UPMC CENTER FOR HEALTH SECURITY

ANNUAL REPORT 2014-2015

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.


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A Year of Health Security Challenges at Home and Abroad

Dear Friends,

The West African Ebola outbreak made painfully clear to all of us the importance of public health preparedness and response to serious infectious disease threats. It also reminded us how the health security of the global community is dependent on the ability of individual countries to cope with these challenges, including countries with poor public health and medical infrastructure. Too often these important systems struggle with low resources and a lack of adequate support. Even in the US, where we have a relative abundance of resources, our public health infrastructure is underfunded and vulnerable to major shocks. We face the task of improving preparedness in the US while redoubling our efforts to collaborate across borders in order to learn from other countries' experiences and share crucial information that can make a difference during the next public health crisis.

During this past year, our Center has been fortunate to contribute to a number of domestic and international initiatives aimed at strengthening global health security, improving response to epidemics and biothreats, raising awareness, and providing the professional community with new knowledge, analysis, and guidance that has helped preparedness, response, and recovery.

In the fall we led a Congressional seminar on the Ebola outbreak, bringing together key staffers with leaders from CDC, USAID, and DoD who were managing the response and helped serve as a resource to Congressional offices over the course of the outbreak. We published a number of articles addressing different aspects of the response – from a primer on Ebola for clinicians, to an analysis of the sociocultural dimensions of Ebola in Liberia, to an assessment of the travel restrictions proposed during the peak of the outbreak, to observations on the role of Ebola virus diagnostics. In the coming year, we will continue work across disciplines to tackle serious problems unearthed by the outbreak.

I am proud of our collaborations with the US CDC to strengthen the healthcare coalitions that states and cities have established to deal with major emergencies. I am excited by the work we are doing alongside the FDA to prepare recommendations for sensitive and effective communications, should it be necessary for people to take unapproved drugs or vaccines during an emergency. We have been happy to have contributed to DHS efforts in the areas of diagnostics, threat assessments, and technology development. On the nuclear side, we provided the Domestic Nuclear Detection Office with an independent assessment and recommendations for improving integrated risk assessments at the state level.

Our international work continues to be vitally important to advancing our health security mission. In collaboration with the Naval Postgraduate School, we led a Track II Biosecurity Dialogue between the US and Singapore. This year, the dialogue expands to include health and defense leaders from both Malaysia and Indonesia. The purpose of the dialogue is to advance understanding and consider potential new approaches to responding to both serious epidemics and bioterrorist attacks in Southeast Asia.

We continue to support the Global Health Security Agenda (GHSA) by collaborating with other NGOs and determining ways our Center can support countries' initiatives to prevent, detect, and respond to infectious disease threats. Our Center devoted an edition of our Journal to the GHSA in order to more broadly raise awareness of its goals and methods. In the coming year, we will focus on identifying concrete ways of assisting countries in their plans to improve preparedness and health security.

As we learn the lessons that emerged from Ebola, the power and unpredictability of emerging infectious diseases are humbling. Our team is committed and honored to do this work in the year ahead.

Thomas V. Inglesby, MD
CEO and Director

Strengthening Global Health Security

Building Resilience to Ebola

The Ebola epidemic, which spread rapidly in the West African nations of Guinea, Sierra Leone, and Liberia, will prove to have been one of the most significant threats to global health security in this generation. More than 26,000 Ebola cases have been reported to the World Health Organization, and more than 11,000 people have died.

The Center responded to this severe outbreak in a number of ways. First, in cooperation with Senators Chris Coons and Jeff Flake, we brought Congressional attention to Ebola during the early fall before a comprehensive US response was envisioned. We convened a high-level meeting of senior government officials and members of the medical, public health, and international humanitarian response communities to discuss with Congressional staff the need for a robust national and international response. Dr. Tom Frieden (Director, CDC), Dr. Joseph Fair (a virologist and special adviser to Sierra Leone's health ministry), Andrew Weber (then Assistant Secretary of Defense for Nuclear, Chemical, and Biological Defense Programs at DoD), and Jeremy Konyndyk (Director of USAID's Office of US Foreign Disaster Assistance) each presented remarks on the nature and scope of the challenges occurring in West Africa and commented on how the United States should respond.

In February, Tom Inglesby participated in a Congressional forum titled "Building Resilient Communities: Ebola and Global Health Crises—Where We Need to Go." He joined Tjada D'Oyen McKenna (Deputy Coordinator for Development for Feed the Future, and Assistant to the Administrator in the USAID's Bureau for Food Security) and Bockari Kortu Stevens (Ambassador of the Republic of Sierra Leone to the United States) to discuss the unity of effort needed for building resilient communities and strengthened systems for health and human security.

In other medical, public health, and financial analyses, our staff authored a number of publications on various aspects of Ebola, including:

- A Primer on Ebola for Clinicians
- Travel Bans Will Increase the Damage Wrought by Ebola
- Optimization of Interventions in Ebola: Differential Contagion
- Sociocultural Dimensions of the Ebola Virus Disease Outbreak in Liberia
- Federal Funding in Support of Ebola Medical Countermeasures R&D

To keep experts and the public well informed, we devoted a special section of our daily newsletter, *Health Security Headlines*, to the Ebola outbreak. Experts from the Center routinely appeared in the *New York Times*, *USA Today*, the *Wall Street Journal*, and on broadcasts by CNN, NBC News, BBC News, NPR, and others.

"The spread of infectious diseases constitutes a growing risk. The Ebola epidemic in West Africa highlights the danger of a raging virus. The spread of new microbes or viruses, the rise and spread of drug resistance, and the deliberate release of pathogens all represent threats that are exacerbated by the globalization of travel, food production and supply, and medical products."

—President Barack Obama

National Security Strategy, 2015

Global Health Security Agenda

The Center joined other NGOs to support the Global Health Security Agenda (GHSA) and to promote its goals for better prevention, detection, and response to infectious disease threats around the world. On September 26, 2014, President Obama hosted the first international GHSA summit, where countries collectively made 100 commitments to strengthen health security and improve multiple aspects of countries' public health systems. The day before, the Center for Health Security co-hosted an NGO conference to highlight a range of NGO proposals for addressing emerging and evolving infectious disease threats. Our Center strongly supports the GHSA, which underscores that biological threats can also be security threats, humanitarian threats, and economic threats, as we saw with the Ebola outbreak in West Africa. To further raise awareness around the GHSA, we dedicated a special issue of our Journal to GHSA-related articles.

