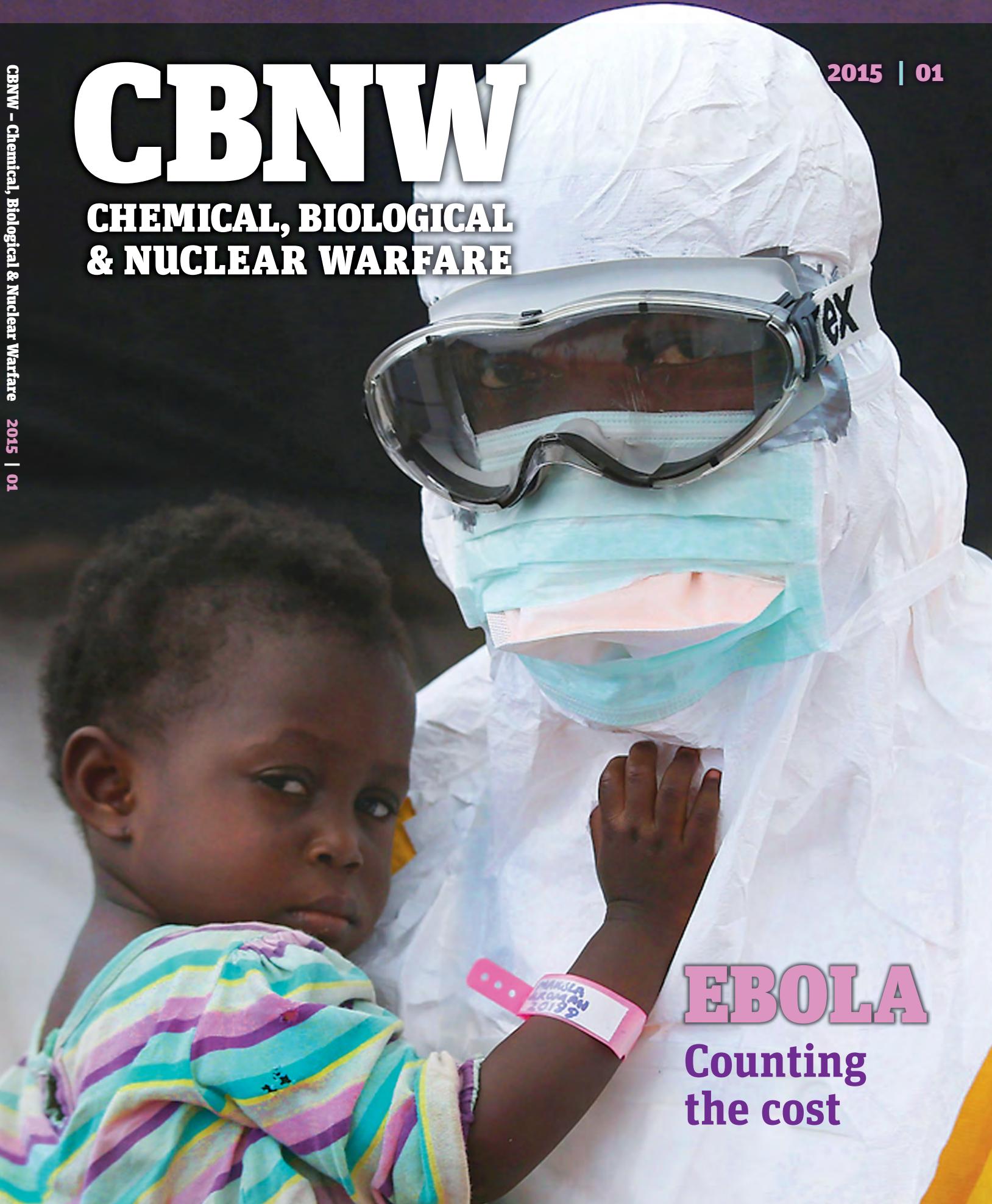


CBNW

CHEMICAL, BIOLOGICAL
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EBOLA
Counting
the cost

SPECIAL FOCUS: EBOLA

THE INTENSE DRUMBEAT
Mutating Terrorism

REALITY CZECH
Gold Standard Training

INTERVIEW
Battelle Ready

MAKING New weapons

Gary Flory asks if we should also be preparing for deliberate use of the Ebola virus and other emerging diseases in acts of bioterrorism

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Vaccination serves a critical role in disease prevention.

The current Ebola epidemic, starting in Guinea in March 2014, has been far more serious than previous outbreaks, having claimed the lives of more than 5,000 individuals as of November 2014, with over 14,000 reported cases. As a naturally occurring disease, Ebola is causing great suffering and death. First discovered in simultaneous outbreaks in Nzara, Sudan and Yambuku, Democratic Republic of Congo in 1976, Ebola Hemorrhagic Fever is, in fact, one of the most virulent viral diseases known to man with a case fatality rate of at least 50%. And it has previously also been regarded as a possible bioweapon. Spain's State Secretary for Security, Francisco Martínez, recently reported to the US Congressional Interior Committee that extremists had been discussing the use of Ebola as a weapon against the United States and the West in general. In his statement, Martínez said that there were numerous examples of threats to use Ebola as a weapon.

