



HHS Public Access

Author manuscript

Biosecur Bioterror. Author manuscript; available in PMC 2016 February 12.

Published in final edited form as:

Biosecur Bioterror. 2012 December ; 10(4): 401–411. doi:10.1089/bsp.2012.0041.

Public Response to an Anthrax Attack: A Multiethnic Perspective

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Abstract

The 2001 anthrax attacks emphasized the need to develop outreach that would more effectively support racial/ethnic minority populations during a bioterrorism incident. Given the importance of antibiotic prophylaxis in a future anthrax attack, it should be a priority to better support racial/ethnic minorities in mass dispensing programs. To examine the needs and perspectives of racial/ethnic minorities, this study used a nationally representative poll of 1,852 adults, including 1,240 whites, 261 African Americans, and 282 Hispanics. The poll examined public reactions to a “worst-case scenario” in which cases of inhalation anthrax are discovered without an identified source and the entire population of a city or town is asked to receive antibiotic prophylaxis within 48 hours. Findings suggest willingness across all racial/ethnic groups to comply with recommendations to seek prophylaxis at dispensing sites. However, findings also indicate possible barriers for racial/ethnic minorities, including greater concern about pill safety and multiple

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None of the authors has a potential conflict of interest to declare.

attacks as well as lesser knowledge about inhalation anthrax. Across all racial/ethnic groups, roughly half would prefer to receive antibiotics at mass dispensing sites rather than through the US Postal Service. People in racial/ethnic minority groups were more likely to say this preference stems from a desire to speak with staff or to exchange medication formulation or type. Findings suggest the need for tailored outreach to racial/ethnic minorities through, for example, emphasis on key messages and enhanced understandability in communications, increased staff for answering questions in relevant dispensing sites, and long-term trust building with racial/ethnic minority communities.

During the 2001 anthrax attacks, public health officials were challenged with providing antibiotic prophylaxis to a racially and ethnically diverse group of people who had likely been exposed to *Bacillus anthracis*.¹⁻³ This experience emphasized the need to develop outreach and communications that would more effectively support racial/ethnic minority populations during a possible future bioterrorism incident. It should therefore be a priority to address the needs of racial/ethnic minority groups with respect to programs for mass dispensing of antibiotic prophylaxis, which form a central piece of the nation's capabilities for reducing mass casualties in the case of future anthrax attacks.³⁻¹¹

In order to improve mass dispensing programs for racial/ethnic minority groups, it is important to understand how people in racial/ethnic minorities might respond to such programs and whether that differs from majority white populations.⁹ It may be particularly important to understand whether there are differences in attitudes about the dispensing programs or knowledge about disease etiology that might dissuade members of racial/ethnic minority groups from obtaining and taking antibiotic prophylaxis available at mass dispensing sites. If so, a more tailored approach with particular outreach to racial/ethnic minority communities may be needed to ensure equal access to prophylaxis and related information and to increase rates of adoption.

There is little research to shed light on the issue of racial/ethnic minorities' response to mass prophylaxis programs. One key source of information is analysis of the response to the 2001 prophylaxis programs, although the populations targeted for these efforts were part of federal institutions, including the US Postal Service (USPS) and the Senate, rather than members of the public at large. Moreover, the focus was almost exclusively on African Americans rather than Hispanics. Nonetheless, a study among people who participated in these programs does suggest there were attitudinal differences between racial/ethnic groups; perceived racial discrimination was a critical element in decreased trust in government among African Americans, whereas it did not play a role for whites.³ Related studies reinforce the idea that African Americans had lower levels of trust in the related anthrax vaccine efforts. This stemmed in part from differences in risk perceptions among African Americans, which were partly rooted in historical memory of the Tuskegee syphilis experiments.¹² Further, these differences echo findings from a study of public opinion about the fairness of government response to a "bioterrorist attack," in which African Americans were less likely to feel that the government would "respond fairly to [their] health needs regardless of race, ethnicity, income or other personal characteristics,"¹³ and a study showing lower levels of specific aspects of trust, including "honesty" and "consistency in

information,” in the event of a smallpox attack.¹⁴ These studies are important insofar as differences in trust may affect willingness to adhere to government recommendations during an attack. However, none of these studies focuses on mass prophylaxis programs nor do they show racial/ethnic differences with respect to levels of preparedness or willingness to respond to recommendations.

Research about racial/ethnic differences in the response to other kinds of public health emergencies, like natural infectious disease outbreaks and natural disasters, provides greater understanding of likely differences between groups, although such studies again focus more frequently on differences between African Americans and whites and rarely include other racial/ethnic minorities. Studies in these areas suggest that racial minorities may respond less to government efforts in a crisis: for example, African Americans were less likely to evacuate from New Orleans when Hurricane Katrina struck, were less likely to get vaccinated during the H1N1 influenza pandemic, and are less likely to want to get the smallpox vaccine in the event of a future episode.^{15–19} African Americans also reported they were less likely to (be able to) adhere to significant social distancing measures (eg, staying away from work for many weeks) in the case of a future influenza pandemic,²⁰ but they were more likely to take less costly measures of personal protection during the H1N1 pandemic.²¹

Differences in behavior between African Americans and whites appear related to differences in underlying attitudes toward government and related risk perceptions, social connectedness, and cultural and religious values, as well as differential abilities to access and act on information provided in emergencies.^{22–27} Moreover, lower income and education levels, which are more common among racial/ethnic minorities, as well as preexisting health disparities contribute to more limited abilities to respond to public health emergencies while simultaneously increasing vulnerability.^{5,8,28,29}

While studies directly comparing the responses of Hispanics and whites to major emergencies are rare, available research does show related disparities in emergency preparedness, access to emergency information, ability to respond to government recommendations, and recovery from natural disasters, in particular. These studies reinforce the notion that differential socioeconomic status, interwoven with language and immigrant status, contributes both to vulnerability and to lower ability to recover from disasters.³⁰ The extent to which these issues manifest for African Americans or Hispanics in the context of a mass prophylaxis program for anthrax has yet to be explored.