JOURNAL SPECIAL ISSUE

The Global Health Security Agenda

Global Health Security Agenda and the International Health Regulations: Moving Forward. *Rebecca Katz, Erin M. Sorrell, Sarah A. Kornblet, and Julie E. Fischer*

Regulatory Underpinnings of Global Health Security: FDA's Roles in Preventing, Detecting, and Responding to Global Health Threats. *Brooke Courtney, Katherine C. Bond, and Carmen Maher*

Bridging the Health-Security Divide: Department of Defense Support for the Global Health Security Agenda. *Robin M. Moudy, Michael Ingerson-Mahar, Jordan Kanter, Ashley M. Grant, Dara R. Fisher, and Franca R. Jones*

Legal and Regulatory Capacity to Support the Global Health Security Agenda. *Ryan Morhard and Rebecca Katz*

Health Inequalities and Infectious Disease Epidemics: A Challenge for Global Health Security. *Sandra Crouse Quinn and Supriya Kumar*

Leveraging the Laboratory Response Network Model for the Global Health Security Agenda. *Chris N. Mangal and Lucy Maryogo-Robinson*

Strengthening Global Health Security by Developing Capacities to Deploy Medical Countermeasures Internationally. *Maria Julia Marinissen, Lauren Barna, Margaret Meyers, and Susan E. Sherman*

Guatemala's Ministry of Health Rapid Response Team Manuals. *Luis Hernandez, Kimberly Hanson, and Lise Martel*

Commentary: One Health Security: An Important Component of the Global Health Security Agenda. *Gigi Gronvall, Crystal Boddie, Rickard Knutsson, and Michelle Colby*

Commentary: Biosurveillance Capability Requirements for the Global Health Security Agenda: Lessons from the 2009 H1N1 Pandemic. *Michael A. Stoto*


Hanoi
Hainan
South China Sea
LAOS
Vientiane
VIETNAM
THAILAND
CAMBODIA
Phnom Penh
Ho Chi Minh City
Bangkok
Manila
PHILIPPINES
Koror
PALAU
BRUNEI
Bandar Seri Begawan
MALAYSIA
Kuala Lumpur
Medan
Putrajaya
SINGAPORE
Borneo
Sulawesi
INDONESIA
Sumatra
Palembang
Padang
Surabaya
Dili
EAST TIMOR
Timor
Darwin
Jakarta
Java
Christmas Island
(Australia)

Engaging the US, Singapore, Malaysia, and Indonesia in a Strategic Dialogue on Biosecurity

Like the US, countries in Southeast Asia face a number of common biosecurity challenges, including the safe conduct of biological research, the identification of new biological threats, issues associated with dual-use research, and surveillance of and response to emerging infectious diseases.

With support from the Defense Threat Reduction Agency (DTRA) and the Naval Postgraduate School, the Center last year started a strategic Track II dialogue for high-level discussion and partnership between the US and Singapore, recognizing Singapore's increasingly important role as a strategic Asian partner in nuclear nonproliferation, trade agreements, and government cooperation. 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. There have been 2 face-to-face meetings for this dialogue—one in Washington, DC (June 2014), and the other at the S. Rajaratnam School of International Studies in Singapore (November 2014)—which brought together influential policy experts, thought leaders, and scientists from both nations.

This coming year, the dialogue will be expanded to include Malaysia and Indonesia, with a first dialogue session to be held in Washington, DC (June 2015), and a second to be held in Kuala Lumpur (December 2015). High-level health and security experts from all 4 countries are committed to a dialogue that addresses a range of vital biosecurity and health security challenges.

Pathogens of Pandemic Potential

Last summer there were a number of lab accidents that brought renewed global focus on the issue of research intended to create pathogens of pandemic potential — also called "gain of function" research. A 1-year moratorium on NIH funding for the work was established in the fall, and a series of meetings have followed, the purpose of which is to inform the National Biodefense Science Advisory Board (NSABB), which is charged with guiding a risk assessment process for this class of work. A number of senior members of the Center participated in official meetings of the NSABB and the National Academies of Science around this challenge. A number of articles were published by Center authors that examined the framework for the risk assessment, the potential for deliberate misuse of this science, and mechanisms of increasing public engagement in critical decisions regarding future funding and support for this field of research.

Infectious Disease Cost Calculator

The Center first developed the IDCC in 2010 to address the noticeable absence of country-specific cost estimates and global cost estimates for many important infectious diseases. Lacking cost information, policymakers often make consequential decisions about public health policy and resource allocation for disease prevention and control without knowing how costly and burdensome a disease is for a country or for the global community. The IDCC provides national-level information on dengue and cholera that makes it possible to compare estimated costs of diseases with costs of control and mitigation measures, such as vaccines, bed nets, medicines, and education.

This year, the Center's experts published an article in the journal *Vector-Borne and Zoonotic Diseases* describing the IDCC methods and findings for dengue cost calculation. Also this year, we partnered with David Sack from the Johns Hopkins Bloomberg School of Public Health and the Bill & Melinda Gates Foundation on the Delivering Oral Vaccine Effectively (DOVE) Program to apply the IDCC cholera cost findings to help plan effective regional use of oral cholera vaccine.

In the coming year, the Center will incorporate the most current available data on dengue and cholera and will expand it to incorporate additional neglected tropical diseases and new ways to analyze cost information and policy decisions.

Selected Professional Activities

Publications:

Gronvall GK. The biological weapons ban increases US security. *Bull At Sci* March 19, 2015.

Gronvall GK. Deterring conflict, getting to zero. *Bull At Sci* March 27, 2015.

Schoch-Spana M. Public engagement and the governance of gain-of-function research. *Health Secur* 2015;13(2):69-73.

Lipsitch M, Inglesby TV. Reply to "Studies on influenza virus transmission between ferrets: the public health risks revisited." *MBio* 2015;6(1):e00041-15.

Nuzzo JB, Golub JE, Chaulk P, Shah M. Post-arrival tuberculosis screening of high-risk immigrants at a local health department. *Am J Public Health* 2015;105(7):1432-1438.

Lipsitch M, Inglesby TV. Moratorium on research intended to create novel potential pandemic pathogens. *MBio* 2014;5(6): e02366-14.

Selck FW, Adalja AA, Boddie CR. An estimate of the global health care and lost productivity costs of dengue. *Vector Borne Zoonotic Dis* 2014;14(11):824-826.

Gronvall GK, Ravi S, Cicero A, Inglesby T. *Singapore-US Strategic Dialogue on Biosecurity.* Report from the second dialogue session, held in Singapore on November 12-13, 2014. UPMC Center for Health Security website. December 2014.

Gronvall G, Boddie C, Knutsson R, Colby M. One Health security: an important component of the Global Health Security Agenda. *Biosecur Bioterror* 2014;12(5):221-224.

Gronvall G, and Inglesby T, eds. Special Issue on the Global Health Security Agenda. *Biosecur Bioterror* 2014;12(5).

Nuzzo JB, Cicero AJ, Waldhorn R, Inglesby TV. Travel bans will increase the damage wrought by Ebola. *Biosecur Bioterror* 2014;12(6):306-309.

Presentations:

WHO, Global Consultation on Diagnostics Interoperability Standards. Geneva, Switzerland. "Why Interoperability Standards for DXs?" June 11, 2015.

National Defense University, Annual Conference on Countering WMD. Washington, DC. "Lessons from Ebola." May 14, 2015.

Institute of Medicine and National Research Council. Washington, DC. Research Priorities to Inform Public Health; and J. Craig Venter Institute. Biosecurity, DNA Screening Guidance, and Lessons Learned workshop. April 28, 2015.

