

Health Priorities for challenge- driven research in Horizon Europe



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Health Priorities for challenge-driven research in Horizon Europe

Introduction

In December 2022, the European Commission launched a consultation to define the priorities for Horizon Europe over the 2025–27 period. This is part of the strategic planning process which focuses in particular on the second pillar of Horizon Europe “Global challenges and European industrial competitiveness”. The first Strategic Plan, published in 2021, covers the period 2021–24. The second Strategic Plan will be instrumental in ensuring that EU research and innovation investments keep targeting the achievement of the strategic objectives of the European Commission in the second half of Horizon Europe, i.e. over the 2025–27 period. It is also crucial that the new or renewed priorities are aligned with the current frontier of knowledge and address the challenges that have emerged since the publication of the first Strategic Plan,¹ such as those caused by the Russian war in Ukraine.

The present document updates [The Guild’s proposals](#) for strategic priorities for Horizon Europe’s health research published in 2019.² It presents our recommendations for strategic

orientations for health research and the research areas relevant to invest in.

1. Key strategic orientations relevant to Cluster 1

Horizon Europe’s investments in collaborative and challenge-oriented research target six clusters. Cluster 1 is dedicated to health research. It aims to contribute in some way to all key strategic orientations (KSOs) of Horizon Europe’s first Strategic Plan but is especially relevant for two of them: “promoting an open strategic autonomy by leading the development of key digital, enabling and emerging technologies, sectors and value chains” (KSO A); and “Creating a more resilient, inclusive and democratic European society” (KSO D).

The relevance of these strategic orientations has not diminished since the launch of Horizon Europe and the publication of its first work programmes in line with the Strategic Plan 2021–2024.

[The Guild reiterates its plea](#) to develop solutions for facilitating exchanges and reuse

¹ European Commission (2021). Horizon Europe: Strategic Plan 2021–2024. In Luxembourg: Publications Office of the European Union. (DOI: 10.2777/083753).

² The Guild (2019) *Priorities for Horizon Europe’s Health Cluster*. https://www.the-guild.eu/news/2019/13_guild-priorities-for-horizon-europe-health-cluster.pdf

of health data across European countries and healthcare systems for research purposes.³ While the strategic autonomy of Europe is important, what is even more at stake is the development of human-centred solutions that will strengthen the EU Health Union and improve the well-being of citizens across Europe throughout their lives and in full compliance with the European fundamental values, such as privacy and equal access to healthcare. Targeted efforts are needed that define solutions addressing legal and technical issues so that health data can be used safely, efficiently and in a way that preserves the integrity of the individuals. The development of digital solutions, where individuals can store, access and act on their own health data to promote health would integrate both privacy and equal access to healthcare.

The creation of a “more resilient, inclusive and democratic society” is increasingly relevant. The ageing population and the shortage of healthcare professionals in certain regions cause severe disruptions to the public health systems and their accessibility in the affected areas and call for the development of new solutions. Likewise, in the current geopolitical context, our societies feel more at risk of nuclear and biological threats, poor mental health and issues related to migration. Health research must contribute to preventing and mitigating these risks.

2. New and renewed research priorities for Cluster 1

The targeted impacts of Cluster 1 under the Strategic Plan 2021–2024 remain relevant for the second part of Horizon Europe. However, some research areas should be further

supported to accelerate the achievement of these impacts.

Stay healthy throughout life

It is even more important that funding goes to research and innovation projects that aim to enable all citizens to stay healthy in a rapidly changing society. Considering that European societies keep ageing, age-related diseases and disabilities are expected to increase. Therefore, it is crucial that Horizon Europe invests more in research on age-related (or age-dependent) diseases and health conditions, such as muscular and skeletal diseases, mental health and cognitive decline, cardiovascular diseases (such as valvular heart diseases, arrhythmias, heart failure), chronic kidney failure, cancer, and metabolic diseases such as diabetes, as well as oral and dental diseases.

