

ANNUAL REPORT 2013-2014

# Mission

The UPMC Center for Health Security works to protect people's health from the consequences of epidemics and disasters and to ensure that communities are resilient to major challenges.



Raising Awareness, Building Readiness

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Strengthening Global Health Security

Improving Response to Epidemics and Biothreats

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Building and Strengthening the Professional Community

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"... we must come together to prevent, and detect, and fight every kind of biological danger whether it's a pandemic like H1N1, or a terrorist threat, or a treatable disease."

President Barack Obama, 2011



Letter from the Director

### Investing in Global and Domestic Health Security

Over the past few years, our Center has made a concerted effort to collaborate with public health professionals and government officials from the US and other countries that share common challenges in preparing for and responding to major health shocks. Depending on the country, priority threats range from naturally occurring infectious disease outbreaks, to bioterrorism, to emerging pathogens like MERS, to earthquakes and other natural disasters, to nuclear accidents or threats. While many of the preparedness and response challenges raised by these threats are similar, there are too few international connections between officials and professionals dedicated to strengthening health security.

In striving to increase information sharing and partnerships globally, the Center has developed working relationships with public health experts from China, Singapore, Taiwan, Kuwait, the Kingdom of Saudi Arabia, the UK, Italy, and Sweden. This year we are leading a Track II biosecurity dialogue between the US and Singapore to deepen understanding and collaborations around biosecurity, biosafety, emerging infectious disease, dual-use science, and other exigent issues. Our connections to these countries have allowed us to both share and compare best practices and to increase our understanding of their national needs and specific circumstances, which, in turn, informs our thinking about possible novel approaches in the US.

In light of the Center's commitment to improving health security and increasing opportunities for international dialogue, we were delighted by the US government announcement that launched the Global Health Security (GHS) Agenda in February of this year. In partnership with more than 30 other countries and international organizations, the US is seeking to greatly accelerate progress in preventing, detecting, and responding to infectious disease threats from natural, accidental, or intentional sources. This major initiative deftly connects public health and security concerns and proposes a set of sensible, collective goals for improving global health security. One of the most important outcomes of this new agenda could be heightened international political attention to infectious disease threats. It has the potential to shine a spotlight on intentional, naturally occurring, and accidental biological threats, to raise the bar for preparedness planning, and to make the case that the risks justify the commitment of human and financial resources to improve health security.

We hope this increased attention to global health security will help to inspire US improvements in the areas of preparedness and response. In the past few years, federal support for public health and hospital preparedness programs has dropped sharply. Since 2006, funding for public health emergency preparedness is down 20%, and funding for hospital preparedness programs is down by almost 50%. We need to make a commitment to build, fund, and sustain public health and hospital preparedness programs if we expect them to be there to respond to crises and to save lives.

The National Health Security Preparedness Index, launched in December 2013, has created a first of its kind process for tracking progress on many of these issues across the country. Our Center was excited to participate in its development process, and we believe this index will not only help health leaders at the state and local levels to improve the strength of their programs, but it will also help underscore the many critical elements that comprise health security, the potential consequences of losing these programs, and the great value that these and other preparedness programs bring to the country.

Our Center has long been a proponent of the benefits to preparedness and response of healthcare coalitions. We are currently working with CDC on an effort to understand and strengthen collaborations among local healthcare facilities, public health agencies, emergency medical services, and emergency management agencies in order to improve their functioning in the face of a crisis.

Another area in need of improvement—both domestically and internationally—is disease surveillance. There is regular emphasis placed on the need for better biosurveillance, but progress has been slow in terms of the development of better technical tools, as well as the capabilities to integrate different data streams into actionable information for public health. For years, our Center has worked with DTRA and other agencies and public health organizations to analyze the many challenges of surveillance systems and to propose policies and investments to improve them. Over the past 2 years, we have also served as partners on a DTRA-funded effort to develop a cloud-based One Health surveillance tool intended to gather information from a variety of traditional health data sources and nontraditional information sources and translate it into actionable disease alerts for leaders in health and government.

All of our work at the Center—from offering improvements to the threat assessment process, to identifying better approaches to making headway in diagnostics technology development, to addressing gray areas of the threat characterization process, to tracking and disseminating details about the MERS outbreak, to improving recovery for people displaced by disaster—is driven by our commitment and mission to protect people's health from epidemics and other disasters. We are encouraged and hopeful that national and international energies around these vital issues could help to galvanize the critical work ahead in health security.

We remain grateful to UPMC for the support which makes our work possible.

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Thomas V. Inglesby, MD CEO and Director

# Strengthening Global Health Security



"A more crowded and interconnected world is increasing the opportunities for human, animal, or zoonotic diseases to emerge and spread globally.... No one can predict which pathogen will be the next to spread to humans or when or where this will occur. However, humans remain vulnerable, especially when a pathogen with the potential to cause a pandemic emerges."

-James R. Clapper, Director of National Intelligence, January 29, 2014

# Supporting the US Global Health Security Agenda

In partnership with the World Health Organization (WHO), the Food and Agriculture Organization (FAO), the World Organisation for Animal Health, and more than 20 partner countries, the US launched the Global Health Security Agenda (GHS Agenda) in February of this year. With the goals of accelerating progress "toward a world safe and secure from infectious disease threats" and promoting "global health security as an international security priority," the Agenda seeks to prevent and reduce the likelihood of disease outbreaks of any type (natural, accidental, or deliberate), to detect threats early, and to stand up rapid and effective response through "multi-sectoral, international coordination and communication."

The Center collaborated with the Center for Strategic and International Studies (CSIS), the Nuclear Threat Initiative (NTI), the American Association for the Advancement of Science (AAAS), and Connecting Organizations for Regional Disease Surveillance (CORDS) to host an event that welcomed Dr. Tom Frieden, Director of the Centers for Disease Control and Prevention (CDC), and Ms. Laura Holgate, National Security Council Senior Director for WMD Terrorism and Threat Reduction, to discuss the launch of the Agenda. Center Director Tom Inglesby, Kavita Berger of AAAS, Deb Rosenblum of NTI, and Steve Morrison of CSIS participated in the discussion to offer their views on the contributions to be made by the scientific, health, and security communities. In a video made for the event, Dr. Inglesby discussed the strengths and challenges of the Agenda and its potential impact on international infectious disease programs.

Dr. Inglesby also co-authored, with Julie Fischer of George Washington University, the commentary "Moving Ahead on the Global Health Security Agenda," which was published in the March/April issue of *Biosecurity and Bioterrorism*, and has planned a special issue of the Center's journal that will focus entirely on the GHS Agenda.





# Providing Insights into the MERS Outbreak in Saudi Arabia

In late 2012, health officials around the world were alarmed by reports from the Kingdom of Saudi Arabia (KSA) of severe respiratory illness caused by a novel coronavirus not seen before in humans. The worry was that SARS was reemerging. The Center immediately started tracking developments related to what came to be known as the Middle East Respiratory Syndrome coronavirus (MERS-CoV), and we issued several perspective pieces in which we interpreted the reports and explained the implications of developments as they unfolded.

