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A Call for Bioterrorism Preparedness

Bioterrorism is the act of releasing bacteria, viruses, parasites, fungi, or other biological agents to harm and intimidate targets to promote a cause. These weapons can be spread through the air as well as in the form of contaminated food or drink. With an estimated cost of up to \$26.2 billion per 100,000 people exposed, an act of bioterrorism could devastate the United States (Kaufmann, Meltzer, & Schmid, 1997). The chance of a bioterrorism event is rising with modern advances in synthetic biology techniques. These techniques allow cells and other biological factors to be designed or recreated with relative ease. Synthetic biology also allows resurrection of long gone pathogens that are no longer guarded against, like smallpox. With modern globalization, the new instruments and advances that support the development of bioweapons can be shared quickly and efficiently with people all over the world (Ahteensuu, 2017). In the wrong hands, these techniques could be deadly.

Immediately after the anthrax attacks in 2001, America increased funding for anti-bioterrorism groups. However, rather than gradually increasing the preparedness of public health departments since this time, the number of staff members and sufficient laboratories has decreased, reducing the probability of quick and efficient response should a biological attack happen. Today, there is still no board or department focused on the threat of bioterrorism. In fact, funding for the CDC has dropped 20% since 2008. Furthermore, funding for public health emergency preparedness has dropped by \$280 million since the post-9/11 panic (Vaida, 2017). This lack of leadership and resources has left the country vulnerable.

Bioterrorism is a national concern that affects all Americans. Everyone in the country is at risk of attack. As of now, five countries have advanced bioweapons programs with five or more pathogenic weapons, including Iraq. Syria and North Korea have research programs, as well (Patterson, 2013). Bioterrorists do not need to be concerned with one specific target or results that are planned in advance. They do not even need to get within a close range of their target. Aerosol dispersal mechanisms are available commercially and can easily affect a large radius of people. 50 kilograms of *F. tularensis*, the causative agent of tularemia or 'rabbit fever', dispersed by this method in a metropolitan area would cause 250,000 deaths. This is an especially important factor to consider in public places with large and contained crowds (Pal et al., 2017). Concerts, the New York City Subway, the Olympic Games, the Superbowl, or a Presidential Address could all be targets. America's food and water supply are also potential targets for attack. More than 700 people were sickened in 1984 after the

Rajneesh cult infected salad bars in Oregon restaurants with *Salmonella typhimurium* (Jones & VanGilder, 2007). Furthermore, the World Health Organization found that if just 0.24 kg of botulism toxin was put in a town's water supply, 60% of a town of 50,000 would be dead in less than 24 hours (Ózsvári, Kasza, & Lakner, 2017).

The country is unprepared for any biological attack. Funding for local public health departments has been dropping, resulting in insufficient laboratories if there is a lab at all. The number of people working in public health departments has also been decreasing, resulting in a lack of support and an increase in burn out. Approximately 80% of public health officials are not properly trained in biological agents, microbiology, infectious disease, or epidemiology. One expert explained that there was no one in charge of securing our country from a bioterrorism attack. Another from John Hopkins University's Center of Health Security noted the lack of persons in the federal government accounting for any anti-bioterrorism programs and absence of collaboration or coordination between agencies (Vaida, 2017).

Bioterrorism response deserves its own department that can be solely dedicated to combating the problem and to educating and preparing the community. Preventative measures save time, money, and human lives. Other solutions will be too little and too late whereas proper preparedness could show results in just a few months. Given a few years, the United States could have the resources to nip a rising epidemic in the bud with relative ease.

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