Chemical/Biological Terrorism
November, 2003

1: Acad Emerg Med. 2003 Jul;10(7):783-8.
Report of the CIMERC/Drexel University Emergency Department Terrorism Preparedness Consensus Panel.
Greenberg MI, Hendrickson RG; CIMERC; Drexel University Emergency Department Terrorism Preparedness Consensus Panel.
Department of Emergency Medicine, Division of Medical Toxicology, Drexel University College of Medicine, Philadelphia, PA, USA.
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This report describes the consensus recommendations of an expert panel convened to develop recommendations for a hospital-based emergency department (ED) to attain a minimal level of preparedness necessary to respond to mass casualty events derived from the use of weapons of mass destruction. The recommendations were created for use by hospital-based EDs of a variety of sizes and locations (urban, suburban, or rural). The disasters that were considered included those that are biological, chemical, or radiological. The panel focused on preparation for a single disaster that could generate 250-500 total patients in 24-48 hours. This number included asymptomatic, exposed, and symptomatic patients. The panel chose not to address circumstances where a small number of patients with an infectious disease are seen in one or a few hospitals. In addition, the panel believed that preparation of a single hospital for an overwhelming mass casualty situation (e.g., 10,000 patients) would not be broadly applicable and would not be required for an individual ED to "minimally prepared." Prior to the convening of this consensus panel, in June 2002, a search of all relevant agencies found no comprehensive, published, validated recommendations for preparedness for individual EDs. Although several agencies had released information on disaster management, clinical diagnosis and treatment tools, and training, no agency had produced a comprehensive list of items and issues that individual EDs must consider when preparing for a terrorist attack. The current report attempts to fill this void in information regarding ED preparedness.
Publication Types: Consensus Development Conference Guideline Review
PMID: 12837654 [PubMed - indexed for MEDLINE]

2: Account Res. 2003 Apr-Jun;10(2):109-21.

Balancing pluralism and the common good: a look at open-air experiments of biowarfare agents.
Trotter G.
Center for Health Care Ethics and Emergency Medicine Division, Saint Louis University, USA. trotterc@slu.edu
PMID: 14577423 [PubMed - indexed for MEDLINE]

3: Account Res. 2003 Apr-Jun;10(2):91-107.
Protecting the public's health in an era of bioterrorism: the Model State Emergency Health Powers Act.
Hodge JG Jr.
Center for Law and the Public's Health, Johns Hopkins Bloomberg School of Public Health, Hampton House, Room 527-A, 624 N. Broadway, Baltimore, MD 21205-1996, USA. jhodge@jhsph.edu
During the fall of 2001, public health law scholars at the Center for Law and the Public's Health at Georgetown and Johns Hopkins Universities were asked by the Centers for Disease Control and Prevention (CDC) and a series of national partners to develop the Model State Emergency Health Powers Act (MSEHPA). The MSEHPA provides a series of modern powers for states to consider in responding to catastrophic public health emergencies, including bioterrorism events. Since December 2001, provisions based on the MSEHPA have been introduced in nearly 40 states and passed in 20. Underlying the development of the act is a long-standing debate between legal and ethical scholars and law- and policymakers as to the appropriate ways to balance individual and communal rights. The drafting challenge was to create a comprehensive model law that provides adequate powers to protect the public's health while also respecting individual and group rights. The MSEHPA empowers public health agents with broad authority and simultaneously limits the exercise of power in time, duration, and scope to accomplish communal goals of abating serious public health threats. Coercive public health powers, particularly isolation and quarantine, are exercised on a temporary basis, only so long as are reasonably necessary and only among persons who justifiably may pose a risk to others because of their contagious conditions. Individual rights to contest the coercive use of public health powers, even during an emergency, are secured.
PMID: 14577422 [PubMed - indexed for MEDLINE]

4: Account Res. 2003 Jan-Mar;10(1):47-56.
A new world order for human experiments.
Moreno JD.
Center for Biomedical Ethics, University of Virginia, Charlottesville, VA 22908-0758, USA. jdm8n@virginia.edu
PMID: 14552300 [PubMed - indexed for MEDLINE]

5: Account Res. 2003 Jan-Mar;10(1):69-84.
The use of experimental drugs during national crisis.
Shamoo AE, Campbell JD.
University of Maryland School of Medicine, Baltimore, MD 21201, USA. ashamoo@umaryland.edu
PMID: 14552302 [PubMed - indexed for MEDLINE]

6: Alaska Med. 2000 Oct-Dec;42(4):101-13.
Preparedness for a bioterrorism event in Alaska. Part 1: Detection and identification of a biologic event.
Funk EA.
Section of Epidemiology, Division of Public Health, Department of Health and Social Services, Anchorage, Alaska, USA.
U.S. military and public health experts are increasingly concerned that the general public is at risk for terrorist attacks. Traditional weapons of mass destruction such as explosive and chemical devices remain the most likely forms of terrorism, however the threat of bioterrorism is also present and may be increasing. An intentional biologic event may be covert and if so, will not become apparent for days or even weeks when many ill people present with an unidentified illness. Health care providers will be the first responders during a biologic attack and will be called upon to diagnose diseases such as anthrax,
tularemia or even smallpox. In the first of a two-part article, a hypothetical scenario is presented to illustrate how such an attack might first be discovered and the agent identified. As the scenario unfolds, evidence is collected that suggests the outbreak was intentional. Information about epidemiologic clues, disease syndromes and specific high-risk agents are discussed.
PMID: 14593880 [PubMed - in process]

7: Am J Clin Pathol. 2002 Jun;117 Suppl:S116-23.
Bioterrorism. Clinical recognition and primary management.
Branda JA, Ruoff K.
Division of Laboratory Medicine, Department of Pathology, Harvard Medical School, Massachusetts General Hospital, Boston, USA.
The recent anthrax attacks in the United States have demonstrated the reality of bioterrorist threats as well as the need for preparedness and planning to mount a successful response to such events. Medical practitioners have a key role in responding to bioterrorist activity because they can contribute to the timely recognition of an event and to the mitigation of morbidity resulting from a bioterrorist attack. The medical community needs to become familiar with how to recognize and manage diseases produced by the biologic agents that might be used by terrorists. This review summarizes the microbiological and clinical aspects of the agents of anthrax, smallpox, plague, and tularemia, which are all considered likely bioterrorist weapons.
Publication Types: Review Review, Tutorial
PMID: 14569808 [PubMed - indexed for MEDLINE]

