HORIZON RESULTS BOOSTER

Enhancing Global Pandemic Preparedness

Policy Recommendations

August 2023

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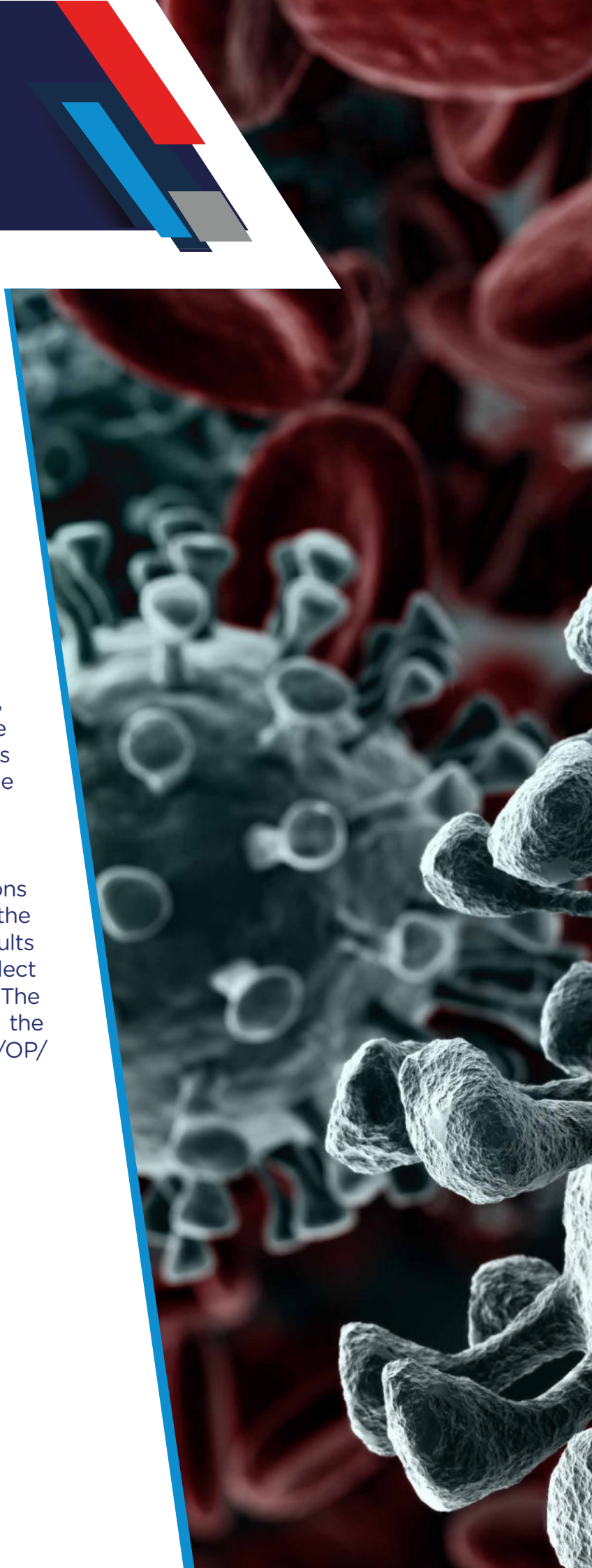

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Executive Summary

The COVID-19 pandemic has exposed significant vulnerabilities in global pandemic preparedness and response strategies, highlighting the need for cohesive and comprehensive approaches to pandemic management. To address these challenges, three research projects - CORONADX, PANDEM-2, and EpiPose - have formed a Project Group (PG) to collaborate on disseminating solutions aimed at preventing future pandemics and enhancing preparedness to combat potential outbreaks.

Supported by the European Commission's Horizon Results Booster programme, these projects are committed to translating their research and innovation outcomes into actionable policies for policymakers, industries, and societies. The PG's overarching mission is to strengthen pandemic preparedness efforts and improve preparedness through innovative solutions, achieved by promoting networking activities, enhancing data access and sharing protocols, and facilitating science-policy collaboration.

The PG's portfolio of research and innovation results includes valuable contributions, such as diagnostic tools, data models, infrastructure, software systems, platforms, and tools developed by the projects. These results will be disseminated to target stakeholders, particularly health authorities and policymakers.

