

Emerging Mosquito-Borne Diseases: Assessment of Chikungunya and Dengue-Related Knowledge, Attitudes and Practices Among Mexican-Born Residents of U.S. Border States



The Centers for Disease Control and Prevention

Team DCG: The District Communications Group & Think Now Research



Centers for Disease
Control and Prevention
National Center for Emerging and
Zoonotic Infectious Diseases

Written January 2016

Released March 2022

ACKNOWLEDGEMENTS

NCEZID Office of Health Disparities: Marian McDonald (Project Director)

Division of Global Migration and Quarantine, US-Mexico Unit: Alfonso Rodriguez-Lainz, Alina Shaw, Maureen Fonseca-Ford, Stephen H. Waterman

Division of Vector-Borne Diseases: Sue Partridge, Judy Lavelle, Amy Lockwood

ABSTRACT

The Centers for Disease Control and Prevention (CDC) anticipates imminent arrival of chikungunya along the U.S.-Mexico border. CDC plans to conduct a U.S.-Mexico border chikungunya education campaign in 2016 to inform key target audiences—namely Mexican-born residents in the four U.S.-Mexico border states—about chikungunya risk, identification and prevention. Because chikungunya is transmitted by the same mosquito as dengue, the campaign will also educate on dengue risk, identification, and prevention. This report describes the results of a project CDC commissioned to conduct focus groups to better understand the communication needs of the audience, specifically, to: (1) describe Mexican-born, U.S.-Mexico border residents' knowledge, attitudes, and practices about chikungunya and dengue, including transmission, symptoms, treatment, and prevention measures; and (2) evaluate draft Spanish-language chikungunya and dengue educational materials for cultural and linguistic appropriateness. This project

finds relatively low awareness of chikungunya compared to dengue, as well as some confusion about these diseases: some focus group participants suggested these diseases are transmitted person to person, others said mosquitoes can transmit HIV or the H1N1 virus, and most were not entirely clear about the symptoms of chikungunya or dengue. The evaluated educational materials did not convince participants to protect themselves from mosquitoes or seek medical help if they present with symptoms of the diseases. In addition, some participants were concerned Mexico had been singled out as the source of these diseases. To be more compelling, messaging must communicate the acuteness of the diseases and how severe their effect can be on family. Language must be clear, concise, and unambiguous; images should be as realistic as possible. Additionally, special care must be taken to avoid alienating the target audience.

TABLE OF CONTENTS

Introduction	4
Project Methodology.....	5
Results.....	7
Discussion	15
Conclusion	17
APPENDIX 1—Focus Group Participant Screener in English (A) and Spanish (B)	18
APPENDIX 2—Focus Group Participant Gender and Age by City.....	20
APPENDIX 3—Moderator Guide in English (A) and in Spanish (B) for Week 1	22
APPENDIX 4—Moderator Guide in English (A) and in Spanish (B) for Week 2	32
APPENDIX 5—Participant Information Sheet in English (A) and Spanish (B) for San Diego.....	46
APPENDIX 6—Participant Information Sheet in English (A) and Spanish (B) for Nogales, McAllen, El Paso and Las Cruces	50
APPENDIX 7—Evite que los mosquitos/Source Reduction Infographic	54
APPENDIX 8—¿Tiene fiebre?/Border Crossing Infographic	55
APPENDIX 9—¿Está enfermo?/Are you sick? Infographic	56
APPENDIX 10—Alternative Image of Mosquito (Week 1)	57
APPENDIX 11—Alternative Images of Mosquitoes (Week 2)	58
APPENDIX 12—Alternative Images of Symptoms of Chikungunya and Dengue	59
APPENDIX 13—Alternative Image for the ¿Tiene fiebre?/Border crossing Infographic ..	60

INTRODUCTION

The Centers for Disease Control and Prevention (CDC) anticipates imminent arrival of chikungunya, an emerging mosquito-borne disease along the U.S.-Mexico border. The risk is greatest in areas with established populations of mosquito vectors and large numbers of travelers arriving from chikungunya- or dengue-outbreak areas. Outbreaks have been reported throughout Mexico and, in particular, in Mexican states bordering the United States.¹

CDC plans to conduct a U.S.-Mexico border chikungunya education campaign in 2016. The campaign aims to inform border region residents and key target audiences about chikungunya risk, identification, and prevention.² Though the campaign's primary purpose is to educate this region about chikungunya, sporadic outbreaks of dengue (another mosquito-borne disease) have also occurred in this region, necessitating the inclusion of dengue education in awareness and prevention goals.

For the CDC communication campaign to succeed, its messages and dissemination strategies need to be adapted to the different cultural and linguistic characteristics of the diverse border region subpopulations. Mexican-born residents in the four U.S.-Mexico border states are culturally unique compared with the general

United States audience and other border populations, and display distinctive media preferences and health care-seeking behaviors. Thus, different types of communication will be required to reach this audience. To better adapt and target the communication campaign, CDC commissioned a project that aimed to: (1) describe Mexican-born, U.S.-Mexico border residents' knowledge, attitudes, and practices (KAPs) about chikungunya and dengue, including transmission, symptoms, treatment, and prevention; and (2) evaluate draft Spanish-language chikungunya and dengue educational materials for cultural and linguistic appropriateness.

This report summarizes key findings from the project and recommendations to enhance educational materials and outreach to the target population.

Note: The work of this project took place before the emergence of Zika; therefore the focus groups included no reference to the Zika virus. However, the insights from the focus groups are relevant to efforts to respond to and to contain the Zika epidemic, because education and prevention efforts for the three mosquito-borne diseases (chikungunya, dengue, and Zika) have elements in common.

1 *Travel Notices: Chikungunya in Mexico* (accessed 24 January, 2016); available from <http://wwwnc.cdc.gov/travel/notices/watch/chikungunya-mexico>. Health and Travel Advisory—February 27, 2015
Chikungunya and Dengue in Mexico and Latin America (accessed 24 January, 2016); available from <https://www.cdph.ca.gov/programs/vbds/Documents/HealthAdvisoryforDENVandCHIKinMX2-27-2015.pdf>.

2 In 2011, there were approximately 11,651,000 Mexican-born immigrants in the United States. There were approximately 7,523,000 living in the U.S. border states of Texas, California, Arizona and Colorado. Source: Ana Gonzalez-Barrera, Mark Hugo Lopez. "A Demographic Portrait of Mexican-Origin Hispanics in the United States." May 1, 2013. Accessed 24 January, 2016. Available from <http://www.pewhispanic.org/2013/05/01/a-demographic-portrait-of-mexican-origin-hispanics-in-the-united-states/>.

PROJECT METHODOLOGY

This project used 10 focus groups among Mexican-born, Spanish-speaking residents of five U.S.-Mexico border cities in Arizona, California, New Mexico, and Texas, to collect their KAPs related to dengue and chikungunya, and to evaluate three CDC draft infographics related to the diseases, including symptoms, actions to take or avoid in case of illness, and protection from the diseases. The project was determined not to be research and was exempted from IRB review. The focus groups took place over two weeks; Week 1 took place in California and Arizona in November 2015, and Week 2 took place in New Mexico and Texas in December 2015.

Focus Group Site Selection

Two focus groups were conducted in each of the following five U.S. cities along the U.S.-Mexico border: San Diego, California; Nogales, Arizona; McAllen, Texas; El Paso, Texas; and Las Cruces, New Mexico. Each of the selected cities represents an important border crossing site, encountering large volumes of cross-border traffic in their respective states.³ Additionally, these cities are located in epidemiological risk zones for these vector-borne diseases.

Focus Group Participant Recruitment

Participants in all cities were selected by a professional recruiting organization,⁴ using a participant-screening instrument provided by CDC (see [Appendix 1](#)) that outlined the criteria for selection. Participants included in the study were Mexican-born men and women, 18 years and older, living in one of the five cities selected for the study, identified as Hispanic or Latino, and reporting Spanish as their preferred language. Sixteen potential participants were recruited per group, for a total of 160, representing a range of ages and an approximately equal gender distribution for each group. There were three primary sources of potential participants. Two

of the sources were health-related organizations and community health centers along the U.S.-Mexico border, and CDC partner organizations working along the border. These organizations have contact and familiarity with, and are trusted by, these target audiences. The third source was the recruiter's database, which included the name, demographic and contact information of individuals living in the United States who have voluntarily opted to participate in market and consumer assessment projects.

Health-related organizations, community health centers, and CDC partner organizations were emailed fliers to print for distribution to their constituents, inviting them to call or email the recruiter to participate in the project. In addition, the recruiter selected potential participants from its database. Each potential participant was administered the participant screening instrument via phone. Those who met the recruitment criteria were invited to participate in one of two focus groups in their city. They were given the time and date of the group, as well as directions to the focus group facility.

Focus Group Procedure

On each focus group day, participants reported to the focus group facility approximately 30 minutes before the start of each session. Each group facility was easily accessible by public transportation. About five minutes before the start of each group, the recruiting organization provided a list of participants who had reported to the facility to the Team DCG project manager. The project manager then selected the final eight participants, who represented a wide range of ages, approximate gender balance, and a wide range of years living in the United States.⁵ Selected participants read, signed, and received a copy of a participant information sheet (Appendices 5 and 6) prior to taking part in the focus group. This

3 In San Diego, CA, 45,176,101 individuals entered the United States by train, bus, personal vehicle and on foot in 2014 through the San Ysidro and Otay Mesa stations, representing 67% of individuals entering into CA via the same modes of transport, in 2014. In Nogales, AZ, 9,856,050 individuals crossed the border into the United States via the Nogales station, representing 43% of total individuals entering into AZ. In El Paso, TX, 26,027,478 individuals crossed the border into the United States via the El Paso station, representing 32% of total individuals entering into TX. In McAllen, TX, 12,700,881 individuals crossed the border into the United States via the Hidalgo and Rio Grande City stations, representing 16% of total individuals entering into TX. In Las Cruces, NM, 1,271,995 individuals crossed the border into the United States via the San Teresa stations, representing 59% of total individuals entering into NM. Source: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, based on data from the Department of Homeland Security, U.S. Customs and Border Protection, Office of Field Operations. (Accessed January 24, 2016). Available from <https://www.bts.gov/browse-statistical-products-and-data/border-crossing-data/border-crossingentry-data>.

4 MerKadoTeknia Research & Consulting LLC conducted participant recruiting for this project.

5 In San Diego, California, and El Paso, Texas, the CDC project lead also helped select the list of final eight participants in each group.

document informed them that the project was conducted on behalf of CDC, that the conversation was audio recorded, and that any shared information would be anonymous and protected. Focus groups lasted approximately ninety minutes, and participants received a \$40 honorarium.

Focus groups were conducted in Spanish using a moderator guide designed to collect participant responses regarding sources of health information and KAPs related to mosquito-borne diseases as well as general reactions to and comprehension of Spanish-language infographics on dengue, chikungunya, and protective measures for the diseases ([Appendix 3](#)). Between Week 1 and Week 2, the moderator guide was fine-tuned based on findings from Week 1 ([Appendix 4](#)).

The evaluated infographics (Appendices 7, 8, and 9) were in draft form and not publically available.

The first infographic shown to participants, called *Evite que los mosquitos*/Source reduction ([Appendix 7](#)), contained an image of a house and its yard with different objects that can gather standing water, where mosquitoes can lay eggs. The infographic asked the readers to prevent mosquitoes from laying eggs in and around their residence by removing standing water.

Participants were also shown a second infographic called *¿Está enfermo?*/Are you sick? ([Appendix 8](#)), which described the vector transmission process and asked readers to protect themselves from mosquito bites during the first week of illness.

A third infographic called *¿Tiene fiebre?*/Border crossing ([Appendix 9](#)) began with a question and included icons designed to help readers identify if they had any symptoms of chikungunya and dengue, and recommended they immediately see a healthcare provider if they did.

Color copies on letter-size paper were provided to participants during the discussion. In addition to the infographics, participants evaluated a set of 'alternative images'. During Week 1, an alternative image to the mosquito on the upper right corner of the *¿Tiene fiebre?*/Border crossing infographic and the upper left corner of the *¿Está enfermo?*/Are you sick? infographic was evaluated, to see which image participants believed best communicated a mosquito. During Week 2, additional 'alternative images' of mosquitoes were evaluated, to help identify a mosquito that can make someone sick. Similarly, 'alternative images' to those that participants had found difficult to understand or interpret during Week 1 were evaluated. These 'alternative images' were provided for symptoms of dengue and chikungunya ([Appendix 12](#)), the map, and the content of the speech bubble in the *¿Tiene fiebre?*/Border crossing infographic ([Appendix 13](#)).

Most of the focus groups were observed by Team DCG's project manager, members of the CDC Chikungunya Group, and CDC's state and local partners from the Chikungunya Working Group.⁶ After each focus group, the moderator led a debrief meeting, discussing key findings with observers. Key findings were compiled and sent to members of the CDC core team. Notes from focus group observations and debrief meetings and Spanish-language transcripts to write the report. While analyzing the transcripts, common findings among participants in the different focus groups and findings that emerged among specific demographic groups or in specific cities were extracted. Additionally, quotations illustrating these findings were identified.

6 The CDC Chikungunya Group is comprised of staff from entities in the National Center for Emerging and Zoonotic Infectious Diseases (NCEZID), including the Division of Vector-Borne Diseases, the Division of Global Migration and Quarantine/US-Mexico Unit, and the NCEZID Office of Health Disparities (OHD); OHD served as project lead. The Chikungunya Working Group is comprised of CDC staff and colleagues from border state and local health departments and community organizations collaborating to address the spread of chikungunya in the United States.

RESULTS

Focus Group Participant Profile

There were 80 focus group participants (8 per focus group), including 48 women (60%) and 32 men (40%) between the ages of 22 and 72, and averaging 41 years of age. The length of time participants had lived in the United States ranged from 6 months to 46 years and averaged 15 years. (See [Appendix 2](#) for the gender and age of each participant by city.)

How Participants Learn About Health Issues, Dengue, and Chikungunya

Participants were asked questions about how they typically obtain health information and the sources they find trustworthy. Participants across cities indicated using a variety of information sources, including news and other programs on television and radio (both U.S.- and Mexico-based television and radio); online sources (including Google searches, specific health-related websites, and social media); doctors and other health care professionals; and friends, family, or acquaintances.⁷ In general, participants noted they compared information across sources, and if multiple sources provided the same information, they judged that information to be more accurate.

Although participants sought information from a variety of sources, their level of trust in the types of sources varied among cities and demographics. For example, while participants in most cities indicated that doctors were among their most trusted sources of health information, those in El Paso and Las Cruces indicated a lower degree of trust in doctors than in other cities. Additionally, across cities, women said they were more likely than men to consult family and friends or social media (Facebook) for information. Participants suggested they generally trusted government sources of health information, with information from the U.S. and Mexican governments more or less equally. Participants did not make a distinction between U.S. local and federal governments. In some instances, participants noted they were not aware of what the CDC is or what it does.

Across all cities, participants indicated they mostly got information on dengue and chikungunya from government sources—and more often from the Mexican government than the U.S. However, participants mentioned some of

the educational information did not provide them with a thorough understanding of the diseases and associated symptoms. Participants felt they attained adequate information about prevention but did not recall hearing about the symptoms or the dangers of either disease. For example, San Diego, Las Cruces, and El Paso participants mentioned a chikungunya jingle used in an awareness campaign on television and radio by the Mexican government (stations in Juarez and Tijuana, specifically), though they did not recall any information in the jingle related to the disease. Many of these participants remembered the upbeat melody and the “funny-sounding” chikungunya name.

