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Developing your messages: it's a risky business

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Risk communication strategies may focus on education, motivation or consensus building, but the point is always to help the public (or specific audience) make a decision about the risk. Messages designed to do this may be delivered to the public via the news media (tv, newspapers, radio), technical reports, posters, ads, forums, displays, computer applications, face to face, newsletters, professional organizations, community service agencies, etc., and each medium has its advantages and limitations. For example, television reaches many people but needs visual material and is typically presented in short segments, whereas newspapers rely on the written word and can present longer, more complex messages but are less vivid and immediate in emotional impact.[1] The characteristics of each channel affect the type of message that can be effectively transmitted.[2]

Communicate early, fully and consistently.

Risk communication messages themselves may include verbal statements, pictures, advertisements, legal briefs, warning signs or other types of information materials. In general, the most effective risk communication messages are those that come from a credible and trustworthy source, are presented in multiple formats, are within an honest, open strategy and are carefully tailored to the intended audience/s. At a minimum, a risk communication strategy should include information on:

- ❒ the nature of the hazard;
- ❒ the probability of exposure to the hazard (for the total population and specific segments of the population if they differ);
- ❒ the probability of harm from a given exposure (and multiple exposures) to the hazard;
- ❒ how the hazard interacts with exposure to other hazards;
- ❒ practical risk reducing actions or alternatives that affected people can take (with information on their effectiveness, costs and benefits);
- ❒ the benefits that might be given up if the risk were reduced or eliminated (and who would get/lose the benefits);

- ❒ any uncertainties about risks and benefits (including data gaps, areas of significant disagreement among experts, assumptions on which estimates are based and levels of confidence about probabilities);
- ❒ who is responsible for risk communication and risk management decisions; and
- ❒ the limits of the communication, defined by laws, policies, etc. (i.e., don't promise information or actions that you will not be able to deliver).

Unfortunately, in practice communicating this information to the appropriate people is rarely easy and can be extremely controversial, particularly when the hazard being described is itself the center of controversy. Often risk communication is necessary in a crisis situation and/or when there is still enough scientific uncertainty to allow different experts to draw contradictory conclusions. Even when the risk is fairly well understood in the scientific community, it can be difficult to present the information to the public in a way that is accurate, complete, engaging, non-manipulative and helps the intended audience make an informed decision. Stakeholder biases can further complicate the process, since the beliefs and interests of risk communicators and the organizations they represent can slant or even completely misrepresent information. Though in most situations it is not possible to overcome all of these difficulties, the following tips can help improve most risk communication efforts.

Remember that perception – even uninformed perception – is reality.[12]

Respond as completely as possible to audience biases, misconceptions, feelings, concerns and needs surrounding the risk.

It is extremely important to gather as much information as possible about the people (audiences) that could be affected by the risk. This audience analysis information should be used to guide the message development process because audience responses to risk are never based solely on technical information or statistics. Many other factors affect audience reactions to risk messages, and should be taken into account when making risk communication and management decisions.

> The way people feel about and respond to risks depends on what they most want to avoid, what kinds of lives they want to lead, what they believe the future will bring, and what they believe to be the proper relationship between humanity and nature .[3]

When people consider their options, for example, they are often influenced by an optimistic bias, or an unrealistic perception that they are not at risk, or are at a greatly reduced risk for a particular threat[4-11]. When this is the case, risk communication efforts should focus on personal susceptibility and responsibility. Other misconceptions should also be addressed by filling in knowledge gaps.

When the audience is hostile, apathetic or feels like victims, risk communication efforts should openly acknowledge their concerns and feelings, emphasize past successes (in similar situations) and provide as many choices as possible. When feasible, it can also be worthwhile to open the risk assessment and management process to stakeholder participation.

Any other information that the audience expresses a desire to know should be provided, or complete reasons why it is not available should be given.

Use language and concepts that the intended audience/s already understand, whenever possible.

Risk messages should not contain acronyms, abbreviations, scientific notation, mathematical formulas or exponents. Research has even shown that seemingly familiar terms such as precipitation forecasts are often misunderstood. In studies by Murphy et al.,[13, 14] people were equally likely to interpret a "70% chance of rain" as "rain 70% of the time", "rain over 70% of the area" and "70% chance of some measurable rain" (the official definition). When it is not possible to use familiar terms, be careful not to omit important information just because it may be difficult to explain. Instead, provide clear definitions with unfamiliar terms or concepts.

