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Developing and Testing the Detén El Zika Campaign in Puerto Rico

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Abstract

Responding to an emerging health threat often requires rapid deployment of behavior change communication. Health communication best practices include developing and testing draft messages and materials to ensure that they resonate with and inspire priority groups to act. However, when faced with an emergency health threat, the timeline for these activities can be compressed from months to weeks. This article discusses the rapid development and implementation of a Zika virus prevention campaign for pregnant women in Puerto Rico. The goal of the campaign was to increase knowledge among and motivate pregnant women, their partners and family members, and the community to follow Zika virus prevention recommendations. The steps in campaign development include environmental scanning, concept development and testing, and message testing to ensure development of campaign materials that resonated with and were well-received by key audience groups. The materials adhere to principles of behavior change communication, and offer our insights for development of future campaigns when under time constraints.

On May 7, 2015, the Pan American Health Organization issued an alert regarding the first confirmed Zika virus infections in Brazil (PAHO & WHO, 2015). By July 2015, Brazil reported an association between Zika virus infections and neurological disorders, primarily cases of Guillain-Barre syndrome. In October 2015, Brazil noted a spike in the number of cases of microcephaly, a congenital condition associated with incomplete brain development among newborns. Within a year, the virus spread rapidly throughout several countries and territories, including the Commonwealth of Puerto Rico and U.S. Virgin Islands. By February 2016, WHO declared Zika virus an international public health emergency and

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predicted that as many as 4 million people could be infected by the end of 2017 (Nickel & Grover, 2016).

Zika virus, first identified in Uganda in 1947 (loos et al., 2014), is a flavivirus transmitted primarily by infected *Aedes* species mosquitos and is closely related to yellow fever, dengue, and West Nile virus. Zika virus infection during any trimester of pregnancy can cause microcephaly, as well as other congenital disabilities, such as impaired growth, and other central nervous systems problems (Rasmussen, Jamieson, Honein, & Petersen, 2016; WHO, 2016). In December 2015, the Puerto Rico Department of Health (PRDH) reported their first locally acquired case of Zika virus. Shortly afterward, on January 22, 2016, the Centers for Disease Control and Prevention (CDC) activated its Emergency Operations Center to respond to outbreaks of Zika virus (Adams et al., 2016) throughout the Americas including Puerto Rico, the U.S. Virgin Islands, and American Samoa.

Puerto Rico, at the time of the Zika virus outbreak, was facing many challenges, such as a financial crisis (in which the island was approximately 72 billion dollars in debt), cuts to healthcare, increased taxes, and increases in unemployment rates (Block, 2017), while also entering an election season. In addition to the socioeconomic context, the public health response was complicated by mistrust of vector control strategies and issue fatigue, because vector-borne diseases such as chikungunya and dengue are endemic to Puerto Rico. In combination, these factors posed challenges to a timely public health response to Zika virus and influenced the island's responsiveness to engaging Zika virus prevention behaviors.

Because Puerto Rico had the highest number of laboratory-confirmed cases of Zika virus in the United States and its territories and high rates of unintended and adolescent pregnancies, the need for the health communication campaign was dire (CDC, 2017; Tepper et al., 2016). In response, the National Foundation for the Centers for Disease Control and Prevention, Inc., (CDC Foundation)—a 501 (c) (3) public charity established by Congress to forge effective partnerships between CDC and philanthropies, corporations, organizations and individuals—activated its emergency response funds on February 10, 2016, to assist with the response to the Zika virus outbreak. The funds raised through the CDC Foundation allowed CDC, working in collaboration with PRDH, to provide technical assistance to outside partners to respond to the Zika virus epidemic with greater speed and flexibility.

As part of this response, the CDC Foundation contracted with RTI International in March 2016, to develop, launch, and evaluate a health communication campaign to raise awareness and promote Zika prevention behaviors among pregnant women in Puerto Rico. Through a multi-paper case study in this volume, we present the activities comprising the development, implementation, and evaluation of the *Detén el Zika* communication campaign to prevent Zika virus infection within communities and to reduce the number of pregnant women impacted by Zika infection in order to prevent birth defects.

Campaign Planning Model

Snyder (2007) defines a communication campaign as “an organized communication activity, directed at a particular population, for a particular period of time, to achieve a particular

goal” (p. s32). Four stages comprise the campaign development cycle (Figure 1). In Stage 1, campaign planners identify the goal and primary and secondary target audiences for the campaign and develop a plan for reaching these audiences. In Stage 2, campaign concepts, messages and materials are developed and tested with target audiences. Insights learned from testing guide revisions to campaign concepts, messages, and materials. In Stage 3, the campaign developers launch and implement the campaign using the strategies and tactics detailed in the campaign plan developed in Stage 1. Finally, in Stage 4, a process and outcome evaluation of the campaign is implemented, and results are used to refine campaign strategies and messages in the next phase of the campaign, should there be one, thus creating a continuous feedback cycle of planning, developing and pretesting, implementing, and evaluating.

