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It's time to modernize the bioweapons convention

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On November 7, the Eighth Review Conference of the Biological Weapons Convention will commence in Geneva. Convened every five years, these meetings are an important opportunity to take stock of the treaty and its contribution to the global biosecurity regime.

The bioweapons convention is the cornerstone of the bioweapons nonproliferation regime. Together with the 1925 Geneva Protocol, it upholds a complete ban on the development, production, and use of biological weapons. The norm against these weapons is exceptionally strong. No state openly admits to pursuing a biological weapons capacity, and membership in the treaty continues to grow. Yet while the convention is not failing, it is not flourishing either. It lacks a dedicated forum to assess treaty implications of scientific advances, a robust institutional capacity, organized means of helping member nations meet their obligations, provisions for verifying compliance, and an operational role to respond in cases of a serious violations. The upcoming review conference provides a welcome opportunity to begin rectifying some of these shortcomings.

The risk of irrelevance. The review of science and technology has been a standing agenda item of the treaty's intersessional meetings over the last four years. While this sustained focus was a marked improvement, the overall experience has been disappointingly uneven. Despite rapid scientific and technological advances that have lowered the “**barriers to acquiring and using a biological weapon,**” the bioweapons convention has been unable to provide a forum where crucial contemporary debates about new developments—including **gain-of-function experiments, potential pandemic pathogens, Crispr and other genome editing technologies, gene drives, and synthetic biology**—can take place internationally. Many organizations and governments recognize the need for reform. The **InterAcademy Partnership** of national science academies has been particularly active in developing ideas and facilitating discussions on science and technology review, and a number of states, including **Finland, Norway, Sweden, Spain, Switzerland, Russia, the United Kingdom,** and the **United States,** have put forward concrete suggestions for how to improve the review process, but major disagreement remains on the purpose, structure, membership, and funding of the science advisory group.

And it is not just relevant scientific debates that are taking place elsewhere. The center of efforts to prevent biological terrorism and the spread of bioweapons is starting to shift away from the convention toward UN Security Council Resolution 1540. First approved in 2004, this measure imposes an obligation on all UN members to improve their legal authorities and bureaucratic capacities to prevent non-state actors from acquiring, developing, or using nuclear, biological, and chemical weapons. While the bioweapons treaty provides one of the foundations for 1540's mandate, the resolution appears to be becoming the preferred international vehicle for enhancing biosafety, biosecurity, export controls, and the criminalization of biological weapons. This situation is due in large part to the stronger political backing and larger administrative capacity devoted to the implementation of 1540. While the convention's administrative body, the Implementation Support Unit, has a staff of three that reports to the UN Office of Disarmament Affairs, the 1540 Committee is composed of diplomats from 18 nations, is supported by a group of nine experts on loan from their home countries, and reports to the Security Council. While the overall bioweapons nonproliferation regime has benefited greatly from 1540, without a major influx of resources to the treaty's implementation unit, the original mission of the regime risks becoming relegated to better-funded organizations.

Such a shift would also have ramifications for the way in which the convention reaches out to stakeholders—from scientists and science academies, health professionals and first

responders, to members of humanitarian organizations, academia, and the private sector—and incorporates them into discussions about biological risk management. Because the 1540 Committee is focused primarily on nuclear proliferation, it concentrates on reducing material- and equipment-based threats, privileges legal tools such as criminalization and export controls, and engages with stakeholders at arm's length. While that approach makes sense for the 1540 Committee, given the resolution's origin as a response to the September 11 terrorist attacks and revelations about the A. Q. Khan nuclear proliferation network, it is not comprehensive enough for the biological field, where arms control and nonproliferation efforts are primarily about the ongoing management of a knowledge-based risk. Hence the need for the bioweapons convention to regain its rightful place as the premier international forum for countering biological terrorism and proliferation, a need that can best be met by giving the treaty's implementation unit more funding and resources.

Finally, the review conference should also address the issue of transparency, which is an important tool for reassuring members of one another's compliance with treaty obligations. The last two decades have seen a dramatic increase in biodefense activities and the number of facilities and researchers working with dangerous pathogens around the world. This has generated a number of trade-off risks related to safety, security, responsible science, and particularly transparency. A major risk here is that these expanding activities could be used as a cover for an offensive bioweapons program, or could be *perceived* as such. This, in turn, can provide other states with a justification for initiating or continuing offensive biowarfare programs. Only by encouraging trust and transparency among its members can the treaty hope to prevent such an escalation.

