Bioterrorism and Intelligence

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Abstract

The potential for bioterrorism has increased within the last 10 years; however, there are mixed arguments among critics as to how serious the president and Congress view this threat. The first question the intelligence community needs to ask is "Is the United States prepared for a biological attack?" Three areas need to be examined: the historical background of biological attacks, types of bioweapons, and the mindset of terrorists behind these bioweapons. Bioterrorism has existed since the 6th century, and over time, bioweapons have progressed in to our modern day list outlined by the CDC. Terrorists focus on producing more mass panic and psychological terror than physical terror which explains their trend towards bioweapons. Intelligence on these 3 areas provides insight to preventing future attacks and determining a policy on combatting terrorism. Various models present methods of combatting bioterrorism at a local level and global level. In preventing bioterrorism, each type of intelligence collection plays an essential role. This intelligence, coupled with a national ethic, provides useful information in combatting bioterrorism.

Key Terms: Bioterrorism, Bioweapons, CDC, Terrorism, Intelligence, ethics, prevention models, Biological attacks

Introduction

According to the Centers for Disease Control and Prevention (CDC), a bioterrorism attack is defined as "the deliberate release of viruses, bacteria, or other germs (agents) used to cause illness or death in people, animals, or plants" (CDC, 2007) enacted by a terrorist group for their own motivation, reasoning, and gain. This type of terrorism uses bioweapons, defined as any sort of agent dispersed on a population with the intent of producing mass harm and panic (Anderson and Bokor, 2012, 521). The potential for this type of attack has increased dramatically in the past ten years, prompting scholars to debate the extent of seriousness placed on this issue by the United States government. This perceived lack of seriousness by governmental agencies may have developed due to the public's perception of the imminence of threats. Human awareness and fear of biological threats and attacks increase as terrorist plans are thwarted or enacted. As time passes and the dangers of an attack seemingly dissipate, generated emotions abate. Critics argue that this mentality in citizens is mirrored in government officials (Intriligator, 2010). Generally embraced among officials is the need to continue advancement in the intelligence field on bioterrorism. An example of this occurrence is the CDC's expansion of its technology and role, developing methods to recognize biological agents more quickly and to prevent mass outbreaks of illness and death. However, a global solution to bioterrorism remains

a key argument among scholars and a focal point in the President's biodefense strategy (Koblentz, 2012).

Questions persist on the likelihood of producing a necessary worldwide preventative method or whether the United States is prepared for a biological attack. Common knowledge among the intelligence community is the degree of hate relished by terrorist groups, such as al Qaeda, towards the United States. Some extreme religious groups encourage mass attacks towards populations opposing their viewpoints. Former Secretary of Defense William Cohen summarized the tendency of terrorists to attack with weapons of mass destruction stating, "The question is no longer if this will happen, but when" (Intriligator, 2010, 8). Terrorists will attack, either using weapons of mass destruction or chemical and biological weapons. Scholars present multiple preventative and responsive methods towards bioterrorism on a worldwide or localized scale. Each method stems from knowledge of the terrorists' mindset with either generalized or specific motives. It also requires extensive intelligence of available, key bioweapons and their location, symptoms, damage, and vaccines. Preparing for a terrorist attack also involves the ethics reflected in multiple categories relating to biodefense strategies. These ethics lead to differing approaches to the aforementioned prevention models and are determined at a governmental level. The President and other agencies responsible for handling an international prevention of bioterrorism develop an ethics code initiated in times of peace and war; this code permeates the intelligence community and is reflected in foreign policy and national responses to terrorism. Intelligence remains the backbone of ethics, scholarly prevention models, foreign policy, and post 9/11 advancements. An in-depth study of the historical background, biological agents, and terrorist goals reveals the application and necessity of intelligence to prepare and combat bioterrorism in local, national, and global efforts.

