Chemical/Biological Terrorism
February 2004

1: Acad Emerg Med. 2004 Feb;11(2):143-8.
Efficacy of an Educational Web Site for Educating Physicians about Bioterrorism.
Chung S, Mandl KD, Shannon M, Fleisher GR.
Center for Biopreparedness, Division of Emergency Medicine, Children's Hospital Boston, Department of Pediatrics, Harvard Medical School (SC, KDM, MS, GRF), Boston, MA.
OBJECTIVES: To determine whether a Web-based educational intervention improves emergency physicians' knowledge about bioterrorism and to survey physicians' knowledge and sources of information on bioterrorism. METHODS: Prospective randomized controlled trial using pre- and postintervention testing in hospitals. Participants were general and pediatric emergency medicine attending physicians, fellows, and fourth-year emergency medicine residents. All participants completed a pretest and attended a lecture on bioterrorism. Participants were then randomized to the Web intervention group that received continuous access to a bioterrorism educational Web site with weekly exposure to case scenarios of diseases due to biological agents, or the control group. Participants were retested after one and six months and surveyed to identify their sources of information and assess their knowledge. RESULTS: Sixty-three physicians completed the pretest. There was no difference in mean +/- standard deviation (SD) pretest scores between Web intervention (45% +/- 10%) and control (44% +/- 10%) groups (mean difference: 1.9%; 95% confidence interval [CI] = -6.7% to 2.9%). There was no significant difference between pre- and posttest scores among groups at one month (Web intervention 48% +/- 10% vs. control 45% +/- 10%; mean difference: 3.3%; 95% CI = -8.5% to 2.0%) and six months (Web intervention 51% +/- 8% vs. control 47% +/- 9%; mean difference: 3.8%; 95% CI = -8.8% to 1.2%). More than 60% of physicians cited media reports as their primary source of information on bioterrorism and believed that their knowledge of bioterrorism was limited after one month. CONCLUSIONS: Providing physicians information on bioterrorism through simulated cases and continuous access to an educational Web site does not increase knowledge of bioterrorism. Physicians are more likely to use media reports for their primary source of information.
PMID: 14759955 [PubMed - in process]

2: Am J Bioeth. 2003 Summer;3(3):W-IF4.
Remember Saddam's human guinea pigs.
Moreno JD.
Center for Biomedical Ethics, University of Virginia, USA.
Publication Types: Historical Article

PMID: 14735883 [PubMed - indexed for MEDLINE]

3: Arch Dermatol. 2003 Dec;139(12):1545-52.
Increased detection of rickettsialpox in a New York City hospital following the anthrax outbreak of 2001: use of immunohistochemistry for the rapid confirmation of cases in an era of bioterrorism.
Koss T, Carter EL, Grossman ME, Silvers DN, Rabinowitz AD, Singleton J Jr, Zaki SR, Paddock CD.

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BACKGROUND: Rickettsialpox is a self-limited febrile illness with skin lesions that may be mistaken for signs of potentially more serious diseases, such as cutaneous anthrax or chickenpox. The cluster of cutaneous anthrax cases from bioterrorism in October 2001 likely heightened awareness of and concern for cutaneous eschars. OBJECTIVES: To apply an immunohistochemical technique on paraffin-embedded skin biopsy specimens for diagnosing rickettsialpox, and to compare the reported incidence of rickettsialpox before, during, and after the cluster of cutaneous anthrax cases. DESIGN: Case series. SETTING: Dermatology department in a large tertiary care hospital in New York City. PATIENTS: Eighteen consecutive patients with the clinical diagnosis of rickettsialpox from February 23, 2001, through October 31, 2002. MAIN OUTCOME MEASURES: Results of immunohistochemical testing of skin biopsy specimens and of serological testing. RESULTS: Immunohistochemical testing revealed spotted fever group rickettsiae in all 16 eschars and in 5 of the 9 papulovesicles tested. A 4-fold or greater increase in IgG antibody titers reactive with Rickettsia akari was observed in all 9 patients for whom acute and convalescent phase samples were available; 6 patients had single titers indicative of rickettsialpox infection (> or =1:64). Of the 18 patients, 9 (50%) presented in the 5 months following the bioterrorism attacks. CONCLUSIONS: Rickettsialpox remains endemic in New York City, and the bioterrorism attacks of October 2001 may have led to increased awareness and detection of this disease. Because rickettsialpox may be confused with more serious diseases, such as cutaneous anthrax or chickenpox, clinicians should be familiar with its clinical presentation and diagnostic features.Immunohistochemical staining of skin biopsy specimens, particularly from eschars, is a sensitive technique for confirming the clinical diagnosis.
PMID: 14676069 [PubMed - indexed for MEDLINE]

4: Arch Dermatol. 2003 Dec;139(12):1657-8.
Bioterrorism preparedness in the dermatology community.
Carroll C, Balkrishnan R, Khanna V, Feldman S.
Publication Types: Letter
PMID: 14676093 [PubMed - indexed for MEDLINE]

