FLORIDA DEPARTMENT OF HEALTH

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Miami-Dade County HEALTH DEPARTMENT

No Indication of Anthrax in Miami-Dade County: Results of Active Anthrax Surveillance

On October 11, Miami-Dade County Health Department set up an active anthrax surveillance system with all 27 Miami-Dade County hospitals. Each hospital has reported daily on patients who have been seen during the past 24 hours with symptoms or lab results that might suggest anthrax.

The infection control professional (ICP) at each hospital has been serving as the key contact person for that hospital and reporting daily with a list of patients meeting the following criteria:

1) Shortness of breath and fever **AND/OR**
2) Signs of meningitis
3) Widening of the mediastinum if radiographic evidence is available
4) Laboratory findings of gram-positive bacilli in a person without another known etiology.

Figure 1 shows the number of patients having shortness of breath and fever or meningitis in Miami-Dade County between October 11 and October 29 and indicates relatively stable disease activity. All specimens with gram-positive bacilli have been tested by the Miami Regional Laboratory and are negative for anthrax. There has been no confirmed case of anthrax identified through the system. We greatly appreciate the hard work and cooperation of infection control practitioners and other hospital staff in setting up and maintaining the special surveillance system. In addition, there have been about 865 environmental specimens related to hoaxes or items found by concerned citizens in Miami-Dade County. No specimen has been positive. Therefore, we currently have no evidence of anthrax in the county. As of October 30, 2001, the CDC has reported 2 confirmed cases of anthrax in Florida (both related to the AMI Building) in Palm Beach County, 3 in New York City, 5 in New Jersey and 5 in Washington, DC for a total of 15 confirmed cases. Additionally, the CDC reported 4 suspect cases in New York City and 1 in New Jersey.

Website References

For additional clinical information on anthrax, updates on developments in Florida, or other diseases likely associated with biological agents, please consult the following websites:

www.myflorida.com
www.bt.cdc.gov
www.idsociety.org
www.acponline.org/bioterr/
www.apic.org/bioterror

Inside this issue:

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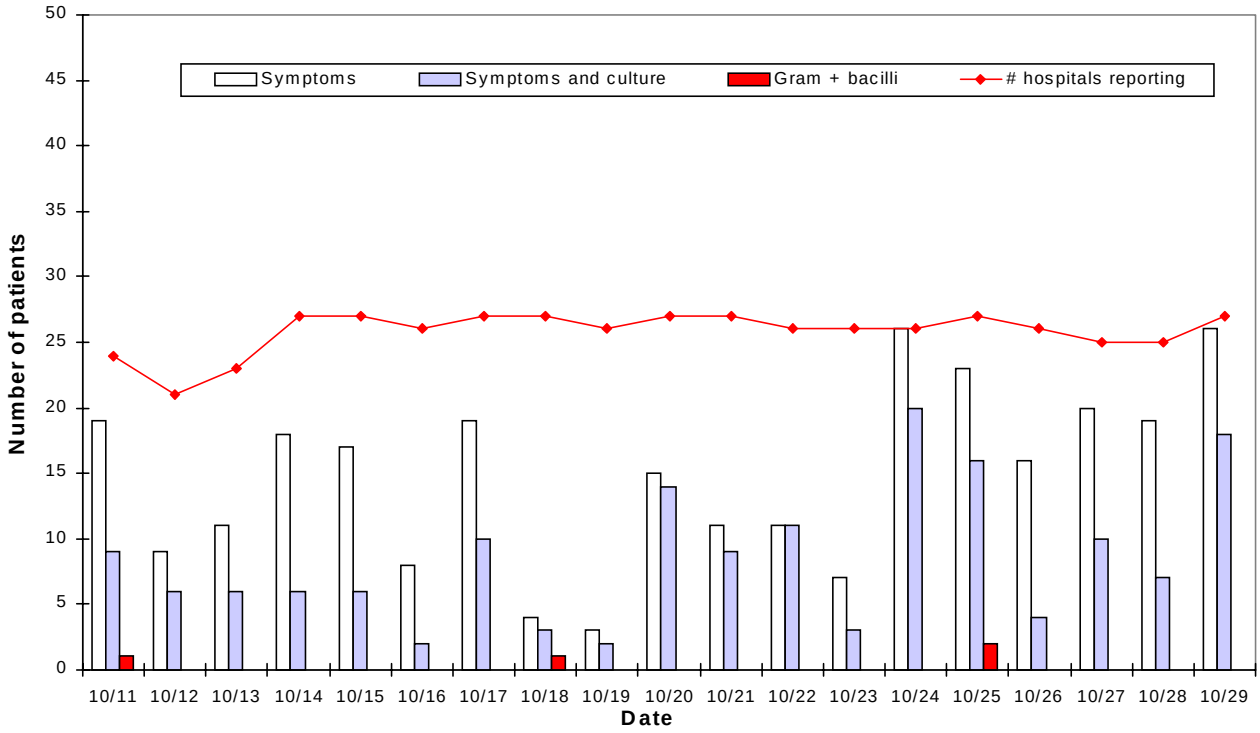
Active surveillance for suspect anthrax cases
Miami-Dade County,October 11-29, 2001
Patients with suspicious symptoms* or laboratory findings



