

## A Necessary Paradox

Research Has Some Risks. But It Is Good for Us

By Ellen Silbergeld

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Just over two weeks ago, the Maryland Court of Appeals delivered a scathing opinion of a 1990s medical study designed to investigate the efficacy of various methods of preventing exposure to lead paint. The court accused researchers from Baltimore's renowned Kennedy Krieger Institute of inadequately informing participants about the risks of living in houses containing lead paint, and of using their children -- like canaries in a coal mine -- to monitor the effects of the contamination. The judges even likened the research to the notorious Tuskegee experiments of the 1940s, in which treatment was withheld from black men infected with syphilis in order to study the course of the disease. The court ruled that two participants' lawsuits should go to trial.

That was unwelcome news for the medical research community -- particularly in light of an external scientific panel's critical review last week of a Johns Hopkins University asthma study in which a healthy volunteer died, as well as the lingering concerns raised by the death in 1999 of Jesse Gelsinger, a volunteer in a University of Pennsylvania gene therapy study.

All three cases raise questions about the conduct of medical research, but the lead study illustrates most clearly a paradox inherent in the use of human subjects in research.

It is the paradox of putting an individual at risk so that society can benefit. The challenge that I -- and all medical researchers -- face is to conduct meaningful and ethical research within this paradox. Although I am an adjunct professor at the Bloomberg School of Public Health, part of Johns Hopkins, with which the Kennedy Krieger Institute is affiliated, I have no special knowledge of the lead study and like others must withhold judgment until the full facts emerge in court. Nonetheless, it is important to understand the tensions inherent in almost all such investigations.

Medical research, like all research, draws generalizations from the study of individuals. If the results of research cannot be extended beyond those who participated in a study, then there is little value to the research.

As in public health in general, then, researchers ask the public, one by one, to make a sacrifice in order to protect the public good. When you agree to be vaccinated, you may not yourself obtain any benefit since you may never have become ill without vaccination. Yet by participating in the societal commitment to vaccination, you protect the public at large. This understanding was essential to the successful eradication of smallpox through a worldwide vaccination program in the last century.

Likewise, when you agree to participate in a clinical trial or other intervention, such as testing different methods to prevent lead paint poisoning, you may not benefit yourself, especially if you are assigned to the "control" or "placebo" group, which by design does not receive the potential benefit of the treatment being tested. Of course, sometimes in the course of a research project, an individual can benefit, as I did when I volunteered for a study of ovarian physiology and menopause and the researchers found I had an ovarian cyst. But such benefits are a bonus of a well-conducted study, not the study's goal. The true benefit you bring by participating will be to others, through sorting out effective from ineffective methods of treatment and prevention.

This paradox is particularly marked in studies aimed at determining safe methods of preventing widespread public health problems, such as lead paint poisoning, because we often do not know what will work. We have no standard practice against which to test a new approach.

Generations of children have been poisoned with lead in Baltimore, Washington and other American cities since J. Lockhart Gibson in 1892 first made the connection between lead-based paint and lead poisoning. Throughout the 25 years I've worked in this field, I have continually been angered by the

complacency with which politicians, as well as many members of the medical profession and public health community, accept the reality that as many as 5 percent of all American children continue to be poisoned by lead-based paint in their homes, resulting in lowered IQs and brain damage. It takes considerable bravery by investigators to devise new methods of prevention -- and bravery by families to try them out.

How can we ask individuals to undertake risks without assurance of direct benefits? We make this request within the context of informed consent, where the individual's gift is understood and honored as an altruistic transaction. In return, the individual has the right to expect honorable and honest conditions of research, to assume that the research is well designed and conducted in such a way that his or her participation has meaning and value, and to be assured that all risks are minimized. It is the responsibility of institutional review boards to ensure that this process works.

However stringently they are enforced, though, these requirements can never resolve the tension inherent in the fundamental paradox of medical research. These tensions are best settled by greater openness between researchers and subjects, between the medical community and the public.

When I visited the biomedical laboratories in Japan's "science city" of Tsukuba some years back, I found myself one day in a quiet little garden at the end of a lunchtime walk. Amid glass buildings and parking lots, its beauty and stillness were particularly striking. It was, I learned, a garden dedicated to all the creatures that had been part of medical research. There are not gardens or beauties enough to acknowledge the gifts of hundreds of thousands of Americans who willingly participate in medical research projects each year. It is their trust and their commitment to benefiting others that have made possible the great successes of modern medicine.

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