Bioterrorism: Changing Priorities in Medical Training and Research

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Bioterrorism-Related Resources for Medical & Graduate Education Programs

- What should we teach medical students?
- What should we teach graduate students?
- Who should decide how to answer these questions?

Medical School Pre-Clinical Curriculum

National consensus reached among medical educators responsible for teaching microbiology, immunology & infectious diseases under the auspices of AMSMIC:

Guidelines for Pre-Clerkship Medical School Bioterrorism Curricula

Richard Coico, Elizabeth Kachur, Viera Lima, and Stanley Lipper

Academic Medicine, 2004 (in press)

Medical School Clinical Curriculum

Guidelines for curriculum content related to bioterrorism were developed by a multi-disciplinary group of experts convened by the AAMC:

Training Future Physicians About Weapons of Mass Destruction: Report of the Expert Panel on Bioterrorism Education for Medical Students

http://www.aamc.org/newsroom/bioterrorism

Graduate Education

American Society for Microbiology

http://www.asm.org/Education/index.asp?bid=10060

Medical Research: Impact of the PATRIOT Act

Providing Appropriate Tools Required to Intercept and Obstruct Terrorism (PATRIOT) Act

Date Passed: Oct. 25, 2001

Part of the Act expands restrictions on the possession, use and access to biological agents, toxins and delivery systems.

PATRIOT Act

- The Act requires registration not only of the transport, but also the possession of "select agents.”
- The Act expands the government's ability to restrict access to hazardous agents.

PATRIOT Act

- Allows for prosecution, fines, or imprisonment of any person who knowingly possesses any biological agent that is not justified by prophylactic, protective, bona fide research, or other peaceful purpose; and
- Makes it a crime to possess select agents for persons under indictment, who have been imprisoned for more than a year, fugitives from justice, unlawful users of a controlled substance, illegal aliens, aliens not admitted for permanent residence from certain terrorist countries where trade is controlled by the Export Administration Act, persons who have been adjudicated as a "mental defective" or have been committed to a mental institution, or those who have been dishonorably discharged from the Armed Services.

Select Agents

- Viruses (e.g. Smallpox, Ebola, Marburg)
- Bacteria (e.g. ***Bacillus anthracis, Yersinia pestis)***
- Fungi (e.g. ***Coccidioides, Phakopsora)***
- Toxins (e.g. Botulinum neurotoxins, Ricin)
- Prions (e.g. Bovine spongiform encephalopathy)

http://www.ehrs.upenn.edu/protocols/slctagnts_list.html

Medical Research: Fink Committee Report

- The government should not attempt to regulate scientific publishing but trust scientists and journals to screen their papers for security risks
- The U.S. should facilitate a new International Forum on Biosecurity to encourage the adoption of similar measures around the world.
- Experiments of concern involving "dual use" pathogens should be approved by the IBCs that already oversee recombinant DNA research at U.S. institutions.

http://books.nap.edu/execsumm_pdf/10827.pdf

Experiments of Concern

1. Would demonstrate how to render a vaccine ineffective. This would apply to both human and animal vaccines
2. Would confer resistance to therapeutically useful antibiotics or antiviral agents. This would apply to therapeutic agents that are used to control disease agents in humans, animals, or crops.

Experiments of Concern

3. Would enhance the virulence of a pathogen or render a nonpathogen virulent. This would apply to plant, animal, and human pathogens.
4. Would increase transmissibility of a pathogen. This would include enhancing transmission within or between species.

Experiments of Concern

5. Would alter the host range of a pathogen. This would include making nonzoonotics into zoonotic agents.
6. Would enable the evasion of diagnostic and detection modalities.
7. Would enable the weaponization of a biological agent or toxin. This would include environmental stabilization of pathogens.

HHS Responds to Fink Committee Recommendations

March, 2440: U.S. formally endorses Fink Report recommendation #4 to establish the National Science Advisory Board for Biosecurity.

Mission: To improve biosecurity measures of legitimate biological research that could be misused to threaten the public/national security – so called "dual use" research.

http://www.biosecurityboard.gov/NSABB_press_release.pdf

Bioterrorism: Changing Priorities in Medical Training and Research

- U.S. medical schools have installed curricular components related to bioterrorism.
- Graduate biomedical education programs and biomedical research have both been impacted by the Patriot Act.
- The National Science Advisory Board for Biosecurity will be a crucial resource for research oversight and policy guidelines related to dual use pathogens.