In this study, we used a nationally representative poll to explore possible racial/ethnic differences in responses to a mass prophylaxis program for inhalation anthrax based on the Department of Homeland Security’s (DHS) target capability for mass prophylaxis and the Center for Disease Control and Prevention’s (CDC) Cities Readiness Initiative (CRI) scenario for which jurisdictions prepare to provide initial prophylaxis to 100% of their populations within 48 hours.^{9,31,32} The goal was to provide broad insights about possible differences in racial/ethnic minorities’ responses to the program’s key dimensions, which could help shape planning and communications at the time of a real attack.

We examined whether there were differences in: (1) people's willingness to go a dispensing site and get antibiotics, as well as the possible barriers to going; (2) people's willingness to consume antibiotics they receive at the site and barriers to consumption; (3) people's preference for having antibiotics delivered by the USPS within 48 hours as compared to going to dispensing sites to get antibiotics, and barriers to acceptability of this alternative delivery mode;³³ and (4) factors that might be barriers to compliance with any of these recommendations, including lack of concern about inhalation anthrax, misperceptions about the contagiousness of the illness, disbelief in the safety and efficacy of the antibiotic pills, and a lack of confidence in the federal and state or local government's ability to carry out this program.

Methods

For this study,^{*} researchers at the Harvard School of Public Health (Boston, MA) conducted a nationwide telephone poll (landline and cell phone) with a representative sample of adults (18 years and older) using a random-digit dial (RDD) design from December 14, 2010, to January 9, 2011, excepting December 24 to 26. The total sample was 1,852, which included people who self-identified as white non-Hispanic (white 1,240), African American non-Hispanic (261), or Hispanic (282). Social Science Research Solutions (Media, PA) oversaw field operations. Interviews were conducted in English and Spanish.

The interview included approximately 50 closed-ended questions about participants' responses to a hypothetical scenario that forms the core of target capability and CRI: Cases of inhalation anthrax are discovered without an identified source, and the entire population of their city or town is asked to obtain a 10-day supply of prophylactic antibiotics within 48 hours. The antibiotics are stored with the Strategic National Stockpile (SNS) and dispensed locally.³⁴ Respondents were asked about 2 dispensing options: (1) Antibiotics would be dispensed in community locations, such as schools, by local (and sometimes state) public health departments; and (2) antibiotics would be delivered to people's homes by the USPS. Appendix A includes the full questionnaire and scenario description (see online supplementary material at www.liebertonline.com/bsp).

This study uses polling as a model methodology for reaching target populations during a crisis because it may need to be replicated in a real crisis. The turnaround time of polls is quicker than many other survey techniques because of shorter field times and the standardization of question structures. This is critical in a crisis because it allows public health leaders and policymakers to make rapid changes in response or communication.³⁵ Although polls generally have lower response rates than longer-term surveys, research suggests that resultant data are comparable to data from higher-response surveys conducted over longer periods of time when weighted to key demographics.³⁶ Weighting addresses differential nonresponse across demographic groups, although it may not fully adjust for this possibility. In this poll, the response rate was 13%, and data were weighted to match the

^{*}This poll was the second in a series. The approach for this study was parallel to that of the first poll, and thus only essential elements and those different from the first study are reported here; more detail may be found in the article describing results from the first poll. Please see SteelFisher GK, Blendon RJ, Ross LJ, et al. Public response to an anthrax attack: reactions to mass prophylaxis in a scenario involving inhalation anthrax from an unidentified source. *Biosecure Bioterror* 2011;9(3):239–250.

following known population parameters: gender, age, race, education, homeownership, phone status, metropolitan status, and US census region. Parameters were taken from the US Census Current Population Survey and the National Health Interview Survey.^{37–39} Data were also adjusted to account for the probability of selecting a given person based on his or her cell phone and landline access as well as by household size.

Researchers compared findings from the total population in each year for questions that remained identical in each poll and found no meaningful differences; thus, analysis focused on racial/ethnic differences and only data from the second wave are presented here. Comparisons between racial/ethnic groups used 2-tailed *t*-tests (Newman Keuls) that account for the use of weighted data and reduce the risk of false-positive results from multiple comparisons. Differences are considered significant using a conventional alpha level of 0.05. All statistically significant differences are shown in the tables, though only significant differences of at least 10 percentage points were considered to have practical implications for policy and are therefore described as such in the text.

Results

Willingness to Go to a Dispensing Site

If it were recommended by public health officials at the time of an attack, a strong majority across all racial/ethnic groups indicated they were likely (“very” or “somewhat”) to go to a dispensing site to get antibiotic pills for themselves (88% white, 93% African American, 91% Hispanic) (Table 1), including a majority in all racial/ethnic groups who would be “very likely” (68% white, 75% African American, 64% Hispanic). There was also a high fraction of parents in each racial/ethnic group who said they would be likely to go get antibiotic pills for their children (95% white, 98% African American, 98% Hispanic).

Among those who were not “very likely” to go to the dispensing sites (ie, those who were “somewhat likely,” “not very likely,” and “not at all likely” to go), the most commonly cited factors that were “major reasons” for this decision included: worry that “officials would not be able to control crowds” (48% total); worry about “the safety of the antibiotic pills, including side effects” (43%); and worry about “getting exposed to anthrax from someone who is sick at the dispensing site” (42%). African Americans and Hispanics were more likely to be concerned than whites about the safety of the pills (53% African American and 62% Hispanic vs. 38% white), and Hispanics were also more likely than whites to be worried about getting exposed to anthrax from those who are sick with it at the dispensing sites (55% vs. 40%).

Among those who were not “very likely” to go to the dispensing sites, Hispanics were more likely than whites and/or African Americans to indicate that 8 of the 10 additional factors asked about in the poll were major reasons they would not go to the sites. These included: a worry about “being exposed to anthrax still in buildings, public transportation or on people at the dispensing site” (60% Hispanic vs. 36% African American and 37% white); worry that “there would not be enough antibiotic pills” (59% Hispanic vs. 29% African American and 32% white); and worry about “a second anthrax attack occurring” while going to the dispensing site (56% Hispanic vs. 13% African American and 22% white).