Participant Knowledge of Mosquito-Borne Diseases

Participants were asked about their general knowledge of mosquito-transmitted diseases. While some participants were aware of dengue, only a few knew about chikungunya. Also, participants were more likely to have been personally affected or know someone who had been affected by dengue, than chikungunya. However, a few McAllen, San Diego, and Las Cruces participants indicated they personally knew someone who had contracted chikungunya. In general, participants mentioned they thought of dengue and other mosquito-transmitted diseases as illnesses people contract in other places, including “more tropical places” further south in Central and South America. This belief was voiced in every market and emphasized in Las Cruces and El Paso. El Paso participants specifically referenced Malaysia, as well as the southern hemisphere, and one participant in McAllen said chikungunya first appeared in Tanzania.

“Here, it is not as important [to protect yourself from mosquitoes], compared to if you were in Malaysia, where there are a lot more diseases transmitted by mosquitoes.” (Male, El Paso)

Participants were more aware of the symptoms of dengue than those of chikungunya, though they tended to conflate them, and in some cases, thought they were the same. Overall, participants from McAllen (where recent rainy weather increased the mosquito population) seemed to be more familiar with chikungunya than participants in other cities. Dengue symptoms listed by participants were hemorrhage, fever, bone and body pain, vomiting, diarrhea,

⁷ In San Diego, participants cited TV stations, Univision and KPBS, as sources of health information; participants in Nogales cited Univision, CNN, Discovery, and Mexican TV station, Televisa, as well as the Nogales radio station, Maxima.

exhaustion, weakness, and headaches. Those who offered symptoms for chikungunya listed fever, bone pain, and immobility.

"They [my mom and my daughter who had chikungunya] had internal pain with fever and pain in the bones. They were in bed for days." (Female, McAllen)

"One of my friends [who got chikungunya] says she was unable to get out of bed; she had very high fever, body pain, and headache. She was vomiting and had diarrhea." (Female, McAllen)

Participant KAPs Related to Mosquito Prevention

Though participants were generally aware mosquitoes could spread disease, particularly as an issue in the summer, they tended to see mosquitoes as more of a nuisance than a danger, and did not express a significant amount of concern about mosquito-transmitted diseases. Some participants indicated they believed certain people were more likely to be bitten than others, due to having "*sangre dulce*" or "sweet blood." Uniformly, McAllen participants expressed more concern about mosquitoes than participants in the other cities.

Participants were confused about which diseases could be transmitted by mosquitoes. In El Paso and San Diego, participants mentioned HIV, H1N1 virus, and cholera; in El Paso, San Diego, and Las Cruces, participants suggested that dengue was transmitted from person to person.

Some participants reported using mosquito repellent, candles, or home remedies (such as Vicks VapoRub) to keep mosquitoes away but were not necessarily consistent in usage. At least a third of participants did not believe repellents were effective. Others indicated they did not use anything to protect themselves from mosquito bites. Some participants in every market, except Las Cruces, indicated that wearing pants and long-sleeved shirts could help prevent against—or reduce the amount of—mosquito bites, though it was more likely they took these precautionary measures for their children as opposed to for themselves.

Some participants in San Diego and Nogales referred to a Mexican government campaign encouraging audiences to remove water from containers around their house because mosquitoes can breed in these standing waters.

In El Paso and Las Cruces, some participants mentioned the area around their home was fumigated, especially during the summer.

"In fact, in Mexico, they created brochures where there was this mosquito and it [the brochure] showed where it [the mosquito] could reproduce: in the water, in tires." (Female, San Diego)

Spanish Language Words Used for "Mosquito"

Participants used different words when referring to mosquitoes in Spanish. Participants in Las Cruces and El Paso were more likely to use the word "*moyote*" and interchange it with "*mosquito*." Participants in El Paso, McAllen, and San Diego were more likely to use the word "*zancudo*." Although participants noticed mosquitoes can vary (e.g., in size, level of annoyance, painfulness of bites, likelihood to transmit disease), they did not agree upon the differentiation among the terms "*zancudos*," "*moyotes*," and "*mosquitos*." However, participants did all agree on one mosquito characteristic: they bite.

Focus Group Responses to Infographics

Common Findings Across All Infographics

Reactions to the Images

Different images intended to represent symptoms of dengue, chikungunya, and disease-carrying mosquitoes were shown to participants to assess individual comprehension of these images. In general, participants seemed to better understand realistic images, as opposed to icons or cartoon-like images. Particularly, there was a higher comprehension of dengue and chikungunya symptoms by using images depicting facial expressions, as opposed to icons. When evaluating the *¿Tiene fiebre?*/Border crossing and the *¿Está enfermo?*/Are you sick? infographics (Appendices 8 and 9, respectively), participants did not clearly understand the majority of the icons representing symptoms of dengue and chikungunya. Although the first icon of a thermometer was generally understood as representing fever, the second and third icons, meant to represent muscle and joint pain, respectively, were not well understood. Participants interpreted the second icon with a wide array of suggestion for the symptoms represented, including cramps, general body pain, muscle pain, stomach pain, diarrhea, and foot pain or malodorous feet. Sometimes the third icon was correctly understood as representing joint pain, but participants also interpreted as general pain in the upper body or the arms, headache, chasing away a mosquito, or even giving 'the arm' or 'the finger' to mosquitoes.

In the *¿Tiene fiebre?*/Border crossing infographic (where the icons were placed directly below the question about symptoms of the disease), many of the participants understood the implied connection and said it was easier to identify the symptoms the icons were intended to represent.

*"Because, here, on top, it says the symptoms,"
(Female, San Diego) ...*

"It's much easier to make the link." (Male, San Diego)

Participants were shown alternate, more realistic-looking images. These images were drawings of a young man displaying symptoms ([Appendix 12](#)). When shown these alternate images, participants indicated a narrower range of interpretations than when shown the icons. The first alternative image, meant to show fever, was well understood because of the thermometer in the man's mouth and because his face clearly demonstrated pain. The second alternative image, meant to represent headache, was understood correctly by many, but was also interpreted as a man who had hit, or was scratching, the top of his head. The third image, meant to represent joint pain, was sometimes understood as joint or muscle pain, pain in the shoulder, or shooing away a mosquito. Several respondents also interpreted the image to mean a sore throat. For both the second and third images, several participants indicated the man's facial expression should mirror the expression of the first man, to better express the severity of the pain.

*"The first one has more the face of pain; the other one looks like he's annoyed, like he's angry."
(Female, McAllen)*

Participants were shown several images of mosquitoes across the infographics. In addition, McAllen, El Paso, and Las Cruces participants were shown alternative images of mosquitoes ([Appendix 11](#)). Participants felt that the mosquito image in the upper right corner of the *Evite que los mosquitos*/Source reduction infographic was too cartoonish or childish, many arguing that it looked "bonito," or cute, rather than dangerous. Some Nogales participants thought it was a grasshopper instead of a mosquito. In addition, many participants indicated that their first impression of the mosquito in the upper right corner of the *¿Tiene fiebre?*/Border crossing infographic was of a helicopter or an airplane. Participants who were shown alternative images said the more realistic looking ones (C and D in [Appendix 11](#)) better represented a mosquito that could make them ill because it communicated a more threatening impression due to the realistic and "uglier" nature of the photo. Finally, some El Paso and McAllen participants indicated image

B ([Appendix 11](#)), a red circle with a diagonal line across a mosquito, demonstrated the importance of protecting one's self from the danger of mosquito bites, and the need to avoid them.

*"We already know that the red circle is danger."
(Female, San Diego)*

Reactions to the Text

In general, participants found that the text in the infographics was not compelling. Participants often thought the text was not prominently displayed, and the content did not clearly tell them what action to take or ways to avoid risk in straightforward, easy-to-understand language. Participants suggested that in order for any text to grab their attention, it should be large, brightly colored, and placed prominently on the infographic—either the top or center.

"You should have 'warning' in big red letters, at the top of the page." (Male, Nogales)

San Diego and Nogales participants complained of redundancy in the language and felt that it could be simplified. For example, some said that "enfermar a la familia" ("make the family sick") would be more direct than "enfermar a algún familiar" ("make a member of the family sick") or "médico" ("doctor") could replace "proveedor de atención médica" ("health care provider"). Also, many complained the language was too convoluted or ambiguous.

"Here, it says that during the first week, the virus can be in the blood. Is this certain or... Because it's telling me that it can be in the blood, but it's not saying that it is for sure." (Female, Las Cruces)

Additionally, participants said that the text in some of the infographics did not clearly instruct them on what actions to take or avoid. Participants expressed a preference for language that would clearly instruct them on what to do or not to do.

"Yes, [it should say] if you are sick, [do this]... In red letters." (Male, McAllen)

Several participants said that the *¿Tiene fiebre?*/Border crossing infographic did not clearly demonstrate the difference between dengue and chikungunya, the symptoms of each disease, or the treatment options they should seek relative to each disease. Participants pointed to the use of the same symptoms in the infographics and the juxtaposition of both diseases with the use of 'or' in between them as the source of their confusion.

"This is a little confusing because they make it sound like chikungunya or dengue is the same thing." (Male, San Diego)

"But does it give you dengue or the other illness? This is not clear here." (Female, El Paso)

Reactions to the Evite que los mosquitos/Source reduction Infographic

Main Message

Across cities, participants agreed the importance of being clean and organized and the removal of standing water around the house were the primary messages. Although the purpose of water removal was not immediately clear to participants, as the discussion progressed, they indicated the action would help eliminate disease-carrying mosquitoes. However, participants did not clearly understand the connection between standing water and mosquitoes (i.e., that mosquitoes lay eggs in standing water). For example, some Nogales participants indicated unsanitary water transferred disease to mosquitoes. McAllen participants reported that clarifying the relationship between mosquitoes and standing water would be helpful. In Las Cruces and El Paso, participants suggested including a "close up" of eggs in water-holding containers.

Reactions to the Images

In response to questions concerning their reaction and ability to identify with the depicted scene, participants in most cities agreed the image resembled something they might see in their neighborhood; however, some participants described it as designed to appeal to children. In addition, San Diego participants tended not to identify with the scene, describing it as "exaggerated," with more places for standing water than would be found around their home or in their neighborhood. When asked, most participants described the objects used as examples to show accumulated standing water around the house as useful and commonly recognized, helping audiences understand the dangers or look for common risk factors.

Reactions to the Instructions to Eliminate Water around the House on a Weekly Basis

The poster provided guidance to eliminate all instances of standing water once a week, but many participants said it should be done whenever water had accumulated around the house. For example, McAllen participants, experiencing daily rain at the time of the study, and Las Cruces and El Paso participants, who experienced an uncharacteristically wet year in 2015, indicated it should be done every time it rains.

When asked if they removed water around their home once a week, many participants said, "yes," though some (particularly in McAllen) indicated they were more worried about keeping their property clean than illness. Others said that they lived in buildings where the landlord takes care of water removal, and some said they were less attentive to the issue because they did not have much outside space because they lived in apartment complexes (particularly in Las Cruces). When they were asked if they thought other people cleaned around their home once a week, they did not believe this was a habit of their neighbors. To help the infographic convey the importance of cleaning practices, participants suggested using simpler and less time-sensitive instructions, such as, "don't leave standing water," ("*no dejes agua estancada*"), would be more easily understood and followed than, "clear all standing water once a week."

"You can change the message. Instead of 'throw out, wash once a week and blah, blah, blah,' if you tell me this, I tell you, 'Yes, I will do it if I remember.' But, if you tell me 'don't leave standing water, don't do it,' well I don't do it." (Male, San Diego)

Participant Recommendations on How to Make the Messages More Compelling

Participants tended to agree that infographic successfully conveyed the importance of prevention, but a sense of urgency did not come across. Across focus groups, participants felt an increased emphasis on the symptoms and the consequences of the diseases would be the best way to draw their attention and encourage them to clean around the house.

"What little I know, I know they [mosquitoes] bite you, they leave a mark and it itches you, but I don't know exactly how strong an illness from mosquitoes can be." (Female, Las Cruces)

"You need to create a bit of awareness... but you have to give information so that you go, 'oh, this can happen to me if I get bitten by a mosquito.' Not just... cover up old cars, remove rubbish... You must talk about the disease so that you create awareness." (Male, El Paso)

Participants expressed that messaging would be more powerful if focused on how mosquito-transmitted diseases could make family and loved ones ill versus an individual ill. Participants said that the *Evite que los mosquitos*/Source reduction infographic, in particular, could be more compelling if the language emphasized removing water accessible to children or pets.

*"For your own health and for that of your kids, I prefer to be sick than for my kids to be sick. A thousand times I prefer to be sick instead of them."
(Female, Nogales)*

Participants were asked if they used mosquito nets or screens on windows and doors. At least some participants in all cities indicated they used screens, but they did not seem to draw a clear distinction between window and door screens, although they seemed to refer to screens on windows more often than doors. Most participants believed nets were useful in keeping mosquitoes outside of the house, but said they were not diligent about upkeep—and in most cases it did not consider it a priority. In McAllen, Las Cruces, and El Paso, some participants mentioned they used air conditioning to keep their homes cool during the summer, some implying that air conditioning took the place of needing screens.

Reactions to the ¿Tiene fiebre?/Border crossing Infographic

Main Message

Most participants stated the primary message of the infographic was to see a health care provider if experiencing or displaying any of these depicted symptoms. Several participants suggested the inclusion of text about Tylenol and aspirin on the poster promoted self-medication when experiencing any of the symptoms, and expressed concern about this message, suggesting the public may not be aware of the general dangers of self-medication. Many participants said the infographic should visually distinguish between what medications are acceptable and unacceptable to consume.

*"I think they shouldn't even talk about what you shouldn't take because a lot of people will be confused and they'll say, 'I will take this.'"
(Male, San Diego)*

*"They should put big red letters that say, 'do not take [aspirin]...'"
(Female, San Diego)*

Reactions to the Map

The map on the infographic was intended to have the reader mention to their health care provider if he or she had recently traveled to Mexico. Overall, the map's intention was not clearly understood and elicited resentment from many participants.

Most participants understood the border between the United States and Mexico was depicted by the red line with dots; however, some McAllen, El Paso, and Las Cruces participants pointed out that the red line showed a river (notable, as the border between both countries follows the course of the Rio Grande from the Gulf of Mexico to Texas).⁸ Most participants said the map represented where the diseases were likely to be found (Mexico and in the four border states), pointing to the mosquitoes on both sides of the border.

Many participants found the map to be offensive and discriminatory, with three different interpretations. The first interpretation was that, while the diseases are only found within the four border states of the United States, they are found *everywhere* in Mexico. Second, the darker color used to distinguish Mexico from the United States suggested Mexico was the source of these diseases, or where the diseases were most dangerous. While some participants said that the disease was found in places such as Asia, Africa, and South America, they did not easily accept that it could be found in Mexico—and much less in northern states bordering the United States. Third, the map seemed to instruct the reader to avoid travel or take extra precautions when traveling to Mexico.