In mid-2013, the Center invited Dr. Ziad Memish, Deputy Minister of Public Health, KSA, to participate in his first public meeting in the US to discuss his experience in leading KSA's response to the MERS-CoV outbreak. The August meeting in Washington, DC, convened senior government officials and representatives from the medical and public health communities and the press. The meeting was also broadcast live online, which allowed attendees from around the world to participate and ask questions.

Dr. Memish discussed the course of illness observed in patients, reviewed details of KSA's public health investigation, outlined collaborative efforts with European officials, and recalled the expedited process for issuing urgent public health guidelines in preparation for the mass gathering at the Hajj. He also announced results of a study just released by his team that traced the source of the outbreak to camels. The meeting was covered in reports that appeared in the *New York Times*, NBC News, the Canadian Press, and *CIDRAP News*.



# Engaging Singapore in a Strategic Dialogue on Biosecurity

The US and Singapore face a number of common biosecurity challenges, including the safe conduct of bioscientific research, the identification of new biological threats, issues associated with dual-use research, and surveillance of and response to emergence of new infectious diseases.

With support from the Defense Threat Reduction Agency (DTRA) and the Naval Postgraduate School, the Center is running a strategic Track II dialogue for high-level discussion and partnership between the 2 nations. The goal of the dialogue is to share views and identify joint interests around a range of topics, including biosafety, developments in the life sciences, nonproliferation, pandemic response, and other relevant issues and policies. Recognizing Singapore's increasingly important role as a strategic Asian partner in nuclear nonproliferation, trade agreements, and government cooperation and training, we plan to incorporate lessons learned from those experiences as we build a shared understanding of approaches to biosecurity.

This Track II dialogue will be anchored by 2 face-to-face meetings—one in Washington, DC (June 2014), and the other in Singapore (Fall 2014)—that will bring together influential policy experts, thought leaders, and scientists from both nations. The first meeting will focus on the nature of biological threats, emerging life sciences and technologies, regional contingencies, and biosafety concerns.



# Empowering the Global Fight Against Cholera

Every year, approximately 2.5 million people contract cholera, and hundreds of thousands die from the disease. In poor and developing nations, the ideal solution is to improve water quality and sanitation, but that approach requires great investment in infrastructure and time. One alternative near-term approach that would save lives is a cholera vaccination strategy. For such a program to succeed, countries will need data to help guide their vaccination intervention decisions.

The DOVE project (Delivering Oral Vaccine Effectively), which is a collaborative, Gates Foundation–funded effort of Johns Hopkins University, the World Health Organization, UNICEF, and other partners, invited the Center to help by providing the economic data health officials need to make sound decisions about investing in cholera vaccine and targeting vaccine distribution.

To contribute to the DOVE project, the Center is deploying our Infectious Disease Cost Calculator and using it to determine country-level cost estimates for treatment of cholera. We are focusing on subnational cholera cost estimates for 5 identified "hot spot" regions. Our approach will account for case estimates, probability of treatment, treatment setting, and area-specific case fatality rates to calculate the estimated economic impact of cholera on specific locations.

Factoring in the price of oral cholera vaccine, we will provide the DOVE program with an analysis that identifies the costs and benefits of vaccination as the primary control strategy and that identifies the drivers of costs in each "hot spot" (such as hospitalization costs and medication costs). We will also use infectious disease models developed by the DOVE project team to evaluate strategies for vaccinating potential super-spreaders, those at highest risk for disease, and those at highest risk for death.

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A report of today's proceedings will be made available online:

www.UPMCHealthSecurity.org



# Collaborating with European Partners to Build One Health Security

The notion of "one health" speaks to the relationship between human and animal health, in which the health of humans depends on the health of animals and the environment, and threats to one will have implications for the others. In our work, the Center has supported the goals of the "one health" approach, including increased collaboration and communication among experts who focus on animal health, human health, agriculture, and the ecosystem. Such collaboration is essential to food safety, and it will also be essential to response to agricultural terrorism.

The Center worked with the Swedish Civil Contingencies Agencies (MSB) and the Swedish National Veterinary Institute (SVA) to host a meeting in late January that extended the "one health" concept further into the realm of security. Held at the Swedish Embassy in Washington, DC, this high-level meeting brought together officials from the US and Sweden to examine current and future multidisciplinary approaches to studying, preparing for, managing, and attributing biological threats.

Speakers included Rickard Knutsson and Staffan Ros from the SVA; Ann Lindquist Anderberg from MSB; Michelle Colby and Scott White from the Department of Homeland Security Science and Technology Directorate; and the Center's Gigi Kwik Gronvall. Attendees included representatives from a variety of Swedish and US government agencies (MSB, SVA, DHS, USDA, DTRA, FDA, CDC, BARDA) and academic institutions. Participants found the discussion valuable for the insights into both USG and Swedish approaches to diverse biological threats. The meeting was also important because it helped to set expectations for an ongoing collaboration on projects to build "One Health Security" with our Swedish colleagues.



## New Research on Threats to Animals, Feed, and Food

The journal *Biosecurity and Bioterrorism* was selected from among peers in the field to publish a September 2013 Supplement entitled: "AniBioThreat: Bioterrorism Threats to Animals, Feed, and Food." This compendium included findings of scholars from across Europe on research related to biological threats to animals, feed, and food. Working closely with colleagues from the Swedish National Veterinary Institute and the National Food Institute in Denmark, Center staff edited the volume, which included nearly 30 peer-reviewed papers focused on 4 broad topics: prevention, preparedness and response, detection, and actions to be taken in cases of animal bioterrorism.

The Supplement is a product of the European Union's AniBioThreat project, which was undertaken to raise awareness of agroterrorism and increase prevention efforts by bridging boundaries that divide countries, competencies, and disciplines. The AniBioThreat consortium includes representatives from human and veterinary medicine, security, forensics, animal and public health, food safety, and academia, with expertise in law and law enforcement, genomics, bacteriology, virology, molecular biology, agronomy, pharmacy, communications, and computer modeling.

The purpose of the Supplement was to disseminate project results and to identify further research and development needs. The papers were published in one volume to showcase the breadth and depth of the 8-country project. The Supplement was distributed widely in Europe and continues to be a top draw on the publisher's website.



# Proposing New Approaches to Fight Antimicrobial Resistance

The problem of antimicrobial resistance is worsening. There are now multiple strains of pathogens that are resistant to nearly all (and in some rare cases, all) licensed antimicrobials. Compounding the problem is the well-chronicled market failure to develop new drugs, which has created an alarming shortage in our medical arsenal for fighting off deadly infections. Drug resistance limits our ability to treat life-threatening infections, and, in the not too distant future, it may threaten the ability to perform routine surgical procedures—from appendectomies to joint replacements to cardiac bypasses—which rely on antibiotic prophylaxis to ward off postoperative infections.

The obvious solution of bringing new antibiotics to market is, at best, a short-term fix, as new antimicrobials will inevitably become resistant. New strategies to cope with infectious diseases are desperately needed; however, there is currently no concentrated effort by the US government to drive the development of therapeutic alternatives. For instance, rapid and specific diagnostics coupled with pathogen-targeted therapies could turn the tide of antimicrobial resistance. Monoclonal antibodies, virulence mechanism targeting molecules, lysins, and bacteriophages are all part of a portfolio of treatments that could radically change the way we manage infectious diseases. It is time to take a good look at our strategy and invest in research and development of new technologies and therapeutics.