***Either (1) shortness of breath AND fever or (2) meningitis**

Prepared by:
Miami-Dade County Health Department
MDCHD 10/30/2001

MMWR Update: Investigation of Bioterrorism-Related Anthrax and Interim Guidelines for Exposure Management and Antimicrobial Therapy, October 2001

[The following article was selected from CDC MMWR October 26, 2001 / Vol. 50 / No. 42. The full article can be downloaded from http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5042a1.htm]

Managing Threats

Letters containing *B. anthracis* spores have been sent to persons in NYC and DC. Prompt identification of a threat and institution of appropriate measures may prevent inhalational anthrax. To prevent exposure to *B. anthracis* and subsequent infection, suspicious letters or packages should be recognized and appropriate protective steps taken.

Characteristics of suspicious packages and letters include inappropriate or unusual labeling, strange return address or no return address, postmarks from a city or state different from the return address, excessive packaging material, and others. If a package appears suspicious, it should not be opened. The package should be handled as little as possible. The room should be vacated and secured promptly and appropriate security or law enforcement agencies promptly notified (Box 1).

Managing Exposures

Identification of a patient with anthrax or a confirmed exposure to *B. anthracis* should prompt an

Box 1. Handling of Suspicious Packages or Envelopes

- Do not shake or empty the contents of a suspicious package or envelope.
- Do not carry the package or envelope, show it to others, or allow others to examine it.
- Put the package or envelope on a stable surface; do not sniff, touch, taste, or look closely at it or any contents that may have spilled.
- Alert others in the area about the suspicious package or envelope. Leave the area, close any doors, and take actions to prevent others from entering the area. If possible, shut off the ventilation system.
- Wash hands with soap and water to prevent spreading potentially infectious material to face or skin. Seek additional instructions for exposed or potentially exposed persons.
- If at work, notify a supervisor, a security officer, or a law enforcement official. If at home, contact the local law enforcement agency.
- If possible, create a list of persons who were in the room or area when this suspicious letter or package was recognized and a list of persons who also may have handled this package or letter. Give the list to both the local public health authorities and law enforcement officials.

epidemiologic investigation. The highest priority is to identify at-risk persons and initiate appropriate interventions to protect them. The exposure circumstances are the most important factors that direct decisions about prophylaxis. Persons with an exposure or contact with an item or environment known, or suspected to be contaminated with *B. anthracis*—regardless of laboratory tests results—should be offered antimicrobial prophylaxis. Exposure or contact, not laboratory test results, is the basis for initiating such treatment. Culture of nasal swabs is used to detect anthrax spores. Nasal swabs can occasionally document exposure, but cannot rule out exposure to *B. anthracis*. As an adjunct to epidemiologic evaluations, nasal swabs may provide clues to help assess the exposure circumstances. In addition, rapid evaluation of contaminated powder, including particle size and characteristics, may prove useful in assessing the risk for inhalational anthrax.

CDC is working with U.S. Postal Service employees and managers on several strategies to address the risk for anthrax among workers involved in mail handling. These strategies include personal protective equipment for workers handling mail and engineering controls in mail facilities. Clinicians and laboratorians should be vigilant for symptoms or laboratory findings that indicate possible anthrax infection, particularly among workers involved in mail sorting and distribution. Information to guide health-care providers and laboratories is available at <http://www.bt.cdc.gov> (1).