Likelihood of Taking Antibiotics Right Away

Among those who were “very likely” or “somewhat likely” to get the pills for themselves, roughly three-quarters of people across all racial/ethnic groups would follow the advice of public health officials and start taking the pills right away (77% white, 68% African American, 74% Hispanic) (Table 2). However, at least 20% of people in each racial/ethnic group said they would hold on to the pills for later, and African Americans were more likely than whites to say this (20% white, 30% African American, 22% Hispanic).

Across all racial/ethnic groups, large fractions of parents who were “very” or “somewhat likely” to get the pills for their children would start to give the pills to their children right away (82% white, 79% African American, 77% Hispanic), but at least 14% in each racial/ethnic group said they would hold on to the pills for later (14% white, 21% African American, 19% Hispanic).

Two of the reasons for not taking or giving the pills right away were similar among racial/ethnic groups. Roughly three-quarters of people who said they would hold on to the pills for themselves or their children in each racial/ethnic group said a major reason was that they would only use the pills if they or their child (or children) had symptoms (74% white, 73% African American, 75% Hispanic). At least 6 in 10 in each racial/ethnic group said a major reason was that they would use the pills only if they knew the area where the anthrax had been released and they or their child (or children) had been there (66% white, 60% African American, 69% Hispanic). However, while nearly two-thirds of Hispanics (63%) and more than half of African Americans (53%) who were going to hold on to the pills said a “major reason” was the possibility of another anthrax attack, only a third of their white counterparts said the same (34%).

Preference for Dispensing Mode

Across all racial/ethnic groups, more people said they would go to the dispensing site as soon as possible than would wait for the USPS to deliver antibiotic pills within 48 hours (Table 3). Roughly half of whites and African Americans (54% and 47%, respectively) said they would not wait for the USPS, while 61% of Hispanics said the same.

Across all racial/ethnic groups, the most common “major reason” for not waiting to get pills from the USPS was the belief that people could get pills faster by going to a dispensing site (79% white, 82% African American, 82% Hispanic). For all other factors asked about in the poll, Hispanics and/or African Americans were more likely than whites to say the issue was a major reason for their decision. African Americans and Hispanics were more likely than whites to cite: the desire to speak with someone in person about questions they might have (78% African American and 79% Hispanic vs. 52% white); a concern that they would need to exchange the pill for another type or form (46% African American and 57% Hispanic vs. 36% white); and a concern about the safety of pills delivered by the USPS (36% African American and 49% Hispanic vs. 17% white). Hispanics were more likely than whites and African Americans to cite: limited confidence that the USPS would deliver the pills (58% Hispanic vs. 38% white and 42% African American) and a worry that pills from the USPS would be less effective (43% Hispanic vs. 14% white and 25% African American).

Attitudes and Beliefs that Could Affect Response

Whites and African Americans were more likely than Hispanics to say they were familiar (“very” or “somewhat” familiar) with the term *inhalation anthrax* (65% white, 63% African American vs. 47% Hispanic) (Table 4). Among those who said they were at least “somewhat familiar” with the term, African Americans were more likely than whites to believe that inhalation anthrax is contagious (36% African American vs. 25% white), while whites and Hispanics were more likely than African Americans to say they did not know whether it was contagious (17% white and 17% Hispanic vs. 7% African American). The vast majority of people in all racial/ethnic groups said that it was likely (“somewhat” or “very”) they would become seriously ill or die if they were exposed to anthrax and did not get treatment (91% white, 91% African American, 94% Hispanic).

A strong majority of respondents in all racial/ethnic groups said they would be worried (“very worried” or “somewhat worried”) about themselves becoming seriously ill or dying if they received news of an anthrax attack in an unknown location in their city or town (79% white, 84% African American, 87% Hispanic). However, African Americans and Hispanics were more likely than whites to say they would be “very worried” (55% African American and 63% Hispanic vs. 41% white), while whites were more likely to say they were “somewhat worried” (38% white vs. 28% African American and 25% Hispanic).

At least three-quarters of people in all groups said they would believe that the antibiotic pills are safe (“very safe” or “somewhat safe”) to take (85% white, 79% African American, 78% Hispanic). However, more than a third of whites said they thought the pills would be “very safe” (36%), while only a quarter of African Americans (25%) and Hispanics (23%) said the same. Views about the effectiveness of the pills were largely the same across groups; 85% of whites and 86% of African Americans and Hispanics said they thought the pills would be effective (“very effective” or “somewhat effective”).

Approximately two-thirds of people in all racial/ethnic groups said they would be confident (“very confident” or “somewhat confident”) that there would be a sufficient supply of antibiotic pills, but a quarter or fewer of people in any racial/ethnic group (19% white, 25% African American, 23% Hispanic) said they would be “very confident” in this. African Americans were more likely than whites or Hispanics to say they would be confident (“very confident” or “somewhat confident”) in the ability of federal public health agencies to deliver antibiotics to local and state public health agencies (74% African American vs. 58% white and 59% Hispanic). Smaller shares of all racial/ethnic groups were “very confident,” but African Americans were nonetheless more likely to say “very confident” than whites (22% African American vs. 10% whites).

Findings were somewhat similar when it came to people’s level of confidence in local public health agencies’ abilities to deliver antibiotics to the public. African Americans were more likely than whites to be confident (“very confident” or “somewhat confident”); 75% African American vs. 65% white) and more likely to be “very confident” (22% African American vs. 12% white). Approximately three-quarters of people across all racial/ethnic groups were confident (“very confident” or “somewhat confident”) in the ability of the USPS to deliver antibiotics to the public (73% white, 76% African American, 73% Hispanic). Roughly a

third of people in all racial/ethnic groups were “very confident” in this (30% white, 35% African American, 30% Hispanic).