While there has been notable progress, the PG has identified several critical policy challenges that significantly undermine pandemic preparedness efforts. These challenges include existing legislative barriers, discrepancies in data access and interpretation, difficulties in science-policy interaction, collaboration with third countries, and the need for projects to adapt to the dynamic nature of pandemics.

To address these challenges, the policy brief recommends five key policy actions:

- **Harmonise Legislative Frameworks**:
  Strengthen international cooperation to harmonise EU legislative frameworks related to pandemic diagnostics and preparedness. This will enable smooth dissemination and implementation of research outcomes across countries.
- **Enhance Data Sharing Protocols**:
  Improve data access and sharing protocols during health crises to ensure timely and accurate pandemic analysis. Establish clear guidelines and agreements for data sharing, considering ethical and privacy concerns.
- **Facilitate Science-Policy Collaboration:**
  Establish dedicated platforms for effective collaboration between scientists and policymakers. This will promote a better understanding of real-time data complexities and uncertainties, empowering evidence-based decision-making.
- **Promote International Collaboration:**
  Encourage cross-border cooperation in pandemic analysis research by facilitating researchers' access to resources and networks necessary for collaborating with third countries.
- **Strengthen EU Research Initiatives**:
  Enhance EU pandemic preparedness by promoting collaborative research incentives and using the Horizon Results Booster to transform findings into actionable policies and solutions.

By implementing these recommendations, policymakers can strengthen pandemic preparedness efforts, improve global preparedness, and foster international cooperation to combat future pandemics more effectively.

1 Introduction

The COVID-19 pandemic, which began over three years ago, has brought to light significant vulnerabilities in global pandemic preparedness and response strategies. The pandemic brought about an unprecedented set of challenges to nations worldwide, underscoring the need for a cohesive and comprehensive approach to pandemic management. In light of these challenges, three research projects - CORONADX, PANDEM-2, and EpiPose - have joined forces as a Project Group (PG) to collaborate on exploring innovative solutions and disseminating knowledge aimed at preventing future pandemics and enhancing preparedness to effectively respond to potential outbreaks. This collaborative effort contributes towards advancing the EU's mission to strengthen its capacity to address future pandemics effectively. It further aligns closely with the EU's commitment to innovation and knowledge sharing, in the pursuit of a world better equipped to respond to health emergencies.

1.1 Topic

Supported by the European Commission's Horizon Results Booster programme, these projects are committed to transferring their research and innovation outcomes into actionable policies for policymakers, industries, and societies.

The PG's overarching mission is to strengthen pandemic preparedness efforts and enhance pandemic response through innovative solutions. By promoting networking activities within the health nd security communities, enhancing data access and sharing protocols, and facilitating science-policy collaboration, the PG aims to contribute to a more robust and proactive approach to pandemic management.

The PG's portfolio of research and innovation results encompasses a range of valuable contributions, including diagnostic tools, data models, infrastructure, software systems, platforms, and tools developed by CORONADX, PANDEM-2, and EpiPose. These results will serve as crucial inputs for collaborative dissemination activities aimed at reaching target stakeholders, primarily health authorities and policymakers.

As the world continues to face unprecedented health challenges, the PG seeks to address common policy challenges encountered during their research. These challenges include existing legislative barriers, discrepancies in data access and interpretation, difficulties in science-policy interaction, and collaboration with third countries. These are further elaborated upon in the rest of this document.

1.2 Policy challenges

The PG has identified several critical policy challenges in the field of pandemic preparedness:

- **Existing EU legislative barriers**: In line with the framework of EU Regulation 2022/2371 on serious cross-border threats to health[1], it is crucial to tackle existing legislative disparities within the EU. The variation in legislation across countries has posed significant policy challenges for pandemic analysis and preparedness. Lack of harmonisation hampers the adoption and implementation of research-based solutions aimed at curbing the spread of pandemic-prone pathogens and improving the management of future pandemics. Addressing this issue requires international cooperation and standardisation of policies related to pandemic diagnostics and preparedness.