Antimicrobial Treatment

A high index of clinical suspicion and rapid administration of effective antimicrobial therapy is essential for prompt diagnosis and effective treatment of anthrax. Limited clinical experience is available and no controlled trials in humans have been performed to validate current treatment recommendations for inhalational anthrax. Based on studies in nonhuman primates and other animal and in vitro data, ciprofloxacin or doxycycline should be used for initial intravenous therapy until antimicrobial susceptibility results are known (Table 1). Because of the mortality associated with inhalational anthrax, two or more antimicrobial agents predicted to be effective are recommended; however, controlled studies to support a multiple drug approach are not available. Other agents with in vitro activity suggested for use in conjunction with ciprofloxacin or doxycycline include rifampin, vancomycin, imipenem, chloramphenicol, penicillin and ampicillin, clindamycin, and clarithromycin; but other than for penicillin, limited or no data exist regarding the use of these agents in the treatment of inhalational *B. anthracis* infection. Cephalosorins and trimethoprim-sulfamethoxazole should not be used for therapy. Regimens being used to treat patients described in this report include ciprofloxacin, rifampin, and

TABLE 1. Inhalational anthrax treatment protocol*,† for cases associated with this bioterrorism attack

Category	Initial therapy (intravenous)§,¶	Duration
Adults	Ciprofloxacin 400 mg every 12 hrs* **or** Doxycycline 100 mg every 12 hrs†† **and** One or two additional antimicrobials¶	IV treatment initially**. Switch to oral antimicrobial therapy when clinically appropriate: Ciprofloxacin 500 mg po BID **or** Doxycycline 100 mg po BID Continue for 60 days (IV and po combined)§§
Children	Ciprofloxacin 10–15 mg/kg every 12hrs ¶¶,*** **or** Doxycycline:†††,†† >8 yrs and >45 kg: 100 mg every 12 hrs >8 yrs and ≤45 kg: 2.2 mg/kg every 12 hrs ≤8 yrs: 2.2 mg/kg every 12 hrs **and** One or two additional antimicrobials¶	IV treatment initially**. Switch to oral antimicrobial therapy when clinically appropriate: Ciprofloxacin 10–15 mg/kg po every 12 hrs*** **or** Doxycycline:††† >8 yrs and >45 kg: 100 mg po BID >8 yrs and ≤45 kg: 2.2 mg/kg po BID ≤8 yrs: 2.2 mg/kg po BID Continue for 60 days (IV and po combined)§§
Pregnant women§§§	Same for nonpregnant adults (the high death rate from the infection outweighs the risk posed by the antimicrobial agent)	IV treatment initially. Switch to oral antimicrobial therapy when clinically appropriate.† Oral therapy regimens same for nonpregnant adults
Immunocompromised persons	Same for nonimmunocompromised persons and children	Same for nonimmunocompromised persons and children

* For gastrointestinal and oropharyngeal anthrax, use regimens recommended for inhalational anthrax.
† Ciprofloxacin or doxycycline should be considered an essential part of first-line therapy for inhalational anthrax.
§ Steroids may be considered as an adjunct therapy for patients with severe edema and for meningitis based on experience with bacterial meningitis of other etiologies.
¶ Other agents with *in vitro* activity include rifampin, vancomycin, penicillin, ampicillin, chloramphenicol, imipenem, clindamycin, and clarithromycin. Because of concerns of constitutive and inducible beta-lactamases in *Bacillus anthracis*, penicillin and ampicillin should not be used alone. Consultation with an infectious disease specialist is advised.
** Initial therapy may be altered based on clinical course of the patient; one or two antimicrobial agents (e.g., ciprofloxacin or doxycycline) may be adequate as the patient improves.
†† If meningitis is suspected, doxycycline may be less optimal because of poor central nervous system penetration.
§§ Because of the potential persistence of spores after an aerosol exposure, antimicrobial therapy should be continued for 60 days.
¶¶ If intravenous ciprofloxacin is not available, oral ciprofloxacin may be acceptable because it is rapidly and well absorbed from the gastrointestinal tract with no substantial loss by first-pass metabolism. Maximum serum concentrations are attained 1–2 hours after oral dosing but may not be achieved if vomiting or ileus are present.
*** In children, ciprofloxacin dosage should not exceed 1 g/day.
††† The American Academy of Pediatrics recommends treatment of young children with tetracyclines for serious infections (e.g., Rocky Mountain spotted fever).
§§§ Although tetracyclines are not recommended during pregnancy, their use may be indicated for life-threatening illness. Adverse effects on developing teeth and bones are dose related; therefore, doxycycline might be used for a short time (7–14 days) before 6 months of gestation.

