

Pre-Event Message Development Project

**Year 2 Summary Report on Results of
Focus Groups and CRT Interviews Conducted About
Plague**

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Table of Contents

Section	Page Number
Introduction	3
Methodology	5
Human subjects protocol	6
Data coding and analysis	11
Results	12
Demographics	12
Radio messages	15
TV messages	18
Fact sheet	22
CRT results	27
Discussion	31
Conclusions and Implications	33
References	38
Appendix A. Plague Creative Brief	
Appendix B. Plague Focus Group Guide	
Appendix C. Plague CRT Guide	
Appendix D. Plague Tested Materials	
Appendix E. Focus Group Topline Summary Reports	
Appendix F. Cognitive Response Testing Summary Tables	
Appendix G. Coding Guides	
Appendix H. Revised Web Materials	
Appendix I. Revised Fact Sheets	
Appendix J. Revised Radio Content	

INTRODUCTION

The emerging global threat of terrorism has stimulated much activity and resource mobilization within the public health community over the past three years, as terrorist acts can have a direct and often serious impact on the physical and mental health of the general population. One concern has been to assure that the health care system has the capacity to respond in an emergency. Establishing drug stockpiles, emergency system improvements, and health provider and first responder training have thus proliferated at national, state and local levels. Another concern has been the preparation of communications plans and materials for the general public. The very real threat of terrorist action requires the design, development, and dissemination of technically accurate and timely information.

Recognizing this, the Centers for Disease Control and Prevention, in concert with the Association of Schools of Public Health (ASPH) Bioterrorism Council, responded by supporting the “Pre-Event Message Development Project” (PEMD). This project provided funding in the Fall of 2002 to four primary schools of public health (Saint Louis University, University of Alabama-Birmingham, University of California at Los Angeles, and the University of Oklahoma) along with several partnering schools. The four University teams working on this project were selected as each brought different skills, perspectives and experience each could bring to the overall project goals of learning how to best communicate critical information related to what audiences want as well as the information that the research team, CDC, and the ASPH Bioterrorism Council, recognize as needs to be known. The basic charge the four Pre-event teams have addressed in the first two years of the project is how to develop and evaluate pre-event messages relevant for bioterrorism events for the general population, using well designed formative research to define, craft, and pre-test crisis communications messages.

What evolved through a participatory, collaborative process was the opportunity to do research on this topic that was groundbreaking, and strengthened by the degree findings can be generalized by using standardized methods across institutions and samples of persons from culturally and geographically diverse backgrounds. Initially the teams debated whether it would be more useful and efficient to focus on generic all-hazards prevention issues and messages to be used to educate the public prior to an event, or to focus the research on different types of agents that could be used for warning systems before during and after an intentional attack. We decided to do agent-specific research as our perception was that other researchers were conducting research on all hazards prevention. This is based on literature that differentiates disaster warnings and responses from public hazard education. The latter involves general knowledge that can be transmitted independent of the hazardous event. Disaster warnings and responses are event specific and happen either right before, during, or after an event. (Mileti and Fitzpatrick 1991; Mileti and Sorensen 1988). These messages are important in regards to saving lives, reducing unnecessary service utilization, facilitating relief efforts, and reducing anxiety among the general public.

Thus each University team was charged with assessing public response to one of the following agents that represented a specific type of threat. These were an infectious agent (plague), a toxin (botulism), a chemical agent (VX), and a radiological agent (dirty bomb). The basic idea was that we would be able to get sufficient information from qualitative formative research to be able to construct prototypes of messages for each of these different types of agents that would be important to communicate to the general public if an event happened. The first year of the project involved open-ended formative research that sought to understand information needs, information seeking strategies, and other responses to hypothetical terrorist emergencies on the part of the public, as well as audience-testing of existing informational materials and messages. Findings from Year 1 can be found in reports, presentations and published articles (Vanderford, 2004; Becker, 2004; Wray and Jupka, 2004; Glik, Harrison, Davoudi and Riopelle, 2004; Henderson, Henderson, Raskob and Boatwright, 2004)

For Year 2, findings from Year 1 were used to craft the messages and materials that made up our initial project activities. Specifically we knew from Year 1 that most persons in the general public had little knowledge about the specific agents we were discussing. Persons had some idea of what to do in crisis and disaster situations, but were not familiar with current terminology, and often had little understanding of disaster response planning that is currently taking place at local, state and federal levels. Levels of trust of media and government were mixed. As well there was a clear “hierarchy of resort” voiced as regards information seeking, with most persons turning to the mass media for initial information and then print, internet and interpersonal sources for more in-depth coverage. However there was also a substantial minority of persons who were more likely to turn to community and interpersonal sources of information first: these were often in more isolated, disadvantaged, ethnic minority or rural communities.

Year 1 data also helped the University teams as regards the framing and organization of messages. Specifically we were reminded of the importance of prioritizing information that addresses the concerns of persons in potential crisis situations. One basic idea is that messages should address survival concerns first, then meaning, then assurance about organized responses to the event. Translated this means messages should first tell persons what to look for, what to do, or how to get help or prevent exposure (problem identification, actions, reconnaissance, symptom recognition, help seeking). The next set of messages explains why they need to do it (epidemiology, transmission, treatment, prognosis). The third type of message is to assure persons that something is being done by someone or some agency (to stop the problem, help the afflicted, find the culprit).

In the first half of Year 2 (January - June 2004) we took Year 1 findings and through an iterative process created sets of messages for each agent. We created four types of message materials: 1) radio scripts, 2) television storyboards 3) fact sheets 4) more in-depth web-based materials. The first task for all of the four University teams was to write basic message materials for video and radio scripts, a longer web page, and a two-page fact sheet. Content was reviewed CDC Subject Matter Experts (January - February). Then we all participated in a message review process using the RAIN technique to test for readability for the scripted materials. This readability system looks at many factors

(words, writing style, grammar, format) that can increase reading level of materials. The goal was to bring materials to a readability level where lower literacy persons could understand them. These materials were revised (March) and then television production began and continued through April and May, with some revision of rough cuts of materials in late May and early June. As well radio production occurred in June and concurrently fact sheets were finalized and formatted in a standardized manner. Thus we were able to produce prototypes of radio clips, short videos, and fact sheets for pretesting. Scripts for these materials can be found in the appendices of each of the reports: the challenge we found in creating materials such as these is to make them effective and credible tools for communication balanced with concerns about scientific validity and accuracy. We did not test longer web page materials due to time and technical constraints.

In retrospect the approach we have taken has proven to be highly informative and efficient, as it has provided a rich and multilayered research data base that can be used to help craft both agent specific and all hazards preparedness messages. That is, even though we were focused on specific agents, much of the information is also relevant to all hazards preparedness. Information about what persons understand in regards to infectious or toxic agents, chemicals or radiological events and what to do about them not only applies to other similar agents, there was also much information gleaned about information seeking in times of a crisis or disaster, cultural differences in response to disasters, perceptions of the role of government the media and first responders, and insight into persons' understanding of basic concepts and terms used in warning and disasters preparedness such as sheltering in place, quarantine, isolation, prophylaxis, immunization, handling food and water, decontamination, coping and stress reduction, and information seeking.

The following sections describe in depth the methods used to test those materials as well as human protection assurances followed. Then each of the participating University will present their unique findings.

METHODOLOGY

Data Collection

Two research methods were used in Year 2 to pre-test the fact sheets, radio and television clips: focus group discussions and cognitive response interviews.

The purpose of the focus groups was to elicit information about audience response and to direct revisions and improvements of the message materials (Krueger, 1994; Kreuter, et al., 2000). Focus groups are an effective means of collecting *opinion and preference* information among selected audience segments (Morgan, 1988; Stewart & Shamdasani, 1990; Krueger, 1994). The Year 2 focus groups were built on the structure of the Year 1 groups in which participants were asked to respond to a three-part hypothetical attack involving the relevant agent. In Year 2, after each scenario section was introduced,

participants were then exposed to the draft message materials – radio clips after the first, the television clip after the second, and the printed fact sheet after the third. However each material was presented, the participants were asked to respond to the same set of questions, inquiring about: comprehension, appeal, credibility, emotional response, confidence in recommended actions, channel appropriateness, and recommendations for improvement. The project partners developed the interview guides collaboratively (see Appendix B).

The purpose of the cognitive interviewing was to gain knowledge on participants' understanding of messages and emotional response to messages (Forsyth & Lessler, 1991; Sudman, Bradburn & Schwartz, 1996). Cognitive testing allows us to explore general reactions to messages, problematic features of the educational messages, emotional responses, and the comprehension of different messages. Cognitive interviews focus pre-testing on specific blocks of text that are thought to contain especially difficult or ambiguous language, identified in the expert review. The cognitive interviews were designed to assess message comprehension and clarity through such strategies as thought-listing, paraphrasing, and word definition. In addition, participants were asked to comment on their feelings after reading specific passages. The project partners developed the interview guides collaboratively (see Appendix C).

