Dealing With The Dangers Of Fear: The Role Of Risk Communication

Fear itself is a risk and must be part of risk-management policy making.

by George M. Gray and David P. Ropeik

ABSTRACT: Among the many lessons of the homeland terrorist attacks of 2001 was that fear has powerful public health implications. People chose to drive instead of flying, thereby raising their risk of injury or death. Thousands took broad-spectrum antibiotics to prevent possible anthrax infections, thereby accelerating antimicrobial resistance. Such potentially harmful actions were taken by people seeking a sense of safety because they were afraid. This essay argues for greater emphasis on risk communication to help people keep their fears in perspective. Effective communication, not only through what the government says but implicit in the actions it takes, empowers people to make wiser choices in their own lives, and to support wise choices by society in applying limited resources to maximize public and environmental health.

IT HAS BEEN MANY MONTHS NOW since that awful September day when Americans were attacked on our own soil. There has been time enough to recover from the horror, to heal from the loss, and to at least begin the effort to make ourselves physically safer. But as we reinforce security at airports, hunt down those who would attack again, and invest in public health preparedness, what are the government and public health institutions doing to battle the terror of terrorism? What are we doing for our sense of emotional well-being? Not enough. As important as it is to physically protect ourselves from the next attack, addressing our fear also has important implications for the public's physical health. We believe that the government could, and should, be doing more to recognize and combat the risks we face from being afraid. We need more-effective risk communication to fight the terror in the "War on Terrorism."

The Health Risks Of Fear

Not long after September 11, a woman from the Boston area who had flown dozens of times announced to her family several states away that she was now afraid

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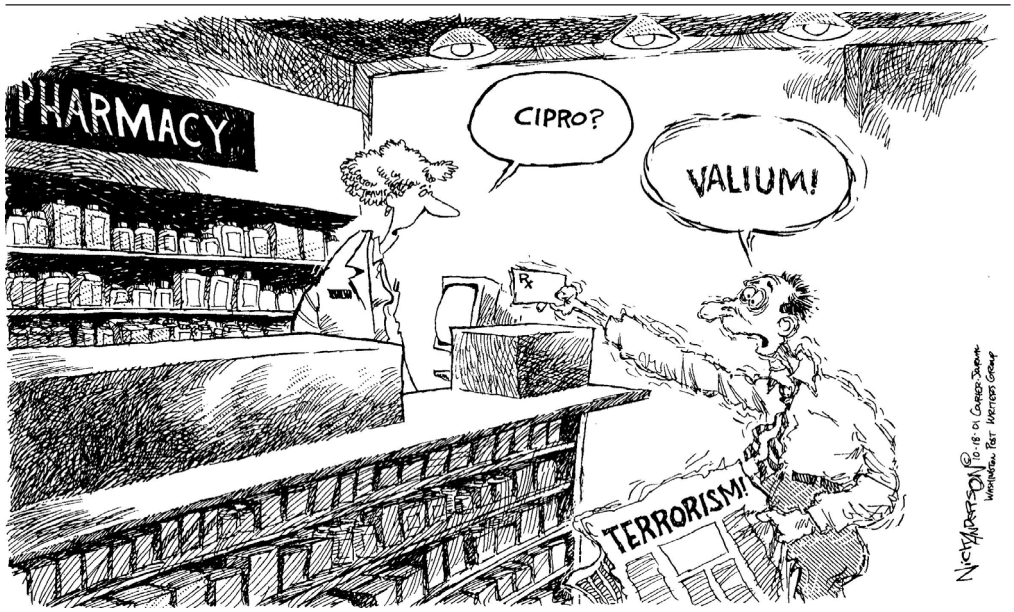
to fly and would instead drive to a family function the next weekend. She was killed in an automobile crash on the way. Fear of a statistically lower risk (flying) led her to engage in a behavior that has a much higher risk (driving), and that fear cost her life. How many more were there like her, people killed or injured, who chose to drive instead of flying because they were afraid? It is impossible to quantify precisely, but let us consider some indicators. The Air Transport Association reports that domestic air travel was down 8.7 percent in May 2002 compared with the previous year.[1] At least some of those nonflyers are apparently driving. As of the end of April, air arrivals in Las Vegas were down 7.9 percent, but driving arrivals were up 12.1 percent compared with the previous year.[2] The number of motorists paying tolls on the Massachusetts Turnpike in May 2002 was 4.3 percent greater than in May 2001.[3]

