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# Theoretical Perspectives on Public Communication Preparedness for Terrorist Attacks

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The experience of federal health authorities in responding to the mailed anthrax attacks in the Fall of 2001 sheds light on the challenges of public information dissemination in emergencies. Lessons learned from the Fall of 2001 have guided more recent efforts related to crisis communication and preparedness goals. This article applies theories and evidence from the field of communication to provide an orientation to how public health communication can best contribute to the preparedness effort. This theoretical orientation provides a framework to systematically assess current recommendations for preparedness communication. **Key words:** *communication, preparedness, terrorism*

**E**FFECTIVE PUBLIC COMMUNICATION is an essential element of preparedness for emergencies—making or breaking the success of prevention and relief efforts.<sup>1</sup> The timely release of accurate information about imminent or present hazards helps achieve key goals of emergency response: (1) increasing the likelihood that people at risk will take precautions, preventing injury and saving lives, (2) reducing anxiety levels and avoiding unnecessary care-seeking by unthreatened populations, and (3) facilitating relief efforts.<sup>2</sup>

These goals are challenging enough under conditions of natural disasters or accidents. The special circumstances of terror attacks using biological, chemical, or radiological agents pose unique challenges. Specifically, terrorist attacks impose a heightened potential for general distress and an exceptional degree of uncertainty. The difficulty in characterizing and communicating these public health threats calls for unique needs analysis and response approaches. This assessment takes on special urgency in the wake of the attacks on the World Trade Center buildings and the distribution through the postal service of letters containing anthrax, resulting in 22 cases of anthrax disease and five fatalities in the Fall of 2001.<sup>3</sup>

The experience of the public health community with the anthrax attacks of 2001 put in stark relief the challenges of communicating public information in the face of an ongoing and uncertain biological threat. Federal authorities were criticized on a number of points in the aftermath of the events surrounding the release of anthrax by mail:

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they had not provided clear and timely information; nonmedical officials offered medical information; and confusing and contradictory information was released from different agencies.<sup>4-6</sup> A set of recommendations have emerged for improving the quality of information released, principally by improving institutional preparedness for communication to ensure timeliness, consistency, coordination among agencies, and strategic planning.<sup>7</sup>

One of the responsibilities of the public health community is to provide clear, accurate, and timely information to the public, civic leaders, the news media, and others. As the Centers for Disease Control and Prevention (CDC) and other key federal agencies have recognized, there is a clear need to upgrade public health agency preparedness for bioterrorism, outbreaks of infectious disease, and other threats and emergencies.<sup>8</sup> Part of this preparedness includes communicating about health risks and disseminating health information.<sup>8</sup>

A number of consequences may result from inadequate communication during a public health emergency caused by an act of terrorism.<sup>7</sup> The threat of an intentional chemical or biological agent release poses challenges to public health at multiple levels. Inappropriate or untimely communication may lead to some individuals delaying or not taking appropriate precautions, possibly leading to avoidable injury, illness, or death. At the same time, these types of threats may raise anxiety and prompt individuals to take inappropriate actions that tax public health and medical resources. Inconsistent information arising from decentralized government sources and unprepared or uninformed spokespersons may contribute to confusion and anxiety. Media coverage can also exacerbate such confusion; at its worst, it can fan the flames of fear.<sup>9</sup>

Public health communication becomes especially important in communicating accurate information regarding the facts and nature of a terrorist event and highlighting precautionary measures the public can take to mitigate the impact of the threat. Well-

planned and executed communication efforts should provide clear precautions, reassure the public, reduce unnecessary distress, and limit inappropriate demands on the health care system.

Current available literature offers useful guidelines for crafting effective information and dissemination strategies, including institutional arrangements required to implement such strategies. However, whereas the literature reflects broad experiences to emergency responses generally and responses to man-made disasters specifically, current recommendations do not benefit from available theoretical approaches from the field of public health communication. This article seeks to fill this gap, applying theories from the public health communication literature to the specific concerns of terrorist emergencies. With this approach, a revised, theoretically informed set of recommendations for emergency communication in case of terrorist attacks is introduced.