The purpose of this first paper, which is one of three papers in the case study, is to describe the methods we used in Stage 1 (Planning and Strategy Development) and Stage 2 (Developing and Pretesting Concepts, Messages, and Materials), and how these results informed the development of a suite of materials that were used to implement the *Detén el Zika* campaign in Puerto Rico. This campaign was unique due to the dramatically compressed timeline for Stages 1 and 2. Planning and developing materials for large-scale multimedia campaigns can often take a year or more. Given the rapid spread of the epidemic and the approach of “mosquito season” in Puerto Rico, Stages 1 and 2 needed to be completed within three months. Stages 1 and 2 were then followed by an intensive 3-month campaign implementation period (Stage 3), and continued campaign support.

Campaign Development

The campaign development process, in its early phase, was based on formative research conducted with women receiving services from the Women, Infants, and Children (WIC) program that found that pregnant women did not want the sole responsibility for protecting their developing babies from the risks posed by the Zika virus (Prue, Perez, & Soto-Gomez, 2016). Instead, pregnant women wanted support from their partners, family members, friends, and those in their immediate communities. Consequently, these groups became the secondary target audiences for the campaign.

Building on the insights gleaned from the (Becker, 1974) research with women attending WIC clinics, we planned a combination of formative research and concept and message testing activities with our primary and second audiences. Given our rapid development timeline, we undertook the following activities to develop the campaign: (1) conduct an environmental scan, (2) develop and test campaign concepts, and (3) refine and test campaign messages and design.

These activities were guided by a conceptual framework for the campaign that includes constructs from the Health Belief Model (Becker, 1974), the Theory of Planned Behavior (Ajzen, 1985), and the Precaution Adoption Process Model (Weinstein, 1988) (Figure 2). In this framework, level of knowledge would affect a set of constructs that in other health behavior theories are precursors to behavior change.

These specific constructs were selected based on the formative findings from research conducted previously with Puerto Rican women about Zika virus (Prue et al., 2016). These findings showed that women had difficulty differentiating Zika virus from other common mosquito-borne illnesses in Puerto Rico, including dengue virus and chikungunya virus. Given this finding, incorporating concepts such as perceived severity and perceived susceptibility from the Health Belief Model was important.

Previous research also pointed out that some of the Zika prevention behaviors such as wearing long sleeves or staying in air conditioning were considered by women to be unrealistic given the hot temperature in Puerto Rico and that most homes do not have air conditioning. Consequently, our framework also included perceived barriers to practicing the recommended behaviors to prevent Zika virus infection. Also, some women were unsure of the need for and effectiveness of recommended prevention behaviors, such as using condoms and applying permethrin spray (Prue et al., 2016); consequently, we included outcome expectancies in our framework.

Self-efficacy also was important to include in the framework because even if women know that a particular behavior is important, such as using condoms, they may not have the confidence to negotiate using the behavior with a sexual partner who does not show any symptoms of being infected with the Zika virus. Finally, we included normative beliefs and motivation in the framework because we suspected it would be challenging to increase motivation and change normative beliefs around the need to take action to prevent Zika infection, because in the minds of some Puerto Ricans, Zika was yet just another mosquito-borne illness.

We describe each of the campaign development activities in greater detail, as well as the final campaign implementation.

Environmental Scan

An environmental scan involves rapidly collecting information through a variety of methods to inform campaign development (Rowel, Moore, Nowrojee, Memiah, & Bronner, 2005). Unlike literature reviews, which survey published literature, environmental scans rely primarily on publicly available information (Porterfield et al., 2012; Rowel et al., 2005). Due to the compressed timeline for developing the campaign, an environmental scan was better suited to give us a quick snapshot of the Zika situation in Puerto Rico. Our goals for the scan included (1) developing a better understanding of the target audiences and their experiences and needs regarding Zika virus, (2) determining any current Zika prevention activities and messaging, and (3) identifying possible communication channels and resources to support the campaign. To help guide the scan, we employed the Political, Economic, Social, Technology, Legal, and Environment model (known as PESTLE), which encourages thinking broadly about the factors that could impact campaign planning and success.

We collected and reviewed information from a wide range of sources, including (1) demographics information of Puerto Rico and our priority audiences, (2) research literature on behavioral and socio-cultural factors relating to the response to dengue and other vector-borne diseases in Puerto Rico, (3) findings from qualitative research already conducted by

CDC staff with pregnant women in Puerto Rico, (4) available Zika educational materials from PRDH, (5) keyword scans from search engines (e.g., Google) and public health sites for information on Zika virus in Puerto Rico, and (6) a summary of posts from Zika-related social media channels and discussions in Puerto Rico. For the search-related activities, we identified a preliminary list of Zika-related search terms, which we augmented with information on web search trends, and limited our search to information from 2012 to the April of 2017.

Results of the Environmental Scan

Table 1 shows some of the key findings from the environmental scanning activities.

