

## Biosafety and Biosecurity as Fundamental Components of Biological Non-Proliferation and Pillars of International Health Security

David Macedo\*

*Biosafety and Biosecurity as Fundamental Components of Biological Non-Proliferation and Pillars of International Health Security, Turkey*

### Abstract

The risk of terrorist or malicious acquisition of deadly pathogens or accidental release of a biological agent has decreased, and the safety of laboratory workers has increased as a result of increased international efforts to improve awareness of modern practices and concerns regarding the safe pursuit of life sciences research. Our goal is to draw attention to the ways in which the requirements for biosafety and biosecurity in the revised International Health Regulations of the World Health Organization, the Biological Weapons Convention, and Resolution 1540 of the United Nations Security Council overlap. This will help practitioners and policymakers better understand the requirements and make the most of the national resources used to comply with international mandates. These international instruments' significance as essential pillars of international health security and cross-cutting components of biological non-proliferation is emphasized by the wide range of their objectives, which are connected by the common thread of biosafety and biosecurity.

### Introduction

The possibility that rogue states and/or terrorists wilfully use biological agents as weapons of war adds to the global environment of biological threat. Any such application of a biological agent has the potential to have devastating effects on the environment or public health [1]. Since infectious diseases do not discriminate, it is a shared responsibility at the international level to implement effective and comprehensive biosecurity measures to stop the unauthorized possession, loss, theft, misuse, diversion, or intentional release of biological agents and toxins. When working with potentially infectious microorganisms and other biological hazards, biosafety refers to the implementation of laboratory practices and procedures, specific construction features of laboratory facilities, safety equipment, and appropriate occupational health programs [2]. Biosafety is a complement to biosecurity. The purpose of these measures is to lessen people working in laboratories, the general public, farmers, and the environment's exposure to biological hazards and potentially infectious agents. In recent years, laboratory-acquired infections (LAIs) have also begun to receive more attention, particularly in high- and maximum-containment (BSL-4) laboratories. LAIs can happen in animal facilities, clinical labs, or research labs. Sometimes, it's hard to tell if the infection came from the community or the lab. Because an infected laboratory worker may spread the infectious disease to his co-workers, family, or community as a whole, the LAIs also pose a serious threat to public health. Inadequate pathogen accounting, storage, and transportation may also contribute to the illicit acquisition of biological agents by terrorists or potential bio-criminals. Inadequate personnel training may also contribute to the risk of a LAI or other biological accident in the laboratory [3]. The implementation of international instruments for non-proliferation, summarized in the establishment of regional and international partnerships in countering biological threats—whether natural, accidental, or deliberate in nature are crucial factors in achieving global health security because there is no single technology or process that could be used to prevent or deter the use of biological agents as weapons. Biosafety and biosecurity are the pillars of global health security because they are at the intersection of public health and security and transcend national concerns. Each of these international instruments is covered in detail in this paper, which then shows Georgia's use of them to promote biosafety and biosecurity [4].

### Under the international health regulations, biosafety and biosecurity

The International Health Regulations' (IHR's) scope is "to prevent, protect against, control, and provide a public health response to the international spread of disease in ways that are commensurate with and limited to public health risks, and which avoid unnecessary interference with international traffic and trade," according to their 2005 mission statement [5]. The revised IHR provide new opportunities for the international community to strengthen public health capacities and collaborate with other nations and the World Health Organization (WHO) and include diseases with new and unknown causes, regardless of origin or source. States Parties are required to meet the core capacity requirements as soon as possible, but no later than five years after the Regulations' entry into force, following the IHR (2005)'s 2007 entry into force. States Parties had two years to evaluate their national structures and resources and create national action plans by June 15, 2007, and three years to meet the core capacity requirements by June 15, 2009. Core capacity 8, also known as the core capacity of the laboratory, refers to the quality services that depend on communication, specimen collection and transportation, financial resources, biosafety and biosecurity best practices, trained staff, appropriate infrastructure, appropriate equipment, and reagents, and the provision of reliable results [6]. A checklist of indicators that can be used for annual reporting on the IHR implementation to the WHA in accordance with Article 54.1 of the Regulations as well as for better targeting of WHO and Partner support to countries was also developed by the WHO for States Parties to monitor the development of the eight core capacities through

**\*Corresponding author:** David Macedo, Biosafety and Biosecurity as Fundamental Components of Biological Non-Proliferation and Pillars of International Health Security, Turkey, E-mail: david\_ms4@gmail.com

**Received:** 03-Mar-2023, Manuscript No. jbtbd-23-91962; **Editor assigned:** 06-Mar-2023, PreQC No. jbtbd-23-91962 (PQ); **Reviewed:** 21-Mar-2023, QC No. jbtbd-23-91962; **Revised:** 27-Mar-2023, Manuscript No. jbtbd-23-91962 (R); **Published:** 31-Mar-2023, DOI: 10.4172/2157-2526.1000324

**Citation:** Macedo D (2023) Biosafety and Biosecurity as Fundamental Components of Biological Non-Proliferation and Pillars of International Health Security. J Bioterr Biodef, 14: 324.