Historical Context

To better understand the importance and variety of biological terrorism, a historical timeline is necessary. Bioterrorism has existed since ancient times. In 6th century BC, Assyrians added biological agents to their weapons arsenal. In Mesopotamia, warring tribes attempted to use *Claviceps purpurea*, a rye ergot, and Hellebore, containing purgative and cardiac side effects, in the water system to poison their enemies. In 184 BC, Hannibal's forces threw snakes onto a nearby ship during a naval battle with King Eumenes. Greeks used old cabbage and animal corpses to pollute the water supply of their enemies, a tactic also used by the Romans and Persians against Italy in 1155. In 14th century BC, the Tartars combined their normal weapons with biological agents by using catapults to launch corpses of plague victims into Kaffa, sparking another wave of the bubonic plague. During the French and Indian war, the British forces passed blankets and handkerchiefs contaminated with smallpox to the Native Indians in hopes of eliminating their population to supply more room for British settlers. Specialized advances in biological warfare began with Napoleon's use of swamp fever in 1797. In the nineteenth century, *Bacillus anthracis* was connected to human disease. Multiple accounts of Germany's use of biological weapons during World War I link them to cholera in Italy, the plague in Russia, and glanders and anthrax in the United States. During World War II, Japan released bombs filled with plague infested fleas over China with successful results. They also instituted Unit 731 to research and develop an arsenal of biological weapons, testing them on Chinese prisoners in Manchuria. Similar research also existed in Britain and the United States during the same time period. In the United States, centers in Fort Detrick, Maryland, and Dugway, Utah, researched

bioweapons while a center in Pine Bluff, Arkansas, was responsible for reproduction efforts. At one time, the center in Arkansas held seven types of deadly agents with the capacity of reproduction at 650 tons per agents per month. These worldwide research labs were designed for the purpose of creating as many deadly agents as possible and discovering new ways of disseminating them upon enemies. (Anderson and Bokor, 2012, 522-523). (Kanchanapoom and Khardori, 2005). (Phillips, 2005).

Efforts were taken to prevent the production of bioweapons in the United States by President Nixon which led to the creation of the Biological and Toxin Weapons Convention in the 1970s. However, the Convention induced little effect on private groups continuing their production of bioweapons. Since then, four main bioterrorism attacks have occurred. In 1984, the Rajneesh Cult obtained samples of *Salmonella typhimurium* to contaminate salad bars in Oregon; it resulted in hundreds of poisoning cases but no deaths. In Tokyo, Japan in 1995, Aum Shinrikyo cult released sarin gas on a crowded subway resulting in 12 deaths and thousands injured. A laboratory in Dallas, Texas, was attacked by *shigella dysenteriae* contaminating muffins and donuts, and, an anthrax scare occurred in 2001 when the deadly spore was mailed to government officials and news media personas. (Anderson and Bokor, 2012, 522-523). (Kanchanapoom and Khardori, 2005). (Phillips, 2005).

Bioweapons have developed over time; the most recent attacks using highly contagious and deadly agents. Ingenuity on the part of commanders and terrorist groups has led to new methods of delivery of agents and in-depth research on new strains of agents, designed to maximize illness, death, and panic among populations. A general knowledge of historical biological accounts is necessary in understanding the current importance placed on bioterrorism. Attacks over time have increased in magnitude, evolved in creativity on behalf of terrorists, and amplified in lethalness. Despite the Biological and Toxin Weapons Convention, several countries have continued bioweapons research, with data and agents becoming readily available for terrorist groups to use at their discretion (Anderson and Bokor, 2012, 522-523). (Kanchanapoom and Khardori, 2005). (Phillips, 2005).

Bioweapons

The CDC separates bioterrorism agents into three categories based on their ability to disseminate and cause illness or death. Category A agents rank as highest priority because they are easily transmissible, have a high mortality rate, result in social and economic disruption, and require special treatments. Category B agents are easily transmissible, produce illness but lower death rates, and require laboratory enhancements and regulated monitoring. Category C agents hold the highest potential of mass production because they are readily available, easily transmitted, and incur high mortality rates. Key Category A and B agents, due to their damage potential and transmissibility, include smallpox, anthrax, plague, tularemia, hemorrhagic fevers, Q fever, brucellosis, glanders, meliodosis, alphaviruses, and Typhus fever. Understanding and recognizing different types of bioterrorism agents reduce the risks of mortality and epidemics. (CDC, 2007).