The fear and economic impact of an intentional introduction of this deadly disease could be staggering. Nonetheless, most experts agree that Ebola, in its current form, would be technically challenging to use as a weapon of mass destruction. It has been speculated that Ebola was successfully aerosolised for dissemination as a biological weapon by scientists working on the Soviet Union's biological weapons programme, Biopreparat. However, most agree that the technical challenges of weaponisation would prevent its large-scale deployment as a weapon. More realistically, terrorists could attempt to spread the virus through infected body fluids or by infecting themselves and intentionally infecting others –in effect, imitating Nature. Though psychologically significant, the morbidity and mortality of such an attack would possibly be less than that of an attack



Medical workers are the new first responders in the war against infectious diseases.

using traditional weapons such as explosives.

Other emerging infectious diseases

As defined by the World Health Organization (WHO), emerging infectious diseases (EIDs) are those whose incidence in humans have increased since the 1990s or threaten to increase in the near future. EIDs include new infections resulting from change or evolution of existing organisms; known infections spreading geographically; new infections appearing in areas undergoing ecological transformation; and existing organisms reemerging due to antimicrobial resistance or the breakdown of public health measures.

Globally, naturally occurring infectious diseases cause one in every three deaths. A recent analysis by Brown University of more than 12,000 outbreaks affecting 44 million people worldwide concluded that both the number of infectious disease outbreaks and the number of unique disease agents are increasing. These increases are in part due to the globalisation of travel and trade. In an environment where we can travel anywhere in the world within 24-hours, we have more potential for exposure to new organisms than ever before. In addition to the increased human contact, we are also more interconnected with animals—both agricultural livestock and wild animals.

Terrorist interest in EIDs

In many ways, infectious diseases are perfect weapons. ➤

DISEASES OF NATIONAL SECURITY SIGNIFICANCE

Diseases are grouped in categories according to the risk they pose to national security:

Category A agents pose the highest risk due to their high mortality or their ability to be transmitted from person to person. They include plague, smallpox, tularemia, anthrax, botulism, and viral haemorrhagic fevers such as Ebola. History proves that these agents can be used with hostile intent.

Category B agents are moderately easy to disseminate and their use produces lower mortality. They include ricin toxin, Q fever, Typhus fever, Brucellosis and water safety threats.

Category C agents are the third highest threats and include emerging pathogens that could be engineered for mass dissemination in the future because of availability, ease of production or potential for high morbidity and mortality.

Decontamination of contaminated equipment.



SPECIAL FOCUS: EBOLA

Many organisms of concern (excluding smallpox) are endemic to many countries. Their production is relatively easy with equipment used for the production of food and medicine and much cheaper than other weapons of mass destruction. Unlike many chemical weapons, aerosols of biological agents are invisible, odourless and tasteless. Additionally, biological agents are more difficult to detect than other security threats. Even attacks with agents with low case fatality rates can overwhelm the public health system and prevent the effective

response to existing healthcare needs.

Biological attacks may also fit well with the ideology of terrorist organizations that are not deterred by mass civilian casualties or the random nature of its victims – and who may actually have this as a prime aim. These groups, as shown by the rise of Islamic State in 2013 and 2014, are on the increase and are becoming more deadly, vicious, and have spread to countries of concern where many diseases are prevalent.

Finally, the response to an intentional disease introduction may cost billions, lead to political instability and have staggering psychological impacts on the target nation.

BIOTHREAT REDUCTION

An effective biothreat reduction strategy must address the most frequently identified limitations of previous responses:

- Weak public health infrastructure
- Lack of active disease surveillance
- Shortages of vaccines, antiviral medications and antibiotics
- Ineffective or unrealistic delivery systems for medical countermeasures
- Lack of personal protective equipment
- Slow research and development of medical countermeasures
- Lack of an infectious waste disposal strategy
- Laboratory capacity
- Inadequate burial procedures and mass fatality management plans
- Failure to address legal and policy issues related to quarantine, detention and isolation
- Ineffective decontamination plans
- Failure to exercise response plans
- Weak training of first responders
- Lack of trust between a nation's leadership and its citizens
- Failure to coordinate and communicate with all appropriate parties

Creation of microorganisms

Recent gain-of-function research and the debate following announcements that various researchers had created an H5N1 virus that was highly contagious in ferrets have made diseases increasingly attractive as weapons. In fact, terrorist organizations are specifically recruiting scientists, microbiologist, doctors and engineers to help with the development of their weapons capabilities.

Even in light of all of these factors, we must keep the risk in perspective. There remain significant obstacles to producing, delivering, and dispersing biological agents in the quantities necessary for a large-scale attack and a significant terrorist attack with a biological agent remains a remote possibility. Although most experts agree that the use of the Ebola virus as a weapon is a remote possibility, the threat posed by EIDs as a whole requires that all nations have a specific set of strategies to respond to these threats.

Clearly, absolute resolution of each of these limitations is outside the control of any single organization or nation. Global problems require global action. One example is the Global Health Security Agenda, whose vision is a world safe and secure from the global health threats posed by infectious disease. Through this initiative at least 30 partner countries will work together to prevent, detect and effectively respond to infectious disease threats, whether naturally occurring or intentionally released. Global initiatives, however, can only support and not replace local action to build effective biothreat reduction strategies. ■



Training staff on proper biosecurity procedures.



Treating patients in the field.

Gary A. Flory is the Agricultural Program Manager for the Virginia Department of Environmental Quality and an advisor, trainer and speaker in EIDs, counter-agroterrorism, and agricultural facility decontamination.