

Anthrax 2001 – Lessons Learned by Public Health Laboratories

SANDRA S HEATHERLEY

OBJECTIVE: To share lessons learned by one local public health department during the anthrax outbreak and associated public hysteria during the autumn of 2001.

DATA SOURCES: Current literature and personal experience.

CONCLUSIONS: Previous planning for a possible bioterrorism event is essential. Management of the communication and testing process is essential for the protection of the public.

ABBREVIATIONS: CDC = Centers for Disease Control; FBI = Federal Bureau of Investigation; SAT = Scholastic Aptitude Test.

INDEX TERMS: anthrax; bioterrorism; public health.

Clin Lab Sci 2002;15(3):183

Sandra S Heatherley MPH is the Director of the laboratory for the Corpus Christi-Nueces County Public Health Department and the owner of Quality Laboratory Consultants.

Address for Correspondence: Sandra Heatherley, Quality Laboratory Consultants, 518 Dolphin Pl, Corpus Christi TX 78411. (361) 851-7214. sandrah@ci.corpus-christi.tx.us

Sandra S Heatherley is the Focus: Management guest editor.

Focus Continuing Education Credit: see pages 189 to 191 for learning objectives, questions, and application form.

The early October isolation of Anthrax bacilli from a photojournalist in Florida was a prominent headline on October 11, 2001. On that day I was summoned to the administrative conference

room of our local city-county health department where I manage the laboratory. There my boss, the Director of Public Health, introduced me to the major players in the city-county emergency response team. This included the director of the city's Office of Emergency Management, the area's U.S. Postal Inspector, a Federal Bureau of Investigation (FBI) agent, and captains of the Fire and Police Departments. Their purpose that day was to develop a plan for a coordinated response to potential biological threats posed by handling mail, packages, and other material that could be contaminated with biohazardous agents.¹ At the conclusion of the meeting we had decided that concerned callers would be instructed by the police department to have everyone who had been in contact with a potentially contaminated item wash their hands and await the arrival of the fire department. The fire department would respond to the location and triple-bag any suspected items while the police department would notify the FBI of the event. If the potentially contaminated items were received by a post office, then the post office would contact the fire department directly. The fire department would notify the police department who would notify the FBI and the fire department would retrieve the item from the post office. All retrieved items would be delivered by the fire department to the laboratory at the city-county health department for placement in the biological safety cabinet while awaiting shipment by the FBI to the nearest level B laboratory in San Antonio, Texas. If tested items yielded positive results for potentially biohazardous agents then the Corpus Christi City County Health Department in consultation with the Texas Department of Health would be the lead agency in conducting a disease investigation. The Health department would have the responsibility of notifying contacts of test results and coordinating the medical and epidemiological response to the exposure. The FBI would be the lead agency in coordinating any criminal investigation. It seemed like a sound plan of action.

Looking back on that plan after five months of dealing with a terrified public, confused healthcare practitioners, and a stunned FBI agent, I can hardly remember the sense of self-assuredness we exhibited in that meeting. The meeting was held on Thursday, October 11 and our first suspected items arrived the next day and our first lesson was learned! Neither of the chain of custody forms we used for noting the receipt of clinical specimen or environmental samples was adequate for tracking the information needed on the suspected bioterrorist submissions. There was no recommended formula for the information that needed to be captured by the FBI, the postal inspector, or other law enforcement agencies. No one from these agencies had developed a form or received one from their superiors. Figure I depicts the form that we devised

The Focus section seeks to publish relevant and timely continuing education for clinical laboratory practitioners. Section editors, topics, and authors are selected in advance to cover current areas of interest in each discipline. Readers can obtain continuing education credit (CE) through P.A.C.E.® by completing the tearout form/examination questions included in each issue of CLS and mailing it with the appropriate fee to the address designated on the form. Suggestions for future Focus topics and authors, and manuscripts appropriate for CE credit are encouraged. Direct all inquiries to Carol McCoy PhD, CLS Continuing Education Editor, Department of Clinical Sciences, 343 Cowley Hall, University of Wisconsin, La Crosse WI 54601; (608) 785-6968. cmccoy@mail.uwlax.edu

and put into use on October 15, 2001. I, like many of my colleagues, had attended workshops related to preparing for a possible bioterrorist event and I, like many of my colleagues, did not rush back to the laboratory and devise a chain of custody form or consult with law enforcement regarding the required information they would expect us to capture and keep relative to specimen or samples.² By October 15 it was too late to confer with peers on the design of a form; it was time to 'just do it'.