Discussion

Results from this poll suggest that whites, Hispanics, and African Americans all show important signs of willingness to comply with public health recommendations for obtaining mass prophylaxis in the event of an anthrax attack. In particular, strong majorities of each racial/ethnic group say they would be likely to go to dispensing sites to get pills for themselves or their children, and majorities would also begin taking pills themselves or giving them to their children right away. Moreover, there are sizable fractions of all groups that are at risk of not fully complying with recommendations, such as those who say they would not consume the pills that they picked up at dispensing sites and would instead hold on to them. Thus, in the aggregate, there is important common ground across these diverse populations in the communications and operations needed for improving mass dispensing programs.⁹

The data also suggest there are some differences between racial/ethnic groups that may be important to consider in efforts to improve communications and operations to meet the needs of racial/ethnic minorities more effectively. In particular, we note 3 areas where African Americans and Hispanics are more likely to hold views that could become barriers to compliance with recommendations about going to dispensing sites and consuming prophylactic antibiotics.

First, both African Americans and Hispanics are more likely than whites to have concerns related to the safety of the pills. Hispanics in particular are also more likely than whites to hold a wide range of related concerns—such as concerns about insufficient pill supply and ineffective pills—that they say could prevent them from going to the site. These views are consistent with literature suggesting that racial/ethnic minorities may have more concerns about the safety of vaccinations in a pandemic context.^{16,17} They also reinforce the notion that racial/ethnic minorities can have lower trust in government than whites, insofar as pill safety is a government responsibility.^{22,25} However, additional study findings show that African Americans are more confident than whites in the government’s abilities to deliver the pills. These findings are consistent with independent polls conducted at the same time showing greater trust in the federal government’s actions among racial/ethnic minorities.⁴⁰ These results point to the multidimensional nature of trust and warn against making assumptions about trust-related attitudes.¹⁴ They reinforce the need for communications with messages pertaining to pill safety, sufficient supply, and general government competence, but they also highlight the importance of building trust across all of its dimensions, recognizing that this is a slower and more profound task. As one potential step in this process, it may be important to engage trusted local leaders from communities of color who can help build stronger bridges between dispensing programs and the communities they aim to serve.⁴

As a second potential barrier to seeking and taking prophylaxis, both Hispanics and African Americans are more likely than whites to be less informed about inhalation anthrax itself,

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either because they have not heard of the illness or because they hold the erroneous view that it is contagious. Thus, it is not surprising that both groups are more likely than whites to have concerns about getting contaminated from another person who is sick at a dispensing site. Such concerns can not only make racial/ethnic minorities less likely to seek out prophylaxis at a dispensing site, but can make them more vulnerable to misinformation and rumor during a crisis.^{24,25} Strong communications outreach to Hispanics and African Americans that provides counterpoint messages will be critical in the event of a real attack. Further, it may be important to consider the possible underlying reasons for differential information, insofar as these may play a role in communications at the time of a real crisis and undermine efforts to disseminate relevant messages. For example, current differences in information about inhalation anthrax may relate to differences in education or language, which suggests, perhaps self-evidently, that readability and language should be considered in developing appropriate communications materials.

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Third, this study shows that Hispanics are more likely to note that fears of a second attack might prevent them from going to a dispensing site, while African Americans are more likely than whites to cite concerns about a second attack that would encourage them to store pills rather than take them now. Increased concern about additional attacks has not been much explored in the literature but warrants further consideration. It is a complex issue because public health officials may not be able to say definitively that there will not be additional attacks; thus, racial/ethnic minorities may need more reassurances that the chances of survival—even in the event of a second attack—are higher by getting and taking the prophylaxis.

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Across all racial/ethnic groups, there is evidence that “wait[ing] for the U.S. Postal Service to deliver pills [within 48 hours]” is not a uniformly appealing alternative delivery mechanism when sites are open simultaneously, with roughly half of each racial/ethnic group choosing to go to a dispensing site. While all racial/ethnic groups identify the need to get pills quickly as their primary reason for not waiting for delivery by the USPS, African Americans and Hispanics are more likely to cite an array of other factors that could make this option less appealing. They are more likely to cite possible problems related to the delivered pills, including safety concerns, a need for the suspension form, or a need for a different antibiotic because of allergy concerns. In addition, they noted a stronger desire to ask questions of staff. These findings suggest that dispensing sites that serve racial/ethnic minority communities may need more staff on hand to answer questions, as well as more written materials for “frequently asked questions” and pill-crushing instructions for medications where that is a recommended alternative to swallowing whole pills. Further, additional, alternative communication channels for this information, including telephone hotlines and web-based resources, may be helpful in supporting such needs. In developing materials and making staffing decisions, due consideration should be given to addressing possible barriers in language, readability, and accessibility of scientific information.

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In considering the implications of our findings for improvements to mass dispensing programs, it is also important to consider the underlying reasons for observed differences in knowledge, attitudes, and predicted behavior that go beyond differences at the individual level. For example, differences in knowledge, attitudes, and predicted behavior may reflect

differences in the structural availability of accessible news or scientific information across racial/ethnic communities. They may also reflect differences in cultural contexts, including religion, that shape the interpretation of scientific information.⁴¹ Thus, dispensing programs may need to investigate complementary modes of message delivery that can reach people who are more isolated from mainstream media. They may also need to consider partnering with leaders in relevant communities of color who can effectively help deliver information in a culturally meaningful way that will be trusted.⁴

The findings from this study face 2 limitations. First, the poll asked participants to react to a hypothetical scenario, which may differ from the real-life circumstances and media description of any future attacks. However, the goal of the poll was not to provide an exact prediction of public response under a very specific scenario, but rather to provide broader insights about key aspects of public reaction to a mass prophylaxis dispensing program and to see whether those broad issues differed between people in major racial/ethnic groups. For this reason, we used a scenario that is somewhat general in nature and questions that highlight areas of concern that may be applicable to an array of specific scenarios. This approach has been useful in other tabletop planning exercises, as well as our previous poll.^{9,42,43}

Second, despite evidence that polls provide data comparable to surveys with higher response rates in many cases, there may nonetheless be differences between the people who responded to this poll and those who did not. In particular, respondents may be more compliant than nonresponders, which would inflate the estimates of people who would be willing to adopt recommended behaviors, although it is less likely to affect differences between racial/ethnic groups.⁴⁴ Thus, despite these potential limitations, the findings from this study suggest that public health officials who are planning mass dispensing programs may need to develop additional, targeted communications to African American and Hispanic communities to reduce possible barriers and create more effective outreach.