Anthrax is caused by *Bacillus anthracis* which forms spores that can come “awake” under the correct conditions. The four types on anthrax are cutaneous (skin), inhalation (lungs), gastrointestinal (digestive), and oropharyngeal. Cutaneous involves direct contact with anthrax spores. Itching initially occurs, followed by lesions, vesiculars, and eschars, forming mostly on the arms and neck. Inhalation involves inhaling anthrax spores. Common symptoms include

fever, cough, fatigue, and respiratory discomfort. Gastrointestinal results from consuming contaminated animal meat and produces vomiting and diarrhea. Oropharyngeal symptoms include swelling and ulcers on the neck area. The risk of anthrax results from the ability of mass dissemination without attracting attention upon a population. Plague is caused by *Yersinia pestis* found in rodents and fleas. Three types exist: pneumonic, bubonic, and septicemic. Pneumonic is spread person to person through inhalation of contaminated people or animals. Bubonic results from a skin breach of a contaminated animal. Septicemia is a complication of the pneumonic plague. The main concern of the plague used as a bioweapon is the potential to use a pneumonic form in an aerial attack. The person to person transmissibility of this plague strain could result in a mass epidemic causing multiple deaths. Tularemia is produced from *Fancisella tularensis*, residing predominantly in rodents and insects and transfers from animals to humans through an insect bite contact with infected animals or surfaces, or through eating or drinking contaminated food or water. Tularemia exists in five forms: ulcerglandular, glandular, oculoglandular, oropharyngeal, and pneumonic. The concern of tularemia used as a bioweapon comes from the high infection and multiplication rate of *Francisella tularensis*, and its potential for high mortality if left untreated. All naturally smallpox viruses have been destroyed, but its supplies still exist at the CDC and State Research Center of Virology and Biotechnology in Russia. Smallpox is a *variola virus*, spread person to person and by contact with contaminated body fluids, bedding, and clothing. Officials are concerned with the unknown supplies for smallpox potentially owned by terrorists, the lack of immunity in younger generations, and the lack of treatment for smallpox, resulting in its classification as a highly effective bioweapon. Hemorrhagic fever is composed of four families of virus sharing similar features. They affect multiple organ systems within the body and cause bleeding. No vaccine currently exists, and, therefore, prevention methods are aimed at avoiding contact with infected rodents. Brucellosis is caused by *Brucella* bacteria found in mammals. It produces influenza-like symptoms in humans and is linked to disability among humans. Glanders is caused by *Burkholderia mallei* and affects domestic animals. As a bioweapon, dissemination would probably occur through an aerial attack causing a shorter incubation period for infected patients. (CDC, 2007). (Anderson and Bokor, 2012).

Officials generally assume epidemics to be a natural outbreak of a common virus (Stern, 2001). This demonstrates the lack of intelligence among officials. My definition of intelligence is the necessary knowledge to recognize, diagnose, and respond to the symptoms of bioweapon agents. Early recognition of these symptoms proves vital in preventing mass outbreaks and mortality rates. Emergency responders must be trained in recognizing these common symptoms. The effectiveness of most bioweapons hinges on the camouflage of their symptoms; they tend to reflect the symptoms of other illnesses such as the flu or food poisoning. However, in order to be successful in bioterrorism preparedness, emergency officials must retrain their minds to actively discern a patient's symptoms and routinely suspect a biological attack. The Electronic Surveillance System for the Early Notification of Community-based Epidemics aids emergency responders in recognizing a pattern among illness outbreaks based on hospital visitations and telephone calls to health care providers. The Model State Emergency Health Powers Act also aids in bioterrorism recognition through requiring a reporting of diseases caused by certain biological agents. State and localities were charged in 2001 to increase their preparedness and planning through a health alert network and training, surveillance and epidemiology capacity, and biological and chemical laboratory capacity. Increasing intelligence among officials is a key factor in preparing for bioterrorism attacks. (Kanchanapoom and Khardori, 2005).