Following the attacks last fall, there was a surge of people buying guns. FBI background checks for handgun sales jumped 39 percent in October 2001 compared with October 2000.[4] This occurred despite the fact that guns purchased for self-protection far more often end up being used in a suicide or a crime or harming someone accidentally than actually being used for self-defense.[5]

By the middle of October 2001, thousands of people were buying the broad-spectrum antibiotic ciprofloxacin hydrochloride ("Cipro"), and many were taking it prophylactically to ward off anthrax, even though "weaponized" anthrax spores had been detected in only a handful of locations nationwide (Exhibit 1). A public survey found that 5 percent of Americans had purchased an antibiotic and that 20

EXHIBIT 1



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percent of those people were taking the drugs prophylactically.[6] This kind of indiscriminate use of such a powerful drug contributes to antibiotic resistance and increases the risk of serious disease.

For many people, just the stress after the attacks created physical risk. Many studies have found that chronically higher-than-normal levels of stress suppress the immune system.[7] In one poll of emotional responses to the attacks, during 1–3 October 59 percent said they had experienced depression, 31 percent had difficulty concentrating, 23 percent suffered insomnia, and 87 percent felt angry.[8]

In sum, our emotional response to the attacks may have imperiled more of us than the number of victims that day, a total 3,019 people dead or missing. We must recognize the real physical danger we face from being afraid. Although Franklin Roosevelt in his first inaugural address in 1933 was speaking about the economy and the Great Depression, his words apply well to America in the fall of 2001: "This great nation will endure as it has endured, will revive and will prosper. So...let me assert my firm belief that the only thing we have to fear is fear itself."

Risk Perception, The Roots Of Our Fears

The vital first step, then, is for the government to recognize the physical risks of fear. But the question then follows, What can be done about it? How can we keep the public alert and cautious as we try to increase our physical safety and at the same time help people keep their perception of risk in some kind of reasonable perspective, so they make wiser and healthier choices for themselves and demand appropriate government protection from the greatest risks? The answer lies in understanding the fear itself and in using that understanding to empower more-effective risk communication.

For the past twenty-five years scholars such as Gilbert White, Amos Tversky, Daniel Kahneman, Baruch Fischoff, and Paul Slovic have contributed to an impressive literature on risk perception.[9] This literature finds, among other things, that humans appear to fear similar things, for similar reasons. The study of risk perception helps to explain the ways we subconsciously "decide" what to be afraid of and how afraid to be. It helps to explain why our responses to risks are not simply internal, rational risk analyses but also heuristic, affective responses that apply our emotions, values, and instincts to our perceptions of risk. Risk perception helps to explain why our fears often do not match the facts. Empowered with these insights, risk communicators can provide information in a way that helps people with their fears even as it empowers them with vital facts.

Risk-perception research has found that there are consistent characteristics of risk that form the basis of our perceptions. The following are some of the factors that help to explain our emotional reactions to the risk of terrorism.