National Academy of Sciences Committee on Support to the Department of Defense's Programs to Counter Biological Threats. Washington, DC. "Summary of Work on Diagnostics for Use by Military in Different Settings." February 5, 2015.

National Academy of Sciences Symposium on Risks and Benefits of Gain-of-Function (GOF) Research. Washington, DC. "Ensuring Public Engagement in the Gain-of-Function Debate." December 15-16, 2014.

SE-US Bilateral Workshops on Multidisciplinary Approaches on Biological Threats. Horizon Scanning Methodologies and Multidisciplinary Biological Threats. House of Sweden. Washington, DC. "Previous Workshops on Swedish-American Cooperation on Multidisciplinary Approaches to Biological Threats." December 9, 2014.

Project on Advanced Systems and Concepts for Countering WMS (PASCC) Semiannual Workshop. Washington, DC. "Understanding and Countering Chemical and Biological Threats." December 5, 2014.

National Science Advisory Board for Biosecurity (NSABB). Bethesda, MD. "The Benefits, Risks, and Ethical Considerations Associated with Gain-of-Function Studies Involving Pathogens with Pandemic Potential." October 2014.

"The Global Health Security Agenda: Non-Governmental Perspectives on Addressing Emerging and Evolving Biological Threats." September 25, 2014.

Swedish Civil Contingencies Agency, SE-US Workshop. Stockholm, Sweden. Multidisciplinary Approaches to Biological Threats. "Common Challenges, Potential Cooperation and Success Stories/Projects," "Report from the Mirror Workshop in DC in January 2014." September 11, 2014.

Advisory Board, Scientific Community, and Task Force Memberships:

One Health Initiative Honorary Advisory Board

WHO International Health Regulations Expert

Improving Response to Epidemics & Biothreats

In this Oct. 29, 2012, file photo, seawater floods caused by Superstorm Sandy pour into the World Trade Center construction site in New York.

Creating a Health Sector Resilience Checklist

Superstorm Sandy devastated parts of New York and New Jersey 2 years ago, severely affecting the health sectors of the region: hospitals were evacuated, dialysis centers lost power, methadone and mental health clinics closed. Some facilities bounced back quickly, and essential services were restored, but others remained fully or partially closed for months. As usual, the most vulnerable populations were most severely affected. What were the factors that facilitated or obstructed the resilience of the health sector—that is, what affected its ability to return to normal functioning? Why did some facilities fare better than others? In this CDC-funded project, we are identifying the hard-learned lessons of Sandy and other recent disasters and translating them into a practical checklist of action items that will strengthen the resilience of the health sector in the face of future disasters.

Through targeted interviews and focus groups involving many people from distinct communities who were involved in various aspects of the health sector during Sandy, we are generating data that will also be analyzed alongside the data and experiences of other recent disasters. From this analysis we will provide lessons and insights to emergency planners across the country to better prepare their own communities.

Improving Our Nation's Ability to Characterize Biological Threats

The Center collaborated with the National Consortium for the Study of Terrorism and Responses to Terrorism—better known as START—to advise the Department of Homeland Security regarding ways to strengthen biological threat characterization efforts. Laboratory characterization of biological threats is an important component of biodefense. The ability to characterize biological agents in the laboratory may inform risk assessments, guide medical countermeasure development priorities, and improve preparedness. However, the process of threat characterization is complex. There are multiple potential priorities for threat characterization: There are many highly pathogenic biological agents; the potential actors who could exploit them have a wide range of skills and resources; and the mechanisms by which threats can be created are expanding along with advances in biotechnology, biosciences, and engineering. Intelligence that could conceivably illuminate or clarify threats is often partial or contradictory; in recent history, there have been notable gaps in the reliability of intelligence information for biological weapons development and capabilities.

The Center provided DHS's Biological Threat Characterization Program (BTCP) with a consensus expert framework to help inform decisions of program leaders as they consider funding experimental work to characterize biological threats. The project also suggested principles, criteria, and decision-making processes for evaluating possible research and recommended how the BTCP might determine appropriate endpoints for threat characterization studies.

In addition to the consensus framework to guide decision making, the Center led a Delphi study, involving more than 50 biosecurity leaders and experts, to produce additional fine-grained insights about perceptions of biological threats. This data, the analysis of which is still ongoing, will be useful in setting national priorities for characterization and defense against biological threats and will represent both the individual and group judgments of experts on these issues.


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Communicating about Medical Countermeasures in an Emergency

In recent years, the United States government has taken many important steps to advance the research, development, manufacture, stockpiling, and distribution of drugs and vaccines that can counter the effects of CBRN threats. But having the nation's medicine chest well stocked for a catastrophic health event has little merit if people are not willing to take a prescribed medication, or inadvertently misuse it, or if they do not know why and how to obtain a potentially life-saving vaccine or drug.

At the request of the US Food and Drug Administration, the Center is undertaking a 2-year project to develop guidance on communication strategies that support appropriate public use of life-saving medical countermeasures (MCMs) in dynamic, potentially fear-instilling contexts. A first step is cataloging "dilemmas" or complex situations that could lead to the public disregarding an MCM when it is needed, demanding it when it is not, denying it to others in need, or engaging in other behaviors that could worsen the emergency. Circumstances triggering public reluctance toward MCMs, for instance, include the treatment of children with drugs intended for adults, a novel vaccine that has not gone through normal review, and an MCM with potentially controversial origins (eg, cell line derived from fetal tissue).

Relying upon in-depth research and broad stakeholder input, the Center is preparing 2 guidance documents: a Casebook on MCM Emergency Communication Dilemmas and a Policy Memo on Strategic Directions in MCM Emergency Communication. Targeted toward public health communicators, the casebook offers "best practices" guidance through a mix of retrospective cases and prospective scenarios, while the policy memo advises FDA and its federal partners on higher-level communication strategies to help steward both MCMs and public trust in emergency contexts. Leading figures in the MCM enterprise as well as top scholars and practitioners in risk/crisis communication have been tapped to assure that the project reflects the best available science and meets users' needs.

Jump Start: Accelerating Government Response to a National Biocrisis

While much work and considerable resources have been applied to prepare the US for a bioterrorism attack, there are still major gaps in preparedness. In the absence of a major biological attack somewhere in the world, some of the needed preparedness and response measures are stalled due to political, fiscal, or other barriers.

But if the perceived threat of a large-scale biological attack suddenly shifted from possible to probable, the American people would likely afford the President broad support for taking extraordinary action—political capital that could ensure swift enactment of policies and programs to protect the country.

With support from the Smith Richardson Foundation, Randall Larsen (USAF Ret.), National Security Advisor to the Center, led a study to examine how US biodefense can be improved given the requisite political will and resources. This study examines a scenario in which the United States is suddenly faced with a newly emerged intentional biothreat, one capable of producing catastrophic consequences. Using the scenario, Colonel Larsen obtained input and suggestions from more than 70 biodefense, medical, public health, life science, and homeland security thought leaders in order to craft a set of recommendations aimed at the highest levels of government. The final report provides a recipe for response for both near-term and long-term policies and programs so that the government will have one on hand and won't have to concoct one from scratch in an emergency—in other words, the study offers a "Jump Start" for an effective response in time of national crisis.