Concept Development and Testing—Having developed an understanding of the communication landscape, including messages and resources currently available to the campaign’s audience, our next step was to develop and test concepts for the campaign. Each campaign concept represented a unifying description of how the different elements of the campaign (e.g., audience, messaging, visuals, tone) would potentially work together to achieve the campaign’s communication goals or desired behaviors. As a starting place in developing campaign concepts, our team developed a creative brief outlining the campaign’s audiences, objectives, including desired protective behaviors, key messaging requirements, and potential communication channels and materials, as well as key findings identified in the environmental scan.

With the parameters of the creative brief in mind, our team brainstormed approximately 20 concepts for the campaign. In this initial stage, the concepts were little more than outlines, each identifying an intended audience (e.g., pregnant women, partners, community members), a desired emotion, sample message statement, and an image to represent the potential feeling associated with each message. Development of these initial concepts also involved the explicit incorporation of one or more constructs from health behavior theory, such as audience motivation (Andreasen, 2002); attitude, beliefs, and norms toward prevention behaviors (Ajzen, 2002); self-efficacy, and perceived behavioral control (Bandura, 1998; Maibach, Flora, & Nass, 1991); response efficacy (Beck & Lund, 1981); and social support (Kaplan, Cassel, & Gore, 1977).

To reduce the initial set of 20 concepts to a number reasonable for audience testing, we worked with members of CDC’s Zika communication team to combine, refine, and reduce the draft concepts. Key to this process was considering the existing formative research with pregnant women in Puerto Rico on preventing Zika and what it suggested about motivators and barriers to pregnant women adopting Zika preventive behaviors, as well as what had been learned about the Zika situation Puerto Rico from the environmental scan. For example, social media posts and editorials questioning the seriousness of the Zika virus threat in Puerto Rico suggested the need to test a concept that aimed to increase pregnant women’s perceived risk about the threat of Zika virus. We theorized the following conditions as important to motivating preventive behaviors:

- Increasing awareness of Zika virus and distinguishing it from other vector-borne diseases,

- Improving understanding of the risks during pregnancy, and
- Increasing self-efficacy related to preventive behaviors.

Through this process, we reduced the number of concepts for testing to four. Among this set of four concepts, two of the final concepts shared a theoretical driver and similar copy, although they featured different headlines, taglines, and image. The inclusion of these two similar concepts allowed testing particular nuances of one messaging approach; we would alternate showing one or the other of these concepts in testing. Table 2a-d provides an overview of the four concepts developed for testing.

To test the concepts with audiences, we placed each of the four concepts on a poster-sized board, with each board displaying a concept title, supporting copy, tagline, and a representative photo or image. The presentation of concepts in this simplified form was in line with recommended practices (Lefebvre, 2013) and serves to keep the conversation at a more conceptual level. In addition to the concept boards, we also created smaller displays containing additional images and taglines to explore in relation to each concept.

We conducted the concept testing interviews at six WIC clinics in northeastern Puerto Rico, in and around the city of San Juan, and completed 82 interviews over 4 days in April 2016 with pregnant women (n = 47), partners (n = 10), and family members (n = 25). Participants (pregnant women and their family and friends) were a convenience sample of individuals presenting for services on the day the research team visited the WIC clinic. All clinic entrants were given the opportunity to participate in the research. Each interview lasted 30 to 40 minutes and was conducted in Spanish. Participants received \$15 for taking part in the interviews. RTFs Institutional Review Board reviewed all research procedures before research activities began.

In testing the concepts, we briefed participants on the purpose of the data collection activities, explored participants' awareness of the Zika virus, knowledge of protective behaviors, and sources of information on the Zika virus. Rotating the order between interviews, we then showed three concepts to each participant, eliciting feedback after they viewed each one, and asking their preferred concept at the end. We also asked about their experiences with different Zika prevention behaviors. Table 3 provides an overview of the interview process.

All of the interviews were recorded and transcribed. However, with the speed of the campaign development, in analyzing the interviews, we ended up relying primarily on the notes taken in each interview by a dedicated notetaker. Using the notes, we used a matrix approach, as advocated by Miles and Huberman (1994), to analyze the data from the concept testing interviews, whereby we created an interview question (columns) by respondent (rows) matrix and input the participant's response in the corresponding cells. This process allowed us to review and compare responses to individual questions, as well as sort by type of participant. In reviewing responses to individual questions, we also followed a constant comparative approach to first look for similarities or themes in the responses to identify outliers or differing views. We also noted substantive quotes that provide examples of views

or common ideas shared in the participant's responses. Simple descriptive statistics were used to characterize the participants (see Table 4).

Pregnant women, the campaign's primary audience, said they were most motivated to prevent Zika virus by *Zika Can Take a Bite Out of Your Life*, and *Zika Can Bring You Down*. They liked that the messaging spoke to the health of the pregnant woman and the baby. For *Zika Can Take a Bite Out*, pregnant women liked that the concept focused on the health of their baby and they identified with the image of the worried pregnant woman. While women shared generally positive feedback on messages in *Zika Can Bring You Down*, they were less comfortable with its more somber tone.