8: Am J Infect Control. 2003 May;31(3):129-34.
Infection control practitioners' perceptions and educational needs regarding bioterrorism: results from a national needs assessment survey.
Shadel BN, Rebmann T, Clements B, Chen JJ, Evans RG.
Center for the Study of Bioterrorism and Emerging Infections, School of Public Health, Saint Louis University, MO 63104, USA.
BACKGROUND: The perceived threat that biological weapons will be used in an act of terror against the United States has escalated sharply since the discovery of anthrax-tainted letters after the terrorist attacks of September 11, 2001. These events underscore the critical nature of health care and public health preparedness and the need to augment infection control practitioner education and training. METHODS: Between October 2000 and August 2001 a national needs assessment was conducted

by use of a 35-question survey. The survey measured infection control practitioners' (ICPs') perception of the risk for bioterrorism in the United States and in their community, the proportion of ICPs with prior training in bioterrorism preparedness, and preferences for delivery media of future bioterrorism education. RESULTS: The assessment of the perceived threat of bioterrorism in the United States during the next 5 years (P =.022) and in the ICPs' work community (P <.001) revealed significant regional differences. Only half (56%) of the respondents reported prior training in bioterrorism preparedness. Respondents reported that the 2 most common barriers to receiving training were lack of training opportunities (70.2%) or no dedicated work time for training (19.4%). CONCLUSIONS: The results of this study indicate an urgent need for more resources and opportunities for clinical education in bioterrorism preparedness that will provide continuing education credit. Successful bioterrorism education will require a variety of instructional designs and media delivery methods to address ICPs' preferences and needs.
PMID: 12734517 [PubMed - indexed for MEDLINE]

9: Am J Infect Control. 2003 May;31(3):176-7.
The anthrax team: a novel teaching approach to increase anthrax and bioterrorism awareness.
Brooks KL, Dauenhauer SA.
Overton Brooks VA Medical Center, Shreveport, LA 71101-4295, USA.
A team approach to educating staff regarding anthrax and bioterrorism awareness was implemented after the acts of terrorism that began September 11, 2001. "The Anthrax Team" developed algorithms on the basis of 5 different scenarios, an educational brochure, and a PowerPoint presentation. With use of the algorithms and PowerPoint material, the team conducted informal educational sessions to increase awareness and allay fears. On the basis of the success of this educational method, the teaching process will be applied to address staff on other biologic and chemical terrorism agents.
PMID: 12734524 [PubMed - indexed for MEDLINE]

10: Am J Infect Control. 2003 May;31(3):178-80.
Anthrax and the mail: the making of an educational video for mail workers.
Moore KL, Sinkowitz-Cochran RL, Safran MA, Chamberland ME, Pearson ML.
Division of Healthcare Quality Promotion, National Center for Infectious Diseases, Centers for Disease Control and Prevention, US Department of Health and Human Services, Atlanta, GA 30333, USA. The anthrax bioterrorist attacks in 2001 affected millions of people who process, sort, and deliver mail. To more effectively communicate information intended to protect the health of these workers, the Centers for Disease Control and Prevention produced a short-format educational video in December 2001 that targets this diverse group. This report illustrates how an educational video can be rapidly produced to translate and disseminate public health recommendations as part of a public health emergency response.
PMID: 12734525 [PubMed - indexed for MEDLINE]

11: Am J Pathol. 2003 Nov;163(5):1901-10.
The critical role of pathology in the investigation of bioterrorism-related cutaneous anthrax.
Shieh WJ, Guarner J, Paddock C, Greer P, Tatti K, Fischer M, Layton M, Philips M, Bresnitz E, Quinn CP, Popovic T, Perkins BA, Zaki SR; Anthrax Bioterrorism

Investigation Team.
Infectious Disease Pathology Activity, Division of Bacterial and Mycotic Diseases, National Center for Infectious Diseases, Centers for Disease Control and Prevention, Atlanta, GA 30333, USA.
Cutaneous anthrax is a rare zoonotic disease in the United States. The clinical diagnosis traditionally has been established by conventional microbiological methods, such as culture and gram staining. However, these methods often yield negative results when patients have received antibiotics. During the bioterrorism event of 2001, we applied two novel immunohistochemical assays that can detect Bacillus anthracis antigens in skin biopsy samples even after prolonged antibiotic treatment. These assays provided a highly sensitive and specific method for the diagnosis of cutaneous anthrax, and were critical in the early and rapid diagnosis of 8 of 11 cases of cutaneous anthrax during the
outbreak investigation. Skin biopsies were obtained from 10 of these 11 cases, and histopathological findings included various degrees of ulceration, hemorrhage, edema, coagulative necrosis, perivascular inflammation, and vasculitis. Serology was also an important investigation tool, but the results required several weeks because of the need to test paired serum specimens. Other tests, including culture, special stains, and polymerase chain reaction assay, were less valuable in the diagnosis and epidemiological investigation of these cutaneous anthrax cases. This report underscores the critical role of pathology in investigating potential bioterrorism events and in guiding epidemiological studies, a role that was clearly demonstrated in 2001 when B. anthracis spores were intentionally released through the United States postal system.
PMID: 14578189 [PubMed - in process]

12: Anaesthesia. 2003 Sep;58(9):926.
Unusual critical incident: chemical gas alert.
Nordmann GR, Woolley T.
Publication Types: Letter
PMID: 12911386 [PubMed - indexed for MEDLINE]

13: Appl Occup Environ Hyg. 2003 Oct;18(10):780-5.
Responding to a bioterrorist attack: environmental investigation of anthrax in New Jersey.
Valiante DJ, Schill DP, Bresnitz EA, Burr GA, Mead KR.
New Jersey Department of Health and Senior Services, Trenton, NJ, USA.
A bioterrorism attack using the United States postal system to deliver a hazardous biological agent to specific targets created multiple environmental and occupational exposure risks along the path of the anthrax-containing letters. On October 18, 2001, a suspected case of cutaneous anthrax was confirmed in a postal worker from the Trenton Processing and Distribution Center where at least four suspect letters were postmarked. Over the next three weeks, a team of investigators collected samples at 57 workplaces in New Jersey as part of a comprehensive environmental investigation to assess anthrax contamination as a result of this bioterrorist attack. A total of 1369 samples were collected with positive sample results found in two mail processing and distribution centers, six municipal post offices, and one private company. This large-scale epidemiological and public health investigation conducted by state and federal agencies included environmental evaluations utilizing general industrial hygiene principles. Issues of sampling strategy, methods, agency cooperation and communication, and site assessment coordination are discussed.

