

Powerful actor, high impact bio-threats – initial report

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In partnership with the Future of Humanity Institute, University of Oxford; Center for Health Security, the Bloomberg School of Public Health, Johns Hopkins; and the Nuclear Threat Initiative

From 7-9 November 2018, 42 senior policy leaders and scientific and technical experts in science, engineering, bio-defence and bio-security, science policy, public health, infectious diseases, and catastrophic risks gathered at Wilton Park to consider powerful actor, high impact bio-threats. For the purpose of the meeting, high impact bio-threats were considered to be deliberate or accidental biological events with population-wide consequences – including deliberate development and use of biological weapons.

Statement of participants

High impact bio-threats have the potential for global catastrophic, population-wide consequences and urgent actions on a global scale are needed to mitigate the consequences posed by them. We commit ourselves to working within our countries and regions to mitigate the conditions that could drive the development and use of high consequence bio-threats that could cause grave population-wide effects, including biological weapons, as well as accidental releases of dangerous agents or materials developed through biotechnology and living systems.

The meeting heard:

- Powerful actors, such as states, have in the past attempted to develop biological weapons intended for wide-area dispersal or high-consequence impact. These efforts were driven or inhibited by a wide variety of factors, including geopolitical factors and technical opportunity.
- Developments in science and technology could significantly ease the development and use of high consequence biological weapons, result in accidental releases and have an impact on the desirability of, demand for, or capacity to develop, acquire or use biological weapons, which could represent high impact bio-threats.
- Current international arrangements have existing mandates relevant to preventing the development and use of high impact bio-threats, but there may be practical limits on what could be achieved through such arrangements. Relevant initiatives include the Biological Weapons Convention, Global Health Security Agenda, Global Partnership against the Spread of Materials and Weapons of Mass Destruction, as well as the activities of health organizations such as the World Health Organization, World Organization for Animal Health and the United Nations Food and Agriculture Organization.

The meeting considered:

- What are the key drivers that could make high-consequence biological weapons become likely to be pursued in the coming years?
- What would specifically make powerful actors more likely to pursue biological weapons which could pose high impact bio-threats?
- What scientific advances are more likely to increase the risk of development and use of high consequence biological weapons?
- What are the gaps and vulnerabilities in the international prevention, detection, and response architecture related to high impact bio-threats?

The nature of the risk - areas of consensus and differences of opinion:

Participants explored areas of consensus, or differences of opinion, on the nature of the risk posed by powerful actor, high impact bio-threats, factors which may influence its likelihood, and options for preventing, mitigating or managing such a risk, specifically when polled anonymously:

Almost all participants (over 90%) agreed that:

- All states have the responsibility to protect against the development or use of a high-consequence bio-weapon within their territories.
- Scientific researchers, their institutions, and non-governmental global networks (e.g. scientific consortia or organizations) have a responsibility to assess and mitigate the risks posed by advances in science and technology that reduce the barriers to acquiring bio-weapons.

A notable majority of participants (over 75%) agreed that:

- Advances in science and technology are notably reducing the barriers to acquiring bio-weapons that could result in a high-consequence impacts such as catastrophic epidemics.
- If high-consequence bio-weapons become more attainable the taboo against them becomes more important in the absence of effective ways to prevent their development or mitigate their impact.
- Advances in understanding life sciences or biological processes could produce more selective and controllable bio-weapons which could challenge the current taboo.
- Given the possibility for researchers to create novel pathogens (or new strains of pathogens) that are both highly virulent and highly transmissible and thus represent new potential pandemic threats, high level international dialogue should be established to recommend whether and how nations fund this work, and if so, what controls and oversight are necessary.
- Funders of biotechnology companies and biological research laboratories should actively invest in reducing the potential for catastrophic biological risks associated with the research and development conducted by the organizations they support. Insurers of biotechnology companies should actively evaluate potential catastrophic biological risks associated with organizations they insure.
- If there is a potential for catastrophic epidemics from high-consequence bio-weapons, commensurate resources need to be committed to preventing, detecting and responding to such events.
- A suitable international forum should be found to develop and agree common standards for emergency-use licensing for and rapid scale-up manufacturing of diagnostics, therapeutics, vaccines and other public health interventions during health emergencies, including those potentially caused by bio-weapons.
- The current international system for non-medical public health interventions – including contact tracing, patient isolation and distributing and dispensing associated supplies – is grossly unprepared for high consequence bio-weapons events.

Most participants (over 60%) felt that:

- Time should be set aside in all future meetings of the BWC and GHSA to specifically consider risks and responses from high-consequence bio-weapons.
- At a minimum, resources comparable to those provided to the Chemical Weapons Convention (€67m in 2018) should be made specifically available for addressing the bio-weapons threat (e.g. the BWC).

