny Reason to Quit* paralleled the development of a social marketing program development process.

Strengths and Limitations

The success of this collaborative effort was at least partly a function of the maturity of the coalition. It was unnecessary for coalition members to spend time getting to know each other and developing trust. Many of the individuals involved had worked together for a number of years and could get to work immediately on campaign design and implementation.

Another strength was that the promoted intervention, 1-800-QUIT-NOW, is an evidence-based smoking cessation service with well-established procedures and sufficient capacity to meet the level of demand that the campaign was expected to create. The team could not have established a new smoking cessation service within the desired timeframe and within the project's budget.

The team was also the fortunate beneficiaries of unexpected resources which resulted in a broader campaign reach. These included the donation of free ad space inside city buses. Our bus posters not only increased exposure during our campaign, but also will remain posted until they are replaced by paid advertisements. In addition, a graduate student intern had worked locally in marketing and helped purchase radio advertising at a reduced rate and arranged for pro bono services from our ad agency.

The campaign faced limitations, which may offer lessons for future research and programs. It was well-known that many members of the target audience lack land line telephone connections; our outreach workers had forms for free cell phones and phone service for Medicaid-eligible women who lacked services. However, the team was unaware that, due to the increased use of text messaging, some cell phones have only full QWERTY keypads, in lieu of traditional phone keypads. The traditional keypad is necessary to decode a "phoneword" like 1-800-QUIT-NOW. To combat this, all printed materials (with the exception of billboards) included both the "phoneword" and the numeric phone digits.

As a last minute "noise" opportunity, the team created a Facebook page for the campaign (http://www.facebook.com, enter *One Tiny Reason to Quit* in search box). While the page generated a small amount of local buzz, it was not as widely accessed as

anticipated. Social marketing colleagues have suggested that Facebook pages that appear to come from organizations or corporate sources are spurned by the majority of Facebook users who use this site to connect with peers.

Outreach also was somewhat less than we expected. As Kreuter and Bernhardt[37] recently suggested, message distribution challenges are real and sizable for new campaigns. In this case, the volunteer outreach workers were enthusiastic about the program, but burdened with other priorities. The tracking system (mailed-in cards which were entered into a raffle) evidently underestimated their outreach, but the extent of the outreach was probably more limited than aimed for. The team learned that having outreach team captains in partner organizations and incentivizing outreach by eligibility for a weekly drawing for a $50 gift card did not suffice as outreach management strategies.

Concluding Comments

One Tiny Reason to Quit is already being replicated in southern Virginia and has garnered national interest. Since it was based on extensive local formative research, the degree to which it is exportable is unknown. If final evaluation results are positive and the program is replicated elsewhere, questions about the process of disseminating the new evidence-based model of maternal smoking cessation could be addressed as the program is adopted and adapted.

The experience of the *One Tiny Reason to Quit* campaign planning process supports the claim that CDCynergy-SM can be used by a coalition of academics, service providers, and target audience representatives. Many previous examples of community-based research involved community members only after the health problem and intervention strategy were identified. By contrast, our community partners were involved from the very outset. Considering its modest cost, acceptability to service providers, and preliminary evidence of effectiveness, the *One Tiny Reason to Quit* was a successful strategy for addressing an important health issue.

References

1. MacDorman MF, Matthews TJ. The challenge of infant mortality; have we reached a plateau? *Public Health Rep.* 2009a;124:670-681.

2. MacDorman MF, Matthews TJ. Behind the international rankings of infant mortality: how the United States compares with Europe. National Center for Health Statistics; 2009b;23:1-8.

3. Shiao P, Andrews C, Helmreich R. Maternal race/ethnicity and predictors of pregnancy and infant outcomes. *Biol Res for Nurs.* 2005;7:55-66.

4. Sparks PJ, McLaughlin DK, Stokes CS. Differential neonatal and post neonatal infant mortality rates across US counties: the role of socioeconomic conditions and rurality. *J Rural Health*; 2009;25:332-341.