5: Arh Hig Rada Toksikol. 2003 Jun;54(2):145-52.
Public health preparedness for chemical incidents in Europe.
Kello D.
MED-EKON Consulting and Services, Zagreb, Croatia. dinko.kello@zg.htnet.hr
In response to the attack of 11 September 2001 on the USA, World Health Organization (WHO), Regional Office for Europe took immediate steps in order to be able to assist countries in case of a terrorist attack. Among other things, WHO

organised a series of different consultations with international organisations, government representatives and experts in order to assess the state of preparedness at the national and international levels, to identify the main problems and to make recommendations. The problems were addressed in the context of possible public health consequences, regardless of whether such an incident derived from a deliberate act or a naturally occurring event. This overview gives a brief account of presentation made at the European Union "First Civil Protection Forum", which was held in Brussels in November 2002, and which served as a basis for defining the EU priorities and actions to make Europe a safer place to live.
PMID: 14679666 [PubMed - indexed for MEDLINE]

6: Bull World Health Organ. 2003;81(10):762-7. Epub 2003 Nov 25.
Smallpox and bioterrorism.
Pennington H.
Department of Medical Biology, University of Aberdeen, Medical School Building, Foresterhill, Aberdeen AB25 2ZD, United Kingdom. t.h.pennington@abdn.ac.uk
Smallpox was declared to be eradicated on 8 May 1980, during the Thirty-third World Health Assembly. However, concerns about the possible use of the virus as a weapon of bioterrorism have increased in recent years. Governments have responded by initiating selective vaccination programmes and other public health measures. This review uses historical data from 20th century outbreaks to assess the risks to current populations (which have declining immunity) from a deliberate release of virus. The data presented supports the conclusion of a previous reviewer (Mack) that "smallpox cannot be said to live up to its reputation. Far from being a quick-footed menace, it has appeared as a plodding nuisance with more bark than bite." Its R value (the average number of secondary cases infected by a primary case) is lower than that for measles, human parvovirus, chickenpox, mumps, rubella, and poliomyelitis; only the value for severe acute respiratory syndrome (SARS) is lower. Like SARS, close person-to-person contact is required for effective spread of the disease, and exposure to the virus in hospitals has played an important role in transmission for both viruses. In the present paper the dangers of mass vaccination are emphasized, along with the importance of case isolation, contact tracing, and quarantine of close contacts for outbreak control. The need for rapid diagnosis and the continued importance of maintaining a network of electron microscopes for this purpose are also highlighted.
PMID: 14758439 [PubMed - in process]

7: Conn Med. 2004 Jan;68(1):27-35.
Bioterrorism preparedness--Part II. Smallpox vaccination in a hospital setting.
Jacobs LM, Emanuelsen K, McKay C, Burns K.
Department of Traumatology and Emergency Medicine, Hartford Hospital, 80 Seymour
Street, P.O. Box 5037, Hartford, CT 06102, USA. Ljacobs@harthosp.org
The threat of using smallpox as an agent for bioterrorism resulted in a directive for the creation of smallpox response teams. In Connecticut, The Commissioner of the Department of Public Health convened public health and hospital leadership to plan for the vaccination of these teams. The purpose of this paper is to provide a description of the vaccination program at Hartford Hospital, a Center of Excellence for Bioterrorism Preparedness, and to report the results of a survey of the vaccinees regarding the vaccination experience.

Ninety persons were vaccinated. Six individuals experienced low-grade fever and 10 had axillary node swelling. One individual experienced significant fatigue. A total of six persons lost time from work. Four lost one day and two persons lost between four to five days of work. There was no autoinoculation, transfer inoculation, vaccinia or any other significant complication. Survey results indicate that most vaccinees felt positive about the experience.
PMID: 14752914 [PubMed - in process]

8: Dent Clin North Am. 2003 Oct;47(4):733-44.
Dentistry and bioterrorism.
Flores S, Mills SE, Shackelford L.
Development Center for Operational Medicine, Dental Expeditionary Operations, Air Force Institute for Operational Health, 311th HSW, 8150 Aeromedical Boulevard, Building 721, Brooks City-Base, San Antonio, TX 78235, USA. salvador.flores@brooks.af.mil
Dentistry's role in responding to bioterrorism and other catastrophic events is evolving and may involve a wide range of activities. Organized dentistry. local dental societies. and interested individuals should make local emergency response planners aware of the services the dental profession can provide and should work to integrate dental resources to strengthen the disaster response capacity of community health care systems. With effective planning, education, and training, dentists can play a significant role in responding to acts of bioterrorism or other unforeseen events.
Publication Types: Review Review, Tutorial
PMID: 14664462 [PubMed - indexed for MEDLINE]

9: Dermatol Nurs. 2003 Dec;15(6):558.
Dermatologic considerations for bioterrorism threats.
[No authors listed]
Publication Types: News
PMID: 14735612 [PubMed - in process]

