

Communicating with the Public on Issues of Science and Public Health

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Communication with others is extremely important for health professionals and scientists. This is true whether the scientists are communicating with peers or with the public, although different communication skills are needed. There are several obvious reasons why communication with the public is important. Most of the funds that support scientific research are ultimately derived from taxes, and elected representatives of the public determine the level of support; failure to convince the public of the importance of the scientific research will surely result in a decrease in available funds for research. A more compelling reason for the scientific community to effectively communicate with the public relates to issues of public health. Health-related research often has direct implications for personal human health, and much of this research suggests immediate steps people can take in lifestyle choices that may improve their health status. Therefore, if the public either does not know or is not convinced to care about new insights into the origins and causes of disease, the research effort is wasted.

While we, of course, do not know the causes and origins of all diseases, it is important to emphasize the extent to which lifestyle factors contribute to a great variety of diseases. McGinnis and Foege (*1*) have recently reported that lifestyle choices kill more Americans than any other single factor. The best examples are the diseases asso-

ciated with cigarette smoking (lung cancer, a variety of less common cancers, and heart disease). Some types of cancer are related to diet or to the degree of exposure to sunlight. Individuals may choose the degree of their own exposure to these factors. People also have a choice in avoiding some infectious diseases, the most obvious of which is human immunodeficiency virus (HIV). But what is true for HIV is also true for the other sexually transmitted diseases, even though these diseases are not lethal. If people know that a particular exposure may cause disease and if they understand how exposure can occur, they each have the option to change personal behavior or to take other steps to reduce the risk of developing particular diseases.

Infectious diseases caused by poor sanitation can be considered lifestyle diseases as well; although many individuals may not have the resources to escape the poverty that is frequently related to these diseases, knowledge of the dangers of contaminated drinking water and food, as well as knowledge of ways to avoid these dangers, can reduce the risk of disease (e.g., by boiling water or selecting locations for waste far from the water supply). Disease from environmental agents also is sometimes a matter of lifestyle and choice. However, neither the scientific community nor the public health community can expect people to change their behavior or take action if they are not informed of the relationship between exposure and disease and if they are not convinced that it is in their self-interest to change. Thus both knowledge and motivation are essential for people to change behavior.

The scientific and public health communities are often inadequate at effectively communicating information to the public. This is a matter of time and opportunity, but it is also a matter of skill and attitude. Most scientists consider it undesirable to

over-simplify their research results and implications, so unfortunately most people cannot understand the complex information; public meetings are not usually called until there is a considerable amount of anxiety or even hysteria over an issue. Therefore, effective communication with the public usually depends on the media, and often this means that a reporter is the link between the scientist and the public. The advantage of this is that someone who is trained for the task communicates with the public, so the message may be more easily transmitted to the target audience. However, this has also a disadvantage in that there are now two points at which communication can be distorted, scientist to reporter and reporter to the public.

There are several general but interrelated principles that appear to be important in the general approach to communication between the scientific community and the public. These are trust, respect, empowerment, and equity; each is detailed below. These principles probably apply equally to communication between any two communities that differ in perspective. I will discuss these four principles in light of my personal experiences in three quite different arenas in which I have been involved: I host a weekly radio program called "The Health Show," which is produced by a local public radio station in Albany; I have frequently been involved in press coverage of the controversial issue of whether there are significant health hazards from magnetic fields produced by electricity; I am the principal investigator in a National Institute of Environmental Health Sciences program project grant focused on the study of the effects of health hazards from local pollution on a Native American community in northern New York.

While different audiences are involved in these three situations, they share important

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common features, many people in these audiences have little scientific background. "The Health Show" communicates general information about scientific advances, primarily to the people who listen to public radio. The question of health hazards from electricity is more controversial and is covered more widely in the media, from the television evening news to women's magazines. While it might appear that a research project focused on a special population has little to do with the questions of communication, my colleagues and I have perhaps learned more about effective (and ineffective) communication through this experience than from any other single source.

There has been a great decline in the trust in our major institutions, including medicine, government, and media, and certainly in authority. There are many causes of this loss of trust, and it is clear that the message will be lost if the messenger is not trusted. Furthermore, factors that create trust in one segment of the population may not be effective in others. Unfortunately for many scientists, public trust does not automatically correlate with how much the public knows about a scientist's advanced degrees from distinguished institutions, bibliography, or research grants. In fact, often these very factors on which scientists tend to evaluate each other become barriers in communicating with the public.