5. Visscher WA, Feder M, Burns AM, Brady TM, Bray RM. The impact of smoking and other substance use by urban women on the birthweight of their infants. *Substance Use and Misuse*; 2003;38:1063-1093.

6. Ballard P, Radley A. Give it up for baby: a smoking cessation intervention for pregnant women in Scotland. *Cases in Public Health Communication & Marketing*; 2009;3:147-160. www.casesjournal.org/volume3. Accessed on: June 24, 2010.

7. Masho S, Chapman D, Wenner M, Rives M, Bradford J. Fetal and infant mortality in Richmond: Perinatal periods of risk analysis. Richmond Healthy Start Initiative; 2007.

8. Center for Disease Control and Prevention. FastStats 2006. http://www.cdc.gov/nchs/fastats/infant_health.htm. Accessed on: June 24, 2010.

9. Virginia Department of Health, Division of Health Statistics, infant death data; 2007.

10. Center for Disease Control and Prevention. Infant mortality rates for ten leading causes of infant death, United States 2005. *MMWR Weekly*; 2005;42:1115.

11. Center for Disease Control and Prevention, Office on Smoking and Health, National Center for Chronic Disease Prevention and Health Promotion. U.S. Surgeon General's report 2001: tobacco use and reproductive outcomes. http://www.cdc.gov/tobacco/data_statistics/sgr/2001/highlights/ouctomes/index.htm . Accessed on: June 24, 2010.

12. Virginia Department of Health, Division of Health Statistics. Birth certificate data, 2006.

13. Center for Disease Control and Prevention. Trends in smoking before, during and after pregnancy: pregnancy risk assessment monitoring systems (PRAMS), United States, 31 Sites, 2000-2005. *MMWR Weekly*; 2009;58:1-29.

14. Centers for Disease Control and Prevention. Smoking-attributable mortality, morbidity and economic costs (SAMMEC). http://apps.nccd.cdc.gov/sammec/. Accessed on: June 24, 2010.

15. Salihu H, Aliyu M, Pierre-Louis B, Alexander G. Levels of excess infant deaths attributable to maternal smoking during pregnancy in the United States. *Matern Child Health J.* 2003;7:219-227.

16. Lincoln R. Smoking and reproduction. *Fam Plann Perspect.* 1986;18:79-84.

17. Guillory VJ, Cai J, Hoff GL. Secular trends in excess fetal and infant mortality using perinatal periods of risk analysis. *J Natl Med Assoc.* 2008; 12:1450-1456.

18. Fridinger F, Kirby S. The "Doublemint" factor: issues and challenges in marketing nutrition and physical activity behaviors in one program. *Social Marketing Quarterly*; 2002;4:1-8.

19. Saitz, Svikis, D'Onofrio, Kraemer, Perl H. Challenges applying alcohol brief intervention in diverse practice settings: populations, outcomes, and costs. *Alcohol Clin Exp Res.* 2006;30:332-338.

20. Nelson DB, Grisso JA, Joffe MM, et al. Does stress influence early pregnancy loss? *Annals of Epidemio*l. 2003;13:223-229.

21. Ahluwalia JS, Resnicow K, Clark WS. Knowledge about smoking, reasons for smoking, and reasons for wishing to quit in inner-city African Americans. *Ethn Dis.* 1998;8:385-393.

22. Okah FA, Mundy DC, Sheehan M, Derman RJ. Role of mental illness in drug use by urban pregnant heavy smokers. *Am J Perinatol.* 2004;21:299-304.

23. Jesse D, Graham M, Swanson M. Psychosocial and spiritual factors associated with smoking and substance use during pregnancy in African American and White low-income women. *J Obstet Gynecol Neonatal Nurs.* 2006;35:68-77.

24. Cornelius MD, Geva D, Day NL, Cornelius JR, Taylor PM. Patterns and covariates of tobacco use in a recent sample of pregnant teenagers. *J Adolesc Health.* 1994;15:528-535.

25. Savitz DA, Dole N, Terry JW (Jr.), Zhou H, Thorp JM (Jr). Smoking and pregnancy outcomes among African-American and white women in central North Carolina. *Epidemiology.* 2001;12;636-642.

