

**Written evidence submitted by Dr Filippa Lentzos and Professor Michael S. Goodman,  
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*King's College London is a public research university with a [vision](#) to make the world a better place. One of King's strategic priorities is to serve, shape and transform the local and international communities with which it engages. The [Department of War Studies](#) is one of the only academic departments in the world focused on understanding the complex realm of conflict, security and international politics through inter-disciplinary teaching, research and engagement. Dr Filippa Lentzos is a Senior Research Fellow in the Department focused on biological security; Dr Michael Goodman is Professor of Intelligence and International Affairs, and Head of the Department.*

We thank you for the opportunity to present our views on biosecurity risks and biopreparedness.

We second what others (e.g. Dr Patricia Lewis in evidence BNS0008) have already emphasised at the national level. In particular, the need for:

- Annual reporting on the state of national preparations by the government.
- Regular scrutiny by parliamentary committees.
- A dedicated minister for national crisis preparedness.
- Ring-fenced funding lines for preparedness.
- Clear responsibilities for the logistics of preparedness.
- Inclusive and regular drills and table-top exercises.
- Safeguarding national capacity to manufacture critical biosecurity and pandemic supplies.

Internationally, we add that **the UK should lead, or co-lead, efforts to make the global biological security architecture more fit for purpose.** Key elements we deem essential are:

- An international coordinating body, ideally UN-based, to monitor and inspect high-containment facilities and high-risk biological activities.
- Action plans, and subsequent implementation plans, to strengthen national, regional and international capacities to identify, respond and mitigate disease outbreaks.
- An international body, at the nexus between public health and security and ideally UN-based, with a mandate to investigate suspected outbreaks of international concern as soon as initial reports emerge, and regardless of any indications of it being natural, accidental or deliberate.
- A standing coordinating capacity, ideally UN-based, to conduct independent, in-depth investigations of suspected bioweapons use.
- A framework to coordinate an international response following any confirmed use of biological weapons.

Like others, we stress the importance of a 'one health' approach and of enhancing preparedness across the entire biological threat landscape. Covid-19 has demonstrated the deep and wide impacts, and the significant national security risks, of pandemics. While Covid-19 has highlighted threats from natural and emerging diseases, **threats from accidental and deliberate biological threats must not be under-estimated.**

Globally, there are well over 50 high containment (Bio Safety Level (BSL)-4) laboratories, either in operation or under construction, spread throughout Asia, Africa, Europe, Russia and the US. These labs carry out some of the most dangerous manipulations of pathogens with pandemic potential. While they are built to protect researchers, the public and the environment from harm, lab design cannot overcome human error or poor training. With each experiment comes opportunities for accidental exposures and inadvertent infections or releases. Accidents happen all the time in labs around the world, as highlighted for years by [expert communities](#), and more recently in publicly accessible, in-depth articles by [The New Yorker](#) and the [South China Morning Post](#).

Moreover, should the intent be there, advances in science and technology, and especially in genomic technologies, are significantly facilitating: the enhancement of pathogens to make them more dangerous; the modification of low-risk pathogens to become high-impact; the engineering of entirely new pathogens; or even the re-creation of extinct, high-impact pathogens like the variola virus that causes smallpox. These possibilities are coming at a time when new delivery mechanisms for transporting pathogens into human bodies are also being developed. In addition to the bombs, missiles, cluster bombs, sprayers, and injection devices of past biowarfare programs, it would now also be technically possible to use drones, nano-robots, and even insects.

An additional significant emerging threat we would like to highlight stems from the combination of genomic technologies with artificial intelligence (AI), machine learning, automation, affective computing and robotics. This merger will enable an ever more refined record of our biometrics, emotions and behaviours to be captured and analysed. Governments and, increasingly, private companies will be able to sort, categorise, trade, and use biological data far more precisely than ever before, creating unprecedented possibilities for social and biological control. These game-changing developments will deeply impact how we view health and treat disease, how long we live, and how we consider our place on the biological continuum. They will also radically transform the dual-use nature of biological research, medicine and health care, and create the possibility of novel biological weapons that target particular groups of people and even individuals. In the coming decade, managing the fast and broad technological advances now under way will require new governance structures that draw on individuals and groups with cross-sectoral expertise—from business and academia to politics and defense—to identify emerging security risks and make recommendations for dealing with them.

Covid-19 has thrown into sharp relief a problem faced by all governments: how to successfully predict and prepare for a host of threats to citizens and to national security. Some threats, like Covid-19, are largely anticipated but not adequately planned for; others are not anticipated and, for the most part, not planned for; and some threats are planned for, but fail to materialise as predicted due to errors and biases in the analytic process. Governments have long tried to employ a set of futures approaches to ensure they are ready for the next crisis. In practice, these are often general, ad hoc, unreliable, methodologically and intellectually weak, and lacking academic insight. The result is that governments are wary of building on the recommendations of much of this futures work, and therefore avoid it in policy planning, in real terms funding and, ultimately, in practice and institutionalisation.

We believe **the UK should pioneer a new vision of ‘strategic awareness’** that goes beyond the simple idea of providing a long-term appreciation of the range of possibilities that the future might hold, to include the means of communication with governments about their receptivity to intelligence and manner in which they act as a result. Strategic awareness

should therefore be conceptualised in three ways: 1) looking more seriously and closely at threats; 2) investing in prevention and foresighted action; and 3) preparing for mitigation, crisis-management and bounce-back in case a threat cannot be wholly prevented or deterred. This will require a paradigm shift in how government practices strategic awareness, and the academic community must play an integral part in that.

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