Many segments of our society have their own culture. For any message to get to all segments of the population, we must find the appropriate vehicle, and we must give the message in a form that will be heard and understood. This is an extraordinarily difficult task. Many people in our society receive their health information only from magazines and television, especially from talk shows. Other than at school, many teens get information only from movies, television, and music. Few scientists are facile at accessing or using these avenues and have minimal communication with those who write or produce in these media. Nevertheless, the important point is that much of the general public not only gets most of their information from these sources, but also views information from them as being the final word. If we as health professionals have messages that are important for the general public to hear, we must learn how to present these messages through the media.

The most effective messenger is someone who has an affiliation with the groups involved in the communication. The most effective individual for communication

with a community will likely be someone with both the ethnicity and background of the community. Success in communication increases if the message is sent in a fashion in which it is best understood by the public to which it is directed. Because of the distance from day-to-day life in individual communities, it is often difficult for the scientific community to establish the trust that is essential for any effective communication. Therefore there is a much better chance that the message will be heard and followed if the messenger is credible to the community, and this is particularly true if the messenger comes from the community.

My colleagues and I have been involved in a research program with a group of Mohawk Native Americans at the Akwesasne. The Mohawk Nation at Akwesasne consists of about 12,000 individuals who live on and near the St. Lawrence River at the junction of New York, Ontario and Quebec. Our study there is focused on human contamination with polychlorinated biphenyls (PCBs), polycyclic aromatic hydrocarbons (PAHs), dioxins, and dibenzofurans, with particular attention to contaminants in human breast milk. Our hypothesis has been that consumption of fish from local polluted waters is the principal source of exposure. Thus, there are two serious problems for this population: concern over health effects, especially in children, and anger that local industry has polluted local fishing grounds and forced a serious disruption of a traditional way of life.

Several factors have been particularly important in developing a trusting working relationship with the Mohawks. In the beginning, our research team came to the Akwesasne at the request of Mohawks. A traditional Mohawk midwife, Katsi Cook, became concerned for the health of her small children because of the appearance and smell of chemicals around her home and in her basement. She appealed to some of our group for help in determining the levels of pollution and the effects on her and her family. Mrs. Cook, who no longer lives on the reservation, remains a co-investigator on our grant, and she has been an invaluable link to the community. To a great degree and as a result of her insight and guidance, all of our local investigators are from the Mohawk community. This helps enormously to get cooperation, and it also brings employment to the community. These individuals assist in finding the pregnant women and in collecting histories and specimens from them; the field-sampling

staff collect fish, wildlife, soil, water, and air samples. We pay the field staff through a subcontract of the grant to the environmental divisions of the Mohawk Nation, and we have developed good working relationships with the two individuals who head these groups. We have tried to make this project integral to the community and to be as responsive as possible to the needs and concerns of the community. We have taken our full team of some 60 people to the Akwesasne for annual meetings with the project's external advisory committee; the community is also invited. We have had frequent public meetings at the Akwesasne. These meetings are not often attended by great numbers of people but meetings are at least held at a time when individuals there can meet the investigators, make suggestions, ask questions, and get some understanding of the results to date. These visits have been enormously beneficial as a means of providing all of us who are not Mohawks with a sense of the culture and in establishing a sense of mutual trust.

To a degree, our program has documented an improvement in the health status of the people at the Akwesasne. Our hypothesis was that local fish consumption was associated with elevated breast-milk contaminants and that this posed a health hazard to infants. At the beginning of the program, we could show that breast-milk PCB concentration was correlated with local fish consumption. We worked with the community in advocating that people follow the recommendations of the fish-consumption advisories issued by both the New York and provincial governments; we now find that the levels of contaminants in breast milk of new mothers does not differ significantly from our control population in levels of PCBs. This has been accomplished by a dramatic reduction in local fish consumption. The community is left with enormous anger since they have had to abandon a traditional way of life because of industry. We and others are working with the community to develop fish aquaculture in clean waters to safely allow at least some restoration of the traditional diet. Considerable anxiety remains about the health of older individuals in the population, many of whom have been eating contaminated fish for years.

There are different, but no less significant, barriers to trust and communication with other ethnic communities. Our country remains a nation of immigrants, and many of these people do not speak English. Getting information to immigrant

populations remains a major difficulty because of both language and culture. These problems pale by comparison with the difficulty of reaching teenagers, when the message from any adult is suspect and more likely not heard. It is difficult to find the critical individuals who bridge the health community with these targeted population groups.

Another major public health debate in which I have a personal involvement is the question of whether or not there are significant public health hazards from exposure to electromagnetic fields coming from power lines, appliances, household wiring, and occupational settings. I became involved in this issue when working with the New York State Powerlines Project between 1982 and 1987. I have become increasingly convinced that there not only is an association between exposure to magnetic fields and certain types of cancer (leukemia and brain cancers) in both children and adults, but also that, for a variety of reasons (mostly our inability to determine exposure accurately), the association is likely to be stronger than indicated by the odds ratio of about 2.0 (which comes from most epidemiological studies). Many members of the scientific community do not agree with me; they either find the evidence to be equivocal or, in some cases, absolutely deny that there can possibly be such an association.