Lesson learned: Plan ahead.

Both the television and print media began to aggressively cover the firemen who were receiving dozens of calls per day from worried citizens. That coverage included having cameras follow the firemen as they responded to individual homes clad in protective body suits and respirators and the subsequent delivery of the retrieved items to the laboratory at the Health Department. This had the effect of further alarming the public and increasing the number of calls regarding suspected items. Being a taxpayer supported agency means that the Health Department must be open and available to the media and our Medical Director gave nearly daily interviews to the press and television stations during the remainder of October. For the first time in my nearly 40 years of practicing clinical laboratory science the local newspaper carried a front-page picture of a clinical laboratory scientist working at a

biological safety cabinet.³ The Medical Director for our Health Department met with representatives from the emergency rooms of the hospitals in town and shared diagnostic information with them. However, the physicians attending these sessions were not proactive in communicating with their staff members as evidenced by the number of phone calls received in the laboratory from area emergency rooms and physicians' offices. Area hospital microbiologists did not require any guidance regarding the laboratory diagnosis of anthrax but could have benefited from communication and training in how to handle unreasonable requests for testing from their medical staff members and the public.

On Saturday, October 20, I received a call at home from one of the fire captains asking if I was willing to go to one of the TV studios for an interview in the next hour. I declined the opportunity and invited the TV crew to visit the laboratory the next week for an interview and photo-op of the material that was now overflowing the biological safety cabinet. In all the earlier workshops that I had attended it was continually emphasized that the FBI would be the decision makers regarding what items should be tested and that testing would be performed at the nearest level B laboratory. In our case the nearest Level B laboratory is the City-County Health Department in San Antonio Texas, but we were about to learn another lesson. The Public Health Regions in Texas (there are 11) and the FBI field offices in Texas (there are 4) do not over-

Figure 1.

CORPUS CHRISTI - NUECES COUNTY PUBLIC HEALTH DEPARTMENT
LABORATORY DIVISION

CHAIN OF CUSTODY FOR POTENTIAL BIOHAZARDOUS ITEMS

DATE	TIME	DESCRIPTION OF ITEM	METHOD OF CONTAINMENT	NAME OF TRANSPORTER	POINT OF ORIGIN	REC'D BY
11/5/01	2:14	Envelope	Double Bag Ziplock Bag	Captain Pat Black	901 N. Broadway	RM
11/5/01	3:40	Cloth	Biohazard Bag	Captain R.L. Green	2218 Northwest Blvd	C.D.
11/5/01	3:51	Powder Substance	Plastic Bag	Capt. J. Burr	2270 Lake Street	C.D.
11/5/01	4:10	Stuffed Animal	Plastic Bag	Sgt. B. Miller	7422 Eagle Ave	E.T.
11/6/01	8:05	Suspicious Letter	Double Bagged	Capt. S. Travis	Fire Station #16 (U.S. Post office)	SA
11/6/01	9:40	Vial of White Crystal	Plastic Bag	Sgt. G. Taylor	1010 Jackson St. 2047 Lincoln Alice Texas	Dr.
"	"	Wrong Address	"	"	"	Dr.
"	"	Money	"	"	Army Navy Credit Union Dr.	
"	"	Blue Envelope	"	"	2530 Pine St.	Dr.
"	"	White Powder	"	"	1120 Crest Robstown Texas	Dr.
"	"	Beef Jerky Bag	"	"	580 Stone Ave	Dr.
11/6/01	12:20	Suspicious Letter From NJ	New Jersey Plastic Bag	Capt. L. Rogers	Air Force Recruiting Office	SA
"	"	Box of Checks	Double Bagged	"	1640 College	SA
"	"	Quarters	Plastic Bag	"	410 Johnson Ave.	SA
"	"	Mail	Plastic Bag	"	1180 Sunray	SA
11/6/01	2:15	Letter From Ireland	Double Bagged	George Harper CCB	Air Force Recruitment	RM
11/6/01	3:42	Material on Beach	1 bag Garbage Bags	Capt. J. Garza	Bob Hall Pier	RM
11/6/01	4:30	Paper Plates	Plastic Bag	Capt. D.C. Hall Alice FD	Latch Key Program	C.D.