Forty-three focus groups and 129 CRTs were conducted by the partner universities in the public sectors. The focus groups and CRTs were conducted in places convenient for the participants and designated by the subject recruiters. Discussions were transcribed by a professional transcriptionist, or by a stenographer. The partner universities conducted groups and interviews with the same general public audience segments as in Year 1: African American, American Indian, Asian, Caucasian, and Hispanic populations, as well as new immigrant groups studying English as a second language. For all but the Asian and new immigrant groups, groups were convened with residents of both rural and urban areas.

HUMAN SUBJECTS PROTOCOL

Protocol development and IRB submission

Over the course of several months, representatives from each member institution provided input on the content and wording of a joint human subjects protocol to be submitted to each institution's review board. Drafts were circulated among the institutions and changes were noted and incorporated until a final document was agreed upon. In addition to the protocol, each institution prepared consent forms and packets under guidelines of their review board for submission. After submission, each institution provided an IRB approval letter to the funding agency.

Study Groups

The cooperative agreement under which the work was carried out was awarded by the Association of Schools of Public Health and the Centers for Disease Control and Prevention. Four institutions served as project partners: Saint Louis University; the University of Oklahoma at Oklahoma City; the University of California at Los Angeles; and the University of Alabama at Birmingham. The University of North Texas was awarded a subcontract by the University of Oklahoma. As requested by the CDC, each of the four schools, along with subcontract institutions, conducted a series of focus groups and cognitive response interviews with various elements of the US population (Caucasian, African American, Hispanic, Asian, Native American and ESL).

Role of participants

The primary aim of the research was to test draft television, radio and printed messages that had been developed for plague, VX, botulinum toxin, and radioactive dirty bombs. Two complementary methods were employed to gather this information. The first method involved the use of focus groups with the various audience segments. Focus groups were led by moderators trained to guide discussions in non-directive, and non-judgmental ways, and to elicit responses from all participants. The second method involved the use of cognitive interviews. Here, one-on-one interviews were conducted with participants to get detailed comment on draft fact sheets. The fact sheets were read and given to participants to respond to and to use for reference in answering the interview questions, as they assessed their quality. Specifically, participants were asked to assess the materials in the areas of: (1) Clarity of the material and information conveyed; (2) Comprehensibility of the information; (3) Adequacy of the level of detail; and (4) Recommendations for improvement.

As total of 46 focus groups were conducted as part of the overall Pre-Event Message Project. Table 1 sets out the division of focus groups by population group, agent, and school.

Table 1. Radio/TV/Web Content Focus Group Testing

By Agent Type					
	<u>Bio-Plague</u>	<u>Bio-Bot</u>	<u>Radiological</u>	<u>Chemical</u>	<u>Total</u>
Urban African American	SLU (1) UAB (1)	SLU (1)	SLU (1) UAB (2)	SLU (1), UAB (1)	8
Rural African American	SLU (1)	UAB (1)	UAB (1)	SLU (1)	4
Urban Hispanic	UAB (1)	ULCA (1)	UOK (1) UAB (1)	UOK (1) UAB (1)	6
Rural Hispanic	UOK (1)	UOK (1)	UOK (1)	UOK (1)	4
Asian Urban	ULCA (1)	ULCA (1)	ULCA (1)	ULCA (1)	4
English 2 nd Language	ULCA (1)	ULCA (1)	ULCA (1)	ULCA (1)	4
Urban White	SLU (1)	ULCA (1)	UAB (3), UOK (1)	ULCA (1)	7
Rural White	SLU (1)	SLU (1)	UAB (2)	SLU (1)	5
Native American	UOK (1)	UOK (1)	UOK (1)	UOK (1)	4
Total	10	9	16	11	46

A total of 129 cognitive response interviews were conducted as part of the overall Pre-Event Message Project. Table 2 sets out the division of cognitive interviews by population group, agent, and school.

Table 2. Fact Sheet Content Cognitive Testing

By Agent Type					
	<u>Bio-Plague</u>	<u>Bio-Bot</u>	<u>Radiological</u>	<u>Chemical</u>	<u>Total</u>
Urban African American	SLU (3) UAB (3)	SLU (3)	SLU (3) UAB (3)	SLU (3), UAB (3)	21
Rural African American	SLU (3)	UAB (3)	UAB (3)	SLU (3)	12
Urban Hispanic	UAB (3)	ULCA (3)	UOK (3) UAB (3)	UOK (3) UAB (3)	18
Rural Hispanic	UOK (3)	UOK (3)	UOK (3)	UOK (3)	12
Asian Urban	ULCA (3)	ULCA (3)	ULCA (3)	ULCA (3)	12
English 2 nd Language	ULCA (3)	ULCA (3)	ULCA (3)	ULCA (3)	12
Urban White	SLU (3)	ULCA (3)	UAB (6), UOK (3)	ULCA (3)	18
Rural White	SLU (3)	SLU (3)	UAB (3)	SLU (3)	12
Native American	UOK (3)	UOK (3)	UOK (3)	UOK (3)	12
Total	30	27	39	33	129

Inclusion and exclusion criteria

As a collaborative effort, the combined study sample of all participating institutions was intended to draw on the principal population subgroups in the United States. In drawing the convenience sample for the general public audience segments, every effort was made to balance representation of both sexes and to include a wide range of adult age groups. Only adult populations were examined, so only individuals who have attained the legal age for consent under the applicable law in the state in which the focus groups were conducted were considered for participation in focus groups (45 CFR 46.402). For all institutions involved, the age of eighteen years was agreed upon as a minimum age for participants. Consequently, children were excluded from the study.

In an attempt to minimize risk to study participants, stringent efforts were made to exclude individuals with a history of trauma from the study. Exclusion criteria included, but were not limited to, combat experience, violent crime, terrorist incident, motor vehicle accident, disaster (natural or manmade), domestic violence, or sexual abuse. Individuals with a history of psychiatric illness including, but not limited to, anxiety disorder, depressive illness, bipolar disorder, posttraumatic stress disorder, psychosis, alcoholism, or substance abuse were also excluded from focus group participation. Additionally, individuals who have had relatives or friends killed or injured in a terrorist incident were excluded.

Participant recruitment

Participants in focus group activities and participants in individual interviews were drawn from a convenience sample of members from each target population. Each university established community and professional contacts, or used existing databases to derive a sample. Although groups were already delineated by race for the general public, there was an attempt to also consider age, SES, and gender while recruiting in order to produce a study population with maximum diversity.

Focus groups and individual interviews were also stratified using an urban vs. rural distinction. Rural counties having less than 12,000 adults over the age of 16 were considered. Gender representation was to be approximately half male/half female. Different literacy levels were included as well. This difference was especially important to ensure that messages were evaluated by people with varying reading levels.

Individual participants from all research segments were paid for research sessions in which they were involved. Total focus group time was approximately 1 to 2 hours in length. The individual interviews were approximately 30 minutes in length.

Focus Group and Interview Procedures

As part of the focus group and interview introductions, the focus group moderator or the interviewer reviewed issues related to confidentiality and risk/benefit. Participants were told that their participation was voluntary and that they could choose not to complete the study or any part of it without penalty or loss of benefits to which they were otherwise entitled. They were told that the materials they reviewed and discussed might be potentially distressing and that they might choose not to participate in any part of the discussion, to leave the group temporarily, or to terminate participation completely. Upon request, they would be given the name and telephone number of a mental health clinician. An informed consent document was reviewed by each participant before the group began, and in cases where the IRB protocol required it, signed by participants.

Referral information was readily available. The conducting institution contacted potential clinicians before focus groups began to secure their willingness to assist in case a participant required attention. The University of Oklahoma mental health team, a partner

school, was willing to assist by telephone, in addition to a list of willing potential clinicians for referral purposes at a local level.

DATA CODING AND ANALYSIS

Coding of Data

The coding analysis process was generated from 1) literature on the theory of the Cultural Construction of Realities, 2) literature of Grounded Theory, and 3) code domains identified in collaboration with participating universities, CDC, and ASPH (Glaser & Strauss, 1967; Strauss & Corbin, 1996). As Miles and Huberman (1994) note, the coding process is simultaneously data collection, method, and analysis (Miles & Huberman, 1994). Consequently, code categories are not simply convenient labels facilitating text retrieval, they are crucial data leading to an auditable trail of findings (Strauss & Corbin, 1994; Miles & Huberman, 1994). In this study, “code categories” will be referred to as “domains.”