Terrorist Mindset

Another important aspect is understanding terrorists' rationale behind their attack. Political agenda plays a key role in this rationale. Terrorist groups tend to use violence and force to assert themselves as leaders of a country. They rule by fear and enact personal agendas over the whole country. Nations such as the United States do not recognize these groups as legitimate governments of a country because they do not adhere to the will or concerns of their people. These groups subconsciously seek to attain legitimacy in the eyes of other countries through the use of violence. Consciously, religious extremists use religious arguments to justify their violent actions towards other nations, claiming to follow the orders of Allah by combating all non-Muslims. They want three things through this jihad, or holy war: revenge for past injustices and humiliation, renown as a legitimate force and to impose their goals upon others, and reaction due to moral outrage. Terrorist are more concerned with the psychological responses produced by a biological attack than mortality rates. Various groups strive to outdo one another in publicity, mortality rates, funding, recruiting, etc. They enjoy producing panic, fear, and paranoia in populations. This reasoning results in their use of bioweapons as opposed to nuclear or chemical weapons because bioweapons tend to have prolonged affects and cause internal pain in humans, creating widespread psychological effects and only minimal social and economic effects. (Cary, 2009). (Intriligator, 2010).

Challenges arise in determining the amount of bioweapon agents available to terrorist groups. However, three components are necessary to cultivate any bioweapon for an attack: "scientific expertise, pathogens and growth medium, and equipment" (Cary, 2009, 17). Bioweapons are becoming easier to develop as pathogens become more available and the necessary equipment readily acquirable. Generating bioweapons requires little space and can reside in any locale because their production easily disguisable. They are quickly becoming cheaper and faster to produce than other weapons of mass destruction while simultaneously causing more destruction than nuclear or chemical weapons; hence, the attraction of bioweapons has significantly increased over past years. Few clues to the operational capabilities of terrorists exist. The most common clue is subtle such as finding bodies contaminated with contagious strains of a bioweapon agent hidden in an underground laboratory, an indication of a mishap in testing. (Cary, 2009). (Intriligator, 2010).

Stopping terrorist attacks also proves challenging due to their substitution and innovation in forming plans. Terrorist groups may substitute a cheaper agent for an expensive agent, resulting in a slightly modified plan of attack. These methods also apply to the degree of attacks in that terrorists may substitute different attack modes depending on the level and types of law enforcement. Innovation in dissemination and transportation methods signals modification of past actions in response to changing policies. For example, suicide bombers use plastic explosives since airports have installed metal detectors. Another example is the combining of two past actions such as airplane hijacking and suicide bombing to create the results seen on 9/11. These examples affirm changes in bioterrorism as agents are disseminated through numerous methods, hard to regulate and detect, and transmitted without the victims' knowledge. (Cary, 2009). (Intriligator, 2010).

A basic knowledge of the history of bioterrorism, types of bioweapons, and the mindset of terrorist groups, lays a foundation for addressing to critical issues: methods on preventing bioterrorism and the ethics behind bioweapons research and biodefense. A historical background underscores the importance and increasing tendency towards bioterrorism; an outline of

categories and symptoms of bioweapons relays needed intelligence to properly prepare for an attack; and, delving into the mindset behind terrorist attacks helps determine a nation's policy on ethics. These three topics supply the intelligence behind preparation, prevention, and ethical models proposed by scholars.