To that end, the Center is undertaking a study that will capture the breadth and potential of novel therapies. We are identifying promising new technologies that are now in development, identifying challenges to bringing them to market, and delineating the investments and efforts needed to advance the most promising options. Ultimately, we will bring together leading experts from the US government, the medical and scientific communities, and private industry to develop recommendations for the federal government on regulatory issues and investments likely to yield the greatest benefits.

#### Selected Professional Activities

#### PUBLICATIONS

Triumphs, Trials, and Tribulations of the Global Response to MERS Coronavirus. McNabb SJN, Shaikh AT, Nuzzo JB, Zumla AI, Heymann DL. *The Lancet Respiratory Medicine*, early online publication, May 2, 2014.

Moving Ahead on the Global Health Security Agenda. Inglesby TV, Fischer JE. *Biosecurity and Bioterrorism.* 2014;12(2).

Dengue: How Imported Mosquito-Borne Diseases Take Hold. Adalja AA. *Biosecurity and Bioterrorism*. 2013;11(3).

AniBioThreat: Bioterrorism Threats to Animals, Feed, and Food. Gronvall G, Editor. Supplement, *Biosecurity and Bioterrorism*. 2013;11(Suppl 1).

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CDC Reopens SARS Playbook from 2003. *The Hill.* May 18, 2014.

Silently Among Us: Scientists Worry about Milder Cases of MERS. Reuters. May 17, 2014. Airports Told to Post MERS Advisory. TopNews Arab Emirates. May 15, 2014.

What Is MERS? Here's What You Need to Know. *TIME*. May 13, 2014.

Two US Health Workers Ill after MERS Exposure; World Health Body Meets in Geneva. Reuters. May 13, 2014.

Expert Panel Convenes to Advise WHO on Whether MERS Is a Public Health Emergency. Canadian Press. May 13, 2014.

MERS Emergency Meeting Held by World Health Organization. CBC News. May 13, 2014.

US Biodefence Facilities Ramp Up. *Nature*. April 29, 2014.

Experts Watching MERS Outbreak for Global Menace. Voice of America. April 28, 2014.

FAQ: The Deadly Ebola Virus. WebMD Health News. April 4, 2014.

Obama Administration Places New Emphasis on Global Health Security. *World Politics Review*. February 21, 2014.

Dengue Virus Identified in Houston. *Houston Chronicle*. October 9, 2013.

Dengue Fever Presence in Florida at a 'Pretty Serious Level.' Al Jazeera America. September 12, 2013. Mystery Virus that's Killed 47 Is Tied to Bats in Saudi Arabia. *New York Times.* August 22, 2013.

Deadly New MERS Virus Traced to Egyptian Tomb Bat. NBC News. August 22, 2013.

Virus Fragment from Bat in Saudi Arabia Perfect Match for MERS Virus: Study. Canadian Press. August 22, 2013.

#### PRESENTATIONS

Center for Nonproliferation Studies. Washington, DC. "Life Sciences Knowledge Sharing and Publication Guidelines." March 3, 2014.

Wilton Park, London, England. "Dual-Use Biology: How to Balance Open Science with Security." September 15-18, 2013.

Taipei Medical University, Taiwan. "The End of the World's Greatest Pestilence." July 9, 2013.

Taiwan CDC. "Preparedness and Health Security—Evolving but Slowly." July 8, 2013.

Asia-Pacific Economic Cooperation Conference. Taiwan. Keynote: "Dawn of a New Era for Infectious Disease Challenges." Lecture: "Promoting Development of Medical Countermeasures for Emerging Public Health Threats." July 5-6, 2013.

Academia Sinica. Taiwan. "Smallpox. Death of a Disease: Miracle and Legacy." July 4, 2013.

#### ADVISORY BOARDS, SCIENTIFIC, COMMUNITY, AND TASK FORCE MEMBERSHIPS

CWA 15793 on Biorisk Management. Working Group on Developing an ANSI/ISO Standard

Global Health Governance: The Scholarly Journal for the New Health Security Paradigm. Editorial Board

Improving Epidemic Response

One Health Initiative Honorary Advisory Board

WHO International Health Regulations Expert



# Health Security Resolutions for 2014

Anita Cicero and Tom Inglesby opened the year with their article, "Health Security Resolutions for 2014," which was published in the January/February issue of *Biosecurity and Bioterrorism*.

Seven resolutions were proposed to improve our ability to protect people from the consequences of disasters, epidemics, and other threats to health security.

- 1. Increase support for public health and hospital preparedness programs.
- 2. Bring more technological power and innovation into health security.
- 3. Work toward common international expectations for biosafety when there is the potential for epidemic risk.
- 4. Improve disease surveillance and management systems.
- 5. Strengthen efforts to cope with the consequences of nuclear and radiation disasters.
- 6. Develop new medicines, vaccines, and diagnostics that meet the challenges of biological, chemical, and nuclear threats and epidemics and antibiotic resistance.
- 7. Increase international health security collaboration.

# Improving Response to Epidemics and Biothreats





"An inevitable but unfortunate downside to recent scientific advancements is that there now exist both high-tech and low-tech ways to create more virulent, drug-resistant, potentially vaccine-evading, highly contagious organisms. And the costs of creating such agents are dropping fast."

*—Tom Frieden*, The Atlantic, *February 13*, 2014

### International Forum on Integrated Risk Assessment

On December 9-10, 2013, the Center helped coordinate and moderate an expert meeting on integrated risk assessment methodologies in Stockholm, Sweden. "Integrated risk assessment" attempts to account for threats, both natural and deliberate, that are continuously evolving as new technologies and new practices emerge. This was a joint activity funded by the Swedish Civil Contingencies Agency and hosted by the European Centre for Disease Prevention and Control (ECDC) at the Swedish Institute for Communicable Disease Control. Participants included representatives from the ECDC, the UPMC Center for Health Security, the Swedish Institute for Communicable Disease Control, the Swedish National Veterinary Institute, the Swedish National Food Agency, the Swedish Defence Research Agency, the US Department of Health and Human Services, and the Public Health Agency of Canada.

The Center helped to frame and moderate the discussion and worked with public health officials in Sweden to think through what is needed for successful integrated risk assessment. The meeting provided an international forum in which participants were able to share information on approaches to integrated risk assessment and catalogue best practices, and it facilitated networking opportunities among key members of the international risk assessment community. A report chronicling the meeting and describing Sweden's objectives was issued by the Swedish government.



# Building a Consensus Framework on Biological Threat Characterization

Would a biological pathogen be infectious if deliberately introduced into food? For how long is a pathogen infectious once it has been aerosolized? When do we know enough about a pathogen that cannot be studied in humans to make decisions that could have a profound impact on human lives? These are the types of questions the Department of Homeland Security's Biological Threat Characterization Program (BTCP) seeks to answer. The BTCP directs and funds much of the biological threat characterization research that is conducted at the National Biodefense Analysis and Countermeasures Center (NBACC). Efforts to understand biological threats begin with determining the best approaches—whether to perform laboratory studies and under what conditions—and end with deciding when the body of research about a pathogen is adequate to inform important policy decisions, such as priorities for development of medical countermeasures.