10: Drug Discov Today. 2003 Oct 1;8(19):881-8.
Prevention and treatment of bacterial diseases caused by bacterial bioterrorism threat agents.
Greenfield RA, Bronze MS.
The Infectious Diseases Section, Department of Medicine, University of Oklahoma Health Sciences Center, & The Oklahoma City Veterans Administration Medical Center, Oklahoma City, OK 73190, USA. Ronald-Greenfield@ouhsc.edu
There is general consensus that the bacterial agents or products most likely to be used as weapons of mass destruction are Bacillus anthracis, Yersinia pestis, Francisella tularensis and the neurotoxin of Clostridium botulinum. Modern supportive and antimicrobial therapy for inhalational anthrax is associated with a 45% mortality rate, reinforcing the need for better adjunctive therapy and prevention strategies. Pneumonic plague is highly contagious, difficult to recognize and is frequently fatal. Therefore, the development of vaccines against this agent is crucial. Although tularemia is associated with low mortality, the highly infectious nature of aerosolized F. tularensis poses a

substantive threat that is best met by vaccine development. Safer antitoxins and a vaccine are required to meet the threat of the use of botulinum toxin as a weapon of mass destruction. In this article, the current status of research in these areas is reviewed.
Publication Types: Review Review, Tutorial
PMID: 14554016 [PubMed - indexed for MEDLINE]

11: Health Aff (Millwood). 2003 Sep-Oct;22(5):189-97.
Ready and willing? Physicians' sense of preparedness for bioterrorism.
Alexander GC, Wynia MK.
Division of General Internal Medicine, MacLean Center for Medical Ethics, University of Chicago Hospitals, USA.
Little is known about contemporary physicians' sense of preparedness for bioterrorism, willingness to treat patients despite personal risk, or belief in the professional duty to treat during epidemics. In a recent national survey few physicians reported that they or their practice are "well prepared" for bioterrorism. Still, most respondents reported that they would continue to care for patients in the event of an outbreak of "an unknown but potentially deadly illness," although only a narrow majority reported believing in a professional duty to treat patients in epidemics. Preparing physicians for bioterrorism should entail providing practical knowledge, preventive steps to minimize risk, and reinforcement of the profession's ethical duty to treat.
PMID: 14515895 [PubMed - indexed for MEDLINE]

12: Hosp Health Netw. 2003 Dec;77(12):20, 22.
Preparedness. Biodefense network.
Mills-Senn P.
Publication Types: News
PMID: 14712529 [PubMed - indexed for MEDLINE]

13: J Am Osteopath Assoc. 2003 Dec;103(12):574-5.
Lessons learned in bioterrorism can be applied to medical practice.
McFee RB.
Publication Types: Letter
PMID: 14740978 [PubMed - in process]

14: J Ark Med Soc. 2004 Jan;100(7):220-3.
On the front lines.
Duke R.
PMID: 14722930 [PubMed - indexed for MEDLINE]

15: J Contemp Health Law Policy. 2003 Spring;19(2):379-414.
Modernizing local responses to public health emergencies: bioterrorism, epidemics, and the model state emergency health powers act.
Reich DS.
PMID: 14748251 [PubMed - in process]

16: J Emerg Med Serv JEMS. 2003 Dec;28(12):16; author reply 16.
Comment on: J Emerg Med Serv JEMS. 2003 Oct;28(10):60-71.
Nerve agent toxicology.
Wood SP.
Publication Types: Comment Letter
PMID: 14702965 [PubMed - indexed for MEDLINE]

17: J Environ Health. 2003 Nov;66(4):35-6.
Chemical-terrorism preparedness--public health laboratories found "unprepared and overwhelmed".
[No authors listed]
PMID: 14621654 [PubMed - indexed for MEDLINE]

18: J Environ Health. 2003 Oct;66(3):43.
Bioterrorism early-warning system--algae?
Krause C.
PMID: 14556369 [PubMed - indexed for MEDLINE]

19: J Health Commun. 2003;8 Suppl 1:121-3.
Questions about hypotheticals and details in reporting on anthrax.
Jamieson KH, Lammie K, Wardle C, Krutt S.
University of Pennsylvania, Annenberg School, Philadelphia, Pennsylvania 19104, USA. kjamieson@asc.upenn.edu
PMID: 14692578 [PubMed - indexed for MEDLINE]

20: J Health Commun. 2003;8 Suppl 1:146-7; discussion 148-51.
Bioterrorism risk communication policy.
Sandman PM.
Risk Communication Consultant, Princeton, New Jersey, USA. peter@psandman.com
PMID: 14692584 [PubMed - indexed for MEDLINE]

21: J Health Commun. 2003;8 Suppl 1:130-43.
Optimistic bias and perceptions of bioterrorism in Michigan corporate spokespersons, fall 2001.
Salmon CT, Park HS, Wrigley BJ.
College of Communication Arts and Sciences, Michigan State University, East Lansing, Michigan 48824, USA. salmon@msu.edu
The notion that individuals believe that they are more likely than others to experience positive events and avoid negative ones is a well-documented phenomenon in the combined literatures of social psychology and health communication. The current study focuses on Michigan corporate spokespersons' perceptions of their company's risk and potential for optimistic bias. Beginning on September 10, 2001, and continuing through October 2001, telephone surveys were conducted by a professional survey research firm to assess spokespersons' awareness of and preparedness for a bioterrorism attack at their corporation, as well as to ascertain perceived self-risk relative to that of other, similar

corporations. The results offer evidence of a robust optimistic bias, and provide an unusually timely snapshot of levels of corporate awareness of bioterrorism during a critical period of time in which the U.S. experienced its first anthrax attack.
PMID: 14692582 [PubMed - indexed for MEDLINE]