Models for Bioterrorism Prevention

Radosavljevic and Belojevic (2009) present a model for investigating a biological attack. They dissect an attack into four components including "perpetrator, agents, means and media of delivery, and target," (Radosavljevic and Belojevic, 2009, 444), examined through both qualitative and quantitative lenses. Through qualitative aspects, a perpetrator exhibits "sophistication and motivation" (Radosavljevic and Belojevic, 2009, 445); agents exist in both biological and informational forms; necessities, such as "air, food, or drinking water" (Radosavljevic and Belojevic, 2009, 446), double as means of delivery; and targets subcategorize into direct, biological and indirect, political, and economical types. Quantitative aspects include the following: "the number of perpetrators and their distribution" (Radosavljevic and Belojevic, 2009, 445); the "amount and distribution" (Radosavljevic and Belojevic, 2009, 446) of agents; three ways of delivery "munitions" (Radosavljevic and Belojevic, 2009, 446) protecting the agents, "a delivery system" (Radosavljevic and Belojevic, 2009, 446) for the agents, and "a dispersion system" (Radosavljevic and Belojevic, 2009, 446) on unsuspecting targets. Radosavljevic and Belojevic (2009) apply the four segments of their model to three types of biological attacks: strategic, operational, and tactical. A strategic biological attack transpires on a large scale. Perpetrators are motivated by political and ideological agendas, use stolen agents disseminating through various means of delivery, and aim at "large populations" intending to cause "epidemics of infectious disease and epidemics of fear and panic" (Radosavljevic and Belojevic, 2009, 447). An operational level of attack "is the most probable type of biological attack" due to combining strategic and tactical methods of deploying bioweapons. Terrorists may use any kinds of agents dispatched through areas of necessity for mankind. Tactical biological attacks, whose purpose "is to produce mass effects and incite mistrust in authorities, as well as panic and fear . . ." (Radosavljevic and Belojevic, 2009, 448), focus on small territorial areas. Radosavljevic and Belojevic (2009) exclude a key ingredient in the model's success, intelligence. Each component relies on accurate intelligence which includes the following: geospatial (GEOINT) which illuminates the type of attack and displays images of the damage, both physically and economically; signal (SIGINT) which reveals what methods preserve and deliver the agents and the location of the targets; human (HUMINT) which provides a firsthand view of the infected area and the potential use of double agents to reveal the identity of the perpetrators; measurement and signatures (MASINT) which displays the agents' composition, production of the agents, and future prevention of the agents' misuse; and, lastly, open source (OSINT) which provides information on the agents, their symptoms, and the infected area. (Lowenthal, 2012, 115).

A localized model in handling the spread and response to a biological attack involves emergency management. Having a pre-outlined plan for emergency response prevents increased outbreak and mortality rates. Key components in this plan include prior agreements with non-profit and private sector organizations, identification of critical resources, and training emergency personnel. A response plan outlines procedures such as quarantine, make-shift hospitals, mass treatment centers, vaccinations, and responsibilities of organizations, local

emergency personnel, and local emergency managers. Intelligence must be passed on to emergency personnel as to the type of agent used in the attack, its symptoms, historical mortality rate, incubation period, known vaccines, etc. Federal and state officials aid financially and physically, providing emergency personnel and emergency managers. National and international labs develop and mass produce the needed vaccines for treatment of the agent. Surveillance systems such as the Real-Time Outbreak Disease Surveillance aid in detecting the bioterrorist attack, the extent and speed of the attack among a population, and its conclusion. The intelligence community plays a role in emergency response plans. Defined more specifically, GEOINT and SIGINT collect pictures used to investigate the attack and determine its generating point and the perpetrating groups responsible; HUMINT offers insight into the success of an emergency response plan; and MASINT and OSINT providing information on the agent and the necessary vaccines for prevention (Lowenthal, 2012, 115). (Pradeep, Prakash, and Sharada, 2010). (Sylves, 2008).

Another model on a global scale of preventing bioterrorism involves economic lenses, defined as seeing the relationship between terrorist groups and the world as a supply and demand equation. Denying terrorists the necessary money, agents, recruits, etc. proves easier and more successful than protecting the United States and thwarting potential attacks. A bioterrorist attack depends on the resources of a terrorist group. After increases in terrorist activities, a lull occurs due to the exhausted resources of terrorist groups. They must regroup themselves and develop new stores of weapons. Intriligator (2010) echoes concerns of national security agencies in arguing in the financial well-being of terrorist groups; theoretically, if these groups are wealthy, they can purchase any needed items for a terrorist attack, such as a bioweapon, equipment, and scientists. Therefore, one way to prevent an attack is to limit a terrorist group's resources. (Intriligator, 2010).