Horizon Europe must target the development of new treatments and also enable healthy ageing. Higher recovery rates from specific diseases such as acute myocardial infarction and cancer may create challenges for ageing patients who have recovered from such diseases. Funding should also go to research projects that enable such patients to stay healthy even though some may have an underlying chronic disability condition.

Investments in the development of personalised medicine should be pursued to ensure healthy ageing across Europe. Ageing and related morbidities depend on individual health conditions and on the healthcare received throughout life. Other important factors include the interaction of genetic setup with lifestyle and environmental exposures, hence the importance of understanding the

³ The Guild (2021). *Proposals for the European Health Data Space*. The Guild of European Research-Intensive Universities and Bern Open Publishing. DOI: 10.48350/156905

respective and combined influences of these factors on health conditions throughout life. Therefore, the personalised collection of health and environmental data throughout life (early in life and onwards) allows for a better understanding and prediction of the ageing trajectory with age-related morbidities.

Horizon Europe must fund research projects aimed at enabling the intersection of cross-sectional datasets of large cohorts (e.g. federated biobanks, national healthcare datasets, and data re-use from previous EU-funded projects) with granular standardised and digitalised longitudinal follow-up of individual health history (such as digital twins). These will be crucial to identify and exploit the most appropriate time for effective therapeutic interventions to stop or slow down the development of age-related morbidities, such as neurodegeneration and cognitive impairment, as well as skeletomuscular wasting (including sarcopenia). Such intersections of large health datasets will also require the development of the appropriate techniques and instruments to allow for the safe re-use of health data in compliance with the EU data regulations (including GDPR). Similarly, Horizon Europe must support research on the parallel and intertwined development of individual health digital twins and in-vitro biomolecular twins to develop timely and effective personalised therapeutic and preventive strategies.

Ageing also increases the risk of multimorbidity. Funding should go to research projects that focus on acceptable health quality in patients that may reduce the need for repeated hospitalisations among patients with multimorbidity. This should include more funding for projects focusing on primary care, which – being responsible for the continuity of care throughout the entire life cycle – is particularly important for addressing chronic

disability and multimorbidity and for reducing the number of preventable hospitalisations.

The objective of enabling individuals to stay healthy throughout their lives does not imply focusing health research only on ageing and related health conditions. Horizon Europe must invest more in prevention research aimed at improving health at all ages, not least in prevention studies with a focus on early-life health (i.e. the health of children and young people). Adopting strategies that promote health early in life has the potential to positively affect life quality throughout the life course. Horizon Europe should put higher emphasis, for instance, on overweight and obesity, as these are a growing threat to children's well-being globally, largely driven by a trap of unhealthy and highly processed foods combined with a lack of physical activity and sedentary behaviour.

Live in a safe and health-promoting environment

The war in Ukraine, which started in February 2022, has severely affected Europe's safety and security. The Russian Federation has repeatedly claimed that it would make use of its nuclear weapons in the case of a perceived threat to the integrity of the territory. Since the beginning of the war, the International Atomic Energy Agency has therefore repeated its strong concerns about military actions against and at nuclear facilities in Ukraine. Individuals living in war zones are also exposed to risks caused by the destruction of civil infrastructures (e.g. public hospitals and utilities, including energy and water supply networks). The disruption of the public services critical for public health, as well as the shortage of clean water, can induce a surge in infections and related diseases and even, in the long run, increase microbial resistance (because of poorly functioning healthcare

services). Additionally, the poor control or the malicious use of biological research facilities in some countries also raises the issue of the safety of Europe from the danger of biological weapons and agents intentionally or accidentally released.

Therefore, to enable citizens in Europe to live in a health-promoting environment, Horizon Europe will need to invest in the development of solutions to increase the resilience of European societies against threats of biological, chemical, or nuclear warfare as well as the destruction of civil infrastructures critical for public health. Research and innovation projects funded under Horizon Europe's Cluster 3 can help improve the prevention of all these risks. They could investigate methods whereby risks from multiple sources could be better integrated, and hazards can be more accurately characterised. There is also a need to support the development of surveillance systems for warfare-related health threats.

