

2001 anthrax crisis in Washington, D.C.: Clinic for persons exposed to contaminated mail

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During October 19–21, 2001, four workers from the U.S. Postal Service's Brentwood Processing and Distribution Center, in Washington, D.C., were hospitalized with inhalational anthrax, the most lethal form of anthrax. Two of these postal workers later died of their infections.¹ Postal workers and those who visited the Brentwood facility were potentially exposed to aerosolized anthrax spores when a letter contaminated with the bacterium passed through automatic mail-sorting equipment.

On October 21, 2001, teams from the Disaster Medical Assistance Team (DMAT) and the Commissioned Corps Readiness Force (CCRF), units of the U.S. Public Health Service (USPHS), were deployed to Washington to establish a clinic that would provide education and medication to workers and visitors to the Brentwood facility who may have been exposed. USPHS pharmacists performed critical roles in establishing and staffing this clinic.

Disaster plans are currently being developed or revised as a result of the

Abstract: An anthrax prophylaxis clinic is described.

In October 2001, four workers from the U.S. Postal Service's Brentwood facility in Washington, D.C., were hospitalized with inhalational anthrax; many others may have been exposed to anthrax spores. U.S. Public Health Service (USPHS) teams were deployed to establish an anthrax prophylaxis clinic that would provide education and medication to workers and people who visited the mail facility. The temporary clinic was set up at D.C. General Hospital and was staffed primarily by health care professionals from USPHS. The protocol at the clinic involved three major phases. Phase 1 consisted of gathering information from the patient and distributing educational materials. Phase 2 involved presentations by a physician and a pharmacist concerning anthrax, followed by a question-and-answer session. In phase 3, a pharmacist selected the most appropriate

prophylactic agent, dispensed the medication, counseled the patient, and referred patients with flu-like symptoms or skin lesions to a physician. Two floor plans were used to maximize the number of patients seen per hour without jeopardizing patient care. The clinic operated 14 hours a day for 14 days. The 136-member health care team included 52 pharmacists, and medication was dispensed to more than 18,000 patients. The clinic may serve as a model for pharmacists and other professionals in designing and implementing disaster plans.

A multidisciplinary team established and operated a clinic to treat persons who may have been exposed to anthrax through contaminated mail.

Index terms: Ambulatory care; Anthrax; Biological warfare; Diagnosis; Disaster planning; Protocols; Team

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anthrax crises that occurred in Washington, D.C.; Florida; New Jersey; and New York. We describe here a working protocol developed at the anthrax prophylaxis clinic in Washington. The concepts developed and used at the clinic may help pharmacists and other health care providers

to design and implement their own treatment protocols in the event of future bioterrorism attacks.

Establishment and functioning of the clinic

A temporary anthrax prophylaxis clinic was initially established in a lo-

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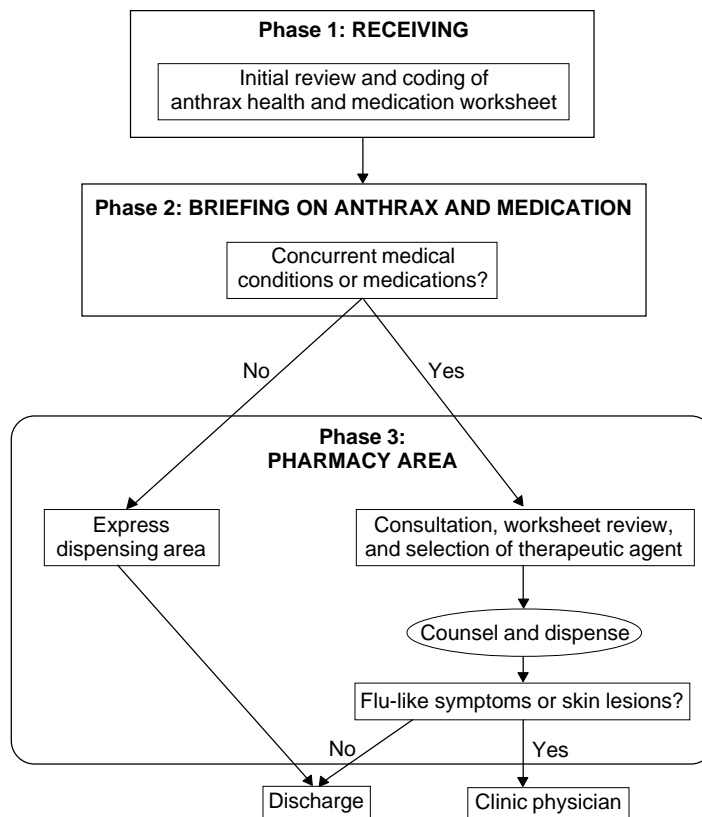
cal District of Columbia government building. On the second day of the mission, a more permanent location for the clinic was established at D.C. General Hospital. The clinic was staffed by officers from the DMAT and CCRF teams and by other USPHS officers. Health care professionals and support personnel from D.C. General Hospital, the District of Columbia Department of Health, the Centers for Disease Control and Prevention (CDC), and the Department of Health and Human Service's Office of Emergency Preparedness (OEP) also provided support. The team included pharmacists, physicians, nurses, mental health professionals, other health care workers, and management support personnel.