In collaboration with the START Center of Excellence at the University of Maryland, the Center is convening a group of diverse scientific and policy experts to develop a consensus framework for consideration by BTCP. The goal is to provide guidance that will inform BTCP's decisions about funding and experimental work and that will help BTCP determine appropriate end points.



# Advising DHS on Investments in New Technology Development

The Center was invited by the US Department of Homeland Security (DHS) Science and Technology Directorate Chemical and Biological Defense Division (CBD) to conduct 2 strategic assessments of the division's program work. The first was to provide CBD with a fresh perspective on investments in diagnostic technology development. Private industry wants to develop technologies that are useful for government, but only if there is a commercial market as well. In this project, we interviewed industry experts to understand attributes that make new technologies commercially compelling, examined models from other USG-industry partnerships, convened leaders from the field to offer views and recommendations to USG leaders, and delivered a report to DHS on our findings.

The urgency of the issues and the rapid pace with which DHS conducts its work warranted a review of the agency's customer base. The Center's second assessment provided an overview of the division's interagency customers and the products associated with CBD programs. Specifically, we catalogued products in development and presented ideas from the community regarding how DHS could improve connections between technologists and government customers of the technologies as well as which additional organizations could benefit from CBD's efforts.



### Assessing the Threat of Bioterrorism

In February 2014, the US House of Representatives Committee on Homeland Security Subcommittee on Emergency Preparedness, Response, and Communications convened the hearing "Bioterrorism: Assessing the Threat." The committee provides oversight of US biodefense and of DHS's biosurveillance capabilities. Center Director Tom Inglesby was invited to give testimony as part of a panel of expert witnesses. Dr. Inglesby offered 3 main messages for the committee: (1) the capability to create and use biological weapons exists widely in the world; (2) the use of biological weapons could produce substantial loss of life and societal disruption; and (3) great progress has been made in preparedness for bioterrorism, but much work remains to be done.

After noting several important developments—an established community of experts in the public and private sectors, major biopreparedness programs across the US government, and greatly increased funding—Dr. Inglesby called for progress in several key areas essential to building our response capacity. He advocated for strengthening medical and public health preparedness, investing in biosurveillance systems that help detect and understand new outbreaks and identify specific signals related to bioterrorism or other health events, and improving global health security overall through sustained federal investments in new medicines, vaccines, and diagnostics that would limit the scope and impact of a bioterrorist attack.


#### Building Better Disease Surveillance and Detection

Collecting and making sense of complex data on infectious diseases from a wide variety of sources continues to be a major impediment to timely identification of and response to disease outbreaks. The Center is in year 2 of a 3-year project, in partnership with technologists from MIT's Draper Lab and Digital Infuzion, to build a cloud-based, One Health surveillance tool for DTRA. The tool is being designed to mine data from a variety of traditional health data sources and nontraditional information sources, and to translate it into actionable alerts for leaders in health and government.

The goal of this new technology is to improve collection, sharing, and analysis of infectious disease surveillance data sources and to shorten the time it takes public health officials to detect outbreaks and initiate appropriate response actions. The effort began as a DTRA-funded competition among 3 different consortia, and last fall our consortium was selected to finish building the surveillance tool. We are also working to develop a commercial sustainability plan for the system once it reaches the final stage of development.

### Selected Professional Activities

#### PUBLICATIONS

The Smallpox Threat: A Time to Reconsider Global Policy. Henderson DA. *Biosecurity and Bioterrorism*. 2014;12(3).

Medical Reserve Corps Volunteers in Disasters: A Survey of Their Roles, Experiences, and Challenges. Watson M, Selck F, Rambhia K, Morhard R, Franco C, Toner E. *Biosecurity and Bioterrorism.* 2014;12(2).

Post-exposure Screening and Treatment of Latent TB among Healthcare Workers in Saudi Arabia. Balkhy HH, Miller TL, Ali S, Nuzzo JB, Kentenyants K, El-Saed A, McNabb SJN. *Infection Control and Hospital Epidemiology*. 2014;35(2).

Absorbing Citywide Patient Surge During Hurricane Sandy. Adalja AA, Watson MC, Bouri N, Minton K, Morhard RC, Toner ES. *Annals of Emergency Medicine*. Published online ahead of print, January 13, 2014.

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Analysis of Latent Tuberculosis Infection Treatment Adherence Among Refugees and Other Patient Groups Referred to the Baltimore City Health Department TB Clinic, February 2009-March 2011. Nuzzo JB, Golub JE, Chaulk P, Shah M. *Journal of Immigrant and Minority Health.* August 2, 2013. Diagnosing Infection at the Point of Care. Nuzzo JB, Rambhia K, Morhard RC, Watson M, Adalja AA, Toner E, Cicero AJ, Inglesby TV. UPMC Center for Health Security. August 2013.

H5N1: A Case Study for Dual-Use Research. Gronvall G. Council on Foreign Relations. Working Paper. July 2013.

Pivotal Strategies in Smallpox Eradication. Henderson DA. *Infectious Disease News*. July 2013.

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Keep or Kill Last Lab Stocks of Smallpox? Time to Decide, Says WHO. National Public Radio. May 9, 2014.

Scientists Urge Delay in Destroying Last Smallpox. Associated Press. May 1, 2014.

Infectious Diseases: Smallpox Watch. *Nature*. April 30, 2014.

Mystery Illness Causes Paralysis in Children. WTAJ (Central Pennsylvania). February 25, 2014.

Nazi Scientists May Have Plotted Malaria Mosquito Warfare. *National Geographic*. January 31, 2014.

No Cure for MERS. US News and World Report. December 18, 2013.

Rampant Misuse of Antibiotics Poses Growing Global Threat, Experts Warn. *Pittsburgh Tribune-Review*. December 7, 2013. Eyeing Terrorist Potential, Pentagon Seeks Vaccine Against Cold War-Era Bioweapon. *Global Security Newswire*. November 27, 2013.

Pentagon Eyes Search for Virus-Fighting Protein 'Cocktails.' *Global Security Newswire*. October 4, 2013.

Hospitals Have Come a Long Way in Girding for Disaster. *US News and World Report*. September 18, 2013.

The Down and Dirty About Nerve Agents Like Sarin. Associated Press. August 27, 2013.

Nerve Agents the Most Deadly of Recognized Chemical Weapons, Can Kill Within 10 Minutes. *Washington Post.* August 22, 2013.

Scientists Aim to Mutate Avian Flu in Lab to Better Understand Its Spread. *National Journal*. August 9, 2013.

Squirrel Tests Positive for Plague in CA. CNN. July 26, 2013.

#### PRESENTATIONS

Association of State and Territorial Health Officials, National Health Security Preparedness Index. Preparedness Summit. Atlanta, GA. "A New Way to Measure and Advance Our Nation's Preparedness." April 2, 2014.

NACCHO/CDC. Clinical Utilization Plan for Anthrax Countermeasures in a Mass Event Setting Workshop. Atlanta, GA. March 12-13, 2014. Asian Institute for Policy Studies and AAAS. Science and Technology to Prevent and Respond to CBRN Disasters: US and South Korean Perspectives. Session: "Remediating CBRN Disasters through Science and Technology." Washington, DC. January 22, 2014.