This view is mirrored in the Obama administration's strategy on biodefense whose primary goal is to "reduce the risk that misuse of the life sciences could result in the deliberate or inadvertent release of biological material in a manner that sickens or kills people . . . or renders unusable critical resources" (Koblentz, 2012, 131-132) and also includes redirecting the international focus on the potential of biological threats. His strategy places emphasis on prevention: preventing the likelihood of a biological attack through various methods. Obama's plans on prevention include: improving public health in would-be terrorist nations, a wide definition of biosecurity to incorporate all potential forms of a bioterrorist attack, and a comprehensive communication plan between scientists and law enforcement. Preventing bioterrorism transpires at a global level because the risks are global risks. Such action requires international cooperation at the Biological Weapons Convention to discuss all known biological threats and international ways of prevention. One challenge faced by this strategy is forming a balance between science and security. The likelihood of preventing proliferation of bioweapons is slim; therefore, science capabilities must be regulated, and scientists must communicate with security and technology to monitor how high-risk agents are being used and their locations. (Koblentz, 2012). Intelligence is essential to this balance. GEOINT monitors the locations of bioweapons and their security; SIGINT and HUMINT detect the application of bioweapon agents to predetermine a global risk; MASINT finds new potential bioweapons and their components, strains, symptoms, transmissibility rate, and mortality rate and conveys the information to the CDC; and OSINT monitors the buying and selling of bioweapon agents and the owners of bioweapons (Lowenthal, 2012, 115).

The strongest biodefense strategy combines these three models into one comprehensive model. Effectively preventing bioterrorism involves an approach at the localized, national, and international levels as well as offensive tactics towards the group responsible for the attack. The local level requires preparing for an attack by creating an emergency response plan to prevent transmission and death during a biological attack. National and international levels communicate on bioweapons research and updates on current owners of biological agents to assess known locations and the potential for a bioterrorist attack. Offensive tactics include applying Radosavljevic and Belojevic's (2009) model to investigate the perpetrators, agents, dissemination methods, and targets of an attack. These narrow the necessary intelligence to combat an attack and closely watch suspect terrorist groups. Attacking the problem of bioterrorism at all three levels will ensure maximum preparedness. If perpetrators surpass regulations at one level, other levels are organized to prevent mass casualties. Questions also arise on the likelihood of developing global regulations to combat bioterrorism. By creating regulations in the United States and its closest allies on the supply of bioweapons, terrorist groups will be forced to find their supplies through other methods, hopefully slowing their progress towards biological attacks. However, having an emergency plan in place is necessary for when terrorists make or steal bioweapons and release them upon the public.

Government concerns about biological agents include their easy access and loosely controlled production. Intelligence on bioweapon types and the reasons behind a trend towards bioweapons by terrorists aid policy makers in writing laws and executive agreements to regulate the supply, research, and available intelligence on bioweapons. The necessity of this early intelligence prevents policy makers in engaging in "risk of the month" laws (Stern, 2002-2003, 107) created in the defensive mindset, not the offensive -- laws created once a risk has been identified but with an oversight of intelligence and a rush to combat a new hole in regulations. Intelligence notifies officials nationally and globally on new concerns in bioterrorism and prepares agencies for a potential attack. (Stern, 2002-2003).

Ethics in Combatting Bioterrorism

Ethics in combating bioterrorism must be developed for every nation; their consideration should be viewed under the subjects of medicine, science, technology, law, international relations, public health, environment, and war. An ethic standard answers and includes eight questions and facts: changes in an ethic policy due to emergencies or war; uncertainty in bioterrorism presents new challenges; doing the right thing may not be the best policy in biodefense; bioweapons research consists of pros and cons; the difficulty associated with human subject research; environmental consequences and their implications and impacts; non-existent jurisdictional boundaries for bioterrorism; and creating a pre-disaster biodefense ethical framework. Public health ethics comprise three perspectives: professional, applied, and advocacy; each focuses on the importance of health professionals and their actions in relation to the greater good of society. Governmental ethics rely on the dependability of public servants and the government body as a whole. International relations ethics focus on the worth and dignity of individuals, formed relationships, and the common good of the community. Environmental ethics reveal the dependence of citizens on their community and environment. War ethics involve the concept of a "just war," meaning the war must occur for a just reason, be officially declared by Congress, have an ethical goal, exasperate all other options before declaring war, have a high success rate, and be proportional to the end result. In combing these topics, a workable definition

for bioethics is a set, unchanging policy in defending against bioterrorism in which government officials and public servants work with law enforcement and public health agents for the better of society and the environment. (Sutton, 2005).