## APPROACH TO THEORY

A number of conceptual frameworks can be brought usefully to bear on the question of developing effective communication strategies for emergency response in the event of a terrorist attack. These theories reflect multiple perspectives and disciplines that contribute to public health communication. As in many contemporary academic disciplines, myriad theoretical approaches are available that can be helpful in assessing message and dissemination strategies, including contrasting theories of campaign effects<sup>10</sup> and message design.<sup>11</sup> This article identifies select theories that have been prominent in risk and health communication. The selection is not exhaustive and is offered as an initial contribution to the discussion.

Current consensus in public health emphasizes the importance of considering multiple determinants of behavior and health in the effort to safeguard the public's health.<sup>12</sup> The social ecological model, for instance, provides a structure for assessing independent

contributions to health outcomes at social, institutional, community, and individual levels.<sup>13</sup> Broadly speaking, determinants of health, and concomitantly, strategies for promoting healthful outcomes, may take the form of population (eg, policy or institutional reform) and/or individual (eg, behavior change) level approaches.<sup>14</sup> Communication scholarship offers a set of theories that lend themselves to the multilevel approach of contemporary public health. Each perspective offers a distinct and useful set of constructs and relationships that may further efforts to refine emergency response communication. In the next section, communication theories are introduced, first at the population and then the individual level.

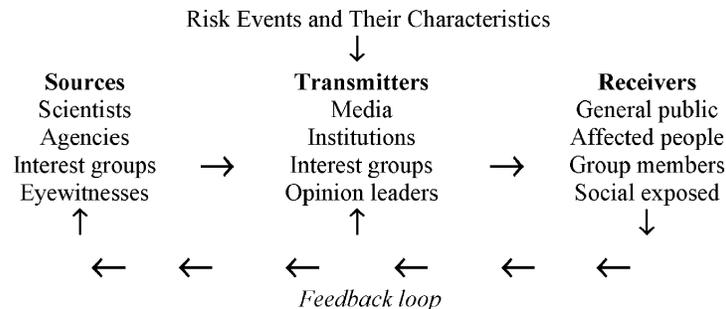
### Population level theory

At the broadest social level, the Social Amplification of Risk Model<sup>15</sup> offers a framework that allows us to consider the overarching system of institutions, intermediaries, and audiences involved in communication in the event of a terrorist attack. The model posits that risk events are portrayed through various signs and images in the media, which interact with a range of psychological, social, institutional, and cultural processes that intensify or attenuate risk perceptions. The model is shown in Figure 1 and highlights the role of agencies as sources, the media as transmitters, and the public as receivers of risk information.<sup>15</sup> It also recognizes that a feedback loop exists through which public response in an on-

going risk-communication scenario can influence the future communication activities of agencies and the media.

The model highlights the importance of federal, state, and local government agencies as primary sources of risk information for the media, who in turn transmit this information to the public. In addition, government agencies may communicate directly with other institutions such as health care providers, police and fire departments, and civic leaders, who in turn transmit information to the public either directly or through contact with the news media. The public's perceptions of the value, clarity, and integrity of the information it receives is then expressed back to each of these sources in a cycle of feedback, which influences how they communicate preparedness information later in an ongoing emergency or in the future. It is important to recognize that each box in the model (ie, sources, transmitters, and receivers) represents a potential target audience for different types of preparedness information. Because the model illustrates the reciprocal and interconnected nature of risk communication, it underscores the identification of priority target audiences for communicating about risk events.

The role of the media is central to the Social Amplification Model. Journalism scholars point to norms and practices of news organizations that structure how events are reported.<sup>16</sup> For instance, journalists favor "legitimated" institutional sources that lend authority and credibility to news reports.<sup>17</sup>



**Figure 1.** The social amplification of risk model. *Source:* Data from Renn O, Risk communication: the amplification of risk. In: Kasperson R, Stallen P, eds. *Communication Risks to the Public*. Dordrecht, The Netherlands: Kluwer; 1991.

