

Prevention of zoonoses at home and abroad

CEPI Position Paper for the Roundtable discussion about Pandemic Preparedness in an International Perspective, 17 May 2023

The Coalition on Epidemic Preparedness Innovations (CEPI) is honoured to participate in the roundtable discussion on 17 May 2023 and aims to offer some first reflections on the question how to prevent zoonoses at home and abroad in the context of the Dutch Global Health Strategy 2023-2030: "Working together for health worldwide".

CEPI is an innovative global partnership between public, private, philanthropic, and civil society organisations launched in Davos in 2017 to develop vaccines to stop future epidemics. Our mission is to accelerate the development of vaccines and other biologic countermeasures against epidemic and pandemic threats so they can be accessible to all people in need. CEPI has made investments in 46 vaccine candidates and 5 disease X platforms. CEPI's priority pathogens include SARS-CoV-2, Lassa virus, Middle East Respiratory Syndrome coronavirus, Nipah virus, Rift Valley fever virus, and Chikungunya virus – all of which are suggested to be of zoonotic origin and/or transmitted by an animal vector. CEPI has played a central role in the global response to COVID-19, by supporting the world's largest portfolio of COVID-19 vaccines, as well as co-leading COVAX, the vaccines pillar of the Access to Covid-19 Tools Accelerator (ACT-A).

The next pandemic threat is very likely zoonotic.

The next pandemic threat will likely be caused by pathogens that are transmitted from animals to humans. Climate change is exacerbating the frequency and range of infectious disease outbreaks. Species that were previously geographically isolated, are now running into each other with increasing regularity, raising the risk they will spread viruses and other pathogens from one to another. This spill-over heightens the risk of a new human virus, Disease X, as WHO names the currently still unknown pathogen that could cause a serious international epidemic or even pandemic. Understanding zoonotic diseases and developing vaccines and other biological countermeasures against zoonotic infections thus plays a key role in international pandemic preparedness. CEPI therefore commends the Dutch Government on the explicit reference to zoonotic diseases and One Health in the Dutch Global Health Strategy 2023-2030 and the National Action Plan for the Strengthening of the Zoonotic Disease Policy. The action plan highlights integrated One Health surveillance, an area in which CEPI is also closely working with WHO's Hub for Pandemic and Epidemic Intelligence.

Preventing the spread and threat of zoonoses is critical.

While environmental change is increasing the likelihood of spill-over, we are not helpless in the face of these increasingly imminent risks. Whether it be a re-emerging known viral threat—like Lassa—that's sparking more frequent and larger human outbreaks, or the next Disease X threat that will one day spill over and begin to spread as a new human virus, humanity has the scientific knowledge and the technical capability to contain such outbreaks before they run out of control. Preparing for known and unknown epidemic diseases will mean that—just like with climate change—we can begin to cap the rising risks, turn the tide of threats, and eventually neutralise their pandemic potential.

As the development and the timely global deployment of vaccines is critical to halt disease outbreaks and potentially pandemics, CEPI, in collaboration with WHO, is monitoring all of the priority pathogens it believes pose a threat to human health security and it is primed to respond to them at a moment's notice. Moreover, CEPI invests in vaccine development against several known zoonotic diseases with epidemic and pandemic potential. A few examples:

- In relation to Lassa fever, an acute viral haemorrhagic illness which can be passed on to people by a rodent called mastomys, CEPI has invested in the development of six vaccine candidates, four of which are in active development. These four vaccine candidates are amongst the first in the world to have entered clinical trials. CEPI is also funding the Enable Lassa Research Programme, a multi-country observational cohort study in which partners aim to assess the burden of disease of Lassa fever to prepare for future Lassa vaccine clinical trials in West Africa.

- CEPI also focusses on Nipah, a highly deadly virus that can spill over from bats, and even by bats-infected domesticated pigs, onto people. CEPI has invested in four vaccine candidates, one of which is the first ever Nipah vaccine to enter clinical trials.
- Additionally, CEPI works against diseases that can be spread by disease-carrying mosquitos. For example, it has invested (together with the European Commission) in the development of two Rift Valley fever vaccine candidates (one of these vaccines is amongst the first in the world to enter clinical trials). Similarly, CEPI supports three Chikungunya vaccine candidates (one of which is the first in the world to enter Phase III clinical trials).

CEPI also actively works to stop the next Disease X, by:

- Creating a library of prototype vaccines for representative pathogens across multiple virus families.
- Getting clinical trials networks at the ready.
- Establishing a global network of laboratories (including Rotterdam-based Viroclinics).
- Speeding up identification of immune response markers.
- Establishing global capacity to produce top-quality, safe, and effective new vaccines quickly.
- Strengthening disease surveillance and global early-warning systems.

The work on Disease X is a core element of CEPI's 2.0 strategy, which is underpinned by a 3.5 billion USD plan to dramatically reduce or even eliminate the future risk of pandemics and epidemics, potentially averting millions of deaths and trillions of dollars in economic damage. Central to this strategy is the '100 Day Mission': the ambition to compress the time taken to develop safe, effective, globally accessible vaccines against new threats to just 100 days. Achieving this '100 Days Mission' would give the world a fighting chance of tackling and containing outbreaks close to the source, before they spread around the world and become pandemics. CEPI is a driving force for the '100 Days Mission' and is now pioneering much of the vital work needed to help the world get ahead of future pandemic threats.

'CEPI 2.0' is clearly aligned with the Dutch global health strategy.

CEPI's work is closely aligned to goals 6.2 (Improving international pandemic preparedness and reducing cross-border health threats) and 6.3 (Addressing the impact of climate change on public health and vice versa). Like the Dutch government, CEPI is a connector, innovator and champion. "Connect" is in fact one of the three pillars of our CEPI 2.0 strategy, harnessing partnerships at the global, regional and country level. Innovation is at the heart of CEPI's mission to accelerate vaccine development against epidemic and pandemic threats. Moreover, CEPI is a champion of equitable access to vaccines.

It is worth noting that Dutch know-how plays an important part in projects funded by CEPI. To date CEPI has approved up to approximately 86 million USD to awardees based in the Netherlands. For example, since 2019 CEPI has supported Wageningen University with up to 12.5 million USD to lead an international consortium aimed at developing a single-dose vaccine candidate against Rift Valley fever virus for use in humans. Similarly, CEPI has committed up to 5.2 million USD to the Dutch company Batavia Biosciences from Leiden to advance the development and manufacturing of a vaccine against the Nipah virus, using state-of-the-art vaccine manufacturing processes to be applied in small footprint, low-cost, modular manufacturing facilities. These are just two examples of the many CEPI-supported projects in which Dutch expertise is leveraged for globally relevant vaccines and international pandemic prevention efforts. The existing collaboration schemes provide a strong basis to jointly accelerate pandemic preparedness through research programmes on zoonotic diseases.

Intensifying our partnership will help reaching common goals.

The Dutch global health strategy states that intensifying cooperation with CEPI is one of the ways in which the Netherlands is committed to international cooperation on knowledge and innovation. CEPI very much welcomes this and looks forward to expanding the partnership with Dutch partners, including the Dutch government. The Government of the Netherlands is already a valued partner of CEPI and has committed 62 million EUR to CEPI. We would like to encourage the Netherlands to further invest in vaccine development against zoonotic diseases with epidemic and pandemic potential, as we strive towards our shared vision of a world in which epidemics and pandemics are no longer a threat to humanity.