22: J Health Commun. 2003;8 Suppl 1:1-2.
Anthrax case timeline.
[No authors listed]
PMID: 14692564 [PubMed - indexed for MEDLINE]

23: J Health Commun. 2003;8 Suppl 1:9-10.
Electronic journal publishing in the age of bioterrorism: how fast is fast?
Potter P.
Emerging Infectious Diseases, Centers for Disease Control and Prevention, Atlanta, Georgia 30333, USA. ppotter@cdc.gov
PMID: 14692566 [PubMed - indexed for MEDLINE]

24: J Health Commun. 2003;8 Suppl 1:11-2.
Communication lessons learned in the Emergency Operations Center during CDC's anthrax response: a commentary.
Vanderford ML.
Centers for Disease Control and Prevention, National Center for Environmental Health, Office of Communication, Atlanta, Georgia 30341, USA. mvanderford@cdc.gov
PMID: 14692567 [PubMed - indexed for MEDLINE]

25: J Health Commun. 2003;8 Suppl 1:15-6.
The anthrax attacks in New York City: the "Giuliani press conference model" and other communication strategies that helped.
Mullin S.
NYC Department of Health and Mental Hygiene, New York, New York 10013, USA. smullin@health.nyc.gov
PMID: 14692569 [PubMed - indexed for MEDLINE]

26: J Health Commun. 2003;8 Suppl 1:17-34; discussion 148-51.
Uncertain science and certain deadlines: CDC responses to the media during the anthrax attacks of 2001.
Robinson SJ, Newstetter WC.
Georgia Institute of Technology, Atlanta, Georgia, USA. susanr@cc.gatech.edu
This paper presents a study in which communication personnel for the U.S. Centers for Disease Control and Prevention (CDC) provided first-hand accounts of the experience of responding to media inquiries during the 2001 anthrax attacks. In-depth interviews were conducted with 19 communication professionals who worked either at the CDC headquarters in Atlanta or at field locations in the U.S. where persons were exposed to anthrax. The interviews sought CDC staff viewpoints on how the CDC handled a historically unprecedented level of press

activity in terms of work locations and equipment, information flow and clearance, and staff roles. Staff reported that the situation led to new work practices, tools for performing the work, and an enhanced understanding of what it takes to be prepared for and to handle communication work during a terrorism-related health crisis. The paper provides a discussion of implications of the findings for CDC and for other public health organizations developing systems for communication response during health-related crises.
PMID: 14692570 [PubMed - indexed for MEDLINE]

27: J Health Commun. 2003;8 Suppl 1:50-82; discussion 148-51.
Communicating anthrax in 2001: a comparison of CDC information and print media accounts.
Mebane F, Temin S, Parvanta CF.
Department of Health Policy and Administration, University of North Carolina at Chapel Hill School of Public Health, Chapel Hill, North Carolina 27599-7411, USA. fmebane@unc.edu
Information about anthrax released by news media from October 4 to December 3, 2001, was identified, sampled, coded, and compared with information released by CDC during that period using statistical analysis. In addition, communications about two anthrax-related issues were examined in depth. The quantitative analysis showed that, overall, CDC information releases and news coverage tracked fairly closely. When weight was defined as number of mentions, both sources gave the same weight to reports of risk for the population. The news sample gave roughly half the weight as CDC to who was exposed, how people were exposed, and what role antibiotics play in preventing anthrax. The samples were widely divergent (CDC high, news sample low) for public health precautions and other details. The in-depth, qualitative analysis showed that some reporters misinterpreted information provided by CDC, but they responded to requests to clarify the issue. The findings of this study suggest ways to improve future crisis communication efforts and demonstrate how differing methods of analysis can yield substantially different conclusions.
PMID: 14692572 [PubMed - indexed for MEDLINE]

28 J Health Commun. 2003;8 Suppl 1:83-92; discussion 148-51.
Using opinion surveys to track the public's response to a bioterrorist attack.
Blendon RJ, Benson JM, Desroches CM, Weldon KJ.
Department of Health Policy and Management, Harvard School of Public Health, Boston, Massachusetts 02115, USA. rblendon@hsph.harvard.edu
To communicate effectively with the public during an emergency, health officials need to find out in real time what Americans know and believe, whom they trust, and what actions they are taking in response to the crisis. Short-duration surveys can provide vital information to guide public officials in their response to events and their communication efforts. Prior research has shown that such surveys, when statistically re-weighted, can offer timely results without unacceptable risk of bias. Using examples from public opinion surveys during the anthrax attacks of 2001, this article examines the role such surveys can play during a public health crisis.
PMID: 14692573 [PubMed - indexed for MEDLINE]

29: J Health Commun. 2003;8 Suppl 1:93-103; discussion 148-51.
Public perceptions of information sources concerning bioterrorism before and after anthrax attacks: an analysis of national survey data.
Pollard WE.
Office of Communication, Centers for Disease Control and Prevention, Atlanta, Georgia 30333, USA. bdp4@cdc.gov
This study examined data from six national surveys before and after the bioterrorist anthrax attacks in the fall of 2001. Public perceptions of information sources regarding bioterrorism were examined. The findings highlighted the importance of local television and radio and of cable and network news channels as information sources. The findings also showed the importance of national and local health officials as spokespersons in the event of bioterrorist incidents. Periodic surveys of public attitudes provide important, timely information for understanding audiences in communication planning.
PMID: 14692574 [PubMed - indexed for MEDLINE]