Partners, family, and friends who saw the *Zika Can Take a Bite Out of Your Life* found it to be the most personally motivating, while those who saw the *Zika Can Bring You Down* concept instead preferred *You've Got the Power to Combat Zika*. Participant liked the message of unity and strength in numbers in *You've Got the Power to Combat Zika*; all participants agreed that it would motivate the broader community the most because cleaning the environment of potential breeding grounds for mosquitoes requires a group effort.

More generally, participants recommended including images of pregnant women, babies, and the community to motivate the community to take action together, and so that pregnant women would not feel like they were facing the threat of Zika virus alone. Participants also recommended including a clear call to action in the messaging, as well as concrete information about prevention measures.

Other key information we learned from the concept testing, which echoed information shared already in CDC's formative research with pregnant women on barriers to Zika prevention, was that women were concerned about having all the burden of Zika virus prevention put on them, especially during the already stressful time of pregnancy. They suggested needing support from family and friends and their community. Also, the individuals we interviewed were interested in knowing more about how Zika virus was different than other mosquito-borne diseases in Puerto Rico, especially given emerging information at that time indicating that Zika virus could also be sexually transmitted (Oster et al., 2016).

Message Development and Testing—To apply the findings from the concept testing in developing campaign materials, we next updated the creative brief with the findings and developed a single campaign concept that would be used to guide draft messages and materials. The brief also included a brand description and draft headlines, taglines, and call to action, as well as a description of a desired visual tone and elements.

Following the findings from the concept testing, the brief emphasized a pregnant woman, with the need to protect her and her baby from the Zika virus, as the central theme in text and imagery, while also incorporating images of community and the collective aspect of Zika prevention activities. Our draft headline became, "Así Prevenimos el Zika," or "This is how we prevent Zika," while the tagline was "Hazlo por ellos" ("Do it for them"), and the call to action was "Únete" ("Join Us").

Working with a local creative firm in Puerto Rico, we developed draft campaign messages for testing, three variations of a single print ad, each featuring variations on the draft headline text, a campaign logo, with the statement “Detén El Zika” (“Stop Zika”) and tagline “Hazlo por los Niños” (“Do it for the babies”), and script of a video public service announcement (PSA) to test with the campaign audiences (see Figure 3).

To gauge receptivity to the draft materials among our campaign audience, we conducted three focus groups in San Juan with adults over the age of 18 years: a group of pregnant women (n = 11), a group of male partners (n = 9), and a group with members of the community (n = 11) (See Table 4 for participant characteristics). Participants in the focus groups were a convenience sample recruited using a marketing research firm and screened for key campaign audience characteristics (e.g. add screener info).

In all three groups, we asked participants about their basic knowledge of Zika virus prevention (e.g., What have you heard about what you can do around your home or in your community to prevent Zika?) and then explored their opinions on the campaign concept, messages, and prototype campaign materials (one PSA script, three posters, and two logos) to ensure the message and creative executions resonated with the target audience groups (e.g., What do you think is the main idea or message behind this logo? Does the ad make you think or feel differently about protecting yourself from Zika?). Bilingual staff conducted the sessions in Spanish. Focus groups lasted between 60 to 90 minutes and participants received an incentive (\$60) for traveling to and participating in a longer interview.

To analyze the data from the focus groups, we summarized reactions to the three materials tested using the same matrix method for concept testing, noting differences according to the audience. Simple descriptive statistics were used to describe participants’ characteristics. We developed recommendations from the focus group findings to revise the final campaign materials.

Message Testing Results

We received similar feedback on the draft materials from all three focus groups. There was a dislike of the overall ad design, which featured a pregnant woman applying mosquito repellent with a baby in the background. Several participants felt the pregnant woman in the ad should look happier and should not look grayed out. Reactions to the hexagonally shaped logo that communicated “Detén El Zika” (“Stop Zika”) were mixed across the groups about the tagline. Most partners felt that the tagline would be a strong motivator for taking Zika virus seriously. However, pregnant women and community members disliked the line, suggesting Zika virus is an issue that affects all people, not just children; all the pregnant women recommended removing the line. In the focus group with pregnant women, several participants also suggested that the “Stop” could be telling women to stop getting pregnant. As a result, we moved away from the stop sign imagery creatively and instead emphasized the community, which was also reflected in a revised headline “Así es como detenemos el zika” (“this is how we stop Zika”).

Most participants shared favorable opinions about the PSA script, because it emphasized a healthy pregnancy. However, all groups disliked the message to wear long sleeves for

prevention “even when it is hot.” Participants suggest the wording was condescending and pregnant woman felt the line was insensitive to pregnant women’s needs.