Redefining Surveillance and Control of Critical Diseases in the Affordable Care Act Era

Changes to the healthcare landscape in the United States may alter the way that diseases are detected and controlled. Surveillance for a number of important infectious diseases (eg, tuberculosis, HIV, sexually transmitted infections) is currently carried out in large part by clinics operated by public health departments. Patients come to these facilities for free medical care and treatment, and public health captures information on these patients and their conditions to monitor trends in the occurrence of diseases in the community. In addition to being a site of information gathering, public health clinics also serve as focal points for disease control activities—places where treatment and prevention measures can be launched to reduce disease transmission.

As the ACA is implemented across the country and indigent patients gain access to private sector health care, some health departments are anticipating a shift of patients away from public health clinics to private practitioners. Increased access to the private healthcare system is expected to provide a number of benefits to patients, such as access to a greater range of treatments and procedures. But the shift of patients from public health clinics may also have significant impacts on the way these diseases are controlled and on the ability of public health departments to conduct surveillance for outbreaks. Given the highly fragmented nature of the private healthcare system and its lack of direct connections to public health departments, public health may no longer have the information it requires to perform disease surveillance and control activities.

With funding from the Robert Wood Johnson Foundation, the Center is analyzing the potential impacts of the ACA on the diagnosis, treatment, and reporting of important infectious diseases and examining ways to enhance disease surveillance and control activities under this new healthcare paradigm. The goal for this project is to provide public health departments, clinicians, and policymakers with enough information to help them gauge the likely potential impacts of ACA implementation on surveillance and control of critical diseases in their jurisdictions and to develop plans to effectively respond to these changes.

Allocating Scarce Life-Saving Resources in a Catastrophic Disaster

If, in the midst of a catastrophic disaster like a severe influenza pandemic, there are not enough life-saving resources for all who need them, how should decisions be made about who gets access to the resource? What are the ethical principles and values that should guide such decision making? Saving the most lives, age, societal value, equal access? Do we know whether the public's values on this topic are the same as healthcare providers' values? These are the questions we have been exploring in a 2-year community engagement project with collaborators at Johns Hopkins University. We conducted 15 day-long community forums across the state of Maryland—half with lay people and half with healthcare providers—involving more than 350 participants.

Overwhelmingly, the participants were fully engaged, civil, and thoughtful in the discussions. While the majority of participants expressed similar values, there were strongly held minority views that are important to note and consider. Additionally, there were clear differences between regions of the state that reflect important concerns about social justice, political viewpoints, and everyday access to resources. The results of this research, funded by the Department of Health and Human Services, will inform a first-of-its-kind scarce resource allocation framework for Maryland that is to be prepared in the coming year.

Improving Assessment of Risks

The Center teamed with the National Consortium for the Study of Terrorism and Responses to Terrorism (START) to comprehensively study the process by which local jurisdictions assess their risks from a range of threats and hazards. This process, called the Threat and Hazard Identification and Risk Assessment (THIRA), is a way for cities and states to identify and prioritize the threats and hazards they face and what capabilities are necessary to address them. In conducting the study, we interviewed stakeholders in 16 jurisdictions and presented findings and received feedback from state and local leaders.

As part of the effort, we developed a high-level strategy document that provided recommendations for the DHS's Domestic Nuclear Detection Office (DNDO) to better integrate radiological and nuclear threats into the THIRA process. By doing so, state and local partners can increase their access to assistance from DNDO, which will enhance the global and domestic radiological and nuclear detection architecture.

Selected Professional Activities

Publications:

Adalja AA, Toner E, Inglesby TV. Clinical management of potential bioterrorism-related conditions. *N Engl J Med* 2015;372(10):954-962.

Toner E, Adalja A, Inglesby T. A primer on Ebola for clinicians. *Disaster Med Public Health Prep* 2015;9(1): 33-37.

Adalja AA, Henderson DA. Optimization of interventions in Ebola: differential contagion. *Biosecur Bioterror* 2014;12(6):299-300.

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Courtney B, Hodge JG Jr, Toner ES, Roxland BE, Penn MS, Devereaux AV, Dichter JR, Kissoon N, Christian MD, Powell T; Task Force for Mass Critical Care. Legal preparedness: care of the critically ill and injured during pandemics and disasters: CHEST consensus statement. *Chest* 2014;146(4 Suppl):e134S-e144S.

Gronvall GK. National-level biosafety norms needed for dual-use research. *Front Public Health* 2014;(2):84.

Presentations:

National Association of County and City Health Officials (NACCHO) Preparedness Summit 2015. Atlanta, GA. "Too Many Patients, Too Few Resources: Community Values and the Allocation of Scarce Medical Resources in Disasters." April 13-15, 2015.

Johns Hopkins Bloomberg School of Public Health, Vaccine Class. Baltimore, MD. "Vaccines for Biothreat Agents." March 2, 2015.

Siriraj Hospital. Bangkok, Thailand. "Preparation and Response for Biothreat Agents." January 27, 2015.

Johns Hopkins School of Medicine. Baltimore, MD. "Death of a Disease . . . Its Eradication and Legacy." December 11, 2014.

National Healthcare Coalition Preparedness Conference. Denver, CO. "Public Engagement and Scarce Resources." December 10, 2014.

Medical Practice for Domestic Ebola Virus Disease: A Workshop. Washington, DC. "Transmission Routes and Routes of Entry and Exit of the Virus." November 3, 2014.

Johns Hopkins Bloomberg School of Public Health, Health Policy MPH Students. Baltimore, MD. "Smallpox—The Response to an Epidemic." August 14, 2014.

Advisory Board, Scientific Community, and Task Force Memberships:

Centers for Disease Control and Prevention, Anthrax Mass Casualty Clinical Guidance Group

Centers for Disease Control and Prevention, Office of Public Health Preparedness and Response, Board of Scientific Counselors

CDC Executive Laboratory Safety Working Group examining biosafety practices of CDC, NIH, and FDA

Department of Defense, Threat Reduction Advisory Committee (TRAC)

Department of Health and Human Services, Botulism Clinical Guidance Group

Infectious Diseases Society of America, Public Health Committee

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


Raising Awareness, Building Readiness

Anniston, Ala.—Students in the Center for Domestic Preparedness's Healthcare Leadership for Mass Casualty Incidents training confer in the hospital Emergency Operations Center during a simulated mass casualty event.

Promoting Local Collaboration for Healthcare Preparedness and Response

Many disasters have health consequences that exceed the capacity of a single hospital or response agency. Therefore, collaboration at the local level among healthcare facilities, public health agencies, emergency medical services, and emergency management agencies is fundamental to a national strategy for healthcare resilience to disasters. The creation of healthcare coalitions for emergency preparedness and response is now mandated for federal funding through the national Hospital Preparedness Program, but many coalitions have experienced limited involvement or engagement by one or more of the essential partners. Others have struggled with a variety of obstacles to effective collaboration among their members. In this CDC-funded project, the Center is addressing the challenges of a collaborative local approach to healthcare emergency preparedness and response by developing a collaboration assessment tool. We believe that in order to effectively foster collaboration, one must be able to measure it. In this project we are creating a framework of measures that can help give additional structure to these valuable local collaborations, facilitate dialogue among coalition members, and assist in a continuous cycle of improvement.