Making reforms work. In anticipation of the Eighth Review Conference, the Biodefense Graduate Program at the Schar School of Policy and Government, at George Mason University, and the Department of Global Health & Social Medicine, at King's College London, convened a small roundtable of academics, policy makers, and former government officials from the United States and the United Kingdom to consider the state of the bioweapons convention and the challenges it is facing. Three strong themes, discussed above, emerged from the talks: adapting to advances in biology and the life sciences, countering treaty marginalization, and increasing the transparency of biodefense programs. It is imperative for the review conference to take concrete steps to address these shortcomings.

First, members should decide to organize the review of relevant developments in science and technology more systematically, and resource it more fully, through an Open-Ended Working Group on Science and Technology supported by additional dedicated staff assigned to the Implementation Support Unit. The working group should be composed of experts nominated by governments and supplemented by specialists from academia, civil society, and industry, and it should regularly review advances in science and technology and assess potential impacts (both positive and negative) on the objectives of the bioweapons convention. The rapid pace of scientific innovation and unexpected breakthroughs, such as the recent discovery of the gene-editing tool Crispr, argue for a flexible approach that can draw on a wide range of expertise as needed. The working group should also be empowered to produce recommendations to member states.

Second, the review conference needs to renew the mandate of its implementation unit, and more importantly provide it desperately needed resources to expand its size and give it a realistic operating budget. Five years ago the Seventh Review Conference added new tasks to the unit but, at the last minute, refused to pay for them. As a result, the unit has had to draw attention, in each of its annual reports since 2012, to the work it has not been able to do, for lack of resources. Increasing the staff of the unit by two positions, including staff dedicated to overseeing the science and technology process, is a reasonable proposition. A better budget would still only ask treaty members to contribute **less than 5 percent** of what member nations are required to give the Organization for the Prohibition of Chemical Weapons, the inspection agency of the Chemical Weapons Convention. Even allowing for major differences between the two conventions in terms of institutional capacity and international verification activities, this is disproportionate. Running the bioweapons convention on an inadequate budget sends a terrible message about how seriously its members regard the treaty as part the bioweapons nonproliferation regime, not to mention how seriously they prioritize implementation.

Finally, treaty members should set up an Open-Ended Working Group on Providing Reassurance to encourage transparency and participation in “peer review” exercises to reassure one another that biodefense programs are in full compliance with the convention. Unusually for an arms control treaty, the bioweapons convention was agreed to without a system for routine on-site verification activities. Efforts to introduce a legally binding verification mechanism for the treaty have failed in the past, and developments in the political, security, and scientific contexts are making it increasingly clear that a fully

effective verification system, or for that matter absolute certainty about the full compliance of treaty members, is exceptionally difficult.

Yet this does not mean that it is impossible for states to be assured that other nations are abiding by their treaty obligations. There are a number of actions and activities that cumulatively may give a reasonable indication of a member nation's compliance status over time. Most states with biodefense programs recognize their special responsibility to ensure high standards of transparency. They submit declarations about their programs, as required under the treaty's confidence-building measures, to reassure other states that their activities are solely for peaceful purposes. To maximize their transparency, an increasing number of states (as of this year, 18 of the 29 members with declared biodefense programs) are now also making their declarations publicly available. Recently, a small number of states, including France, Germany, Belgium, and the Netherlands, have voluntarily gone even further by inviting experts from other states, including non-government experts, to their biodefense facilities for interactive information exchanges and on-site visits. These innovative peer-review exercises are designed to provide reassurance through transparency and must be strongly endorsed at the Eighth Review Conference. It is through these sorts of initiatives that member nations can develop common understandings of how best to reassure one another, and the wider world, that their biodefense activities serve "prophylactic, protective and other peaceful purposes" and therefore are permitted by the treaty.

The Eighth Review Conference provides an opportunity to revitalize the bioweapons treaty by taking concrete actions to expand its relevance, enhance its capacity to review developments in science and technology, and strengthen the confidence of nations in the peaceful intentions of their fellow treaty members. These proposed measures will also enable the regime to play a leading role in the global dialogue on preventing the misuse of biology. The repeated use of chemical weapons by Syria and the Islamic State should serve as a stark reminder about the importance of ensuring that advances in the life sciences—which have the potential to create weapons exponentially more dangerous than chlorine barrel bombs—are not exploited by states or non-state actors for hostile purposes.