

Global health shifts to local experts with global partners

Local health specialists seek international collaborations to fight health emergencies

By Anne Q. Hoy

A decade and a half ago, severe acute respiratory syndrome (SARS) took hold in the coastal Chinese province once known as Canton. Within months, the respiratory virus had spread across four continents. The U.S. Centers for Disease Control and Prevention issued its first travel warning. In time, 774 people had died and 8,098 were sickened by the outbreak.

The response of governments and global public health organizations to the world's first known instance of atypical pneumonia has informed responses to more recent global health epidemics, including the Ebola outbreak in West Africa from 2014 to 2016 and the Zika virus in Brazil in 2015.

At the center of the U.S. response to the outbreaks was Jimmy Kolker, now a visiting scholar at the American Association for the Advancement of Science's Center for Science Diplomacy. At the time, he was the assistant secretary for global affairs at the U.S. Health and Human Services Department, a position to which he brought experience as the former ambassador to Burkina Faso from 1999 to 2002 and later to Uganda from 2002 to 2005.

Kolker traced the evolution of global health on 4 May as part of the AAAS-Hitachi Lecture on Science and Society, at AAAS's Washington, D.C., headquarters. The annual lecture series is a decade-long collaboration between AAAS and Hitachi Ltd., the global technology and innovation company.

As the U.S. ambassador to Uganda seeking to implement the President's Emergency Plan for AIDS Relief, Kolker said diplomacy was "a crucial but ill-defined" requirement. Applying policies based on science and evidence in Uganda required weighing uncertainties with limited data, a topic Kolker explored in an essay recently published in *Science & Diplomacy*.

Global health crises require international health institutions, governments, scientists, and diplomats to work together. Yet, this growing but still tiny field of health diplomacy increasingly needs scientists skilled in translating research into actionable policy options—

skills AAAS has long worked to hone through multiple science policy, engagement, and diplomacy programs designed to help scientists effectively place research findings into context to ensure that science informs policy. "The data rarely speaks for itself," Kolker said.

The interplay of science and diplomacy takes on many forms. The SARS epidemic in 2003, for instance, underscored the necessity of open public and international communications, a practice the Chinese government initially discounted. After SARS, the CDC embedded disease surveillance and detection experts with Chinese counterparts.

"The system that was set up, the protocols that were put in place meant that when the next potential pandemic, H7N9, broke out, the Chinese response was timely and enabled governments and experts around the world to bring to bear the knowledge needed to control the outbreak," Kolker said.

At the outset of the Zika outbreak in Brazil, the government hesitated to share samples necessary to develop blood bank screening, diagnostics, and vaccines. A U.S. team from the CDC, the National Institutes of Health, and other agencies responded to the Brazilian government's request for an experts' meeting. Kolker, who led the group, said the meeting "changed the dynamic" and produced a plan that gave political approval for Brazil's top health institutions to deal directly with American counterparts to streamline cooperation on Zika research, countermeasures, and field studies.

The unexpected 2014 Ebola outbreak in West Africa highlighted the benefit of an earlier collaboration between the CDC and Ugandan scientists dating from what was then the world's largest Ebola outbreak in 2000. The CDC helped Uganda develop its own world-class Ebola laboratory and response center at the Uganda Virus Research Institute. During the West African outbreak that killed thousands, a single case of Ebola in Uganda was quickly diagnosed, and contacts were traced and isolated.

"There was one death in Uganda," said Kolker. "The methods were in place to deal with the outbreak. We didn't hear about it because Uganda had world-class capacity and did not require outside or emergency help."

Emerging economies, as the Ugandan outcome demonstrates, are not looking for "donors to provide aid;" instead, Kolker said, they want to work as partners with experts to help build First World capacity in their own health systems and institutions.

Against this backdrop, U.S. funding for international health security is being squeezed, Kolker added, including programs designed to assist emerging economies to meet World Health Organization standards to prevent and respond to global health emergencies.

The White House proposed deep cuts to global health programs in

Hong Kong passengers don masks during the 2003 SARS outbreak. its fiscal 2019 budget proposal, including programs that address HIV/AIDS, malaria, immunizations, and parasitic diseases, said David Parkes, program associate of AAAS's R&D Budget and Policy Program. The president's budget plan would cut these CDC programs alone by a total of \$80 million, taking funding levels 16.3% below enacted fiscal 2018 levels.

The fiscal 2019 budget proposal also called for a 36% reduction below enacted fiscal 2018 levels for the U.S. Agency for International Development. It would cut 17% from a CDC infectious disease program that develops tools to stop diseases spread between animals and people, reported the Global Health Technologies Coalition, a group dedicated to advancing deadly disease treatments and diagnostic tools.

