How to Avoid Human-Made Pandemics

Dr Filippa Lentzos
King’s College London

Contents

Tools enabling global biomedical research

- Some tools are the old school stock-in-trade of classical virology
- Others are tools that biologists and life scientists have had access to for some time, but that are accelerated by the constant advance of biotechnology.
- New tools we are only beginning to understand how they will be used in biological research

Biorisks are real because....

- There have been historic ‘lab leaks’ and today there are more labs and more people working with pathogens than ever before
- There is now more high-risk bioresearch than previously
- There have been intentional releases of pathogens
- There have been significant BW programs in the 20th century, with purposful research into making pathogens more virulent and more transmissible
- Indistrial espionage, cybe theft, academic infiltration and early-stage investment in start-ups as a means to access S&T innovation are on the rise

WEF Global Risks Report 2025

“It is becoming easier for threat actors to make use of advances in biotech to modify or create new biological agents, which if released could lead to pandemics or be used in targeted biological attacks.”

“Advances in AI-driven biotech will make biological weapons easier and cheaper to develop over the next decade. The weapons themselves could be made more harmful than previous versions. Or they could be different to those previously built in that they might eventually be focused on specific target groups of people based on genetic characteristics, leaving other people unharmed.”

WEF Global Risks Report 2025

“Unless comprehensive global ethical boundaries are set for biotech developments, then ethical concerns are likely to be disregarded by some, leading to new sources of division and conflict within societies.”

Advocates for a global ethical oversight body to direct government efforts. “Pending such an intergovernmental agreement, which could take years, a less ambitious objective for the short term would be to establish and agree on a set of broad norms to guide government policies on biotech worldwide.”

Development of a WHO Global Public Good

Consultative, participatory and multidisciplinary approach

2020

3 dual-use research of concern dialogues

2021

5 thematic working groups (35 meetings)