30: J Health Commun. 2003;8 Suppl 1:104-15.
Leave no one behind: improving health and risk communication through attention to literacy.
Rudd RE, Comings JP, Hyde JN.
Department of Society, Human Development, and Health, Harvard School of Public Health, Boston, Massachusetts 02115, USA. rrudd@hsph.harvard.edu
Twice in recent times, the federal government mailed critical health-related information to every household in the United States. The mailings, the 1988 brochure Understanding AIDS and the 2001 postcard A Message to Americans, were designed to provide the general public with important information about needed action. This paper compares the development process undertaken for each mailing. The authors assess content and format in light of communication principles and the functional literacy skills of average adults. The authors, noting that the reading grade level of the postcard exceeds the reading ability of the average adult, recommend that plain language guidelines be combined with health and risk communication principles in all future efforts to alert the public.
PMID: 14692575 [PubMed - indexed for MEDLINE]

31: J Occup Environ Med. 2004 Jan;46(1):77-83.
Clinicians' knowledge, attitudes, and concerns regarding bioterrorism after a brief educational program.
Gershon RR, Qureshi KA, Sepkowitz KA, Gurtman AC, Galea S, Sherman MF.
Mailman School of Public Health, Columbia University, New York, NY 10032, USA. rg405@columbia.edu
We conducted this study to determine the knowledge, attitudes, and intended behaviors of New York City clinicians regarding bioterrorism-related diseases after a brief educational program. Data on clinicians' knowledge and attitudes toward bioterrorism and related diseases were collected using a self-administered questionnaire following a 3.5-hour educational program. Participants (n = 310, 82% response rate) reported increased confidence in recognizing symptoms of bioterrorism-related diseases (89%), in addressing patients' bioterrorism concerns (83%), and ability to treat bioterrorism victims (75%). Despite a high level of confidence in the efficacy of infection control

precautions, participants' knowledge scores regarding safe work practices suggest that additional education is warranted. Educational programs are useful in enhancing the public health response to bioterrorism and its consequences.
PMID: 14724481 [PubMed - in process]
32: JAMA. 2004 Jan 14;291(2):181-2; author reply 182-3.
Comment on:
JAMA. 2003 Aug 6;290(5):659-62.
Treatment of sarin exposure.
DeBalli P, Cook DR.
Publication Types: Comment Letter
PMID: 14722137 [PubMed - indexed for MEDLINE]

33: JAMA. 2004 Jan 14;291(2):181; author reply 182-3.
Comment on:
JAMA. 2003 Aug 6;290(5):659-62.
Treatment of sarin exposure.
Krivoy A, Layish I, Rotman E, Yehezkelli Y.
Publication Types: Comment Letter
PMID: 14722138 [PubMed - indexed for MEDLINE]

34: JAMA. 2004 Jan 14;291(2):182; author reply 182-3.
Comment on:
JAMA. 2003 Aug 6;290(5):659-62.
Treatment of sarin exposure.
Schier JG, Hoffman RS.
Publication Types: Comment Letter
PMID: 14722139 [PubMed - indexed for MEDLINE]

35: Lancet Infect Dis. 2004 Jan;4(1):1.
Comment on:
Lancet Infect Dis. 2004 Jan;4(1):54-7.
Covering the parts other Bioshields don't reach.
[No authors listed]
Publication Types: Comment
PMID: 14720558 [PubMed - indexed for MEDLINE]

36: Manag Care. 2003 Nov;12(11 Suppl):16-8.
Setting research priorities for disaster preparedness: the role of AHRQ.
Phillips S.
U.S. Agency for Healthcare Research and Quality, USA.
PMID: 14669388 [PubMed - indexed for MEDLINE]

37: Manag Care. 2003 Nov;12(11 Suppl):13-5.
Bioterror emergency readiness: a local responsibility.
Godley J.
Philadelphia Department of Public Health, USA.
PMID: 14669387 [PubMed - indexed for MEDLINE]

38: Manag Care. 2003 Nov;12(11 Suppl):7-12.
Creating a health care agenda for the Department of Homeland Security.
Noji EK.
United States Public Health Service, USA.
The challenge before us at DHS--to optimize use of our resources to create an effective health response to terrorist incidents--is formidable. After spending several weeks in Baghdad and seeing all the problems that arise in establishing a new government, I found myself thinking, "This is going to take years." Then, when I returned to the United States, Surgeon General Vice Adam. Richard Carmona, MD, MPH, almost immediately assigned me to the new Department of Homeland Security, adding that the problems it faced were probably worse than those in Baghdad. "That is impossible," I thought. "There's no way this could present a greater logistical, organizational, cultural, and administrative challenge than establishing a new government in a country with no democratic tradition in its 5,000-year history!" Within two days of my appointment to the new department, however, I recognized the accuracy of the surgeon general's statement. We will, however, work diligently toward our goals. During the next couple of years, a major DHS priority will be state and local preparedness, which includes rapid identification of epidemics, improved training, the establishment of liaisons with other first responders such as fire, rescue, law enforcement, and emergency medical services teams, and implementing state-of-the-art communication, disease alert, and reporting systems. Table 2 constitutes a checklist for bioterrorism preparedness, from a public health perspective. Local response and coordination with federal authorities and the issues inherent in these efforts are discussed in depth in the presentations that begin on the following page of this publication.
PMID: 14669386 [PubMed - indexed for MEDLINE]