There are 2 important areas for consideration as the next steps in research for developing communication strategies and operations that further enhance the relevance and outreach potential for racial/ethnic minority communities. First, it may be worthwhile to explore and document the underlying reasons for differences seen in concerns and other attitudes described here. Areas for consideration include income and education, as well as sociocultural differences and community-level variables like access to information. Second, it is notable that there may be heterogeneity within the populations identified here with respect to key factors that shape response to communications, such as risk perception. Such differences may manifest along regional or socioeconomic lines, for example, and more research may be needed in order to explore them more fully.^{45,46}

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

Acknowledgments

FUNDING

Biosecur Bioterror. Author manuscript; available in PMC 2016 February 12.

We thank Keri Lubell for her assistance in managing the technical assistance project through which this manuscript was developed, and the anonymous reviewers for their thoughtful comments. This poll is funded under a cooperative agreement between the Harvard School of Public Health, the National Public Health Information Coalition, and the Centers for Disease Control and Prevention.

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of their institutions and employers.

References

1. Shepard CW, Soriano-Gabarro M, Zell ER, et al. Antimicrobial postexposure prophylaxis for anthrax: adverse events and adherence. *Emerg Infect Dis.* 2002; 8(10):1124–1132. [PubMed: 12396927]
2. Jefferds MD, Laserson K, Fry AM, et al. Adherence to antimicrobial inhalational anthrax prophylaxis among postal workers, Washington, D.C., 2001. *Emerg Infect Dis.* 2002; 8(10):1138–1144. [PubMed: 12396929]
3. Blanchard JC, Haywood Y, Stein BD, Tanielian TL, Stoto M, Lurie N. In their own words: lessons learned from those exposed to anthrax. *Am J Public Health.* 2005; 95(3):489–495. [PubMed: 15727982]
4. Andrulis DP, Siddiqui NJ, Gantner JL. Preparing racially and ethnically diverse communities for public health emergencies. *Health Aff (Millwood).* 2007; 26(5):1269–1279. [PubMed: 17848436]
5. Blumenshine P, Reingold A, Egarter S, Mockenhaupt R, Braveman P, Marks J. Pandemic influenza planning in the United States from a health disparities perspective. *Emerg Infect Dis.* 2008; 14(5):709–715. [PubMed: 18439350]
6. James X, Hawkins A, Rowel R. An assessment of the cultural appropriateness of emergency preparedness communication for low income minorities. *Journal of Homeland Security and Emergency Management.* 2007; 4(3):1–24.
7. Hutchins SS, Fiscella K, Levine RS, Ompad DC, McDonald M. Protection of racial/ethnic minority populations during an influenza pandemic. *Am J Public Health.* 2009; 99(Suppl 2):S261–S270. [PubMed: 19797739]
8. Crouse Quinn S. Crisis and emergency risk communication in a pandemic: a model for building capacity and resilience of minority communities. *Health Promot Pract.* 2008; 9(4 Suppl):18S–25S. [PubMed: 18936256]
9. SteelFisher GK, Blendon RJ, Ross LJ, et al. Public response to an anthrax attack: reactions to mass prophylaxis in a scenario involving inhalation anthrax from an unidentified source. *Biosecur Bioterror.* 2011; 9(3):239–250. [PubMed: 21819225]
10. Graham, B.; Talent, J. Prevention of WMD Proliferation and Terrorism Report Card: An Assessment of the US Government's Progress in Protecting the United States from Weapons of Mass Destruction Proliferation and Terrorism. Washington, DC: Commission on the Prevention of WMD Proliferation and Terrorism; 2010. http://www.pharmathene.com/WMD_Report_Card.pdf. Accessed November 20, 2012
11. Wein LM, Craft DL, Kaplan EH. Emergency response to an anthrax attack. *Proc Natl Acad Sci U S A.* 2003; 100(7):4346–4351. [PubMed: 12651951]
12. Quinn SC, Thomas T, Kumar S. The anthrax vaccine and research: reactions from postal workers and public health professionals. *Biosecur Bioterror.* 2008; 6(4):321–333. [PubMed: 19117431]
13. Eisenman DP, Wold C, Setodji C, et al. Will public health's response to terrorism be fair? Racial/ethnic variations in perceived fairness during a bioterrorist event. *Biosecur Bioterror.* 2004; 2(3):146–156. [PubMed: 15588052]
14. Meredith LS, Eisenman DP, Rhodes H, Ryan G, Long A. Trust influences response to public health messages during a bioterrorist event. *J Health Commun.* 2007; 12(3):217–232. [PubMed: 17497377]
15. Brodie M, Weltzien E, Altman D, Blendon RJ, Benson JM. Experiences of hurricane Katrina evacuees in Houston shelters: implications for future planning. *Am J Public Health.* 2006; 96(8):1402–1408. [PubMed: 16571686]