**Copyright:** © 2023 Macedo D. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

assessment and implementation. Additionally, these indicators are intended to inform the strategic planning process through a feedback process and provide information regarding improvement priorities [7]. In particular, the framework includes a set of ten global indicators for monitoring the comprehensive development, strengthening, and upkeep of States Parties' IHR core capacities and a set of 20 global indicators for monitoring the development of IHR core capacities. All States Parties are required to report these indicators annually to the WHA.

### **Biological weapons convention biosafety and biosecurity**

Every five years, the States Parties to the BWC hold Review Conferences, with the next one coming up soon. Between these Audit Gatherings, States Gatherings have sought after different exercises and drives to fortify the viability and work on the execution of the Show [8]. For instance, the 2006 BWC 6th Survey Gathering made the intercessional interaction, which comprises of four arrangements of yearly gatherings preceding the Seventh Survey Gathering each set incorporates a one-week Meeting of Specialists, trailed by a one-week Meeting of States Gatherings laid out the Execution Backing Unit (ISU); formulated a strategy for achieving universality and enhancing national implementation; improved the process of exchanging information about Confidence Building Measures (CBM); worked on enhancing assistance provisions; and established a nationwide contact network. CBMs were first agreed upon at the Second Review Conference in 1986 "in order to improve international cooperation in the field of peaceful biological activities and to prevent or reduce the occurrence of ambiguities, doubts, and suspicions." In 1991, the CBMs underwent significant expansion and modification. Although it is anticipated that the Seventh Review Conference will carry out a significant review of the current CBM forms and content in 2011, they have not been altered since [9]. Information about a variety of BWC-related activities, including unusual infectious disease outbreaks, national biological defense research and development programs, vaccine production facilities, and research centers and laboratories, is shared on a voluntary basis through the CBMs. Since the CBMs are not legitimately restricting (i.e., not needed by any article of the Show), but rather settled exclusively as deliberate politically-restricting measures, support in the CBMs isn't general or reliable from one year to another. States Parties are encouraged to implement national legislation to enforce the BWC's provisions to prohibit and prevent the development, production, stockpiling, acquisition, retention, transfer, or use of biological weapons by anyone under their jurisdiction, as well as parallel measures to prohibit and prevent encouraging, inciting, or assisting others in any of these acts, in order to ensure that the BWC's tenets are adhered to. However, it is up to the discretion of each State Party to determine the specific measures required to achieve these objectives and implement the Convention's provisions. In view of the understandings and arrangements came to generally at the Audit Meetings, public implementation of BWC incorporates

regulative, managerial, and different measures to improve home-grown consistency with the BWC; systems for national export control; measures for education, outreach, and raising awareness; disease monitoring, detection, and control; as well as provisions for biosafety and biosecurity [10]. The consensus reached at the 2008 BWC Meeting of States Parties is highly relevant in this context: States Parties agreed on the value of...international cooperation on biosafety and biosecurity at the bilateral, regional, and international levels. They also agreed that pursuing biosafety and biosecurity measures could also contribute to the fulfillment by State Parties of other respective international obligations and agreements, such as the revised IHR of the WHO and relevant codes of OIE [the International Organization for Animal Health]. States Parties also agreed that biosafety and biosecurity measures are appropriate means of implementing the BWC.

### **Conclusion**

The aforementioned international instruments are all components of the so-called "web of prevention" designed to address the myriad health and security issues facing the world today. By involving civic, scientific, and government capacities in its outreach events, Georgia is promoting participation in and compliance with international arms control, disarmament, and non-proliferation efforts and fostering a culture of security and responsibility at the national and international levels; bolster international efforts to defend against biological threats; what's more, further develop sickness regulation and reaction if there should be an occurrence of flare-ups whether because of regular, coincidental, or purposeful causes.

### **References**

1. Wang X (2019) Era of biological security. *Int J Biosaf Biosecurity* 1(1): 13-14.
2. Xia H, Yuan Z (2022). High-containment facilities and the role they play in global health security. *Int J Biosaf Biosecurity* 4(1): 1-4.
3. Novosiolova T, Whitby S, M Dando, Shang L (2022) Strengthening biological security after COVID-19: Using cartoons for engaging life science stakeholders with the Biological and Toxin Weapons Convention (BTWC). *Int J Biosaf Biosecurity* 18(9): 68-74.
4. Houser RS, Koblenz GD, Lentzos F (2023) Understanding Biosafety and Biosecurity in Ukraine. *Health Secur* 21(7): 70-80.
5. LeDuc JW, Yuan Z (2019) Safety and security in the age of synthetic biology. *Int J Biosaf Biosecurity* 1(2): 77-79.
6. Franz DR (2019) Facilities equipment and procedures: An historic glimpse at high-containment lab safety and security. *Int J Biosaf Biosecurity* 1(3): 98-99.
7. Soisangwan P (2021) Biosafety and biosecurity law in Thailand: From legislation to practice. *Int J Biosaf Biosecurity* 3(2): 91-98.
8. Xu J, Yuan Z (2019) Inaugural editorial: Towards evidence-based biosafety and biosecurity. *Int J Biosaf Biosecurity* 1(1): 1-2.
9. Zhang Y, Zhang H (2020) Capacity building of biosafety Laboratories, a 2019 side event of expert meeting on biological weapons convention, was held in UN Geneva. *Int J Biosaf Biosecurity* 2(1): 1-2.
10. Wei H (2019) Strengthening global biosafety capacity. *Int J Biosaf Biosecurity* 1(1): 1-10.