PA-13 Metropolitan Medical Response System. Pittsburgh, PA. "Hospital Evacuations During Hurricane Sandy." January 9, 2014.

University of Pittsburgh School of Medicine, Infectious Diseases Grand Rounds. Pittsburgh, PA. "Botulism in 2014." January 2, 2014.

Johns Hopkins School of Public Health. Baltimore, MD. "Smallpox: Death of a Disease . . . Birth of a New Era." November 13, 2013.

Baystate Medical Center. Springfield, MA. "Healthcare Preparedness for a Nuclear Detonation: Focus on the Collar Communities." October 24, 2013.

USC Institute of Global Health, Global Health Lecture Series. University Park Campus, Los Angeles, CA. "A Cow and a Needle and the End of Smallpox." October 21, 2013.

Biomedical Advanced Research and Development (BARDA) Scientific Board of Advisors and Annual Retreat. Washington, DC. Reviewer. September 30, 2013.

Strategic Advisory Group of Experts on Immunization Consultation on Smallpox Vaccines. WHO Headquarters, Geneva, Switzerland. Expert Advisor. September 18-19, 2013.

National Summit on Critical Care Policy. Washington, DC. Panelist. "Disaster Preparedness and Critical Care." July 10, 2013.

#### ADVISORY BOARDS, SCIENTIFIC, COMMUNITY, AND TASK FORCE MEMBERSHIPS

American Academy of Microbiology, Disease Eradication Colloquium. Steering Committee

American College of Chest Physicians. Taskforce on Mass Critical Care

Association of State and Territorial Health Officials, National Health Security Preparedness Index. Chair

Biomedical Advanced Research and Development Authority (BARDA). Scientific Board of Advisors

CDC. Anthrax Mass Casualty Clinical Guidance Group

CDC. Office of Public Health Preparedness and Response. Board of Scientific Counselors. Chair

CDC. Office of Public Health Preparedness and Response, National Voluntary Organizations Active in Disaster, Steering Committee

CDC. Public Health Preparedness Partnerships Working Group

Defense Intelligence Agency. BioChem 20/20

Department of Defense. Threat Reduction Advisory Committee (TRAC)

Department of Health and Human Services. Botulism Clinical Guidance Group

Department of Homeland Security. Biodefense Net Assessment Executive Review Panel

Department of Homeland Security. PA-13 Metropolitan Medical Response System

Infectious Disease Society of America. Public Health Committee

Institute of Medicine Health Threats Workforce and Resilience Standing Committee

Maryland Governor's Emergency Management Advisory Council

National Healthcare Coalitions for Emergency Preparedness Conference. Advisory Committee

UPMC, International Commercial Services Division. Medical and Scientific Committee

UPMC, International Commercial Services Division. Medical and Scientific Committee



Raising Awareness, Building Readiness







## Improving Recovery for People Displaced by Disaster

FEMA estimates that in the first year after a 10-kiloton nuclear detonation in the national capital region, 1.5 million people would have to be relocated to protect them from exposure to fallout radiation. As part of an effort to understand relocation needs and challenges, the Center was engaged by FEMA to identify the common issues that attend mass relocations after a disaster and to make recommendations for federal policy to promote recovery among survivors who must vacate their homes and communities before rebuilding their lives.

Completed in December 2013, phase 1 of this Center study entailed identifying the issues common to people relocated after 2 types of disaster: radiological/nuclear events, such as the Fukushima disaster, and sudden onset catastrophes, such as hurricanes, floods, and earthquakes. The study showed that forced relocation exacerbates the trauma of disaster and, if possible, should be avoided. Our results also made clear that if relocation cannot be avoided, then steps should be taken to ensure that people have the resources, support, and control over their own affairs necessary to foster recovery. People in greater need of assistance and resources before disaster struck will need more assistance to recover afterward. Separation from economic, social, and emotional support networks can be devastating; to the maximum extent possible, families and neighbors should be relocated together. Services must be provided over the long term, because it takes an extended time and prolonged support for people to reestablish their lives in a new setting after they have lost everything. And host communities need support and resources as well.

The next phase of this project will be to assess existing policies on uprooted people and host communities, recommend policies to aid recovery for displaced survivors of an attack with an improvised nuclear device, and publish and disseminate our findings and recommendations.



# Measuring the Nation's Health Security Preparedness

The Center worked with the Association of State and Territorial Health Officials (ASTHO), the Centers for Disease Control and Prevention (CDC), and 19 other development partners to help create the National Health Security Preparedness Index (NHSPI), which was released in December 2013 at a public briefing held at the Dirksen Senate Office Building.

The NHSPI is a new way to measure the overall health security preparedness of the nation by aggregating existing statelevel data from a wide variety of sources. The Index can be used to guide quality improvement, inform policy and resource decisions, and encourage shared responsibility for preparedness across a community. Center Director Tom Inglesby is chairing the Index Steering Committee that will oversee its development.

Initial Index results indicate that substantial capabilities for health security preparedness are found throughout the US—a reflection of progress made over the past few years. It also shows that although specific preparedness strengths differ among states, overall results vary only moderately, affirming nationwide progress. The areas of particular strength include health surveillance, incident and information management, and countermeasure management. Areas in need of further development include community planning and engagement and surge management for healthcare facilities.

The long-term goal of the program is to establish a standardized and manageable approach to assessing and reporting on the national health security preparedness measures and build on that platform to develop a system that provides a comprehensive picture of US health security and state-level health security preparedness.



# Analyzing Federal Funding for Preparedness and Response

The Center's annual analysis of US biodefense funding began in 2004 with a peer-reviewed article in *Biosecurity and Bioterroism* that tracked agency budgets and allocations for fiscal years 2001 through 2005 and identified those programs dedicated to civilian biodefense preparedness and response. Ours was the first such effort to track federal funding for biodefense, and it is still widely cited and anticipated annually by biodefense policymakers and practitioners. In 2012, we added a complementary analysis that tracked funding for nuclear terrorism consequence management.

This year marks 10 years of work to follow the money, during which time much has changed in how the nation approaches biological disaster preparedness and response. The US has, for instance, shifted from building systems to prepare for and respond to specific threats to building more flexible approaches that support response to a variety of threats, with the aim of securing the public's health and helping communities recover swiftly from catastrophic events.

Our focus has shifted as well. This year, our annual funding analysis will include budget allocations for 4 categories of threats: biological, chemical, radiological/nuclear, and joint WMD programs that address all hazards. Our goal is to align our analysis with the federal government's comprehensive approach to health security.



#### Strengthening the Nation's Healthcare Coalitions

The Center's work has long supported the creation of healthcare coalitions for emergency preparedness and response. Coalitions are now mandated by the federal government through both the Hospital Preparedness and the Public Health Emergency Preparedness programs, and they are ubiquitous. More than 90% of hospitals report that they collaborate with community partners, but the degree and quality of collaboration is highly variable. Coalition building is not easy, and essential partners may be reluctant participants—for example, public health may argue that disaster preparedness is not a core mission, while emergency managers maintain that disaster preparedness and response are their sole purview, and hospital executives weigh competing priorities and limited financial resources before investing in disaster preparedness. Much works remains to be done in this arena.