PMID: 12959889 [PubMed - indexed for MEDLINE]

14: BMJ. 2003 Oct 25;327(7421):948.
Smallpox bioterrorist conference highlights divisions over vaccines.
Fleck F.
Publication Types: News
PMID: 14576234 [PubMed - indexed for MEDLINE]

15: Brief Bioinform. 2003 Jun;4(2):133-49.
Comparative genomics tools applied to bioterrorism defence.
Slezak T, Kuczmarski T, Ott L, Torres C, Medeiros D, Smith J, Truitt B, Mulakken N, Lam M, Vitalis E, Zemla A, Zhou CE, Gardner S.
Lawrence Livermore National Laboratory, Livermore, CA 94550, USA.
Slezak@LLNL.GOV
Rapid advances in the genomic sequencing of bacteria and viruses over the past few years have made it possible to consider sequencing the genomes of all pathogens that affect humans and the crops and livestock upon which our lives depend. Recent events make it imperative that full genome sequencing be accomplished as soon as possible for pathogens that could be used as weapons of mass destruction or disruption. This sequence information must be exploited to provide rapid and accurate diagnostics to identify pathogens and distinguish them from harmless near-neighbours and hoaxes. The Chem-Bio Non-Proliferation (CBNP) programme of the US Department of Energy (DOE) began a large-scale effort of pathogen detection in early 2000 when it was announced that the DOE would be providing bio-security at the 2002 Winter Olympic Games in Salt Lake City, Utah. Our team at the Lawrence Livermore National Lab (LLNL) was given the task of developing reliable and validated assays for a number of the most likely bioterrorist agents. The short timeline led us to devise a novel system that utilized whole-genome comparison methods to rapidly focus on parts of the pathogen genomes that had a high probability of being unique. Assays developed with this approach have been validated by the Centers for Disease Control (CDC). They were used at the 2002 Winter Olympics, have entered the public health system, and have been in continual use for non-publicised aspects of homeland defence since autumn 2001. Assays have been developed for all major threat list agents for which adequate genomic sequence is available, as well as for other pathogens requested by various government agencies. Collaborations with comparative genomics algorithm developers have enabled our LLNL team to make major advances in pathogen detection, since many of the existing tools simply did not scale well enough to be of practical use for this application. It is hoped that a discussion of a real-life practical application of comparative genomics algorithms may help spur algorithm developers to tackle some of the many remaining problems that need to be addressed. Solutions to these problems will advance a wide range of biological disciplines, only one of which is pathogen detection. For example, exploration in evolution and phylogenetics, annotating gene coding regions, predicting and understanding gene function and regulation, and untangling gene networks all rely on tools for aligning multiple sequences, detecting gene rearrangements and duplications, and visualizing genomic data. Two key problems currently needing improved solutions are: (1) aligning incomplete, fragmentary sequence (eg draft genome contigs or arbitrary genome regions) with both complete genomes and other fragmentary sequences; and (2)

ordering, aligning and visualising non-colinear gene rearrangements and inversions in addition to the colinear alignments handled by current tools.
PMID: 12846395 [PubMed - indexed for MEDLINE]

16: Can Vet J. 2003 Jun;44(6):447-8.
The need to look outward.
[Article in English, French]
Hare D.

Publication Types: Editorial
PMID: 12839238 [PubMed - indexed for MEDLINE]

17: Clin Infect Dis. 2003 Oct 1;37(7):905-11. Epub 2003 Sep 12.
Serious adverse events among participants in the Centers for Disease Control and Prevention's Anthrax Vaccine and Antimicrobial Availability Program for persons at risk for bioterrorism-related inhalational anthrax.
Tierney BC, Martin SW, Franzke LH, Marano N, Reissman DB, Louchart RD, Goff JA, Rosenstein NE, Sever JL, McNeil MM; Centers for Disease Control and Prevention's Anthrax Vaccine and Antimicrobial Availability Program.
Epidemiology Program Office, National Center for Infectious Diseases, Centers for Disease Control and Prevention, Atlanta, Georgia 30333, USA. bgt2@cdc.gov
On 20 December 2001, the Centers for Disease Control and Prevention (CDC) initiated the Anthrax Vaccine and Antibiotic Availability Program (hereafter, the "Program") under an investigational new drug application with the US Food and Drug Administration. This Program provided options for additional preventive treatment for persons at risk for inhalation anthrax as a result of recent bioterrorism attacks who had concluded or were concluding a 60-day course of antimicrobial prophylaxis. Participants were offered an additional 40 days of antibiotic therapy (with ciprofloxacin, doxycycline, or amoxicillin) or antibiotic therapy plus 3 doses of anthrax vaccine. By 11 February 2002, a total of 5420 persons had received standardized education about the Program and 1727 persons (32%) had enrolled. Twelve participants have been identified as having serious adverse events (SAEs). One SAE, which occurred in a participant with ciprofloxacin-induced allergic interstitial nephritis, was considered to be probably associated with treatment received in the Program. No SAEs were associated with anthrax vaccine. CDC will continue to monitor Program participants during the next 2 years.
PMID: 13130401 [PubMed - indexed for MEDLINE]

18: Clin Leadersh Manag Rev. 2003 Jul-Aug;17(4):216-8.
9/11: a pathologist's story.
Thomas CE.
PMID: 12945518 [PubMed - indexed for MEDLINE]

19: CMAJ. 2003 Nov 11;169(10):1065.
MD critic challenges US over bioterrorism, Iraq.
Silversides A.
Toronto.
PMID: 14609987 [PubMed - in process]