The health care professionals combined their expertise and resources to develop a working protocol for establishing, staffing, monitoring, and assessing the clinic. Pharmacists were involved in all aspects of the mission and performed many key functions within the clinic. In addition to dispensing medication and counseling patients, pharmacists participated in educational sessions, screened patients, selected appropriate therapeutic agents, and provided logistical support.

The protocol at the clinic involved three major phases: patient receiving and collection of patient information, education about anthrax and treatment options, and distribution of the most appropriate prophylactic medication for each individual (Figure 1).

Receiving. On arrival at the clinic, people were brought to a receiving area where general information was collected, such as their names and the locations of potential exposure. Individuals were quickly assessed to determine if they were at risk (i.e., whether they had entered the Brentwood facility or had come into contact with mail from it or any other affected location). Printed educational materials about anthrax, prophylactic therapy, and psychological

Figure 1. Flow chart for patient receiving, counseling, and treatment in the anthrax prophylaxis clinic.



issues were provided to each person. The printed materials gave a telephone number and Web-site address that patients could refer to for additional information about anthrax and their medication. An anthrax health and medication worksheet was distributed so that the medical history could be quickly assessed.² The medical support staff and postal authorities were also available to answer procedural questions and facilitate completion of the forms.

The worksheet was developed at the clinic as a tool for rapidly assessing each individual for appropriate therapeutic selection and education. Patients answered 16 yes-or-no questions about their current health status (including presence of flu-like symptoms or skin lesions), concurrent medical conditions, and drug-drug, drug-food, and drug-disease interactions that might affect treat-

ment selection. All worksheets were immediately reviewed by a nurse and assigned a 1 if all questions were answered no, indicating no concurrent medical conditions or medications, or a 2 if any questions were answered yes, indicating the presence of concurrent medical conditions or medications.

Briefing on anthrax and medication. After the patients completed the worksheets, groups of approximately 50 each were assembled in a briefing area. The briefing included a short presentation by a physician on anthrax and what to expect while visiting the clinic. After the physician's presentation, a pharmacist briefly discussed drug therapy, including dosage schedule, interactions, adverse effects, and other medication-related information. The physician and the pharmacist then answered questions, of which there were many. The most frequently reported con-

cerns included the risk of developing inhalational anthrax or of transferring anthrax to family members, what to do with potentially contaminated clothing, and interactions between alcohol and the anthrax prophylaxis medication. The briefing helped alleviate some of the patients' stress and anxiety. (Mental health professionals were also available at the briefing to address psychological issues.)

Pharmacy area. Individuals with a code of 1 (i.e., those with all "no" answers on the worksheet) were triaged to an "express" dispensing area to receive prophylactic medication and were discharged. The express dispensing area was staffed by nurses who dispensed medication and provided general information. Patients in this area did not require in-depth consultation, because their worksheets did not signal a contraindication, potential interaction, or concurrent medical condition. The written information and the oral briefing were considered sufficient interventions.

