

# Defining Moments in *MMWR* History: CDC's Response to Intentional Release of Anthrax -- 2001

[Announcer] This program is presented by the Centers for Disease Control and Prevention.

[Dr. Rasmussen] Welcome to *Defining Moments in MMWR History*. I'm your host, Dr. Sonja Rasmussen, Editor-in-Chief of the *MMWR*.

On October 4, 2001, shortly after the September 11 attacks in New York City and Washington, DC, the Palm Beach County Health Department, the Florida State Department of Health, and CDC reported a case of anthrax in a 63-year-old man from Florida.

This case was the beginning of a series of anthrax cases that resulted from intentional delivery of *Bacillus anthracis* spores sent through the mail. These resulted in 22 people becoming ill, five of whom died.

CDC worked 24/7 with state and local health officials to determine the source of the attacks, prevent others from becoming sick, and minimize the risk of exposure to the general public. On October 12 a summary of the investigation appeared in the *MMWR*. This was the first of several reports to describe CDC's investigation and response to the anthrax attacks.

Today I'm talking with Dr. Sherif Zaki, a pathologist who assisted with CDC's investigation. Dr. Zaki is currently Chief of CDC's Infectious Disease Pathology Branch. Thank you, Dr. Zaki, for being here.

[Dr. Zaki] Thank you.

[Dr. Rasmussen] Tell us what experts at CDC did when they first heard about this case?

[Dr. Zaki] There were high level meetings with a lot of experts, both clinicians, epidemiologists, laboratorians to discuss this particular case. We knew he had anthrax because of the clinical presentation and some of the laboratory tests showing that there was anthrax bacilli in the cerebrospinal fluid of this patient.

[Dr. Rasmussen] So was it obvious when he presented to the emergency room or was it initially difficult to make that diagnosis?

[Dr. Zaki] It was certainly a difficult diagnosis. Remembering that the prior case of inhalational anthrax had occurred in the U.S. 25 years prior to that date. So it's not something we commonly see here in the U.S. You know, I credit the clinical acumen of the treating physicians and laboratorians that were able to make the diagnosis. So, it was certainly a tough diagnosis.

[Dr. Rasmussen] So eventually this man died. How did you determine that anthrax was the cause of death?

[Dr. Zaki] So we learned that the patient had died on late Friday afternoon... and we learned that he died...and at that time the big question was this inhalational anthrax or was it another form of anthrax. So, Dr. Jim Hughes, the director of our center at that time, asked that we put together a team that can go and perform an autopsy in Florida. So we talked to the medical examiner in Florida and arranged for the team to fly out the next day and conduct the autopsy.

[Dr. Rasmussen] So then you determined that it was inhalational anthrax?

[Dr. Zaki] So, when we did the autopsy, we found these huge hemorrhagic lymph nodes in the chest of this patient. There was a lot of fluid in the chest. And those—you know with the enlarged lymph nodes showed that this patient most likely inhaled the spores—not a cutaneous route or gastrointestinal, but actually an inhalational anthrax. We also used special tests to show the anthrax bacilli—to see them under the microscope in the lungs and lymph nodes and other tissues of this patient. So we confirmed beyond any doubt that this patient had died of inhalational anthrax.

[Dr. Rasmussen] Can you tell me about the other types of anthrax?

[Dr. Zaki] So there are two other forms of anthrax: cutaneous and gastrointestinal anthrax. And I'll... gastrointestinal is very rare, but when you have contact with animals, you swallow the spores and then you get a gastrointestinal presentation. The other form of anthrax is the cutaneous anthrax, and that's where you get actually skin lesions, very characteristic black lesions, on your skin. And that's again with exposure to animal or animal products. And that's basically the cutaneous form. It usually, hopefully, you know, by treating with antibiotics, it can resolve. There are some cases however of cutaneous anthrax, if not treated, can lead to systemic disease, illness, and death in actually 15 percent of patients.

[Dr. Rasmussen] So did you see some cases of cutaneous anthrax in this outbreak?

[Dr. Zaki] So, actually, it was one week after the first case in Florida, the inhalational case, that we received reports of a case in New York of suspect anthrax. This patient had actually heard about the case in Florida. She was previously tested for anthrax, it was negative, but she went back to the public health department and said, "I want to be tested for anthrax." So they took a skin biopsy and sent it to our laboratory. And that's when we confirmed that it was actually cutaneous anthrax and raised the concern at that point if it was an intentional release.

[Dr. Rasmussen] Anthrax can be found naturally in soil and commonly affects domestic and wild animals around the world. How was it determined that *this* case was due to an intentional release of anthrax, not an exposure in the environment?

[Dr. Zaki] That's a great question. So after we diagnosed cutaneous anthrax in this case in New York, a lot of investigators and colleagues at CDC went back to the office where this case had happened and found a letter that contained the spores of anthrax. So basically that linked the

cutaneous and Florida case as intentional and due to anthrax spores disseminated by intention through letters.

[Dr. Rasmussen] So that letter was a smoking gun.

[Dr. Zaki] It was indeed.

[Dr. Rasmussen] Had using anthrax as a bioweapon been considered as a possibility before this happened?

[Dr. Zaki] Yes, indeed, it was considered. And in fact several years, maybe three years prior to 2001, we were asked to develop more sensitive tests to diagnose anthrax among other bio threat agents, such as small pox and others. So we worked in our lab with tissue diagnostics to develop the tests we used in the Florida case and the New York case. So those tests were ready when it happened, and it was only the foresight of our leadership to ask us to do that which made us able to respond quickly after these incidents.

[Dr. Rasmussen] What did CDC do to prevent more people from getting sick after the letters were discovered?

[Dr. Zaki] So, several things were done immediately after. Very importantly was the education or sharing with clinicians more information about the clinical presentation of anthrax, including muscle pain, you know, fever, etc., pulmonary symptoms. And also information about how to treat patients with antibiotics, and related to the antibiotics, antibiotics can also be used to prevent the disease in patients or patients exposed. That was also done. And finally, you know, how to deal with suspicious letters. When somebody finds a package that they're not sure if it contains spores or not, how to deal with it.

[Dr. Rasmussen] I remember the anthrax attacks as a scary time in the United States. It was right after the 9/11 attacks, and it quickly became clear that anthrax was being delivered through the mail. How did CDC deal with the fear and the media surrounding these events?

[Dr. Zaki] Thanks, Sonja, for that question. I mean, it was certainly a scary time, but CDC responded by holding frequent press briefings and publications, including the *MMWR*, to relay the sense that you can treat this, you can control it, and there was no fear for—the public shouldn't be concerned.

[Dr. Rasmussen] Well thanks, Dr. Zaki. *MMWR* is proud of its role in communicating critical findings of this investigation and response. For more information on this outbreak, or to learn more about the latest in public health, visit [cdc.gov/MMWR](http://cdc.gov/MMWR). Until next time, this is Dr. Sonja Rasmussen for *Defining Moments in MMWR History*.

*[Announcer] For the most accurate health information, visit [cdc.gov](http://cdc.gov) or call 1-800-CDC-INFO.*