- **Data access**: Data access and data interoperability are critical factors, especially during health crises. These aspects are comprehensively addressed in another policy brief developed by PANDEM-2, currently under review for publication[2]. The policy brief delves into considerations regarding access to pandemic data, as well as differences in data collection and reporting approaches and their implications on data sharing for pandemic preparedness. Ensuring access to high-quality data is crucial at all times, but particularly during health crises. It is also essential to employ the right analytical framework for effective data interpretation. Complexities such as reporting delays or missing values must be taken into account. Moreover, data collected in various countries or settings may lead to different interpretations, as demonstrated by the challenges in comparing COVID-19-induced healthcare pressures due to varying definitions for critical care beds and issues with outdated data. This challenge was also evident during the PANDEM-2 project, as the use of different systems, platforms, or formats for collecting, storing, and processing data across institutions and countries made it difficult to integrate and compare data from multiple sources. While tools like the EU Healthcare Pressures Platform[3] have facilitated some cross-country comparisons, ongoing work in this area, including initiatives like the European Health Data Space[4], is essential to improve data sharing and utilisation. Additionally, non-traditional data sources such as mobile phone data should be made more readily available for research purposes, particularly for surveillance and modelling efforts related to pandemic preparedness and response. These data sources were crucial components of both surveillance and modelling responses during the COVID-19 pandemic. However, getting access to some of this data can be challenging. To enhance data access and usage, it is imperative to improve protocols

1. European Parliament and Council of the European Union. Regulation (EU) 2022/2371 of the European Parliament and the Council of 23 November 2022 on serious cross-border threats to health and repealing Decision No 1081/2013/EU. Luxembourg: Official Journal of the European Union. L 314/26. Available from: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32022R2371&from=EN
2. Ngongalah, L., Gala, J.-L., Hayes, J. S., Beishuizen, B., & Connolly, M. A. (2023) [Under Review] Data sharing challenges and implications for pandemic preparedness and response: Perspectives from the PANDEM-2 project. *Policy Brief, Public Health Rev.*
3. Healthcare pressure (covid-hcpressure.org)
4. European Commission. European Health Union: A European Health Data Space for People and Science. 2022. Available online: https://ec.europa.eu/commission/presscorner/detail/e%20n/ip_22_2711

for sharing data and tools across countries and settings. Furthermore, behavioural data, exemplified by the success of EpiPose's large-scale social contact survey, CoMix[5] and the participatory surveillance platform Influenzanet[6], proved invaluable for managing the COVID-19 response.

- **Science and policy interaction**: Scientific evidence was relied upon heavily by policy-makers during the COVID-19 response. For instance, members of the EpiPose team shared findings and insights of their work with national and international public health and governmental bodies (including ECDC and the WHO) throughout the pandemic on a range of issues, spanning disease burden and health costs, healthcare pressure, cost effectiveness of vaccines and non-pharmaceutical interventions as well as the assessment of mental health and the wider social and macroeconomic impact. The team's work thus had a phenomenal societal impact (for example, rapid estimates of the basic reproduction number (R0) provided by the CoMix social contact survey informed response plans in several countries. In parallel, PANDEM-2 actively engaged with advisory board members from the ECDC and the WHO to ensure alignment of research efforts with policy priority areas. PANDEM-2 further collaborated closely with DG SANTE, particularly in terms of training, including the use of EWRS-SimEx in a functional exercise. The project also consulted with the EPIC11 team, which is currently contracted by HaDEA (DG SANTE) to create a training platform for Member States. This collaborative engagement further strengthened the link between research and policy implementation. However, these interactions were not without challenges, particularly with respect to communicating uncertainty.

  Facilitating effective communication between scientists and policymakers is crucial, especially when dealing with the complexities and uncertainties involved in real-time modelling of infectious diseases. Scientists face the challenge of conveying both the limitations and potential of their models in a way that enables policymakers to grasp these nuances and relay them effectively to the general public. During the COVID-19 pandemic, some countries adapted their approach, by appointing multidisciplinary Science Task Forces to provide guidance on pandemic responses. To ensure ongoing preparedness, these adaptive mechanisms should be maintained during periods of stability, fostering sustained engagement between scientists and policymakers for evidence-based decision-making. Additionally, while the evidence produced by the scientific community proved crucial in shaping pandemic response in many countries, it is important to emphasise that scientists operate independently and are not directly involved in political decision-making. This message is vital for helping the public understand the boundaries of scientific influence in this context.