Positive perceptions of such institutional sources, especially pertaining to trust, are central to these judgments of legitimacy.<sup>9</sup> An established and reliable source may be especially important in the aftermath of an attack because it can provide a steady flow of information to the media, which is helpful to reporters in developing ongoing news stories.<sup>18</sup> In sum, the Social Amplification Model suggests the importance of looking at emergency communication as an interconnected system, highlighting the roles and relationships of sources, transmitters, and receivers alike.

### Individual level theory

A number of theoretical perspectives enhance our understanding of communication at the individual level and drive the development and assessment of interventions targeting individual behavior change. Four are offered here: (1) McGuire's Persuasion/Communication Model, (2) risk communication, (3) behavioral theory (encompassing various theoretical approaches), and (4) the Elaboration Likelihood Model.

McGuire's Persuasion/Communication Model<sup>19</sup> invokes a set of inputs (elements of the communication process) that independently influence a set of outputs (steps in persuasion and behavior change). The inputs are roughly parallel to the Social Amplification Model: source, message, channel, receiver, and destination (or behavioral goal). Using this model, the characteristics of each input may be specified to increase the likelihood of effectiveness. Thus, the identity or office of an individual or the reputation of his or her agency identified as a source of a warning will determine whether the warning is considered credible. Message content, such as the complexity of the language, will determine whether a warning is understood. The channel by which a message is transmitted will determine who receives it. Similarly, audience and behavior characteristics will influence which strategy will achieve the best results.

Risk communication theory identifies how the characteristics of and communication about threats affect knowledge of and percep-

tions about them. Terrorist attacks are especially likely to cause distress and fear because they are intentional, unexpected, malicious, kill innocents, and are difficult to prevent.<sup>9</sup> The infectious nature of biological weapons—their very communicability—wreaks havoc on publics far beyond their immediate victims. Distress and panic can lead to disruption of social services and unnecessary precautions taken by unaffected groups.

Risk perceptions are prone to error due to psychological biases or short-cuts, such as availability bias, by which individuals bring to mind recent or familiar events when evaluating risks they may encounter.<sup>9,20</sup> In this way, individuals at risk may underestimate their risk, whereas individuals not at risk may exaggerate theirs. Risk perception theory thus underscores the need to assess and understand how messages may be crafted to accurately convey risk level to appropriate audiences. Framing theory offers approaches to impart risk information to minimize the effects of psychological bias.<sup>9,21</sup> Notably, people tend to make riskier choices when alternatives are framed in terms of losses, but play it safe when choosing between possible gains.

Drawing largely on social psychology, behavioral theories have contributed greatly to the theoretical approaches that inform communication intervention design and evaluation. Behavioral theorists point out the need to assess behaviors in specific rather than general terms. For instance, in seeking to understand the behavior of safety related to smallpox vaccination, it is critical to specify the behavior of interest (eg, care of the vaccination site rather than general hygiene).

Behavioral theorists have identified a number of sociocognitive determinants of health behavior.<sup>22</sup> It is of interest to note that there has been little study of the determinants of precautions that are most relevant in the aftermath of a biological attack. Nonetheless, several constructs are pertinent here.