*"I think that in these states [U.S. states along the border] there could be mosquitoes that transmit these diseases, because they are in the border. Not necessarily in Mexico..."
(Female, Nogales)*

*"The map says like this disease is only found in Mexico.... But mosquitoes will not say, 'Oh, no. Not this. I am not going to the United States.'"
(Female, McAllen)*

*"The color [of Mexico on the map] comes out too much."
(Male, McAllen)*

*"It bothers me that they are illustrating the map as something discriminatory... if you come from Mexico, you can have the disease. It sounds discriminatory and as if they're pointing at you... They put us in the map, and now we're there."
(Female, El Paso)*

To make the map less open to interpretations of discrimination, participants suggested clearly marking the affected Mexican states—mostly southern Mexican states, in their view—to avoid suggesting the entire country of Mexico was affected, or by showing other countries where mosquitoes

8 Encyclopaedia Britannica, Rio Grande. (Accessed Januar 11, 2016). Available from <http://www.britannica.com/place/Rio-Grande-river-United-States-Mexico>.

and mosquito-borne diseases can be found. El Paso and Las Cruces participants agreed that context, which would clarify that Mexico had currently experienced outbreaks of the diseases, would also help decrease the discriminatory impact of the map.

"If it says travel, then why not talk about the world? That is, why does the alert only concern Mexico?... I heard [chikungunya] was born in Tanzania, therefore in all of the world." (Female, McAllen)

"You might want to emphasize with the same colors those states of the Coast, that are the most [affected]." (Male, San Diego)

Upon seeing the map in the alternative infographic where both sides of the border are of equivalent color ([Appendix 13](#)), participants were less likely to consider the image discriminatory and to view Mexico as the primary source of the disease. The majority of the participants who had initially showed discontent with the map felt more at ease about Mexico not being singled out. However, several also said that removing the border lines from Mexico now reinforced the message that all of Mexico was affected.

Reactions to the Image of the Doctor Examining the Girl

Overall, participants were confused by the speech bubble containing modes of transportation next to the doctor and the girl. Some said the speech bubble indicated to some participants that the doctor was asking the girl if she had traveled. However, many participants interpreted the bubble as the doctor asking the girl where she had gotten sick, or where she had acquired the disease, such as from mosquitoes, other passengers on the bus, or when walking on the street. Others, particularly in Nogales and Las Cruces, thought the doctor was not asking the question directly to the girl, but rather thinking about the questions. One participant in Nogales suggested using an airplane might better represent travel.

"I think that an airplane is better, because it better represents traveling. It seems to be that an airplane is missing here." (Female, Nogales)

When shown the alternative infographic in which the doctor was asking the girl, "Have you been to Mexico recently?" (*"Has estado en Mexico recientemente?"*) ([Appendix 13](#)), participants reported the question in the bubble helped clarify what the doctor was asking. However, most of the participants agreed that, by only asking about Mexico, the question seemed discriminatory. Many of these participants suggested that the question should be more general, simply asking whether you have traveled outside of the country.

"It is discriminatory because they are asking you if you traveled to Mexico, [but] the disease can be elsewhere." (Male, Las Cruces)

Participants were asked what nationality the doctor appeared to be. To the majority, the doctor looked Asian, as opposed to Latino, but participants did not consider this to be an issue.

Participant Interpretation of Crossing the Border

Participants provided mixed responses when asked whether "crossing the border" (*"cruzar la frontera"* in Spanish) to Mexico would be considered travel, with about half agreeing and half disagreeing. Those who agreed said movement between any countries was considered travel, while those who disagreed generally said that crossing the border to visit family and friends a few miles away is not considered travel, unless you are going further down into the interior of Mexico. Nogales participants, in particular, emphasized the latter, as they consider the cities on either side of the border to be essentially the same.

Reactions to the ¿Está enfermo?/Are you sick? Infographic

Main Message

For the most part, participants understood that this infographic was meant for people who had contracted chikungunya or dengue. More than half of the participants seemed to understand, from the text in the center of the infographic, the process of viremic transmission and implications. However, no infographic image communicated that information.

For example, several said that if a person is sick with either dengue or chikungunya, they should seek protection from mosquito bites or keep their loved ones at a distance, to avoid spreading the disease.

"That if you have chikungunya or dengue, you need to isolate yourself so that another mosquito won't bite you and then go bite someone else." (Female, McAllen)

"You have to be kept at a distance from the family, so that you don't infect them. Because it says that the mosquito can get infected and then infect someone else." (Female, McAllen)

Reactions to the Images of the Sick Girl and the Calendar

In general, participants thought the image of the girl in this infographic did not clearly convey the severity of the diseases. For example, participants suggested the girl lying in bed should be depicted as severely ill or in more pain, rather than showing an uncomfortable fever (depicted through the thermometer shown next to her head).

"Her eyes should be sadder. Her face should reflect better her disease... She should look more depressed... Her eyes should look less alive." (Male, Nogales)

"She doesn't look sick at all... (Female, El Paso)... We can say she has a fever only from the thermometer." (Female, El Paso)

At the right of the infographic, the calendar and the "7 days" text caused confusion among participants, as some suggested it referred to a seven-day incubation period, the most painful seven days of the disease, or death resulting on the seventh day.

"It's confusing, this calendar. Does it talk about the period of incubation, or what?" (Male, San Diego)

"If it bites you, it's like seven days for the disease to ferment itself in the bite of the mosquito, and then the mosquito goes and bites someone else." (Female, McAllen)

Reactions to the Guidelines for Protection Against Mosquito Bites

At the bottom of the infographic, the bullet points indicating ways to protect oneself from mosquito bites, such as using mosquito repellent and wearing long pants and long-sleeved shirts, were generally well understood. When participants in Nogales and McAllen were asked if they would follow these instructions, some said they would not necessarily do so, citing doubt in the effectiveness of these methods or a low probability of being bitten by mosquitoes in the first place.⁹ Additionally, the majority of participants agreed that these protective measures needed to be made more prominent,

suggesting placing them toward the top of the infographic, using a bright font color, or enlarging the text and placing it on a contrasting background.

"But we've seen that, in any case, mosquitos go through the fabric [of clothing]." (Female, San Diego)

"You should put a more illustrative color, a yellow color. Something phosphorescent that grabs the attention." (Male, Nogales)

"I prefer that the symptoms that are here on top be put in bigger letters." (Male, San Diego)

Reactions to Motivating Factors

During the focus groups, participants discussed the likelihood that potential "motivating factors"—or statements about the consequences of chikungunya and dengue on a person's health—would encourage them to protect themselves from mosquito bites.

These potential motivating factors are as follows:

- A. You could get sick from a mosquito bite and be unable to work for a week or more.
- B. Chikungunya can make you or a family member so sick that they can't move at all—not even stand up or go to the bathroom—for several days to weeks.¹⁰
- C. Chikungunya can make you or a family member be in pain for months and even years after having chikungunya.
- D. You or a family member could die from dengue.
- E. Both of these diseases can be more severe for babies and the elderly.

The motivating factors that seemed to resonate the most among participants included references to the potential severity of chikungunya (B) and of dengue (D). For most participants, extreme pain causing immobility clearly communicated the gravity of the disease, and most participants expressed fear that dengue could lead to death.

⁹ In other cities, the discussion about the protective measures centered around their clarity and comprehension, rather than whether or not they would be followed.

¹⁰ For Las Cruces, motivating factor B was changed to more accurately describe the acuteness of the diseases. Most importantly, it removed the mention about not being able to go the bathroom, as several McAllen and El Paso participants interpreted this as being a physiological incapacity to urinate or defecate, as opposed to simply not being able to stand up and go to the bathroom. Motivating factor B was modified to "Chikungunya can make you or a family member sick and be in so much pain that you can't move at all—not even stand up for several days to weeks."

"Of course this is very impactful, because who will want to die?" (Female, Las Cruces)

Although Message C, warning of long-lasting sickness did not elicit as strong a response, some participants did show concern that chikungunya could be painful for months or years after recovering for the disease and said it would be difficult to have to live with the consequences for so long.

The majority of the participants said the statement describing the diseases as being more severe for babies and the elderly (E) was not as impactful because common knowledge suggests the elderly and younger members of the family are generally more vulnerable to disease.

Most participants (with the exception of some Las Cruces participants and a few El Paso participants) were least affected by the possibility of missing work for a week or more (A), because it failed to communicate the severity of illness during that week.

"[It] says that you will not work for a week, because of a bite, but it doesn't tell you the consequences of this bite." (Female, El Paso)

"It should talk about health, more than work. Something that could scare you more with your health." (Female, Nogales)

Responses to Closing Questions

At the end of each session, participants reported a better understanding of the dangers of chikungunya and dengue, how both diseases are transmitted, and how to protect themselves. This was particularly true regarding chikungunya, since many participants came into the sessions with either no knowledge or very vague knowledge of chikungunya, including transmission and symptoms. Participants reiterated the importance of regularly removing sources of standing water and emphasized an increased awareness of travel to places with more instances of chikungunya. Many indicated that understanding the severity of the illnesses will cause them to be more careful about taking precautions. Some participants expressed heightened concern and anxiety about disease transmission and the best ways to protect themselves against infection; this was particularly true in Las Cruces, where there was some confusion about how the disease was transmitted by the mosquitoes. Across focus groups, the differences in symptoms between chikungunya and dengue were unclear.

The majority of participants suggested the posters be displayed in places such as medical centers, stores, schools, pharmacies, public transportation, and media sources, including printed materials (such as magazines) and social media (such as Facebook).

DISCUSSION

This section discusses key findings in relation to the objectives of the project and recommendations, as well as the overall process of the project and its limitations.

Discussion of Findings

It was found that there is relatively low awareness, knowledge, and concern about mosquito-borne diseases among the Mexican-born, U.S.-Mexico border residents who participated in this project. Therefore, these study participants did not see a real necessity or urgency in protecting themselves from mosquito bites, and the infographics were generally not perceived as striking enough to move participants to action. In this context, it is important to highlight the potential severity of these diseases in order to increase the chances of gaining this audience's attention, to motivate them to protect themselves and loved ones from mosquito bites ahead of the arrival of these diseases in the United States, and to seek medical treatment if they experience symptoms.

Additionally, findings highlighted the heterogeneity of the participants. For example, in McAllen, participants seemed to be more familiar with chikungunya than in other cities and expressed more concern about mosquitoes than participants in the other cities. This is most likely due to McAllen's wetter climate and proximity to the Rio Grande, which makes the environment more prone to mosquitoes. Also, in San Diego, participants tended not to identify with the scene in the *Evite que los mosquitos*/Source reduction infographic, describing it as "exaggerated," with more places for standing water than would be found around their home or in their neighborhood. In all of the border cities, participants tended to use different terms interchangeably with "mosquito," including "zancudo" and "moyote." There seemed to be no agreement among participants on the differences and similarities between the terminologies, aside from the fact that they refer to an insect that can bite.

Lastly, the project illuminated that participants did not have a clear understanding of the concept of emerging infectious diseases. While some participants said that chikungunya was found in places such as Asia, Africa, and South America, they did not easily accept that it could not have travelled across the world and be found now in Mexico—with the possibility even less likely in the northern states bordering the United States. Without understanding how infectious diseases can spread globally across populations, participants were offended by the map, and

they interpreted the doctor's question in the *¿Tiene fiebre?*/Border crossing infographic as singling out Mexico as the place where the diseases were found.

Discussion of the Data Collection Process

Several factors eased the data collection process. Implementing focus groups in five cities covering the length of the U.S.-Mexico border made it possible to understand key differences among project participants based on geographical differences. Additionally, observers from the CDC Chikungunya Group and CDC's state and local partners from the Chikungunya Working Group helped better interpret the findings as they were being discussed during the post-focus group debriefing sessions. For example, observers in Nogales confirmed they had previously heard from Mexican-born, U.S.-border residents that they do not necessarily consider crossing the border as "travel." Others clarified that El Paso and McAllen residents most likely referred to the border line as a river, because the Rio Grande runs along the border in parts of Texas. Finally, having two weeks in between Week 1 and Week 2 of focus groups allowed CDC and Team DCG to refine the focus group moderator guide based on findings from the first focus groups, in order to collect more nuanced and relevant information from the participants during Week 2.

Limitations

There were several limitations to this project. First, this project was based on focus group discussions, as opposed to more quantitative data collection methods, such as surveys. As such, the findings from this project represent the views of the project participants only—and not necessarily those of Mexican-born, U.S.-Mexico border residents as a whole. Second, due to a recruitment screener with a limited number of demographic questions, it was not possible to distinguish clearly among subgroups within the larger group of Mexican-born, U.S.-Mexico border states residents who took part in the study. For example, it was not possible to say with certainty where project participants fell in terms of socio-economic class, levels of acculturation, or English proficiency. Additionally, it was not possible to distinguish which participants crossed the U.S.-Mexico border frequently, or how much Spanish-language television and radio they consumed. These limitations restrict the range of analysis.

Recommendations

In general, the infographics could be improved by making the images more realistic and more culturally relevant, by making the messages more compelling and by increasing the visual impact of key text. For example, if images are used to convey the symptoms of the diseases, they should depict realistic facial expressions and should clearly convey pain. Images of mosquitoes should also be more realistic, as these seem to portray better an imminent danger or threat of illness. Additionally, images should take into account the heterogeneity of the audience, when possible. Accordingly, images should be broad enough so they can be relevant to the entire border region. For example, it might be worth modifying the image of the house and the backyard in the *¿Evite que los mosquitos?*/Source reduction infographic so that it is also relevant to San Diego residents.

To address low literacy in the population, it is important the infographics have self-explanatory images that need only minimal text, ideally placing text next to the image for optimal helpfulness.

The messages will have greater impact through direct, concise, and unambiguous language. For example, according to participants, using *"médico"* ("doctor") instead of *"proveedor de atención médica"* ("health care provider"), *"familia"* ("family") instead of *"algún familiar"* ("a member of the family"), and *"el virus está en la sangre"* ("the virus is in the blood") instead of *"el virus puede estar en la sangre"* ("the virus can be in the blood") in the *¿Está enfermo?*/Are you sick? infographic would enhance comprehension. Similarly, the messages should continue using the term *"mosquito"* to designate a mosquito, instead of *"zancudo"* or *"moyote."*

Messages should highlight the acuteness and severity of the diseases and, to a lesser extent, how long the effects of the diseases can last. Additionally, messages should talk about the effects on family, especially children, as opposed to the individual. Also, if the message asks the reader to do something, this action should be very clearly communicated, with simple language outlining what should or should not be done.

It is important to give visual weight to the most important text—for example, text on the consequences of the diseases and how individuals can protect themselves and loved ones—by enlarging it, placing it at the top or the center of the page, and by use of a brighter font color or contrasting background.

Finally, it is imperative to consider the geopolitical situation at hand. Many of the participants felt stigmatized and discriminated against with the current map image and by the question the doctor was asking the ill girl in the *¿Tiene fiebre?*/Border crossing infographic. The participants felt that Mexico was singled out as the originating point of the diseases. Modifying the map to show a more global risk could help resolve this concern. Additionally, it became clear through the focus group discussions that participants did not have a good understanding of the global phenomenon of emerging infectious diseases.

Additional recommendations specific to each infographic include:

- *¿Evite que los mosquitos?*/Source reduction infographic
 - Include the symptoms or consequences of dengue and chikungunya at the top of the infographic.
 - Change the "once a week" message so that it is simpler and less time-dependent. For example, consider using, "Don't leave standing water," versus "Clear all standing water once a week." In addition, "standing water" should be translated as "agua estancada," instead of "agua acumulada," as this is how participants referred to it in Spanish.
- *¿Tiene fiebre?*/Border crossing infographic
 - Regarding medications: clearly tell people what to take and avoid telling them what not to take. (However, in this case, "what not to take" was included because, for a person with dengue, taking aspirin can cause blood to thin and cause bleeding.)
 - Change the doctor's question to, "Have you traveled outside of the United States, including Mexico?"
 - Consider showing a map of more countries outside of the United States, so as not to single out Mexico.
- *¿Está enfermo?*/Are you sick? infographic
 - Use an image that strongly depicts a sick girl in severe pain.
 - Remove the calendar and/or the "7 days" text under the calendar.
 - Move the bullet points on protective measures against mosquito bites to the top of the infographic and increase the font size.