39: Manag Care. 2003 Nov;12(11 Suppl):2-6.
Improving response to terror and global emerging infectious disease.
Winkenwerder W.
PMID: 14669385 [PubMed - indexed for MEDLINE]

40: Manag Care. 2003 Nov;12(11 Suppl):19-21.
Health care's counterterrorism efforts: what's being done and what isn't.
Coates V.
ECRI, USA.
PMID: 14669389 [PubMed - indexed for MEDLINE]

41: Med Confl Surviv. 2003 Oct-Dec;19(4):318-25.
Bioterrorism in the United States: a balanced assessment of risk and response.
Sidel VW.
Montefiore Medical Center and Albert Einstein College of Medicine, Bronx, NY 10467, USA. vsidel@igc.org
There are many definitions of terrorism and numerous examples of the use of explosives and small arms, especially against civilians and with the objective

of instilling fear. Although chemical and biological agents have only rarely been used by terrorists, there has recently been much concern about the threat of bioterrorism and the role of future health personnel in counteracting it. Rational setting of priorities requires the balance of risks against benefits in prevention and preparedness. Adverse effects of preparedness include inappropriate warnings, diversion of resources from other public health measures, both in the United States and overseas and constraints on civil rights. It is argued that the US should counteract the threat of bioterrorism by dealing with its root causes and by strengthening civil rights, international arms control and international law rather than by a self-defeating 'war on terrorism'.
PMID: 14703129 [PubMed - indexed for MEDLINE]

42: Med Confl Surviv. 2003 Oct-Dec;19(4):303-17.
The Biological Weapons Convention after November 2002.
Millett PD.
Department of Peace Studies, University of Bradford, West Yorks BD7 1DP. p.d.millett@bradford.ac.uk
The Fifth Review Conference of the Biological Weapons Convention, in November 2002, was the first to fail to produce a Final Document. It saw heated debate on non-compliance with the spirit of the prohibitions that it enshrines and marked the collapse of almost ten years of negotiations attempting to create a Protocol to strengthen the Convention. What was to emerge was a new process, very different from the traditional tools of arms control. This article examines the events that culminated in this drastic new approach, details the nature of this new process and discusses the possible short-, medium- and long-term impact of these events on the norm against the weaponization of disease.
PMID: 14703128 [PubMed - indexed for MEDLINE]

43: Med Confl Surviv. 2003 Oct-Dec;19(4):285-302.
Seascape with monkeys and guinea-pigs: Britain's biological weapons research programme, 1948-54.
Willis EA.
Medact, Grayston Centre, London N1 6HT. e.a.willis@tinyworld.co.uk
The British biological weapons (BW) research programme based at Porton Down continued after the Second World War. Five series of BW experiments with animals at sea were undertaken to supplement laboratory work. The causative organisms for plague, brucellosis, tularemia and later Venezuelan equine encephalomyelitis and Vaccinia viruses were tested in the Caribbean near Antigua in the late 1940s, in Hebridean waters (north-west Scotland) in the early 1950s and off Nassau in the Bahamas in 1953-54. In September 1952, at the end of Operation 'Cauldron' off the Isle of Lewis, a trawler, the Carella, passed through the danger area when a toxic cloud had been released and was covertly watched until the incubation period had passed in case those on board had come into contact with the plague bacillus. Publicity about the trials was avoided, but a press statement was issued in March 1954. The last series provoked sustained agitation in Cuba. More recently an outline of the sequence has emerged in the UK parliamentary record and in Porton's official history, and a fuller account of the Scottish trials has awakened some interest locally.
Publication Types: Historical Article

PMID: 14703127 [PubMed - indexed for MEDLINE]

44: Med Confl Surviv. 2003 Oct-Dec;19(4):326-30.
Which bio-weapons might be used by terrorists against the United Kingdom?
Boulton F.
Oxford Research Group, Oxford OX2 6JE. frank.boulton@nbs.nhs.uk
The properties of potential biological weapon agents for bioterrorism include a consistent effect at low dosage and short incubation period in a population of low immunity, being difficult to treat, able to be produced in bulk, stable in storage and readily disseminated. Possible agents include smallpox, haemorrhagic fever viruses, anthrax, tularaemia and plague. The example of Severe Acute Respiratory Syndrome (SARS) demonstrates the possible consequences of an act of bioterrorism, but also the necessary global response. There is scepticism about the practicability of surveillance schemes and the global elimination of biological weapons though the Biological and Toxin Weapons Convention remains urgent.
PMID: 14703130 [PubMed - indexed for MEDLINE]