In general, the public react with greater concern, fear and sometimes hostility when the risk:

- involves fatalities and injuries grouped in time and space;
- is unfamiliar;
- mechanisms or process is not well understood;
- is uncontrollable;
- specifically affects children;
- has delayed effects;
- endangers future generations;
- has resulted in identifiable victims;
- may have 'dreaded' effects;
- is being managed by an institution that the public does not trust;
- has resulted in a great deal of media attention;
- has associated benefits or detriments that are unequally distributed throughout the population;
- has unclear benefits;
- may causes irreversible effects; and
- is caused by human actions or failures.

Use magnitudes common in ordinary experience.

Most people have difficulty comprehending magnitudes that are exceedingly small or exceedingly large. Sometimes analogies can help convey such magnitudes. "For example, a risk of 0.05 may not mean much to most people but the statement that about 5 people in an auditorium of 100 people would be affected is much easier to comprehend."

Emphasize cumulative probability over extended periods of time, instead of one-shot probabilities, when applicable.

Most people have difficulty distinguishing between cumulative and one-shot probabilities. For example, Linville and colleagues[15, 16] found that college students tended to over–estimate the probability of infection with HIV from a single unprotected exposure, and to underestimate the probability of infection from repeated unprotected exposure. This means that if risk communicators only talk about the probability of infection from a single unprotected sexual encounter, they risk miscommunicating by leaving the calculation of cumulative probability to the audience. Cumulative probabilities convey the higher probability associated with long-term risk, and may be more likely to motivate behaviour change.[17]

Instead of expressing probabilities in quantitative (numeric) terms, try to use a qualitative tem that is close in meaning (if a tested term is available).

Though quantitative terms are obviously more precise, most people are more likely to use and understand qualitative expressions. For instance, a person might say that it is "very likely" that they will buy a new sofa this year, but it would be unusual for them to say that there is a .90 probability they will do so.[18] Kassler et al.,[19] for example found that a .88 positive predictive value for a rapid HIV test could be more easily understood by clients if expressed as "probably infected", "very likely infected", "highly likely to be infected" or "very good chance of being infected."

*Stick to **informing** an audience unless persuasion techniques have been deemed appropriate following a legitimate scientific and public process.*

Attempts to persuade audiences may be viewed as unethical and with hostility, particularly when:

- there is unresolved controversy over an issue;
- the techniques used to influence approach or include outright deception; and
- when the risk is confined largely to the person undertaking a particular behaviour and does not put others at risk (e.g. lifestyle issues such as a consistent diet of high fat foods may be viewed as a risky behaviour that only affects the individual eating the high fat diet).

Emotional appeals (such as fear, tragedy, humour) fall into the category of influential communication, and should be used with caution, as the conditions under which people view these as acceptable, and under which they are effective are not well understood (please see **www.utoronto.ca/chp/hcu** for more information on emotional appeals).

Even subjective words such as "significant", "negligible" and "minor" can be inappropriately biased, as they beg the questions "significant to whom?", "under what conditions?", and "based on what evidence?"

Be conscious about how different ways of describing risks reflect different values and can be misleading or manipulative.

Choice of measure can affect how risky a hazard appears. Consider for example the following ways that annual fatalities resulting from emission of an air toxin might be presented;[20]

- deaths per million people in the population
- deaths per million people within miles of the facility
- deaths per facility
- deaths per ton of the airborne toxic substance released
- deaths per ton of chemical produced, and
- deaths per million dollars of product produced.

There are even more ways to summarize deaths, each embodying its own set of values. "For example, 'reduction in life expectancy' treats deaths of young people as more important than deaths of older people, who have less life expectancy to lose. Simply counting fatalities treats deaths of the old and young as equivalent. Using 'number of deaths' as the summary indicator of risk implies that it is equally important to prevent deaths of people who engage in an activity by choice and deaths of those who bear its effects unwillingly. It also implies that it is equally important to protect people who have been benefitting from a risky activity or technology and those who get no benefit from it."[21]

Different ways of presenting the *same* measure can also create different impressions. For example a study found that a vaccine that reduces the probability of contracting a disease from 0.2 to 0.1 is less attractive to people if it is described as effective in half the cases than if it is presented as fully effective against one of two virus strains.[22]

Use caution when comparing risks.

Comparing risks, for example one that is familiar to one that is unfamiliar, can help audiences understand probabilities and make decisions about appropriate action. Establishing effective and ethical comparisons however, can be a tricky process that warrants extreme caution. A risk comparison could, for example, mislead someone into thinking that if they are willing to take the larger of the two risks, they should accept the smaller one as well.[23, 24] In general, only risks with similar characteristics (outcomes, controllability, level of public outrage/ concern about the risk etc.) should be compared, otherwise the comparison will be confusing to the audience.