5. The CoMix study- UHasselt
6. InfluenzaNet

- **Collaboration with third Countries**: International collaboration with third countries is essential for effective pandemic preparedness, especially in the context of surveillance and research concerning emerging infectious diseases. To enhance cross-border cooperation, it is essential to put support mechanisms in place that facilitate access to and the implementation of EU-funded projects in third (Non-EU) countries. A compelling example of a challenge in this context was evident in CORONADX, which encountered difficulties in collaborating with two partners from China. These partners experienced difficulties in accessing H2020 funding and utilising the electronic tools made available, and faced challenges in sharing samples and data due to evolving regulations. These experiences resulted in project delays, emphasising the importance of establishing support mechanisms to facilitate cross-border cooperation.
- **Change in pandemic epidemiology**: The dynamic nature of pandemics can lead to dramatic changes in their epidemiology. Research projects may face challenges in adapting their work plans to new circumstances. While the epicentre of the pandemic was in China and Asia at the time of the proposal writing this has since changed dramatically so that the epicentre moved to the EU and US, while the situation in China seemed to be soon under control. To address these challenges, project durations should be made more flexible, allowing for quicker results in response to emerging pandemics. The European Commission's fast approval and implementation procedures for pandemic-related calls for proposals can serve as a model for future projects.

2 Recommendations

Following the challenges outlined in section 1.2 above and drawing from the valuable experiences gained by the PG, this policy brief puts forward a series of recommendations for consideration. 2.1

2.1 Recommendation 1 Harmonise EU Legislative Frameworks

Strengthening international cooperation to harmonise legislative frameworks related to pandemic diagnostics and preparedness is essential. By establishing standardised guidelines and protocols that are universally adopted, countries can streamline the dissemination and implementation of research outcomes. This harmonisation will foster greater collaboration among nations, ensuring a more efficient and coordinated response to future pandemics. Policymakers should work together to address any regulatory inconsistencies and create a cohesive framework that enables seamless research and knowledge sharing across borders.

2.2 Recommendation 2 Enhance Data Sharing Protocols

Improving data access and sharing protocols during health crises is paramount to ensure timely and accurate pandemic analysis. Establishing robust data-sharing mechanisms will enable researchers and policymakers to access high-quality data, including valuable non-traditional sources. This comprehensive data availability will lead to better-informed decision-making and more effective responses to rapidly evolving pandemics. It is crucial to develop clear guidelines and agreements for data sharing, considering ethical and privacy concerns while prioritising the urgency of pandemic response.

2.3

Recommendation 3
Facilitate Science-Policy Collaboration

To bolster preparedness efforts for future pandemics, dedicated platforms and communication channels should be established to facilitate effective collaboration between scientists and policymakers. This approach will promote a deeper understanding of real-time data complexities and uncertainties among policymakers, empowering them to make evidence-based decisions. Encouraging regular exchanges between research experts and policymakers will create a feedback loop that ensures policy decisions are well-informed and supported by the latest scientific insights.

2.4

Recommendation 4
Promote International Collaboration

Encouraging cross-border cooperation in pandemic analysis research is crucial for comprehensive global preparedness. Policymakers should actively support and provide necessary resources to overcome administrative and regulatory barriers faced by researchers when collaborating with third (non-EU) countries. Strengthening international collaboration will enable access to diverse datasets and experiences, enriching research efforts and enhancing the world's ability to collectively combat future pandemics.

2.5

Recommendation 5
Strengthen EU Research Initiatives

In order to fortify pandemic preparedness efforts within the EU, it is important to take proactive steps to enhance current research initiatives. For instance, while the importance of clustering EU projects for collaborative research is widely acknowledged, there is a notable gap in terms of sufficient incentives and a clearly defined pathway for translating research outcomes into practical solutions. We recommend exploring mechanisms such as the Horizon Results Booster process, to improve the attractiveness of clustering for EU projects and establish a concrete pathway for translating research findings into practical applications. This approach would encourage greater collaboration and coordination among EU research projects, fostering a synergy of knowledge and resources. Secondly, it would streamline the transformation of research insights into actionable policies and tangible solutions, thus enabling more effective and efficient pandemic response efforts.

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