46: Med Confl Surviv. 2003 Oct-Dec;19(4):331-4.
Bioterrorism: how should doctors respond to the threat of biological weapons?
Nathanson V.
British Medical Association, London WC1H 9JP. ahutchinson@bma.org.uk
Planning for the threat of a biological weapons attack includes preparations to recognize and identify an attack and its scale. Training is the key element of any response, but it is not possible for any health service to maintain sufficient extra capacity to deal with a massive bioterrorist threat. Training must include both first- and second-line responders. Subject to issues of confidentiality, information about plans should be as widely available as possible. Planning for prevention is also important. This should include stopping the production and dispersal of weapons under international humanitarian law and establishing the ethical basis on which doctors and scientists would not become involved in the production of biological and other weapons.
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One response to the threat of bioterror: smallpox vaccination.
Lonks JR.
Miriam Hospital, Brown Medical School, Providence, RI, USA. John_Lonks@brown.edu
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A genomics-based approach to biodefence preparedness.
Fraser CM.
The Institute for Genomic Research, 9712 Medical Center Drive, Rockville, Maryland 20850, USA. cmfraser@tigr.org
Publication Types: Review Review, Tutorial
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Comment on:
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Smallpox: the threat of bioterrorism and the risk of the vaccine.
Johnson RT.
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One hundred years of anthrax.
Nicoll A, Maynard R.
Publication Types: Comment Editorial Historical Article
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51: Proc AMIA Symp. 2003;:664-8.
Emergency department data for bioterrorism surveillance: electronic data availability, timeliness, sources and standards.
Travers DA, Waller A, Haas SW, Lober WB, Beard C.
Emergency Department (ED) data are a key component of bioterrorism surveillance systems. Little research has been done to examine differences in ED data capture and entry across hospitals, regions and states. The purpose of this study was to describe the current state of ED data for use in bioterrorism surveillance in 2 regions of the country. We found that chief complaint (CC) data are available electronically in 54% of the North Carolina EDs surveyed, and in 100% of the Seattle area EDs. Over half of all EDs reported that CCs are recorded in free text form. Though all EDs have electronic diagnosis data, less than half report that diagnoses are coded within 24 hours of the ED visit.
PMID: 14728256 [PubMed - in process]

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Applied IT for the CDC's Bioterrorism Preparedness and Response Program.
Hutwagner LC, Seeman GM, Treadwell T, McGehee JE, Bray DA.
Early identification of an outbreak is essential, as rapid public health response minimizes morbidity and mortality. The Early Aberration Reporting System (EARS) is a software solution designed to aid in the early identification of bioterrorism events and other disease outbreaks. EARS implements established aberration detection methodologies. In parallel and supporting the laboratory side of response, the LRN Geographic Information System (GIS) map server was created as a way of visually providing critical data through the CDC intranet on the nation's laboratory readiness, displaying many data elements in a unified fashion.
PMID: 14728376 [PubMed - in process]

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Emergency implementation of knowledge management system to support abioterrorism response
Garrett NY, Yasnoff WA, Kumar V.

In a public health emergency, it becomes necessary for public health agencies to provide timely, accurate and useful information to the community. During the anthrax attacks, the Public Health Practice Program Office in the Centers for Disease Control and Prevention implemented a knowledge management (KM) system to respond to an increased number of inquiries from public health officials, first responders, and health care professionals as well as the general public. While it is possible to successfully implement a knowledge management system quickly in a crisis situation, additional challenges to sustainability may result from shortchanging the normal decision-making channels.
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Simulation modeling of anthrax spore dispersion in a bioterrorism incident.
Reshetin VP, Regens JL.
Joint Institute for Power and Nuclear Research, nationa Academy of Sciences of Belarus, Sosny-Minsk, 220109, Belarus.
Recent events have increased awareness of the risk posed by terrorist attacks. Bacillus anthracis has resurfaced in the 21st century as a deadly agent of bioterrorism because of its potential for causing massive civilian casualties. This analysis presents the results of a computer simulation of the dispersion of anthrax spores in a typical 50-story, high-rise building after an intentional release during a bioterrorist incident. The model simulates aerosol dispersion in the case of intensive, small-scale convection, which equalizes the concentration of anthrax spores over the building volume. The model can be used to predict the time interval required for spore dispersion throughout a building after a terrorist attack in a high-rise building. The analysis reveals that an aerosol release of even a relatively small volume of anthrax spores during a terrorist incident has the potential to quickly distribute concentrations that are infectious throughout the building.
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Quo vadis bioterrorism research?
Panait ML, Szegli G, Negut M.
National Institute of Research-Development for Microbiology and Immunology Cantacuzino, Bucharest, Romania.
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Uncertain threat. Does smallpox really spread that easily?
Sinha G.
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PMID: 14682033 [PubMed - indexed for MEDLINE]

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Coding ethical behaviour: the challenges of biological weapons.
Rappert B.
Department of Sociology, School of Historical, Political and Sociological