Focus group and CRT tapes were transcribed and entered into the [Ethnograph] qualitative data analysis programs for coding using the designated coding protocol. For each transcript, coding proceeded from macro domains to smaller units of coded material (see Appendix H). Coding and recoding were completed when all portions of the transcripts were classified, domains were “saturated” (information began to be repetitive), and common themes emerged (Strauss & Corbin, 1994).

Analysis of Data

After coding of transcripts was completed, research relevant statements were extracted from each interview and analyzed for meanings. These meanings were clustered into themes which could be analyzed across focus groups (Morse, 1994). Thematic analysis is a process that encodes qualitative information, therefore themes are generated as the coding proceeds. It is important to note that frequency of the response is only one aspect of identification of themes. The significance of meaning as judged by the nature of the subject’s discourse could mean that something less frequently mentioned could also represent a theme, provided, for example, that it is mentioned with great emphasis (Valle, 1989).

Themes elicited for each focus group were compiled into Topline Summary Reports (see Appendix E) and presented to the partner universities for utilization in the crafting of Final Topic Specific Creative Briefs for designated content areas (see Appendix A). The CRT coding process identified terms and concepts that were confusing to participants, and patterns could be discerned across participants. These were also presented to partner universities for the compilation of agent-specific reports (see Appendix F).

RESULTS

The findings section presents the results of the analysis of the plague focus group discussions, according to the different constructs or domains that informed the discussion guide. A copy of the moderator's guides can be seen in Appendix A.

The moderator's guides were split into four parts:

- I. Part One- Presentation of a hypothetical terrorism attack scenario involving a non-specific agent and symptoms. Participants were asked to listen to and respond to three radio ads addressing the hypothetical situation.
- II. Part Two- Continuation of a hypothetical terrorism attack scenario at the time the specific agent is known, symptoms are present, and response is taking place. Participants were asked to watch and respond to a television clip providing information on the agent.
- III. Part Three- Presentation of informational materials about the agent to participants for reactions. Participants were asked to read and respond to a 5-page fact sheet.
- IV. Part Four- Participants were asked to discuss information dissemination channels and their preferences.

Between each off the first three sections participants were asked a series of similar questions regarding the different media. Participants were asked about message comprehension, emotional response, action steps, channel appropriateness, and overall response.

Part 1: Demographics

Focus Group participants

Overall, the 94 participants in 10 focus groups ranged from 16 to 82 years of age, with an average age of 41 (SD = 17.002). Sixty-three females participated (67%) and there were 31 males (33%). Three (3.2%) has some high school, 21(22.3%) had a high school diploma or GED, 22 (23.4%) had some college, 22 (23.4%) had a college degree, and 26 (27.7%) held a graduate degree. Twenty-five (26.6%) were African American, 34 (36.2%) were Caucasian, 14 (14.9%) were American Indian or Alaskan Native, 12 (12.8%) were Asian or Pacific Islanders, 8 (8.5%) were Latino/Hispanic, and 1 (1.1%) reported an other race. Most (77; 81.9%) reported their main language spoken at home was English, while 5 (5.3%) reported Spanish as their main language spoken at home, and 12 (12.8%) reported some other language. Thirty-one (33%) were single, 43 (45.7%) were married or living with a partner, 15 (16%) were divorced or separated, 4 (4.3%) were widowed, and 1 (1.1%) did not report a marital status. Most (51, 54.3%) had children, while 42 (44.7%) did not, and 1 (1.1%) did not respond to the question. Most (62; 66%) were employed, 27 (28.7%) were not employed, and 5 (5.3%) did not respond

to the question. The median family income was in the \$30,000 to \$40,000 range (3; 3.2% did not respond).

Overall Plague focus group demographic characteristics (N = 94)

Characteristic	Category	N (%)	Mean/SD
Age			41.21 (17.002)
Sex	Male	31 (33%)	
	Female	63 (67.0)	
Education	Some high school	3 (3.2%)	
	High school diploma or GED	21 (22.3%)	
	Some college	22 (23.4%)	
	College degree	22 (23.4%)	
	Graduate degree	26 (27.7%)	
Ethnicity/race	African American/Black	25 (26.6%)	
	American Indian/Alaska Native	14 (14.9%)	
	Caucasian/White	34 (36.2%)	
	Asian/Pacific Islander	12 (12.8%)	
	Latino/Hispanic	8 (8.5%)	
	Other	1 (1.1%)	
Language in home	English	77 (81.9%)	
	Spanish	5 (5.3%)	
	Other	12 (12.8%)	
Marital status	Single	31 (33%)	
	Married or living with partner	43 (45.7%)	
	Divorced or separated	15 (16%)	
	Widowed	4 (4.3%)	
	Missing	1 (1.1%)	
Children	Yes	51 (64.3%)	
	No	42 (44.7%)	
	Missing	1 (1.1%)	
Employment	Yes	62 (66%)	
	No	27 (28.7%)	
	Missing	5 (5.3%)	
Family income	Less than \$10,000	9 (9.6%)	
	\$10,000-\$19,999	14 (14.9%)	
	\$20,000-\$29,999	19 (20.2%)	
	\$30,000-\$39,999	8 (8.5%)	*
	\$40,000-\$49,999	14 (14.9%)	
	\$50,000-\$59,999	3 (3.2%)	
	\$60,000-\$69,999	4 (4.3%)	
	\$70,000-\$79,999	6 (6.4%)	
	\$80,000-\$89,999	1 (1.1%)	
	\$90,000-\$99,999	7 (7.4%)	
	\$100,000 or more	6 (6.4%)	
	Missing	3 (3.2%)	

* = median

CRT Demographics

Overall, the 30 participants ranged from 22 to 86 years of age, with an average age of 48 (SD = 19.377). Twenty-three females participated (79.7%), there were 7 males (23.3%). Two (6.7%) had less than high school, 1 (3.3%) had some high school, 3 (10.0%) a high

school diploma or GED, 9 (30.0%) had some college, 11 (36.7%) had a college degree, and 4 (13.3%) held a graduate degree. Nine (30.0%) were African American, 8 (26.7%) were Caucasian, 3 (10%) were American Indian or Alaskan Native, 7 (23.3%) were Latino/Hispanic, and 3 (10%) were Asian/Pacific Islander. Most (25; 83.63%) reported that their main language spoken at home was English, 4 (13.3%) reported Spanish, while 1 (3.3%) reported an other language. Twelve (40%) were single, 12 (40%) were married or living with a partner, 2 (6.7%) were divorced or separated, and 4 (13.3%) were widowed. Most (17, 56.7%) had children, while 13 (43.3%) did not. Most (18; 60%) were employed, and 12 (40.0%) were not employed. The median family income was in the \$30,000 to \$40,000 range (3; 10% did not respond).

Overall Plague CRT demographic characteristics (N = 30)

Characteristic	Category	N (%)	Mean/SD
Age	Missing	1 (3.3%)	47.62 (19.377)
Sex	Male	7 (23.3%)	
	Female	23 (76.7%)	
Education	Less than high school	2 (6.7%)	
	Some high school	1 (3.3%)	
	High school diploma or GED	3 (10.0%)	
	Some college	9 (30.0%)	
	College degree	11 (36.7%)	
	Graduate degree	4 (13.3%)	
Ethnicity/race	African American/Black	9 (30.0%)	
	American Indian/Alaska Native	3 (10.0%)	
	Caucasian/White	8 (26.7%)	
	Hispanic/Latino	7 (23.3%)	
	Asian/Pacific Islander	3 (10.0%)	
Language in home	English	28 (83.3%)	
	Other	1 (3.3)	
	Spanish	4 (13.3%)	
Marital status	Single	12 (40.0%)	
	Married or living with partner	12 (40.0%)	
	Divorced or separated	2 (6.7%)	
	Widowed	4 (13.3%)	
Children	Yes	17 (56.7%)	
	No	13 (43.3%)	
Employment	Yes	18 (60.0%)	
	No	12 (40.0%)	
Family income	Less than \$10,000	6 (20.0%)	
	\$10,000-\$19,999	5 (16.7%)	
	\$20,000-\$29,999	3 (10.0%)	
	\$30,000-\$39,999	2 (6.7%)	
	\$40,000-\$49,999	1 (3.3%)	
	\$50,000-\$59,999	2 (6.7%)	
	\$60,000-\$69,999	3 (10.0%)	
	\$70,000-\$79,999	2 (6.7%)	
	\$80,000-\$89,999	2 (6.7%)	
	\$90,000-\$99,999	1 (3.3%)	
	Missing	3 (10.0%)	*

* = median

Part 2: Radio Messages

Comprehension of materials from radio message, including clarity, understanding, and most important points?