16. SteelFisher G, Blendon R, Bekheit M, et al. Novel pandemic A (H1N1) influenza vaccination among pregnant women: motivators and barriers. *Am J Obstet Gynecol*. 2011; 204(6 Suppl 1):S116–S123. [PubMed: 21492827]
17. Santibanez TA, Singleton JA, Santibanez SS, Wortley P, Bell BP. Socio-demographic differences in opinions about 2009 pandemic influenza A (H1N1) and seasonal influenza vaccination and disease among adults during the 2009–2010 influenza season. *Influenza Other Respi Viruses*. 2012;10.1111/j.1750-2659.2012.00374.x
18. Uscher-Pines L, Maurer J, Harris KM. Racial and ethnic disparities in uptake and location of vaccination for 2009-H1N1 and seasonal influenza. *Am J Public Health*. 2011; 101(7):1252–1255. [PubMed: 21566026]
19. Micco E, Gurmankin AD, Armstrong K. Differential willingness to undergo smallpox vaccination among African-American and white individuals. *J Gen Intern Med*. 2004; 19(5 Pt 1):451–455. [PubMed: 15109343]
20. Blendon RJ, Koonin LM, Benson JM, et al. Public response to community mitigation measures for pandemic influenza. *Emerg Infect Dis*. 2008; 14(5):778–786. [PubMed: 18439361]
21. SteelFisher GK, Blendon RJ, Kang Kim M, et al. Adoption of self-protective measures in response to novel influenza A (H1N1): a multiethnic perspective. In press.
22. Cordasco KM, Eisenman DP, Glik DC, Golden JF, Asch SM. “They blew the levee”: distrust of authorities among Hurricane Katrina evacuees. *J Health Care Poor Underserved*. 2007; 18(2):277–282. [PubMed: 17483557]
23. Elder K, Xirasagar S, Miller N, Bowen SA, Glover S, Piper C. African Americans’ decisions not to evacuate New Orleans before Hurricane Katrina: a qualitative study. *Am J Public Health*. 2007; 97(Suppl 1):S124–S129. [PubMed: 17413086]
24. Taylor-Clark KA, Viswanath K, Blendon RJ. Communication inequalities during public health disasters: Katrina’s wake. *Health Commun*. 2010; 25(3):221–229. [PubMed: 20461607]
25. Eisenman DP, Cordasco KM, Asch S, Golden JF, Glik D. Disaster planning and risk communication with vulnerable communities: lessons from Hurricane Katrina. *Am J Public Health*. 2007; 97(Suppl 1):S109–S115. [PubMed: 17413069]
26. Perry RW, Lindell MK, Greene MR. Crisis communications: ethnic differentials in interpreting and acting on disaster warnings. *Soc Behav Pers*. 1982; 10(1):97–104.
27. Spence PR, Lachlan KA, Griffin DR. Crisis communication, race, and natural disasters. *J Black Stud*. 2007; 37(4):539–554.
28. Morrow BH. Identifying and mapping community vulnerability. *Disasters*. 1999; 23(1):1–18. [PubMed: 10204285]
29. Fothergill A, Maestas EG, Darlington JD. Race, ethnicity and disasters in the United States: a review of the literature. *Disasters*. 1999; 23(2):156–173. [PubMed: 10379098]
30. Carter-Pokras O, Zambrana RE, Mora SE, Aaby KA. Emergency preparedness: knowledge and perceptions of Latin American immigrants. *J Health Care Poor Underserved*. 2007; 18(2):465–481. [PubMed: 17483572]
31. US Department of Homeland Security. Target Capabilities List: A Companion to the National Preparedness Guidelines. Sep. 2007 <http://www.fema.gov/pdf/government/training/tcl.pdf>. Accessed July 6, 2012
32. US Centers for Disease Control and Prevention. Cities Readiness Initiative Guidance. <http://www.bt.cdc.gov/cri/>. Accessed June 19, 2012
33. US Postal Service. <https://www.usps.com/>. Accessed July 6, 2012
34. US Centers for Disease Control and Prevention. Strategic National Stockpile (SNS). <http://www.bt.cdc.gov/stockpile/>. Accessed June 19, 2010
35. Blendon RJ, Benson JM, Desroches CM, Weldon KJ. Using opinion surveys to track the public’s response to a bioterrorist attack. *J Health Commun*. 2003; 8(Suppl 1):83–92. discussion 148–151. [PubMed: 14692573]
36. Keeter S, Kennedy C, Dimock M, Best J, Craighill P. Gauging the impact of growing nonresponse on estimates from a national RDD telephone survey. *Public Opin Q*. 2006; 70:759–779.
37. US Census Bureau. Current Population Survey. 2009. <http://www.census.gov/cps/>. Accessed June 19, 2012

38. US Census Bureau. American Community Survey. 2009. <http://www.census.gov/acs/www/>. Accessed June 19, 2012
39. Blumberg, SJ.; Luke, JV. Wireless substitution: early release of estimates from the National Health Interview Survey, July–December 2008. <http://www.cdc.gov/nchs/data/nhis/earlyrelease/wireless200905.htm>. Accessed June 19, 2010
40. Pew Research Center for the People & the Press. Political Survey. August 25–September 6. 2010. <http://people-press.org/report/658/>. Accessed June 19, 2012
41. Steensland B, Park JZ, Regnerus MD, Robinson LD, Wilcox WB, Woodberry RD. The measure of American religion: toward improving the state of the art. *Soc Forces*. 2000; 79(1):291–318.
42. Blendon RJ, Donelan K, Knox RA. Public opinion and AIDS. Lessons for the second decade. *JAMA*. 1992; 267(7):981–986. [PubMed: 1734113]
43. Blendon RJ, DesRoches CM, Benson JM, Herrmann MJ, Taylor-Clark K, Weldon KJ. The public and the smallpox threat. *N Engl J Med*. 2003; 348(5):426–432. [PubMed: 12496352]
44. Kohut, A.; Keeter, S.; Doherty, C.; Dimock, M.; Christian, L. Assessing the Representativeness of Public Opinion Surveys. Pew Research Center for the People & the Press; May 15. 2012 <http://www.people-press.org/files/legacy-pdf/Assessing%20the%20Representativeness%20of%20Public%20Opinion%20Surveys.pdf>. Accessed November 20, 2012
45. Vaughan E, Tinker TL, Truman BI, Adelson P, Morse SS. Predicting response to reassurances and uncertainties in bioterrorism communications for urban populations in New York and California. *Biosecur Bioterror*. 2012; 10(2):188–202. [PubMed: 22582813]
46. Institute of Medicine. Speaking of Health: Assessing Health Communication Strategies for Diverse Populations. Washington, DC: National Academies Press; 2002. Committee on Communication for Behavior Change in the 21st Century: Improving the Health of Diverse Populations.