After conducting interviews over the past year with healthcare coalition members across the country, leading an expert advisory meeting, and researching the science of collaboration assessment, the Center developed an online tool that will allow coalitions to assess the degree and quality of collaboration among their members. Coalition members anonymously answer an online survey that explores important aspects of collaboration. The results are shared with all coalition members. In this way, the coalition members can collectively consider the range of responses to the questions and identify problems that require attention. This tool can be used repeatedly to gauge progress in collaboration, and anonymous results can be shared between coalitions so that they can compare themselves to their peers. The principal outcome of this project will be to enhance the ability of US communities to prepare more effectively for, cope with, and rebound from potential public health emergencies and mass casualty events.

San Benito, Texas, July 27, 2008 — An Army National Guard soldier puts water into the car of a family that was affected by Hurricane Dolly. South Texas suffered flooding and widespread power outages, and FEMA is working with the military and state and local agencies to provide assistance.

Measuring and Motivating Health Department Excellence in Community Engagement

Recovery from disasters, epidemics, technological accidents, and terrorist attacks is most effective when individuals, businesses, and community- and faith-based groups collaborate to design and implement emergency responses. Local public health departments are primarily responsible for organizing this kind of community engagement to respond to public health emergencies. But often it is a big challenge for local public health agencies to make this happen because of their diminishing staffs and budgets and a scarcity of resources needed for preparedness activities. In addition, there has been no evidence base showing which local health department core competencies and tools are most important for this work.

With funding from the deBeaumont Foundation, the UPMC Center for Health Security is collaborating with the National Association of County and City Health Officials to collect empirical evidence that will be used to define best practices for community engagement in public health emergency preparedness. This project has 2 components. First, we are fielding a national survey of health departments that we originally fielded in 2012 for a longitudinal analysis of the practices and organizational capacities (eg, fiscal resources, human capital, programmatic knowledge, physical infrastructure, governance structures) of local health departments to conduct community engagement efforts. Second, we will use the survey results to identify a subsample of small and large health departments that are high performers, and we will analyze each to document their best practices. These exemplary practices can provide other local health departments with a template for successfully engaging the range of key organizations in community preparedness.

The goal of this project is to strengthen community engagement in public health emergency preparedness by providing hard data on what fuels top performance by local public health departments. The project will also provide policymakers with information that can guide them in prioritizing resources in ways that will strengthen public health emergency preparedness as a critical element of US national health security. The evidence we collect can be used to make a persuasive case for providing sustained technical and financial support for what has been repeatedly recognized as a top federal and local priority.

Analyzing Federal Funding for Health Security

The Center continued its annual series of peer-reviewed articles detailing federal funding for health security. This pioneering article series, which has now spanned 11 years, is widely cited and relied upon by policymakers and practitioners. It provides an accounting of all programs and funding for programs dedicated to prevention, preparedness, and response in this field.

This year's article included an analysis of budget allocations in 5 categories of threats: biological; chemical; radiological/nuclear; pandemic and emerging infectious diseases; and joint WMD programs that address all hazards. In addition, the analysis tracked emergency funding appropriated for response to the Ebola outbreak in West Africa and potential cases in the United States.

National Health Security Preparedness Index

The National Health Security Preparedness Index is a first-of-its-kind tool that annually measures preparedness on a state-by-state basis. In December 2014, the second year's Index results were released. This year's results included a greater focus on health- care preparedness, emergency management, and environmental and occupational health. It also marked the transition from CDC ownership of the Index to Robert Wood Johnson Foundation ownership and sponsorship, ensuring a long-term and stable foundation for the effort, with the University of Kentucky serving as the program management office. Priorities for the year ahead include ensuring a way for states to compare year-to-year results, further strengthening of the model, understanding how states and locals are using the Index, and improving the value and visibility of the website. Throughout the process of index development, the Center has been a committed participant, serving in various leadership roles. With the Index's transition to the Robert Wood Johnson Foundation, the Center now serves as chair of the National Advisory Committee to the Index.

Selected Professional Activities

Publications:

Toner E, Ravi S, Adalja A, Waldhorn R, McGinty M, Schoch-Spana M. Doing good by playing well with others: exploring local collaboration for emergency preparedness and response. *Health Secur* 2015;13(4); in press.

Toner E, Adalja A, Gronvall GK, Cicero A, Inglesby TV. Commentary: antimicrobial resistance is a global health emergency. *Health Secur* 2015;13(3):153-155.

Gronvall GK. The promise and peril of synthetic biology needs more attention. *BRINK News* February 19, 2015. http://www.brinknews.com/the-promise-and-peril-of-synthetic-biology-needs-more-attention/.

Gronvall GK. Mitigating the risks of synthetic biology. A CFR Discussion Paper. February 2015. http://www.cfr.org/health/mitigating-risks-synthetic-biology/p36097.

Gronvall GK. Hindsight not 20/20 for smallpox research. National Consortium for the Study of Terrorism and Responses to Terrorism (START) Newsletter, January 30, 2015.

Adalja AA, Sell TK, Ravi S, et al. Public health preparedness in the 10-mile emergency planning zones surrounding US nuclear power plants. *Journal of Homeland Security and Emergency Preparedness* December 6, 2014.

Jacobson EU, Inglesby T, Khan AS, Rajotte JC, Burhans RL, Slemp CC, Links JM. Design of the National Health Security Preparedness Index. *Biosecur Bioterror* 2014;12(3):122-131.

Henderson DA. Smallpox eradication. In: *Encyclopedia of Life Sciences.* 3rd ed. New York: John Wiley and Sons; Article 3993.

Presentations:

National Institute of Social Sciences Luncheon. Harvard Club, New York, NY. "New Threats for the 21st Century: Ebola, Chikungunya, Smallpox – MEASLES." June 17, 2015.

University of Utah, Public Health Professional Education Special Event. Public Health and Disasters. Park City, UT. "Healthcare Coalitions for Emergency Preparedness and Response." May 11-12, 2015.

European Biological Safety Association (EBSA) 2015 Conference. Vienna, Austria. "Public Engagement and the Shared Governance of Gain-of-Function Research," "Need for National Biosafety Norms." April 23, 2015.

The White House Office of Science and Technology Policy (OSTP). Washington, DC. "Data & Innovation at the Climate-Health Nexus" symposium. April 7, 2015.

Regional Interagency Steering Committee/ Regional Advisory Council of the Federal Emergency Management Agency (FEMA), Region III. Philadelphia, PA. "Mass Population Displacement as a Problem for Recovery Following Detonation of an Improvised Nuclear Device (IND)." November 18, 2014.

101st Meeting of the Interurban Clinical Club. Walters Art Gallery, Baltimore, MD. "From Smallpox to Ebola—Responding to Biological Threats." November 7, 2014.