Released To FBI + U.S. Postal Inspector Date 11/20/01 Time 1642

101591

lap. There is an FBI field office in San Antonio but the agents assigned to Corpus Christi are out of the Houston field office. It was therefore the FBI's decision that all items for testing would be sent to Houston's Health Department Level B laboratory, twice as far away as San Antonio. However, when a white powder escaped from an envelope and brought the main post office to an immediate halt, and when the mayor received a threatening letter containing a white powder, the local U.S. postal inspector who is assigned to the Houston district did not hesitate to drive the material to San Antonio. These scenarios had not been covered in earlier preparatory workshops or exercises.

Lesson learned: Interagency cooperation needs to be addressed in the planning process.

The names and addresses in Figure 1 are fictitious, but the items listed are actual items that were received by the laboratory. One of the lessons we learned is that cornstarch is routinely used by publishers of magazines and periodicals to keep the items from sticking together when being mailed in a batch. The presence of this cornstarch can sometimes be detected as a white powder and since every postal worker and concerned citizen had a heightened awareness of white powder we received many stacks of magazines that were deemed suspicious. The white powder that caused a temporary closure of our main post office turned out to be methamphetamine that was being delivered via the U.S. mail. That offense is the responsibility of the Postal inspector to investigate and bring charges.

On November 6, 2001 the local news at noon covered some suspicious material that had washed up on the county beach of the Gulf of Mexico at North Padre Island. The folks working in the laboratory missed that broadcast but many in the public saw the firefighters in full biohazard gear collecting the material from the beach. About two hours after the material arrived in the laboratory (it appeared to be foam rubber of the type used in cushions in a boat or automobile) I received a call from a local hospital Emergency Room RN. She was counseling two families whose children had been on the beach earlier in the day and had 'played' with the material that the fire department had collected. I advised her against her plan to draw blood cultures on the children and I referred her to the Texas Department of Health web site for information she could give to the adults.

As it turned out, she did not draw the blood cultures but she referred the families to the laboratory at the Health Department. It was a truly "gut wrenching" experience to have those parents and their children standing at the laboratory door. They wanted to know when the material would be tested and if they should begin taking antibiotics. The parents were in a panic for the welfare of their children because of the report they had seen on television and the words and actions of their parents distressed the children. I explained that there had been no cases of human anthrax in south Texas and nothing we had sent to Houston had tested positive for

anthrax. When one father asked me if I would not be equally terrified for the health of my children, I could honestly tell him that I would not. The difference between us was knowledge of *B. anthracis*. I knew that the likelihood of the organism being present on salt water soaked foam rubber was nil while he only knew that the television coverage had mentioned anthrax and the firemen had been clad in protective clothing when they removed the material from the beach.

Lesson learned: Terrorism always works and television helps.

By mid-November the laboratory had accumulated 17 cubic feet of material that had been submitted to us by the surrounding fire or police departments. The FBI had not triaged or transported any items to Houston for testing since October 18 and had instructed us to deal with the U.S. Postal Inspector and cease giving the FBI phone number to the public who were calling us for results. I did increase communications with the postal inspector but still gave the FBI number to concerned callers. It seemed to be good news that the FBI was showing little interest or concern for the items that were being brought to the Health Department. I figured that if the FBI was not concerned there was probably no need for concern on the part of the general public. On three occasions we received money which was thought to be contaminated because of the presence of 'white powder'. In one case the fire department responded to a local motel and picked up \$20.00 in quarters. Upon receipt we dumped the coins in dilute sodium hypochlorite (household laundry bleach) and called the motel guest to come and pick up the money. Another time we received \$100.00 in moldy, dirty bills that a bank customer wanted to exchange for new bills but made the mistake of bringing the money to the bank in a biohazard bag. One of the post office branches in an outlying municipality called on October 23 and requested that the fire department pick up one of the large metal mail drops outside their building because it was contaminated with a white powder. Fortunately the fire department called the laboratory before responding and we instructed them on how to decontaminate the postal drop with dilute bleach. Those postal boxes are made of cast iron and must weigh 1,000 pounds. I doubt the fire department could have transported it and I certainly don't know where in the laboratory we would have kept it!

