

Creating a comprehensive defence against biological weapons

Anshu Joshi

Dr. Anshu Joshi is Faculty, School of International Studies.

Summary

Following the unprecedented impact of the worldwide spread of COVID-19, there's a newfound global awareness regarding the potential havoc that biological agents can wreak if employed for destructive purposes. The rapid advancements in technology have empowered both governmental bodies and non-state groups, including terrorist organizations, to harness more affordable, highly effective, and easily deployable 'sophisticated' biological weapons. The fusion of modern technology with terrorism has presented a significant challenge, particularly for nations like India that advocate for global peace and security. Terrorism has added layers of complexity and altered the dynamics of global politics, ushering in a new paradigm of power while also introducing new threats.

After facing the unprecedented implications of the global spread of COVID-19, the world now understands how biological agents, if used for violent purpose, can create a havoc. The exponential advancements in technology have enabled both state and non-state actors (terrorist organizations) to use 'sophisticated' biological weapons that are cheaper, more effective and are easy to use. The question remains, how to contain the challenge of bioterrorism?

The concoction of new technology and terrorism has created a potential challenge for countries like India that promote global peace and security. Terrorism has complicated the complexity and dynamics of world politics; this world depicts new concept of power as well as new threats. This is the time when we can clearly see a deadly combination of political ambitions and new technology taking new shapes in the context of terrorist organizations. Anthrax attacks in the United States following 11 September 2001 terrorist attacks, use of biological weapon in Japan by Aum Shinrikyo group in 1995-96, and the use of chemical weapons agents in Syria have reinforced the threat. While most of the nations have repeatedly condemned the use of biological weapons, many of them still continue to have stockpiles. Also, we also confront the possibility of biological weapons use by non-state actors or terrorist organizations. For a country like India that is combating against the terror attacks since a long time, it becomes very important to focus on the challenge of bioterrorism and possible solutions to counter against the threat of bioweapon use by terrorist organizations.

First of all, we need to understand that why there is a possibility that such weapons can

be used by terrorist organizations. In recent years, the incredible advancements in technology, availability of dual-use technologies, materials and information associated with the production and delivery of biological weapons has aggravated the proliferation problem. Also, because of the latest technology and internet, these weapons are easy to develop and cost effective. These all factors have increased their attractiveness to proliferant states as well as non-state actors that cannot afford to develop and use advanced conventional or nuclear weapons.

It is important to understand what are biological weapons and how are they used. Biological warfare is the use of living organisms or their byproducts (toxins) to cause physical harm. Biological weapons are basically the disease-causing microorganisms and toxins. When these biological weapon agents enter the body (it could be human, animals or plants), they infect the individual, multiply and then cause the symptoms of the disease they carry. If the disease is contagious, the effects can be more devastating. Toxins, which have biological origin, but possessing certain chemicals traits, can affect the target immediately. Biological weapons can have destructive effects on all kinds of biodiversity, including humans, animals, plants, and other life. They can also be used against resources, such as water or food supplies. Corona virus is a classic example to understand the scale and speed of effect of biological agents.

Biological and chemical weapons were used in World War I and World War II; however, most of the countries then banned these weapons on ethical grounds. But in today's time, when terrorism poses a potential challenge of using unconventional methods to terrorize people, we cannot deny the possibility of their usage by terrorist organizations.

Today, many chemical or chemical-based companies can make biological weapons. Any state with advanced biotechnology facilities can also develop biological weapons. Increasing role of regional powers, high ambitions of terrorist organizations and more involvement of multi-national corporations in world politics increase the possibility of dual usage of technologies and their transfer to the attacker. Although, there has been growing debates over the idea of terrorists using these unconventional weapons and causing havoc, we can see their usage in recent times. The Anthrax letters were posted in the United States soon after 9/11 attacks. Aum Shinrikyo group's attack in Japan is another important example. In March 1995, members of a Japanese religious cult, the Aum Shinrikyo, released the chemical agent Sarin in the Tokyo subway. The Sarin was produced by this group only. This act killed nineteen people and injured several hundred. The group also had attempted to produce biological agents and tried to use the same in Tokyo and other nearby areas between 1990 and 1994.¹ However, creating panic was the real impact that this attack caused. The Aum Shinrikyo group also used Botulin in June 1994 in another Japanese city that caused several deaths.