Budget constraints and global political trends heighten the need for organizations like AAAS, academic institutions, philanthropies, and the private sector to forge partnerships with emerging economies, Kolker said. Technical partnerships are needed to further

expand health care infrastructure and medical expertise. Several AAAS science diplomacy training and public engagement programs contribute to meeting this goal but will be hard put to fill gaps if government commitment is reduced, Kolker added.

In discussing his experience with epidemics, Kolker explained how multidisciplinary and multinational approaches are especially beneficial as researchers in emerging economies increasingly want to select the health experts they partner with and the research they want to pursue. Such collaborations have led research teams to no longer focus exclusively on infectious diseases. Increasingly, they also study chronic diseases such as diabetes, heart disease, and cancer that present growing health burdens in their countries.

"Our health research system has led U.S. institutions to use African institutions as research platforms. This underestimates the ability of Third World institutions to actually identify their own priorities," said Kolker. "In the 21st century, the new paradigm is that lower- and middle-income countries actually want partnerships with the world's best experts to bring their own capacity to First World standards."

AAAS extends science in theological education program

Science in the Seminaries enhances science education across the religious community

By Anne Q. Hoy

Building on broad interest generated by a three-year pilot project integrating science into theological education, the American Association for the Advancement of Science is now expanding the initiative to advance understanding of science and technology across the religious community to as many as 35 seminaries over the next 5 years.

A set of seven seminaries in Michigan, Missouri, Indiana, Illinois, and Wisconsin have been selected as the first of four groups to participate in the expanded program over the next 18 months. Three additional groups of seminaries will be chosen to join the program in stages.

"The hope is that the seminary students exposed to enriched classes will find science relevant and interesting to their vocations, and in the future, help them make science a positive force for their congregations and favorably impact the everyday lives of a broad swath of Americans," said Jennifer Wiseman, director of the AAAS Dialogue on Science, Ethics, and Religion (DoSER) program.

Fr. John Kartje, a trained astrophysicist, rector, and president of Mundelein Seminary, a Roman Catholic theological seminary in a northern Chicago suburb, expressed hope that his school's participation in the expansion phase will give students and faculty a "deeper knowledge and better appreciation for the findings and methodologies of scientific research."

"As Mundelein Seminary prepares priests who will be serving in parishes across the country, it is important that they possess a basic foundation in the fundamentals of science and are up to date on current trends in research and discovery," Kartje said. "Such 'scientific fluency' will help them better connect with their parishioners and better integrate their theological expertise into the scientifically savvy culture in which they will minister."

Anna Case-Winters, professor of theology at McCormick Theological

Seminary, said the chance to participate in the initiative drew immediate faculty support from the U.S. Presbyterian theological seminary located in Chicago. "We believe that for religious leaders today, capacity for thoughtful interaction with the sciences is not optional—it is essential," Case-Winters said.

Participating seminaries have pledged to incorporate science into at least two of their core courses and to hold at least one campus-wide event over the next 18 months. "We provide science resources and they plug that into the larger context of their programs," said Curtis

Baxter, a DoSER program associate. "The seminaries decide on their own how to incorporate the science into courses they already teach."

AAAS will recruit science advisers from nearby research and academic institutions to share knowledge and experience in designing engaging science coursework, assisting theological educators at each seminary to sort out how best to integrate science into courses the seminaries have selected. The program makes available information on advances in science and technology and provides the institutions with access to the *Science* family of journals.

Coursework that seminaries plan to fold into their core classes covers a broad sweep of science, ranging from evolution of the cosmos to genetics and neuroscience. One seminary plans to explore topics such as anxiety, addiction, and dementia to prepare church leaders

to better minister to congregants. Some seminaries plan hands-on activities, including a pilgrimage to Israel to study archaeological sites and field trips to laboratories and science museums.

The five other seminaries participating are the Seventh-Day Adventist Theological Seminary of Andrews University in Berrien Springs, Michigan; Nazarene Theological Seminary in Kansas City, Missouri; Bethany Theological Seminary in Richmond, Indiana; Kenrick-Glennon Seminary in St. Louis, Missouri; and the Sacred Heart Seminary and School of Theology in Hales Corners, Wisconsin.

Screeners needed for journalism awards

Scientists from the United States and abroad who will be in the Washington, D.C., area between late August and late September are needed to review the scientific accuracy of entries in the prestigious AAAS Kavli Science Journalism Awards competition. If you can volunteer, please contact Nkongho Beteck (nbeteck@aaaas.org) for screening dates and categories.

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