TABLE 2. Cutaneous anthrax treatment protocol* for cases associated with this bioterrorism attack

Category	Initial therapy (oral)†	Duration
Adults*	Ciprofloxacin 500 mg BID or Doxycycline 100 mg BID	60 days§
Children*	Ciprofloxacin 10–15 mg/kg every 12 hrs (not to exceed 1 g/day)† or Doxycycline:¶ >8 yrs and >45 kg: 100 mg every 12 hrs >8 yrs and ≤45 kg: 2.2 mg/kg every 12 hrs ≤8 yrs: 2.2 mg/kg every 12 hrs	60 days§
Pregnant women*,**	Ciprofloxacin 500 mg BID or Doxycycline 100 mg BID	60 days§
Immunocompromised persons*	Same for nonimmunocompromised persons and children	60 days§

* Cutaneous anthrax with signs of systemic involvement, extensive edema, or lesions on the head or neck require intravenous therapy, and a multidrug approach is recommended. Table 1.
† Ciprofloxacin or doxycycline should be considered first-line therapy. Amoxicillin 500 mg po TID for adults or 80 mg/kg/day divided every 8 hours for children is an option for completion of therapy after clinical improvement. Oral amoxicillin dose is based on the need to achieve appropriate minimum inhibitory concentration levels.
§ Previous guidelines have suggested treating cutaneous anthrax for 7–10 days, but 60 days is recommended in the setting of this attack, given the likelihood of exposure to aerosolized *B. anthracis* (*6*).
¶ The American Academy of Pediatrics recommends treatment of young children with tetracyclines for serious infections (e.g., Rocky Mountain spotted fever).
** Although tetracyclines or ciprofloxacin are not recommended during pregnancy, their use may be indicated for life-threatening illness. Adverse effects on developing teeth and bones are dose related; therefore, doxycycline might be used for a short time (7–14 days) before 6 months of gestation.

vancomycin; and ciprofloxacin, rifampin, and clindamycin.

Penicillin is labelled for use to treat inhalational anthrax. However, preliminary data indicate the presence of constitutive and inducible beta-lactamases in the *B. anthracis* isolates from Florida, NYC, and DC. Thus, treatment of systemic *B. anthracis* infection using a penicillin alone (i.e., penicillin G and ampicillin) is not recommended. The *B. anthracis* genome sequence shows that this organism encodes two beta-lactamases: a penicillinase and a cephalosporinase. Data in the literature also show that some beta-lactamase negative *B. anthracis* strains for which the penicillin minimum inhibitory concentrations (MICs) are 0.06 µg/mL increase to 64 µg/mL and become beta-lactamase positive when exposed to semisynthetic penicillins (4). The frequency of this induction event is unknown. Although amoxicillin/clavulanic acid is more active than amoxicillin alone against beta-lactamase, producing strains in vitro, the combination may not be clinically effective for inhalational anthrax where large numbers of organisms are likely to be present.

Toxin-mediated morbidity is a major complication of systemic anthrax. Corticosteroids have been suggested as adjunct therapy for inhalational anthrax associated with extensive edema, respiratory compromise, and meningitis (5).

For cutaneous anthrax, ciprofloxacin and doxycycline also are first-line therapy (Table 2). As for inhalational disease, intravenous therapy with a multidrug regimen is recommended for cutaneous anthrax with signs of systemic involvement, for extensive edema, or for lesions on the head and neck (Table 2). In cutaneous anthrax, antimicrobial treatment may render lesions culture negative in 24 hours, although progression to eschar formation still occurs (5). Some experts recommend that corticosteroids be considered for extensive edema or swelling of the head and neck region associated with cutaneous anthrax. Cutaneous anthrax is typically treated for 7–10 days; however, in this bioterrorism attack, the risk for simultaneous aerosol exposure appears to be high. Although infection may produce an effective immune response, a potential for reactivation of latent infection may exist. Therefore, persons with cutaneous anthrax associated with this attack should be treated for 60 days.

Prophylaxis for inhalational anthrax exposure has been addressed in a previous report (1) and indicates the use of either ciprofloxacin or doxycycline as first line agents. High-dose penicillin (e.g., amoxicillin or penicillin VK) may be an option for antimicrobial prophylaxis when ciprofloxacin or doxycycline are contraindicated. The likelihood of betalactamase induction events that would increase the penicillin MIC is lower when only small numbers of vegetative cells are present, such as during antimicrobial prophylaxis.