20: Curr Neurol Neurosci Rep. 2003 Nov;3(6):476-82.
Bioterrorism and the nervous system.
Han MH, Zunt JR.
Department of Neurology, Harborview Medical Center, Box 359775, 325 Ninth Avenue South, Seattle, WA 98104, USA. jzunt@u.washington.edu
Recent events of war, terrorist attacks, and mail-borne anthrax exposure have produced increasing awareness of potential bioterrorism attacks in the United States and other parts of the world. Physicians and healthcare personnel play a key role in identifying potential bioterrorist attacks. Early recognition and preparedness for bioterrorism-associated illnesses is especially important for neurologists because most bioterrorism agents can directly or indirectly affect the nervous system. This article reviews the neurologic manifestations, diagnosis, and treatments of syndromes caused by potential bioterrorism agents, as well as the potential side effects of vaccines against some of these agents.
PMID: 14565901 [PubMed - in process]

21: Emerg Infect Dis. 2003 Oct;9(10):1330-2.
The European Commission's Task Force on Bioterrorism.
Tegnell A.
Task Force on Biological and Chemical Agent Threats, European Commission, Luxembourg, Belgium.
In response to the increased threat of bioterrorism, a task force on health security was established in the European Commission. Task force members address a broad range of issues related to preparedness for and response to bioterrorist events and seek to bring about a greater collaboration between the European Union member states.
PMID: 14609475 [PubMed - in process]

22: Emerg Infect Dis. 2003 Oct;9(10):1197-204.
Syndromic Surveillance and Bioterrorism-related Epidemics.
Buehler JW.
Emory University Rollins School of Public Health, Atlanta, Georgia, USA.
To facilitate rapid detection of a future bioterrorist attack, an increasing number of public health departments are investing in new surveillance systems that target the early manifestations of bioterrorism-related disease. Whether this approach is likely to detect an epidemic sooner than reporting by alert clinicians remains unknown. The detection of a bioterrorism-related epidemic will depend on population characteristics, availability and use of health services, the nature of an attack, epidemiologic features of individual diseases, surveillance methods, and the capacity of health departments to respond to alerts. Predicting how these factors will combine in a bioterrorism attack may be impossible. Nevertheless, understanding their likely effect on epidemic detection should help define the usefulness of syndromic surveillance and identify approaches to increasing the likelihood that clinicians recognize and report an epidemic.
PMID: 14609452 [PubMed - in process]

23: Emerg Infect Dis. 2003 Sep;9(9):1053-7.
Automated laboratory reporting of infectious diseases in a climate of bioterrorism.
M'ikantha NM, Southwell B, Lautenbach E.

Pennsylvania Department of Health, Harrisburg 17108, USA.
nmikanatha@state.pa.us
While newly available electronic transmission methods can increase timeliness and completeness of infectious disease reports, limitations of this technology may unintentionally compromise detection of, and response to, bioterrorism and other outbreaks. We reviewed implementation experiences for five electronic laboratory systems and identified problems with data transmission, sensitivity, specificity, and user interpretation. The results suggest a need for backup transmission methods, validation, standards, preserving human judgment in the process, and provider and end-user involvement. As illustrated, challenges encountered in deployment of existing electronic laboratory reporting systems could guide further refinement and advances in infectious disease surveillance.
Publication Types: Review Review, Tutorial
PMID: 14519239 [PubMed - indexed for MEDLINE]

24: Emerg Infect Dis. 2003 Aug;9(8):909-14.
Detecting bioterror attacks by screening blood donors: a best-case analysis.
Kaplan EH.
Yale School of Management and Yale Medical School, New Haven, Connecticut, USA.
edward.kaplan@yale.edu
To assess whether screening blood donors could provide early warning of a bioterror attack, we combined stochastic models of blood donation and the workings of blood tests with an epidemic model to derive the probability distribution of the time to detect an attack under assumptions favorable to blood donor screening. Comparing the attack detection delay to the incubation times of the most feared bioterror agents shows that even under such optimistic conditions, victims of a bioterror attack would likely exhibit symptoms before the attack was detected through blood donor screening. For example, an attack infecting 100 persons with a noncontagious agent such as Bacillus anthracis would only have a 26% chance of being detected within 25 days; yet, at an assumed additional charge of $10 per test, donor screening would cost $139 million per year. Furthermore, even if screening tests were 99.99% specific, 1,390 false-positive results would occur each year. Therefore, screening blood donors for bioterror agents should not be used to detect a bioterror attack.
PMID: 12967486 [PubMed - indexed for MEDLINE]

25: Health Matrix Clevel. 2003 Winter;13(1):33-70.
Blinded by bioterrorism: public health and liberty in the 21st century.
Annas GJ.
Health Law Department, Boston University School of Public Health, USA.
PMID: 14569657 [PubMed - in process]

26: Health Matrix Clevel. 2003 Winter;13(1):85-115.
Quarantine redux: bioterrorism, AIDS and the curtailment of individual liberty in the name of public health.
Parmet WE.
Northeastern University School of Law, USA.
PMID: 14569659 [PubMed - in process]

27: Int J Health Geogr. 2003 Nov 16 [Epub ahead of print].
Initiating informatics and GIS support for a field investigation of Bioterrorism: The New Jersey anthrax experience.
Zubieta JC, Skinner R, Dean AG.
Background: The investigation of potential exposure to anthrax spores in a Trenton, New Jersey, mail-processing facility required rapid assessment of informatics needs and adaptation of existing informatics tools to new physical and information-processing environments. Because the affected building and its computers were closed down, data to list potentially exposed persons and map building floor plans were unavailable from the primary source. Results: Controlling the effects of anthrax contamination required identification and follow-up of potentially exposed persons. Risk of exposure had to be estimated from the geographic relationship between work history and environmental sample sites within the contaminated facility. To assist in establishing geographic relationships, floor plan maps of the postal facility were constructed in ArcView Geographic Information System (GIS) software and linked to a database of personnel and visitors using Epi Info and Epi Map 2000. A repository for maintaining the latest versions of various documents was set up using web page hyperlinks. Conclusions: During public health emergencies, such as bioterrorist attacks and disease epidemics, computerized information systems for data management, analysis, and communication may be needed within hours of beginning the investigation. Available sources of data and output requirements of the system may be changed frequently during the course of the investigation. Integrating data from a variety of sources may require entering or importing data from a variety of digital and paper formats. Spatial representation of data is particularly valuable for assessing environmental exposure. Written documents, guidelines, and memos important to the epidemic were frequently revised. In this investigation, a database was operational on the second day and the GIS component during the second week of the investigation.
PMID: 14617376 [PubMed - as supplied by publisher]