Final Campaign Materials

Based on the results of the message testing, we retained the core messaging from the draft materials, but revised the print ads to contain less text. We also used a simplified, softer design that featured a full-color image of a pregnant woman. We added a background image of a couple watching over a baby as recommended by male and community groups in the focus groups. We developed a new logo that used a circle of hands to represent a community of people working together. For the PSA script, we included more supportive language around prevention behavior.

Campaign messages highlighted how individuals and communities can take action to stop Zika virus and why it is important for them to be vigilant in these activities. “Why” messages were used to highlight the reasons for preventing Zika virus, with a primary focus on healthy babies. “How” messages were used to explicitly portray recommended behaviors. Ad images, for example, included a pregnant woman wearing long sleeves and applying repellent, a pregnant woman, and her partner in bed holding up a condom, community members working together to clean up and remove potential mosquito breeding areas, and a family installing screens and bed nets. By showing a variety of images of target audience members participating together for the baby, these messages sought to affect target audiences’ knowledge, attitudes, self-efficacy, and perceived norms about Zika prevention behaviors, including for more controversial behaviors like condom use. The overall tone of campaign messages was uplifting and encouraged pregnant women to protect themselves, and their partners, family, friends, and community to join efforts to reduce the spread of Zika virus.

Figure 4 shows a sample of the final suite of materials developed for the campaign, which were adapted for use across campaign channels. In creating the campaign materials, we also combined a video shoot for the PSA production with a photoshoot of the actors doing a range of Zika prevention behaviors. We also selected actors of different ages and skin tones for the video, to broaden its use with potential audiences. This gave us a suite of high-quality, custom images that shared the same look and feel to use across all the campaign materials.

The *Detén el Zika* campaign launched on June 30, 2016, coordinated with Zika Action Day events held at several locations around Puerto Rico. At a health fair, PRDH and CDC provided participants with Zika prevention educational materials, Zika counseling, Zika Prevention Kits for pregnant women, which contained items such as a bed net, mosquito spray, standing water treatment tabs, and permethrin spray, and both male and female condoms made possible via in-kind donations from CDC Foundation donors. This was supported by internet, television, radio, print, out-of-home, and online media activities over three months. After the initial implementation period, elements of the campaign, including the campaign brand, received continued support by partners, such as PRDH, who used their resources to extend the campaign.

Limitations of the Research and Development

Given the short time frame we had to develop the campaign, we were only able to conduct two rounds of testing with a total of 113 individuals, using convenience samples from only one region of Puerto Rico. Consequently, our findings are not representative of all women and their partners and family members across Puerto Rico. With more time, we would have conducted additional audience-specific research before generating the campaign concepts. More importantly, we would have undertaken additional rounds of concept, message, and materials testing to help further refine the campaign messages and products, as well as additional materials for individual audiences (e.g., pregnant women, their partners, family members), including potentially quantitative message testing. Sexual transmission of Zika virus was just being recognized as we started, and with more time, we would have developed communications to address that aspect of Zika risk. Conducting efficacy testing would have been beneficial to confirm selection of the health behavior theories used in conceptualizing the campaign concepts, something that could be accomplished through rapid quantitative testing. We also would have broadened the geographic areas where the campaign research was conducted. With the research activities that were conducted, our team applied techniques for rapid analysis, rather than implement a more formal coding process.

Given the cost of services to aggregate social media data, we performed only a limited social media scan. Typically, we would have done a more thorough scan with continued monitoring of Zika-related conversations throughout the development and implementation of the campaign. Regardless, the scan provided valuable information that allowed us to understand the public's sentiment toward Zika virus during the development of the campaign.

Despite these limitations, we believe this research demonstrates that even with very tight time constraints, formative research with target audiences can be conducted and the findings can be used to inform the development of social marketing campaigns.

Conclusions

The *Detén el Zika* campaign offered critical information to pregnant women, their partners, and communities in Puerto Rico about how to and why they should prevent the transmission of the Zika virus. We developed this campaign in just 2 months by using a flexible development process that enabled us to be fast, while still adhering to the principles and process of pretesting campaign concepts, messages, and materials to ensure the development of theoretically-grounded messaging that fit the needs of the campaign audiences.

We found that, although not the equivalent to conducting focused formative research, an environmental scan did allow us to rapidly understand the communication environment and move quickly to concept development stage. Despite the Zika virus's unique characteristics (e.g., it can be transmitted sexually and affect developing fetuses), we still were able to learn from the literature on previous community prevention efforts for other mosquito-borne illnesses. Also, in a setting like Puerto Rico where there is high social media use, listening to online conversations about Zika virus provided valuable information on people's beliefs and attitudes about the virus and its impacts on their community.

In developing and testing concepts, access to the pregnant women campaign population was also pivotal in conducting timely testing of campaign materials. Efficiently identifying locations for and partners to support intercept interviews and other testing activities—WIC clinics, in this case—should be considered an integral step in the planning process. Overall, local partnerships and collaboration, like PRDH with WIC, were and should be seen as critical to developing a timely response. Our work also was informed by the emergency response activities led by CDC, improving our understanding of the evolving response. Also, having research staff available to develop, test, and analyze results promptly, in the languages spoken by the priority groups, is also crucial.