All medications may have undesirable side effects and allergic reactions may result from any medication. Clinicians prescribing these medications should be aware of their side effects and consult an infectious disease specialist as needed. Patients should be urged to inform their health-care provider of any adverse event.

This is the first bioterrorism-related anthrax attack in the United States, and the public health ramifications of this attack continue to evolve. Additional updates and recommendations will be published in MMWR.

References

1. CDC. Update: investigation of anthrax associated with intentional exposure and interim public health guidelines, October 2001. MMWR 2001;50:889–97.
2. Keim P, Price LB, Klevytska AM, et al. Multiple-locus variable-number tandem repeat analysis reveals genetic relationships with *Bacillus anthracis*. J Baceriol 2000;182:2928–36.
3. National Committee for Clinical Laboratory Standards. Performance standards for antimicrobial susceptibility testing. Wayne, Pennsylvania: National Committee for Clinical Laboratory Standards, 2001; 11th informational supplement M100-S11.
4. Lightfoot NF, Scott RJ, Turnbull PC. Antimicrobial susceptibility of *Bacillus anthracis*. Salisbury Med Bull 1990;68:95S–98S.
5. Dixon TC, Meselson M, Guillemin J, Hanna PC. Anthrax. N Engl J Med 1999;341:815–26.
6. Inglesby TV, Henderson DA, Bartlett JG, et al. Anthrax as a biological weapon: medical and public health management. JAMA 1999;281:1735–45.

To report diseases or for information:

Office of Epidemiology and Disease Control

Childhood lead poisoning prevention program	(305) 324-2414
Hepatitis	(305) 324-2490
Other diseases and outbreaks	(305) 324-2413
HIV/AIDS Program	(305) 377-7400
STD Program	(305) 325-3242
Tuberculosis Program	(305) 324-2470
Special Immunization Program	(305) 376-1976
Nights, weekends, and holidays	(305) 377-6751

Monthly Report
Selected Reportable Diseases/Conditions in Miami-Dade County, September 2001

Diseases/Conditions	Reported Cases this Month	2001 Year to Date	2000 Year to Date	1999 Year to Date	1998 Year to Date
AIDS *Provisional	73	1010	1054	1099	1278
Campylobacteriosis	6	91	117	109	54
Chancroid	0	0	0	0	2
Chlamydia trachomatis	237	2196	2763	3092	1585
Ciguatera Poisoning	0	0	2	0	0
Cryptosporidiosis	1	12	15	16	8
Cyclosporosis	0	0	0	0	1
Diphtheria	0	0	0	0	0
E. coli , O157:H7	2	2	3	4	2
E. coli , Other	0	1	1	0	1
Encephalitis	0	0	0	0	0
Giardiasis, Acute	26	207	177	70	56
Gonorrhea	132	1229	2171	2014	1341
Granuloma Inguinale	0	0	0	0	0
Haemophilus influenzae B (invasive)	0	1	1	1	1
Hepatitis A	29	134	56	69	98
Hepatitis B	3	46	42	17	57
HIV *Provisional	113	1221	1142	1190	1394
Lead Poisoning	25	200***	344	Not available	Not available
Legionnaire's Disease	1	2	0	0	1
Leptospirosis	0	0	0	0	0
Lyme disease	1	6	4	0	1
Lymphogranuloma Venereum	0	0	0	0	0
Malaria	2	14	21	14	18
Measles	0	0	0	0	0
Meningitis (except aseptic)	3	16	17	24	14
Meningococcal Disease	0	13	22	15	10
Mumps	0	0	1	2	0
Pertussis	0	1	7	10	14
Polio	0	0	0	0	0
Rabies, Animal	0	0	0	0	0
Rubella	0	0	1	0	0
Salmonellosis	50	226	207	227	139
Shigellosis	24	115	167	145	158
Streptococcus pneumoniae, Drug Resistant	9	139	154	141	63
Syphilis, Infectious	12	154	95	56	20
Syphilis, Other	70	747	554	624	488
Tetanus	0	1	1	0	0
Toxoplasmosis	1	11	0	1	0
Tuberculosis *Provisional	28	167	203	201	209
Typhoid Fever	0	0	2	15	3
Vibrio , *cholera*	0	0	0	0	0
Vibrio , Other	0	0	0	0	1

* Data on AIDS are provisional at the county level and is subject to edit checks by state and federal agencies.
** Data on Tuberculosis are provisional at the county level. ***: All follow-up cases were removed