CONCLUSION

This project uncovers significant challenges in informing Mexican-born, U.S.-Mexico border residents about the risks of mosquito-borne diseases. It is likely that members of this audience will pay little attention to—and may not act upon—messaging if it does not clearly communicate the real threat mosquitoes and mosquito-borne diseases pose, or if it seems discriminatory against Mexico. This project finds that describing the potential severity of the diseases, with an emphasis on how they can impact

the health of a person's family or loved ones, while also providing context related to how infectious diseases can spread globally, may address some of these challenges. Additionally, messaging must be direct and unambiguous, and images must be self-explanatory and as realistic as possible. This project also underlines the importance of testing public-health related communication materials before disseminating them in order to increase their effectiveness.

APPENDIX 1—Focus Group Participant Screener in English (A) and Spanish (B)

A. English Language Version

[Date/Time of Group]
[Name]
[Phone Number]
[Email Address or Mailing Address]
[Market]
[NOTES]

Hello, my name is [NAME] and I am calling from [INSERT ORGANIZATION NAME HERE]. I would like to invite you to participate in a group discussion about health information materials that will be held at [LOCATION]. We'd like to ask what you think about several health topics including dengue and chikungunya. Your answers will help the U.S. Centers for Disease Control and Prevention, the "CDC," improve health education and communication materials. We have a few brief questions to ask and if you qualify and are interested, we will invite you to take part in a 90-minute discussion during [MONTH], 2015.

1. How old are you? **(MUST BE 18+)**
(IF UNDER 18 YEARS OLD, THANK PERSON AND END CONVERSATION)
2. What is your sex? **(Male/Female)**
3. Is Spanish your preferred language? **(Yes/No) (MUST BE YES)**
4. In what country were you born? **(MUST BE MEXICO)**
5. What race or ethnicity do you consider yourself? **(MUST BE HISPANIC/LATINO)**

American Indian or Alaska Native Hispanic or Latino White Asian
Black or African American Native Hawaiian or Other Pacific Islander

6. How far do you live from the border with Mexico?
7. For how long have you lived in this area?
8. How long have you been living in the United States?
9. Are you able to attend a 90-minute session? **(Yes/No)**
(IF NO or UNSURE, THANK PERSON AND END CONVERSATION)
10. Any information that will be shared during this discussion will be kept private. All sessions will be audio-recorded. Are you willing to be recorded? **(Yes/No)**
(IF NO or UNSURE, THANK PERSON AND END CONVERSATION)
11. Do you feel comfortable speaking in a group? **(Yes/No)**
(IF NO or UNSURE, THANK PERSON AND END CONVERSATION)
12. Do you have any special needs, which need to be addressed for you to participate such as hearing, visual, or other impairments? **(Yes/No)** If yes, please list impairment(s): **(SPECIFY)**

Those are all my questions. You do qualify for participation in this discussion, and we would like to invite you to join us on [INSERT DATE], 2015. If you decide to participate, you will be given \$40 cash.

13. Are you willing to participate? **(Yes/No)**
(IF NO, THANK PERSON AND END CONVERSATION; (IF YES, PLACE CONTACT INFORMATION ABOVE)

Thank you for your time.

Termination Script: Thank you for answering our questions. Unfortunately, you do not meet our selection criteria and so are not eligible to participate in our group discussion. Any information that you have shared thus far will be deleted. Thank you for your time and have a good day/night.

B. Spanish Language Version

[Date/Time of Group]

[Name]

[Phone Number]

[Email Address or Mailing Address]

[Market]

[NOTES]

Hola, mi nombre es [NAME] y llamo de parte de [INSERTAR EL NOMBRE DE LA ORGANIZACIÓN]. Deseo invitarlo a participar en una conversación grupal sobre materiales informativos sobre salud que se llevará a cabo en [LOCATION]. La conversación examinará su opinión, su conocimiento y sus experiencias con respecto a distintos temas de salud y ayudará a los CDC a mejorar los materiales de educación y comunicación sobre salud. Queremos hacerle algunas preguntas breves y, si reúne los requisitos y está interesado, lo invitaremos a participar en una conversación de 90 minutos que se llevará a cabo durante el mes de [MONTH] de 2015.

1. ¿Cuántos años tiene? **(DEBE SER MAYOR DE 18 AÑOS)**
(SI LA PERSONA ES MENOR DE 18 AÑOS, AGRADÉZCALE Y FINALICE LA CONVERSACIÓN)
2. ¿Cuál es su sexo? **(Masculino/Femenino)**
3. ¿El español es el idioma que más utiliza? **(Sí/No) (DEBE DECIR QUE SI)**
4. ¿En qué país nació? **(DEBE SER DE MEXICO)**
5. ¿De qué raza o etnicidad se considera? **(DEBE SER HISPANO/LATINO)**
Americano Nativo o Nativo de Alaska o las Islas Hispano o Latino Anglo Asiático
Afroamericano Nativo de Hawái o de otras Islas Pacíficas
6. ¿Cuál lejos vive de la frontera mexicana?
7. ¿Por cuánto tiempo ha vivido en esta región?
8. ¿Hace cuánto tiempo vive en los Estados Unidos?
9. ¿Puede comprometerse a asistir a una sesión de 90 minutos? **(Sí/No)**
(SI LA RESPUESTA ES "NO" O NO ESTÁ SEGURO, AGRADÉZCALE Y FINALICE LA CONVERSACIÓN)
10. Toda la información que se comparta durante el debate será confidencial. Se grabará el audio de todas las sesiones.
¿Desea que se lo grabe? **(Sí/No)**
(SI LA RESPUESTA ES "NO" O NO ESTÁ SEGURO, AGRADÉZCALE Y FINALICE LA CONVERSACIÓN)
11. ¿Se siente cómodo expresando su opinión a un grupo de personas? **(Sí/No)**
(SI LA RESPUESTA ES "NO" O NO ESTÁ SEGURO, AGRADÉZCALE Y FINALICE LA CONVERSACIÓN)
12. ¿Tiene algún tipo de necesidad especial que deba resolverse para que usted participe, como problemas auditivos, visuales u otros? **(Sí/No)** Si la respuesta es "Sí", indique los problemas:

Esas fueron todas las preguntas. Usted reúne los requisitos para participar en esta sesión de debate y queremos invitarlo a que nos acompañe el [INSERT DATE] de 2015. Si decide participar, recibirá un incentivo \$40.

13. ¿Desea participar? **(Sí/No)**
(SI LA RESPUESTA ES "NO", AGRADÉZCALE Y FINALICE LA CONVERSACIÓN); (SI LA RESPUESTA ES "SÍ", COLOQUE LA INFORMACIÓN DE CONTACTO EN LA PARTE SUPERIOR)

Muchas gracias por su tiempo.

Texto de terminación: Gracias por contestar las preguntas. Desafortunadamente usted no llena nuestros criterios de participación entonces no es elegible para participar en nuestro grupo. Toda la información que has compartido lo mantenemos privado. Gracias por su tiempo y que tenga buen día/noche.

APPENDIX 2—Focus Group Participant Gender and Age by City

Table 1: Focus Group Participant Gender and Age in San Diego, CA (Week 1)

Group Number	Gender	Age
1	F	54
1	F	58
1	F	22
1	F	40
1	F	32
1	M	53
1	M	30
1	M	39
2	F	33
2	F	28
2	F	25
2	F	47
2	M	48
2	M	24
2	M	48
2	M	53

Table 3: Focus Group Participant Gender and Age in McAllen, TX (Week 2)

Group Number	Gender	Age
5	F	67
5	F	26
5	F	38
5	F	45
5	F	31
5	F	40
5	M	38
5	M	41
6	F	54
6	F	26
6	F	38
6	F	33
6	M	30
6	M	25
6	M	44
6	M	43

Table 2: Focus Group Participant Gender and Age in Nogales, AZ (Week 1)

Group Number	Gender	Age
3	F	30
3	F	47
3	F	35
3	F	48
3	F	72
3	M	27
3	M	68
3	M	40
4	F	24
4	F	48
4	F	38
4	F	29
4	F	37
4	M	47
4	M	66
4	M	55

Table 4: Focus Group Participant Gender and Age in El Paso, TX (Week 2)

Group Number	Gender	Age
7	F	41
7	F	41
7	F	26
7	F	29
7	M	60
7	M	60
7	M	54
7	M	30
8	F	51
8	F	37
8	F	50
8	F	29
8	M	31
8	M	59
8	M	25
8	M	35

Table 5. Focus Group Participant Gender and Age in Las Cruces, NM (Week 2)

Group Number	Gender	Age
9	F	33
9	F	36
9	F	60
9	F	31
9	F	59
9	F	45
9	M	46
9	M	43
10	F	29
10	F	55
10	F	38
10	F	35
10	F	31
10	M	54
10	M	23
10	M	48

APPENDIX 3—Moderator Guide in English (A) and in Spanish (B) for Week 1

A. English Language Version

Emerging Mosquito-Borne Diseases: Assessment of Educational Messages for Mexican-Origin Audiences Along the U.S.-Mexico Border

Introduction: 10 minutes

My name is [moderator name] I am an independent moderator. We are here today on behalf of the U.S. Centers for Disease Control and Prevention (CDC) to get your opinion about educational posters on some diseases. These posters are in development and so are not finished products. Getting your reaction to them will help us make changes to improve the posters. Your opinions are really important to us—you are the expert audience—and so we really want you to share your honest thoughts. Today's discussion will help CDC improve health education and communication posters for you and your families and others in your community, and so your participation could help the people you care about. First, let's discuss how things will work during today's group.

- Privacy
 - Only first names will be used, and we will not keep any written record of your names nor will anyone besides researchers have access to any information collected today.
- Audio recording and observers/note taker
 - We will record today's discussion to help us remember what you say since there will be a lot of information discussed and we won't be able to write everything down. Also, in the back of the room there is someone taking notes on the discussion which will also help us remember what you say.
 - If you are worried about your privacy, you can use a different name during the discussion.
- We want your honest opinions
 - Again, the main goal today is to get your opinions about these posters so we can make them easier to understand by your community. So, please do not hesitate to point out things that you don't like or don't understand.
- Ground rules
 - Please allow everyone a chance to voice their own opinions, even if it is different than your own. We want to hear what all of you have to say.
 - We encourage you to share with family and friends information from today. But please don't share your thoughts with others here right after this focus group.
 - I will also ask "why" a lot because I am very interested in your opinions.

Do you have any questions about what we are doing here today or anything that I have said so far?

NOTE FOR MODERATOR: If participants ask questions about chikungunya or dengue, tell them to call the CDC Information Number (see information at end).

Introductory Questions: 10 minutes

1. Who is your most trusted source of health information for health recommendations for you and your family?
 - a. Probe: a doctor, promotora, family, friends, a health agency representative, a newsperson
 - b. Probe: In US? In Mexico?
2. How do you most frequently get health information?
 - a. Probe: TV? Radio? Smart phone? Internet? Printed?
In-person (e.g., Doctor's office? Promotora?)
Phone? Text messages? Facebook? Other social media? Other?
 - b. Probe: In US? In Mexico?
3. How do you prefer to receive health information?
 - a. Probe: TV? Radio? Smart phone? Internet? Printed?
In-person (e.g., Doctor's office? Promotora?)
Phone? Text messages? Facebook? Other social media? Other?
 - b. Probe: In US? In Mexico?
4. Where do you or your family seek health information?
 - a. Probe: Online? Which sites? Other?

Questions on Mosquito-Borne Diseases

1. Are mosquitoes a problem in your home or neighborhood?
2. What do you do to protect yourself and your family from mosquito bites?
Is it important to protect yourself and your family from mosquito bites?
3. Have you heard of any diseases that are spread by mosquitoes?
 - a. Probe: Are you concerned about getting those diseases?

Now I'm going to ask you to look at some posters. You can flip over just the first one. Take a few minutes to look at it and give your reactions. Please put a question mark on anything that is confusing. At the end of the session, I'll collect them all. Thanks!

EVITE QUE LOS MOSQUITOS/Source Reduction Poster: 20 minutes

Questions to pose to focus group participants

1. What is your first impression of this poster?
 - a. Probes: Is it visually appealing? Do you like the colors? Does this look like your yard or a yard in your community? Why or why not?
2. What do you get as the main messages of this poster?
3. What do these images tell you?
4. Are there images that are confusing or unclear, or any items that seem out of place? Are there any words or phrases that are unclear? How would you say it/show it?

NOTE FOR MODERATOR: Now let's look at this "Una vez a la semana message..."

5. How likely is your family, on a weekly basis, to empty and scrub, turn over, cover, or throw out any items that hold water in your yard/home? Why or why not? How easy or difficult would it be to remove items/containers that hold water in and around your house/yard?
6. What would motivate you to follow these suggestions?
 - a. Probe: If you knew you could get sick from a mosquito bite and be unable to work for a week or more, would you be more likely to follow these instructions?
7. Do houses in your area they have screens on doors and windows? If so, do holes get repaired?



Introductory Questions—INFOGRAPHIC “¿TIENE FIEBRE?”

1. What have you heard about chikungunya and dengue?
2. Tell me about anything you might have heard about the symptoms of these diseases.

Now I'm going to ask you to look at another poster. You can look at the next one. Take a few minutes to look at it and give your reactions. Please put a question mark on anything that is confusing. At the end of the session, I'll collect them all. Thanks!

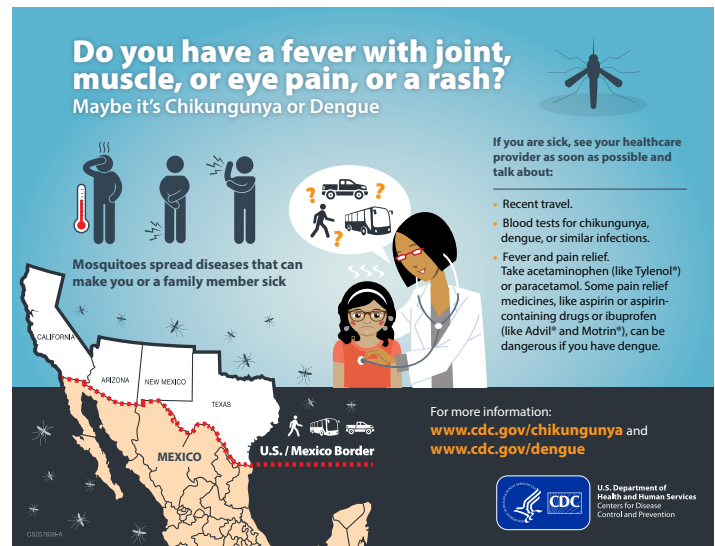
Border Crossing Poster: 20 minutes

Questions to pose to focus group participants

1. What are the main messages this poster is trying to get across, in your own words?
2. What about this poster catches your attention?
3. Is there too much information in it, not enough, or is it just right?

Symptoms

4. What do these images tell you about what happens when you have chikungunya or dengue?
5. Does the top sentence about the symptoms make sense to you? Why? Why not?
How would you say it with your own words?
 - a. Is there anything about the images that is confusing? If yes, what? Why?
 - i. Would it be easier to understand if the three figures were more realistic, for example showing facial expressions or more body details, like the doctor and child figure?
 - ii. Do the images convey Fever? Joint pain? Muscle pain?