2 consultative meetings

2022

Public online consultation

External review group

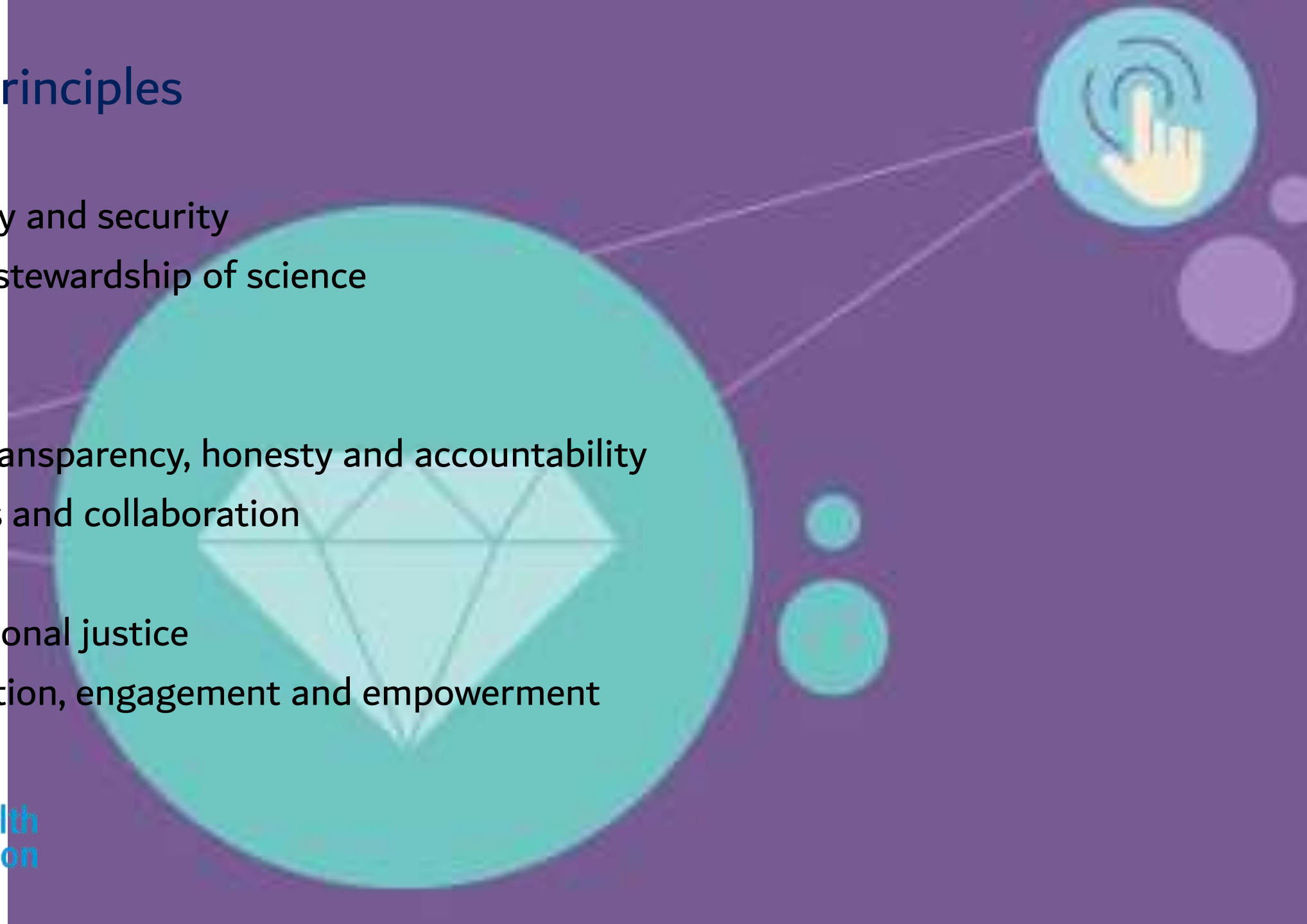
Edit and design

Launch

Dissemination and Implementation

Values and principles

1. Health, safety and security
2. Responsible stewardship of science
3. Integrity
4. Fairness
5. Openness, transparency, honesty and accountability
6. Inclusiveness and collaboration
7. Social justice
8. Intergenerational justice
9. Public education, engagement and empowerment



World Health Organization

A Task Force on Research with Pandemic Risks

An independent panel of 28 international experts.

Remit: To consider the potential benefits and potential harms of the small subset of research that could plausibly source a large disease outbreak due to accidental or inadvertent actions during research, or that results in information that could be misused by a malicious actor.