As with all campaigns, using insights gained through the development process is important to campaign success. Audience testing allowed us to not only get feedback on draft materials and concepts, but also learn what pregnant women knew, believed, and felt about the risks from the Zika virus. This research allowed us to understand better the cultural context and social norms in which we would be trying to influence preventive behaviors.

By following the principles of good campaign planning, even while operating in an emergency response and constrained timeline, we were able to develop and test campaign messages and products that were used during the Zika epidemic in Puerto Rico for over a year. Furthermore, we believe that demonstrating a sound development process helped the campaign to garner collaborators and support that allowed for others to continue and build on it, after we had completed our original mandate for a rapid response.

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Fig. 1.
Campaigning planning model.

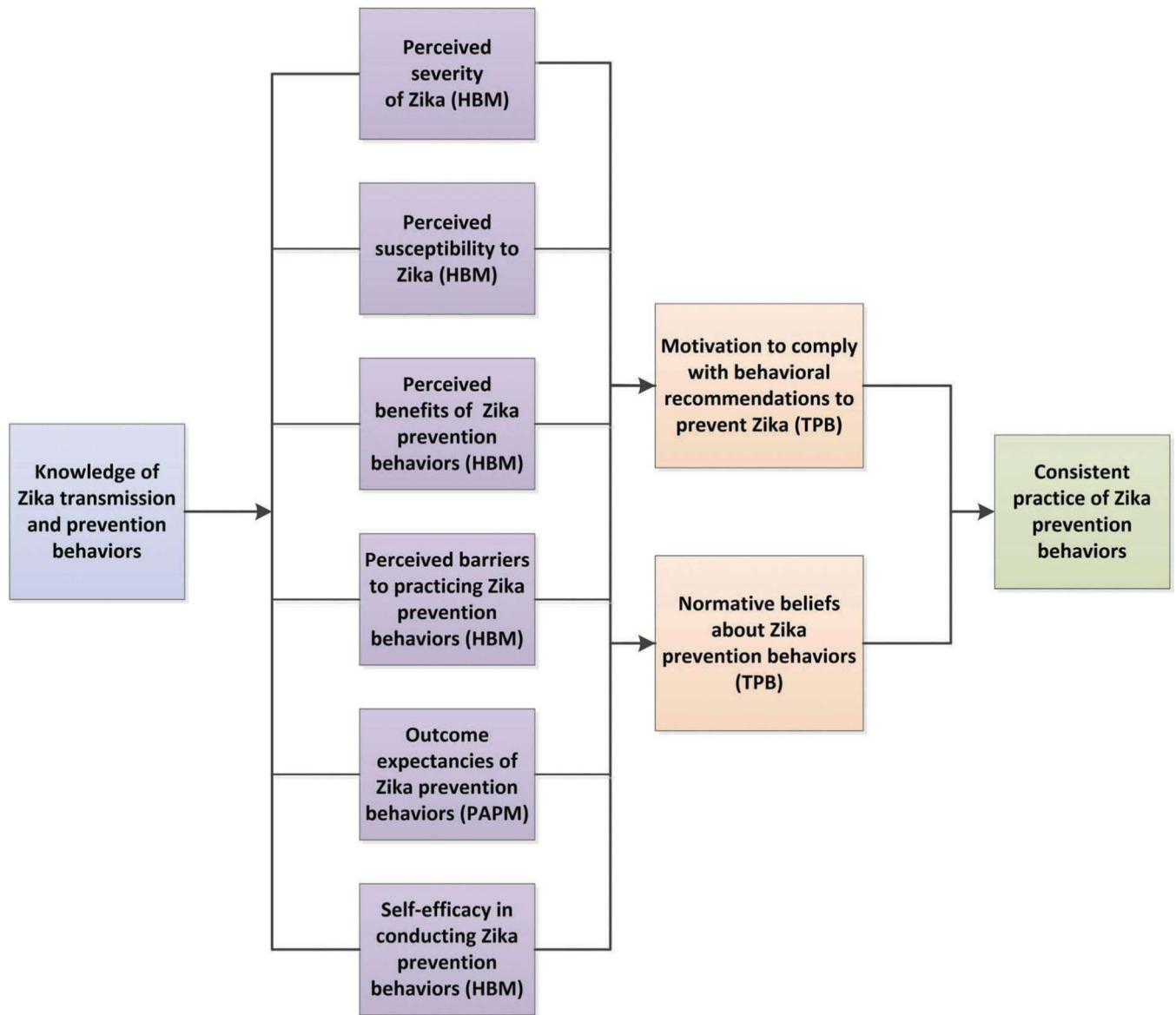


Fig. 2.
 Theoretical framework.
 Abbreviations: HBM = Health Belief Model; PAPM = Precaution Adoption Process Model;
 TPB = Theory of Planned Behavior.

