Rationale for Additional Post-Exposure Prophylaxis Options

Bradley A. Perkins, M.D.
Meningitis & Special Pathogens Branch,
Division of Bacterial and Mycotic Diseases, NCID, CDC

Speaker 1 of 4 for program “CDC Responds: Update on Options for Preventive Treatment for Persons at Risk for Inhalational Anthrax,” broadcast December 21, 2001
Additional Options for Those Exposed to *Bacillus anthracis* spores

- Earlier Recommendation - 60 days of antibiotics + medical monitoring
- Additional Option 1 - 40 additional days of antibiotic treatment + medical monitoring
- Additional Option 2 – 40 additional days of antibiotic treatment + 3 doses of anthrax vaccine over 4 weeks + medical monitoring
Advisory Committee on Immunization Practices (ACIP) Recommendations

• “Use of Anthrax Vaccine in the US: Recommendations of the [ACIP]” MMWR, December 15, 2000

• Post-exposure prophylaxis (PEP) is recommended following aerosol exposure to *B. anthracis* spores

• Antibiotics $\geq$ 30 days if used alone, & longer therapy (up to 42 to 60 days) might be indicated

• If anthrax vaccine is available, antibiotics can be discontinued after 3 doses of vaccine (0, 2, and 4 weeks)
Epidemiologic Investigations

1. Palm Beach County – 10/3
2. New York City – 10/12
3. Washington, DC – 10/15
4. Trenton, NJ – 10/17
Public Health Decisions, Actions, & Options Regarding Post-Exposure Prophylaxis

- Investigational new drug (IND) application filed with FDA to use anthrax vaccine for PEP
- 60 days of antibiotics recommended for PEP
- ACIP re-convened & endorsed routine use of 60 days of antibiotics for PEP
- 217,000 doses of anthrax vaccine obtained by DHHS from DoD
- ACIP encourages provision of anthrax vaccine under IND to exposed persons
Bioterrorism-associated Anthrax:
Inhalational and Cutaneous Cases

NYC Inhalational Case
- 9/18*

Senator Inhalational Case
- 10/9*

*Postmark date of known contaminated envelopes

CT inhalational anthax case, date of onset - 11/14

CDC
Post-Exposure Prophylaxis for Prevention of Inhalational Anthrax

• Approximately 10,000 individuals recommended to take 60 days of antibiotic therapy
• Initiated October 8 – November 25, 2001
• Primarily occupational exposures (media outlets, postal workers, congressional staffs)
One of the main factors in the therapy of inhalational anthrax is the “...persistence of spores in the tissues and their germination after the blood-penicillin level has fallen...”

J. M. Barnes
Key Non-Human Primate Studies

  - Aerosol challenge: 4 & 8 LD50 (1LD50=50,000 spores)

  - Aerosol challenge: 8 LD50
B. anthracis Spore Clearance

Data adapted from Henderson DW et al J Hygiene 1956; 54: 28-36.
Senator Daschle & Leahy Envelopes:
Postmarked 10/9/01
Risk Assessment of Anthrax Threat Letters*

- Feb-April, 2001 @ Defence Research Establishment Suffield (DRES), Canada
- Weapons-grade *B. globigii* spores used to simulate an envelope release of *B. anthracis*
- 18x10x10 foot “office-size” chamber for release
- Extensive sophisticated aerosol sampling
- Estimated 480-3,080 LD50s in 10 min exposure
Conclusions

• Among persons with heavy exposures to *B. anthracis* spores, 60 days of antibiotics alone may eliminate risk for inhalational anthrax

• Additional antibiotics, or antibiotic & vaccine, may benefit persons who remain at risk for inhalational anthrax after 60 days of antibiotics alone