Accurate knowledge regarding precautions is a necessary prerequisite, though often an insufficient one.<sup>23</sup> Response efficacy, or belief in the effectiveness of a precaution, may increase the likelihood of measures being

taken.<sup>24,25</sup> Self-efficacy, or the confidence in one's ability to carry out the precautionary or protective behavior, has been found to be an important determinant of many behaviors.<sup>26</sup> Research suggests that behavior change interventions are most effective when behavioral objectives are clearly conceptualized and theoretically specified.<sup>11,24</sup>

Lastly, borrowed from the information processing literature, Petty and Cacciopo's Elaboration Likelihood Model (ELM) is another important perspective to consider. The ELM posits that an individual's motivation and ability to process a message determine whether he or she does so through a thoughtful "central" route or through a more superficial "peripheral" route. Each route can lead to persuasive results, but the central route leads to more enduring attitude and behavior change.<sup>27</sup> Under circumstances of an attack, motivation is likely to be high for a large majority; the mere threat of an attack may produce less motivation. High levels of illiteracy in the American public<sup>28</sup> speak to the diminished ability to process complicated messages and the need to craft messages that are unambiguous, written in simple language, and take advantage of graphics and layout to facilitate comprehension.

In sum, the communication literature provides a variety of perspectives, constructs, and relationships that may be usefully applied to the problem of devising effective strategies to inform the public about imminent or actual terrorist threats.

#### IMPLICATIONS FOR PRACTICE

In this final section, we combine theoretical insights from the communication literature with lessons learned and recommendations from the emergency preparedness literature, consensus documents, and critique that have emerged following the events of 2001. Where possible, evidence is offered that has emerged from recent research in the preparedness area to inform a set of revised, theoretically based recommendations for preparedness communication. The resulting recommendations are organized in three categories: (1) institutions,

(2) dissemination, and (3) messages. In the process, we seek to make useful distinctions between biological, chemical and radiological events, and point out their relevance for emergency communication. Opportunities for preparedness are also identified as distinct from response.

#### Institutions

1. Ensure collaboration and integration of agencies responsible for communication preparedness.

The Social Amplification Model highlights the interconnectedness of actors in a system of risk communication by identifying the relationships between institutions, transmitters, and receivers. For institutions, this speaks to the importance of building interconnectedness and integration between responsible agencies vertically (from the federal to local levels), horizontally (across federal agencies), as well as across sectors (including businesses and philanthropic organizations).<sup>2</sup> To move toward this challenging goal requires involving stakeholders from different sectors and acceptance of their viewpoints.<sup>29</sup> One effort underway calls for the need for an integrated national warning system that builds on the existing Emergency Alert System and operations of the National Weather Service and the Federal Emergency Management Agency.<sup>2</sup> Interoperability, or the ability of systems to function together, is required to ensure seamless and efficient connections from (and between) agencies providing critical warning information to responders and public audiences.<sup>2</sup>

2. Establish communication planning as a priority area for terrorism preparedness.

Federal, state, and municipal law enforcement and public health agencies are at the forefront of emergency response and primary sources of preparedness information.<sup>1,2</sup> Public health agencies need information not only about their roles and responsibilities in managing the consequences of an emergency,

but also about communicating effectively with the public. McGuire's Persuasion/Communication Model highlights the importance of understanding how characteristics of sources like public health agencies influence reception and impact of messages. Many health departments and first-responder agencies are now developing risk communication plans that include both the messages to be delivered and the spokesperson who will deliver them. However, it is probably the case that most local public health and medical care professionals lack adequate training and resources to carry out these important communication functions.<sup>30</sup> Many health and medical professionals do not see biological weapons as a likely threat. In a national survey conducted by the Center for the Study of Bioterrorism among 1,191 health care workers nationally, over two-thirds indicated that a biological attack in their community was "somewhat" or "very" unlikely. Highlighting transferability of preparedness and response strategies across emergencies may be a critical approach to enhancing communication preparedness specifically for terrorist threats.

Even communities that recognize biological, chemical, and radiological weapons as a threat and have developed and rehearsed an emergency response plan have found risk communication and information dissemination to be a challenge. In recent preparedness exercises,<sup>31,32</sup> many of the key lessons learned were directly related to the need for enhanced information and communication. Specifically, gaining the trust of the public was found to be important in order to control the spread of contagious disease, but community leaders lacked sufficient preparedness education to do so and didn't feel they could depend on information they received from public health and medicine. The study suggested that in the event of an attack, local public health and first-

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responder agencies should either have communication messages already on file or have easy access to these through federal agencies. Because communication lines such as the Internet could be intentionally disrupted during an attack, it is probably advisable to preposition emergency response messages within local public health agencies.