Very few participants (fewer than 15%) felt that:

- If resources were made available, existing fora (such as the BWC, GHSA, GP, WHO, OIE, FAO, etc.) will adequately address the risks posed by high-consequence bio-weapons.

Almost no participants (fewer than 10%) felt that:

- Current national and international initiatives to address bio-risks sufficiently cover risks from high-consequence bio-weapons.

Almost all participants also agreed that it would be useful to have another meeting in the future to further explore the risks posed by powerful actor, high impact bio-threats and opportunities to prevent, manage and mitigate them.

New approaches for preventing, mitigating and managing powerful actor, high impact bio-threats

Participants discussed three propositions associated with powerful actor, high impact bio-threats. During the course of the discussion, they identified several potential new approaches for preventing, mitigating or managing powerful actor, high impact bio-threats, including:

1. Strengthening the taboo against high impact bio-threats

Participants explored new ideas for global approaches to strengthen the taboo against high impact bio-threats, including:

- Develop a strategic plan to raise awareness of the risk (among both policy makers and general publics) without exacerbating the risks by increasing drivers for acquisition and use. This would include outreach campaigns, regional dialogues and next generation champions and ambassadors.
- Support work on codes of conduct – potentially combining current diplomatic initiatives with revisiting the IAP-Global Network of Science Academies Statement on Bio-security.
- Promote research coordination networks on a global scale that also share functional, technical, and policy norms and enhance transparency among researchers to strengthen the taboo/promote global bio-defence.
- Develop global system of international penalties for deliberate misuse and for accidents.
- Pilot concepts for awarding a 'seal of approval' among researchers or institutions to develop incentives for responsible science and disincentives for irresponsible behaviour.
- Strengthen the Biological Weapons Convention (BWC). Expand resources for the BWC Implementation Support Unit. Use the 50th anniversary of BWC to reaffirm importance of the taboo/norm at a high political level. The outcomes from this Wilton Park meeting should be briefed to the BWC Meeting of States Parties.
- Broaden norms to include attacks on basic public health infrastructure, including learning lessons from the wars in Syria and Yemen.
- Support exchange programmes between defence and academic institutions to break down barriers.

2. Reducing the likelihood for advances in science and technology to increase the potential for intentional misuse or accidental release

Participants explored new ideas and specific steps that can be taken to reduce the likelihood for advances in science and technology to increase potential for high impact bio-threats, including:

- Develop a strategic plan for support and investment for broad-spectrum countermeasure development and rapid scale up, distribution and flexibility of manufacturing.
- Incentivize innovation in bio-security including the development of an X-Prize / grand challenge for bio-defence and developing a network of technical experts (global bio-security corps) focused on bio-security, which prioritizes both innovation and inclusion of experts from around the world.
- Compile a list of high-consequence biological accidents to raise awareness about risk.
- Introduce a new prize, such as a Nobel Peace Prize category, to reward steps taken prevent development and use of high-consequence bio-threats.
- Improve capability and tools for attribution, such as creating a voluntary registry of personal style signatures for synthetic biologists and capabilities to detect and monitor cases of misuse.
- Explore global oversight mechanisms for research that enhances the transmissibility or virulence of pathogens with pandemic potential. The WHO Committee for Variola Virus Research was discussed as a potential model.
- Develop universal global approaches for screening orders and customers for enabling technologies (including DNA synthesis screening).
- Recognize and work to mitigate risks of misuse associated with enabling technologies and services such as DNA synthesis and cloud labs.

3. Filling gaps and vulnerabilities in international capacity to respond to high impact bio-threats

Participants explored new ideas and specific steps that can be taken to fill gaps in international capacity and bio-risk reduction:

- Develop an international response framework that maps gaps in the response architecture for biological weapons events and conduct table-top exercises that take this into account. Participants noted this could be achieved either by mapping, planning and practicing inter-organization efforts or through the creation of a dedicated international organization.

- Employ regular and ongoing bio-science / bio-security outreach for diplomats at relevant international forums, and educate policymakers about security risks associated with science and technology.
- Harden global public health infrastructure against the threat of attack and deter and defend against specific disinformation designed to subvert response capacity.
- Provide resources to fill gaps identified by the WHO Joint External Evaluations and EU CBRN assessments and bolster the Global Health Security Agenda.
- Develop global norms on access and benefits sharing beyond the Pandemic Influenza Preparedness (PIP) framework.
- Strengthen focus on non-pharmaceutical, non-medical interventions for large-scale outbreaks.

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