Most audience segments exhibited a good general understanding of the radio messages. While many participants did recognize that the symptoms of plague were a main point of the radio clips, some groups failed to see the need to seek urgent medical care as a main point as well. Participants were concerned about the similarity of symptoms between plague and other common ailments such as a cold. The American Indian group was more interested in discussing attention-getting qualities of the message, instead of comprehension of the main points. Lingering questions include: Treatment, event-specific information, and historic background.

UAA2, P2 (1) "What I am concerned about is how closely these symptoms are to common colds, common aches, common pains."

The Urban African American groups did not recognize the need to seek urgent medical care as a main point of the communication.

UAA1, P4 (3) "I didn't necessarily feel a sense of panic. It's more aware, just to be on the look out. It wasn't that I wanted to run and go to the hospital just because my head started hurting after I heard it."

One urban group expressed the need for action steps included in the radio clips.

UA, pg. 3 "I mean it doesn't say go seek emergency treatment. It doesn't get very specific."

The Rural White group still had specific questions after hearing the message, including the extent of infectiousness of plague, the speed of transmission, and the percent chance of death. An urban group had questions about animal infections.

RW, pg. 5 "Also, what's the seriousness, like does it cause death? And if so, like what's the period of time that it will?"

UH, pg. 2 "I don't know that maybe people in more of an urban setting would just dismiss that, saying well, maybe this is just probably something that people in rural, with animals would get."

What are participants' emotional responses to the radio materials?

The groups displayed a range of mixed emotional responses to the radio messages. The most common response of having heightened anxiety showed up in over half of the groups.

UAA1, P5 (2) “Just hearing that name, pneumonic plague, you know that scares you, especially when you don’t know what it is.”

Some participants also mentioned feeling fearful and threatened due to a lack of perceived credibility and expertise from the speaker.

UA, P7 (2) “ I don’t even know what his background is, is he a physician, or not, like I don’t know.”

Other participants had an opposite emotional reaction, and expressed feeling like the information presented alleviated their initial fears. This was especially so if the message included local information. One Urban African American group felt more informed.

UAA1, P4 (1) “I thought the message was kind of enlightening because I didn’t know what pneumonic plague was and I didn’t know what to expect, you know. So, it kind of let you know that and it kind of let you know what precautions you need to take and what symptoms you need to look for.”

Two groups felt the speaker did not elicit an emotional response. They mentioned that the unserious tone and lack of urgency portrayed by the speaker brought out the same feelings in themselves.

UAA1, P2 (7) “The clip, itself, again, there was no importance in his attitude.”

What actions do participants intend to take in response to the materials?

There were various differences between the groups regarding actions to take in response to the messages and hypothetical scenario. No clear themes among populations or groups were evident, although there was disagreement regarding the clarity of the actions ranging from the actions being too broad to being clear and sufficient.

The most common action mentioned involved watching for symptoms and seeking medical care from an emergency room or doctor’s office.

RH “Given the symptoms, some might think this was the flu, but you should go to the doctor just in case. I think that is good.”

Other actions mentioned included taking care of one’s family and leaving town.

RAA, Male “we could leave here with a gas mask on, drive to Memphis, take it off and be all right...”

A rural and an ESL group thought the actions were too broad.

ESL, P11 (6) “The information given was broad. It did not give me a clear idea of what to do with others. It was too big.”

A couple of urban groups thought the actions were clear and sufficient.

UAA2, P4 (4) “If I heard it, I’m going to do everything that they said that was quite clear to me and I’m going to make every effort to do everything that they say do as a precautionary and for safety reasons. I find it to be quite clear. ”

Information seeking was a common action in several groups. Group members mentioned contacting the CDC, local organizations, and checking the internet for additional resources.

UAA1, P2 (6) “For something like this, I would try to contact the Center for Disease Control because I am kind of vague on it.”

Was the radio the preferred channel for the type of information presented?

Nearly all groups mentioned television as the preferred medium for this information and with a few exceptions, the radio was not mentioned as the ideal medium for this information.

UA, P1 (9) “Maybe as a general public service health announcement, but not during the time of crisis.”

Additional places that participants would look for more information varied greatly across groups. Internet, Amber Alert System, library, news media, print materials, churches, post offices, and police stations were all suggested.

UAA, P3 (4) “Billboards, up on major highways and freeways, and things of that nature.”

What are the participants’ responses to the radio materials?

Overall the groups felt the radio messages were sufficient. Differences existed in the credibility of the speaker’s voice, and the urgency of the message. Several areas of unanswered questions were evident. The groups did offer numerous suggestions for improvement.

All of the rural groups thought that the speaker was believable and credible.

RW, P9 (7) “The announcer had a tone of voice that like would make you tune into. I would pay attention to it.”

This differs from the majority of urban groups who thought the speaker was not credible due to a lack of urgency in his voice and un-indentifiable source.

UAA2, P2 (9) “Whomever is also a part of this, and maybe just hearing those names will make people a little more comfortable and calm and knowing that those people usually get things done and taken care of, and hearing those names in this that they are working on this may help also.”

Participants were left with a number of unanswered questions including the historic background, transmission in food, and treatment options.

UAA1, P2 (4) “I think a history being ran about it or a brief description of the history of this type of disease would help people understand.”

Many suggestions for improvement of the message were also mentioned. These included using celebrities from the music and sports industries to deliver the messages, shortening the length, slowing down the delivery, providing other contacts, alternating with a women’s voice, having available in multiple languages, making each of the 3 messages have a different and specific topic, repetition of message, and providing the messages before an event occurs.

UH, P4 (1) “I think that people, especially I guess with Hispanic background that are maybe not as quick as understanding, they might miss the number, so repetitions.”

UAA1, P3 (4) “And I think they need to start running messages like that now”

Part 3: Television message

Comprehension of materials from television message, including clarity, understanding, and most important points?

The majority of the groups displayed general comprehension of the video message on important key points: treatment time frame, antibiotic availability, contagiousness, and self-protection. Only a few groups mentioned comprehending the urgency of care seeking.

ESL, P6 (12) “You will die if you don’t get treatment.”

The majority of the groups understood the time frame to receive treatment, except for the American Indian group.

AI, Male (15) “This ends up being one of those deals where you get a lot of information, but it’s still not exactly clear.”

What are participants' emotional responses to the television materials?

For some groups the video heightened anxiety, however for others they felt helplessness, hope, or nothing at all.

An overwhelming majority of groups felt that the video message heightened their anxiety.

RW, P9 (10) "If I watched that, and it was really happening, I'd probably panic because she made it sound really, really, really serious, like everyone's going to die."

Some groups felt helpless and were worried others would not take suggested preventive actions.

UH, P3 (11) "I would follow the directions, but I would be afraid for people who don't, people who really panic, grab the car, got the kids and start driving out of town, hightailing it. That would scare me if I was in that area... I would be scared if someone drove out the interstate and became the outbreak monkey."

One group displayed feelings of hope from the video, as a result of the suggested action steps.

RH, Female (5) "I liked watching the information. It is better. You actually see how people react if they have been exposed to this, so you know how to deal with it and also they gave a phone number to contact and a website."

A couple of groups felt no anxiety in response to the video material, in part because the event was not taking place in their area.

UAA1, P1 (10) "Location is very important to me. If it's not in my location, then okay."

What actions do participants intend to take in response to the materials?

Most participants felt they could carry out recommended actions. Some participants felt there would be certain barriers, such as lack of resources or unreasonable expectations. Only one group did not mention any actions they intended to follow.

The majority of groups mentioned seeking help or additional information in response to the materials.

RAA, P5 (19) "Seeking some help"

Avoiding symptomatic people was mentioned by a number of participants. However, some participants felt this action may be difficult to carry out.

UA, P1 (18) “If it’s a contagious disease try to stay away from the people who are exhibiting the symptoms.”

UAA2, P1 (8) “That’s a hard action to take, to get away from around your family.”

Participants noted message lacked actions for children and the elderly.

UH, P5 (9) “This TV clip doesn’t say what do about children, the elderly. I meant what to do in those cases?”

Although not recommended in the material, fleeing the area and checking up on family members, were also mentioned actions.

RAA, P3 (19) “And check to see if any of my family have any of the symptoms.”

Several groups mentioned feeling confident regarding the suggested actions, while one group questioned the availability of needed resources to carry out the actions, as well as the potential lack of preparedness of their local health facilities.

RAA, P9 (15) “I’m confident that the actions that are contained in the tape would keep me safe. I just ain’t comfortable with that here locally we got something that actually would help you, like the hospital.”