Our work in this realm continues with a CDC-funded 3-year effort to assess "preparedness community integration," a term we use to describe collaboration among local healthcare facilities, public health agencies, emergency medical services, and emergency management agencies. Because every coalition is different—with distinctive structures, origins, histories, and politics—a range of strategies is needed to strengthen collaboration, and leaders are seeking opportunities to learn from each other and share strategies and best practices.

To meet that need, the Center is facilitating such exchanges, documenting what is working, identifying cost-effective approaches for improving coordination, designing a training program for preparedness community integration, developing actionable tools for coalitions, fostering greater buy-in from hospital executives, and identifying milestones to measure progress in planning and response capabilities. Ultimately, this broad effort will provide evidence-based, practical tools for those involved in healthcare disaster preparedness at the state and local levels to improve disaster response capability in communities across the country.

#### Selected Professional Activities

#### PUBLICATIONS

Rad Resilient City: A Preparedness Checklist to Save Lives Following a Nuclear Detonation. Schoch-Spana M. *Health Physics*. 2013;105(5):462-463.

The Community Speaks: Understanding Ethical Values in Allocation of Scarce Lifesaving Resources During Disasters. Biddison ELD, Gwon H, Schoch-Spana M, Cavalier R, White D, Dawson T, Terry P, London A, Regenberg A, Faden R, Toner E. *Annals of the American Thoracic Society*. Published Online 24 April 2014.

A National Survey on Health Department Capacity for Community Engagement in Emergency Preparedness. Schoch-Spana M, Selck F, Goldberg L. *Journal of Public Health Management and Practice*. (Accepted, in press).

#### MEDIA COVERAGE

Potential "Dirty Bomb" Material Stolen. CNN. December 4, 2013.

What's the Risk? Radioactive Medical Material's Biggest Threat Is to Unwitting Thieves. NBC News. December 4, 2013.

Unprecedented Nuclear Education Campaign Launches in Ventura County. *Ventura County Star.* September 18, 2013.

#### PRESENTATIONS

2014 Social Equity Conference, University of Pittsburgh Graduate School of Public and International Affairs (GSPIA). Pittsburgh, PA. "Public Psychology and Communication of Risk and Uncertainty." May 29, 2014.

Maryland Emergency Manager Association Annual Conference. Ocean City, MD. "Community Values and the Allocation of Scarce Medical Resources in Disasters." May 29, 2014.

Maryland Department of Health and Mental Hygiene Integrated Public Health and Medical Preparedness Forum. Baltimore, MD. "Community Values and the Allocation of Scarce Medical Resources in Disasters." April 28, 2014.

2014 Keeneland Conference on Public Health Systems and Services Research. Lexington, KY. "A National Survey on Health Department Capacity for Community Engagement in Emergency Preparedness." April 8-10, 2014.

National Alliance for Radiation Readiness. "Public Health Preparedness in Nuclear Emergency Planning Zones." March 20, 2014.

National Health Security Strategy Meeting, Session on Preparedness and Resilience, Department of Health and Human Services. "A National Survey on Health Department Capacity for Community Engagement in Emergency Preparedness." November 12, 2013.

Baystate Medical Center. Springfield, MA. "Rad Resilient City." October 24, 2013.

Johns Hopkins Preventive Medicine Residency Program. Baltimore, MD. "Walk Through the Evolution of a Career." July 29, 2013.

38th Annual Natural Hazards Research andApplications Workshop. Broomfield, CO."Resilience Revisited." Panelist. July 12-16, 2013.

National Association of County and City Health Officials. Annual 2013 Meeting. Dallas, TX. "What Policymakers Need to Hear from Preparedness Practitioners about Community Engagement." July 9-12, 2013.

#### ADVISORY BOARDS, SCIENTIFIC, COMMUNITY, AND TASK FORCE MEMBERSHIPS

American Association for the Advancement of Science. Committee on Scientific Freedom and Responsibility

American Anthropological Association

American Ethnological Society

Association for the Anthropology of Policy

US Department of Health and Human Services, National Biodefense Science Board. Community Health Resilience Working Group

American Red Cross, Disaster Cycle Services. Community Mobilization Process Team

RAND Corporation and US Department of Health and Human Services, Office of the Assistant Secretary for Preparedness and Response. 2014 National Health Security Strategy. Community Preparedness, Recovery, and Resilience Workgroup

Department of Homeland Security, Federal Emergency Management Agency. Improvised Nuclear Device Recovery Working Group

National Consortium for the Study of Terrorism and Responses to Terrorism (START), a DHS University Center of Excellence. Executive Steering Committee National Association of County and City Health Officials. Radiation Law Working Group National Research Council. Disaster Roundtable Steering Committee RESOLVE and the Natural Resources Defense Council, Advisory Committee Society for Applied Anthropology Society for Medical Anthropology Society for the Social Studies of Science University of Pittsburgh School of Medicine. Pittsburgh, PA. Medical Microbiology Course. Problem-based Learning Facilitator



# Building and Strengthening the Professional Community







#### Engaging the Next Generation of Leaders in the Field

The Emerging Leaders in Biosecurity Initiative (ELBI) was established in 2012 to help promote the diverse field of biosecurity and acquaint the next generation of scholars with this growing discipline. The aim of the program, funded by the DoD, is to ensure that early and mid-career professionals interested in deepening their knowledge and contributions to biosecurity become familiar with the many disciplines involved in the field, learn about potential career paths, are informed about how to contribute ideas and collaborate across disciplines to advance the issues, and are provided with opportunities to meet and work with their peers as well as senior leaders in the field.

The class of 2014 ELBI fellows met in March for 4 days of events in the Washington, DC, region. They were invited to the White House for a briefing on the Global Health Security Agenda and emerging biosecurity policy issues from members of the National Security Council and the Office of Science and Technology Policy. Next, they participated in a full-day workshop hosted by the Center in which fellows heard presentations



Top row, L to R: Marcienne Wright, Gordon Lemmon, Chas Eby, Elizabeth Carter, Nathan Hillson, Daniel Grushkin, Reid Harvey, Rebecca Fish, Jessica Tucker, Ellie Graeden, Uri Lopatin, Cindi Rae Corbett. Bottom row. L to R: Tina Schoenberger, Joseph Buccina, Rebecca Gurba, Ryan Newkirk, Patrick Boyle, Jacob Shafer, Kelly Cappio, Michael Crowley, Darya Pilram, Richard Saint, Isabelle Goulet, Michael Patterson

from and met with senior biosecurity leaders, who discussed international biosecurity, past and future biological threats, and the role of the intelligence community in scientific and technological innovations.

Fellows also attended a series of private briefings at Fort Detrick's Integrated Research Facility and the National Biodefense Analysis and Countermeasures Center, received a private tour of each facility, and learned about current research efforts. The week concluded at the Pentagon, where the group was given a tour of the building and a private briefing from Assistant Secretary of Defense Andrew Weber. Their second meeting of the year will be at the US Centers for Disease Control and Prevention. The combination of formal and informal gatherings this program offers creates unique opportunities for teaching, learning, networking, and collaboration. Building and Strengthening the Professional Community

# **BIOSECURITY** AND BIOTERRORISM

BIODEFENSE STRATEGY, PRACTICE, AND SCIENCE

## Advancing Scholarship and Research

Tom Inglesby and D. A. Henderson are Coeditors-in-Chief of *Biosecurity and Bioterrorism: Biodefense Strategy, Practice, and Science*, the only peerreviewed journal dedicated to issues of biosecurity, preparedness, and response to public health threats. Now in its 12th year of publication, the journal has steadily grown in the breadth of its authors, readers, and subject matter since it was launched in 2003. In 2014, publication expanded from 4 to 6 issues per year. The Journal has experienced a 48% increase in full-text article downloads of its website content in 2014, and personal access subscriptions increased by 50%. The Journal is read in more than 170 countries, with a wide international audience of individual and institutional subscribers in Europe, Asia, Canada, Australia, South America, Europe, and India and more than 650 libraries in China.