On the other hand, Cluster 1 should put more emphasis on enhancing preparedness, developing treatments, and adapting public health systems. Because the current geopolitical context also has direct consequences on the health of people in Europe, Horizon Europe must support research aimed at a better understanding of wartime-related diseases and disorders (e.g. mental traumas, including post-traumatic stress disorders, disabilities, and migration-related diseases and health conditions) and at the development of treatments.

Tackle diseases and their burden

The relevance of research aimed at tackling diseases and reducing disease burden is still high. The higher global mobility of individuals, the existence of biological warfare programmes and the location of biological facilities in unstable regions increase the risk

of pandemics. The recent COVID-19 pandemic has exerted a major impact on human health and societies globally and similar pandemics are a likely scenario over the coming decades, hence the crucial importance of investing in vaccine development through Horizon Europe.

The development of effective and safe vaccines at an unprecedented pace, based on fundamental and clinical research efforts, has demonstrated the importance and relevance of such research priorities. Future strategies and priorities should continue along this line to provide the knowledge base for clinical translation and the development of prophylactic and therapeutic measures, at both individual and population levels. More specifically, this involves studies on human immune responses and biomarkers, the basis of interindividual variability in susceptibility to severe infection, as well as microbial evolution and pathogenicity. This will enable the identification of the particularly susceptible individuals who may benefit from accelerated vaccine schedules, prophylactic antivirals, or intensified treatments.

Horizon Europe must also invest in research aimed at minimising the risks induced by specific treatments (e.g. myocarditis in the case of the COVID-19 vaccines). The approach to be promoted in Horizon Europe's Strategic Plan 2025-27 should be interdisciplinary. It should encompass considerations aimed at ensuring equal access to every new treatment regardless of country borders, at reducing intra- and inter-country disparities in the implementation and uptake of vaccines and prevention interventions, and at enhancing the cost-effectiveness of vaccination campaigns.

While improving pandemic preparedness is of strategic importance for increasing the

resilience of European societies, research funding under Horizon Europe should not target exclusively communicable diseases. Horizon Europe must overcome the misleading separation between communicable diseases and non-communicable diseases. The COVID-19 pandemic again demonstrated that strong interactions exist between them. Instead, the focus on communicable and non-communicable diseases must be equally weighted. Horizon Europe must pay special attention to multimorbidity, for which ageing is a factor because the impacts of interactions between several diseases and their treatments remain insufficiently clarified.

Improve mental health

The COVID-19 pandemic and its accompanying containment measures have affected the mental health of citizens in Europe. Moreover, the war in Ukraine, the subsequent economic and energy crises, and the increased occurrence of disasters caused by climate change are contributing to higher anxiety, especially among the youth. In this context, the announcement of a new initiative on mental health in the State of the Union 2022 speech⁴ is relevant. Horizon Europe's Strategic Plan 2025-27 will need accordingly to put more emphasis on research on mental health to increase the knowledge base, hence the need for fundamental research, and for the development of new treatments.

An interdisciplinary approach is clearly needed to achieve progress. The approach should include a biological perspective to investigate underlying mechanisms for mental diseases. Further research on the possible biological and genetic factors of mental health

conditions will ultimately support their more effective treatment. Horizon Europe should invest in research linking further, where relevant, psychiatry to biological and clinical studies. However, mental health research also needs to involve psychological approaches that are not easily obtained by a biological approach to investigate cognitive functions, consciousness, and memory.