Individuals with a code of 2 (i.e., those with at least one affirmative response) were triaged to the pharmacy area for consultation with a pharmacist. The pharmacist met with each patient, reviewed the worksheet, and prescribed and dispensed one of three antimicrobials (ciprofloxacin, doxycycline, or amoxicillin). The pharmacist concluded with a brief discussion of drug–drug, drug–food, and drug–disease interactions and other medication-related issues, depending on the individual's needs. Patients with flu-like symptoms or skin lesions were directed to a clinic physician. Those who preferred not to see a clinic physician were referred to their personal primary care provider.

Therapeutic interchange was left to the discretion of the pharmacist on the basis of predetermined criteria established in consultation with physicians and current CDC recommendations. CDC suggested either ciprofloxacin or doxycycline as the

drug of choice for postexposure prophylaxis against inhalational anthrax when antimicrobial susceptibility was unknown.³ Initially, ciprofloxacin was determined to be the drug of choice and was dispensed to all patients, unless the pharmacist determined that an alternative agent was necessary. After several days, testing by CDC demonstrated that the strain of the anthrax bacterium was susceptible to doxycycline. Doxycycline was made the prophylactic drug of choice because of its comparable effectiveness, more favorable safety profile, and availability from multiple sources.

All individuals were initially dispensed a 10-day supply of antimicrobials. CDC determined that 10 days was a reasonable time for prophylaxis to cover the normal incubation period after inhalational exposure to anthrax spores. This 10-day period also allowed CDC sufficient time to fully test each postal facility to determine who needed a prolonged (60-day) prophylactic regimen. Certain employees from the Brentwood facility were determined to be at a higher risk of exposure and were asked to return to the clinic for an additional 50-day supply of medication (to complete a full 60-day regimen).

Antimicrobials dispensed at the clinic were provided by CDC's National Pharmaceutical Stockpile Program (NPSP).⁴ The medications were delivered in bulk from NPSP "push packages." Push packages consist of 50 tons of preassembled supplies, pharmaceuticals, and medical equipment ready for delivery to a mass-casualty area within 12 hours. The pharmacists who staffed the pharmacy area of the clinic repackaged and labeled the bulk antimicrobials for dispensing.

Design of the clinic

The design of a temporary clinic is largely determined by space limitations and the number of individuals to be treated. Two floor plans were utilized at the D.C. General Hospital

clinic site to maximize the number of patients seen per hour without jeopardizing patient care. The first floor plan (Figure 2) was developed to process large numbers of patients (>100 per hour). Hospital corridors and rooms were used in such a way that many people could pass through the clinic in an orderly manner. The receiving area was a hallway lined with chairs. Patients then moved to a classroom or a larger hallway, where the briefing was conducted. Each briefing area contained approximately 50 chairs. With the briefing concluded, patients were directed to the pharmacy area. The pharmacy area had 20 desks that were used as individual counseling and dispensing stations and a long table designated as the express dispensing area. A secure room in the pharmacy area was used to store medications during normal clinic hours.

The second floor plan was developed to handle up to 100 patients per hour. This design had only two areas for all three phases of clinic operation. A hallway lined with chairs served as the receiving area. The briefing and dispensing functions both took place in a classroom.