3. Gauge public perceptions and monitor the media in an ongoing event.

The Social Amplification Model notes the importance of incorporating feedback from the public, as well as the news media, to inform ongoing media planning and response. Recent research has established the utility of rapid polling for the purposes of informing government response in an ongoing emergency.<sup>33</sup> Federal authorities (with the resources to do so) should preposition polling contracts to activate in the event of an attack. Similarly, public health agencies should monitor the news media constantly during an emergency and respond to ensure that information is accurate.<sup>34</sup>

#### **Dissemination**

4. Foster relationships with professionals working in the news media.

The Persuasion/Communication Model emphasizes the importance of considering channels of information as factors contributing to the effectiveness of communication strategies on behavioral outcomes. The public health community has come to recognize that the media are influential actors and determinants

of health behaviors and outcomes.<sup>12</sup> In addition, a consensus document released in the wake of the anthrax attacks underscored the importance of establishing rapport between public health officials and journalists.<sup>7</sup> These two groups rely on each other in many ways, yet have different goals and see the world very differently. Building relationships in advance of attacks can help ensure that the press will seek guidance and information from authorized officials.<sup>18</sup>

Protocols for releasing information in emergencies should be prepared in advance, including the preparation of situation-specific messages if possible, and a public information officer should be appointed to undertake all release of information to the media.<sup>1</sup> It is advisable that this individual make advance arrangements with print and broadcast media channels for how information will be released. It became evident in the Fall of 2001 that the public will turn to public health leaders for information.<sup>35</sup> Media training for officials from public health and local government can help them provide information to the public as effectively as possible.<sup>36</sup> Preparedness exercises have shown that the news media need to be kept informed about ongoing emergencies to maintain community trust.<sup>31,32</sup> Maintaining an open and proactive relationship with the press in an emergency may enhance message effectiveness by enhancing such community trust.<sup>9</sup>

5. Develop effective media-based dissemination plans.

The Persuasion/Communication Model highlights the value of assessing where people are likely to go for information in an emergency. Recent polling data indicated that the general public will turn to television and radio as primary sources of information in a terror attack.<sup>37,38</sup> The polls also indicated that people compare information from mul-

tiple sources to confirm the veracity of warnings. Thus, it is all the more important to assure a broad dissemination plan across all media channels to ensure consistency of messages.

Critiques of information dissemination in response to the events of September 11, 2001, highlight the increasingly important role of the Internet as an information channel and the need for strategically coordinating what is often conflicting information. For example, one analysis recognized the importance of the Internet in providing up-to-the-minute information but also its potential for increasing confusion and uncertainty through rapid and often uncontrolled proliferation of information and spread of rumors.<sup>39</sup> Others noted that information was coming from so many sources and transmitters, it was often more confusing and contradictory than it was helpful.<sup>4-6</sup> Thus, it is all the more essential to plan carefully to ensure consistency of messages across channels. It is also critical to conduct research to assess how the media have covered past emergencies and to better understand norms and practices of journalists in covering emergencies.<sup>40</sup>

### Messages

6. When possible, use theory in designing messages.

Behavioral theories should inform communication strategies, beginning with the careful specification of precautionary behaviors and the identification of sociocognitive factors associated with those behaviors. The paucity of behavioral research on precautions in emergencies dictates the immediate support of funding efforts to improve our understanding of the determinants of prevention behavior. Such research is critical for the effective design of theoretically driven messages.

