

## Opinion

## Emerging Infectious Diseases and Biological Terrorism

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The theme of this paper to discuss the challenges imposed by the emerging, re-emerging, and new emerging diseases and the threat caused by them to biological terrorism. The main aim is to control biological terrorism nationally and internationally. The topic of Infectious diseases came under discussion since 1990, but in 2001 the word of Emerging Infectious Diseases in coined for it, to emphasize the alarming situation of bioterrorism faced even by the infectious diseases even after the implementation of BTWC. The word “Emerging Infectious Diseases” and how they contribute to and create bioterrorism, and ultimately result in a threat to our national security as well as to international security. In the last, I will discuss how we can control the Bioterrorism caused by infectious diseases nationally by following confidence-building measures and what are the steps needed to control this internationally because of experiences gained in COVID-19 pandemic, then giving some recommendations to be discussed in Ninth Review Committee coming up in 2021.

Bioterrorism is the intentional release or threat of release of biological agents, viruses, bacteria, fungi, or toxins to cause harm to the human population, livestock, and agriculture. Nowadays, sometimes it is very difficult to differentiate between intentional and unintentional release so actually, you have to prepare yourself against both.

The history of bioterrorism is very old. It started in the sixth century BC. These incidences that took place whether intentionally or unintentionally, but they harmed the life on this planet. The awareness developed by the time and in 1972, the Biological Weapon Convention came into being. The Conventional prohibits the stockpiling and offensive use of biological agents but even ratifying it Russia continued to carry out its bio research program with more than 60,000 research workers.

If we look at BTWC, it was signed in 1972 and entered into force on March 26th, 1975. It is the first multilateral disarmament treaty of Biological and Toxic Weapons. Now after 48 years, BTWC has 183 countries members to it. The most important and alarming drawback of this treaty as compared to CWC is the absence of international verification organization and the convention by itself has no provision to verify compliance which hampers the technical implementation of BWC.

Keeping in view that the biological agents are more dangerous than chemical and nuclear weapons and their no procedure to verify

how many states have biological weapons or have the capability to develop biological weapons. In 1975, it was thought that only 1 or 2 member states other than superpower had biological weapons but now 12-15 countries have such weapons. The international community is working hard for the sake of mankind to stop biological agents being used as weapons.

BTWC has been ratified by 179 countries in 1972 but even after that, there are incidences when mankind is threatened by bioterrorism; in 1979, Anthrax spores are accidentally released in Sverdlovsk Russia and about 66 people died, in 1984 salad bars in Oregon town found contaminated with salmonella and more than 750 people become seriously ill, in 1991, UN finds out traces of anthrax, botulism and other toxins in Iraq, in 1995 Aum Shinrikyo released biological agents in Tokyo Subway killing more than 12 people, and in 2001, letters containing anthrax spores mailed to NBC News. This has pressed the bio scientist and decision-makers to think about how to confront the threats of bioterrorism to national and international security due to different types of bacteria and viruses' toxins and diseases caused by them has created real challenges.

About 14 countries haven't signed the convention – but even the 183 countries which are party to it, do not have any legislation for implementation, besides that we know there are no verification producers – this puts all the states globally on the stakes of bioterrorism, there is no universal method for control of disease outbreak and to cover the S&T and Biotechnological advances. Besides that, there is no global procedure for surveillance of the outbreak of infectious diseases. This has been quite obvious during the COVID-19 outbreak, even the UN and WHO have taken no combined action or there was no MOU between these organizations and the states. It seems that only stringent national implementation procedures and CBMs can help to control the threats from biological material.

Easy production of many bacteria has made bioterrorism threat easy – to control this and to put a lot of money in bio research the US coined the term such as of Emerging Infectious Diseases in 2001, has two other categories, the New Emerging Infectious Disease and Re-emerging Infectious Diseases. Emerging Infectious Disease means the disease of the future but with some R&D whereas new emerging disease is those on which no R&D is not done yet, so actually under these two categories we should be thinking of all future suspected diseases and their control, the re-emerging Infectious Diseases, are more dangerous especially for developing countries because these diseases re-appear with more resistant bacterial strains which are very difficult to control.