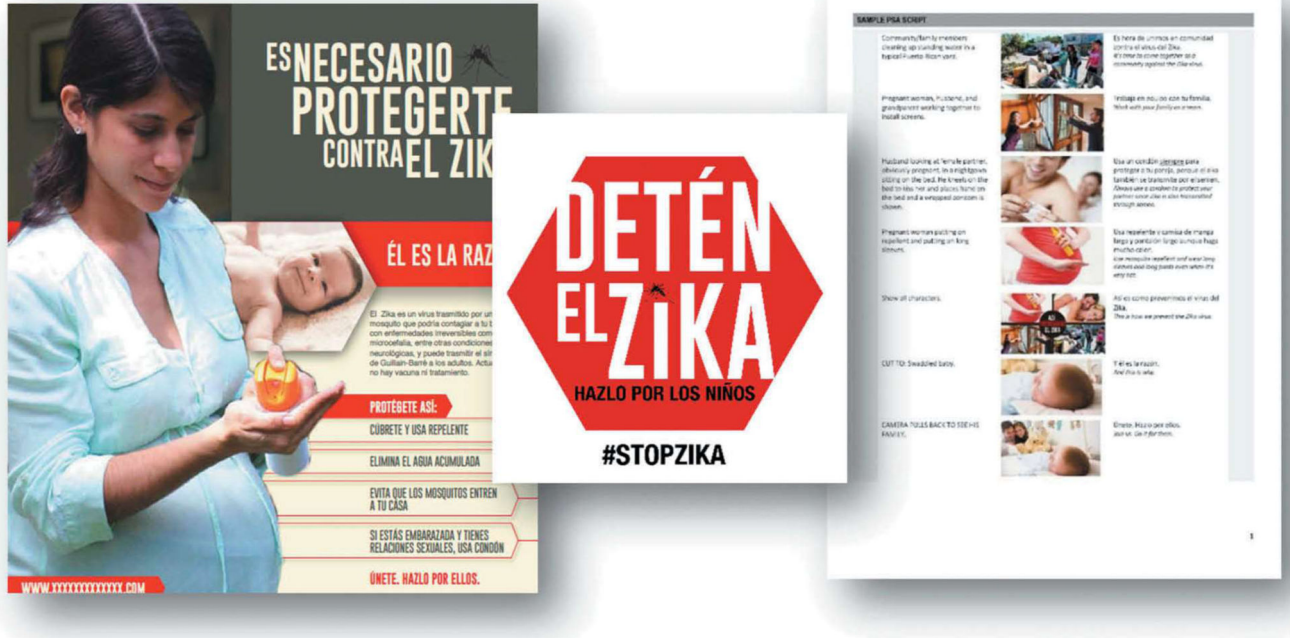


Fig. 3. Draft Campaign material for testing.



Fig. 4. Final suite of Campaign materials.

Table 1.

Key findings from the environmental scan

Informational Domain	Key Findings
Audience Information	<ul style="list-style-type: none"> • The U.S. Census Bureau estimates put the number of women of reproductive age (15 to 44 years of age) at roughly 775,000. • From the news media, audiences were learning daily about new cases of Zika virus infections, but not being provided with much information about prevention. • There was general concern that Zika virus would impact tourism, further hurting Puerto Rico's struggling economy. • CDC formative research done in Puerto Rico suggested that pregnant women were talking about Zika virus, and awareness of Zika virus was high among pregnant women. Although knowledge about transmission of the Zika virus by mosquitoes was high, recognition of its potential for sexual transmission was limited.
Zika Prevention Activities	<ul style="list-style-type: none"> • Active messaging from PRDH and a few local municipalities on Zika virus, with most messaging focusing on specific protective behaviors (e.g., application of insect repellent, wearing long sleeves), and limited private sector engagement in Zika prevention to date. • Research literature on dengue, which is similarly transmitted by mosquitoes, and its prevention efforts, suggested a public familiarity in Puerto Rico with environmental sanitation methods of prevention (e.g. community cleanup, house visits, and fumigation), as well as a general perception that prevention is a government issue (Pérez-Guerra et al., 2005; Pérez-Guerra et al., 2009).
Campaign Planning	<ul style="list-style-type: none"> • The Puerto Rico Health Insurance Administration and Puerto Rico's Women, Infants, and Children program were identified as providing services to a high percentage of the campaign's target audience. • Television and printed newspapers are important mass communication channels in Puerto Rico, including television news shows. • Facebook is the most widely used social media site in Puerto Rico, followed by Twitter, with both being used to share articles on Zika virus.

Note. CDC = Centers for Disease Control and Prevention; PRDH = Puerto Rico Department of Health.

Table 2a.

Concept testing: Don't let Zika in

Headline	<i>Don't Let Zika In</i>
Supporting Copy	<i>You can prevent Zika from entering your body, your home, and your life. When you constantly protect yourself, you can be sure that you shut out Zika. Protect yourself and your loved ones.</i>
Tagline	<i>Keep up your guard.</i>
Theoretical Driver	Encourages self- and response-efficacy
Value Proposition	Beat Zika at its own game. You have the power to stop it.