In the planning process it was never exactly clarified who would communicate with individuals wanting their letters, magazines, money, or mail returned to them. The laboratory, the fire department, and the postal inspector were telling callers that they would probably not have their items returned. In late November one of the local high schools called the fire department to pick up a suspicious box thought to have white powder in it. The box turned out to be full of Scholastic Aptitude Test (SAT) exams from the College Entrance Exam Board and the powder was probably the famous cornstarch. I called the high school several weeks later and asked if they would like to have the box returned. The counselor I spoke with

was upset that so much time had elapsed between submitting the box and hearing that it was not contaminated and instructed me to send the box back to its point of origin at the SAT headquarters. I did not intend to use Health Department time and monies to return the box and just left it stored in the laboratory for the postal inspector. In early March the high school counselor called because she had been contacted by the SAT regarding the whereabouts of the missing exams (the exams have sequential accession numbers). The postal inspector handled the return of the box to the SAT even though it had been delivered by UPS.

Lesson learned: It is impossible to plan for all eventualities. Define who will communicate results, positive and negative to public submitters.

From mid-November to the present the postal inspector has been a regular visitor to our laboratory. Working with a clinical laboratory scientist and using the biological safety cabinet, all of the suspicious mail was sorted and triaged to destroy, investigate, or return to addressee.

We didn't see the FBI agent again until February 7, 2002 when he brought a letter for examination and decontamination. It appeared that a federal prisoner had sent a threatening letter to a federal prosecutor and enclosed some soap shavings and talc, thereby lengthening his time of imprisonment.

From October 15 to February 19, our Health Department Laboratory received 235 items suspected of being anthrax vectors. The Health Department laboratories in Houston and San Antonio received more than 2,500 items each. The majority of items were submitted between October 15 and December 17. Items are still being received as this article goes to press on April 1, 2002 but at a much slower rate. The cost in labor and supplies for responding to this bioterrorist threat has not been fully calculated nation-wide. These costs represent a large unbudgeted expense for state and local health department laboratories that have operated on very limited funding for the past twenty years.

Our experiences in South Texas are not unique. This is one of many articles written to help share experiences so that we can all do better the next time. At this writing every state is preparing a response to the "Public Health Preparedness for Bioterrorism" cooperative agreement in order to receive a portion of the Homeland Security funds appropriated by congress. The CDC will administer this cooperative agreement award. It contains seven focus areas for action which include: preparedness, surveillance and epidemiology, laboratory capacity to handle biological threats, laboratory capacity to handle chemical threats, communication and information within a Health Alert Network, public information and communication, and finally, education and training. Governors of the 50 states were to submit their plans by April 15, 2002.

REFERENCES

1. Biological Warfare and Terrorism, The Military and Public Health Response. A Satellite Broadcast of the CDC and FDA. September 21-23, 1999.
2. Laboratory Readiness for Bioterrorism. A workshop sponsored by the National Laboratory Training Network and the Texas Department of Health Bureau of Laboratories. Feb 12, 2001.
3. Corpus Christi Caller-Times. Saturday, October 27, 2001.



Faculty Position, full-time twelve month tenure-track position in the Clinical Laboratory Science Program at the Texas Tech University Health Sciences Center. Qualified candidates must be certified in clinical laboratory science and have a graduate degree (doctorate preferred). Responsibilities include teaching clinical immunology and microbiology, development of relevant preceptorship materials, evaluation of policies and procedures within the program, evaluation of curriculum and program effectiveness, and development of scholarly activities to include publications, presentations, and research.

A letter of application, current vitae, three letters of reference, and official transcripts should be sent to: Dr Barbara Border, Chair of Search Committee, TTUHSC 3601 4th Street, Mail Stop 6281, Lubbock, Texas 79430. Phone: (806) 743-3248 or e-mail: Barbara.border@ttuhsc.edu

Review of applications will begin immediately and continue until position is filled.

AA/EOE/ADA