Explore interactions between pharmacological and lifestyle interventions

Solutions to tackle diseases or decrease their burdens do not consist only of pharmacological interventions. Research should further explore how pharmacological and non-pharmacological interventions (e.g. on individuals' nutrition and eating habits, prescriptions for physical activities) could be better combined to improve healthcare and individuals' well-being. Any such intervention should also include a preventive approach and address vulnerable individuals who are difficult to reach. Preventive measures implemented early in life have the high potential to greatly contribute to reducing the disease burden of certain diseases.

Multi-disciplinary research will help to identify the relevance of each type of intervention or their combination to specific populations, and to understand how to better reach and implement successful interventions, for instance, among individuals who are lonely, sedentary and have poor eating habits and/or obesity. In the same context, both biological and social causes and consequences of poor oral and dental health, should be addressed. Initiatives at the local, regional, or national levels are being implemented. A European approach will help reduce their fragmentation

⁴ European Commission. (2022, September). *State of the Union Address 2022 by the President of the European Commission*. Retrieved February 6, 2023, from https://state-of-the-union.ec.europa.eu/state-union-2022_en

and help mutual learning and capacity building.

Ensure access to innovative, sustainable, and high-quality healthcare

Horizon Europe must keep helping health research and public health to tap into the potential of big data and digitalisation. Digital technologies can support a better understanding of health and disease parameters and help stratify the population. They may also increase the effectiveness of healthcare interventions, improve diagnostics, and facilitate the monitoring of individual and collective health conditions.

Digital technologies for healthcare to be further explored through Horizon Europe include Artificial Intelligence-assisted diagnosis, sensor technologies to support self-diagnosis, smart apps to supervise and monitor drug treatment, and telemedicine for rehabilitation. Interventions such as patient-controlled visits, where patients initiate a visit with a healthcare provider based on their needs, have proven useful for managing chronic conditions, such as diabetes or hypertension. Pilot testing has demonstrated concurrent improvements in patient satisfaction and treatment quality while reducing patient visits. Patient-controlled visits can be an example to improve the efficiency of healthcare delivery and make it easier for patients to access the care they need, which should include equitable access to oral care, including dentistry.

It is also urgent that Horizon Europe invests in research aimed at exploring and increasing the contribution of digital solutions – among other solutions – to equal access to innovative,

sustainable and high-quality healthcare across Europe. The ageing population strains healthcare systems by contributing to increasing the ratio between the number of people with complex diseases in need of healthcare and the number of professionals able to provide this care. The shortage of healthcare workers is an increasingly dire issue in rural areas and in Central, Eastern and Southern European countries because of brain drain phenomena. These demographic changes may cause severe disruptions to the public health systems and their accessibility in the affected areas. Also, the cross border mobility of individuals, including refugees fleeing war zones such as Ukraine, keeps calling for solutions to ensure that healthcare systems remain accessible to all people moving within Europe.

Investments through Horizon Europe must support research for the development of solutions to the challenges posed by the ongoing demographic changes and the cross-border mobility of people. Multi-disciplinary research should also further explore the implications of the digitalisation of healthcare for the patients, the healthcare professionals, and the public health systems as a whole.

Facilitate the safe exchange of health data

It is of crucial importance that Horizon Europe maintains and even increases its investments in the development of solutions for the safe (cross-border) exchange of health data. Ongoing initiatives are still fragmented, and many obstacles remain to data-sharing which ultimately limit the opportunities for collaborative research projects. Solutions will consist of [new technologies, infrastructures, governance models or legal frameworks](#) ⁵

⁵ The Guild (2021). Proposals for the European Health Data Space. The Guild of European Research-Intensive Universities and Bern Open Publishing. DOI: 10.48350/156905

addressing solutions that can be operative across countries.

The European Health Data Space (EHDS)⁶ is seen as the cornerstone in efforts to address the need for an EU-wide centrally governed infrastructure for the exchange of health data and effectively support interoperability in science and research. Horizon Europe must keep investing in establishing common and persistent data services and infrastructures as strategic assets for improving human health and well-being, strengthening European competitiveness, and boosting economic growth. Moreover, safe data-sharing solutions will be crucial for the uptake of digital healthcare solutions, especially those relying on AI technologies. A true translational research approach is needed to ensure short to medium-term impact.