Till today, it is norms building procedure that has been considered the most significant approach to check the use of biological weapons. The first international treaty in modern law banning the use of biological weapons was the 1925 Protocol or the Geneva protocol that prohibited the use of asphyxiating, poisonous or other gases, and bacteriological methods of warfare. Negotiated under the League of Nations after the First World War, the Geneva Protocol had significant shortcomings as its prohibition did not cover production, development and stockpiling of biological and chemical weapons, and many countries held in

reserve the right to develop biological weapons. The growing need of a more comprehensive treaty gave birth to the 1972 Biological and Toxic Weapons Convention (BTWC) Convention to prohibit development, production and stockpiling of biological and toxin weapons. Unlike the Geneva Protocol's restrictions only on use, the BTWC is a far more comprehensive treaty. It bans development, production and stockpiling, acquisition or retention of biological agents or toxins. The ban also extends to means of delivery designed to use such agents or toxins for hostile purposes or in armed conflicts. Later separate Chemical Weapons Convention (CWC) and Biological Weapons Convention (BWC) came in to existence.² But so far, due to certain shortcomings related to BWC, a full-proof defence against biological weapons could not be ensured.

First of all, BWC does not provide for any full-proof verification regarding the peaceful or defensive usage of the technology related to biological weapons given that the dual-use nature of technology that can produce biological agents. Because of the dual-use and covert nature of biological weapons, it is very difficult to differentiate between offensive and defensive technology. And because of this dual use problem, all biodefence research cannot be banned or stopped. Any development in the biotechnology and genetic engineering such as the development of a new medicine, vaccine or a new genetic advancement can be applied to combat against biological weapon attack. However, at the same time, the same technology can be used to develop the biological weapons, and it is not possible to differentiate between the two.

Then, it is practically impossible to involve terrorist organizations into a norm building procedure. Hence, we need a holistic approach to counter against bioterrorism.

Since the bioterrorism threatens the security of civilians and public property, it is essential to develop a strong civil defence against bioterrorism. It involves lots of cooperation, latest technology and of course, huge funding, especially for a hugely populated country like India.

First of all, we need to see the challenge of bioterrorism from a realistic perspective. We cannot consider this threat as a fallacy anymore and a holistic defence system is the need of the hour to ensure national security and promote world peace.

For a country like India, it has become crucial to establish a potential defence against biological weapons as the threat of use of biological weapons comes from both, state as well as non-state actors. To meet with this challenge, The Indian government has established Nuclear, Biological and Chemical (NBC) warfare directorates to monitor nuclear, biological or chemical weapon attack. Indian government has also established a Nuclear, Biological and Chemical (NBC) cell at Army Headquarter to study the effects of NBC warfare and to prepare an appropriate defence system against it. The Defence Research and Development Organization (DRDO) is involved into research and development of new technologies to detect and protect against biological weapon attack. It focuses on using latest technology to design and manufacture protective clothing and equipment for military personals. However, it is still limited to military purpose and civilian security using such kind of clothes and equipment is not in the focus. And, seeing the budget it involves, it is not practically feasible also to use such technology for civil defence. After all, how many masks or suits can be distributed in a hugely populated country like India? The Defence Research and Development Establishment (DRDE) at Gwalior is established to perform research and

development related to toxicology and biochemical pharmacology. It also works to develop antibodies against several bacterial and viral agents.³

There are various vaccination programmes that the government supports to increase immunity against various organisms, which could also be used as a biological weapon by terrorist organizations. However, there are no awareness programmes to make common man aware of biological weapons and bioterrorism. Although wrong information or uncontrolled information can create a panic among people, however creating general awareness is significant to establish a potential civil defence against bioterrorism. Here, the role of media becomes very crucial. During Mumbai attacks, we all witnessed how the presence of media complicated the issue. Media needs to be very careful while deciding the limit of the information to be shared in national interest. Also, media needs to be cautious while finalizing the content as it should not cause any panic across the nation. Various general awareness programmes related to biological weapons, their symptoms, their delivery model and so on can be run through print and electronic mediums. People can also be trained through these programmes to identify and respond in case of a biological weapon attack.