28: Intensive Crit Care Nurs. 2003 Aug;19(4):183-5.
Editorial. A bio-terrorist or bio-chemical attack.
Deeny P.
Publication Types: Editorial
PMID: 12915107 [PubMed - indexed for MEDLINE]

29: J Allergy Clin Immunol. 2003 Oct;112(4):675-82.
Comment on: J Allergy Clin Immunol. 2003 Oct;112(4):683-5.
Combating high-priority biological agents: What to do with drug-allergic patients and those for whom vaccination is contraindicated?
Gruchalla RS, Jones J.
University of Texas Southwestern Medical Center, Dallas, USA.
The threat of bioterrorism continues to be a very real one. Regularly, there are news stories on bioterrorism-related topics: What biologic weapons will our enemies likely use to attack the United States? How prepared is our country to successfully counter such attacks? Although these critical questions are being addressed by the leaders of our country, allergists-immunologists, too, will have to grapple with difficult questions during these uncertain and frightening times. We care for a special group of patients with various allergic and immunologic disorders. Some of our patients have immunodeficiency disorders that might preclude them from receiving life-saving vaccines. Our patients with drug allergies are fearful that should they become

infected with a biologic agent, they will not be able to receive appropriate treatment. In this article we focus on the various vaccine-related and antibiotic-related adverse effects that the allergist-immunologist might see during treatment of infections caused by Category A agents. Where possible, potential management approaches are outlined.
Publication Types: Comment Review Review, Tutorial
PMID: 14564343 [PubMed - indexed for MEDLINE]

30: J Allergy Clin Immunol. 2003 Oct;112(4):686-94.
Comment in:
J Allergy Clin Immunol. 2003 Oct;112(4):683-5.
Innate immune activation as a broad-spectrum biodefense strategy: prospects and research challenges.
Hackett CJ.
Division of Allergy, Immunology, and Transplantation, National Institute of Allergy and Infectious Diseases, National Institutes of Health, Bethesda, MD 20892-6601, USA.
Biodefense strategies require protection against a broad and largely unforeseen spectrum of pathogens--the forte of innate immune system defenses--that have evolved over millennia to function within moments of encountering either ancient or newly emerging pathogens. Although constitutive, the innate immune system is activated by the presence of microbes or their products, providing a rationale for a potential biodefense strategy. Both prophylactic and postexposure strategies involving innate immune stimulation have been shown to be plausible to prevent or ameliorate infections in animal models. Innate immune-activating compounds based on conserved microbial components recognized by toll-like molecules and other receptors could be synthesized and delivered like drugs by using an entirely different strategy from conventional vaccination. However, important theoretic and practical questions emerge about developing and deploying innate immune protective strategies for biodefense. This rostrum discusses prospects and problems in the overall approach itself. Important topics include microbe-specific issues about innate immune system effectiveness against highly virulent pathogens and general questions, such as whether innate immune responses will be safe and effective if used in a diverse human population of different age groups and with different genetic makeups.
Publication Types: Review Review, Tutorial
PMID: 14564345 [PubMed - indexed for MEDLINE]

31: J Am Vet Med Assoc. 2003 Jul 15;223(2):163-4.
Though better prepared after 9/11, America still vulnerable to bioterrorism.
Nolen RS.
Publication Types: News
PMID: 12875435 [PubMed - indexed for MEDLINE]

32: J Appl Toxicol. 2003 Jul-Aug;23(4):249-54.
Effects of sulfur mustard on transcription in human epidermal keratinocytes: analysis by mRNA differential display.
Platteborze PL.

Pharmacology Division, USAMRICD, Aberdeen Proving Ground, MD 21010-5425, USA.
Peter.Platteborze@det.amedd.army.mil
This study examines the transcriptional response of human epidermal keratinocytes (HEK) to sulfur mustard (HD) in order to gain a better understanding of the intracellular events that result in cytotoxicity. Differential display polymerase chain reaction technology was used to examine the relative transcriptional activity of healthy cells to those exposed to subvesicating or vesicating concentrations of HD for 4 h. Approximately 2% of the HEK transcriptome had altered expression. Sixty of the most prominently altered transcripts were characterized. Important upregulated genes include NADH dehydrogenase III, GADD45 and ubiquitin. Key downregulated genes include type I keratin 14, alpha-enolase and caltractin. Many of the identified transcripts protein products presently do not have an assigned function and eleven transcripts were unidentifiable. These transcriptional alterations provide one of the first molecular insights into the intracellular events induced by HD.Published in 2003 by John Wiley & Sons, Ltd.
PMID: 12884408 [PubMed - indexed for MEDLINE]

33: J Clin Invest. 2003 Oct;112(7):970-1.
The growing pains of biodefense.
Birmingham K.
Publication Types: News
PMID: 14523029 [PubMed - indexed for MEDLINE]

34: J Environ Health. 2003 Oct;66(3):43.
Bioterrorism early-warning system--algae?
Krause C.
PMID: 14556369 [PubMed - in process]

35: J Vet Med Educ. 2003 Summer;30(2):110-1.
Food safety and global security.
Crawford L.
PMID: 12970852 [PubMed - indexed for MEDLINE]

36: J Vet Med Educ. 2003 Summer;30(2):105-9.
Veterinarians in global public health.
Pappaioanou M.
Office of Global Health, Centers for Disease Control and Prevention, Atlanta, USA. xp1@cdc.gov
PMID: 12970851 [PubMed - indexed for MEDLINE]

37: J Vet Med Educ. 2003 Summer;30(2):155-6.
Molecular weapons against agricultural vulnerability and the war on terror.
Hietela SK, Ardans AA.
Department of Medicine and Epidemiology, School of Veterinary Medicine, University of California, Davis, USA. skhietala@ucdavis.edu
The multiple reports in this issue of the Journal from the Agenda for Action conference, coupled with the analysis by the National Academy of Sciences, the

