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Managing Global Biological Risks: Towards a Security-Health Coordination Framework

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SYNOPSIS

The task of securing the world against biological risks is complicated by enforcement and information challenges. A security-health coordination framework is crucial for securing cooperation among a diverse set of actors with different but converging mandates.

COMMENTARY

If the COVID-19 pandemic taught the world anything, it is that global health systems were unprepared for a crisis of that scale. The challenge now is whether those lessons will be applied to strengthen defences against the next unknown biological threat – [Disease X](#).

The protection against global [catastrophic](#) biological risks is currently included in several international conventions and policies, each with its own definitions of what is being secured and against whom. There is the need for a *Security-Health Coordination Framework (SHCF)* to harmonise approaches and definitions.

This framework operationalises the broader notion of promoting health security, i.e., the promotion of global health as a public good. Specifically, an SHCF serves to engage security and health actors in improving the implementation of protocols related to their respective mandates.

The Global Landscape for Mitigating Catastrophic Biological Risks

One type of biological threat focuses on biosecurity, traditionally seen as preventing pathogens from being misused by ill-intentioned actors.

Key security-focused conventions addressing biosecurity include the [Biological Weapons Convention \(BWC\)](#), which prohibits the development, production, stockpiling, and use of biological and toxin weapons, and [UN Security Council Resolution 1540](#), which mandates that states prevent non-state actors from acquiring weapons of mass destruction, including biological weapons, for harmful purposes.

Organisations like the World Health Organization play a crucial role in global biosecurity governance, particularly through laboratory [guidelines](#) and the broader [International Health Regulations](#), which aim to prevent and respond to public health emergencies.

This contrasts with *biosafety*, on the health side, which focuses on protecting individuals, laboratories and communities from accidents within laboratories.

The traditional health ambit also includes managing emerging and re-emerging diseases that could result from climate-induced animal migration and disease movements. The [World Organisation for Animal Health](#) focuses on preventing the transmission of zoonotic diseases, while the [Food and Agriculture Organization](#) addresses biosecurity in agriculture, including food safety and plant protection.

These frameworks, while distinct in their mandates, intersect in managing biological risks. They therefore require the cooperation of all sectors in ensuring a robust framework for mitigating such risks globally.

Challenges in Managing Global Biological Threats

The BWC, as the primary overarching international instrument governing biological agents with a degree of transparency and verification mechanisms, provides a good starting point for promoting cooperation among countries.

However, a significant gap with the BWC compared to other weapons conventions is the absence of a centralised oversight institution for biological weapons, such as the International Atomic Energy Agency for nuclear weapons and the Organisation for the Prohibition of Chemical Weapons for chemical weapons. This lack of institutional oversight hampers efforts to ensure compliance, transparency, and accountability in the global biosecurity framework.

Additional challenges arise from the unique nature of biological threats. In contrast with nuclear and chemical threats, which are constrained by the need for specialised materials and infrastructure, biological threats (such as pathogens) are practically invisible, self-replicating, and capable of evolving, making containment very difficult.

Once released, pathogens can spread unpredictably across borders, mutate into more virulent or drug-resistant forms, and remain in the environment or host populations indefinitely, complicating response and mitigation efforts.

Additionally, chemical and nuclear threats are largely man-made and state-controlled. On the other hand, biological threats can emerge naturally through pandemics and zoonotic spill-over events, making it impossible to eliminate risk and requiring continuous surveillance, preparedness, and rapid response capabilities.

The Need for a Security-Health Coordination Framework

The health sector is more difficult to govern since it is relatively decentralised and involves multiple actors and agencies. These include private companies developing biotechnology products, government hospitals, research agencies and laboratories.

Myriad avenues exist for actors to misuse biotechnology products; even the simplest R&D processes can have a dual-use that could inflict significant harm on nations or groups.

Implementing the provisions of the BWC, therefore, requires further cooperation from health actors and the broader institutions for health-related biosecurity governance to enable credible reporting of countries' practices for mitigating biological risks.

These health actors possess the necessary infrastructure and critical data detect, assess, and respond to biological threats across different sectors. They are also uniquely adept at diagnosing and treating infectious diseases, which are crucial in distinguishing between natural outbreaks and potential attempts at bioterrorism.

At the same time, the health sector will need to work closely with the security sector in developing and enforcing biosecurity guidelines for risk assessment, threat mitigation, and crisis response planning. For instance, preventing the illicit trade of wildlife is not strictly within the purview of health agencies, but rather under the jurisdiction of trade and border control officers. Yet, such goods can be sources of zoonotic diseases, especially for countries which share land borders, hence requiring greater capacity to monitor these borders.

Furthermore, improper storage practices for licit goods can lead to an increase in infections among animals which could lead to disease evolution and possibly zoonoses, as evidenced by the findings of an increase in [rat coronaviruses](#), from the earlier stage in the supply chain when rats are caught, to the time when they are sold in wet markets and restaurants in certain countries.

Military medicine best exemplifies the intersection of security and health by combining medical expertise with strategic preparedness to address biological threats and public health emergencies. It can play a [crucial role](#) in biodefence, disease surveillance, and outbreak response, often pioneering advancements in vaccines, medical countermeasures, and trauma care that benefit both military and civilian populations.

However, a key downside is that military medicine typically operates within the defence community, limiting broader engagement with civilian health sectors and public health networks. Its association with national security may also lead civilian health institutions to be sceptical of defence-driven biosecurity policies.

Finding a Common Language

A critical challenge and starting point in rolling out an SHCF involves addressing differences in definitions over what is being secured, or securitised, and against whom.

The security sector typically views biosecurity through the lens of national defence and

threat prevention, focusing on preventing the deliberate misuse of biological agents, controlling access to sensitive materials, and enforcing strict regulations. In contrast, the health sector leans more towards biosafety, prioritising the protection of researchers, healthcare workers, and the public from accidental exposure to infectious agents, as well as ensuring adherence to laboratory best practices and effective disease surveillance.

Moving forward, finding common ground in addressing these differences is crucial for facilitating collaborative decision-making and increasing trust between sectors and actors. Developing integrated biosecurity strategies will ultimately strengthen global responses to present and future biological threats. To begin with, there is a need for a Security-Health Coordination Framework to harmonise the approaches and definitions.

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