#### Highlights from Biosecurity and Bioterrorism, 2013-2014

"The Human-Animal Interface and Zoonotic Threats: The Russian Federation Approach." Tracey McNamara, Alexander Platonov, Louise Gresham, and Tatyana Elleman

"Ready or Not: Analysis of a No-Notice Mass Vaccination Field Response in Philadelphia." Jessica Caum and Steven Alles

"The Plague of Athens: An Ancient Act of Bioterrorism?" Manolis J. Papagrigorakis, Philippos N. Synodinos, Angeliki Stathi, Chrysanthi L. Skevaki, and Levantia Zachariadou

"Public Health Emergencies and Responses: What Are They, How Long Do They Last, and How Many Staff Does Your Agency Need?" Joseph M. Posid, Sherrie M. Bruce, Julie T. Guarnizo, Ralph C. O'Connor, Jr., Stephen S. Papagiotas, and Melissa L. Taylor

"Botulinum Toxin Field Assays Evaluated Using Cosmetic Botox Preparations." Hans-Christian Slotved, Julia Tanas Tanassi, Nadja Sparding, Anja Lindqvist, Nina R. Steenhard, and Niels H. H. Heegaard

"EMAC Volunteers: Liability and Workers' Compensation." Matthew Penn, Wilfredo Lopez, and Stacie Kershner

"BSL-3 Laboratory Practices in the United States: Comparison of Select Agent and Non–Select Agent Facilities." Stephanie L. Richards, Victoria C. Pompei, and Alice Anderson

"Detection of the Urban Release of a *Bacillus anthracis* Simulant by Air Sampling." Alexander Garza, Sheila M. Van Cuyk, Michael J. Brown, and Kristin M. Omberg "Facilitating Access to Antiviral Medications and Information During an Influenza Pandemic: Engaging with the Public on Possible New Strategies." Barbara A. Fain, Lisa M. Koonin, Michael A. Stoto, Umair A. Shah, Susan R. Cooper, Rachael Piltch-Loeb, and Arthur L. Kellermann

"Leveraging Partnerships Among Community Pharmacists, Pharmacies, and Health Departments to Improve Public Health Emergency Response." Sara Rubin, Rachel Schulman, Andrew Roszak, Jack Herrmann, Anita Patel, and Lisa Koonin

"Medical Reserve Corps Volunteers in Disasters: A Survey of Their Roles, Experiences, and Challenges." Matthew Watson, Frederic Selck, Kunal Rambhia, Ryan Morhard, Crystal Franco, and Eric Toner

"Do Latin American Scientific Journals Follow Dual-Use Review Policies?" Edith Gladys Valles and Adriana Silvina Bernacchi

"Comprehensive Laboratory Evaluation of a Highly Specific Lateral Flow Assay for the Presumptive Identification of Ricin in Suspicious White Powders and Environmental Samples." David R. Hodge, Kristin M. Willner, Jason G. Ramage, Samantha Prezioso, Tanya Swanson, Rebecca Hastings, Uma Basavanna, Shomik Datta, Shashi K. Sharma, Eric A.E. Garber, Andrea Staab, Denise Pettit, Rahsaan Drumgoole, Erin Swaney, Peter L. Estacio, Ian A. Elder, Gerald Kovacs, Brenda S. Morse, Richard B. Kellogg, Larry Stanker, Stephen A. Morse, and Segaran P. Pillai



# Keeping Professionals in the Field Up to Date

The Center has an array of resources to keep professionals in the field up to date on developments and issues in health security. We publish the daily *Health Security Headlines*, which delivers to more than 2,000 subscribers a compilation of important headlines related to news, events, research, and policy in the areas of biosecurity and biodefense, medicine and public health, science and technology, domestic preparedness and response, national security, government affairs, and 21st century threats. The bi-weekly *Clinicians' Biosecurity News*, which also reaches more than 2,000 subscribers, focuses on analysis of developments and challenges in clinical biosecurity; *CBN* reports are archived at www.upmc-cbn.org. And *Preparedness Pulsepoints*, issued weekly, keeps readers informed about federal rulemaking, legislation, and policy developments related to preparedness for public health emergencies, homeland security, radiological and nuclear security, and science and technology policy. Our Twitter feed is followed by leaders in the field and USG officials.

The Center's website, UPMCHealthSecurity.org, is a comprehensive source of research, publications, and multimedia in all of the areas of practice that comprise health security. It also provides a historical collection of the Center's work in biosecurity and biodefense. In addition, we provide the online Infectious Disease Cost Calculator (idcostcalc.org), an interactive tool designed to help decision makers estimate the national and global costs of infectious disease. RadResilientCity.org presents the Center's Fallout Preparedness Checklist, a research-based tool to help local and regional leaders to design and implement a fallout preparedness program. EmergingBioleaders.org serves 2 purposes: It attracts new applicants for the Emerging Leaders in Biosecurity fellowship program and provides an online networking and information exchange for current and former fellows. Through our e-publications, social media, and websites, we reach a large and growing audience of professionals in the field in the US and around the world.







Tom Inglesby, MD Chief Executive Officer and Director

Dr. Inglesby has been with the Center since its inception at Johns Hopkins University, serving as Deputy Director from 2001 to 2009 and as Director since 2009.

His work is internationally recognized in the fields of public health preparedness, pandemic flu and epidemic planning, and biosecurity. He is Chair of the Board of Scientific Counselors, Office of Public Health Preparedness and Response of the US Centers for Disease Control and Prevention, and Chair of the National Health Security Preparedness Index initiative. Dr. Inglesby has been chair or a member of a number of National Academy of Sciences committees, and he has served in an advisory capacity to the Defense Science Board, the Departments of Health and Human Services and Homeland Security, and the National Institutes of Health. He has been invited to brief White House officials from the past 3 presidential administrations on national biosecurity challenges and priorities, and he has delivered Congressional testimony on public health preparedness and biosecurity. He is also on the board of directors of PurThread, a company dedicated to developing antimicrobial textiles.

Dr. Inglesby has authored or co-authored more than 80 peer-reviewed articles, reports, and commentaries on a wide range of issues related to health and security. He is Coeditor-in-Chief of the journal *Biosecurity and Bioterrorism: Biodefense Strategy, Practice, and Science*, which he helped to establish a decade ago as the first peer-reviewed journal in its field. He was principal editor of the 2002 *JAMA* book *Bioterrorism: Guidelines for Medical and Public Health Management*. He is regularly consulted by major news outlets for his expertise.