Wilson Center Roundtable on Responsible Innovation in Synthetic Biology. Washington, DC. October 29, 2014.

Staff of White House Council on Environmental Quality and Judge Alice Hill, Senior Advisor for Preparedness and Resilience at National Security Staff. September 29, 2014.

Council on Foreign Relations, Center for Preventive Action, Contingency Planning Roundtable. Washington, DC. "Discuss Challenges and Present Recommendations for US Policy." September 4, 2014.

Trust for America's Health, Congressional Briefing. Washington, DC. "Healthcare Resilience to Climate Change." July 31, 2014.

Harvard School of Public Health. Gain-of-Function/Potential-Pandemic-Pathogen Experiments. July 14, 2014.

Advisory Board, Scientific Community, and Task Force Memberships:

National Advisory Committee of the National Health Security Preparedness Index

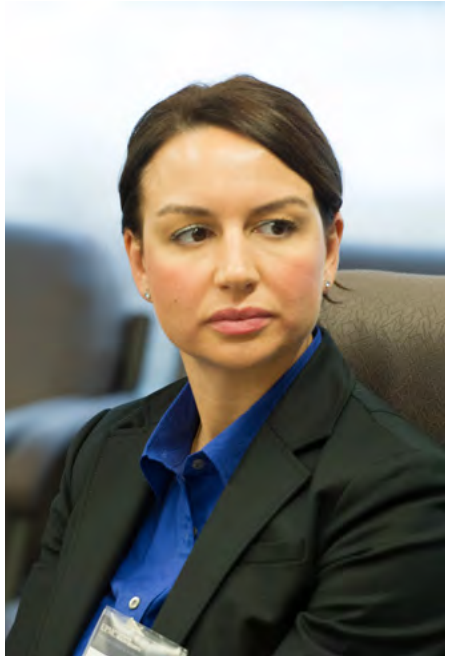
Blue Ribbon Study Panel on Biodefense

National Research Council (NRC) Roundtable on Risk, Resilience, and Extreme Events

US Agency for Toxic Substances and Disease Registry (ATSDR) Stakeholder Panel

US Environmental Protection Agency's Board of Scientific Counselors, Homeland Security Subcommittee

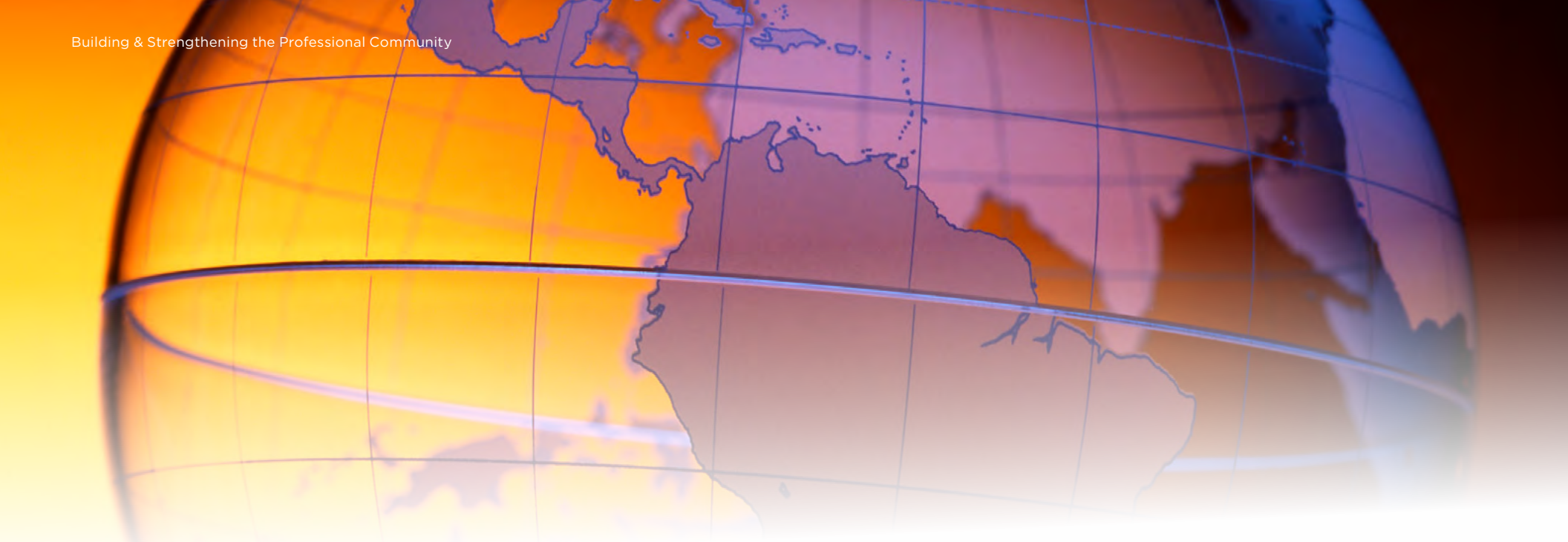
Building & Strengthening the Professional Community



Identifying and Educating Next-Generation Leaders

The Center runs the Emerging Leaders in Biosecurity Initiative (ELBI), a highly selective fellowship program that brings together graduate students and early career professionals to learn about and discuss some of the most pressing issues in contemporary biosecurity policy and practice. The various disciplines represented in this 3rd year of ELBI include the life sciences, bioethics, policy and law, nonproliferation, and public health. In addition to ELBI's domestic fellows, we were pleased to welcome 6 international fellows this year from the UK, Canada, and Australia. The program provides fellows with unique access to a growing alumni network, as well as to senior biosecurity leaders.

The 2015 ELBI class held its spring meeting in Washington, DC. The fellows attended a briefing at the White House on the Global Health Security Agenda, dual-use research of concern, and related biosecurity issues given by staff from the National Security Council and the Office of Science and Technology Policy. They then had a full day of meetings interacting with leaders in the field, followed by visits to the Department of Defense and the Department of State. The fellows and ELBI program staff look forward to reconvening in the United Kingdom in August.



A New Title for Our Journal: *Health Security*

For the past 12 years, our Journal has been known as *Biosecurity and Bioterrorism: Biodefense Strategy, Practice, and Science*. That title served us well as the journal was established and developed its readership and scholarship. As we envisioned at its start, the Journal became the forum of choice for the biosecurity community to examine issues such as medical and public health preparedness, community resilience and planning, dual-use research, risk communication, disease surveillance, countermeasure development, and a wide range of topics in the field.

Over the years, the field itself has broadened to include the continued risk of pandemics and emerging infectious diseases, natural disasters, outbreaks of foodborne illness, health emergencies caused by acts of terrorism, and the potential for biological, chemical, and nuclear accidents. The new title, *Health Security*, better reflects the expanded horizons of readers and authors from the range of professions relevant to the science and practice of preparedness and response and to protecting people's health from the consequences of epidemics and disasters.

Health Security is the only peer-reviewed journal dedicated to this set of issues. Our new name signals our commitment to protecting people's health after epidemics or disasters and to ensuring that communities are resilient to major health challenges.