Transmission by mosquitoes

6. Mosquito image:
 - a. What do you call this insect? [mosquito, zancudo?]
 - b. Do you think about this image is better? (Show alt. image)
7. Do you think the images in the material show that mosquitoes spread diseases that can make you or a family member sick?

Seeking care

8. Image of doctor with girl:
 - a. What does this image mean to you? Can you relate to it?

Recent travel

9. What do these images [map with mosquitoes flying around and modes of transport, bubble with modes of transport] mean to you?
10. When you cross the border to see family or friends, do you consider that to be travel?

Introductory Questions—INFOGRAPHIC “¿ESTÁ ENFERMO?”

1. Have you or someone you know ever had chikungunya or dengue?
2. [OTHER OPENING QUESTION/S TO BE SOLICITED FROM MODERATOR]

I'm going to ask you to look at another poster. You can look at the next one. Take a few minutes to look at it and give your reactions. Please put a question mark on anything that is confusing. At the end of the session I'll collect them all. Thanks!

Sick with Chikungunya or Dengue? Poster: 20 minutes

Questions to pose to focus group participants

1. What is your first impression of this poster?
 - a. Probe: Is it visually appealing? Do you like the colors? Do you like the images? Why or why not?
2. What are the main messages you get from this poster?
3. Looking at the **girl**, tell me what's happening.
 - a. Probe: Tell me why she is sick. Tell me about her symptoms.
4. Looking at the calendar and the text in the middle of the poster, tell me what you understand.
 - a. Is the text and image understandable? If not, why not? What would you change?
5. **Instructions to moderator:** Ask participants to read the following text:
 - a. “Protect yourself and others from mosquito bites during the first week of illness” AND “Protect yourself from mosquito bites” in the left-hand, bottom corner.
ASK the following:
 - i. Is the text understandable? If not, why not? What would you change?
 - ii. Given that you can get sick and spread the illness to other family members, how likely would you be to follow these suggestions? Why or why not?
6. Is it important for a person who is sick with chikungunya or dengue to protect themselves from more mosquito bites? Why or why not?



Closing Questions: 10 minutes

Thank you so much for your comments, ideas, and suggestions.

After looking at the posters presented:

1. Tell me what was the most important thing you learned about chikungunya or dengue?
2. How important are these messages for you and your family in your daily lives?
3. After looking at these posters, will you talk to your friends and family about chikungunya or dengue?
4. If you could pick where these posters go, where would you like to see them, where the most people would notice?
 - a. Probe: doctor's office, public places (bus stops, parks, community centers, etc.)?
5. Any questions?

For more information, contact the Centers for Disease Control and Prevention (CDC):
1-800-CDC-INFO (1-800-232-4636)
<https://wwwn.cdc.gov/DCS>
www.cdc.gov/chikungunya
www.cdc.gov/dengue

B. Spanish Language Version

Enfermedades emergentes transmitidas por mosquitos: Evaluación de los mensajes educativos dirigidos a la población de origen mexicano en la región fronteriza Estados Unidos-México.

Presentación: 10 minutos

Mi nombre es [nombre del moderador] y soy un moderador independiente. Estamos aquí de parte de los Centros para el Control y la Prevención de Enfermedades (CDC) para conocer su opinión acerca de algunos carteles educativos sobre ciertas enfermedades. Estos materiales están en desarrollo y no son productos terminados. Sus impresiones respecto a ellos nos ayudarán a realizar cambios para mejorarlos. Sus opiniones son muy importantes para nosotros—ustedes son la audiencia experta y, por esto, queremos que compartan su opinión honestamente. La conversación de hoy nos ayudará a mejorar estos carteles educativos sobre salud para ustedes, sus familias y para otros en sus comunidades; esto quiere decir que su participación puede ayudar a sus seres queridos. En primer lugar, comenzaremos por explicar las reglas y cómo va a funcionar el grupo de hoy.

- Confidencialidad
 - Solo se usará su primer nombre, y no se mantendrá ningún registro escrito de sus nombres; además, nadie aparte de los investigadores tendrán acceso a cualquiera de la información recabada hoy.
- Grabación de audio y observadores/toma de notas
 - La conversación de hoy será grabada para ayudarnos a recordar lo comentado debido a que mucha información será discutida y no seremos capaces de anotar todo. Además, habrá alguien tomando notas de la discusión que nos ayudarán a recordar lo comentado, y asegurarnos que estamos obteniendo las opiniones de todos ustedes. Además, habrán personas de nuestro proyecto observando en otra habitación.
 - En caso les preocupe su privacidad, pueden utilizar un nombre distinto durante la conversación.
- Queremos recibir opiniones honestas
 - Una vez más, el objetivo principal de hoy es conocer sus opiniones sobre estos materiales para que puedan ser más claros para su comunidad. Por lo tanto, por favor no duden en señalar las cosas que no les gusten o que no comprendan.
- Reglas básicas
 - Por favor permitan que todos tengan una oportunidad para dar su opinión, aun cuando esta sea diferente a la suya. Queremos escuchar lo que todos tiene que decir.
 - Los alentamos a que compartan la información de hoy con su familia y amigos. Pero, por favor, no comenten sus opiniones inmediatamente a la conclusión de este grupo focal con otros participantes aquí presentes.
 - Preguntaré mucho “por qué” porque estoy muy interesado en saber sus opiniones.

¿Tienen una pregunta o duda sobre lo que haremos hoy aquí o sobre algo de lo que he dicho hasta ahora?

NOTA PARA MODERADOR: Si los participantes realizan preguntas acerca de chikungunya o dengue, pídale que se comuniquen al número de información de CDC (vea información al final).

Preguntas de Introducción: 10 minutos

1. ¿De dónde principalmente obtiene usted o su familia información sobre la salud?
 - a. TV? ¿Radio? ¿Internet? ¿Carteles/folletos/información imprimida? ¿Teléfono inteligente (móvil)?
En persona (¿Médico? ¿Clínica? ¿Promotora?)
¿Teléfono/aplicaciones? ¿Mensajes de texto? ¿Facebook? ¿Otros medios sociales? ¿Otro?
 - b. ¿En los EEUU? ¿O en México?
2. Pensando en información sobre salud y recomendaciones para usted y su familia, ¿cuál es su fuente más confiable?
 - a. ¿Médico, promotora, familia, amigos, las noticias?
 - b. ¿Qué tan confiable es la información que viene de las agencias de salud del gobierno?
 - c. ¿En los EEUU? ¿O en México?
3. ¿Cómo prefiere usted recibir información sobre la salud?
 - a. ¿TV? ¿Radio? ¿Internet? ¿Carteles? ¿Teléfono inteligente (móvil)
En persona (¿Médico? ¿Clínica? ¿Promotora?)
¿Teléfono/aplicaciones? ¿Mensajes de texto? ¿Facebook? ¿Otros medios sociales? ¿Otro?
 - b. ¿En los EEUU? ¿O en México?

Preguntas Sobre Las Enfermedades Transmitidas Por Vectores

1. ¿Qué entiende con la palabra "mosquito"? "Zancudo"?
2. ¿Son los mosquitos un problema en su hogar o vecindario?
3. ¿Qué hace usted para protegerse a sí mismo y a su familia de las picaduras de mosquitos?
¿Es importante para usted el protegerse usted y su familia de las picaduras de mosquitos?
4. ¿Ha escuchado de enfermedades que se puedan propagar por mosquitos? ¿Cuáles?
 - a. Sondeo: ¿Le preocupa enfermarse de tales enfermedades?

Ahora les voy a pedir que vean unos carteles. Por favor solo volteen el primero. Tomen unos minutos para leerlo, fijarse las imágenes, y denme sus opiniones. Por favor pongan un signo de interrogación sobre cualquier cosa (una imagen, palabra o frase) que sea confusa. Al final de la sesión recopilaré todos. ¡Gracias!

EVITE QUE LOS MOSQUITOS/Cartel: Reducción de fuentes: 20 minutos

Preguntas para los participantes

1. ¿Cuál es su primera impresión de este cartel?
 - a. Sondeo: ¿Le parece atractivo? ¿Le gustan los colores?
 - b. Sondeo: ¿Se parece esto a su patio o a un patio típico en su comunidad? ¿Por qué?
2. Para usted, ¿Cuáles son los mensajes principales en este cartel?
3. ¿Qué le dicen estas imágenes a usted?
4. ¿Hay alguna imagen que sea confusa o no sea clara para usted? ¿Hay alguna imagen que esté fuera de lugar, es decir que no pertenezca? ¿Hay alguna palabra o frase que no sea clara? ¿Cómo lo diría usted?

NOTA PARA MODERADOR: Ahora revisemos este mensaje "Una vez a la semana..."

5. ¿Qué tan probable es que su familia lave, tape, voltee y tire todas las cosas que pueden acumular agua en su patio, dentro y alrededor de su casa CADA SEMANA? ¿Por qué sí o por qué no? ¿Qué tan difícil o fácil sería para su familia el remover los contenedores y artefactos que acumulan agua que están adentro y alrededor de su casa?
6. ¿Qué motivaría a su familia a seguir estas sugerencias?
 - a. Sondeo: Si usted supiera que puede enfermarse por la picadura de un mosquito y que no podría trabajar durante una semana o quizás más tiempo, ¿sería más probable que usted siguiera estas instrucciones?
7. ¿Tienen las casas de su comunidad mosquiteros en las puertas y ventanas? Si sí, ¿se reparan los agujeros?



Preguntas de Introducción—"¿TIENE FIEBRE?" INFOGRAFÍA:

1. ¿Qué ha escuchado sobre el chikungunya y el dengue?
2. Por favor, cuénteme cualquier cosa que haya escuchado sobre los síntomas de estas enfermedades.

Ahora les voy a pedir que vean unos carteles. Por favor solo volteen el primero. Tomen unos minutos para leerlo, fijarse las imágenes, y denme sus opiniones. Por favor pongan un signo de interrogación sobre cualquier cosa (una imagen, palabra o frase) que sea confusa. Al final de la sesión recopilaré todos. ¡Gracias!

Cartel: "¿TIENE FIEBRE?": 20 minutos

Preguntas

1. ¿Cuál es su primera impresión de este cartel?
2. Para usted, ¿cuáles son los mensajes principales?
3. ¿Qué tanta información cree usted que hay en este cartel? ¿demasiada información, suficiente información, o menos información de la necesaria?

Síntomas

4. ¿Qué le dicen estas imágenes acerca de qué pasa cuando alguien tiene chikungunya o dengue?
5. ¿Tiene sentido para usted, la primera frase acerca de los síntomas? ¿Por qué sí? ¿Por qué no? ¿Cómo lo diría en sus propias palabras?
 - a. ¿Existe cualquier cosa sobre las imágenes que le sea confuso o que no sea claro? Si sí, ¿qué? ¿Por qué?
 - i. ¿Sería más fácil de entender si las tres figuras fueran más realísticas? Por ejemplo, mostrando expresiones faciales o más detalles corporales, como la imagen de la médica con la niña.
 - ii. ¿Cree que las imágenes sugieren fiebre? ¿Dolor en las articulaciones? ¿Dolor muscular?



Transmisión por mosquitos

6. Imagen del mosquito:
 - a. ¿Cómo llama a este insecto? [mosquito, zancudo]
 - b. ¿Es claro para usted que esta imagen representa un mosquito? (Mostrar imagen alternativa) ¿Qué opina de esta imagen, es mejor? ¿Cuál imagen prefiere?
7. ¿Considera que las imágenes de este cartel muestran que los mosquitos transmiten enfermedades que pueden enfermarle a usted y a su familia?

Atención médica

8. Imagen de la médica con una niña:
 - a. ¿Qué significa esta imagen para usted?
 - b. ¿Se puede identificar usted o su familia con esta imagen?

Viaje reciente

9. [Mapa con mosquitos volando alrededor y las opciones de transporte, círculo con modos de transporte:]
¿Qué significan para usted estas imágenes?
10. Cuando usted cruza la frontera al otro lado para visitar a familia o amigos, ¿lo considera como un "viaje"?

Preguntas de Introducción—¿ESTÁ ENFERMO? INFOGRAFÍA:

1. ¿Qué ha escuchado sobre el chikungunya y el dengue?
2. Por favor, cuénteme cualquier cosa que haya escuchado sobre los síntomas de estas enfermedades.

Ahora les voy a pedir que vean unos carteles. Por favor solo volteen el primero. Tomen unos minutos para leerlo, fijarse las imágenes, y denme sus opiniones. Por favor pongan un signo de interrogación sobre cualquier cosa (una imagen, palabra o frase) que sea confusa. Al final de la sesión recopilaré todos. ¡Gracias!

Cartel: ¿Está enfermo de chikungunya o dengue?: 20 minutos

Preguntas

1. ¿Cuál es su primera impresión sobre este cartel?
 - a. Sondeo: ¿Le parece atractivo? ¿Le gustan los colores? ¿Le gustan las imágenes? ¿Por qué sí?, ¿por qué no?
2. Para usted, ¿Cuáles son los mensajes principales?
3. Mirando a la niña, cuénteme qué le está pasando.
 - a. Sondeo: Dígame por qué está enferma. Cuéntame sobre sus síntomas
4. Mirando el calendario y el texto al centro del cartel, por favor, cuénteme que entiende.
 - a. Sondeo: ¿Son el texto y la imagen claros, entendibles? Si no, ¿Por qué? ¿Qué cambiaría? ¿Cómo lo diría con sus propias palabras?
5. **Instrucciones para Moderador:** Pregúntales a los participantes que lean el texto siguiente:
 - a. "Protéjase y proteja a otros de las picaduras de mosquitos durante la primera semana de su enfermedad" Y "protéjase de las picaduras de mosquitos" (en esquina inferior del lado izquierdo):
PREGUNTE lo siguiente:
 - i. ¿Es el texto claro, entendible? Si no, ¿Por qué? ¿Qué cambiaría?
 - ii. Sabiendo que usted se puede enfermar y transmitir la enfermedad a otros miembros de la familia, ¿qué tan probable es que siguiera estas sugerencias? ¿Por qué sí o no?
6. ¿Es importante para una persona quien está enfermo de chikungunya o dengue que se proteja de más picaduras de mosquitos? ¿Por qué?



Preguntas de Clausura: 10 minutos

Muchísimas gracias por todos sus comentarios, ideas y sugerencias.

Después de repasar todos los carteles,

1. ¿Qué cosa es la más importante que ha aprendido sobre el chikungunya y el dengue?
2. ¿Qué tan importantes son estos mensajes para usted y para su familia en sus vidas diarias?
3. Después de ver estos carteles, ¿hablaría usted con su familia y amigos sobre el chikungunya o dengue?
4. Si usted pudiera escoger dónde colocar estos carteles, ¿dónde le gustaría verlos?, ¿dónde los verían la mayor cantidad de gente en su comunidad?
 - a. Sondeo: clínica, sitios públicos (paradas del autobús, parques, centros comunitarios, etc.)
5. ¿Tiene cualquier otra pregunta?

Para más información, llame a los Centros para el Control y la Prevención de Enfermedades (CDC):
1-800-CDC-INFO (1-800-232-4636)
<https://wwwn.cdc.gov/DCS>
www.cdc.gov/chikungunya
www.cdc.gov/dengue

APPENDIX 4—Moderator Guide in English (A) and in Spanish (B) for Week 2

A. English Language Version

Emerging mosquito-borne diseases: assessment of educational messages for Mexican-origin audiences along the U.S.-Mexico border

Introduction: 10 minutes

My name is [moderator name] I am an independent moderator. We are here today on behalf of the U.S. Centers for Disease Control and Prevention (CDC) to get your opinion about educational posters on some diseases. These posters are in development and so are not finished products. Getting your reaction to them will help us make changes to improve the posters. Your opinions are really important to us—you are the expert audience—and so we really want you to share your honest thoughts. Today's discussion will help CDC improve health education and communication posters for you and your families and others in your community, and so your participation could help the people you care about. First, let's discuss how things will work during today's group.

