

Biodefense Preparedness Programs: To Fund or Not to Fund?

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Bioterrorism is the deliberate use of biological warfare agents (BWAs) that can kill or incapacitate living being. These BWAs are also called weapon of mass destruction (WMD) that targets lives without affecting infrastructure. The basic groups of these agents that can be used as weapons are bacteria, viruses and toxins. In addition, BW agent may be designed that are resistant to antidote/vaccine and/or show confusing symptoms. Even advancements across multiple disciplines of biomedical sciences may lead to a departure of the traditional BW to advanced biological warfare agents (ABWAs). Whether used by warring armies or terrorist groups it may create terror/havoc in civilized society. BW agents can be dispersed into the air, infecting animals, releasing vectors or contaminating food and water resources.

Word like 'drills', 'stockpiles', and 'preparedness' in biodefense have been adopted from the era named as 'Cold War' when civil-defense drills and fallout shelters were sold to the terrified community as readiness for nuclear attack more than 40 years ago. Similar to nuclear weapons, it is also very difficult to weaponize biological warfare agents and using them is even more difficult. The anthrax cases of October, 2001 in USA, there had been five deaths and seventeen hospitalizations from the use BWA by terrorists, and there had been only a single incident of use of ricin in 1978. Nonetheless, the endorsing preparedness programs at such a scale without any evidence of their effectiveness is matter of concern. Since 1970 the possible use of biological agents have been terrified society and further 2001 Amerithrax case strengthen the terror that resulted dangerous diversion of resources in name of 'preparedness programs' around the globe. The main issue in biodefense preparedness is proper prioritization of validated threats and they must not prioritize like "could be". In most of the assessments these BWAs threats placed as possible threats so there is need to identify the real threats. Use of biological weapons are primarily prevented and we saw failure of international organizations including the Biological Weapons Convention to restrict research on hazardous materials. In contradiction to generate good public health practice and infrastructure, world is observing multibillion-dollar preparedness programs for bioterrorism. Moreover, allocation of fund for research on bioterrorism and biodefense preparedness, such as the military research on select agents like anthrax, small pox, botulinum neurotoxins may be viewed as offensive-weapons development. This will trigger a new arms race involving biological weapons in the same way like missile-defense systems and nuclear proliferation.

It is evident that natural biology has most potential for devastation than anything else including use of traditional and weapon of mass destruction. People have seen the biological catastrophes when diseases eradicated huge human population. Black death caused by Plague bacilli in 14th century killed half of European civilization and

in 1918 Spanish flu pandemic killed ~20 million people. Recent H5N1, Ebola and Zika virus epidemics demonstrated that there is an urgent need to develop a reliable and robust system for detecting, preventing, and responding to such outbreaks. Also prospect remains that yet unknown viral threat can test the power of medical advancements. Finally, vulnerability to natural biological disasters rank top on the list of unmet challenges for researchers of biomedical sciences. At least a billion people do not have access to adequate supplies of clean water and virtually no medical care available for countless millions, this cumulate for more deaths in the world than expected in war. Technologies for timely detection of causative agents and deployment of effective medical countermeasures like vaccines, antidotes should rank among the most important strategies. Also for effective countermeasures, quick development and mass-production of vaccines or antidotes and their timely deployment is critical to contain and to keep the outbreaks as small as possible. More emphasis should be given to fund for developing newer technologies for producing effective vaccines in large quantities, sampling of causative agents, rapid testing and quickly design medications. Importantly, system also accelerate regulatory process so that controlling an outbreak that causes death in days or weeks and/or threatens widespread and presently regulatory approvals take years, so some of the efforts are self-defeating. The lack of funding for public health programs increases the vulnerability of the society to infectious diseases outbreaks, irrespective of their origin. The idea of a 'dual benefit' a theory supporting that public health research will gain from the billions of dollars funding of biodefense preparedness is not really helping.

Critical areas to be focused are strengthening health regulations and knowledge sharing; funding outbreak related research and addressing institutional shortcomings; and finally inculcating humanitarian response. Present national and international policies are not framed with solid and relevant guidelines to control double-use equipment and supplies. It will be most important and need to be debated the use of classified biodefense research and there should be some legal control to restrict classified biodefense research regarding augmentation of microbe's pathogenicity by genetic manipulation and development of advanced biological warfare agents.

Some more information related to Bioterrorism and Biodefense can be found in the articles published in the previous issues [1-4].

References

1. Kwak ML (2016) Helminths as Weapons of Bioterrorism: an Unrecognised Threat. *J Bioterror Biodef* 7: 148.
2. Hu WG, Nagata LP (2016) Opportunities and Challenges of Therapeutic Monoclonal Antibodies as Medical Countermeasures for Biodefense. *J Bioterror Biodef* 7: 149.

3. Utratna M, Deegan S, Joshi L (2016) Exploitation of Glycobiology in Anti-Adhesion Approaches against Biothreat Agents. J Bioterror Biodef 7: 150.
4. Aquino TL (2016) Radicalized Health Care Workers and the Risk of Ebola as a Bioterror Weapon . J Bioterror Biodef 7: 146.