In the absence of behavioral research, experience in preparedness response

and polling suggest key content areas for messages. Critical topics to communicate are the nature of the hazard, safety precautions, and requirements for evacuation or shelter-in-place.<sup>1</sup> Public polling for desired content of communications in terrorist emergencies show similar results. The public wants to know specifics about the agent; specifics of the attack; recommendations for minimizing the risk of exposure; recommendations for treating exposure; travel advisories; and possible suspects in the attack.<sup>38</sup> Behavioral theory can provide insights into how to craft messages offering precautionary actions to enhance their effectiveness. For example, to promote self-efficacy,<sup>26</sup> messages should focus on specific behaviors individuals can perform to keep themselves and their loved ones safe, emphasizing their effectiveness and breaking them down into key steps.

The distinctive features of chemical, radiological, and biological agents call for different message strategies. Attacks by means of conventional, chemical, or radiological weapons achieve their effects within a confined geographical area, and first responders are emergency and law enforcement personnel and firefighters trained to address acute trauma and distress. For chemical and radiological hazards, it will be critical to provide information regarding the nature and timing of care for exposed survivors and evacuation information for individuals at continued risk. At the same time, it will be important to reassure those who are not exposed of their safety.

Biological attacks are encountered first by the medical community and rely on astute physicians to identify index cases. The infectious nature of biological weapons increases the likelihood of widespread fear and social disruption.<sup>41</sup> The role of public health communication in a biological attack is to disseminate information to prevent further

transmission of the disease and to mitigate social effects of the attack.

7. Design and disseminate open, accurate, clear, consistent and timely messages.

Given the challenges of literacy in the United States, every effort should be made to draft messages that can reach and be understood by as broad a public as possible, enhancing the chances that the messages will be centrally processed and achieve the best result, as posited by the Elaboration Likelihood Model.<sup>42</sup> Information about emergencies should be open and honest, enhancing trust and effectiveness.<sup>29</sup> Messages should be factual, positive and reassuring, and written in plain English.<sup>1</sup> Messages should be consistent for both professional and public audiences so that requested actions of agencies and the public are consistent.<sup>2</sup> Messages should be "clear, concise and credible."<sup>1(p75)</sup> National warning system advocates call for "standards and guidelines for all-hazard terminology,[and] common message protocols."<sup>2(p37)</sup> As research in the area of communication preparedness is still in its early stages, little is known about the potential influence of risk communication constructs such as psychological biases and message framing on impact of preparedness messages. The CDC currently supports several research activities designed to develop and test message strategies to disseminate accurate knowledge about threats and provide specific steps diverse publics can take to protect themselves.

8. Ensure an ethical approach to preparedness communication.

Ethical principles at stake in emergencies are the value of life and the obligation to warn.<sup>2</sup> Public health ethicists also posit that effective ethical approaches to public health are those that employ voluntary rather than coercive measures, protect privacy and confidentiality, and express rather than impose community norms.<sup>43</sup> Communication

strategies that aim to inform the public about the likelihood of different threats, their potential consequences, and the steps individuals can take to protect themselves and their families afford perhaps the best opportunity to address preparedness and promote voluntary adoption of protective behaviors that express community concerns and protect individual rights and responsibilities.

## CONCLUSIONS

In recent years, the public health community has recognized the central role of communication in determining health outcomes. This awareness increases the likelihood that public health initiatives will include message and media strategies as integrating elements. It is appropriate then that the preparedness community take a similarly sophisticated and ambitious view on the critical contribution of communication to emergency prepared-

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***Taking institutions, dissemination, and message design carefully into account are critical to the potential success of communication preparedness and emergency response efforts.***

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ness and response. In this article, we have acknowledged several key factors contributing to the potential success of communication in emergencies. First, it is essential to understand the interdependence of agencies and institutions in developing and disseminating information in emergencies. Second, we must approach the news media as equal partners (not vendors) in the effort. Third, we must make every effort to understand and respond to our audiences so we can best serve them in the event of an emergency. Taking institutions, dissemination, and message design carefully into account are critical to the potential success of communication preparedness and emergency response efforts.

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