Speaking Out and Reaching Out on Global Health Policy—The Case of HIV/AIDS

For this month's column, I'm pleased to introduce guest columnist Roger Hoerl of GE, who will lay out his ideas for how statisticians can and should make contributions to health policy. If you would like to be considered as a guest columnist, please contact Steve Pierson, pierson@amstat.org *with your idea and a detailed outline.*

Roger W. Hoerl, GE Global Research

Throughout the years, numerous ASA leaders have called for expanded efforts by the ASA and individual statisticians for making a greater impact on public policy (See the links at *www.amstat.org/scipolicy*). One of the most critical areas for such influence is global heath.

While tremendous advances are being made in medical technology, millions of people continue to die from preventable diseases each year. Governments and nongovernment organizations (NGOs) are providing billions of dollars to address these issues, and while some progress is being made, millions continue to die unnecessarily. For example, about 2 million people died of AIDS-related illnesses last year, leaving behind millions of AIDS orphans. While Africa remains the epicenter of the AIDS pandemic, millions in China, India, Russia, and even the United States are infected with HIV. In fact, AIDS is currently the leading cause of death for U.S. African-American women between the ages of 25 and 34.

What does this have to do with the ASA or statisticians? To answer that question, let me review a few figures. According to the latest UNAIDS estimate, the number of people currently living with HIV globally is 33.2 million, with an "uncertainty interval" (not a formal statistical confidence interval) of 30.6–36.1 million. However, the estimate from the 2006 report was 39.5 million infected, with an uncertainty interval of 34.7–47.1 million. The 2007 point estimate was outside the uncertainty interval of the previous year, with the significant drop in infections not being explained by deaths versus new infections. The 2007 uncertainty interval also does not include the 2006 point estimate. This awkward situation suggests a methodology issue. My point is not to be critical of UNAIDS, but rather to highlight the difficulty in estimating the number of people living with HIV.

One might ask if the accuracy of these estimates matters. The U.S. House recently passed a bill to reauthorize the President's Emergency Plan for AIDS Relief with $50 billion over the next five years. Organizations such as the Gates Foundation; the World Health Organization; and the Global Fund to Fight AIDS, Tuberculosis, and Malaria also apportion billions of dollars to AIDS relief. How can such significant funds be allocated between countries to have the greatest impact? How should they be allocated within countries? How should decisions be made about balancing funding for AIDS relief with funding to fight malaria, dysentery, or other preventable diseases? Surely, accurate data on the extent of HIV infection is critical to sound decisionmaking and public policy.

There are a number of other AIDS policy issues being hotly debated in the public arena for which our objective, scientific input could provide guidance. For brevity, I will list only a few.

- Estimating the impact on HIV infection of providing/not providing needle exchange programs for intravenous drug users
- Estimating the impact on HIV infection of distributing/not distributing condoms in prisons
- Providing scientific evidence of the relative effectiveness of different prevention strategies, including abstinence promotion, condom distribution, and various educational programs

While ASA members are already active in these areas, especially in the clinical trials of new anti-retroviral (ARV) drugs or potential HIV vaccines, I believe we can speak out and reach out more.

I became involved in AIDS policy issues during a six-month sabbatical from GE Global Research in 2007 that I used to study

the global AIDS pandemic. The culmination of this sabbatical was a month-long trip to Africa, involving time in Zambia, Uganda, and South Africa. I, along with research partner Presha Neidermeyer of West Virginia University, visited several nongovernment organizations, orphanages, clinics, and AIDS activists, meeting numerous people suffering from AIDS along the way. By design, we tended to avoid the official government establishments and focused more on interacting with people from all walks of life who are on the 'front lines' of the battle against AIDS in Africa. As can be imagined, it was an amazing, once-in-a-lifetime experience, but also disturbing.

We obtained a tremendous amount of information. We also came away convinced that the AIDS crisis will not be solved anytime soon—but it can be solved. Somewhat unexpectedly, my statistical background proved invaluable, not so much from a mathematical point of view, but rather by enabling me to take an objective view of a very emotional topic, to gather relevant data first hand, and to weigh conflicting and sometimes contradictory evidence to arrive at actionable conclusions. I suppose we could consider these elements of "statistical thinking."

Relative to statistical methods, my GE colleague Huaiyu Ma and I are evaluating uncertainty estimates of published HIV/AIDS infection models, research that will be presented at JSM. [Session 50, "Statistical Methods in Public Health," 4:00 p.m., Sunday, August 3.]

Neidermeyer and I are currently working on a book to document our findings and recommendations, and hopefully to influence public policy. In it, we will discuss five macro issues we think must be addressed to produce a solution to the AIDS pandemic. If you would like to read more about my trip to Africa or the book we are working on, visit *www.grcblog.com/?author=51.*

For those interested in HIV/AIDS, or global health policy in general, I invite you to attend session 473 at JSM in Denver this August—Statisticians: Speaking Out and Reaching Out on Global Health Policy, Thursday, August 7, at 8:30 a.m. The purpose of this session is to bring together statisticians interested in global health care issues to share experiences and discuss opportunities to get more involved in reaching out beyond our profession, with the ultimate goal of having greater impact on public policy related to global health crises. I will share my experiences in Africa, and Donna Stroup of Data for Solutions, Inc. will discuss her experiences in the Caribbean and Eastern Europe, researching the consequences of obesity and smoking in the population. Also, Steve Pierson, the new ASA director of science policy, will share his insights into how statisticians can become more active contributors to public policy.

In summary, the ASA and the global statistical community have much to offer public health policy. I urge my fellow members to join me and the ASA in these efforts. ■