■ **Awareness.** Risk-perception studies have found that as our awareness of a risk rises (this is sometimes referred to in the literature as "availability"), so does our fear.[10] Who in late September 2001 was worrying about global climate change, West

Nile virus, or the risk from drivers using their cell phones? Those risks weren't gone. They had just been replaced in our awareness by hijacked airplanes and bioterrorism, practically the only thing in the news for weeks. As communications theorist Bernard Cohen observed, the news media "may not be successful in telling people what to think, but it [*sic*] is stunningly successful in telling its readers what to think about."[11]

Awareness is not generated only by the media, however. It can come from personal experience and conversation.[12] Certainly terrorism was a constant topic of conversation in the fall of 2001. As one piece of evidence of how awareness raises fear and prompts people to make potentially dangerous choices, consider that as July 4, 2002 approached and news reports warned about the possibility of terrorist activity, gun sales on July 3 were 32 percent higher than predicted by the FBI for that date.[13]

■ **Uncertainty.** Risk-perception research has found that the more uncertain we are, the more afraid we are.[14] There was, and still is, uncertainty about so much. Who were the attackers? What will they do next? When? Where? How does anthrax work? Just how hard is it to "weaponize" biological agents? Is our water supply safe?

■ **Is the risk personal?** Risk perception finds that we are more afraid of a risk if it puts us in personal peril than if it threatens somebody else.[15] Before September 11, terrorism that targeted Americans happened to Americans elsewhere, not to us here at home. In a CNN/*Time* poll 13 September 2001, only 36 percent of Americans said that prior to the attacks, they feared serious terrorist attacks in the United States. But after 9/11, when for the first time many of us felt that "it might happen to me," 80 percent of respondents said that they feared more terrorism in the United States.

■ **Optimism bias.** Interestingly, risk-perception research has also found that even when people have greater fear of a risk, they consistently believe that the risk is more likely to happen to somebody else.[16] While 80 percent of Americans on 13 September 2001 believed that it was very or somewhat likely that terrorist attacks would occur again in the United States, only 24 percent thought that it was very or somewhat likely to happen where they live.[17]

■ **Is the risk new?** Risk-perception research finds that humans are generally more afraid of a risk when it's new than after they've lived with it for a while, grown familiar with it, and gained perspective.[18] One measure of this is the trend in the public's willingness to fly. Although the number of Americans who think that another terrorist attack will occur in the United States has remained steady at around 80 percent, passenger air traffic was off 20 percent in November 2001, just 14 percent in December 2001, only 10 percent in February 2002, and 8.7 percent by May 2002, compared with the previous year.[19] Another measure of this is the trend in handgun sales. As we mentioned, background checks for handgun sales were up 39 percent in October 2001 compared with October 2000. But by June 2002 they were 20 percent below the same month in the previous year.[20]

■ **Is the risk catastrophic?** Risk-perception research finds that we are more

afraid of risks that are catastrophic, threatening to kill a lot of people all at once in one place, than those that are chronic, killing people over time in scattered locations.[21] On September 10 (and every day in 2001), approximately 2,000 Americans died from heart disease. But these deaths did not raise the same level of public concern because they didn't all happen in one place, in a single event.

■ **Is the risk voluntary?** Risk-perception research finds that we are more negative about risks that are forced on us than those we choose.[22] For example, the motorist next to us using his mobile phone seems more threatening than when we use our cell phone while driving. On September 11 an Ispos-Reid survey found that 76 percent of Americans expressed anger that "someone did this to the United States."[23]

■ **Control.** If we feel some control over events, we are less afraid than if we feel we have no control.[24] This helps to explain why fear of driving is low and why many bicycle riders don't wear helmets. Many of the actions people took in the wake of the attacks—driving instead of flying, buying guns, taking drugs, and avoiding crowded places (14 percent of Americans said they had done this in a survey by ABC news on 24 October 2001)—were in part an effort to act and, by acting, to establish some sense of control.