One urban group was not confident the actions would keep them safe, but stated that they would indeed follow them.

UH, P3 (10) “It will never be 100% confident, feel safe... That would make me about 70 or 80% confident that that would help me stay away from contracting the disease, and keep me healthy in case I have it.”

Was the television the preferred channel for the type of information presented?

For most participants, the television was the preferred channel for this type of information, with the radio mentioned as a secondary source. Participants also mentioned a number of alternative sources for information.

Several groups mentioned that the visual message was ideal. Seeing pictures, along with reinforcing text was thought to be very effective.

ESL, P4 (14) “From a visual aspect it would help us when... you actually see it. It really helps to create a sense of urgency.”

Rural participants mentioned flyers, newspaper inserts, and a traveling van with a speaker as other channels of sufficient information delivery.

RAA, P9 “They could have a little dude on the loud speaker riding by your house.”

Another group thought highway signs and telephone books would be other appropriate places for this material. One group would look to alternate media sources such as the internet, newspapers, and magazines.

UH, P3 (12) “...if you are working down and you’ll see the marquis, the little big signs they show with the letters on them, start flashing information on them, especially the hotline number, contact, or get next to a TV or radio, and provide hotline information on that.”

What are the participants’ responses to the television materials?

The participants had several positive responses to the television message including liking the visual aspect of the message, the incorporation of pictures and text, and the way information was presented. Some things that weren’t liked included the video being overacted, a lack of credibility in the main actor, and a lack of diversity among the cast.

UA, P6 (12) “It just captures your attention and the colors just make it seem like I should pay attention to this.”

The major criticism to the television clip was that it was overacted, and at times appeared comedic.

ESL, (17) “Being so visually over dramatized, it kind of makes you think that in a certain population that some people would find it like, give them a feeling of panic rather than the real hard core information.”

There were several suggestions to improve the credibility of the video, such as using a male physician, actual physicians, non-actors, and having more diverse cast. Two groups mentioned that local personalities would help grab their attention more so than an unknown actor or physician.

AI, Male (16) “I think if you had a person – somebody that you kind of admire and look up to, would talk about, hey this important, you need to listen, these are the symptoms, and this could lead to death.”

RW, P1 (19) “And I almost wonder if they didn’t have a man on there saying it if you would listen to it more or—you know they kind of have more of a voice, that kind of you know, grabs you more.”

Other suggestions were made to help improve the overall impression of the video message such as including maps showing location of affected areas, bullets summarizing the main points and displaying the phone number the entire duration of the clip. A couple

groups thought it to be beneficial to show the progression of the symptoms, in aid of identifying stages, or seriousness.

ESL, P5 (22) "I don't remember how many times, but repeatedly they were showing people out of sequence. Maybe sequencing of, if it happens within the first 2 or 3 days, but if it happens within 6 days this is what you can expect. So 1, 2, 3."

The scrolling words, the colors used and the supplemental text were mentioned as things that were liked. Flashing pictures of the organs and skin were distracting, and the red highlighted words caused a feeling of panic.

RW, P9 (20) "The skin and other organs shocked me."

Part 4: Fact Sheet

Comprehension of materials from fact sheet, including clarity, understanding, and most important points?

Most of the groups had a good understanding of the written materials, mentioning symptoms, urgency of treatment, and protective actions. A few of the groups did have some confusion over the timing of the transmission and treatment. Many agreed that there was too much information for an emergency situation, however the Rural and Urban African American groups did not mention this concern.

A common concern of participants was the effectiveness of the antibiotics used to treat plague.

RW, p. 27 "...even with the medication, what are the chances of survival like the percentage of death...?"

Questions about the accuracy of diagnosis were brought up in two groups.

UH, p. 14 "It's kind of hard to determine which one you- if you got one of those things which one is really attacking you? Is it your lung? How do you know? Is it in the bloodstream? Do you got to do a test or what?"

Rural groups had questions regarding transmission in animals.

RW, p. 27 "...also symptoms that your animals might have, too. I mean, if there's a way to detect that they might have it so that you would know to keep away from that animal."

Majority of the groups said the language was easily understood.

ESL, P5 (24) "It's in good language, easy to understand."

What are participants' emotional responses to the fact sheet?

Most groups reported feeling informed and comforted by the printed information. However there were concerns about the information found in the materials.

UW, p. 39 "It's comforting to look at something and have it tell you."

Urban and Rural Whites and Urban Hispanic were concerned about getting infected at the hospital or doctor's office.

UH, p. 15 " I think they should have, like, a specific place for just those infected. Because if they go to the doctor and there is somebody else and they cough or whatever, everybody in there is going to catch it."

Some worried about the antidote being within 12 hours.

UAA, p.18 "What I am talking about is supplying 3 million people is not as easy as what is written here. Realistically if the epidemic was to happen now, we couldn't supply everybody. So 12 hours would be a whole lot longer than that. "

Some Urban African Americans found the fact sheets boring and suggested more interactive methods of disseminating information (e.g. video games, coloring books, brochures)

UAA, p.20 "Reading these will put you to sleep (recommended) coloring books, pop-up books."

What actions do participants intend to take in response to the fact sheet?

Most groups were confident that recommended actions were reasonable and would keep them safe. However there were some participants who felt the action steps were unclear, or even dangerous.

Some of the groups felt that the actions were easy to follow, and would in fact carry them out.

RW, p. 25 "and it tells you where to go and you know, for treatment."

One of the Urban African American groups thought the recommended actions were not clear.

UAA, p. 12 "To me or someone out in the public, but just the general population, it's got to be some way that they can just really get it, and I just don't think that the general population would get it like this."

An Urban Hispanic participant wondered if spraying disinfectant in the air would kill the plague bacteria.

UH, p. 14 “I don’t like the fact that I don’t know if you can remove the spread with one of those air cleaner things that you just spray in the air. I don’t know if that stuff can- I believe they should at least point that out that you cannot use that.”

Participants from three groups felt the recommendation to go to the physician’s office could be dangerous and cause illness.

UH, p. 15 “The only thing I didn’t like about this is it says that if you feel that you’ve been infected to go to your local doctor. I think they should have, like, a specific place for just those infected. Because if they go to the doctor and there is somebody else and they cough or whatever, everybody in there is going to catch it. So just have a specific place, go here or call someone so they can pick you up or whatever. So they will have everybody in one place and not running here and there infecting other people.”

Rural White and American Indian participants would wear a sock/bandana or mask around the mouth to prevent infection.

RW, p. 23 “Put a sock around my mouth.” “Tie a bandana.”

The ESL and Rural White groups would seek further information from other sources.

ESL, p. 26 “I think it depends on if you are having some symptoms that may not be related but you just have symptoms then that might take you to a different place. But if you really feel that you haven’t been exposed, because you haven’t been to any particular areas, or if you don’t have any symptoms maybe just go to the CDC website to get more information.”

How credible are the fact sheet materials?

Half of the groups mentioned credibility. It was the consensus among the groups that commented that the materials were credible; however, there were a few issues of concern. Credibility could have been enhanced by the addition of a reference or source (e.g. CDC), previously mentioned unanswered questions, and event-specific information after an event takes place.

Many of the groups, such as Urban Hispanic, Asian, and American Indian suggested adding the CDC as a source to add to credibility or wanted the source to be identified more clearly.

RW, P9 (30) “The CDC is pretty credible, so I think that nobody would have a hard time believing this if it was issued by them.”

ESL, p. 27 “I think that actually having a source on the top would be important because maybe in these circumstances when there’s a lot of concern and question, sometimes there would be stories with mixed messages and so I might feel more comfortable if I had a site, like a national organization or a local agency that I could associate and say this is legitimate.”

Some participants found the formatting and content to be distracting. An Urban Asian participant thought credibility was decreased due to the pictures.

UA, p. 25 “I think the pictures take away from the credibility of it. They’re just kind of distracting. I started laughing when I saw them”

Other groups thought the pictures were useful in conveying the information to those who have difficulty reading or don’t speak English.

AI, p. 20 “The one thing that I was concerned about was like you still have your elderly Native Americans who don’t understand English, and some are still out there. And seemingly this visual to them might be informative.”

What are participants’ recommendations for improving the materials?

Recommendations include adding side effects or long-term effects of drugs, more info on the specific names and types of antibiotics, additional contacts, print in different languages, more bullets and color, and reordering the information. Many of the groups liked the use of pictures (American Indian, Rural Hispanic, Urban Hispanic, Rural African American, ESL) and considered them useful in reaching audiences with literacy deficits or those who are non-native English speakers. Urban Asian participants were an exception. Most of the groups suggested including more contact information and making the source more clearly identifiable.