Studies, University of Exeter, Exeter EX4 4RJ, United Kingdom.
B.Rappert@exeter.ac.uk
Since 11 September 2001 and the anthrax attacks that followed in the US, public and policy concerns about the security threats posed by biological weapons have increased significantly. With this has come an expansion of those activities in civil society deemed as potential sites for applying security controls. This paper examines the assumptions and implications of national and international efforts in one such area: how a balance or integration can take place between security and openness in civilian biomedical research through devising professional codes of conduct for scientists. Future attempts to establish such codes must find a way of reconciling or at least addressing dilemmatic and tension-ridden issues about the appropriateness of research; a topic that raises fundamental questions about the position of science within society.
PMID: 14652899 [PubMed - indexed for MEDLINE]

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Ricin. Mechanisms of cytotoxicity.
Lord MJ, Jolliffe NA, Marsden CJ, Pateman CS, Smith DC, Spooner RA, Watson PD, Roberts LM.
Department of Biological Sciences, University of Warwick, Coventry, UK.
Ricin is a heterodimeric protein produced in the seeds of the castor oil plant (Ricinus communis). It is exquisitely potent to mammalian cells, being able to fatally disrupt protein synthesis by attacking the Achilles heel of the ribosome. For this enzyme to reach its substrate, it must not only negotiate the endomembrane system but it must also cross an internal membrane and avoid complete degradation without compromising its activity in any way. Cell entry by ricin involves a series of steps: (i) binding, via the ricin B chain (RTB), to a range of cell surface glycolipids or glycoproteins having beta-1,4-linked galactose residues; (ii) uptake into the cell by endocytosis; (iii) entry of the toxin into early endosomes; (iv) transfer, by vesicular transport, of ricin from early endosomes to the trans-Golgi network; (v) retrograde vesicular transport through the Golgi complex to reach the endoplasmic reticulum; (vi) reduction of the disulphide bond connecting the ricin A chain (RTA) and the RTB; (vii) partial unfolding of the RTA to render it translocationally-competent to cross the endoplasmic reticulum (ER) membrane via the Sec61p translocon in a manner similar to that followed by misfolded ER proteins that, once recognised, are targeted to the ER-associated protein degradation (ERAD) machinery; (viii) avoiding, at least in part, ubiquitination that would lead to rapid degradation by cytosolic proteasomes immediately after membrane translocation when it is still partially unfolded; (ix) refolding into its protease-resistant, biologically active conformation; and (x) interaction with the ribosome to catalyse the depurination reaction. It is clear that ricin can take advantage of many target cell molecules, pathways and processes. It has been reported that a single molecule of ricin reaching the cytosol can kill that cell as a consequence of protein synthesis inhibition. The ready availability of ricin, coupled to its extreme potency when administered intravenously or if inhaled, has identified this protein toxin as a potential biological warfare agent. Therapeutically, its cytotoxicity has encouraged the use of ricin in 'magic bullets' to specifically target and destroy cancer cells, and the unusual intracellular trafficking properties of ricin potentially permit its development as a vaccine vector. Combining our understanding of the ricin structure with

ways to cripple its unwanted properties (its enzymatic activity and promotion of vascular leak whilst retaining protein stability and important immunodominant epitopes), will also be crucial in the development of a long awaited protective vaccine against this toxin.
Publication Types: Review Review, Academic
PMID: 14579547 [PubMed - indexed for MEDLINE]

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Ricin poisoning.
Bradberry SM, Dickers KJ, Rice P, Griffiths GD, Vale JA.
National Poisons Information Service (Birmingham Centre), West Midlands Poisons Unit, City Hospital, Birmingham, UK. sallybradberry@npis.org
Ricin is a naturally occurring toxin derived from the beans of the castor oil plant Ricinus communis. It is considered a potential chemical weapon. Ricin binds to cell surface carbohydrates, is internalised then causes cell death by inhibiting protein synthesis. Oral absorption is poor and absorption through intact skin most unlikely; the most hazardous routes of exposure being inhalation and injection. Features of toxicity mainly reflect damage to cells of the reticuloendothelial system, with fluid and protein loss, bleeding, oedema and impaired cellular defence against endogenous toxins. It has been estimated that in man, the lethal dose by inhalation (breathing in solid or liquid particles) and injection (into muscle or vein) is approximately 5-10 micrograms/kg, that is 350-700 micrograms for a 70 kg adult. Death has ensued within hours of deliberate subcutaneous injection. Management is supportive. Prophylactic immunisation against ricin toxicity is a developing research initiative, although presently not a realistic option in a civilian context.
Publication Types: Review Review, Tutorial
PMID: 14579548 [PubMed - indexed for MEDLINE]

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Bioterrorism and electron microscopic differentiation of poxviruses from herpesviruses: dos and don'ts.
Miller SE.
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With increased threat of terrorism, much attention is being directed toward readiness for biodefense. Smallpox virus, a deadly and much feared organism, is among possible bioterrorism agents. Herpes viruses, such as the one that causes chickenpox and shingles, produce skin lesions that may resemble those seen early in smallpox infection. Electron microscopy (EM) is a rapid and reliable method for differentiating poxviruses from herpesviruses. However, before becoming involved in the monitoring of potential smallpox cases, a laboratory must consider several issues, including expertise in virus identification, capacity for handling biohazards, and health and immune status of laboratory staff.

PMID: 12775503 [PubMed - indexed for MEDLINE]