Dr. Inglesby is Associate Professor of Medicine and Public Health at the University of Pittsburgh Schools of Medicine and Public Health. He completed his internal medicine and infectious diseases training at Johns Hopkins University School of Medicine, where he also served as Assistant Chief of Service in 1996-97. Dr. Inglesby received his MD from Columbia University College of Physicians and Surgeons and his BA from Georgetown University. He continues to see patients in a weekly infectious disease clinic.



Anita Cicero, JD Chief Operating Officer and Deputy Director

Working with the CEO, Ms. Cicero directs operations, strategic and budget planning, and program development. Since joining the Center in 2010, she has expanded efforts in epidemic preparedness, nuclear resilience, and international programs.

Ms. Cicero has authored or co-authored a number of widely cited articles and reports on biosecurity policy, pandemic preparedness, nuclear and radiological consequence management, biosurveillance, international disease surveillance, and public health law.

In working to engage the Center in valuable new exchanges, Ms. Cicero launched a number of initiatives to improve mutual understanding and collaboration with countries including China, Kuwait, the Kingdom of Saudi Arabia, Singapore, and Taiwan.

Before joining the Center, Ms. Cicero spent nearly 2 decades as a practicing attorney in both the US federal government and the private sector. She was Managing Partner in charge of the Washington, DC, office of Drinker, Biddle & Reath, LLP, where she was responsible for more than 300 lawyers and staff. In her legal work, she created and managed a number of pharmaceutical consortia, with a particular focus on clinical research and regulatory compliance. Ms. Cicero's work required constructive engagement with members of Congress; the World Health Organization; the European Commission; the US Food and Drug Administration; the US Departments of State, Defense, and Health and Human Services; and the Environmental Protection Agency.

Before entering private practice, Ms. Cicero focused on environmental litigation and counseling. She began her career as a trial attorney in the Honors Program at the US Department of Justice, Environmental Enforcement Section.

Ms. Cicero is a graduate of the Yale Law School and Oberlin College.



D. A. Henderson, MD, MPH Distinguished Scholar

Dr. Henderson, a Founding Director of the Center, is Professor of Public Health and Medicine at the University of Pittsburgh and Dean Emeritus and Professor of the Johns Hopkins School of Public Health. From November 2001-April 2003, he served as Director of the Office of Public Health Emergency Preparedness and, later, as Principal Science Advisor to the Secretary of Health and Human Services.

Dr. Henderson served as Associate Director of the Office of Science and Technology Policy, Executive Office of the President (1990-93); Dean of the Faculty, Johns Hopkins School of Public Health (1977-90); Director of the World Health Organization's global smallpox eradication campaign (1966-77); and Chief of the Surveillance Section, Epidemiology Branch, Centers for Disease Control (1961-66).

He is a recipient of the Presidential Medal of Freedom (2002), the Order of the Brilliant Star with Grand Cordon (Taiwan, 2013), National Medal of Science (1986), National Academy of Sciences' Public Welfare Medal (1978), and the Japan Prize (1988). He holds honorary degrees from 17 universities and special awards from 19 countries. Dr. Henderson advises many organizations in the United States and abroad. He is a member of the Institute of Medicine, a Fellow of the American Academy of Arts and Sciences, an Honorary Fellow of the National Academy of Medicine of Mexico, an Honorary Fellow of the Royal College of Physicians of London, an Honorary Member of the Royal Society of Medicine, and a Fellow of a number of professional medical and public health societies.

Dr. Henderson is author of *Smallpox: Death of a Disease*, and Coeditor-in-Chief of the peer-reviewed journal *Biosecurity and Bioterrorism: Biodefense Strategy, Practice, and Science.* He he has authored more than 200 articles and scientific papers and 31 book chapters and is coauthor of the renowned *Smallpox and Its Eradication* (Fenner F, Henderson DA, Arita I, Jezek A, and Ladnyi ID. 1988. Geneva: World Health Organization), the authoritative history of the disease and its ultimate demise.

Dr. Henderson, a Lakewood, Ohio, native, graduated from Oberlin College, the University of Rochester School of Medicine, and the Johns Hopkins School of Hygiene and Public Health. He served as a medical resident at the Mary Imogene Bassett Hospital in Cooperstown, New York.



#### Honors for Dr. D. A. Henderson

In July 2013, President Ma Ying-jeou presented D. A. Henderson with the Order of the Brilliant Star with Grand Cordon, an award from the government of Taiwan that honors civilians for their contributions to societal development. Dr. Henderson was recognized for "outstanding contributions to protecting the people around the world from threat of smallpox infection as well as promoting friendship and cooperative relations between Taiwan and the United States." The eradication of smallpox, under Dr. Henderson's leadership of the WHO's smallpox eradication campaign, is a widely acclaimed global public health achievement: Smallpox was one of the deadliest diseases, and it remains the only human disease to have been eradicated through a targeted public health program.

While in Taiwan, Dr. Henderson delivered the keynote address for the Asia-Pacific Economic Cooperation (APEC) Conference and gave lectures at Taiwan's CDC and at Academia Sinica in Taipei. In October, Dr. Henderson delivered 2 lectures for the University of Southern California (USC) Global Health Institute Lecture Series. The series invites world-renowned leaders in global health to share their experiences with the university's faculty and students. Dr. Henderson also delivered invited lectures at WHO in Geneva and at several schools of medicine in the US.

In November, Dr. Henderson, a 2002 recipient of the Presidential Medal of Freedom, attended the ceremony at which President Obama named the 2013 recipients, who included former President Bill Clinton and Oprah Winfrey. This year marked the 50th anniversary of the award, which, through President Kennedy's 1963 Executive Order 11085, reestablished the Medal of Freedom as the Presidential Medal of Freedom, the nation's highest civilian honor. This honor "may be awarded by the President . . . to any person who has made an especially meritorious contribution to (1) the security or national interests of the United States, or (2) world peace, or (3) cultural or other significant public or private endeavors."



#### Senior Associates & Associates

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Leadership and Staff

# CENTER FOR HEALTH SECURITY

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# UPMC Advances Global Health Security

UPMC is a nonprofit healthcare system and insurer based in Pittsburgh, Pennsylvania, that operates 22 academic, community, and specialty hospitals and outpatient sites. Internationally, UPMC operates a leading transplant hospital and radiotherapy center in Italy, provides ongoing clinical training in family medicine in Japan, provides technology services in Canada, and supplies remote, second-opinion pathology consultations in China. Additionally, UPMC is helping to plan a national cancer treatment and research center in Kazakhstan and is developing a comprehensive transplant center in Singapore.

The Center was recruited to join UPMC in 2003. In our first decade with UPMC, we have expanded our work internationally and have taken on a wide range of issues in the broader health security field.

In 2013, we changed our name to the UPMC Center for Health Security to signal our commitment to protecting people's health from the consequences of epidemics and disasters and to ensuring that communities are resilient to major challenges. Though our dedication to diminishing the public health consequences of biological threats remains strong, we have in recent years expanded our focus to address other serious threats to the public's health. Our focus has broadened to include issues in infectious diseases and epidemics, disaster preparedness and response, and chemical and nuclear threats. We continue to advance strategies that help leaders and communities understand, prepare for, respond to, and recover from catastrophic events that disrupt society and threaten the public's health.

## CREDITS

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