Table 1

Racial/Ethnic Differences in Public's Response to Recommendations to Go to a Dispensing Site to Get Antibiotic Pills and Related Barriers

	<i>Total</i>	<i>White</i>	<i>African American</i>	<i>Hispanic</i>
Likelihood of Going to a Dispensing Site				
% saying how likely it is that they would go to a dispensing site to get antibiotic pills <u>for themselves</u> within 48 hours of confirmed anthrax cases:	(n = 1,852)	(n = 1,205)	(n = 282)	(n = 261)
Likely (very/somewhat)	89	88	93 ^W	91
Very likely	68	68	75	64
Somewhat likely	21	21	19	26
Not likely (not very/not at all)	10	11	6	9
Not very likely	6	7	3	7
Not at all likely	4	4	3	3
% saying how likely it is that they would go to a dispensing site to get antibiotic pills <u>for their children</u> within 48 hours of confirmed anthrax cases (among parents):	(n = 481)	(n = 274)	(n = 63)	(n = 107)
Likely (very/somewhat)	96	95	98	98
Very likely	84	85	90	78
Somewhat likely	11	9	7	20 ^{WA}
Not likely (not very/not at all)	4	5	2	2
Not very likely	2	2	2	—
Not at all likely	2	3	—	2
Barriers Preventing People from Going to Dispensing Site				
% among adults not "very likely" to go to dispensing sites saying each of the following would be a "major reason" for not going:	(n = 562)	(n = 369)	(n = 80)	(n = 80)
Worried that officials will not be able to control crowds	48	46	40	58
Worried about the safety of the antibiotic pills, including side effects	43	38	53 ^W	62 ^W
Worried about being exposed to anthrax while at the dispensing site	42	40	42	55 ^W
Would wait to get antibiotic pills until sure exposed to anthrax	40	38	47	47
I would worry about getting exposed to anthrax that might still be in buildings, public transportation, or on people at the dispensing site.	40	37	36	60 ^{WA}
Worried that there would not be enough antibiotic pills	34	32	29	59 ^{WA}
Able to get antibiotic pills from doctor or someone else instead	34	31	41	47 ^W
I would be worried about having an allergic reaction to the pills.	34	31	37	50 ^W
Think there would be no need because government is likely to have overblown the situation	26	25	13	30 ^A
I don't think the antibiotic pills would be effective in preventing people from getting sick with anthrax.	26	24	21	38 ^W
I would worry about a second anthrax attack occurring while I went to the dispensing site.	26	22	13	56 ^{WA}
Don't think I/my child(ren) would be likely to get sick from anthrax	23	19	28	38 ^W
Difficult to get to dispensing site and back home	21	21	14	27

— indicates less than 1%.

^W Statistically significantly greater than white respondents.

^A Statistically significantly greater than African American respondents.

^H Statistically significantly greater than Hispanic respondents.

Note: Summary categories (eg, very/somewhat) may not equal the sum of individual categories combined (eg, very plus somewhat) due to rounding.

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Table 2

Differences in Racial/Ethnic Groups' Likelihood of Taking the Antibiotics Right Away and Related Barriers

	<i>Total</i>	<i>White</i>	<i>African American</i>	<i>Hispanic</i>
Likelihood of Taking Antibiotic Pills Right Away				
% who would start taking the antibiotic pills right away or hold onto them (among those "very" and "somewhat" likely to go get the pills for themselves):	(n = 1,664)	(n = 1,076)	(n = 261)	(n = 241)
Start taking the pills right away	75	77 ^A	68	74
Hold on to the pills for later	23	20	30 ^W	22
% who would start giving their children the antibiotic pills right away or hold on to them (among parents "very" and "somewhat" likely to go get the pills for their children):	(n = 458)	(n = 260)	(n = 61)	(n = 103)
Start giving the pills to their child(ren) right away	78	82	79	77
Hold on to the pills for later	19	14	21	19
Reasons for Holding on to the Antibiotic Pills				
% among those who would hold on to pills for themselves or their children saying each of the following was a major reason:	(n = 469)	(n = 266)	(n = 86)	(n = 75)
Only use the pills if had symptoms of inhalation anthrax	73	74	73	75
Only use the pills if I knew where the anthrax was released and had been in that area	65	66	60	69
Hold on to the pills in case there was another anthrax attack	42	34	53 ^W	63 ^W

^W Statistically significantly greater than white respondents.

^A Statistically significantly greater than African American respondents.

^H Statistically significantly greater than Hispanic respondents.

Table 3

Racial/Ethnic Differences in the Public's Preference for Postal Service Delivery of Antibiotics and Reasons They Would Not Wait for Postal Service Delivery

	<i>Total</i>	<i>White</i>	<i>African American</i>	<i>Hispanic</i>
Public's Preference for Postal Service Delivery of Antibiotic Pills Versus Going to PODs				
% saying they would ...	(n = 1,852)	(n = 1,205)	(n = 282)	(n = 261)
Wait for the postal service to deliver antibiotic pills and only go to the dispensing site if or when you run out of pills	38	38	44 ^H	34
Not wait for the postal service to deliver antibiotic pills and go to the dispensing site as soon as possible	54	54	47	61 ^W
Wouldn't do either	7	6	7	4
Reasons People Would Not Wait for the Postal Service to Deliver Antibiotic Pills				
% among those who would not wait for the postal service to deliver antibiotic pills saying each of the following would be a "major reason" for not waiting:	(n = 1,021)	(n = 663)	(n = 139)	(n = 162)
Would get the antibiotic pills faster by going to the dispensing site	80	79	82	82
Would want to go to the dispensing site in order to talk to someone about questions regarding the pill	60	52	78 ^W	79 ^W
Would not be confident that the postal service would deliver the pills	42	38	42	58 ^{WA}
Would be concerned about not being able to exchange the standard antibiotic pills because I may have allergies to them or may need a liquid form	41	36	46 ^W	57 ^W
Would worry that the pills from the postal service would not be as safe as the antibiotic pills available at the dispensing sites	25	17	36 ^W	49 ^W
Would worry that the pills from the postal service would not be as effective as the antibiotic pills available at the dispensing sites	20	14	25 ^W	43 ^{WA}

^W Statistically significantly greater than white respondents.