■ **Trust.** The risk-perception literature finds that the more we trust the people who are supposed to protect or inform us, the less afraid we will be. The less we trust them, the greater our fears.[25] If the public trusts the government to deal with a crisis effectively, there will be less public fear. A survey by Robert Blendon and colleagues conducted in October 2001 found that 48 percent of Americans would trust the head of the Centers for Disease Control and Prevention (CDC) as a source of reliable information in the event of a disease outbreak caused by bioterrorism. But only 38 percent would trust the secretary of health and human services (HHS), and only 33 percent would trust the director of the FBI.[26]

It is clear that knowledge of risk perception can empower more-effective risk communication and help people keep their concerns in perspective. If, as the anthrax issue was still unfolding, government officials had recognized the importance of trust and chosen the most trusted figures to do most of the talking, public concern about the risk of bioterrorism might have been reduced. Instead, HHS secretary Tommy Thompson, FBI director Robert Mueller, Attorney General John Ashcroft, and Office of Homeland Security chief Tom Ridge (trust level, 33 percent, the Blendon survey found) did most of the public speaking on the issue, thereby impairing the government's ability to battle the terror of terrorism.

We believe that by understanding the psychological roots of people's fears and respecting the reality that demeanor and emotion play an important part in people's perception of risk, government leaders can craft their actions and messages in ways that address the real reasons people are afraid. We offer the following as a powerful recent example that also illustrates the vital importance of trust.

Actions Count, Too

■ **A risk-communication success.** In November 2000 German agriculture minister Karl-Heinz Funke declared confidently that Germany was immune from bovine spongiform encephalopathy (BSE), commonly known as mad cow disease. Funke essentially said to the German public, Trust us. You're safe. One week later the first sick cow was found. Not only did this create fear of the disease and its related human form, variant Creutzfeldt-Jakob disease (vCJD), but Funke's statements damaged public trust in government, and beef sales plummeted nationwide.

Now consider the German government's response. Within several days of the outbreak, Chancellor Gerhard Schroeder said, "The BSE crisis has made it compellingly clear that we have to make several organisational, and not just personnel, changes."[27] Within a matter of weeks Funke was forced to resign and was replaced by Renate Kuenast, a member of the Green Party and former prison social worker, who promised to make the Agriculture Ministry more aware of consumers' concerns and to move German agriculture away from industrial practices and toward organic farming. These symbolic actions, taken on top of direct controls on dairy and cattle farming to reduce the risk of BSE, were not intended to deal with the physical risk. Rather, they recognized the peril from fear and the reality that public perceptions of mad cow disease were a very real part of the problem. This was an example of effective risk communication, with actions as well as words. Trust was restored, and despite subsequent identification of more sick cattle, within a few months beef sales had returned nearly to normal.

■ **A failure.** Now consider, by contrast, the risk-communication failures, in words and deeds, of the Japanese government. After the first case of BSE was confirmed in Japan (10 September 2001), agriculture minister Tsutomu Takebe foolishly promised that there wouldn't be any others. The second sick animal was found just days later. Takebe also said that the first sick animal hadn't been rendered into protein and put into the cattle food supply, so the disease couldn't spread. Within days, the government had to admit that it was wrong and that the first animal had indeed been used to produce protein for cattle feed. The press revealed that the Japanese government had suppressed a European Union document that reported that Japan was at high risk for BSE. Other news coverage revealed that the Japanese government had failed to impose controls on the cattle and dairy industry to keep the disease from spreading should a case get into the country, controls that were being imposed in other nations, including the United States.[28]

As word of BSE in Japan spread, beef sales, an important part of a sagging economy, sank practically to zero. Takebe tried to reassure the public by sacking an assistant and publicly eating beef to show that it was safe. This may not have been seen as especially compelling since the incubation period for the disease in humans is years. Takebe did not resign. Although fewer sick cattle have been found in Japan than in Germany, beef sales in Japan were still off dramatically months later, much longer than it took for German beef sales to recover.

Toward Better Communication

So how do we use these insights to make risk communication about terrorism more effective? We offer specific examples below. But first we suggest important conceptual changes that must take place at the highest levels of policy making.

■ **Part of policy making.** To begin with, the operational paradigm of risk-management decision making must recognize the danger people face when they are afraid. To do this, government leaders must embed risk communication into all policy making, and they must realize that risk communication is more than just a way to respond to the crisis at hand. It is absolutely vital in helping prepare for the next one. The planning under way to protect the public from future attacks must include risk-communication strategies that establish trust and help the public keep risks in perspective beforehand. That will help combat fear should another attack occur.