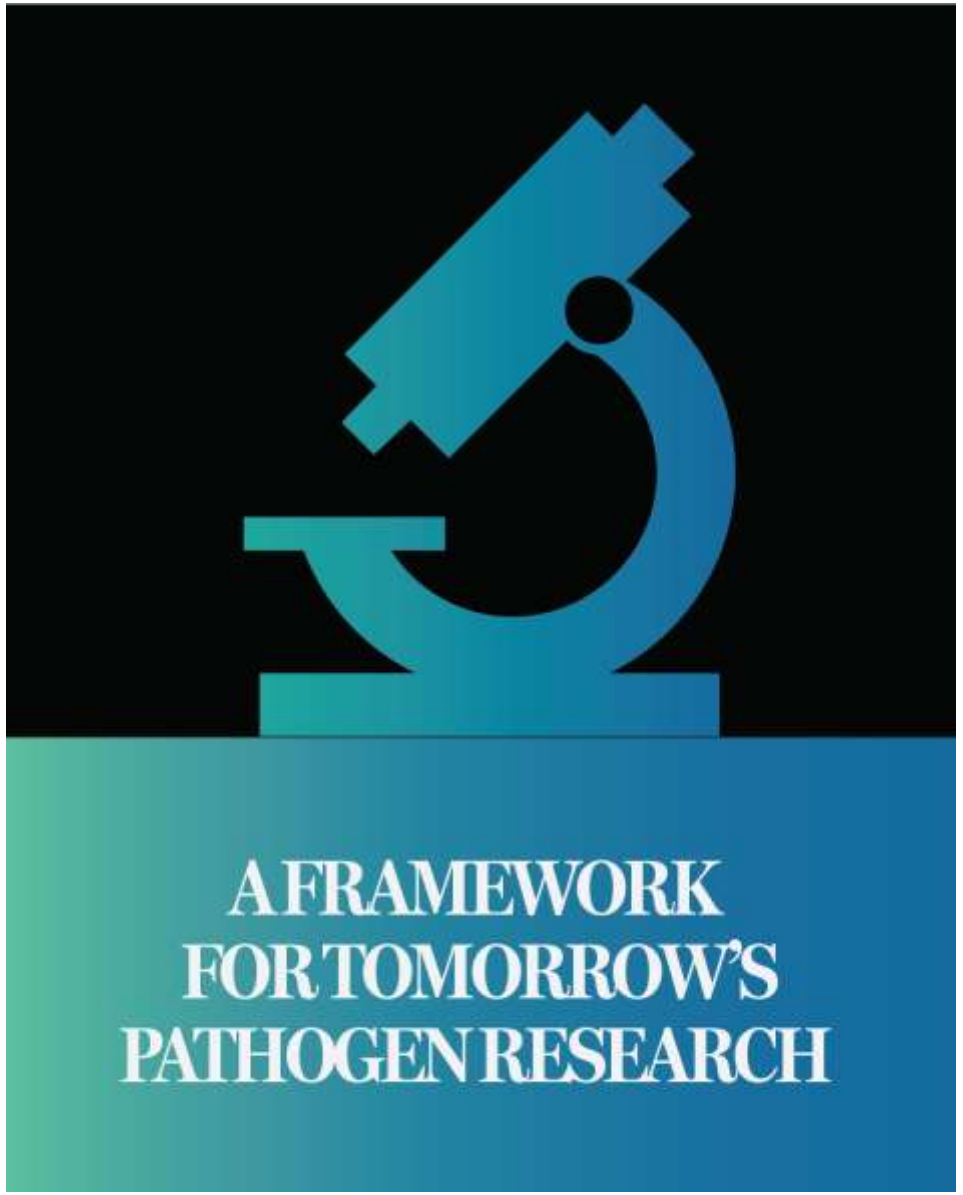
A Task Force on Research with Pandemic Risks

Our scope included:

- Research on pathogens known to be capable of causing a pandemic that under current conditions could result in extensive spread beyond the current infection burden
- Manipulation of pathogens that are not currently thought capable of pandemic spread in ways that can be anticipated to increase their capacity to cause a pandemic
- Research on pathogens with unknown characteristics

Our starting point was that **research with pandemic risks is qualitatively different**.

Navigating in this high-risk research space **warrants additional precautions**, including traffic signals, guardrails, speed bumps and lamp posts.



Recommendations

- When there is potential for harm to large numbers of people as a result of research with pandemic risks, and especially where it is questionable whether those at risk will benefit from the research, additional oversight, beyond occupational health and safety, is essential, as is a more elaborate risk assessment than is currently performed for research lacking these risks.
- Research with pandemic risk should have high-probability benefits for public health.

Recommendations

- Researchers and their institutions have an obligation to identify whether the risks from research with known and potential pandemic pathogens are proportionate to the potential benefits of the research and to assess whether less-risky forms of research could be equally beneficial.
- For research with pandemic risks in which the stakes are higher and inequities in harm–benefit distribution across stakeholders are greater, researchers and their institutions should not be the only ones conducting harm–benefit assessments

Recommendations

- Research with pandemic risks should only proceed when the research community and relevant oversight bodies can

(1) demonstrate that the research would be conducted safely, securely, and responsibly;

(2) demonstrate that no alternative and safer research could reach the same public-health ends; and

(3) provide adequate assurances of substantial benefits expected in the near term with a plausible plan for equitable global distribution of these benefits.

Recommendations

- Effective legislation, regulations, policies, and guidelines specifically regulating research with pandemic risks will strengthen the scientific enterprise.
- Meanwhile informal governance through professional norms, codes of ethics, standard operating procedures, and other practices associated with self-governance, should be harnessed to provide norm-setting standards and raise awareness of the need for enhanced harm–benefit assessments of research with known and potential pandemic pathogens.

The overarching aim of the *Framework for Tomorrow's Pathogen Research* is to create a safe, secure, and responsible research environment for researchers, and in so doing, to earn public trust.