National Research Council, and the Auditor General (UK) on bioterror preparedness and homeland security, highlight the immediate need for rapid disease detection and advanced diagnostic capabilities to protect the public health, animal agriculture, and the numerous associated economies in the United States. In response to the potentially devastating consequences that could arise, there is an acute need for rapid detection of a variety of the lethal foreign animal diseases, such as foot-and-mouth disease virus (FMDV), highly pathogenic strains of avian influenza, classical swine fever, rinderpest, exotic Newcastle disease virus (END), and domestic, vesicular look-alike diseases that include bluetongue, epizootic hemorrhagic disease, vesicular stomatitis, bovine herpes IBR, contagious ecthyma, bovine herpes mammilitis virus, vesicular exanthema, malignant catarrhal fever, and papular stomatitis. Some striking advances are occurring in the creation of rapid technology, including microfluidics, robotics, miniaturization, and biostabilization that are quickly being applied to the development of rapid microbial detection assays. These are now providing important weapons to combat this agricultural vulnerability.
PMID: 12970863 [PubMed - indexed for MEDLINE]

38: J Vet Med Educ. 2003 Summer;30(2):152-4.
The current state of veterinary vaccines: is there hope for the future?
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This article is an overview and assessment of available veterinary vaccines, placed in a historical context. A more complete presentation of the main tenets of the symposium talk at Agenda for Action: Veterinary Medicine's Role in Biodefense and Public Health is published elsewhere.' The symposium presentation contained a critical evaluation of the current state of the field of veterinary vaccines for both food and companion animals and of promises for future vaccine development. There is considerable variability in safety and sustained efficacy among veterinary vaccines, especially those developed for companion animals. Standardization of vaccines and vaccinal strains and detailed knowledge of their safety, efficacy, and potency and of the duration of immunity are needed before rational recommendations can truly be made. It is proposed that the establishment of an international vaccine advisory committee be supported, which would function to apprise the veterinary profession of the current status of vaccines and their use, and that a system for reporting vaccine adverse events, similar to that for humans, should be established.
PMID: 12970862 [PubMed - indexed for MEDLINE]

39: J Vet Med Educ. 2003 Summer;30(2):96-104.
US agriculture is vulnerable to bioterrorism.
Moon HW, Kirk-Baer C, Ascher M, Cook RJ, Franz DR, Hoy M, Husnik DF, Jensen HH, Keller KH, Lederberg J, Madden LV, Powers LS, Steinberg AD, Strating A, Smith RE, Kuzma J, Grossblatt N, Holliday L, Sweatt D, Strongin S.
Veterinary Medical Research Institute, Iowa State University, USA.
PMID: 12970850 [PubMed - indexed for MEDLINE]

40: J Vet Med Educ. 2003 Summer;30(2):92-5.
Agenda for action: veterinary medicine's crucial role in public health and biodefense and the obligation of academic veterinary medicine to respond. Executive summary.
Walsh DA, Murphy FA, Osburn BI, King L, Kelly AM.

School of Veterinary Medicine, University of California, Davis, USA.
dawalsh@ucdavis.edu
PMID: 12970849 [PubMed - indexed for MEDLINE]

41: J Vet Med Educ. 2003 Summer;30(2):90-190.
An agenda for action: Veterinary medicine's crucial role in public health and biodefense and the obligation of academic veterinary medicine to respond. Conference proceedings. Washington, DC, USA. November 1-3, 2002.
[No authors listed]
Publication Types: Congresses Overall
PMID: 12970848 [PubMed - indexed for MEDLINE]

42: J Vet Med Educ. 2003 Summer;30(2):161-3.
Veterinary medicine's role in biodefense and public health.
King LJ.
College of Veterinary Medicine, Michigan State University, USA.
king-lonn@cvm.msu.edu
PMID: 12970865 [PubMed - indexed for MEDLINE]

43: J Vet Med Educ. 2003 Summer;30(2):112-4.
Vulnerabilities in agriculture.
Brown C.
College of Veterinary Medicine, University of Georgia, Athens, GA 30602-7388, USA.
corbrown@vet.uga.edu
PMID: 12970853 [PubMed - indexed for MEDLINE]

44: J Vet Med Educ. 2003 Summer;30(2):115-20.
An epiphany: recent events highlight the responsibilities, roles, and challenges that veterinarians must embrace in public health.
Becker KM.
Karen.Becker@hhs.gov
PMID: 12970854 [PubMed - indexed for MEDLINE]

45: J Vet Med Educ. 2003 Summer;30(2):164-72.
Strategies for educational action to meet veterinary medicine's role in biodefense and public health.
Baker J, Blackwell M, Buss D, Eyre P, Held JR, Ogilvie T, Pappaioanou M, Sawyer L.
College of Veterinary Medicine, Michigan State University, USA.
Baker@cvm.msu.edu
It is clear that the profession is not well prepared to respond to society's needs in bio-defense and public health. The imperatives that face the veterinary profession, as emphasized by the agenda for action conference deliberations that are reported in this issue of the journal, require action on many fronts, but possibly none more essential than to address how veterinary education needs to change to meet these challenges. Addressing these needs, participants at the agenda for action conference met in groups of 30 to 50 to shape approaches that would address these key

questions. The 161 participants were broadly representative of government, private practice, corporate practice, organized veterinary medicine, and academia (Appendix A). Reported here are the results of those deliberations, with each of the seven sections written up by the discussion leader. Included in the participants were 20 students, representative of eight different veterinary colleges, who both participated in the group discussions and have presented their own report.
PMID: 12970866 [PubMed - indexed for MEDLINE]

46: J Vet Med Educ. 2003 Summer;30(2):148-51.
Surveillance for emergencies.
Hugh-Jones M.
Department of Pathobiological Sciences at the School of Veterinary Medicine of Louisiana State University, Baton Rouge, LA 70803, USA. mehj@mail.vetmed.lsu.edu
PMID: 12970861 [PubMed - indexed for MEDLINE]

47: Kennedy Inst Ethics J. 2003 Jun;13(2):175-88.
Dilemmas in military medical ethics since 9/11.
Howe EG.
Programs in Ethics, Uniformed Services University of the Health Sciences, Bethesda, MD, USA.
The attack on the United States by terrorists on 9/11 and the war with Iraq have raised new ethical questions for the military and for military physicians (Herman 2002; Elshtain 2003). How and when attacks may occur now is less predictable. Planes have been hijacked, and persons dressed as civilians may carry bombs to blow themselves and others up. These dangers pose an increased threat, and, thus, there is a need for new defensive measures. How far these measures should go is, however, greatly open to debate. One of the most difficult ethical question raised for the military and military doctors by these developments is what interrogation methods are permissable when questioning captured terrorists. The licitness of different interrogation practices is,however, only one of the ethical problems potentially encountered by military physicians now having to treat terrorists and POWs. The following discussion presents the major concerns regarding this and other issues.
PMID: 14570019 [PubMed - indexed for MEDLINE]