- Privacy
 - Only first names will be used, and we will not keep any written record of your names nor will anyone besides researchers have access to any information collected today.
- Audio recording and observers/note taker
 - We will record today's discussion to help us remember what you say since there will be a lot of information discussed and we won't be able to write everything down. Also, in the back of the room there is someone taking notes on the discussion which will also help us remember what you say.
 - If you are worried about your privacy, you can use a different name during the discussion.
- We want your honest opinions
 - Again, the main goal today is to get your opinions about these posters so we can make them easier to understand by your community. So, please do not hesitate to point out things that you don't like or don't understand.
- Ground rules
 - Please allow everyone a chance to voice their own opinions, even if it is different than your own. We want to hear what all of you have to say.
 - We encourage you to share with family and friends information from today. But please don't share your thoughts with others here right after this focus group.
 - I will also ask "why" a lot because I am very interested in your opinions.

Do you have any questions about what we are doing here today or anything that I have said so far?

NOTE FOR MODERATOR: If participants ask questions about chikungunya or dengue, tell them to call the CDC Information Number (see information at end).

Introductory Questions: 10 minutes

1. Where do you or your family get health information? (WARM UP QUESTION—Spend no more than a minute on this)
2. Who is your most trusted source of health information for health recommendations for you and your family?
 - a. Probe: a doctor, promotora, family, friends, a newsperson
3. Do you trust information from a government health agency?
 - a. Probe: In US? In Mexico?

Questions on Mosquito-Borne Diseases

1. Are mosquitoes a problem in your home or neighborhood?
2. What do you do to protect yourself and your family from mosquito bites? Is it important to protect yourself and your family from mosquito bites?
3. Have you heard of any diseases that are spread by mosquitoes?
 - a. Probe: Are you concerned about getting those diseases?

Now I'm going to ask you to look at some posters. You can flip over just the first one. Take a few minutes to look at it and give your reactions. Please put a question mark on anything that is confusing. At the end of the session, I'll collect them all. Thanks!

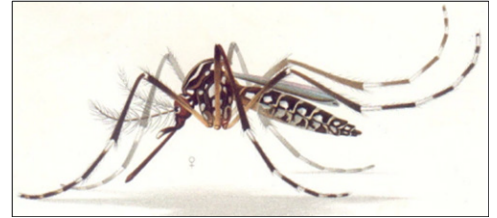
EVITE QUE LOS MOSQUITOS/Source Reduction Poster: 20 minutes

Questions to pose to focus group participants

1. What is your first impression of this poster?
 - a. Probes: Is it visually appealing? Do you like the colors? Does this look like your yard or a yard in your community? Why or why not?
 - b. Are there images that are confusing or unclear? Are there any items that seem out of place?
2. Look at the images only and ignore the text for a moment. What do these images tell you?
3. What is the main message of this poster?
 - a. Would it be better for the poster to focus FIRST on how mosquitoes can make you sick?
 - b. Would focusing on mosquitoes and diseases FIRST make you more likely to keep your yard free of standing water and having screens?
4. Do the images go along with the overall message of the poster?
 - a. What changes, if any, would you make to these images, so they fit the message of the poster better?
 - b. Probe: Have you noticed the screens? Do houses in your area have screens on doors and windows? If so, do holes get repaired?



5. [The moderator] will unveil alternative mosquito images and ask:
- Which of these images best represents a mosquito that you think could make you sick?
 - If you wanted to let other people in your community know that it is important to protect themselves from mosquito bites, which of these images would you use?



NOTE FOR MODERATOR: Now let's look at this "Una vez a la semana message..."

- How likely is your family, on a weekly basis, to empty and scrub, turn over, cover, or throw out any items that hold water in your yard/home? Why or why not? How easy or difficult would it be to remove items/containers that hold water in and around your house/yard?
- What would get you to follow these suggestions?
 - Probe: The poster says that 'mosquitoes spread diseases that can make you or a family member sick.' What do you think about this? Which of the two messages: 'you becoming sick' versus 'your family becoming sick' would most likely convince you to protect yourself from mosquitoes?
- If you wanted to let your neighbors/friends about the message of this poster, what would you tell them? How would you explain it to them?

Introductory Questions—INFOGRAPHIC “¿TIENE FIEBRE?”

1. What have you heard about chikungunya?
2. What have you heard about dengue?
3. Tell me about anything you might have heard about the symptoms of these diseases.

Now I'm going to ask you to look at another poster. You can look at the next one. Take a few minutes to look at it and give your reactions. Please put a question mark on anything that is confusing. At the end of the session I'll collect them all. Thanks!

Border Crossing Poster: 20 minutes

Questions to pose to focus group participants

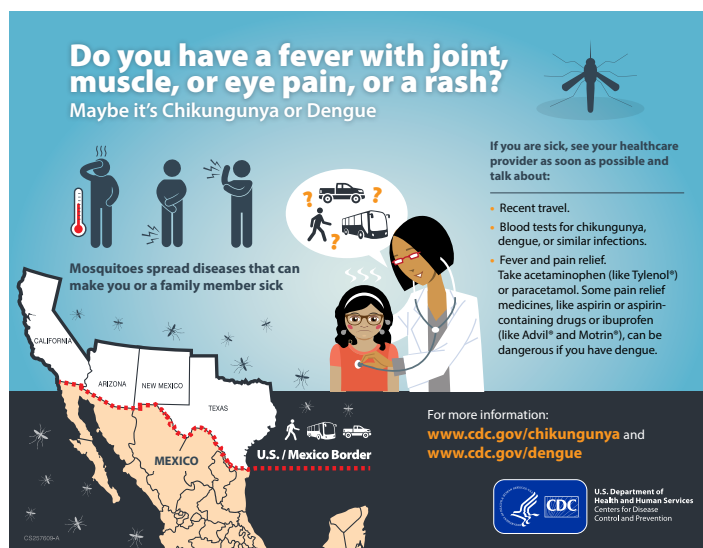
1. What are the main messages this poster is trying to get across, in your own words?
2. What about this poster catches your attention?
3. Is there too much information in it, not enough, or is it just right?

Symptoms

4. What do these images tell you about what happens when you have chikungunya or dengue?
5. Does the top sentence about the symptoms make sense to you? Why? Why not? How would you say it with your own words?
 - a. Is there anything about the images that is confusing? If yes, what? Why?
 - i. Do the images convey Fever? Joint pain? Muscle pain? Rash?
 - ii. Would it be easier to understand if the three figures were more realistic, for example showing facial expressions or more body details, like the doctor and child figure?
6. [The moderator] will unveil alternative symptom images:



- a. What does each of these images represent?
 - b. Do they represent any symptoms? If so, which ones?
 - c. Which of these two sets of images (Stick figures vs. Human figures) best represent each of the symptoms?
 - i. [Optional probe: We actually meant to communicate fever, headache and joint pain. How would we change these images to better communicate these?]
7. Do you think the images in the poster show that mosquitoes spread diseases that can make you or a family member sick?
 - a. If not, what do you think the images would need to look like in order to convey this message?



Seeking care

8. Image of doctor with girl:
 - a. What does this image mean to you? Can you relate to it?
 - b. After looking at this poster, how likely are you to let your doctor know about any recent visit to Mexico?

Recent travel

9. What do these images [map with mosquitoes flying around and modes of transport] mean to you?
 - a. What does the map mean to you?
 - b. Did you notice the images of the bus, the person walking and the pickup truck? What do these images mean to you? How important are they to the overall message of the poster?
10. When you or your family cross the border to Mexico, do you consider that travel? How do you refer to it?
 - a. Probe: is it visiting? Is it crossing the border?
 - b. What about if you are going to the interior? What do you call that?
11. [The moderator] to unveil alternative border crossing image.
 - a. What if we had this poster instead? What are your thoughts?
 - b. Probe: What do you think about the revised callout bubble?
 - c. Probe: What do you think about the revised map?

12. **SECOND POSTER QUESTIONS** [To be asked for the second poster shown to focus group participants regardless of the poster. Questions a through e will be rotated from one group to the next]:

- a. If you knew you could get sick from a mosquito bite and be unable to work for a week or more, would you be more likely to follow these instructions? Why? Why not?
- b. If I told you that chikungunya can make you or a family member so sick that they can't move at all—not even stand up or go to the bathroom—for several days to weeks, would you be more likely to protect yourself and your family? Why? Why not?
- c. If I told you that chikungunya can make you or a family member be in pain for months and even years after having chikungunya, would you be more likely to protect yourself and your family? Why? Why not?
- d. If I told you that you or a family member could die from dengue, would you be more likely to protect yourself and your family? Why? Why not?
- e. If I told you that both of these diseases can be more severe for babies and the elderly, would you be more likely to protect yourself and your family? Why? Why not?



Introductory Questions—INFOGRAPHIC “¿ESTÁ ENFERMO?”

1. What have you heard about chikungunya?
2. What have you heard about dengue?
3. Tell me about anything you might have heard about the symptoms of these diseases.

I'm going to ask you to look at another poster. You can look at the next one. Take a few minutes to look at it and give your reactions. Please put a question mark on anything that is confusing. At the end of the session, I'll collect them all. Thanks!

Sick with Chikungunya or Dengue? Poster: 20 minutes

Questions to pose to focus group participants

1. What is your first impression of this poster?
 - a. Probes: Is it visually appealing? Do you like the colors? Do you like the images? Why or why not?
2. What are the main messages you get from this poster?
3. Looking at the **girl**, tell me what's happening.
 - a. Probe: Tell me why she is sick. Tell me about her symptoms.
4. Looking at the calendar, what does it tell you?
5. Is the text understandable? If not, why not? What would you change?
6. [The moderator] will unveil alternative symptom images (This should not be repeated if the order of the posters is such that it has already been covered)



- a. What does each of these images represent?
- b. Do they represent any symptoms? If so, which ones?
- c. Which of these two sets of images (Stick figures vs. Human figures) best represent each of the symptoms?
 - i. [Optional probe: We actually meant to communicate fever, headache and joint pain. How would we change these images to better communicate these?]

Instructions to moderator: Ask participants to read the following text:

7. "Protect yourself and others from mosquito bites during the first week of illness" AND "Protect yourself from mosquito bites" in the left-hand, bottom corner.

ASK the following:

- a. Is the text understandable? If not, why not? What would you change?

- b. Is it important for a person who is sick with chikungunya or dengue to protect themselves from additional mosquito bites? Why or why not?
- c. Given that you can get sick and spread the illness to other family members, how likely would you be to follow these suggestions? Why or why not?

Closing Questions: 10 minutes

Thank you so much for your comments, ideas, and suggestions.

After looking at the posters presented:

1. Tell me what was the most important thing you learned about chikungunya or dengue?
2. How important are these messages for you and your family in your daily lives?
3. After looking at these posters, will you talk to your friends and family about chikungunya or dengue?
 - a. Probe: If so, what would you tell them?
4. Thinking about the house (prevention) poster and what we've read about dengue and chikungunya, how likely are you to follow any of the measures that are listed on the posters? Why? Why not?
 - a. Probe: Probe for the most convincing 'motivating factor' that was discussed after the first poster and the second poster shown to the focus group participants.
5. If you could pick where these posters go, where would you like to see them, where the most people would notice?
 - a. Probe: doctor's office, public places (bus stops, parks, community centers, etc.)?
6. Any questions?

For more information, contact the Centers for Disease Control and Prevention (CDC):
1-800-CDC-INFO (1-800-232-4636)
<https://www.cdc.gov/DCS>
www.cdc.gov/chikungunya
www.cdc.gov/dengue

B. Spanish Language Version

Enfermedades emergentes transmitidas por mosquitos: Evaluación de los mensajes educativos dirigidos a la población de origen mexicano en la región fronteriza Estados Unidos-México.

Presentación: 10 minutos

Mi nombre es [nombre del moderador] y soy un moderador independiente. Estamos aquí de parte de los Centros para el Control y la Prevención de Enfermedades (CDC) para conocer su opinión acerca de algunos carteles educativos sobre ciertas enfermedades. Estos materiales están en desarrollo y no son productos terminados. Sus impresiones respecto a ellos nos ayudarán a realizar cambios para mejorarlos. Sus opiniones son muy importantes para nosotros—ustedes son la población experta y, por esto, queremos que compartan su opinión honestamente. La conversación de hoy nos ayudará a mejorar estos carteles educativos sobre salud para ustedes, sus familias y para otros en sus comunidades; esto quiere decir que su participación puede ayudar a sus seres queridos. En primer lugar, comenzaremos por explicar las reglas y cómo va a funcionar el grupo de hoy.

- Confidencialidad
 - Solo se usará su primer nombre, y no se mantendrá ningún registro escrito de sus nombres; además, nadie aparte de los investigadores tendrán acceso a cualquiera de la información recabada hoy.
- Grabación de audio y observadores/toma de notas
 - La conversación de hoy será grabada para ayudarnos a recordar lo comentado debido a que mucha información será discutida y no seremos capaces de anotar todo. Además, habrá alguien tomando notas de la discusión que nos ayudara a recordar lo comentado, y asegurarnos que estamos obteniendo las opiniones de todos ustedes. Además, habrán personas de nuestro proyecto observando en otra habitación.
 - En caso de les preocupe su privacidad, pueden utilizar un nombre distinto durante la conversación.
- Queremos recibir opiniones honestas
 - Una vez más, el objetivo principal de hoy es conocer sus opiniones sobre estos materiales para que puedan ser más claros para su comunidad. Por lo tanto, por favor no duden en señalar las cosas que no les gusten o que no comprendan.
- Reglas básicas
 - Por favor permitan que todos tengan una oportunidad para dar su opinión, aun cuando esta sea diferente a la suya. Queremos escuchar lo que todos tiene que decir.
 - Los alentamos a que compartan la información de hoy con su familia y amigos. Pero, por favor, no comenten sus opiniones inmediatamente a la conclusión de este grupo con otros participantes aquí presentes.
 - Preguntaré mucho “por qué” porque estoy muy interesado en saber sus opiniones.

¿Tienen una pregunta o duda sobre lo que haremos hoy aquí o sobre algo de lo que he dicho hasta ahora?

NOTA PARA MODERADOR: Si los participantes realizan preguntas acerca de chikungunya o dengue, pídeles que se comuniquen al número de información de CDC (vea información al final).

Preguntas de introducción: 10 minutos

1. ¿De dónde principalmente obtiene usted o su familia información sobre la salud?
(“WARM UP QUESTION”—no más de un minuto.)
2. Pensando en información sobre salud y recomendaciones para usted y su familia, ¿cuál es su fuente más confiable?
 - a. ¿Médico, promotora, familia, amigos, las noticias?
 - b. ¿Qué tan confiable es la información que viene de las agencias de salud del gobierno?
 - c. ¿En los EEUU? ¿O en México?

Preguntas Sobre Las Enfermedades Transmitidas Por Vectores

1. ¿Son los mosquitos un problema en su hogar o vecindario?
2. ¿Qué hace usted para protegerse a sí mismo y a su familia de las picaduras/piquetes de mosquitos?
¿Es importante para usted el protegerse y su familia de las picaduras de mosquitos?
3. ¿Ha escuchado de enfermedades que se puedan propagar por mosquitos? ¿Cuáles?
 - a. ¿Le preocupa enfermarse de tales enfermedades?