In case of a biological weapon attack people might identify the attack too late to use the physical protection. Hence, awareness, immunization and enhanced local public health facilities play an important role. Also, an efficient and clear communication chain across local public health systems, national-level authorities and concerned international organizations can also help in reporting the issue at the earliest.

Various vaccination programs are already been run, and can be run, however there are some challenges too. We have experienced

the same during different waves of COVID-19. First of all, vaccination creates specific or non-specific immunity. The specific immunity can be developed across people by using the vaccines against the agents that are likely to be used in the attack. The non-specific immunity is developed by using broad-spectrum vaccines that can develop immunity against a wide range of agents; however, the time span of such kind of immunity is not very long. Now neither we can make out that which agents can be used for a terror attack nor we can get to know the time of the attack to use the broad-spectrum vaccines. Secondly, vaccination programmes, for a hugely populated country, need a huge funding. From research and development to necessary trials and production, huge funding is required. Here, the role of various international organizations becomes significant. Today, apart from state-sponsored vaccination programmes, many international organizations like World Health Organization (WHO) and corporate organizations are providing their support in running vaccination programs across the globe.

Then comes an advanced public and community health system. For developing a strong public health system against biological weapon attack, various parts of society at various points have to be involved. From the public health perspective, we need to ensure that we are laced with appropriate detection systems, advanced diagnostic techniques, sufficient stocks of various medicines and vaccines, efficient communication systems, and sufficient training of doctors and other health care workers. Then, the essential medicines and vaccines are also needed to be stored so that they can be distributed to large numbers of people on a short notice.

As the vulnerability of a biological weapon attack cannot be checked, we can enhance our preparedness and capability to fight

against bioterrorism. By creating general awareness against bioterrorism, enhancing emergency medical facilities and supporting research and development related to biodefence techniques, a comprehensive defence against bioterrorism can be developed. These measures can also help in combating against naturally occurring epidemics and in ensuring well-being of citizens. As the objective of an attacker is difficult to identify, we can enhance our preparedness and preventive means to mitigate the risk of biological weapon attacks.

Today, the threat of bioterrorism has been taken increasingly seriously by international community. Despite all normative and technological efforts, problem in detection and weak prevention strategies is one another major challenge to create a potential defence against bioterrorism. Local, national and international cooperation is essential to develop a strong communication and support mechanism against bioterrorism. The challenge is also to provide appropriate education to people about the type, symptoms and possible mode of attack of biological weapons, and different resources available to provide their support with the primary-level response to such attacks.

Today, our lives and the global security are clearly vulnerable to the looming threat of highly advanced and genetically modified biological weapon agents. We certainly need a holistic defence against the devastating effects of biological weapon attack. We can develop a potential and comprehensive defence against the use of biological weapons by using latest technologies, increasing general awareness, strengthening public and community health systems, developing improved immunization and by strengthening norms and international cooperation.

Endnotes:

- ¹ "The Sarin Gas Attack in Japan and the Related Forensic Investigation", 1 June 2001, OPCW Website, <https://www.opcw.org/media-centre/news/2001/06/sarin-gas-attack-japan-and-related-forensic-investigation>
- ² Reports and data from United Nations Office for Disarmament Affairs, <https://disarmament.unoda.org/biological-weapons/CWC>
- ³ Reports and data from Defence Research and Development Organization (DRDO) website, <https://www.drdo.gov.in/>

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1. Reports and data from Nuclear Threat Initiative Website (DRDE).
2. Chemical and Biological Warfare Studies No.12, SIPRI, Oxford University Press, 1991.
3. Zanders Jean Pascal, John H., "Chemical and biological weapon developments and arms control", SIPRI, Oxford University Press, 1997.
4. Raymond A. Zilinskas (ed.), Biological Warfare: Modern Offence and Defence, Lynne Rienner Publishers, London, 2001.