48: Kennedy Inst Ethics J. 2003 Jun;13(2):67-82.
Should smallpox vaccine be made available to the general public?
May T, Silverman RD.
Graduate Program in Bioethics, Medical College of Wisconsin, Milwaukee, USA.
In June 2002, the Advisory Committee on Immunization Practices (ACIP) approved draft recommendations concerning preparation for potential biological terror attacks that utilize the smallpox virus. ACIP recommends against both mandatory and voluntary vaccination of the general public. The present paper examines the moral and political considerations both for and against each of the general public vaccination options considered by the ACIP in the context of the state's authority over vaccination for the purposes of protecting public health. Although it is clear that compulsory mass vaccination is not justified at this time, the issues surrounding voluntary vaccination are more complex. Should smallpox vaccination prior to an outbreak be made available to the general public? The paper concludes that the vaccine should not be made available at this time. This conclusion, however, is based

upon contingent features of current circumstances, which would change once an outbreak occurred. In the even of a terror-related outbreak of smallpox, the general public's access to voluntary vaccination would become justified, even in areas beyond where the outbreak has occurred.
PMID: 14569990 [PubMed - indexed for MEDLINE]

49: Mater Manag Health Care. 2003 Sep;12(9):22-6.
A call for help. Collaboration with community officials is key.
Neil R.
The U.S. government's war on terrorism is a battle with an unseen enemy that uses tactics that are just as elusive. Although such conventional terrorists' assault methods as bombs and other explosives are a major concern, the threat of a biological, chemical or nuclear attack is particularly troubling to the government and those who would have to deal with the aftermath of such an attack.
PMID: 14552041 [PubMed - indexed for MEDLINE]

50: Math Biosci. 2003 Sep;185(1):33-72.
Analyzing bioterror response logistics: the case of smallpox.
Kaplan EH, Craft DL, Wein LM.
Yale School of Management, and Department of Epidemiology and Public Health, Yale School of Medicine, Box 208200, New Haven, CT 06520-8200, USA. edward.kaplan@yale.edu
To evaluate existing and alternative proposals for emergency response to a deliberate smallpox attack, we embed the key operational features of such interventions into a smallpox disease transmission model. We use probabilistic reasoning within an otherwise deterministic epidemic framework to model the 'race to trace', i.e., attempting to trace (via the infector) and vaccinate an infected person while (s)he is still vaccine-sensitive. Our model explicitly incorporates a tracing/vaccination queue, and hence can be used as a capacity planning tool. An approximate analysis of this large (16 ODE) system yields closed-form estimates for the total number of deaths and the maximum queue length. The former estimate delineates the efficacy (i.e., accuracy) and efficiency (i.e., speed) of contact tracing, while the latter estimate reveals how congestion makes the race to trace more difficult to win, thereby causing more deaths. A probabilistic analysis is also used to find an approximate closed-form expression for the total number of deaths under mass vaccination, in terms of both the basic reproductive ratio and the vaccination capacity. We also derive approximate thresholds for initially controlling the epidemic for more general interventions that include imperfect vaccination and quarantine.
PMID: 12900141 [PubMed - indexed for MEDLINE]

51: Medsurg Nurs. 2003 Aug;12(4):263-4.
Real time military exercise prepares military nurses for deployment around the world.
Yackel EE.
PMID: 14515607 [PubMed - indexed for MEDLINE]

52: Mil Med. 2003 Sep;168(9 Suppl):9-14.
Anthrax: lessons learned from the U.S. Capitol experience.
Martin G.

Uniformed Services University, Bethesda, MD, USA.
PMID: 14527185 [PubMed - indexed for MEDLINE]

53: N C Med J. 2002 Sep-Oct;63(5):265-7.
The challenge of training a public health workforce in bioterrorism preparedness.
Ryder RW.
Schools of Medicine and Public Health, University of North Carolina at Chapel Hill, USA. RobertRyder@unc.edu
PMID: 12970970 [PubMed - indexed for MEDLINE]

54: N C Med J. 2002 Sep-Oct;63(5):257-64.
Preparing for bioterrorism in North Carolina.
Cline JS.
Epidemiology Section and Bioterrorism, North Carolina Division of Public Health, USA. steve.cline@ncmail.net
PMID: 12970969 [PubMed - indexed for MEDLINE]

55: N C Med J. 2002 Sep-Oct;63(5):271-3.
Anthrax scare in Buncombe County. A lesson in the basics of bioterrorism preparedness.
Bond GF Jr.
Buncombe County Health Center, Asheville, USA. george.bond@buncombecounty.org
PMID: 12970972 [PubMed - indexed for MEDLINE]

56: N C Med J. 2002 Sep-Oct;63(5):268-70.
Bioterrorism, the public's health, and the law.
Moore J.
Public Law & Government, School of Government, University of North Carolina at Chapel Hill, USA. moore@iogmail.iog.unc.edu
PMID: 12970971 [PubMed - indexed for MEDLINE]

57: Nature. 2003 Oct 16;425(6959):647.
Health chiefs poised to step up US scrutiny of microbe research.
Check E.
Publication Types: News
PMID: 14562061 [PubMed - indexed for MEDLINE]

58: Nature. 2003 Oct 16;425(6959):681-5.
Planning for smallpox outbreaks.
Ferguson NM, Keeling MJ, Edmunds WJ, Gani R, Grenfell BT, Anderson RM, Leach S.
Department of Infectious Disease Epidemiology, Faculty of Medicine, Imperial College London, St Mary's Campus, Norfolk Place, London, W2 1PG, UK. neil.ferguson@imperial.ac.uk
Mathematical models of viral transmission and control are important tools for assessing the threat posed by deliberate release of the smallpox virus and the best means of containing an outbreak. Models must balance biological realism against limitations of knowledge, and uncertainties need to be accurately communicated to

policy-makers. Smallpox poses the particular challenge that key biological, social and spatial factors affecting disease spread in contemporary populations must be elucidated largely from historical studies undertaken before disease eradication in 1979. We review the use of models in smallpox planning within the broader epidemiological context set by recent outbreaks of both novel and re-emerging pathogens.
Publication Types: Review Review, Tutorial
PMID: 14562094 [PubMed - indexed for MEDLINE]