Different challenges, questions, and approaches arise under bioethics. Experimentation on individuals and populations raises controversy. Experimenting on humans provides insight into the symptoms and risk of bioweapons, but includes inhumane treatment and environments. These experiments tend to occur without the persons' knowledge or intent, arguably violating their rights as a United States' citizen. One way to bypass this argument is using prisoners of war or accepting research from other countries that used prisoners of war or human test subjects in inhumane ways. However, debates emerge on the ethics of the United States government in accepting bioweapon information from countries, such as Japan, that retrieved their information by conducting experiments in inhumane ways by misusing prisoners of war for their own research. Experimentations on populations raise similar questions. Consent of risk cannot be obtained from every individual, and consequences concerning the legal implications on citizens are called into question. Opposing views on the moral issues of bioethics are reflected in the utilitarian and non-consequentialist approaches. Utilitarian approach focuses on actions and their consequences on the individual, what the right actions are for individuals of a nation. In contrast, the non-consequentialist approach focuses on consistently applied rules and their good for the public as a whole, not necessarily on each individual. (Sutton, 2005).

These views apply to the global questions preventing terrorist groups from obtaining bioweapons and conducting our nation's own bioweapon research. Several ideas exist on preventing terrorist groups from obtaining bioweapons, such as on the global and national scale mentioned earlier in this paper. However, officials have also suggested either increasing security for the CDC and Russia's State Research Center of Virology and Biotechnology or destroying all samples of bioweapons. Increasing security and surveillance for these facilities is crucial for two reasons. First, nearly all bioweapons exist in nature and, therefore, cannot all be destroyed. Second, by eliminating all bioweapon samples we stop our own bioweapons research, and by default, our research on bioweapon vaccine and prevention. Terrorist groups can gather bioweapon agents from nature, and by destroying our samples, these groups can attack our nation without plans or vaccines to protect citizens. Views circulating on conducting bioweapons research consist of regulating and enhancing the publication of bioweapon research and reducing our current research abilities. Government officials argue that our current abilities and publication rules allow for crucial bioweapon information to circulate in journals and thereby allow terrorist groups to use our research to enhance and alter their agents into more dangerous and contagious bioweapons. Maintaining or increasing our research effects on bioweapons enhances our knowledge and preparedness skills for an attack, while regulating stricter laws on publishing bioweapon research prevents crucial information potentially aiding terrorists in their endeavors. The intelligence generated from bioweapons research increases our chances of success in preventing and combating a biological attack. (Sutton, 2005).

Conclusion

Intelligence or knowledge of the historical background of bioterrorism, the types of bioweapons and concerns for their use in a bioterrorist attack, and a terrorist mindset are necessary for critiquing and establishing a method of preparing and preventing a bioterrorist attack and ethics behind fighting bioterrorism. A historical background initiates the necessary

mindset in viewing bioterrorism and relates the concerns and potential outcomes of an attack crucial in preparing a national ethics policy and prevention model. An understanding of bioweapons and their dangers must be relayed to officials at the national, state, and local levels to aid in recognition and containment of a bioterrorist attack. The general reasoning behind a terrorist group's attack allows intelligence collection agencies to hone their disciplines at certain suspect territorial areas and groups. The implications and consequences of a lack of intelligence and knowledge on these topics relate to hasty policy methods regarding prevention and ethics. Government officials must understand the goals behind a terrorist group planning to attack the United States, the historical devastations of past biological attacks, and the potential destruction of known biological agents. This intelligence outlines an ethics standard of our nation that can be applied during times of peace and war as well as aid in the decisions regarding global prevention techniques and our national research and publishing regulations and abilities. An effective prevention plan combines global, national, and offensive models to combat terrorist groups through limiting their supply and demand and creating investigative and emergency plans initiated during an attack. Included in this plan is an increased security at biological agent stockpile and research facilities worldwide and a set standard for national publication of modern research and development of biological agents. Combining these ideas into one comprehensive model will minimize terrorist supply at an international level while planning for a bioterrorist attack at a national level.

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