Rural Hispanic and Urban African American groups suggested reordering the information to put more urgent actions first and descriptions of different types of plague last.

RH, p. 9 “I would change the order of the descriptions of the three types of the disease I would put probably later on. I would probably start with the symptoms so I can know and then I can go and get more details about the problems. It is more important for people to know how to recognize the problem and how to get help, then I can spend some time with these three types later.”

Many wanted more specific information about name and type of antibiotics used to treat plague and long-term effects or reactions to taking them.

UAA, p. 17 “...And how could the drugs potentially affect me? So I just got a headache, and I take the whole treatment, how can it affect me short and long term? Do I have to worry about there being a shortage of these drugs?”

RH, p. 9 “The name of the medicine that will be taken should be given. I may think I can just take any antibiotic I have at home and they may not be what they meant to say.”

A few groups were concerned about how plague affected animals and what actions should be taken to handle them. They wanted additional information on animals included in the materials.

UW, p.18 “I was also wondering what symptoms the pets should be exhibiting. So if your pet has been exposed, what symptoms should I have so that I would not go to my pet or to the vet or whatever. It just says, ‘Avoid dead animals.’ I’m not going to pick up any.” “And can a cat give it to a dog?”

Most groups suggested changing some aspect of the formatting to highlight key points and make the materials easier to read. Some suggested the use of bullets and color to highlight key points: symptoms and treatment. Suggestions made the ESL group included more enlarged pictures, especially for those with literacy deficits.

UH, p. 15 “...Just one of the things I would recommend, for example, with regards to the symptoms. It seemed like it is all kind of mushed up into just four bullet points. I would recommend maybe spreading it out a little more so that people can quickly glance over it. So maybe put them in bullet points, I mean bold so that—fever, headache, weakness. Even color would be nice.”

Hispanic and ESL groups suggested printing the fact sheet in different languages for those who are not native-English speakers.

RH, p. 6 “I think the wording is okay but I would think they would make that same thing in Spanish too because Hispanics that don’t speak English will see it but they don’t really know what that they are talking about. All they will understand is that some people are sick. I would think they would do the same thing in Spanish.”

What channel of media did the participants prefer for information?

The majority of the groups were in agreement that they would turn to television first in a crisis to obtain information. Most of the groups additionally added that they would additionally seek out the print material to provide them with more complete and credible information. They also thought the print materials were useful to read at their own pace and use as a reference. A couple of groups mentioned the radio in the event that they did not have access to a television. The only exception was the American Indian population, which preferred the fact sheet as a credible source. Rural White groups mentioned that they would look to national news sources first, and then to local news for information.

Television was the first source that the groups would turn to for information.

UA, p. 28 “TV. I think out of the three it had the most number of key points in the way I would like it the most with coloring and different things and visuals and just to the point without extra info or too little info.”

ESL, p. 28 “ I think that for emergency TV because it’s the easiest way to get the information dispensed.”

Many thought the fact sheet would be most useful, provide the most comprehensive information and could be kept and used as a reference and to provide information prior to an event.

RW, p. 32 “I think the print (was most helpful) because you can go back over it and read it again. If you didn’t catch something, you got it here and you can – see it again, you know.”

UAA, p. 10 “I think that these fact sheets are good pre-information. It gives you time to read over it, to absorb it, to know what it is about and to know what to do. So I think the fact sheet is a good pre-bioterrorism mechanism or tool to be used.”

Some thought comparing all three sources (TV, radio, and print material) was important.

RH, p.10 “It would be good to say on the radio clip that you can look for more information on the TV. On the TV clip they should say you can look for flyers, fact sheets, or newspaper so you have all the facts there. So you can expect more information in different media. One point of concern is it is good for us because we read. Hispanics, I don’t know how you read enough of this and I would be afraid that it might be hard. You always need the radio and TV to get the whole public.”

Where participants are during an event may determine what media they look to first.

UA, p. 28 “I think it depends on where you are. If I’m at work I would go to the internet. I don’t have access to a radio at work either. So I think it depends a lot on the setting of where you are. So I think it would be important to be able to do all three.”

Part 5: Cognitive Response Testing (CRT)

Participants were asked to respond to specific questions about each of the following sections (in italics). Each section contained passages from the fact sheet being developed by this group. Specific questions were asked about the passage, comprehension, and emotional response.

Section A

Pneumonic plague is contagious and can spread from person to person through respiratory droplets. Respiratory droplets are moist, tiny particles containing bacteria. They are exhaled when an infected person talks, sneezes, or coughs. Respiratory droplets are then inhaled by people nearby (up to 6 feet away).

Across all groups there was confusion regarding the meaning of respiratory droplets. Hispanic participants seemed to have a better understanding of the concept than the other groups. However, the word “pneumonic” was confusing for some African American participants and for one Urban Hispanic participant. American Indian and ESL participants struggled with the meaning of contagious, and participants from a number of different backgrounds had difficulties pronouncing “pneumonic plague”. Urban African Americans worried about their community having the resources to deal with an outbreak.

RAA, P3 “[Re: Contagious] Is that some kind of disease or something?”

Section B

Those infected with pneumonic plague usually have flu-like symptoms such as fever, headache, weakness, chills and muscle aches. Anyone with symptoms of the flu should be treated for plague. Symptoms of pneumonia which develop quickly, such as shortness of breath, chest pain, and cough, are also common. Infected persons may cough up blood. Some people become sick to their stomach, throw up, or have stomach pains. Most people develop these early symptoms in 1-4 days, but they may occur up to 6 days after the attack or after exposure to a person with pneumonic plague. If treatment is not received within 24 hours of developing symptoms, pneumonic plague usually leads to death.

Many participants pointed out that the symptoms of plague resemble other common illnesses, and because of these similarities it would be hard to recognize the symptoms of plague. Rural White participants were also concerned because the common symptoms will make pneumonic plague hard to diagnose. American Indian participants confused pneumonic plague with pneumonia. Some stated the segment made them feel frightened, while others said they felt relieved to have the additional information. Some African American participants struggled with understanding the symptoms such as abdominal pain, shock, and respiratory failure. Rural Hispanic, Urban Asian, and ESL participants struggled with the timeline (1-4 days to become ill, then 24 hours after symptoms appear to seek medical assistance).

UA #3 “Probably more concerned because these are some of the symptoms I’ve had before in the past.”

Section C

People with symptoms of plague may be hospitalized and receive antibiotics (medicine) through an I.V. An I.V. is a small tube that's put into a vein. Medicine then flows through the tube and into the body. People with symptoms of plague may also receive oral antibiotics.

People who are exposed to plague but who do not show symptoms, may be given oral antibiotics for 7 days to prevent illness.

With the exception of Urban White and Urban Hispanic, most participants understood how plague is treated. Only a couple of African American participants struggled with the meaning of “oral”. A small number of participants didn't understand why someone would take medicine if they were not ill, and struggled with the different forms of treatment (IV and oral).

RAA #3 “[Re: Oral Antibiotics] Uh antibiotic to help you heal.”

Section D

There is currently no vaccine for pneumonic plague available. Research to develop a vaccine against pneumonic plague is continuing in the US and elsewhere. A vaccine is available for bubonic plague; however, it is not available in the United States.

Across the board participants felt that vaccine and oral antibiotics were too complicated of words to be used in the materials. With the exception of Urban Hispanic and ESL participants, there was not a good understanding of the meaning of vaccines. Some Urban participants felt scared, sad, or worried after reading the section. Both urban and rural participants from a number of ethnicities were suspicious about other places having bubonic plague vaccine and the U.S. not having it. ESL and Urban White participants did not understand what bubonic plague was.

UH #2 “Pretty scary if you get it. There is nothing to help you.”

Section E

If you have been exposed to someone with pneumonic plague, illness may be prevented by seeking treatment immediately. If you become ill, antibiotics must be taken within 24 hours after symptoms develop to reduce the risk of death. If exposure to people with pneumonic plague cannot be avoided, wear a surgical mask to reduce exposure to the Yersinia pestis bacteria.

Participants found the reference to Y. Pestis confusing. Many participants understood the importance of immediate treatment but some doubted the efficacy of the listed precautions. Some African Americans did not know what surgical mask meant, while others were concerned that there would not be surgical masks available for them in their communities. There were still lingering questions regarding the ability to recognize symptoms of plague because of their similarity to other common illnesses by a number of

participants including Urban African Americans and Rural Whites. There was concern from some participants that people might panic if they are exposed to this information.

UW, #3 “You know we don’t want to panic the public, by telling them you can be exposed in a minute you know, and die in 24 hours – well, that would scare the pants off of half of us, you know, so...”