There is at least a perception that some scientists' judgments on the issue might be clouded by factors other than a truly objective assessment of the information available. Some scientists may have financial conflicts of interest; they may be employed by or hold research grants from utility companies. Some health officials serve as consultants to industry organizations, often offering opinions designed to minimize any public concern; these people are often well paid. It is difficult in cases such as these to determine whether the payments influence the judgment, but it is also clear that the same industry usually does not offer similar dollars to those individuals who take different positions. Clearly any perception of even the appearance of a conflict of interest erodes the credibility of a health professional as an individual and creates a cynicism in the public mind about the objectivity of the greater health community.

The issue of respect is related to trust, but there is a distinction. Even when a trusting communication is established, if there is no respect in the messenger and the

message, it is unlikely that the communication will have the desired consequences.

How does a scientist get the public to respect not only the scientist as an individual, but also the message he or she is trying to communicate? As in the issue of trust, it must be understood that different segments of the population give respect on the basis of different considerations, and therefore it is essential to tailor how credentials are presented to different audiences. For example, to many readers of *The New York Times*, a person's credibility as an expert is a function of the position held, where he or she went to school, and the general status held within the scientific community. This is not very different from those criteria by which scientists in general evaluate each other. However, the great majority of Americans do not obtain their information from this source and may not even consider an Ivy League education to be a positive thing. People may require that someone be a doctor, but give their respect more on the basis of indications that the doctor relates to their lifestyle and day-to-day problems. Arrogance is detrimental to gaining respect with at least some part of the public.

The language used in communication is important with regard to respect. No one likes information presented in such a technical fashion that it is not understandable; at the same time no one likes condescending language that conveys that the scientist thinks that the audience is lacking in intelligence and in the ability to understand. This is an extraordinarily important consideration. What it means is that to be effective the level of communication must be accurately targeted to each audience. For example, most listeners of "The Health Show" are relatively well educated and are, in general, informed and concerned about lifestyle issues that relate to personal health. For this audience, the format we use (short interviews with different scientists) works well. The host can help in directing the conversation, help in translating technical terms into something the audience can understand, and still allow scientists to describe their research in their own words. However, the same language will be totally ineffectual with many other audiences.

While communication with any lay public should be presented in as non-technical a form as possible, it is a mistake to think of the public as being stupid. This is perhaps the greatest single barrier between scientists and the public. Many educated people forget that a lack of education does not necessarily indicate a lack of

intelligence. In terms of the effectiveness of communication, it is essential that the scientist honestly feels and shows respect for the public with which he or she is communicating. The failure to do so is very apparent to the audience through a variety of verbal and nonverbal clues and can doom the chances of any message being positively received and followed. To a great degree this is the heart of the problem in reaching teenagers. The teen years are ones of developing independence and, while that is very desirable, it makes for barriers with adults in general. For example, teens are not commonly represented among scientists or the science media. These two factors—lack of respect and lack of representation with the scientific community—are major barriers to effective communication.

Even when the issues are controversial, there are good and important reasons to involve the public in the debate, share with them the different perspectives, and include them in the discussions over what can be done to solve the problem. For example, in the magnetic field health-effects debate, there are many scientists who feel this is a nonissue; others feel that it is potentially a very significant public health issue and that it is wise for individuals to take steps to reduce exposure to themselves and their families. The degree of hazard from magnetic fields cannot be adequately assessed at present, but Morgan and his colleagues at Carnegie Mellon University (2) have advocated the concept of "prudent avoidance," which is to advise the public to reduce their exposure to magnetic fields as much as they can without going to either great inconvenience or cost. Others do not feel that the public should be involved at all until there is a clear consensus within the scientific community. I see the latter view as reflecting a general lack of respect for the ability of individuals to make their own decisions. While there is, of course, a certain danger of confusing the public by giving opposite messages, I prefer to consider the public as consisting of responsible adults, not small children who cannot understand a degree of uncertainty. Involving the public openly in issues that are controversial is also a part of the process of empowering individuals to take charge of their own behavior and health.