Ahora les voy a pedir que vean un cartel. Por favor tomen unos minutos para leerlo, fíjense en las imágenes, y denme sus opiniones. Por favor pongan un signo de interrogación sobre cualquier cosa (una imagen, palabra o frase) que sea confusa. Al final de la sesión los recogeré todos. ¡Gracias!

EVITE QUE LOS MOSQUITOS/Cartel de reducción de fuentes: 20 minutos

Preguntas para los participantes

1. ¿Cuál es su primera impresión de este cartel?
 - a. Sondeo: ¿Le parece atractivo? ¿Le gustan los colores? ¿Se parece esto a su patio o a un patio típico en su comunidad? ¿Por qué?
 - b. ¿Hay alguna imagen que sea confusa o no sea clara para usted? ¿Hay alguna imagen que esté fuera de lugar, es decir que no pertenezca? ¿Hay alguna palabra o frase que no sea clara? ¿Cómo lo diría usted?
2. Ahora por favor vea las imágenes solamente, e ignore el texto por un momento. ¿Qué le dicen estas imágenes?
3. Para usted, ¿Cuál es el mensaje principal en este cartel?
 - a. ¿Sería mejor que el cartel se centrara en el hecho que los mosquitos los pueden enfermar?
 - b. Si el poster hiciera énfasis en los mosquitos y las enfermedades PRIMERO, ¿creen ustedes que esto haría que ustedes quisieran mantener sus patios libres de objetos que puedan acumular agua y tener mosquiteros?
4. Pensando en las imágenes del cartel, ¿Si representan las imágenes el mensaje del cartel?
 - a. ¿Qué cambios le harían ustedes, si es que le harían algún cambio, a este cartel para hacer que reflejaran mejor el mensaje del cartel?
 - b. ¿Habían ustedes notado los mosquiteros? ¿Las casas en su área tienen mosquiteros en las ventanas y puertas? Si sí, ¿Se reparan los agujeros?



5. [El moderador] muestra las imágenes alternativas de los mosquitos y pregunta:
- ¿Cuáles de las siguientes imágenes representa mejor un mosquito que lo pueda enfermar?
 - Si usted quisiera hacerle saber a otros miembros de su comunidad que es importante protegerse de las picaduras de mosquitos, ¿cuál de estas imágenes usaría usted?



NOTA PARA MODERADOR: Ahora revisemos este mensaje "Una vez a la semana..."

- ¿Qué tan probable es que su familia lave, tape, voltee y tire todas las cosas que pueden acumular agua en su patio, dentro y alrededor de su casa CADA SEMANA? ¿Por qué sí o por qué no? ¿Qué tan difícil o fácil sería para su familia el remover los contenedores y artefactos que acumulan agua que están adentro y alrededor de su casa/patio?
- ¿Qué le motivaría a seguir estas sugerencias?
 - Sondeo: El cartel dice que los mosquitos propagan enfermedades que lo pueden enfermar a usted o algún otro miembro de su familia. ¿Qué piensa acerca de esto?
 - ¿Cuál de los dos mensajes, el que usted se puede enfermar o que se puede enfermar algún miembro de su familia es más probable que lo convenza a protegerse de los mosquitos?
- Si usted quisiera hablar con sus vecinos/amigos acerca del mensaje de este cartel, ¿Qué le dirían? ¿Cómo explicarían ustedes este mensaje?

Preguntas de Introducción—“¿TIENE FIEBRE?”:

1. ¿Qué ha escuchado sobre el chikungunya
2. ¿Qué ha escuchado sobre el dengue?
3. Por favor, cuénteme cualquier cosa que haya escuchado sobre los síntomas de estas enfermedades.

Ahora les voy a pedir que vean unos carteles. Por favor solo volteen el primero. Tomen unos minutos para leerlo, fíjense en las imágenes, y denme sus opiniones. Por favor pongan un signo de interrogación sobre cualquier cosa (una imagen, palabra o frase) que sea confusa. Al final de la sesión recopilaré todos. ¡Gracias!

Cartel: “Tiene Fiebre?": 20 minutos

Preguntas

1. En sus propias palabras, ¿cuáles son los mensajes que principales que este cartel está tratando de llevar?
2. ¿Hay algo que le llame su atención en este cartel?
3. ¿Qué tanta información cree usted que hay en este cartel? ¿demasiada información, suficiente información, o menos información de la necesaria?

Síntomas

1. ¿Qué le dicen estas imágenes acerca de lo que pasa cuando alguien tiene chikungunya o dengue?
2. ¿Tiene sentido para usted la primera frase acerca de los síntomas? ¿Por qué sí? ¿Por qué no? ¿Cómo lo diría en sus propias palabras?
 - a. ¿Hay alguna cosa sobre las imágenes que le sea confuso o que no sea claro? Si sí, ¿qué? ¿Por qué?
 - i. Pensando en estas imágenes (POINTING TO STICK FIGURES), ¿Representan estas imágenes fiebre, dolor en las articulaciones o dolor muscular?
 - ii. ¿Sería más fácil de entender si las tres figuras fueran más realistas? Por ejemplo, que mostraran expresiones faciales o más detalles corporales, como la imagen de la doctora y la niña.
3. [El moderador] muestra las imágenes alternativas de los síntomas



- a. ¿Qué representa cada una de estas imágenes?
- b. ¿representan síntomas? Si sí, ¿Cuáles?
- c. ¿cuál de estos grupos de imágenes representa mejor cada uno de los síntomas?
 - i. OPCIONAL: Las imágenes están representando es fiebre, dolor de cabeza, y dolor de articulaciones. ¿Qué le cambiarían ustedes a estas imágenes para comunicar estos síntomas mejor?

4. ¿Creen ustedes que las imágenes de este cartel muestran que los mosquitos le pueden enfermar a usted o a algún miembro de su familia?
- a. Si no, ¿qué creen ustedes que tendrían que mostrar las imágenes para llevar este mensaje?

Atención médica

5. Imagen de la doctora con la niña:
- a. ¿Qué significa esta imagen para usted? ¿Se puede identificar usted o su familia con esta imagen?
- b. Después de ver este cartel, ¿qué tan probable es que usted le haga saber a su doctor que usted haya visitado a México recientemente?

Viaje reciente

6. [Mapa con mosquitos volando alrededor y las opciones de transporte, círculo con modos de transporte:] ¿Qué significan para usted estas imágenes?
- a. ¿Qué significado tiene el mapa para usted?
- b. ¿Habían notado usted las imágenes del camión, la persona caminando, y la camioneta? ¿Qué significan estas imágenes para usted? ¿qué tan importante son estas imágenes para el mensaje general del cartel?
7. Cuando usted o su familia cruza la frontera con México, ¿lo considera como un "viaje"? ¿Cómo le dice?
- a. ¿Es una visita? ¿Cruzar la frontera?
- b. ¿y si usted fuera al interior? ¿Cómo le dice a eso?
8. [El moderador] muestra la imagen alternativa del cruce de frontera
- a. ¿Y si se utilizara este cartel en vez del anterior? ¿Qué pensarían ustedes?
- b. Pregunta: ¿Que piensan acerca del cambio en la burbuja de dialogo?
- c. Pregunta: ¿Qué piensan acerca del mapa nuevo?

9. **PREGUNTAS PARA EL SEGUNDO CARTEL** (Para preguntar durante el segundo cartel mostrado al grupo sin importar el cartel.) Las preguntas a-e serán rotadas de un grupo a otro.

- a. Si usted supiera que se puede enfermar tras una picadura de mosquito, y que no pudiera ir a trabajar por una semana o más, ¿sería más probable que usted siguiera estas instrucciones? ¿Por qué si/no?
- b. Si yo le dijera que el chikungunya puede hacer que usted o algún miembro de su familia se enferme tanto, que ni siquiera si pueda mover, ni si quiera pararse o ir al baño, durante varios días o semanas, ¿sería más probable que usted se protegiera a sí mismo, y a su familia? ¿por qué si/no?
- c. Si yo le dijera que el chikungunya lo puede hacer que usted o a algún miembro de su familia tenga dolor durante varios meses, o incluso años después de haber tenido chikungunya, ¿sería más probable que usted se protegiera a sí mismo, y a su familia? ¿por qué si/no?
- d. Si yo le dijera que usted o algún miembro de su familia puede morir a causa del dengue, ¿sería más probable que usted se protegiera a sí mismo, y a su familia? ¿por qué si/no?
- e. Si le dijera que ambas enfermedades pueden ser más severas en bebés y ancianos, ¿sería más probable que usted se protegiera a sí mismo, y a su familia? ¿por qué si/no?



Preguntas de Introducción: "¿ESTÁ ENFERMO?" INFOGRAFÍA

1. ¿Qué ha escuchado sobre el chikungunya?
2. ¿Qué ha escuchado sobre el dengue?
3. Por favor, cuénteme cualquier cosa que haya escuchado sobre los síntomas de estas enfermedades.

Ahora les voy a pedir que vean otro cartel. Tomen unos minutos para leerlo, fíjense en las imágenes, y denme sus opiniones. Por favor pongan un signo de interrogación sobre cualquier cosa (una imagen, palabra o frase) que sea confusa. Al final de la sesión los recogeré todos. ¡Gracias!

Cartel: ¿Está enfermo de chikungunya o dengue?: 20 minutos

Preguntas

1. ¿Cuál es su primera impresión sobre este cartel?
 - a. Sondeo: ¿Le parece atractivo? ¿Le gustan los colores? ¿Le gustan las imágenes? ¿Por qué sí?, ¿por qué no?
2. Para usted, ¿Cuáles son los mensajes principales en este cartel?
3. Mirando a la niña, cuénteme qué le está pasando.
 - a. Sondeo: Dígame por qué está enferma. Cuéntame sobre sus síntomas.
4. Mirando el calendario, por favor, cuénteme que le dice esta imagen.
5. ¿Son el texto y la imagen claros, entendibles? Si no, ¿Por qué? ¿Qué cambiaría? ¿Cómo lo diría con sus propias palabras?
6. [El moderador] muestra las imágenes alternativas de los síntomas (No se repite.)

¿Está enfermo de **CHIKUNGUNYA** o **DENGUE**?
Protéjase y proteja a otros de las picaduras de mosquitos durante la primera semana de su enfermedad.

• Durante la primera semana que se tiene la enfermedad, el virus del chikungunya o el dengue puede estar en la sangre.

• El mosquito que lo pique se puede infectar.

• Un mosquito infectado puede picar a algún familiar o vecino y enfermarlos.

7 días

Protéjase de las picaduras de mosquitos

- Use camisas de manga larga y pantalones largos.
- Ponga mosquiteros en las puertas y ventanas para que no entren los mosquitos.
- Use repelente contra insectos.

Para más información:
www.cdc.gov/chikungunya
www.cdc.gov/spanish/enfermedades/dengue

CDC U.S. Department of Health and Human Services
Centers for Disease Control and Prevention



- a. ¿Qué representa cada una de estas imágenes?
 - b. ¿representan síntomas? Si sí, ¿Cuáles?
 - c. ¿cuál de estos grupos de imágenes representa mejor cada uno de los síntomas?
 - i. OPCIONAL: Las imágenes están representando es fiebre, dolor de cabeza, y dolor de articulaciones. ¿Qué le cambiarían ustedes a estas imágenes para comunicar estos síntomas mejor?
7. **Instrucciones para moderador:** Pregúntales a los participantes que lean el texto siguiente: "Protéjase y proteja a otros de las picaduras de mosquitos durante la primera semana de su enfermedad" Y "protéjase de las picaduras de mosquitos" (en esquina inferior del lado izquierdo):

Pregunte lo siguiente:

- a. ¿Es el texto claro, entendible? Si no, ¿Por qué? ¿Qué cambiaría?

- b. ¿Es importante para una persona que está enferma de chikungunya o dengue que se proteja de más picaduras de mosquitos? ¿Por qué?
- c. Sabiendo que usted se puede enfermar y transmitir la enfermedad a otros miembros de la familia, ¿qué tan probable es que siguiera estas sugerencias? ¿Por qué sí o no?

Preguntas de Clausura: 10 minutos

Muchísimas gracias por todos sus comentarios, ideas y sugerencias.

Después de repasar todos los carteles,

1. ¿Cuál es la cosa más importante que ha aprendido sobre el chikungunya y el dengue?
2. ¿Qué tan importantes son estos mensajes para usted y para su familia en sus vidas diarias?
3. Después de ver estos carteles, ¿hablará usted con su familia y amigos sobre el chikungunya o dengue?
 - a. Si sí, ¿qué les diría?
4. Pensando en el cartel de la casa (Prevención), y lo que han leído acerca del chikungunya o dengue, ¿qué tan probable es que usted siga las medidas que se mostraban en los carteles? ¿Por qué si/no?
 - a. Indagar acerca del factor motivacional que más les convenció tras discutir acerca del primer y segundo cartel.
5. Si usted pudiera escoger dónde colocar estos carteles, ¿dónde le gustaría verlos?, ¿dónde los verían la mayor cantidad de gente en su comunidad?
 - a. Sondeo: clínica, sitios públicos (paradas del autobús, parques, centros comunitarios, etc.)
6. ¿Tiene cualquier otra pregunta?

Para más información, llame a los Centros para el Control y la Prevención de Enfermedades (CDC):
1-800-CDC-INFO (1-800-232-4636)
<https://www.cdc.gov/DCS>
www.cdc.gov/chikungunya
www.cdc.gov/dengue

APPENDIX 5—Participant Information Sheet in English (A) and Spanish (B) for San Diego

A. English Language Version

Form Approved
OMB No. 0920-0987
Expiration Date 09/30/2016
U.S. Department of Health and Human Services (HHS)
Centers for Disease Control and Prevention (CDC)

Participant Information Sheet

Generic Information Collection: Emerging mosquito-borne diseases: assessment of chikungunya and dengue-related knowledge, attitudes and practices for Mexican-origin audiences along the U.S-Mexico border

Purpose of the Talk

You are invited to share your thoughts in a discussion held today by the Centers for Disease Control and Prevention, or CDC. CDC is part of the U.S. government, Department of Health and Human Services. The {contractor} will also help in leading this discussion.

During the discussion, we will ask you to tell us what you have heard or think about dengue and chikungunya. We will also ask you what you think about some health information. There is no right or wrong answer; every response teaches us something. Your answers can help us to better inform others in your community about these health topics in the future.

If you agree to participate

You will be asked to:

- Take part in a 90-minute discussion about dengue and chikungunya and educational materials
 - Allow the discussion to be recorded on audio tape
-

Risks

The risks in participating in the discussion are the same as you face in your daily life. While we would like to hear what you think, you do not have to participate and you can decide to leave at any time.

Your decision to stay for the discussion or leave will not affect your immigration status or any services you may receive from the U.S. government. No information about your participation will be shared with anyone outside the small group working on these materials. Any notes and the audio recordings will be destroyed after 3 years. If you are worried about your privacy, you can use a different name during this discussion.

Benefits

During today's discussion, you will learn more about a major health issue. You will also be helping others by sharing your thoughts during this discussion. We will use your feedback to provide better health information to you, your families, and your communities in the future.

