Thinking Outside the Box: Biosafety's Role in Protecting Non-Laboratory Workers from Exposure to Infectious Disease

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The global response to the 2015 Ebola Virus Disease (EVD) outbreak in West Africa necessitated close working relationships among a set of professions that routinely interacts with infectious agents, but often in different venues: biosafety, infection prevention, and public health. For example, as infected patients were transported internationally to specialized clinical sites for enhanced supportive care, infection prevention professionals focused their efforts on protecting the patients and healthcare workers. Biosafety professionals provided expertise on important concepts adapted from the laboratory setting to supplement the protection of these patients and healthcare workers, such as the safe use of enhanced personnel protective equipment (PPE), the methodical removal of this PPE, containment, disinfection and decontamination protocols, and so forth. They also focused on protecting lab workers, ensuring containment and safe transport of patient samples, and the proper management of contaminated waste materials. Public health professionals provided crucial support in the identification of case contacts and in monitoring potentially exposed individuals, and helped to educate the public to reduce misconceptions and fears about the disease. But the experience also revealed that in outbreak situations, many individuals in occupations beyond the laboratory and healthcare setting have the potential to be exposed to infectious agents. Examples include transportation workers, housekeepers, waste handlers, law enforcement, and morticians, just to name a few. The need to train non-healthcare worker populations on how to safely conduct their work in conditions where the risk for potential exposure to an infectious disease exists became readily apparent, representing an opportunity for the biosafety profession to think "outside the box" of traditional laboratory risk assessment and containment.

The National Institute of Environmental Health Sciences (NIEHS) recently leveraged resources within its Worker Training Program (WTP) to address the training needs of workers outside of the healthcare industry but in professions with possible exposure to the agents that cause infectious diseases of public health significance. A primary function of the NIEHS WTP is to fund extramural activities that provide high-quality and innovative health and safety training to workers, particularly those responsible for the proper management of hazardous materials. To quickly respond to this emerging training need, the NIEHS WTP allowed current grantees to redirect funds to train personnel in healthcare and other industries to prevent or mitigate potential exposures to EVD. In April 2015, the NIEHS WTP, with support from the Centers for Disease Control and Prevention (CDC), published a funding opportunity to supplement the training activities of current grantees. The objective of the supplemental funding was to conduct worker-based training to prevent and reduce the exposure of emergency first responders and other workers who are at risk of contacting the agents that cause infectious diseases of public health significance. Late this summer the NIEHS WTP published a new funding opportunity with the goal of establishing several large training centers. As a result of these opportunities, the Biosafety and Infectious Disease Training Initiative was formed.

Biosafety and Infectious Disease Training Initiative (BIDTI)

The Texas-Utah Consortium for Hazardous Waste Worker Training (the Consortium) is a collaboration between the Southwest Center for Occupational and Environmental Health (SWCOEH) at The University of Texas School of Public Health (UTSPH) and the University of Utah. The Consortium partnered with the University of Nebraska Medical Center, host of the Nebraska Biocontainment Patient Care Unit (NBU). The NBU was commissioned in 2005 and is now one of the nation's 55 CDC-recognized Ebola treatment centers. Together, the Consortium and the NBU applied for and received one of only six NIEHS WTP supplemental awards and we used the funding to form the new Biosafety and Infectious Disease Training Initiative (BIDTI).

The primary purpose of the BIDTI is to positively and meaningfully impact worker and community health by providing well-designed, well-delivered, and practical health and safety training to prevent the transmission of EVD and other serious communicable diseases. Through a series of modular courses, each designed at the appropriate level commensurate with risk, a team of experienced biosafety and infection prevention professionals from BIDTI aims to train the following audiences: emergency medical technicians, law enforcement, public health officials, trans-

portation workers, environmental health and safety professionals, hospital employees, waste transporters and processors, embalmers and others in the mortuary industry, and the general public. The modules will be designed as follows:

- **BIDTI's community level course** targets the general public and will be delivered through free online learning modules in English and in Spanish.
- **BIDTI's awareness level course**, called *Fundamentals of Infectious Diseases of Public Health Significance: Ebola, MERS, and Other Emerging Diseases*, is aimed at workers who may be exposed to serious communicable diseases at their workplaces. Elements of this course include an introduction to highly infectious diseases, methods to identify likely exposure routes within the participant's industry or organization, techniques to select exposure controls, description of the uses and limitations of PPE, strategies for conducting risk assessments and communicating clearly, an explanation of current infectious disease surveillance methods and reporting requirements, and, importantly, an explanation of when and who to contact for help.
- **BIDTI's operations level course** is aimed at workers with a great likelihood of exposure to infectious diseases of public health significance. This competency-based workshop is an intensive hands-on course in which the participant is immersed in the awareness level topics, but in greater detail and with an emphasis on a team approach to prevention. Interested biosafety, infection prevention, and public health professionals are encouraged to attend the training at this level so that they, in turn, can provide the information to others at their respective places of work.

Anticipated Results

What do these training efforts mean for the biosafety, infection prevention, and public health professions? As a result of BIDTI's activities, we expect the following:

- Improved communications, interactions, and collaborations among the professions responsible for preventing the transmission of infectious diseases of public health significance
- The identification of gaps in knowledge among the biosafety, infection prevention, and public health professionals
- The development and delivery of targeted educational interventions to fill knowledge gaps among biosafety, infection prevention, and public health personnel
- The education of various workforces with potential exposure to agents that could cause diseases of public health significance, and the general public on the fundamentals of these infectious diseases.

In addition to filling knowledge gaps in industries peripheral to or outside of healthcare, we also anticipate enhancing training opportunities across the continuum of healthcare. As such, we are applying for continuing education units for all major target audiences, including nurses, physicians, biosafety professionals, industrial hygienists, and emergency medical service providers.

Summary

The global response to the 2015 EVD outbreak in West Africa necessitated coordination and collaboration among three professions that routinely interact with infectious diseases, but also revealed difficulties in synchronizing efforts and in dealing with the educational gaps in a variety of professions also impacted by the outbreak. We hope that the efforts of the BIDTI, generously supported by the NIEHS WTP and CDC, will assist in addressing these knowledge gaps not only for EVD but also for whatever disease outbreak that might occur in the future. For more information, please visit http://is.gd/BIDTI.

Disclosure

BIDTI activities are supported by the NIEHS of the National Institutes of Health under Award Number U45ES019360. Additional support is provided by the Southwest Center for Occupational and Environmental Health, The University of Texas Health Science Center at Houston, the Nebraska Biocontainment Unit, and Indiana University School of Public Health at Bloomington.

Acknowledgments

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