Section F

If there are cases of plague in your community, do not let visitors with respiratory symptoms into your home. Also, stay at home as much as possible. The fewer people you come into contact with, the lower your chance of getting sick.

Most participants understood the importance of keeping away from sick people. A number of participants were concerned that they wouldn’t know if people were sick. One African American participant was concerned that this information could cause people to become paranoid of individuals with respiratory symptoms; another said even if you can’t visit people, you could still pray. Not all Urban African American participants understood what was meant by respiratory symptoms.

RAA, #2 “If you know someone in the community has got it stay at home and don’t try to get in contact with them. Try to stay away from them as much as possible, because you can even get it by breathing.”

Section G

Keep pets inside. Pets, especially cats, may become infected with plague bacteria and bring the bacteria into your home. Listen for any additional advice from local officials.

Participants understood that animals, specifically cats, can become infected with pneumonic plague and pets should be kept inside. The ESL, Urban African American and Rural Hispanic participants questioned whether all animals, not just cats could introduce plague into the home. African Americans also questioned the ability for people to keep their pets inside. Urban White participants added additional action steps to this section including routine pet care.

RH, #3 “Maybe they should have mentioned pets like dogs, too, ‘cause you’re only referring to cats here. Be more in general, that’s because people like cats and they might be offended.”

Section H

*Pneumonic plague is an infection in the lungs. It is an uncommon type of naturally occurring plague, but the deadliest. In a bioterrorism attack the *Yersinia pestis* bacteria may be released in the air. People would breathe in the*

Yersinia pestis bacteria, infecting their lungs. Symptoms may appear within 1-4 days of exposure.

While many participants understood how to become infected from a bioterrorism attack, Rural African Americans and Whites struggled to explain how one could become infected during an attack. Urban African Americans and Rural Whites struggled to define infection. For Urban African Americans “uncommon naturally occurring” was confusing. Urban White and Hispanic participants experienced confusion regarding the timeline from event to illness and death, including not realizing that people may not know there is an attack until hours to days after the bacteria is initially released.

UAA, #2 “Yeah, that isn’t uncommon, yet it can occur naturally. So how is that, is it something my body manufactures or is it something in the air. Or is it really something that somebody is cooking up in a bottle somewhere.”

Section I

Most antibiotics (medicines) used to treat pneumonic plague are readily available. If greater supplies are needed, such as after a large bioterrorism attack, emergency drugs and equipment from the Strategic National Stockpile can be delivered anywhere in the country within 12 hours.

Many understood that the Strategic National Stockpile (SNS) was a stockpile of medication and supplies, however some Rural African Americans did not understand what the SNS was. While some understood the picture was of the SNS, others did not. Rural Whites and Rural African Americans didn’t understand how an antibiotic works. For many participants, there was concern over whether antibiotics would be available to them. Knowing the existence of the SNS comforted a number of participants.

UH, #1 “In some ways it makes me feel secure because I know if anything happens, something like a terrorism attack, I know they are going to come behind me and you know if it happens I know they have something to back up, so that they can caught it easily.”

DISCUSSION

Issues of Coding Reliability

The coding of transcripts proceeded from the first coding of the manuscript to a process known as “check-coding” in which 1) two researchers code the same data set and coding difficulties or disagreements are discovered and/or 2) one researcher codes the data set and repeats the process on an identical un-coded manuscripts several days later. The processes of check-coding increase definitional clarity and validate reliability, and are also an assessment of internal consistency in individual coders (Miles and Huberman, 1994).

The coding of focus groups by the partner universities achieved acceptable levels of code-recode reliability. Verification of results was also achieved by a process of cross-group validation in which findings were compared across universities and similarities identified. It is notable that this level of reliability was achieved in this research.

Limitations of the Study

The Focus group and CRT participants in the study represent a non-random convenience sample of the population. The partner universities accessed participants from six diverse populations, and this is of considerable benefit. However, there is much discussion in the literature about the use of non-probabilistic sampling techniques. In probability samples, each member of the population has an equal chance of being included in the study. The most common uses of a probability sample are to determine distribution in a population and to test the relationships between variables. However, a primary limitation of this type of sampling is that it cannot easily be used to obtain information about the meaning of a construct (Morse, 1986).

The assumption underlying the use of non-probability sampling is that not all subjects experience the phenomenon of interest in the same ways. In qualitative research, sample size is dependent upon the purpose of the inquiry. In-depth information from a small target population is the desired outcome rather than dilute information from a large number of subjects. In a project such as this one, the researcher's main emphasis is on understanding and identifying culturally-driven constructions which will in turn facilitate the crafting and delivery of messages important to the continued health and well-being of the public. In addition to other issues, the validity of the study after its completion depends upon the richness of the information obtained, and the observational and analytic skills of the researcher (Patton, 1990).

Issues of Validity

Validity is the degree to which the research measures what it is supposed to measure. Krueger (1994) states that the use of focus groups in qualitative research is valid if the focus groups are used carefully for a problem that is amenable to focus group inquiry. The validity depends upon the context in which it is used and the procedures followed in the conduction of the groups (Krueger, 1994). Focus groups are particularly valuable prior to initiating a social marketing campaign for the purpose of successfully communicating with designated population groups. The cognitive response testing assured that terms and phrases used in the publicly-distributed printed materials on chemical attack were fully understandable and of use to the targeted population segment.

In order to insure validity, the findings must be grounded in the data, inferences made from the data must be logical, analytic strategies applied correctly, and alternative explanations accounted for (Schwandt & Halpern, 1988). The findings of this research were consistent across four universities, and this consistency of findings constitutes the verification process necessary to assessment of validity. Ideally, the research should have the possibility of being replicated by other investigators. "Transparency" of method

addresses the issue of clarity of data and procedures such that the study may indeed be replicated at a later date (Miles & Huberman, 1994). Methodology was consistent across the four universities involved in this research.

In this study external validity is limited in that the findings cannot be generalized to the entire U.S. population. They can, however, be generalized to the populations that were accessed for the focus group participants. Therefore, it is felt that the research contains important and valid information that may be of value to the CDC and ASPH in the crafting of pre-event messages addressing the issues extant in the realities of bioterrorist activity, especially in regard to targeted special populations.

CONCLUSIONS & RECOMMENDATIONS

Radio

Overall there was a good general understanding of the radio messages across all audience segments. Namely participants understood symptoms, but missed urgency of seeking care.

The main points of the radio messages reported by the groups most frequently included the symptoms of plague. Although mentioned as a main point, the groups quickly expressed their concerns that the symptoms of plague were too similar to flu and cold symptoms to distinguish the difference. This ambiguity caused a great deal of confusion and fear among the participants.

Various actions steps were mentioned in response to the radio messages. These included avoidance of people displaying symptoms, seeking medical care, checking self for symptoms, taking care of family, leaving town, and information seeking. Although specific action steps were mentioned, there was disagreement regarding the clarity of these steps, as they were mentioned as being too broad to follow.

The actual scenario and corresponding clips caused anxiety across groups. The main source of this anxiety was the ambiguity between plague and flu or cold symptoms mentioned above. Several groups mentioned that providing local information alleviated this anxiety.

There was disagreement about the voice used for the radio messages. Some participants felt it did not convey appropriate levels of urgency, yet other groups thought it sounded professional and credible.

Overall the radio was considered an appropriate and sufficient source to obtain the information presented, but most said they would be more likely to look to television sources first. Several suggestions were offered to improve the radio message.

Television

Overall the television messages were generally thought to be a clear and effective means of presenting this type of information. The participants were able to comprehend and list the main points of the message more consistently than seen in the radio messages: Prevention measures, urgency of treatment, and contact information.

The television message brought out a lot of common concerns across groups. These include how to avoid people with symptoms, clinics as a possible source of infection, accuracy of diagnosis, and progression of symptoms.

The ambiguity of symptoms mentioned during the radio messages was also put forth as the most prevalent concern from the television message. The participants were concerned and confused regarding how to differentiate between symptoms of plague and other ailments such as a cold or flu.

Most respondents would follow the recommended actions, though there were some questions about their effectiveness. Some participants had reservations regarding the effectiveness of the actions

Another issue brought forth during the television messages is that the location of the event is an important piece of information for the listeners. Knowing this piece of information helps alleviate initial fears and concerns, and helps direct participants in what to do next.

More information regarding treatment is desired. The participants felt the information regarding treatment was very limited and it would help dismiss fears and concerns if more information was available.

The television message heightened the levels of fear and anxiety in some of the participants. They felt the seriousness of the message would cause them to panic, especially when the location is uncertain.

Overall the television is the definite preferred medium for emergency response information. The participants alluded to the effectiveness of the visuals, and pointed out how overacting can detract from the sense of urgency and credibility of the message.

