Risk communication, risk perception, and public health

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Introduction

The September 11 terrorist attacks and subsequent destruction of the World Trade Center towers caused significant environmental contamination. Environmental fallout in the form of toxic dust covered much of downtown New York City. There was widespread uncertainty, fear, and anxiety about terrorism, but also of the toxic dust.[1] Initial attempts by the government failed to reassure the public about the dust's safety.[2] A specialized form of communication, known as risk communication, was needed to address questions raised by the public during this complex public health emergency. Wisconsin public health officials also raised the question, "How can we effectively communicate after a disaster or terrorist event occurs?" The ability to communicate effectively about risks is emerging as a high priority for public health officials.[3,4]

This article briefly defines risk communication and risk perception, and highlights a Wisconsin study involving local public health officials and their risk perceptions regarding terrorism occurring in or near Wisconsin.

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Defining Risk Communication and Risk Perception

Risk communication, a relatively new communication model, is a complex, multidimensional, evolving approach to communicating with the public about issues that pose a threat to health, safety, or the environment. It evolved in the mid-1980s to address public communication problems regarding exposure to hazardous waste at Superfund sites. Throughout the public health community, the communication of risk is intuitively applied. However, risk communication is more than simply disseminating "risk" information. Risk communication combines elements of conflict resolution, public participation, and two-way messages. In a traditional communication model, the messages about a crisis or health risk flows one-way—warn people or motivate behavioral change. Risk communication is a two-way process, with active participation from both the sender and the audience (Table 1).[5] Additionally, building and maintaining trust between spokespeople and the audience is a cornerstone of effective risk communication. As Vincent Covello notes, "Only when trust has been established can other goals, such as education and consensus building, be achieved. Trust can only be built over time and is the result of ongoing actions, listening, and communication skill."[6] In risk communication, there are four characteristics that effective spokespeople exhibit in establishing and maintaining trust: (1) caring and empathy, (2) dedication and commitment, (3) competence and expertise, and (4) honesty and openness.[7]

Risk perception also significantly affects risk communication. First and foremost is the idea that perception equals reality. People view risks differently for different reasons. Researchers have identified several common factors that influence risk perception.[8] These factors are varied and have a significant impact on how strongly risks are perceived. For example, risks that are perceived to be familiar, voluntary, natural, or under an individual's control are more accepted than risks perceived to be unfamiliar, involuntary, or exotic (Table 2).[9]

Other factors that contribute to risk perception include an individual's perception of the severity or threat of a hazard. One study found that before considering possible preventive actions, an individual must first decide if a hazard specifically affects him or her, and whether the hazard is worth avoiding.[8] The perception of risk is further influenced by past events and the forecasting of future events. In his book, *The Perception of Risk*, Paul Slovic reports that unusually vivid or memorable hazards receiving extensive media coverage may distort percep-

Table 1. The Seven Cardinal Rules of Risk Communication

Accept and involve the public as a legitimate partner.
Plan carefully and evaluate your efforts.
Listen to the public's specific concerns.
Be honest, frank, and open.
Coordinate and collaborate with other credible sources.
Meet the needs of the media.
Speak clearly and with compassion.

Table 2. Examples of Lower and Higher Perceived Risk

Lower Perceived Risk	
Voluntary	Smoking
Domestic	Lyme disease
Random	Terrorism
Familiar	Household dust
Natural origin	Radon
Higher Perceived Risk	
Involuntary	Secondhand smoke
Exotic	West Nile virus
Direct	September 11
Unfamiliar	World Trade Center fallout dust
Human origin	Nuclear radiation

tions of risk. The Chernobyl and Three Mile Island nuclear accidents are examples of how extensive media coverage led to an unprecedented worldwide fear of nuclear power.[10]

In sum, risk communication is effective at addressing the complexities of fear, outrage, mistrust, and uncertainty. Therefore, it is ideal for addressing various public health issues caused by toxic chemical spills, contaminated drinking water, and hazardous waste. Risk communication is also being applied to address emerging public health threats, such as bioterrorism, West Nile virus and mad cow disease.[6]

Highlights of Risk Communication Study

In April 2002, a study about risk communication was conducted with all Wisconsin local public health officers. The health officers were surveyed via mail about their perceptions of risk regarding terrorism occurring in or near Wisconsin. Other questions examined their trust, credibility, and information-seeking behaviors as they relate to the Wisconsin Department of Health and Family Services (DHFS) regarding terrorism response and planning. A 71% response rate was obtained. A complete review of the study is available elsewhere.[11] The main study results are noteworthy:

- The local health officers perceived DHFS as highly trustworthy and credible regarding terrorism response and planning.
- Perception of risk regarding terrorism was geographically driven. Health officers in rural areas perceived a very low risk of terrorism, while urban and suburban health officers perceived a much higher risk.

The implications of these findings are useful for future risk communication efforts. Past research has shown a decrease in public perceptions of trust and credibility in government communication activities.[12] According to the study findings, if an actual terrorist attack or other disaster were to occur in or near Wisconsin, communication distributed by DHFS to the local health agencies would be viewed as trustworthy and credible. This discovery is important because it reduces the likelihood of interagency stress caused by distrust or lack of credibility.

Secondly, the difference in the findings of risk perception between rural and suburban/urban health officers is notable. Risk perception of terrorism is not uniform throughout Wisconsin. Considering that non-rural health officers serve larger populations, including key transportation and business markets, a higher perception of risk seems warranted. The finding that rural health officers have lower perceptions of risk may stimulate further examination into why a difference exists. For example, are rural health officers just too busy managing the basic challenges of public health to worry about terrorism? Finding answers to this and related questions is important because research shows that an increased perception of risk leads to a greater participation in risk avoidance.[8]

Summary

Risk communication is about building trust while deploying an interactive and ongoing communication process in which audience members are active participants. This interactive participation may not solve a public health crisis, but it will help reduce unwarranted fear, anxiety and distrust. Consequently, if a government agency fails to understand how to effectively communicate about health risks, their trustworthiness and credibility may suffer, and a crisis event may go from bad to worse.

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