

UNIVERSITY OF
LOUISVILLE SCHOOL
OF PUBLIC HEALTH
AND INFORMATION
SCIENCES

Center for Health Hazards Preparedness

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Confronting the Spectrum of Public Health Hazards

The Center for Health Hazards Preparedness is a Centers for Disease Control and Prevention (CDC)-designated Center for Public Health Preparedness within the University of Louisville School of Public Health and Information Sciences. The Center is a coordinator for research, education and service on the early recognition and response to potential acts of terrorism and disaster. The Center's activities aim to bring together the information resources, human expertise and research infrastructure to improve the local, regional and national response to outbreaks of infectious diseases and the defense against potential biological, chemical and radiation threats. The Center's coverage includes the Commonwealth of Kentucky and areas in the surrounding states.

Public health preparedness involves prevention, detection and response. These three functions are information-intensive and involve knowledge, surveillance, planning and response communications.



Image is from the Center's DVD "Respiratory Illness: A Case Review."

Faculty and staff from multiple departments and schools of the University of Louisville, along with colleagues from local and state agencies, collaborate in the Center to address these core competencies.

A major function of the Center is to provide continuing education for professionals in the fields of medicine, nursing, allied health, public health, healthcare administration and dentistry as well as first responders. In September 2003, the Center, with HRSA support, created a consortium to initiate a broad-based continuing education program for health professionals in Kentucky and the surrounding region. This project addresses the reality that it requires a vast network of responders to stabilize a community in cases of terrorism or disaster. Expertise from the University of Kentucky has broadened educational curricula to include agricultural and veterinary bioterrorism and contact with pharmacists and behavioral health professionals. In September 2005, HRSA announced a three-year continuation of the cooperative agreement.

FREE Online Continuing Education Courses

The Center for Health Hazards Preparedness is taking continuing education outreach to the next level by providing free online continuing education courses. There are six different courses that reside on the University of Louisville Continuing Health Sciences Education website, which are video-archived presentations. Various national and local experts present the following 1-2 hour courses: *Avian Influenza & the Coming Pandemic*, *Pandemic Flu: Will It Occur & Are We Prepared*, *Neuroterrorism: Chemical Threats to Human Health*, *Emergency Medical Management of Radiological/Nuclear Incidents*, *Population Health Protection and Information Infrastructure*, and *Kentucky's Preparedness Plans*. To access these free preparedness continuing education courses go to <http://www.chse.louisville.edu/disasterprepcourses.html>.

The Center has also developed a free online learning module, *Preventing Transmission of Infections*. This unique self-directed educational module explores modes of disease transmission, explaining the ways diseases or organisms move from one individual to another. Knowledge about how to prevent disease transmission empowers the healthcare worker with essential knowledge necessary to implement safer healthcare practices. To access this free online learning module go to <https://ky.train.org>. See the Distance Learning section on the last page for more information.

Continuing Education Programs

PARTNERS

Kentucky Cabinet for Health and Family Services

Kentucky Department for Public Health

Kentucky HRSA Bioterrorism Hospital Preparedness Program

Kentucky AHEC Program

Kentucky Department of Homeland Security

Kentucky TeleHealth Network

Louisville Metro Health Department

Louisville Emergency Management Agency

University of Kentucky

Southeast Public Health Training Center - Chapel Hill, NC

University of Louisville Schools of Medicine, Dentistry and Nursing

University of Louisville Hospital, Louisville VA Medical Center, Kosair Children's Hospital, Jewish Hospital of Louisville, Norton Hospital, Norton-Audubon, Norton-Suburban and Baptist Hospital East



Physicians, nurse practitioners, nurses, allied health, EMS, and public health professionals encompass the majority of hands-on healthcare providers within a given community. These professionals provide care in a variety of settings including ambulatory, home health, long-term care and schools. Their basic skills and competencies differ widely. Training required to address an appropriate response to terrorism or disaster events must begin at the individual's recognized skill level. The Center's customized training is based upon the participants' current level of skill and knowledge with an emphasis on providing information in a format that facilitates a change in practice.



Level One Courses

Objectives: Trainees will understand: 1) the effects of different classes of potential weapons of terrorism on individual humans and communities; 2) the characteristic pattern of symptoms and signs linked to these agents; 3) the types of pharmaceutical agents recommended for treatment or prophylaxis of these exposures; 4) the use of measures to reduce the risk of exposures to themselves and others, including selective decontamination, appropriate isolation, waste disposal, and use of personal protective equipment; 5) how to identify persons who have or are likely to sustain major psychological trauma following the event; 6) the procedures for reporting cases or clusters that may be suspicious for a terrorist attack; 7) incident command structures under the National Incident Management System (NIMS) and the National Response Plan (NRP); 8) the range of public health interventions applicable, including epidemiologic investigations, environmental decontamination, mass vaccination or chemoprophylaxis, and quarantine; and 9) their professional obligation to provide treatment.