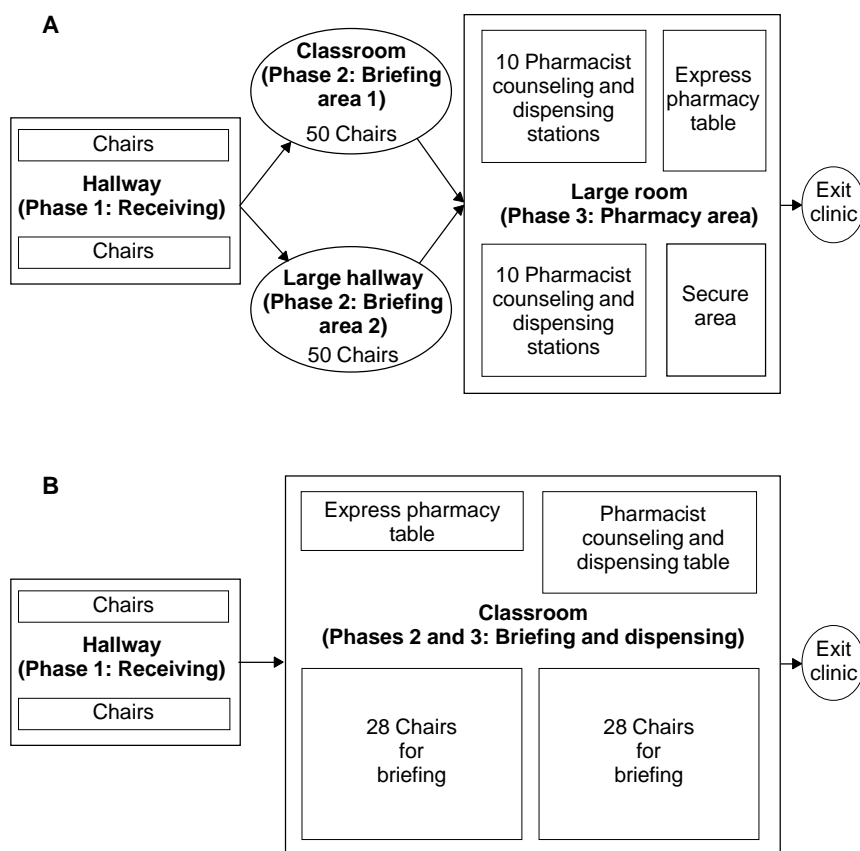
CDC and OEP are reviewing the experience of the anthrax prophylaxis clinic at D.C. General to determine how its operations could be improved. They are particularly interested in determining if this type of operation can be scaled up to treat 100,000 to 1,000,000 patients. A consensus statement on this topic is expected later in 2002.

Discussion

The anthrax prophylaxis clinic was initially designed to treat several thousand potentially exposed postal workers from the Brentwood facility. However, the clinic was expanded as the number of potentially exposed people increased, and this necessitated adjustments in both resources and staffing. The clinic operated 14 hours a day, 7 days a week, for 14 days.

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Figure 2. Designs of anthrax prophylaxis clinics capable of handling >100 patients per hour (A) and ≤100 patients per hour (B).



Over the two-week period, the clinic was staffed by 52 pharmacists—more than a third of the 136-member health care team. The clinic dispensed medication to 18,051 patients. During the busiest times, as many as 250 patients an hour received education and drugs. Processing time per patient ranged from 20 to 55 minutes, depending on patient volume, staffing, and patient medical issues.

The clinic can be used as a model for pharmacists and other health care professionals in designing and implementing disaster plans. When designing a bioterrorism response

protocol, it is important to consider that

- Patient volume, available staff, and available space may vary greatly;
- The health care staff may consist primarily of volunteers;
- Resources will have to be closely monitored and reallocated as needed;
- Good records of daily activities must be maintained;
- Regular briefings will be needed to address changes in processes, new information, and problems; and
- A debriefing must be held at the end of the mission to discuss successes and

failures and improvements needed to prepare for possible future operations.

The experience at the anthrax prophylaxis clinic at D.C. General Hospital illustrates the vital role pharmacists can play in temporary clinics set up to educate, screen, treat, and counsel patients who may have been exposed to harmful microorganisms. A pharmacist at such a clinic may be required to assume responsibility for patient education, screening, protocol development, dispensing, counseling, and drug selection. Therapeutic selection is not performed by pharmacists as part of their routine professional activities; however, as demonstrated by our response to the bioterrorism attack in Washington, D.C., pharmacists can proficiently perform such a function during times of crisis.

Conclusion

A multidisciplinary team established and operated a clinic to treat persons who may have been exposed to anthrax through contaminated mail.

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