The accelerating digitalisation of healthcare systems increases the opportunities for integrated research-based solutions to address contemporary health challenges. New legal, technical, and methodological frameworks are needed to improve cross-border collaboration while ensuring the quality and privacy of patient data, e.g. by developing a secure standardised interoperable data framework.

3. Funding instruments in Cluster 1

European Missions

The European Mission on Cancer is a unique opportunity to boost research on cancer, accelerate the development of treatments and diagnostic techniques, improve cancer-related healthcare, reduce inequalities, and increase the well-being of patients, survivors,

and their carers. However, the implementation of the Cancer Mission raises serious concerns. While most Horizon Europe funding for research on cancer was moved under the missions, the mission work programmes offer insufficient opportunities for actual research, and especially for collaborative fundamental research aimed at creating new knowledge on cancer. There is therefore a risk that the European Mission on Cancer, because of its implementation, contributes to diverting investments away from research that would be essential to achieving its ambitious objectives.

The lack of opportunities to fund fundamental research is not restricted to missions. Horizon Europe's second Strategic Plan must strike a better balance between investments in basic research and innovation projects in Cluster 1. The policy priority given to cancer must not result in neglecting other important health research topics, such as neuroscience, immunology (including chronic inflammation, autoimmunity, and infection diseases), and cardiovascular science. Considering the relative decline of national research funding, Horizon Europe plays an increasingly crucial role in the funding of cutting-edge areas of biomedical research, such as on cancer and the brain.

Multinational clinical trials

European countries often lack the necessary population sizes to undertake large-scale clinical trials on rare diseases and/or rare endpoints. International multi-centre trials are one way of addressing this issue, but these are not very often investigator-initiated. To overcome this limitation, an emerging field in clinical research has been the development of

⁶ European Union. (2022). Proposal for a Regulation of the European Parliament and of the Council on the European Health Data Space. COM(2022) 197 final. In *The Official Journal of the European Union* (2022/0140(COD)). Retrieved February 6, 2023, from <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A52022PC0197>

registry-nested randomised controlled trials. The European Union has a role to play in maintaining and increasing support for research-related activities aimed at facilitating large and multinational clinical studies.

The conduct of such trials on a multinational basis [must be facilitated](#)⁷ by developing logistic and regulatory instruments further, and by adapting European legislation, as suggested in the European Commission's proposal for the EHDS. Moreover, it is important that Horizon Europe devotes funding for the [conduct of multinational clinical studies](#) to complement the limited resources available from member states for this kind of activity.⁸

Use of animals in research

Research projects financed under Cluster 1 must comply with the standards for the

protection of animals used for scientific purposes (as defined in Directive 2010/63/EU) and the 3Rs principles (replacement, reduction, refinement). As long as there are no scientifically valid alternatives to the use of animals, Horizon Europe must keep investing in health research regardless of whether the use of animals is planned or not. Giving preference to animal-free research in funding decisions would [threaten health research areas](#) where no alternatives exist yet and hinder the capacities of European research-performing organisations to develop new treatments.⁹ Furthermore, such an approach may unintentionally negatively impact laboratory animal welfare by indirectly promoting relocation of animal-based research projects to countries in which animal welfare standards may not be as high as in the EU.

⁷ The Guild (2022). *Statement on the Clinical Trials Regulation and the Accelerating Clinical Trials in the EU (ACT EU) initiative*.

⁸ The Guild (2020). *Proposals for the Pharmaceutical Strategy for Europe*. The Guild of European Research-Intensive Universities and Bern Open Publishing. DOI: 10.7892/boris.146527

⁹ The Guild (2022). *The Guild's position on the use of animals in research*. The Guild of European Research-Intensive Universities and Bern Open Publishing. DOI: 10.48350/167438



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