Recognition and Prevention of Emerging Infectious Diseases and Biological Agents

The aim of this cornerstone bioterrorism presentation is to review a spectrum of diseases which include, but are not limited to, smallpox, chickenpox, monkeypox, measles, anthrax, viral hemorrhagic fevers, tularemia, botulism, plague, avian influenza, pertussis and SARS. Key points of emphasis include physical presentation of the disease, transmission, epidemiology, prevention strategies, protective measures and notification. The discussion draws attention to recognition of critical differential diagnostic features.

Chemical Agents

This lecture presents the major groups of chemical agents considered to be terrorist threats, including nerve agent (organophosphate cholinesterase inhibitors), vesicants (mustard agents, lewisite), cyanide (formerly blood agents), incapacitating agents, riot-control agents and pulmonary agents (e.g. phosgene, chlorine, ammonia). An overview of the toxicological properties of each group, the reported human effects of use of each agent during mass exposure and studies of individual

case reports are presented. Management of large group exposure focuses on decontamination, triage, acute mental health issues and the selection of appropriate antidotes.

Radiation Disaster Preparedness

The presentation, which is under development, will begin with an overview of the types, mechanism and clinical effects of moderate to high level radiation exposure. Next, a discussion of the primary scenarios of concern: a dirty bomb, a direct attack on a nuclear power plant and the detonation of nuclear explosive device. A discussion of disaster preparedness, triage, medical care of injuries as simulated with the use of SPs, use of secondary prevention agents, consideration of prenatal radiation exposure, use of radiation detectors and management of psychological impact will conclude the treatment component. Incident command and control issues, communication, tracking and short-term follow up and use of registries for long-term follow up of survivors also will be covered.

Level Two Courses

Objectives: Trainees will develop a thorough knowledge of: 1) the infectious, biochemical, physiologic, and radiologic mechanisms by which each agent exerts human toxicity; 2) the pharmacologic mechanism by which each therapeutic intervention reduces toxicity; 3) the methods and rationale for decontamination; 4) how to initiate care of persons with evident psychological trauma; 5) how to deal with compassion fatigue; 6) how to incorporate optimal laboratory studies and procedures based on the best available evidence; 7) the coordination of local, state and federal authorities under the NRP; and 8) the ethical principles underlying their actions.



Dr. Paul McKinney guides residents through a scenario-based training using a human patient simulator.

Comprehensive Case Management

This training begins with a five to seven minute video of a scenario using an SP to present a simulated infectious disease. Each video will show “staged” patient encounters in a variety of settings (e.g. hospitals, clinics, laboratories). During the case, the physician interacts with the patient to gather pertinent medical history. In the process, s/he will describe the salient physical findings as well as demonstrate appropriate use of protective equipment and isolation environments. The last portion of the video will describe the internal and external response to the risks posed by that individual patient and highlight specific concerns of both the clinician and patient. After the video, the instructor guides participants through content elements specific to their job responsibilities. The clinician’s choices and patient responses as viewed in the video forms the basis for expanded discussion. A live demonstration of specimen collection may be incorporated using SPs with moulage. This could include an aspiration of vesicles and pustules from pox lesions, punch biopsies for lesions suspicious for cutaneous anthrax, blood cultures and nasopharyngeal washing to collect samples for respiratory viruses. Proper handling and packaging of specimens for shipment is also discussed. By engaging in dialogue, participants are able to demonstrate an understanding of the specific diseases, application, problem solving abilities and alternative responses. The first video in the series, “Respiratory Illness: A Case Review,” involves an SP who presents in an emergency room with pneumonia-like symptoms and history allowing the presenter to discuss both SARS and avian influenza.

Hospital Preparedness and Evaluation

This course examines system-wide readiness and responses within a particular setting. This training builds on basic disease identification and transmission competencies and facilitates thoughtful responses to issues such as patient placement, transportation, notification and activation of response plans (incident command). This course discusses mechanisms employed to: 1) minimize the impact on the hospital and community; and 2) maximize the safety of an infectious patient (known or suspected), other patients, healthcare workers and the community at large. The discussion focuses on practical application through a complex organizational structure.