■ **More than PR.** Another vital paradigm shift is that policymakers must understand that risk communication is not just what they say but what they do. Had Chancellor Schroeder said that action was necessary but not taken any, fear of BSE in Germany would have remained higher. Risk communication, then, is more than just press releases and public service campaigns. The childhood aphorism applies: Actions speak louder than words. This means that all risk-management policy making must consider the risk-communication implications of all decisions.

Accordingly, we suggest that responsibility for risk communication be added to the responsibilities of the highest-level policymakers in both the executive and legislative branches of government. This will ensure that the effects of government action (or inaction) on the way the public perceives a risk will always be considered at the most senior level as decisions are made.

We recognize that risk-management decision making is already a difficult process. Balancing the facts from technological risk assessments and cost-benefit analyses against the competing forces of political pressures and public sentiment, amid limited resources, is a daunting challenge for regulators. Nonetheless, we suggest that the public health implications of fear demand that risk communication should also have a prominent role in that policy-making balancing act.

■ **Set honest goals.** Another paradigm shift is about measuring success. Honest goals must be set. Most risk communication fails because it tells people only what the communicators want them to know, to get them to behave "rationally"—that is, the way the communicator wants them to behave. This is the "brainwashing" model that Sheila Jasanoff and others have fairly criticized.[29] We believe that risk communication is more likely to succeed if it sets the more realistic goal of helping people understand the facts, in ways that are relevant to their own lives, feelings, and values, so they are empowered to put the risk in perspective and make more informed choices. Both approaches seek to inform, to educate, and to motivate changes in behavior. But the first is overtly manipulative and less likely to be trusted, while the second acknowledges and respects the reality that people's reactions to risk are not always rational and presents the information in terms relevant to what they are feeling.

Such change will not come easily to some agencies. It means letting go of control ("We'll tell them what we want to tell them and make them think what we want them to think") and relying on trustworthiness rather than manipulation to achieve success. It will take a courageous manager to recognize the long-run value of giving up control in the short term.

Applying The Principles

How might the risk-perception factors we cited above be applied to risk communication about terrorism? We cite the example of Attorney General Ashcroft's announcement in June 2002 that the U.S. government had arrested a "dirty bomber" who was allegedly plotting to detonate a conventional explosive laced with radioactive material. Risk-perception research suggests that this announcement would alarm people by raising awareness of a risk with a lot of uncertainty, a risk that is new, catastrophic, and imposed and over which the average citizen would have no control. (Risk-perception research also finds that people fear risks such as radiation because they are hard to understand.)[30]

However, Ashcroft, knowing that how he handled the announcement could make people either more or less afraid, dramatically described dirty bombs as weapons of mass destruction, when in fact such devices are really only dangerous in the immediate vicinity of their detonation, as nearly every scientist and most press reports said the next day. When he was contradicted by the scientific community, his trust level almost certainly fell in the eyes of some. And among those who heard only his description of dirty bombs, he raised public fear of these weapons such that should such a device go off in the future, it may well be much harder for the public to keep their fears in perspective.

Had Ashcroft used the worldwide attention he knew he would get as he announced the arrest to explain these weapons more accurately, he could have taken advantage of the perception factor of awareness and immediately talked about a new risk in a way that would reduce uncertainty, prevent fear of a catastrophic risk, and help the public understand the radiation impacts of dirty bombs. He could have had independent, trusted scientists on hand to provide information and in so doing also have strengthened public trust in government.

Another example of a missed opportunity in applying lessons of risk perception to empower more-effective risk communication is Homeland Security director Ridge's announcement of the Homeland Security Advisory System—that color-coded chart depicting various levels of danger of a terrorist attack. This system, he said, "empowers government and citizens to take actions to address the threat."[31] In fact, the announcement included no suggestions on what citizens should do to reduce their risks at any particular stage of alert. Had the planners of the advisory system included just a few general safety tips for each threat level, the chart might have given Americans a sense that they could do something to reduce their risk—a sense of control—reducing the perception that the risk of terrorism is personal.