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, Japan, Europe, India, and China. Last year, the full-text downloads from the Journal increased by 28% over the previous year.

The Journal is online at: **www.liebertpub.com/hs**.

Health Security Highlights, 2015

US Disaster Planners' Attitudes Regarding Preevent Vaccine for First Responders and Point-of-Dispensing Workers. *Terri Rebmann, Travis M. Loux, Thomas K. Zink, Zachary Swick, and Mary Wakefield*

Applying Crowd Psychology to Develop Recommendations for the Management of Mass Decontamination. *Holly Carter, John Drury, G. James Rubin, Richard Williams, and Richard Amlôt*

The 49th Hour: Analysis of a Follow-up Medication and Vaccine Dispensing Field Test. *Raymond Puerini, Jessica Caum, Natalie Francis, and Steven Alles*

Commentary: Engaging the States of the Former Soviet Union in Health Security. *David R. Franz*

Commentary: Public Engagement and the Governance of Gain-of-Function Research. *Monica Schoch-Spana*

Insights from Nature for Cybersecurity. *Elżbieta Rzeszutko and Wojciech Mazurczyk*

Are Human Service Agencies Ready for Disasters? Findings from a Mixed Methods Needs Assessment and Planning Project. *Thomas J. Hipper, Ashley Orr, and Esther Chernak*

Implications Drawn from a Military Bioterror Exercise in Israel. *Tamar Berger, Itay Fogel, Lion Poles, Adi Aran, Omri Shental, and Michael Kassirer*

Development of Drug-Approval Regulations for Medical Countermeasures Against CBRN Agents in Japan. *Rumiko Shimazawa and Masayuki Ikeda*

Special Feature: Antimicrobial Resistance

Commentary: Antimicrobial Resistance Is a Global Health Emergency. *Eric Toner, Amesh Adalja, Gigi Kwik Gronvall, Anita Cicero, and Thomas V. Inglesby*

Public Funding of Clinical-Stage Antibiotic Development in the United States and European Union. *Michael J. Eichberg*

Antimicrobial Stewardship in Outpatient Settings: Leveraging Innovative Physician-Pharmacist Collaborations to Reduce Antibiotic Resistance. *Michael E. Klepser, Alex J. Adams, and Donald G. Klepser*

A Plausible Worst-Case Scenario of Increasing Multidrug Resistance as a Tool for Assessing Societal Risks and Capabilities in Sweden. *Roger Roffey, Anna Lindberg, Lena Molin, and Per Wikman-Svahn*

Informing and Interacting with Professionals in the Community

The Center publishes numerous resources to keep health security leaders, policymakers, scientists, and practitioners current on critical developments and issues in the health security field. We publish the daily *Health Security Headlines*, which delivers to more than 2,200 subscribers from academia, government, and journalism 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 emerging threats.

The bi-weekly *Clinicians' Biosecurity News* reaches more than 2,400 readers, including healthcare professionals, emergency preparedness officials, and policymakers from every state as well as many international subscribers. The *CBN* offers updates on new developments in a range of clinical research and practice issues that intersect with biosecurity and health security, including infectious diseases, medical management, drug development, hospital and healthcare system preparedness, public health preparedness, and public policy.

Preparedness Pulsepoints, issued weekly, goes to more than 1,100 subscribers. *Preparedness Pulsepoints* readers from the US span more than 30 states, while international readership includes subscribers from more than 40 countries. *Pulsepoints* subscribers are policymakers and officials from various government agencies at the state, local, and federal levels; members of professional healthcare organizations and philanthropic foundations; and thought leaders in academia and industry. The publication keeps them 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.

In December 2014, the Center launched its blog, *The Bifurcated Needle*. Featuring commentary by Center experts, the blog offers readers in-depth perspectives on current developments in the worlds of biosecurity, health care, public health, policy, and science, as well as original analyses of emerging trends in health security. Additionally, the Center's website, Twitter feed, and Facebook page are followed by health security thought leaders and practitioners, as well as by US government officials.

REVIEW ARTICLE

Clinical Management of Potential Bioterrorism-Related Conditions

Anesah A. Adalja, M.D., Eric Toner, M.D., and Thomas V. Inglesby, M.D.

IN THIS ARTICLE, WE REVIEW THE CLINICAL MANAGEMENT OF DELIBERATE infection with several pathogens of greatest bioweapons concern. On the basis of historical incidents coupled with information on ease of dissemination, contagiousness, mortality rates, public health impact, ability to engender panic, and the need for special preparedness,[1] the Centers for Disease Control and Prevention (CDC) stratifies pathogens and toxins into three risk categories — A, B, and C — with category A meriting the highest level of concern and preparedness.[1,2] In this review, we consider diseases that are caused by category A agents for which there are high-quality clinical data in the unclassified literature (see the Supplementary Appendix, available with the full text of this article at NEJM.org). The category A viral hemorrhagic fever viruses are beyond the scope of this review.

ANTHRAX

Naturally occurring anthrax has been known since antiquity and is found worldwide. It has also been used as a bioweapon: there were 22 anthrax cases and 5 deaths after the 2001 attacks in which anthrax spores were sent through the U.S. mail.[3] Anthrax is caused by infection with the spore-forming, exotoxin-producing, gram-positive bacillus *Bacillus anthracis*. It is a disease of herbivores that ingest spores present in the soil that then germinate in the gut. In humans, three forms of anthrax are recognized: cutaneous (the most common), gastrointestinal, and inhalational (the most deadly).[4] After the 2009–2010 European outbreak linked to heroin injection, a fourth type, injectional, was recognized.[5] In all forms, the clinical manifestations are primarily caused by the toxins secreted by the vegetative bacteria.[6]

CUTANEOUS ANTHRAX

The most common and least lethal form of anthrax, cutaneous anthrax occurs after spores penetrate breaks in the skin and germinate. After a 1-day to 12-day incubation period, a pruritic papule appears at the site of inoculation, progresses to become a vesicle or pustule, and finally becomes the characteristic painless, coal-black eschar from which the disease derives its name. Marked edema of the affected region is present, as well as lymphadenopathy and fever. When untreated, cutaneous anthrax carries a mortality rate of less than 1%, but in rare cases it can disseminate throughout the body and produce high lethality.[7] Figure 1A shows the characteristic black eschar of cutaneous anthrax.

GASTROINTESTINAL ANTHRAX

Gastrointestinal anthrax occurs after ingestion of vegetative *B. anthracis* bacteria from the meat of infected animals. The disease is divided into two phases: oropha-

Clinical Management of Potential Bioterrorism-Related Conditions

In March of 2015, the Center published in the *New England Journal of Medicine* a review of the clinical management of deliberate infection with several pathogens of greatest bioweapons concern. The purpose of this review was to highlight clinically useful issues related to CDC category A pathogens for which there are available high-quality clinical data. Because most of these conditions can occur naturally, suspicion for bioterrorism depends on clinicians being alert to unusual patterns, such as unexplained clusters of infection. The review is intended to help facilitate rapid diagnosis and subsequent communication with public health officials.