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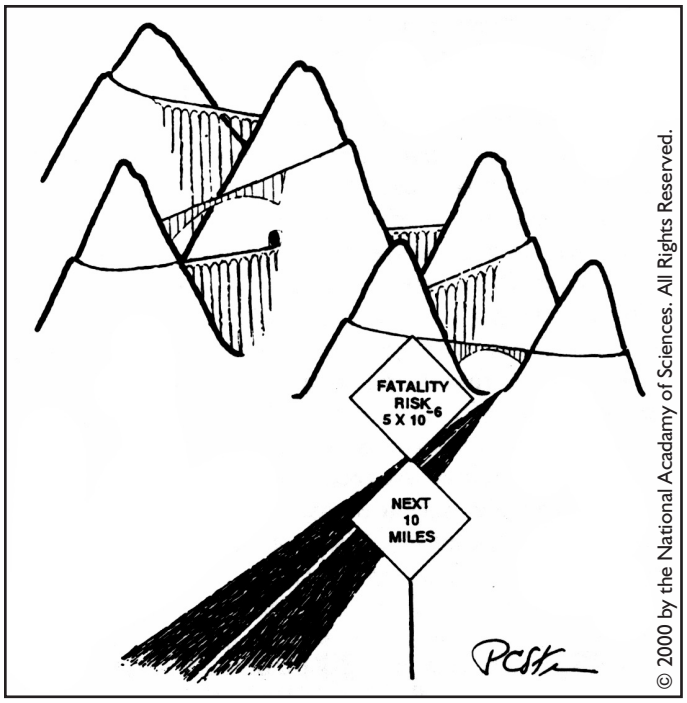
Acceptability of risk comparisons[25]

Most acceptable	Less desirable	Even less desirable	Rarely acceptable
• same risk at different times or for different audiences (e.g. infants vs. seniors). • risk vs. an accepted standard • different estimates of the same risk	• doing something vs. not doing it • alternative ways of lessening risk • risk in one place vs. risks in another place	• average risk vs. peak risk at a particular time or location • risk from one source of harm vs. risk from all source of that harm • occupational risk vs. environmental risk	• risk vs. cost • risk vs. benefit • risk vs. other specific causes of same harm

Use clear visuals to accompany or replace other forms of communication, whenever possible.

Carefully chosen (or developed) visuals can make "information transmission more rapid, realistic and accurate than is possible in purely verbal messages".[26] Visuals such as photos, pictures, illustrations, graphs, charts, tables, and labels can help clarify abstract concepts, improve comprehension and recall and help put facts into context. They are particularly useful for:

- audiences with low literacy or education levels;
- raising awareness about a previously unknown risk;
- portraying conditions that indicate a risk, such as a blocked fire door;
- showing the potential effects of a risk that can be seen, such as a visible health effect, or an effect on plant-life;
- depicting size of, significance of and changes in level of risk over time;
- comparing probabilities of a given risk occurring in different situations or for different groups of the audience; and
- comparing various options/alternatives.



The key to effective visuals is being clear, non manipulative and tailoring the design and content to the needs of the audience so that they are better able to make an informed decision about the risk. This can involve using different visuals for different segments of the intended audience (consider, for example, the types of visuals that would be appropriate/engaging for a Canadian trained doctor vs. a non-English speaking, recently emigrated parent), and always involves pretesting materials with the intended audience (see below).

Test all messages with members of the intended audience.

Regardless of how closely the above guidelines have been followed, it is of the utmost importance to test messages with members of the intended audience before they are widely distributed. At a minimum members of the intended audiences should be asked if they;

- are interested in the message;
- feel that the message is relevant to them;
- can understand the message (get specific details on how they interpret the message);
- think it is biased or distorted in any way; and
- feel the message provides enough information to help them make the best decision.

If resources are available, it is also wise to consider having messages reviewed by independent experts in the field of the applicable risk and/or the general area of risk communication.

As indicated by this supplement's title, developing effective risk communication messages can be a complex process. Though using these tips will improve your messages, remember to be realistic about what you can achieve through good risk communication. You cannot "...expect good risk communication to always reduce conflict, maximize general welfare and smooth risk management."[27] Rather you should focus on raising the level of understanding of relevant issues or actions for those involved, and satisfy them that they are adequately informed within the limits of available knowledge.

Endnotes

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