Print

There is generally a good understanding of the information presented in the fact sheets, although many of the participants felt there was too much information to comprehend for an emergency scenario situation.

Several positive feelings resulted from reading the fact sheets. The participants mentioned feeling informed and comforted by the printed info, as well as confident about the effectiveness of the recommended actions and their ability to carry them out.

Some common concerns included how to care for their exposed family members, the efficacy of the antibiotics, disinfection instructions, infection at hospitals, and accuracy of diagnosis. Some people were unsure about the recommended actions, as they doubted their efficacy.

Rural groups had additional questions regarding animals, such as if there were different treatment options available for animals.

Overall, most of the participants responded positively to the print materials. Some of the enhancements that were liked included the pictures, the definitions and pronunciation guide. There was a concern that non-native English speakers would not be able to comprehend the printed materials.

CRT

All participants mentioned recognizing the similarity of pneumonic plague symptoms to other common illness such as a cold or flu. They had a good understanding of the necessary plague treatment, and how to become infected during a bioterrorism attack. Some struggled to understand when the medication must be received in order to survive.

All participants understood the importance of avoiding those infected with plague, though many felt it would not be easy or may be ineffective.

Participants differed regarding their feelings about being provided with the information as some felt better having the additional information, while most felt frightened or concerned after reading the section. The lack of vaccine availability made participants feel scared and suspicious.

Some of the participants struggled to understand the terms “respiratory droplets,” “respiratory symptoms,” “contagious,” “pneumonic,” “uncommon naturally occurring.”

Many participants did not understand that vaccines are used to prevent illness, instead confusing it with a treatment.

Some participants struggled with understanding surgical masks, while some were concerned about their actual availability, especially in an emergency situation.

Participants understood that cats could become infected with pneumonic plague, but there were questions about other animals, and how to handle them

Most participants understood what the Strategic National Stockpile (SNS) was, with the exception of some rural participants. A number of different groups questioned whether the SNS medication would be available to them, or if it would only be available to select people or select areas. Knowing of the existence of the SNS comforted most urban participants.

Implications/Recommendations

Based on the findings from the focus groups and cognitive response testing interviews, many recommendations can be made for informational materials for distribution in the event of a bioterrorism attack using plague.

Recommendations for all media

- The recommended actions steps should be placed at the top of beginning of the message or communication.

Recommendations for radio message

- Due to the ambiguity and difficulties describing how plague symptoms differ from those of the common cold or flu, more emphasis should be aimed at convincing someone to seek treatment when exhibiting flu-like symptoms if they reside in the area where the outbreak has occurred.
- The treatment options need to be clearly described. Without understanding the available treatment, additional feelings of panic and fear exist.
- Local information will need to be provided with the radio message, perhaps through line reads by radio announcers. This information will help alleviate initial fears and concerns, as well as help with appropriate action steps.
- Significant attention needs to be given to the radio voice. The speed of delivery causes varying emotional reactions in the public, as the faster the message, the more panicked the listener becomes. Also, credibility is lost when the source of the voice is not immediately known. The tone of the voice should convey authority and gravity.
- Special attention should be placed on repeating the contact number and address information.

Recommendations for television message

- The acting should not be overly dramatic or comedic; this can be a reason why the message loses credibility with the viewer.
- Other means to improve credibility include using a bona fide physician or someone well known in the community. It is also important to portray the location in the video as relevant to the viewer. (Palm trees for a Midwest audience quickly loses credibility)
- As with radio, ambiguity in determining difference between plague and flu symptoms exists. Anyone with symptoms should seek help.
- Providing adequate information regarding treatment is beneficial. This information alleviates fear.
- Other recommendations include providing a map for showing the affected areas, diversifying the cast, using a bulleted list for key points, providing the contact information throughout the videos entirety.

Recommendations for print materials

- Supplemental information available during an emergency may help people feel empowered.
- Further clarification should be made regarding the possibility of infections acquired at treatment locations.
- Some concerns that need to be addressed in print materials include caring for family members and disinfection instructions.
- Information regarding infection and the treatment options for pets should be included, as well as specific action steps.
- Other recommendations include providing contact information and source on first page, urgent actions listed first, more sources of information, including long-term effects of plague, using bullets to highlight the key points of symptoms and treatment, more enlarged pictures especially with those with literacy deficits.

Implications from CRT interviews

- The symptoms of plague and comparisons to flu and cold like symptoms should be realized, and action steps to deal with these similarities must be included in the information.
- Various technical terms such as antibiotic, infection, respiratory droplets and vaccine should be avoided or clearly defined.
- Knowing additional information, especially when learning about treatment possibility and the Strategic National Stockpile (SNS) may comfort people and can alleviate fear.

References

Becker, S. 2004. "Emergency Communication and Information Issues in Terrorist Events Involving Radioactive Materials." *Biosecurity and Bioterrorism* 2 (3): 195-207

Forsyth B. and Lessler J. 1991. Cognitive laboratory methods: A taxonomy. In Biemer PP et al. (eds.), *Measurement errors in surveys*. New York: Wiley; 393-418.

Glaser, B., & Strauss, A. 1967. *The discovery of grounded theory: Strategies for qualitative research*. Chicago: Aldine.

Glik, D., Harrison, K., Davoudi, M. and Riopelle, D. 2004." Public Perceptions and Risk Communications for Botulism." *Biosecurity and Bioterrorism* 2 (3):216 – 223.

Henderson, J. N., Henderson, L. C., Raskob, G., and Boatwright, D. 2004. Chemical (VX) Terrorist Threat: Public Knowledge, Attitudes, and Responses." *Biosecurity and Bioterrorism* 2 (3):224-228.

Krueger, R.A. 1994. *Focus groups: A practical guide for applied research*. (2nd ed.) Thousand Oaks, CA: Sage.

Kreuter, M., Farrell, D., Olevitch, L., and Brennan, L. 2000. *Tailoring health messages: Customizing communication with computer technology*. Mahwah NJ: Lawrence Erlbaum Associates.

Miles, M. B., & Huberman, A. M. 1994. *Qualitative data analysis*. (2nd ed.). Thousand Oaks, CA: Sage.

Mileti, D. S. and Fitzpatrick, C. 1991. "Communication of Public Risk: Its Theory and its Application." *Sociological Practice Review* 2 (1):20-28.

Mileti, D.S. and Sorensen, J. H. 1988. "Planning and Implementing Warning Systems." Pp. 321-345 in *Mental Health Response to Mass Emergencies*, edited by M. Lystad. New York, NY: Brunner-Mazel.

Morgan, D.L. 1988. *Focus groups as qualitative research*. Qualitative research methods, Series 16. Newbury Park, CA: Sage Publications.

Morse, J. M. 1986. Quantitative and qualitative research: Issues in sampling. In P. L. Chinn (Ed.), *Nursing research methodology: Issues and implementation* (pp. 181-193). Thousand Oaks, CA: Sage.

Morse, J. M. 1994. Designing Funded Qualitative Research. In N. K. Denzin & Y. S. Lincoln (Eds.), *Handbook of Qualitative Research* (pp. 220-235). Thousand Oaks: Sage.

Patton, M. Q. 1990. *Qualitative Evaluation and research methods*. Newbury Park, CA: Sage.

Schwandt, T. A., & Halpern, E. S. 1988. *Linking Auditing and Meta-evaluation: Enhancing Quality in Applied Research*. Newbury Park, CA: Sage.

Stewart, D.W. and Shamdasani, P.N. 1990. *Focus groups: Theory and practice*. Applied Social Research Methods, Series 20. Newbury Park, CA: Sage Publications

Strauss, A., & Corbin, J. 1994. Grounded theory methodology: An overview. In N. K. Denzin & Y. S. Lincoln (Eds.), *Data Management and Analysis Methods* (pp. 280). Thousand Oaks: Sage.

Sudman, S., Bradburn, N., and Schwartz, N. 1996. *Thinking about answers: The application of cognitive processes to survey methodology*. San Francisco: Jossey-Bass, Inc.

Valle, R. 1989. Cultural and ethnic issues in Alzheimer's disease research. In E. Light & B. D. Lebowitz (Eds.), *Alzheimer's disease treatment and family stress: Directions for research* (pp. 122-154). Rockville, MD: National Institute of Mental Health.

Vanderford, M. 2004. "Breaking New Ground in WMD Risk Communication: The Pre-event Message Development Project." *Biosecurity and Bioterrorism* 2 (3): 193 – 194.

Wray, R. and Jupka K, 2004."What does the public want to know in the event of a terrorist attack using plague." *Biosecurity and Bioterrorism* 2 (3):208-215.