Selected Professional Activities

Publications:

Schoch-Spana M, Selck FW, Goldberg LA. A national survey on health department capacity for community engagement in emergency preparedness. *J Public Health Manag Pract* 2015;21(2):196-207.

Henderson DA. John Bartlett and bioterrorism. *Clin Infect Dis* 2014;59 (Suppl 2):S76-S79.

Presentations:

Johns Hopkins Preventive Medicine Residency Program, "Meet the Professor" series. Baltimore, MD. "Walk Through the Evolution of a Career." July 15, 2014.

Johns Hopkins Bloomberg School of Public Health, International Health Doctoral Students. Baltimore, MD. "Global Threats of Disease." October 7, 2014.

Johns Hopkins Bloomberg School of Public Health, Vaccine Science Course. Baltimore, MD. February 11, 2015.

PA Coalition of Nurse Practitioners Annual Meeting. Pittsburgh, PA. "Ebola." November 7, 2014.

Johns Hopkins Bloomberg School of Public Health, Vaccine Science Course, Part II. Baltimore, MD. March 2, 2015.

Pittsburgh Infraguard. Pittsburgh, PA. "Ebola." November 14, 2014.

University of Pittsburgh School of Medicine, Pulmonary Critical Care Grand Rounds. Pittsburgh, PA. "Ebola." September 19, 2014.

University of Pittsburgh School of Medicine, Global Health Equity Grand Rounds. Pittsburgh, PA. "Ebola." September 8, 2014.

Advisory Board, Scientific Community, and Task Force Memberships:

Advisory Committee, National Healthcare Coalitions for Emergency Preparedness Conference

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


UPMC


ENTER FOR
EALTH SECURITY

Tom Inglesby, MD

Chief Executive Officer and Director

Dr. Inglesby has been with the Center since its inception, 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 *Health Security*, formerly *Biosecurity and Bioterrorism: Biodefense Strategy, Practice, and Science*, which he helped to establish 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, Malaysia, Indonesia, 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 Editor Emeritus of the peer-reviewed journal *Health Security*. 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.

Her Royal Highness Princess Maha Chakri Sirindhorn, representing His Majesty the King, presenting the Prince Mahidol Award for the year 2014 in the field of Public Health to Professor Donald A. Henderson, the United States of America, at the Chakri Throne Hall, Grand Palace

Honors for Dr. D. A. Henderson

On January 28, 2015, Her Royal Highness Princess Maha Chakri Sirindhorn of Thailand, representing His Majesty the King, presented the Prince Mahidol Award for the year 2014 in the field of Public Health to D. A. Henderson. The Prince Mahidol Awards are given annually to those who have had a great impact on the world of medical science and public health on a historical scale. Dr. Henderson received the award for his leadership and devotion in eradicating smallpox. From 1966 to 1977, Dr. Henderson led the WHO Smallpox Eradication Unit and coordinated a global effort of mass vaccination and intensive case surveillance that subsequently led to eradication of smallpox.

On April 14, 2014, Dr. Henderson received the Dr. Charles Mérieux Award for Achievement in Vaccinology and Immunology, which honors individuals whose outstanding lifetime contributions to the fight against vaccine-preventable diseases have led to significant improvement in public health. The award is named for Dr. Charles Mérieux, the distinguished French scientist who devoted his life to fighting infectious diseases globally, combining his medical knowledge with an understanding of business to develop one of the world's leading vaccine laboratories, the Pasteur Institute. First offered in 2005, the award is presented annually at the Annual Conference on Vaccine Research.

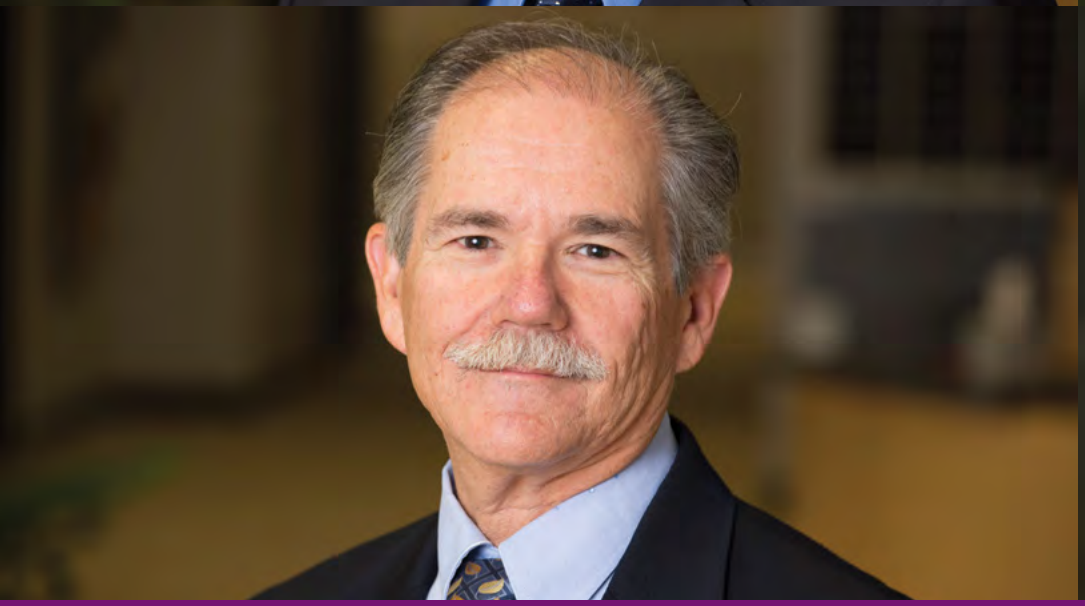
Center Project Staff

L to R Row 1: Matthew Shearer, MPH, Analyst; Crystal Boddie, MPH, Associate; Ann Norwood, MD, COL, USA, MC (Ret), Contributing Scholar; Dan Hanfling, MD, Contributing Scholar

L to R Row 2: Gigi Kwik Gronvall, PhD, Senior Associate; Matt Watson, Senior Analyst; Meghan McGinty, MPH, MBA, Research Assistant; Tara Kirk Sell, MA, Associate

Staff of the UPMC Center for Health Security, 2014-2015






Center Project Staff

L to R Row 3: Colonel Randall J. Larsen (USAF, Ret), National Security Advisor; Jennifer Nuzzo, DrPH, Senior Associate; Richard E. Waldhorn, MD, Contributing Scholar; Amesh Adalja, MD, Senior Associate

L to R Row 4: Eric Toner, MD, Senior Associate; Sanjana Ravi, MPH, Analyst; Michelle Rozo, PhD, Research Assistant; Monica Schoch-Spana, PhD, Senior Associate




Publications, Finance, Events, IT and Administrative Staff

Jackie Fox, Managing Editor, *Health Security;* Andrea Lapp, Director of Events; Price Tyson, Information Technology Director; Tasha King, Chief Financial Officer and Senior Administrator, Elaine Hughes, Senior Administrative Assistant; Maria Jasen, Executive Assistant; Tanna Liggins, Senior Administrative Assistant

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 runs 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.

CREDITS

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