No dejes entrar al Zika

Tú puedes impedir que el Zika entre a tu cuerpo, a tu hogar y a tu vida. Al protegerte constantemente, puedes estar segura de cerrarle el paso al Zika. Protégete a ti y a los tuyos. Mantente en guardia.



Table 2b.

Concept testing: You've got the power to combat Zika

Headline	<i>You've Got the Power to Combat Zika</i>
Supporting Copy	<i>As a Puerto Rican, you can play an important role in securing a healthy, and happy future for our children. Working together, Puerto Rico has the power to overcome Zika.</i>
Tagline	<i>Working together, Puerto Rico has the power to overcome Zika.</i>
Theoretical Driver	Leverages social support and social norming
Value Proposition	Your community is here to help

Tú tienes el poder de combatir el Zika

Como puertorriqueño, tú puedes jugar un papel importante en asegurar un futuro más sano y feliz para nuestros niños. Trabajando juntos, Puerto Rico tiene el poder para vencer el Zika.



Table 2c.

Concept testing: Zika can take a bite out of your life

Headline	<i>Zika Can Take a Bite Out of Your Life</i>
Supporting Copy	<i>A simple bite from a carrier mosquito can change your life forever by affecting the health of your baby. Protect yourself and your loved ones.</i>
Tagline	<i>Don't let Zika change the course of your lives.</i>
Theoretical Driver	Positions protection and prevention behaviors as gains to avoid long-term pains
Value Proposition	You can bite back and secure your future.

El Zika te pica la vida

Una simple picada del mosquito portador del Zika puede cambiar tu vida para siempre, afectando la salud de tu bebé y su posibilidad de vivir un futuro sano y feliz. Protégete a ti misma y a los tuyos. No dejes que el Zika cambie el curso de sus vidas.



Table 2d.

Concept testing: Zika can bring you down

Headline	<i>Zika Can Bring You Down</i>
Supporting Copy	<i>A simple bite from a carrier mosquito can affect your baby's wellness and the possibility of living a healthy and happy future. Protect yourself and your loved ones.</i>
Tagline	<i>Don't let Zika change the course of your lives.</i>
Theoretical Driver	Positions protection and prevention behaviors as gains to avoid long-term pains
Value Proposition	Short term sacrifice is better than long-term loss



Table 3.

Concept testing interview process

Introduction

Step 1: Zika Virus Discussion
 Discussed with participants:
 Awareness of the Zika virus
 Knowledge of protective behaviors
 Sources of information on Zika virus

Step 2: Review of Concepts*
 Participants were asked to share:
 First impressions of the concepts
 How each concept made them feel
 What they liked and didn't like about them
 Participants also were asked to
 Identify the main message
 Determine whether the concept "spoke to them"
 State whether the concept's theme was believable and made them feel differently about protecting themselves
 Share what they would change or add to the concept
 For each concept, we shared the alternate images with participants and asked which they preferred, and which best communicated the concept's main message.

Step 3: Concept Preferences
 For the three concepts shown, we asked participants:
 Which concept was most and least motivating?
 Which concept they liked best and least?
 For the concept they liked best, we shared alternate taglines and asked:
 Which tagline was most motivating to them?
 Which tagline best communicated the concept's message?

Step 4: Prevention Behaviors
 After reviewing the concept with participants, if time permitted, we asked about:
 Experiences with the Zika prevention kits (*pregnant women only*)
 Current preventive behaviors in addressing Zika virus
 Recommendations for campaign implementation and channels

* Two of the final concepts shared a theoretical driver and similar copy, but had different headlines, taglines, and images. We alternated showing one or the other of these concepts in testing so that half of the respondents saw Zika Can Take a Bite Out of Your Life and half saw Zika Can Bring You Down.

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Table 4. Characteristics of interview (concept testing) and focus group (materials testing) participants

Testing Group	Interviews			Focus Groups		
	# Interviewed	Mean Age (SD)	Education	# in Group	Mean Age (SD)	Education
Pregnant Women	47	26 (5.7)	Less than High School	3	28 (7.1)	Less than High School
			High School	23		High School
			Some College	7		Some College
			Associate degree	5		Associate degree
			Bachelor's Degree	6		Bachelor's Degree
			Graduate Degree	3		Graduate Degree
Partners	10	28 (4.7)	Less than High School	9	30 (6.3)	Less than High School
			High School	9		High School
			Some College	1		Some College
			Associate degree			Associate degree
			Bachelor's Degree			Bachelor's Degree
			Graduate Degree			Graduate Degree
Family and Friends	25	45 (17.4)	Less than High School	1	34 (9.3)	Less than High School
			High School	11		High School
			Some College	6		Some College
			Associate degree	4		Associate degree
			Bachelor's Degree	2		Bachelor's Degree
			Graduate Degree	1		Graduate Degree