There are some Emerging Infectious Diseases mentioned by WHO such as, Crimean-Congo Haemorrhagic Fever, Ebola, Marburg, MERS, SARS, Nipah, Riffat-Valley Fever, some Re-emerging Infectious diseases such as malaria, tuberculosis and MBR causing global health-conscious as they are appearing with more drug resistivity. Besides this, New Emerging Infectious Diseases are causing more problems such as H5N1, Zika Virus. Although, very

few cases are reported, and in some cases, the origin is known and in some not. The scenario has now been changed a lot after the global outbreak of the COVID -19 pandemic, which is widespread but less lethal disease.

All infectious diseases are bacterial or viral and divided into three categories due to their potential of bioterrorism. The important factor I like to mention here that developed countries have their vaccine banks in which they keep important vaccines for their whole population in case of emergency. Whereas in developing countries can only imagine this and are very far away from these essential facilities and the developing countries have not even started any work in this direction.

Regarding the New Emerging Infection Diseases and Re-Emerging Disease, I like to discuss the important contributory factor of climate change, which plays an effective role in Re-Emerging Infection Diseases. Weather changes such as precipitation, temperature, drought, and flood have direct or indirect effects on outbreaks of infectious diseases transmitted by rodents, mosquitos, and water. Research groups worldwide are needed to develop a Predictive Framework to integrate knowledge from ecophysiology and modeling for effective control.

The most important potential of bacteria and viruses, due to which bioterrorism is more dangerous than chemical and nuclear terrorism. It is the incubation delay or period, which takes 7-20 days of disease to appear – no nation can protect its population by simply screening the travelers. To control bioterrorism as a priority, we have to develop stringent surveillance methods, efficient, rapid, and sensitive screening procedures of detection and efficient and fast methods of reporting.

It is also important to mention the Disease Early Warning System (DEWS). In which some national organizations collectively can play an important role. Some organizations can play a role in the surveillance and collecting the samples and the others for R&D findings to control the disease. When we examine the provisions of BWC it consists of XV articles, but for controlling the infectious diseases we are concentrating on Article IV and X and their effective implementation.

To fully implement BWC State parties are obliged to translate the commitments of the convention into effective national actions. These necessary measures depend on the circumstances and legal system of each state party and as such there can be different approaches to implement the provision of the convention nationally.

The most important thing in implementation, which has been emphasized in the seventh review conference in 2011, is the development of awareness and the Code of Conduct and Code of Ethics in industry, academic, and research organizations. Besides this, the other important thing is the strengthening of capacity building for surveillance and detection of emerging and Re-emerging infectious diseases outburst at the national and international levels, and now, the most important is collaboration at the international level to control these diseases. This will be the most important topic under discussion in the upcoming Ninth Review Committee Meeting in 2021.

Given the experiences gained particularly during COVID-19. There are some steps we should take nationally and also at the international level. Nationally we can protect people by taking important steps of vaccination and rapid connectivity. Confidence Building Measures, such as National procedures on risk assessment of Pathogens, processing, and handling and transportation. Licensing and registration of facilities, awareness, and education program of life scientists and a national body to implement.

A national Action plan could be implemented with three recommendations directly relevant to the topic of emerging and re-emerging of infectious diseases and control of bioterrorism. First to increase teaching and training, second to introduce disease early warning system and thus surveillance, detection, and efficient reporting and the third and last the develop good vaccine production facilities and a vaccine bank.

After the coronavirus outbreak and experiences gained, these national CBMs should be equally and globally strengthened. First, international collaboration is required between the United Nations, World Health Organization, the Australia Group, and the Wassenaar Arrangement. Second the global capacity of the UN and WHO should be increased in terms of effective role and testing. The ninth review conference in 2021 should work out a way forward to handle this kind of scenario in the future [1-12].

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