Privacy

None of the information being collected is of a personal nature. We will protect this information to the extent allowed by law. We will not keep a written record of your name, and the information you share will not be used in any report so that you can be identified. By agreeing to participate, you agree to let us audio record today's discussion. We will destroy the audio recording after 3 years. While we ask that the other participants do not talk about what we discuss today outside of the group, there is the possibility that they might talk and so we cannot guarantee complete privacy in this case.

Persons to Contact

If you have any questions about the talk or your rights as a participant, you may call:

**Alfonso Rodriguez-Lainz, Centers for Disease Control and Prevention,
Division of Global Migration and Quarantine, U.S. Mexico Unit, San Diego,
CA, Phone: 619-692-8406.**

B. Spanish Language Version

Form approved
OMB No. 0920-0987
Expiration Date 09/30/2016
U.S. Department of Health and Human Services (HHS)
Centers for Disease Control and Prevention (CDC)

Hoja de información para el participante

Enfermedades emergentes transmitidas por los mosquitos: una evaluación sabiduría, actitudes, y prácticas acerca de la chikungunya y el dengue para una audiencia de residentes de la región fronteriza que son de origen mexicano

Objetivo de la charla

Se lo invitó a compartir sus opiniones en una conversación que los Centros para el Control y la Prevención de Enfermedades (CDC, por sus siglas en inglés) realizan hoy. Los CDC son parte del Departamento de Salud y Servicios Humanos del Gobierno de los EE. UU. {El contratista} también ayudará a dirigir este debate.

Durante la conversación, se le pedirá que comparta lo que piensa o lo que ha escuchado sobre dengue y chikungunya. También se le preguntarán cuáles son sus opiniones sobre algunos mensajes sobre salud. No existen respuestas correctas o incorrectas; todas las respuestas nos enseñan algo. Sus respuestas pueden ayudarnos a informar mejor en el futuro a otras personas de su comunidad sobre estos temas de salud.

Si desea participar

Se le pedirá que realice lo siguiente:

- Participe en una conversación de 90 minutos sobre dengue y chikungunya
 - Permita que se grabe la conversación en una cinta de audio.
-

Riesgos

Los riesgos de participar en la conversación son los mismos que enfrenta en su vida diaria. Si bien queremos que participe, no es obligatorio que lo haga y puede decidir retirarse en cualquier momento.

Su decisión de quedarse para la conversación o de retirarse no afectará su estatus migratorio o cualquier servicio que reciba por parte del Gobierno de los Estados Unidos. No se compartirá ningún tipo de información sobre su participación con ninguna persona fuera del pequeño grupo que trabaja con estos materiales. Todas las notas y las grabaciones de audio se destruirán después del transcurso de 3 años. Si le preocupa su privacidad, puede utilizar un nombre distinto durante el debate.

Beneficios

Durante la conversación de hoy, aprenderá más sobre un tema importante de salud. También ayudará a otros a través de las opiniones que exprese durante el debate. Utilizaremos la información que usted nos da para brindarles a usted, su familia y a su comunidad una mejor información sobre salud en el futuro.

Privacidad

Toda la información que recopilamos no es de forma personal. Protegemos esta información al alcance de la ley. No vamos a mantener una anotación de su nombre y la información que comparte no se usaría de manera que se puede ser identificado. Su decisión a participar nos permita grabar la conversación de hoy. Destruimos la grabación después de 3 años. Aunque les pedimos a los otros participantes que no hablen de lo que conversamos hoy fuera del grupo, hay la posibilidad que hablarían entonces en este caso no podemos garantizar la privacidad completa en este caso.

Personas para contactarse

Si tiene alguna pregunta sobre esta charla, puede llamar a:

Alfonso Rodriguez-Lainz, Centros para el Control y la Prevención de Enfermedades, División de Migración Global y Cuarentena, Unidad de EE. UU. y México, San Diego, CA; teléfono: 619-692-8406.

APPENDIX 6—Participant Information Sheet in English (A) and Spanish (B) for Nogales, McAllen, El Paso and Las Cruces

[**Note:** The main difference between Appendix 5 and Appendix 6 is that we removed reference to chikungunya or dengue, to avoid biasing participants' awareness of these diseases before they took part in the focus groups.]

A. English Language Version

Participant Information Sheet

Purpose of the Talk

You are invited to share your thoughts in a discussion held today by the Centers for Disease Control and Prevention, or CDC. CDC is part of the U.S. government, Department of Health and Human Services. The {contractor} will also help in leading this discussion.

During the discussion, we will ask you to tell us what you have heard or think about certain diseases. We will also ask you what you think about some health information. There is no right or wrong answer; every response teaches us something. Your answers can help us to better inform others in your community about these health topics in the future.

If you agree to participate

You will be asked to:

- Take part in a 90-minute discussion about certain diseases
- Allow the discussion to be recorded on audio tape

Risks

The risks in participating in the discussion are the same as you face in your daily life. While we would like to hear what you think, you do not have to participate, and you can decide to leave at any time.

Your decision to stay for the discussion or leave will not affect your immigration status or any services you may receive from the U.S. government. No information about your participation will be shared with anyone outside the small group working on these materials. Any notes and the audio recordings will be destroyed after 3 years. If you are worried about your privacy, you can use a different name during this discussion.

Benefits

During today's discussion, you will learn more about a major health issue. You will also be helping others by sharing your thoughts during this discussion. We will use your feedback to provide better health information to you, your families, and your communities in the future.

Privacy

None of the information being collected is of a personal nature. We will protect this information to the extent allowed by law. We will not keep a written record of your name, and the information you share will not be used in any report so that you can be identified. By agreeing to participate, you agree to let us audio record today's discussion. We will destroy the audio recording after 3 years. While we ask that the other participants do not talk about what we discuss today outside of the group, there is the possibility that they might talk and so we cannot guarantee complete privacy in this case.

Persons to Contact

If you have any questions about the talk or your rights as a participant, you may call:

**Alfonso Rodriguez-Lainz, Centers for Disease Control and Prevention,
Division of Global Migration and Quarantine, U.S. Mexico Unit, San Diego,
CA, Phone: 619-692-8406.**

Hoja de información para el participante

Objetivo de la charla

Se lo invitó a compartir sus opiniones en una conversación que los Centros para el Control y la Prevención de Enfermedades (CDC, por sus siglas en inglés) realizan hoy. Los CDC son parte del Departamento de Salud y Servicios Humanos del Gobierno de los EE. UU. {El contratista} también ayudará a dirigir este debate.

Durante la conversación, se le pedirá que comparta lo que piensa o lo que ha escuchado sobre algunas enfermedades. También se le preguntarán cuáles son sus opiniones sobre algunos mensajes sobre salud. No existen respuestas correctas o incorrectas; todas las respuestas nos enseñan algo. Sus respuestas pueden ayudarnos a informar mejor en el futuro a otras personas de su comunidad sobre estos temas de salud.

Si desea participar

Se le pedirá que realice lo siguiente:

- Participe en una conversación de 90 minutos sobre algunas enfermedades
- Permita que se grabe la conversación en una cinta de audio

Riesgos

Los riesgos de participar en la conversación son los mismos que enfrenta en su vida diaria. Si bien queremos que participe, no es obligatorio que lo haga y puede decidir retirarse en cualquier momento.

Su decisión de quedarse para la conversación o de retirarse no afectará su estatus migratorio o cualquier servicio que reciba por parte del Gobierno de los Estados Unidos. No se compartirá ningún tipo de información sobre su participación con ninguna persona fuera del pequeño grupo que trabaja con estos materiales. Todas las notas y las grabaciones de audio se destruirán después del transcurso de 3 años. Si le preocupa su privacidad, puede utilizar un nombre distinto durante el debate.

Beneficios

Durante la conversación de hoy, aprenderá más sobre un tema importante de salud. También ayudará a otros a través de las opiniones que exprese durante el debate. Utilizaremos la información que usted nos da para brindarles a usted, su familia y a su comunidad una mejor información sobre salud en el futuro.

Privacidad

Toda la información que recopilamos no es de forma personal. Protegemos esta información al alcance de la ley. No vamos a mantener una anotación de su nombre y la información que comparte no se usaría de manera que se puede ser identificado. Su decisión a participar nos permita grabar la conversación de hoy. Destruimos la grabación después de 3 años. Aunque les pedimos a los otros participantes que no hablen de lo que conversamos hoy fuera del grupo, hay la posibilidad que hablarían entonces en este caso no podemos garantizar la privacidad completa en este caso.

Personas para contactarse

Si tiene alguna pregunta sobre esta charla, puede llamar a:

Alfonso Rodriguez-Lainz, Centros para el Control y la Prevención de Enfermedades, División de Migración Global y Cuarentena, Unidad de EE. UU. y México, San Diego, CA; teléfono: 619-692-8406.

Evite que los mosquitos pongan huevos adentro y alrededor de su casa

Los mosquitos propagan enfermedades que pueden enfermarlo o enfermar a algún familiar.



Una vez a la semana

tire, lave, voltee o tape cualquier cosa que pueda acumular agua.

Para más información: www.cdc.gov/chikungunya y www.cdc.gov/dengue



U.S. Department of
Health and Human Services
Centers for Disease
Control and Prevention

Accessible Description: Keep mosquitoes from laying eggs in and around your home graphic. The key message is that mosquitoes spread diseases that can make you or your family sick. Once a week, empty and scrub, turn over, cover, or throw out any items that hold water to keep mosquitoes from laying their eggs in the standing water. The graphic includes an image of a home and surrounding yard with items that can possibly hold water including several plant pots, a dog bowl, two barrels for collecting rainwater, a bird bath, rain gutter, a wheelbarrow and bucket, a children's wading pool, stacked tires, recycling bin and trash can, children's toys and puddles in the ground. The house in the graphic also shows that the door and windows have screens on them to keep mosquitoes out of the home.

APPENDIX 8—¿Tiene fiebre?/Border Crossing Infographic

¿Tiene fiebre con dolores musculares, de las articulaciones o de los ojos, o un sarpullido?
Tal vez sea chikungunya o dengue.



Si usted está enfermo, consulte a su proveedor de atención médica tan pronto como sea posible sobre lo siguiente:

- Viajes recientes.
- Pruebas de sangre para detectar el chikungunya, el dengue o infecciones similares.
- Fiebre y cómo aliviar el dolor. Tome acetaminofeno (p. ej., Tylenol®) o paracetamol. Algunas medicinas para aliviar el dolor, como la aspirina o medicinas que contengan aspirina o ibuprofeno (como Advil® y Motrin®), pueden ser peligrosas si usted tiene dengue.

Los mosquitos propagan enfermedades que pueden enfermarlo o enfermar a algún familiar.



Para más información:
www.cdc.gov/chikungunya y
www.cdc.gov/spanish/enfermedades/dengue/



U.S. Department of Health and Human Services
Centers for Disease Control and Prevention

Accessible Description: This graphic explains that if you have a fever with joint, muscle or eye pain or a rash, you might have chikungunya or dengue virus from a mosquito bite. If you are sick, see a healthcare provider as soon as possible and talk about recent travel, including travel by car, bus or walking across the US-Mexico border. You can also talk about blood tests for chikungunya, dengue, or similar infections and the use of acetaminophen, like Tylenol, or paracetamol for fever and pain relief. Some pain relief medicines, like aspirin or aspirin-containing drugs or ibuprofen, like Advil and Motrin, can be dangerous if you have dengue.

APPENDIX 9—¿Está enfermo?/Are you sick? Infographic

¿Está enfermo de CHIKUNGUNYA o DENGUE?

Protéjase y proteja a otros de las picaduras de mosquitos durante la primera semana de su enfermedad.

- Durante la primera semana que se tiene la enfermedad, el virus del chikungunya o el dengue puede estar en la sangre.
- El mosquito que lo pique se puede infectar.
- Un mosquito infectado puede picar a algún familiar o vecino y enfermarlos.

7 días

Protéjase de las picaduras de mosquitos

- Use camisas de manga larga y pantalones largos.
- Ponga mosquiteros en las puertas y ventanas para que no entren los mosquitos.
- Use repelente contra insectos.

Para más información:
www.cdc.gov/chikungunya y
www.cdc.gov/spanish/enfermedades/dengue

U.S. Department of Health and Human Services
Centers for Disease Control and Prevention

CS257182-A

Accessible Description: This graphic illustrates the symptoms of chikungunya and dengue and provides information on how to protect yourself and others from mosquito bites during the first week of illness. The symptoms of dengue and chikungunya include fever, joint pain, and muscle pain. During the first week of illness, chikungunya or dengue virus can be found in your blood. A mosquito that bites you can become infected, and an infected mosquito can bite a family member or neighbor and make them sick. Preventing mosquito bites helps prevent an infected mosquito from spreading the virus to other people. Protect yourself from mosquito bites by wearing long-sleeved shirts and long pants, use door and window screens to keep mosquitoes outside, and use insect repellent. For more information visit <https://www.cdc.gov/chikungunya> and <https://www.cdc.gov/dengue>.

APPENDIX 10—Alternative Image of Mosquito (Week 1)



APPENDIX 11—Alternative Images of Mosquitoes (Week 2)

A



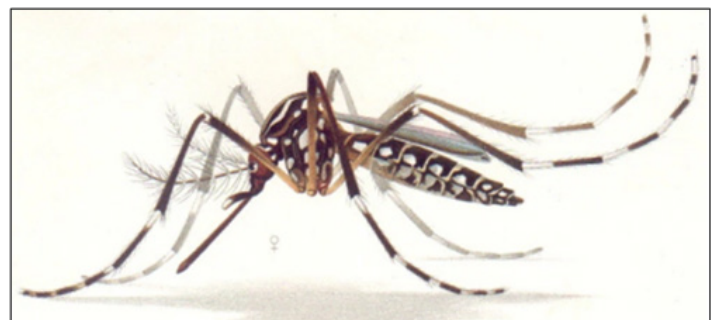
B



C



D



APPENDIX 12—Alternative Images of Symptoms of Chikungunya and Dengue



APPENDIX 13—Alternative Image for the ¿Tiene fiebre?/Border crossing Infographic

¿Tiene fiebre con dolores musculares, de las articulaciones o de los ojos, o un sarpullido?
Tal vez sea chikungunya o dengue.

Los mosquitos propagan enfermedades que pueden enfermarlo o enfermar a algún familiar.

¿Has estado en México recientemente?

Si usted está enfermo, consulte a su proveedor de atención médica tan pronto como sea posible sobre lo siguiente:

- Viajes recientes.
- Pruebas de sangre para detectar el chikungunya, el dengue o infecciones similares.
- Fiebre y cómo aliviar el dolor. Tome acetaminofeno (p. ej., Tylenol®) o paracetamol. Algunas medicinas para aliviar el dolor, como la aspirina o medicinas que contengan aspirina o ibuprofeno (como Advil® y Motrin®), pueden ser peligrosas si usted tiene dengue.

Para más información:
www.cdc.gov/chikungunya y
www.cdc.gov/spanish/enfermedades/dengue/

U.S. Department of Health and Human Services
Centers for Disease Control and Prevention

ESTADOS UNIDOS
MÉXICO
Frontera entre los EE. UU. y México

CS257609-A

Accessible Description: This graphic explains that if you have a fever with joint, muscle or eye pain or a rash, you might have chikungunya or dengue virus from a mosquito bite. If you are sick, see a healthcare provider as soon as possible and talk about recent travel, including travel by car, bus or walking across the US-Mexico border. You can also talk about blood tests for chikungunya, dengue, or similar infections and the use of acetaminophen, like Tylenol, or paracetamol for fever and pain relief. Some pain relief medicines, like aspirin or aspirin-containing drugs or ibuprofen, like Advil and Motrin, can be dangerous if you have dengue.