^A Statistically significantly greater than African American respondents.

^H Statistically significantly greater than Hispanic respondents.

Note: Summary categories (eg, very/somewhat) may not equal the sum of individual categories combined (eg, very plus somewhat) due to rounding.

Table 4

Attitudes and Knowledge that Could Influence Public's Willingness to Follow Public Health Officials' Recommendations—Racial/Ethnic Differences

	<i>Total</i>	<i>White</i>	<i>African American</i>	<i>Hispanic</i>
Knowledge About Inhalation Anthrax				
Familiarity with the term "inhalation anthrax"	(<i>n</i> = 1,852)	(<i>n</i> = 1,205)	(<i>n</i> = 282)	(<i>n</i> = 261)
Familiar (very/somewhat)	62	65 ^H	63 ^H	47
Very familiar	20	22 ^H	20	13
Somewhat familiar	42	43 ^H	43	34
Not familiar (not very/not at all)	38	35	36	53 ^{WA}
Not very familiar	17	18 ^A	11	23 ^A
Not at all familiar	20	17	25 ^W	29 ^W
Belief about contagiousness (among those saying "very" or "somewhat familiar")				
Believe inhalation anthrax is contagious	(<i>n</i> = 1,482)	(<i>n</i> = 1,001)	(<i>n</i> = 200)	(<i>n</i> = 197)
Do not believe inhalation anthrax is contagious	28	25	36 ^W	30
Do not know if inhalation anthrax is contagious	56	59	56	50
Do not know if inhalation anthrax is contagious	16	17 ^A	7	17 ^A
Belief about likelihood of serious illness or death if exposed to anthrax and not treated				
Likely (very/somewhat)	(<i>n</i> = 1,852)	(<i>n</i> = 1,205)	(<i>n</i> = 282)	(<i>n</i> = 261)
Very likely	91	91	91	94
Somewhat likely	69	68	68	72
Somewhat likely	23	23	23	23
Not likely (not very/not at all)	7	7	9	4
Not very likely	4	5	3	2
Not at all likely	2	2	6	2
Worry About Personal Risk in an Attack				
Level of worry about becoming seriously ill or dying	(<i>n</i> = 1,852)	(<i>n</i> = 1,205)	(<i>n</i> = 282)	(<i>n</i> = 261)
Worried (very/somewhat)	80	79	84	87 ^W
Very worried	46	41	55 ^W	63 ^W
Somewhat worried	34	38 ^{AH}	28	25
Not worried (not very/not at all)	20	21 ^H	16	13
Not very worried	13	15 ^{AH}	8	7
Not at all worried	6	6	8	6
Views of Pill Safety and Efficacy				
Views on whether the antibiotic pills used to treat anthrax would be safe to take	(<i>n</i> = 1,852)	(<i>n</i> = 1,205)	(<i>n</i> = 282)	(<i>n</i> = 261)
Safe (very/somewhat)	83	85 ^{AH}	79	78
Very safe	32	36 ^{AH}	25	23
Somewhat safe	51	49	54	55

	<i>Total</i>	<i>White</i>	<i>African American</i>	<i>Hispanic</i>
Not safe (not very/not at all)	14	12	18 ^W	20 ^W
Not very safe	9	8	9	14 ^W
Not at all safe	5	4	9 ^W	6
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Views on whether the antibiotic pills used to treat anthrax would be effective in preventing them from becoming seriously ill or dying if exposed to anthrax	(n = 1,852)	(n = 1,205)	(n = 282)	(n = 261)
Effective (very/somewhat)	85	85	86	86
Very effective	26	24	30	29
Somewhat effective	60	61	56	57
Not effective (not very/not at all)	12	12	11	12
Not very effective	8	9	5	9
Not at all effective	3	3	6 ^W	2
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Confidence in Government's Response				
That there would be a sufficient supply of antibiotic pills for everyone in city or town who wanted them	(n = 1,852)	(n = 1,205)	(n = 282)	(n = 261)
Confident (very/somewhat)	65	65	68	66
Very confident	21	19	25	23
Somewhat confident	44	45	43	43
Not confident (not too/not at all)	35	35	32	33
Not too confident	26	25	24	27
Not at all confident	9	10	8	6
<hr/>				
In ability of federal public health agencies to deliver antibiotics to local and state public health agencies	(n = 1,852)	(n = 1,205)	(n = 282)	(n = 261)
Confident (very/somewhat)	59	58	74 ^{WH}	59
Very confident	13	10	22 ^W	18 ^W
Somewhat confident	47	47	51	41
Not confident (not too/not at all)	40	42 ^A	26	41 ^A
Not too confident	30	31 ^A	18	32 ^A
Not at all confident	10	11	8	9
<hr/>				
In ability of local and state public health agencies to deliver antibiotics to the public	(n = 1,852)	(n = 1,205)	(n = 282)	(n = 261)
Confident (very/somewhat)	66	65	75 ^W	68
Very confident	14	12	22 ^W	18
Somewhat confident	52	53	53	51
Not confident (not too/not at all)	34	35 ^{AH}	25	32
Not too confident	26	26	19	26
Not at all confident	8	9	6	5
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Confidence in the ability of the USPS to deliver antibiotics to the public	(n = 1,852)	(n = 1,205)	(n = 282)	(n = 261)
Confident (very/somewhat)	74	73	76	73
Very confident	30	30	35	30

	<i>Total</i>	<i>White</i>	<i>African American</i>	<i>Hispanic</i>
Somewhat confident	43	43	41	44
Not confident (not too/not at all)	26	26	23	26
Not too confident	17	18	16	18
Not at all confident	8	8	7	9

^W Statistically significantly greater than white respondents.

^A Statistically significantly greater than African American respondents.

^H Statistically significantly greater than Hispanic respondents.

Note: Summary categories (eg, very/somewhat) may not equal the sum of individual categories combined (eg, very plus somewhat) due to rounding.

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