



Workshop

Broad-spectrum anti-viral therapeutics:

a key tool for
pandemic preparedness

Scoping paper

Brussels, 22-23 November 2022

Background

In “Infectious diseases: Considerations for the 21st Century” (February 2001), Anthony S. Fauci states “*At the dawn of the 21st century, the future of infectious diseases and its impact on societies throughout the world is strikingly apparent.*”¹ SARS, Zika and Ebola are just few examples that proved Dr Fauci right. The first pandemic of the 21st century was caused by influenza A(H1N1) in 2009-2010. Ten years later the world was hit again, but now on a very different scale: the COVID-19 pandemic has resulted in over 546 million confirmed cases and over 6.3 million deaths, still counting.²

Even if caused by a novel coronavirus, the COVID-19 pandemic was not unexpected. Since 2015, the WHO R&D Blueprint keeps a list of priority diseases, which focuses on emerging diseases that have the potential to cause a public health emergency but for which insufficient countermeasures exist. The 2018 list included Middle East Respiratory Syndrome coronavirus (MERS-CoV) and Severe Acute Respiratory Syndrome (SARS); highly contagious coronaviruses were considered but did not make it to the final list.³ This illustrates the uncertainty inherent to pandemic preparedness. However, while it cannot be known which pathogen will cause the next large epidemic or pandemic, there is no doubt that there will be a next one. Viral infections represent the biggest threat, and some virus families are more prone to causing large epidemics than others.

In the COVID-19 pandemic, vaccines were developed and made available at unprecedented speed; together with basic public hygiene measures and fast diagnostic methods, they have been at the centre of the pandemic response. However, the characteristics of the current vaccines, as well as the continuous evolution of new viral variants, contribute to the realisation that more tools are needed in the public health armamentarium to fight a pandemic. Antiviral drugs are prominently among them.

Before 2020, antiviral drugs were developed to combat specific individual viruses (herpesviruses, HIV, hepatitis B and hepatitis C virus, influenza viruses).⁴ However, considering the uncertainty of the next pandemic virus, preparedness efforts should go beyond such narrow scope, and rather target viral families or even larger groupings. Broad-spectrum antiviral drugs (i.e. compounds targeting an entire genus, family or even multiple virus families), and preferably broad-spectrum antiviral-containing drug cocktails, are needed as a central pillar of pandemic preparedness, readily available to locally contain infection with a novel virus when it emerges, and buying time for the development of other key countermeasures such as vaccines.⁵

¹ Fauci AS. (2001) Infectious diseases: Considerations for the 21st century. CID 32(5): 675-685. DOI: 10.1086/319235

² World Health Organization. Weekly epidemiological update on COVID-19 – 6 July 2022. Edition 99. Available from <https://www.who.int/publications/m/item/weekly-epidemiological-update-on-covid-19---6-july-2022>

³ 2018 Annual review of diseases prioritized under the Research and Development Blueprint. Meeting report. https://www.who.int/docs/default-source/blue-print/2018-annual-review-of-diseases-prioritized-under-the-research-and-development-blueprint.pdf?sfvrsn=4c22e36_2

⁴ Adalja A. Inglesby T. (2019) Broad-spectrum antiviral agents : A crucial pandemic tool. Expert Rev Anti Infect Ther; 17(7): 467-70. DOI: <https://doi.org/10.1080/14787210.2019.1635009>

⁵ Ianevski A. Yao R. Simonsen RM et al. (2022) Broad-spectrum mono- and combinational drug therapies for global viral pandemic preparedness. BioRxiv preprint DOI: <https://doi.org/10.1101/2022.01.15.476444>

Large investments have been made to create a strong European Health Union for improved EU health security and to reinforce the global health emergency response architecture. This to support the development or repurposing of, and access to appropriate, effective and safe pandemic medical counter-measures such as antivirals. In particular, significant investments have been made under the latest EU framework programmes to support research and innovation in the field of antiviral drug development. The COVID-19 pandemic brought renewed attention to the importance of a diverse toolbox that takes into account the uncertainty inherent to pandemic preparedness.

This meeting will provide an overview of the broad-spectrum antiviral research and innovation, as well as the development and production landscape, and will discuss strategic future steps in order to include broad-spectrum antivirals in the pandemic preparedness toolbox.

Scope and purpose

Building on the research and innovation efforts during the COVID-19 pandemic and taking into account the significant regulatory and financial investments to build a strong European Health Union, the overall goal of this meeting is to develop a roadmap for better integrating broad-spectrum antivirals as a critical pillar of pandemic preparedness efforts, including broad-spectrum antiviral containing combinations. It is expected that the roadmap will reflect the benefits of close inter-regional, global collaboration and cooperation.

Specific objectives of the meeting are

- To take stock of the progress made in the development of broad-spectrum antivirals in the context of pandemic preparedness;
- To understand the potential of broad-spectrum antivirals in pandemic preparedness, as well as the limitations and challenges to be anticipated related to their development and use;
- To understand the ongoing and planned actions with potential impact on the rapid and efficient development of, and access to, novel broad-spectrum antiviral therapeutics, including clinical research, manufacturing and commercialisation aspects;
- To outline potential ways forward to overcome identified challenges and limitations;
- To kick-start the development of a roadmap towards the development of a range of broad-spectrum antivirals that target the most epidemic-prone virus families or larger groupings.

Expected outcome

It is expected that at the end of the meeting participants have gained a common understanding of the role of broad-spectrum antivirals in pandemic preparedness, the available support for their development, and how to move forward to ensure that the most needed broad-spectrum antivirals become available in a timely manner for pandemic preparedness and infectious disease emergencies.

Meeting participants

Participants are expected to include representatives of the European and international research and funder's community, relevant European and international initiatives and organisations, as well as industry.