59: Nurs Stand. 2003 Aug 13-19;17(48):33-7.
Anthrax: forms, symptoms and treatment.
Woodrow P.
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philip.woodrow@ekht.nhs.uk
BACKGROUND: This article examines the history of anthrax, the organism, the different forms of human anthrax, its symptoms and treatment. Set against fears of a bioterrorist attack, the article also examines the potential threat of anthrax as a weapon. CONCLUSION: Frontline staff such as nurses can contribute greatly to increasing survival by recognising symptoms, treating patients promptly and helping to allay public concern.
Publication Types: Review Review, Tutorial
PMID: 14515539 [PubMed - indexed for MEDLINE]

60: Pediatrics. 2003 Sep;112(3 Pt 1):648-58.
Nerve agent attacks on children: diagnosis and management.
Rotenberg JS, Newmark J.
Departments of Child and Adolescent Neurology and Pediatrics, Walter Reed Army Medical Center, Washington, DC 20307, USA.
joshua.rotenberg@lackland.af.mil
Nerve agents (NAs) are the most lethal chemical weapons. We review the pathophysiology and management of NA poisoning of children. NAs cause cholinergic crisis. Children may manifest signs of cholinergic poisoning differently than adults. Children may be less likely to manifest miosis and glandular secretions. They may present with neurologic derangements alone. The goals of treatment should be to limit additional exposure, to provide respiratory support, and to prevent neurologic morbidity. Autoinjectors are optimal delivery vehicles for intramuscular antidotes and are likely to be used in civilian prehospital care. Antidotes include anticholinergics, oximes, and benzodiazepines. Several medications may be available within each class of antidotes. Clinicians will select an antidote based on the status of the individual victim, the accessibility of supportive care, and the availability of the drug. Atropine is well-tolerated and high doses may be required. The oxime pralidoxime chloride has a longer half-life in children. Currently, diazepam is the standard NA anticonvulsant. Midazolam may be the most effective intramuscular anticonvulsant after NA exposure, but, despite its efficacy, it is not an approved agent for seizures. Supportive care and long-term complications are summarized.
Publication Types: Review Review, Tutorial
PMID: 12949297 [PubMed - indexed for MEDLINE]

61: Science. 2003 Nov 7;302(5647):962-3.
Bioterrorism. Facing a security deadline, labs get a 'provisional' pass.
Enserink M.
Publication Types: News
PMID: 14605333 [PubMed - in process]

62: Science. 2003 Oct 10;302(5643):222-3.
Infectious diseases. An obscure weapon of the cold war edges into the limelight.
Vogel G.
Publication Types: News
PMID: 14551418 [PubMed - indexed for MEDLINE]

63: Science. 2003 Sep 26;301(5641):1852-3.
Public health. Building microbial forensics as a response to bioterrorism.
Budowle B, Schutzer SE, Einseln A, Kelley LC, Walsh AC, Smith JA, Marrone BL, Robertson J, Campos J.
Federal Bureau of Investigation, Laboratory Division, Quantico, VA 22135, USA. bbudowle@fbi.gov
Combating bioterrorism is a challenge to all of us. To be proactive, the U.S. Government has formalized the discipline of "microbial forensics" to deter and attribute perpetrators of such acts. This Policy Forum describes the foundations of the microbial forensics program: the creation of a national bioforensics laboratory, a partnership laboratory network, and a peer-consensus scientific working group and the promulgation of quality assurance guidelines.
PMID: 14512607 [PubMed - indexed for MEDLINE]

64: Surg Infect (Larchmt). 2003 Fall;4(3):281-7.
Bacterial agents used for bioterrorism.
Horn JK.
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BACKGROUND: Bacterial pathogens and their products are potential agents of biological terrorism and biological warfare. These agents can be deployed through simple aerosol delivery systems and thereby cause widespread disease and death. METHODS: This report is a review of bacterial species that have been employed for development of biological terrorism, relying on a system for classification of their threat developed by the Centers for Disease Control. RESULTS: Physicians must understand how to recognize early signs and symptoms caused by bacterial agents. Clinical findings often seen on presentation are emphasized along with a summary of therapeutic approaches. CONCLUSIONS: Initiation of immediate therapy and supportive care provides the best chance for survival from these potentially lethal and devastating infections. A high index of suspicion must be maintained, especially in the setting of a sudden influx of cases with what are often relatively nonspecific symptoms.
PMID: 14588163 [PubMed - in process]

65: Vet Hum Toxicol. 2003 Oct;45(5):247-8.

Calls about anthrax to the Texas Poison Center Network in relation to the anthrax bioterrorism attack in 2001.
Forrester MB, Stanley SK.
Texas Department of Health, 11 W 49th Street, Austin, Texas 78756, USA.
Between October 4, 2001 and November 20, 2001, 22 cases of anthrax were identified in a bioterrorism attack on the US. This study examined the patterns of anthrax calls before and after the bioterrorist attack based on calls received by poison centers in Texas, a state that reported no anthrax cases as a result of the attack. During 1998-2002, 553 calls about anthrax were received. The majority of the anthrax calls occurred in 2001 (n = 489, 88.4%) and 2002 (n = 52, 9.4%). The number of calls increased greatly in the days after October 4, 2001, reaching a peak of 31 anthrax calls in 1 d and then declining sharply in succeeding months. However, by December 2002 the number of calls about anthrax still had not returned to pre-attack levels. This study demonstrated the value of poison centers in documenting public need for information on biological agents used in a terrorist attack, even if the attack did not occur in the area serviced by the poison center. Poison centers may expect to receive calls regarding a bioterrorist attack shortly after the public became aware of the attack and will continue to receive related calls for months afterward. Poison centers need to be prepared with appropriate information prior to such attacks to provide to the public upon request.
PMID: 14513892 [PubMed - indexed for MEDLINE]

66: Vet Rec. 2003 Oct 18;153(16):482-3.
Dealing with the threat of bioterrorism and exotic disease.
[No authors listed]
Publication Types: News
PMID: 14601793 [PubMed - in process]