26. Okuyemi KS, Ahluwalia JS, Ebersole-Robinson M, et al. Does menthol attenuate the effect of bupropion among African American smokers? *Addiction*. 2003;10:1387-1393.

27. Fagan P, Augustson E, Backinger CL, et al. Quit attempts and intention to quit cigarette smoking among young adults in the United States. *Am J Public Health*. 2007;97:1412-1420. Epub 2007 Jun 28.

28. Pletsch PK, Morgan S, Pieper AF. Context and beliefs about smoking and smoking cessation. *Am J Matern Child Nurs*. 2003;28:320-325.

29. DiClemente CC, Dolan-Mullen P, Windsor RA. The process of pregnancy smoking cessation: implications for interventions. *Tob Control*. 2000;9 Suppl 3:III16-21.

30. Guide to Community Preventive Services. Increasing tobacco use cessation. 2010. www.thecommunityguide.org/tobacco/cessation/index.html. Accessed June 17, 2010.

31. Lumley J, Oliver SS, Chamberlain C, Oakley L. Interventions for promoting smoking cessation during pregnancy (Review). The Cochrane Library. John Wiley & Sons; 2008(2).

32. Parker DR, Windsor RA, Roberts MB. Feasibility, cost, and cost-effectiveness of a telephone-based motivational intervention for underserved pregnant smokers. *Nicotine Tob Res*. 2007:10:1043-1051.

33. Fiore MC, Bailey WC, Cohen SJ, et al. *Treating Tobacco Use and Dependence*. Quick Reference Guide for Clinicians. Rockville, MD: U.S. Department of Health and Human Services. Public Health Service. October 2000.

34. Ajzen I, Fishbein M. *Understanding attitudes and predicting social behavior*. Englewood Cliffs, NJ: Prentice-Hall; 1980.

35. Hornik RC. (ed) *Public Health Communication Effectiveness: Evidence of Effectiveness*. Mahwah, NJ: Lawrence Erlbaum; 2002.

36. Ossip-Klein DJ, Giovino GA, Meghahed N, et al. Effects of a smoker's hotline: results of a 10-county self-help trial. *Journal of Consulting and Clinical Psychology* 1991;59(2),325-332.

37. Kreuter MW, Bernhardt JM. Reframing the dissemination challenge: A marketing and distribution perspective. *Am J Public Health* 2009;99:123-127.

Author Information

Allison L. Sepulveda, M.A., is a research manager in the Institute for Drug and Alcohol Studies at Virginia Commonwealth University (VCU). She is a behavioral research coordinator with a focus on infant mortality, substance use and health disparities.

Diane B. Wilson, Ed.D., is an associate professor in the Department of Internal Medicine and the Massey Cancer Center at VCU School of Medicine. She is a public health research investigator with a focus on primary prevention interventions.

Sheryl L. Garland, M.H.A., is the Vice President of the Department of Community Outreach at the Virginia Commonwealth University Health System, and the Administrative Director for the Virginia Commonwealth University Center on Health Disparities. She is a health system administrator who specializes in the development and implementation of partnerships between an academic medical center and community organizations and providers.

Susan E. Dubuque, M.Ed., is the president of Neathawk Dubuque & Packett, an advertising and marketing firm based in Richmond, VA, that specializes in the healthcare industry. She is also an associate professor for VCU's School of Healthcare Administration.

Rose Stith Singleton, M.Ed. is the project director of the federally funded Richmond Healthy Start Initiative, a program designed to reduce infant mortality and eliminate racial and ethnic disparities in birth outcomes. She serves on numerous state and local boards addressing family health and medical needs.

May G. Kennedy, Ph.D., M.P.H., is an associate professor and director of graduate studies in the Social and Behavioral Health Department of the Virginia Commonwealth University School of Medicine. Prior to 2005, she served as a behavioral scientist at The Center for Disease Control and Prevention (CDC) where she specialized in social marketing and evaluation and at the U.S. House of Representatives where she worked on health issues concerning women, adolescents and children.