

The Heidelberg Manifesto on *European Cancer Research*

October 2022

Europe supports an innovative patient-centred cancer ecosystem built on infrastructures for basic and translational research, clinical trials, and outcomes research with improved public engagement and understanding

Cancer represents a major burden for society, with almost 4 million new patients and 1.3 million deaths per year in Europe and a sharp increase in the number of citizens living with or beyond the disease. Central for relieving this burden is the need to embed cancer research innovation within national and Europe-wide cancer control programmes aimed at delivering new knowledge, increasing cancer awareness, improving cancer prevention and early detection through the adoption of wide screening programmes based on non-invasive technologies, enhancing treatment's quality, access and effectiveness, as well as support patients and their families. New types of research governance and practices must be urgently implemented to ensure that the EU Mission on Cancer achieves its desired impact by 2030.

New treatment modalities turn cancer more and more into a chronic disease with rising prevalence in affluent societies, including Europe. As a result, cancer surveillance, long-term treatment and side-effect management in cancer patients and survivors impose an ever-increasing burden on healthcare systems¹. Moreover, the COVID-19 pandemic has dramatically affected the provision of cancer services (screening, diagnosis and treatment) with devastating results. Nevertheless, the pandemic has also accelerated digitalization and virtual knowledge sharing, with benefits expected to outlast the pandemic.

Recognizing that the translation of laboratory discoveries into benefits for patients is slow, expensive, and often inefficient, the **Porto Declaration** of May 2021 called for European stakeholders to commit to collective action for developing national and transnational infrastructures that foster cancer research innovation and decrease inequalities². Now, we stress the need to robustly address **seven high-priority themes**:

1. **Scope: Patients at the centre** of the translational research continuum. This requires a **multidisciplinary approach**, with collaborations among basic researchers, medical oncologists, pathologists, imaging representatives, radiation oncologists, surgeons, nurses, ethicists and healthcare professionals, quality-of-life researchers, epidemiologists, digital health experts, patient representatives, health economists and research managers. In addition, the collective commitment of all stakeholders (policymakers, universities, industry, healthcare professional organizations, science communicators and educators, regulatory bodies, and funders) is equally indispensable;
2. **Scale**: Precision cancer medicine requires **large numbers of patients, complex diagnostic resources, sharing of research/clinical data and access to advanced data infrastructures**, as well as quality assurance of cancer care, long-term follow-up and cost-effectiveness, including health technology assessment. Due care should also be given to ensuring the **resilience and sustainability of the supply chain for pharmaceutical products and medical technologies**, with an emphasis on European strategic autonomy in all the steps;
3. **Digitalization**: Digital health, along with the advancement of digital technologies, computing facilities and emerging forms of data science, provide **unique opportunities to improve the quality and accessibility of cancer care**. With appropriate open data policies, data science has the potential to innovate the cancer continuum. Still, it requires a push for European harmonization for the benefits to be fully harvested. In addition, **digital platforms have facilitated patient engagement**³, which should foster "user-driven" innovations to promote quality-of-life of cancer patients;

¹ According to the European Academy of Cancer Sciences (EACS), "the challenging healthcare problem will be difficult to control unless cancer research leads to better disease outcome or prevention of the disease. Prevention, early diagnosis, and improved treatment and care are the primary strategies that may reduce mortality rates. Furthermore, given the large number of cancer patients and survivors, focusing on their health-related quality-of-life is of critical importance".

² See at: <https://www.2021portugal.eu/en/news/launching-of-the-porto-declaration-on-cancer-research/>

³ See at: <https://patient-innovation.com/>

4. **Innovation:** Innovative prevention, diagnostic and treatment strategies must be combined within a **sustainable** state-of-the-art **virtual European cancer ecosystem**. Such a critical mass of expertise and resources can provide enhanced capabilities, permit the sharing of new knowledge, offering societal and economic added-value across Europe. **Innovation throughout the cancer continuum** will rely on the **three pillars of European infrastructures for cancer research**⁴, which need urgent attention:
 - i. Infrastructures for **early translational research** to deliver multi-omics assisted preclinical research and foster the progress in molecular and digital pathology, immunotherapy, liquid biopsy, scientific data recording, analysis and handling (i.e., AI and data storage);
 - ii. Infrastructures for conducting **clinical/prevention trials** require separate multi-centre trial capabilities entailing unified strategies for patient stratification, imaging, biopsy acquisition, storage, and evaluation, together with evidence studies;
 - iii. Infrastructures for **outcomes research and implementation science**, including **awareness programmes**, need to adequately support research activities in primary prevention, early detection, clinical effectiveness of innovations, health-related quality-of-life assessment and survivorship research. This must consider inequalities in health economics among European regions and ending discrimination for access to work and financial services through the **right to be forgotten**.
5. **Public engagement and understanding:** Cancer awareness programmes, ranging from science education to public campaigns, must be strongly supported to foster a **general understanding of cancer research, prevention as well as outcome**. They must involve cancer researchers, physicians and experts, patient representatives, science centres and communicators. Increased cancer awareness throughout the European population is key to early detection and better health-seeking behaviours, particularly among the most vulnerable;
6. **Europe-wide collaboration:** Today's personalized/precision cancer medicine era requires a cultural shift from regional/national efforts into **continent-wide partnerships** involving all stakeholders. The role of **Comprehensive Cancer Centers (CCCs)** and their intertwining with **National Cancer Mission Hubs (NCMHs)** must be emphasized and should leave no region in Europe behind. In addition to accelerating the cost-effective translation of laboratory discoveries into patient outcomes, Europe-wide collaboration brings significant benefits for citizens and the economy at large, reflecting the *health is wealth* ethos if equal access to high-quality of care and follow-up monitoring is provided throughout Europe.
7. **Commitment and resources:** Cancer research and treatment are facing shortages in both personnel and funds. There is an urgent need to reduce bureaucracy freeing time for cancer professionals to fully commit to their specific areas of expertise. There is also a pressing need for cost optimization. These require alignment of research and innovation agendas by **health administrations and research leaders**, closer interactions among **researchers, physicians and healthcare professionals**, as well as forms of **institutional innovation** to strengthen the three pillars of the European infrastructures for cancer research,

This Manifesto was prepared and launched under the scope of the **5th Gago Conference on European Science Policy** (<https://www.cienciaviva.pt/gagoconf/5th-edition>), jointly organized by Ciência Viva (the Portuguese National Agency for Scientific and Technological Culture, <https://www.cienciaviva.pt/en/>), EACS (the European Academy of Cancer Sciences, <https://www.europeancanceracademy.eu/>) and the German Cancer Research Center (DKFZ, <https://www.dkfz.de/en/index.html>) in **Heidelberg, Germany on 6 October 2022**. It was organized four years after the first Gago Conference on European Science Policy discussed cancer research in May 2018 in Porto, Portugal (<https://www.cienciaviva.pt/gagoconf/1st-edition/#section-1>).

⁴ See Ringborg, U. et al.; Molecular Oncology, volume 15 (10), pp. 2507-2543; October 2021.