Challenges Ahead

■ **Answering the scientists.** While few would argue against the importance of risk communication, many, particularly in the scientific community, argue against the approach we suggest. These people argue that pandering to emotions often interferes with wise, fact-based decision making. They suggest that risk science, economics, and policy are so complex that experts and technocrats ought to be left to figure out what's best, and risk communication can just explain it all, ex post facto, to the public. They argue that such an "irrational" basis for policy causes misallocation of limited resources and leads to spending more money and time protecting ourselves from lesser risks that evoke high fear—such as hazardous waste or pesticides on food—than we invest to protect ourselves from greater risks—such as foodborne disease or antibiotic resistance. This is not far from the argument made by U.S. Supreme Court Justice Stephen Breyer in his book, *Breaking the Vicious Circle: Toward Effective Risk Regulation.*[32]

We support a good measure of this argument. Careful and rigorous risk analysis and cost-effectiveness analysis must be cornerstones of risk management if we are to maximize public and environmental health in a world of limited resources. Sound science conducted by experts will indeed point the way to the most effective and efficient risk-reduction policies.

But that argument fails to include the difficult-to-measure but nonetheless real physical dangers that arise when people are afraid. If people fear pesticides on food, some might eat fewer fruits and vegetables than health experts recommend. If people fear nuclear power, they might force government policy toward fuels that cause more pollution and danger to human health and the environment. Fear itself is a risk and must be included in risk-management policy making. As University of Chicago law professor Cass Sunstein puts it, "When people are neglecting the fact that the probability of harm is small, government should generally attempt to inform people, rather than cater to their excessive fear. But when information will not help, government should respond, at least if analysis suggests that the benefits outweigh the costs. The reason is that fear, even if it is excessive, is itself a significant problem, and can create additional significant problems."[33]

■ **Joining risk communication and science.** In a sense, risk communication is catering to people's fears. But this is not inconsistent with the use of sound science. In fact, it uses the social science findings of risk-perception research to complement it. The idea of effective risk communication is simply to present the findings of sound science in a way that is relevant to people's concerns, so the information is more likely to be useful to them and used by them as they make their risk judgments. That will help them put the risk in more reasoned perspective, which can only help the rational input of experts to have more impact.

We also point out that there is a scientifically rigorous method known as the Mental Models Approach to identify the key risk-communication messages that audiences want and need and that are most likely to be effective.[34] This approach

relies on interviews with various publics to help identify the information, both correct and erroneous, that people already have (their "mental model") and then uses these interviews and expert knowledge to develop the information people need and want as they attempt to understand a given risk.

■ **Evaluating new risks.** Finally, some suggest that terrorism is a new and fundamentally different sort of risk, one that cannot be reliably evaluated and quantified. The risks of terrorism to the United States are indeed new, evolving, and difficult to characterize. This poses clear communication challenges. At the same time, it is useful to remember that the risks of climate change, for example, are evolving and difficult to characterize as well. In these cases, technical descriptions of the magnitude of the risk, although highly uncertain, can be developed. Making sound decisions in the face of this uncertainty requires accurate and careful communication.

CHARLIE BROWN SAID, "I have a new philosophy. I only dread one day at a time." The problem, Charlie, is that tomorrow will bring some new risk, some new reason to dread. Whether it be terrorism or West Nile virus, genetically modified food or mad cow disease, risks continually arise. Old ones may fade, but new ones will replace them. Just as certainly, the human imperative of survival will compel us to react to risks in ways that make us feel safe, even when our reactions actually put us in greater peril. It is critical for public health that effective risk communication become an intrinsic part of how government makes risk-management policy, so that we be not only physically safe but informed enough to make wiser and safer choices for ourselves and for our fellow citizens.

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