

From the Editor-in-Chief: A Is for Anthrax

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In the months leading up to the 10th anniversary of the September 11 terrorist attacks and subsequent anthrax attacks, I was asked by various colleagues to address anthrax in my editorial. I deferred for several reasons. First, the journal was in receipt of a commentary on the work of the Bipartisan WMD (weapons of mass destruction) Terrorism Research Center by former Senators Bob Graham and Jim Talent, who are leading that endeavor.¹ Having served as an advisor to the center on their “report card” project, I believed the commentary would be a more appropriate vehicle for highlighting the important work that is being done—and not being done—on anthrax and other potentially serious infectious diseases since the events of September 11, 2001. Second, Dr Tom Zink addressed several important issues concerning anthrax that the editors believed would not be articulated well in an editorial.² Finally, although the letter(s) that initiated the anthrax attack in 2001 may have been postmarked in September of that year, to those of us who dealt directly with the medical and public health consequences of that event, the true 10th anniversary is not September 11 but October 4, 2001. That was the day of the press conference at JFK Medical Center in Atlantis, Florida, announcing what would prove to be the first diagnosed case of anthrax resulting from the “Amerithrax” attack.³

On October 5, 2001, I directly experienced the reality of this event while working for the Miami-Dade County Health Department. Staff was abuzz with both excitement and skepticism about what we may truly be encountering. Two camps soon emerged. One camp was absolutely convinced that this was a deliberate act of terrorism, and the other, which I spearheaded, believed that the available evidence favored a rare but naturally occurring exposure and infection. Of course, with the confirmation of a second case, reported from within Miami-Dade, all doubt disappeared and all of the available resources were focused on the medical and public health response. In retrospect, my original position was influenced as much by denial as by science, and I detail this here because I find such denial, whether individual or collective, to be the single greatest obstacle to improving our readiness for another anthrax attack.

Collective denial is nowhere more apparent than in our national preparedness posture for the deliberate dispersion of anthrax spores in the air over 1 or more US cities—a scenario that is not only possible but also probable. Certainly the likelihood of such an attack has not been lost on those in government who are charged with protecting and defending the public from terrorist attacks. All of us, in both the public and private sectors, involved in this arena can fully attest to the great deal of thought, resources, and effort that have been applied to mitigating the impact of an aerosolized anthrax attack. The inherent prob-

lem is that the proffered “solutions” are as untenable as they are laudable.

My understanding is that the anthrax mitigation strategy that is being promoted by various federal agencies calls for the distribution of a preselected antibiotic to a large population within 2 to 3 days of exposure. This, of course, means that in an extremely limited time frame, we have both detected and confirmed the causative agent, have set in motion all of the necessary authorities to distribute the stockpiled countermeasure, can identify individuals at greater risk of infection, can deliver the preselected antibiotic to at-risk individuals, and can address the anxiety and possible hysteria of others who are not provided the antibiotic. Should these challenges not be daunting enough, we also are assuming that the pathogen will be susceptible to the preselected antibiotic, when it is well accepted that *Bacillus anthracis* can be modified easily to become more antibiotic resistant.¹⁻³ I fear that such thinking may be misguided and engenders a false sense of complacency among those most responsible for protecting the public’s health.

In the absence of an alternative, the present federal anthrax mitigation strategy may be acceptable. For anthrax, however, there is an alternative: preevent vaccination. In 1881, Pasteur developed and demonstrated an effective vaccine against this disease. We provide the anthrax vaccine to military personnel; it remains largely unavailable to medical responders in the private sector and to the public. Having served in the US Army Medical Corps at the time that mandatory anthrax vaccination was instituted, I am well aware of the controversies surrounding its use. Much of this controversy arose from outcries against the “mandatory” nature of the vaccination program, fueled by a vocal and well-publicized antivaccination movement. Such sentiment has festered despite an overwhelming preponderance of scientific literature refuting the majority of antivaccination claims.⁴⁻⁸ Unfortunately, these claims have already cast anthrax vaccination in an unflattering light, some of which can be dispelled by offering the vaccine on a purely voluntary basis.

Readers may recall another vaccine in our WMD arsenal that was similarly attacked, the smallpox vaccine. Despite a high degree of public concern, enough vaccine has been commissioned and stockpiled to effectively eliminate widespread exposure to the smallpox virus as a major terrorist threat. Like the anthrax vaccine, the smallpox vaccine has not been administered widely (again, except to military personnel). Given the epidemiologic characteristics of smallpox, however, preevent protection for smallpox is far less critical than it is for anthrax. For many of us who have studied the biology and epidemiology of anthrax, the only truly effective means of protecting the

public is through preevent protection measures such as vaccination.⁹ Vaccination has proven to be the sine qua non of public health measures used to protect against an infectious pathogen. It would seem imminently reasonable, given the risks and consequences of an anthrax attack, to at least offer vaccination to those who desire it. This is certainly indicated for the responder community, as proposed by Zink, but to the public as well, because they are equally at risk. In an aerosol-exposure scenario, *B anthracis* would be an equal opportunity organism.

As with so much of what we deal with in science, medicine, and life, the more we learn, the more we realize the limits of that knowledge. To better prepare for an aerosolized anthrax attack, we need to review and learn from experience. In particular, we need to learn from an incident involving the unintentional aerosolized release of anthrax spores from a military microbiology facility over Sverdlovsk, USSR (now Russia), in 1979. A study of this outbreak¹⁰ should be required reading for anyone charged with protecting the health, safety, and security of our citizens and our nation. Possibly the most salient lesson from Sverdlovsk is avoiding the delay in making a definitive diagnosis coupled with the rapid and concentrated appearance of clinical cases (with a high mortality). I hope that a careful review of this event would help us address the collective denial we exhibit concerning anthrax vaccine as a countermeasure and, as we have done for smallpox, effectively take this threat off the table. The goal is to protect our population

from a terrorist anthrax attack. The solution, to paraphrase Zink, is to offer voluntary, preventive vaccination to our citizens.

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