The goal of the scientific, public health, and medical communities, as well as the health communicator, should be to empower the public to solve their own problems. This is true whether one is speaking of the whole nonscientific public,

selected groups on the basis of occupation, education, or ethnicity, or individuals. It is simply not possible for the health community to dictate and enforce a standard lifestyle. This is the case for lifestyle factors that contribute to the major causes of death (e.g., heart disease, cancer, and infectious disease), and it is particularly true for the most social diseases (e.g., smoking, drug use, and violence). Empowerment is the natural end point of successful communication; it means that a community and the individuals within that community take charge of their own lives.

Empowerment of the public in any health-related issue, whether the public constitutes the residents of a particular block in the city or a defined minority or immigrant population, will be more successful if there has been successful communication with the scientific and health communities in advance. The challenge is to impart sufficient information to the community to assist people in making appropriate choices for action without taking the action steps for the community. Clearly one very effective way to accomplish this is through training members of the community so that they can take the lead. In our work with the Akwesasne, for example, we have tried to incorporate Mohawk master's and doctoral students into the program and to involve Mohawks who are studying at other universities. We expect that at least some of these new master's and doctoral level Mohawks will return to the community and that they will help the community to deal with the host of issues that relate to health. But even if there are no fully trained health professionals available, there are always community leaders, religious leaders, and others who are trusted in the community. These are the kind of community leaders with whom outside scientific and health personnel can coordinate; if trusting and mutually respectful relationships can be developed, these individuals can help achieve the goals of improving the health of the community and, at the same time, assist the community in taking charge of its own affairs.

Most of us do not think in terms of equity when we discuss communicating information to the public. I first heard the word equity mentioned in this context by one of our Mohawk colleagues when he was speaking to a group of Canadian scientists who were about to begin a research study at the Akwesasne. In describing the characteristics of the relationship that he expected to develop, he mentioned equity along with trust, respect and, empowerment.

My first reaction to this comment was puzzlement. Equity is a term applicable to business and investment, but it is not usually applied to the giving of information and certainly not in connection to research. Yet, upon consideration, I saw that if one goal of the scientific and health communities is to empower individuals and to promote the ability of specific groups to assume responsibility for their own health, then equity is an important consideration. Equity implies that there is a personal investment in health. Perhaps one of the reasons that health communication and research efforts, no matter how well intended, often fail to accomplish significant changes in human behavior is that we fail to appreciate that if there are no incentives for personal gain and investment implicit in the notion of equity there is unlikely to be any change in behavior.

What is equity in this context? It is easy to define equity in the context of our research program at the Akwesasne. Equity means that some of the support dollars from the grant go to the community, members of the community are supported on the grant, and others are trained through the program. Equity means that the design of the research protocol reflects the needs and concerns of the community and is not limited only to what some Albany-based investigator thinks is a fundable project. We have found this to be a very significant point and, in fact, we are redesigning our renewal application to reflect community concerns related to breast cancer and depression.

Does the concept of equity have any relevance to the general issue of communication of science and health information to the public? Perhaps it depends on how the goal of the communication is defined and how equity is defined. If the goal of the communication is to empower individuals, and if equity means to provide individuals with a personal reason to take and use the information for that purpose, then the concept is very relevant. Equity may not be a consideration if the intention is to give information about very basic or theoretical scientific advances that have no immediate application to personal behavior, if personal behavior is the target of the information, then we should think in terms of equity. If the health communicator can "sell" the message, equity will help the public to "buy in" to the solution of the problem; members of the public can then feel that they have a personal investment in healthy behavior. To really accomplish our goals, whether for general public support

for basic research or to promote better health through lifestyle changes, we must find self-serving reasons for people to care about health.

It is not easy to develop a procedure for integrating equity into communication with the public. Certainly equity issues are considered by advertisers of consumer goods to persuade individuals that the use of a product will bring personal benefit. This approach is in contrast to the usual academic approach in which the teacher may tell the students what is right and what to do. For the public that alone does not work very well. We as scientists and health professionals need to learn much more effectively how to "sell" our product. Perhaps considering equity as a factor in our communication will help.

In summary, communication with the public is frequently difficult for scientists and public health professionals, whether done via the media or by personal contact. The difficulties increase the more the public, the target of the communication, differs from the communicators in culture, socioeconomic status, age, education and value systems. There are at least four factors that can contribute to effective communication across these barriers. The first and most important is establishing trust, which can be inhibited by arrogance, deceit, or conflicts of interest and can be promoted by the use of appropriate language, the use of media that the subject population relates to, and genuine caring. The second factor, respect, is essential, but most people base respect on different value systems than scientists (e.g., the numbers of papers published); respect must be earned. The other two critical factors are empowerment, a genuine attempt to provide the public with the tools to make their own decisions for better health, and equity, the provision of resources to accomplish the empowerment. If we want people to hear what we say and to change their own lifestyles as a result, they must feel that they have a personal stake in the issue.

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