Scenario-based Training

This course incorporates the sequential use of an SP and patient simulator to enhance recognition and management of biothreat infections or chemical intoxication for all levels of health care providers. An SP provides a real-time, interactive experience with interviewing, examining and evaluating patients. The interaction provides the opportunity for developing and improving interviewing skills in situations with either a limited diagnostic feature or a more complex, unexpected situation involving interpretation of the history and physical findings. The SP with moulage presents to the providers with complaints of appropriate symptoms, then progresses to the requirement for intensive care interventions, whereupon the focus moves to a human patient simulator, a computer-controlled mannequin. Current cases include botulism and inhalational anthrax.

Identification of Biothreat Agents and Safe Handling and Transport of Specimens

This intermediate level presentation is directed to those who collect and ship specimens as well as laboratory technicians and technologists who may be called upon to identify an unknown microbiologic agent submitted to their facility directly from a patient or via transport by mail or courier. This extended program utilizes benign surrogate agents to test the proficiency of laboratory personnel in identifying suspect biothreat agents.

Developing and testing response protocols during drills and exercises is a cornerstone of effective training.



Distance Learning

The Center provides distance learning courses via videoconference and web-based modules. Marketing and registration for many of these courses is centralized through KY TRAIN (Training finder Real-time Affiliate Integrated Network), a web-based learning management system of the Public Health Foundation. Registration is Required: Connect to <http://ky.train.org>. If this is your first time on the site, click on "Register" (left side of page) to register yourself in the system before you register for this program.

Videoconference: Interactive videoconference technologies allow busy professionals to participate in training sessions broadcast to participating sites. The Kentucky TeleHealth Network (KTHN) is a statewide telemedicine network of over 70 healthcare facilities with interactive videoconference capabilities. A subgroup of these facilities have been designated as the PROACT (Preparedness and Response On Advance Communications Technology) network. This group of 19 geographically diverse sites are contracted to make their facilities available for disaster preparedness educational programming, allowing us to reach health professionals in the most remote counties of Kentucky.

Continuing Education Preparedness Courses: Participants receive 1.5 hours of CME credit and 2.0 hours of CEU credit for each video-achieved preparedness course. Go to <http://www.chse.louisville.edu/courses.html> to access the FREE courses.

Continuing Education Preventing Transmission of Infections Module: The module is a unique self-paced educational experience that uses videos to explore the modes of disease transmission; it will take approximately 1.5 hours to complete. Participants receive 1.5 hours of CME credit and 1.8 hours of CEU credit. Go to <http://ky.train.org> to access the FREE module. Registration is required.

Calendar of Events

July 18, 2006 (Louisville, KY) Gerald Grant, MD, United States Air Force, will be presenting on battlefield experiences from the war in Iraq during the lunchtime lecture, "Lessons from the Neurosurgical Theater: Operation Iraqi Freedom."

August 25, 2006 (Lexington, KY) Symposium "Integrating Dental Professionals into a Disaster Response" will bring together dental representatives from each component KDA Dental Society and public health professionals from around the state in an effort to enhance the role of dental professionals as responders to mass disasters. Sponsored by the University of Louisville School of Dentistry, School of Public Health and Information Sciences, Center for Health Hazards Preparedness, Kentucky Dental Association, and the Kentucky Department of Public Health.

September 20, 2006 (Louisville, KY) Department of Juvenile Justice Program, will focus on training nurses from various Juvenile Justice facilities throughout the Commonwealth of Kentucky. The topics that will be discussed are Avian Influenza Update, Preventing Disease Transmission, The Road to Cervical Cancer, Recognizing Infectious Agents, and Changes in Methicillin-resistant Staphylococcus aureus (MRSA).

November 3-8 (Boston, MA) American Public Health Association (APHA) annual conference. Theresa Mayfield, DMD, who assistance in providing continuing education course for dental professionals is presenting, "Dental professionals as responders to a mass disaster: A survey of interest and motivation of Kentucky dental professionals," at the conference.

November 17, 2006 (Louisville, KY) Park DuValle Program will cover the following topic: Recognizing and Preventing Transmission of Infectious Disease and Respiratory Illness: Knowledge Application.

Publications

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Carrico R. and Goss L. (2005). Syndromic Surveillance: Hospital Emergency Department Participation during the Kentucky Derby Festival. *Disaster Management & Response (DMR)*, 3(3), 73-9.

Snyder, J.W. (2005). The Laboratory Response Network: Before, During, and After the 2001 Anthrax Incident. *Clinical Microbiology Newsletter*, 27: 171-175.

The Center for Health Hazards Preparedness is supported in part by grants from the Centers for Disease Control and Prevention (CDC) and the Health Resources and Services Administration (HRSA).



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