

New Perspectives for Science Transfer

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There is no question that we live and work in a global community. While some parts of our globe remain remote for many of us, we nonetheless can and will be affected by what occurs throughout the world. This is true in business and social aspects of life, and it is especially true with respect to issues of health. In an age when those of us in developed countries had begun to feel relatively secure with respect to our protection against infectious diseases, for example, the AIDS pandemic has brought home this lesson loud and clear. As oral health scientists and practitioners, therefore, we have a responsibility to view knowledge in our field from the perspectives of the global community. At the World Health Organization's Sixth Global Conference on Health Promotion in Thailand (August 2005), the changing context of globalization was described in terms of widening inequities in health and health care—inequities that are fundamentally social in nature. Clearly, the most challenging health problems of this century will involve what I shall now term the human aspects of preventing and treating disease.

But what does this really mean for the transfer of science? First and foremost, it suggests that our understanding of oral health issues must be developed with a worldwide perspective—country by country or tribe by tribe, if necessary. This type of understanding needs to occur for four major areas of oral health knowledge: 1) patterns of oral health and disease, 2) systems of health care delivery, 3) socioeconomic and cultural influences, and 4) geopolitical considerations that have an impact on health care. That is a tall order, and as individuals, we are not likely to attempt to tackle this entire agenda. But neither can we assume that the health agencies of various countries, or any other entity, have sole responsibility for that work. As health scientists and practitioners, we must each learn to think globally and move forward with a vision for oral health that reflects that thinking. To further explain, let's look at those four areas of knowledge that I just mentioned.

Patterns of Oral Health and Disease

As the leading edge of science moved toward the twenty-first century, the focus of oral health research turned increasingly to advancing our understanding of disease at the molecular level and generating new technologies for addressing these problems. Only recently, as with the emphasis on health disparities research in the United States, have we begun to recognize that many groups and individuals do not have access to the latest treatments based on that research and that major efforts need to be made to identify the causes of disparities and develop effective approaches to addressing and eliminating those disparities.

Within developed nations, those living in poverty—often those of ethnic minority backgrounds—are least likely to benefit from the latest scientific advances. For example, Native American children living on reservations in the United States have the highest documented rates of early childhood caries in the world. The rates are high among other ethnic minority groups as well, and adult members of these groups also show disproportionately high levels of disease, along with undertreatment for oral health problems.

The National Institute of Dental and Craniofacial Research has been aggressive in funding research that seeks to decrease oral health disparities, and yet we are just beginning to clarify the relevant issues. We are far from eliminating those disparities. As this area of research matures, we will see more work focused on the causes of oral health disparities, rather than simply their documentation, and we will see more attention given to the differential acceptability for various groups of preventive and therapeutic treatments, rather than to the absolute effectiveness of the treatments themselves.

The problems of differential patterns of health and disease represent a research area in which the behavioral and social sciences have yet to fully rise to the challenge. Understanding the role of health literacy, the acceptability of various oral health protocols, and resistance to health care recommendations and methods are areas where understanding demands considerable sophistication in terms of theory and methods. Yet much of the research on oral health disparities continues to focus simply on the outcomes of treatment or prevention protocols, without regard to these human considerations. Some of the same can be said for understanding health care delivery.

Systems of Health Care Delivery

When viewed from a global perspective, we are fortunate if we live in a country that has bona fide health care delivery systems. This is not the case in all corners of the world, yet where no viable health care delivery system exists, the most advanced knowledge in the world is useless.

A global vision for science transfer requires that we consider these systems (or lack of them)—with all of their complexities—as critical variables for enhancing research transfer. This is an area where partnerships between the corporate and academic worlds could be especially fruitful. Corporations that have sponsored basic and product research must be just as interested in research related to how those products can be delivered, and this should represent an important research wave of the future. Yet we know even less about the variables that define health care delivery systems around the world than we do about patterns of health and disease.

We need to be open to a highly diverse array of systems and approaches for delivering oral health care. In some parts of the world, the establishment of the most technologically sophisticated Western-style dental clinic will be met with skepticism, or even fear. A global vision of oral health means developing ways of providing care that will be used—not feared or avoided. We must build into our thinking the possibility that the science that looks most promising for addressing oral diseases in the United States, for example, may be largely irrelevant in Niger or Nicaragua. To ensure this, we must understand factors that influence responses to care, including the

socioeconomic and cultural patterns, expectations, and concerns of many different peoples.

Socioeconomic and Cultural Influences

The single most important obstacle to accessing oral health care, even in developed countries, is financial. This may reflect direct costs or related issues, such as transportation problems, schedules that don't accommodate work demands, or child care needs. Other important obstacles—particularly in developing countries—may be rooted in the social structure and organization of families and communities, deeply engrained beliefs about social roles, or other cultural customs or taboos. A global vision for oral health must take these differences into consideration.

It is important to note that when cultural or religious values interfere with health care, the most vulnerable in a society are the most likely to suffer—that is, the children and the women who care for them. The most extreme examples of this occur in cultures where women are not allowed to make decisions about health or see health care providers. While these problems usually are less extreme in the United States and other more developed nations, similar situations are sometimes seen in these countries, too, when working with underserved populations.

One of the most promising approaches to addressing these issues has come out of the increased sponsorship in the United States of community-based participatory research. Particularly when working with ethnic minority populations whose concerns may not be well understood by many scientists and providers, this approach provides a way to ensure that the needs of the underserved population will be met. When members of the community are actually involved in the design of services and have a say in how they will participate in research, socioeconomic and cultural factors are more likely to be addressed. Moreover, we can anticipate that participation rates and adherence to recommendations will be higher, and innovative solutions to problems will become more available. Certainly, participatory research models may challenge the scientist's need to “control” a carefully designed study, but as our research methods become more sophisticated, it is becoming increasingly clear that the outcomes of such work will substantially enhance science transfer.

Geopolitical Considerations

Finally, global approaches to science transfer must be cognizant of geopolitical considerations. Unfortunately, getting the results and products of research to health care providers, and ultimately to patients, is difficult in many areas around the world. Simply delivering the materials and supplies needed for health care is an activity that can be sabotaged or subverted. Where protections are in place, working with nongovernmental organizations may provide the best approach to ensuring that the goals of research and health care programs are achieved in remote areas. What is critical, however, is that we understand how these issues will affect science transfer and that we work to minimize any negative impact on the interventions that are being developed.

Even in highly developed countries, the smooth transfer of research results into practice can be thwarted or slowed by political considerations, guild

issues, or conflicting agendas of public, governmental, advocacy, and financial interests. Most scientists and practitioners prefer not to deal with these situations at all, but there is no alternative. We must be prepared to support a vision of optimal oral health in the face of all obstacles and to persevere with approaches that apply community-based participatory research principles on a different, global scale—a scale that is culturally sensitive and locally defined.

Final Comments

I have only begun to describe a vision for science transfer in oral health that will meet the needs of a global community. Even so, it is clear that such a vision must be more focused on human and community variables than on biological, pharmaceutical, or technical solutions. The most compelling component of that vision is the recognition that our greatest challenge is to understand and meet oral health needs within a context that is unavoidably social, behavioral, and cultural, as well as biological.