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EMPOWERING INVOLVEMENT AND ENGAGEMENT OF PATIENTS WITH CANCER IN ONCOLOGY DRUG DEVELOPMENT: A WHITE PAPER ON BEHALF OF THE CANCER DRUG DEVELOPMENT FORUM

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Abstract

In this White Paper, we advocate involving people with cancer in every stage of the oncology drug development process, emphasising the importance of delivering a bespoke Patient and Public Involvement and Engagement (PPIE) agenda to support oncology drug development research. We discuss the evidence that involvement of people with cancer increases and enriches the quality of the research, highlight existing initiatives that aim to increase the impact that people with cancer have in cancer research, and make a series of recommendations to enhance involvement of people with cancer and their advocates in oncology drug development. Our recommendations indicate (i) that people with cancer should be involved at all stages of oncology drug development research; (ii) that there should be appropriate representation of different voices of people with cancer to contribute to the oncology drug development research process; (iii) that appropriate guidance and support should be available to people with cancer to ensure that their contribution to cancer research is meaningful; (iv) that those people with cancer who actively contribute to the study design and conduct of oncology drug development activities should be offered co-authorship on any publications that ensue from the research undertaken; (v) that people with cancer, in addition to representing specific stakeholder groups, can bring their own skill sets to the cancer research agenda; (vi) that people with cancer should have access to all available information to support them in their contribution to oncology drug development; (vii) that appropriate training should be made available to people with cancer who wish to help support oncology drug development activities; (viii) that people with cancer should be appropriately financially compensated for their contribution to oncology drug development research; (ix) that grant awarding bodies should give higher priority to research studies that provide meaningful involvement of people with cancer, and that people with cancer should be embedded on funders' decision-making committees; (x) that guidelines should be developed around methodology of patient-generated evidence in regulatory decision-making, with increased transparency in the use of patient experience data in decision-making processes as well as clear and communicated timelines and deadlines in R&D and regulatory processes. (xi) that research should be funded to help evaluate barriers to involvement of people with cancer in cancer research; (xii) that research determining the value of the involvement of people with cancer in oncology drug discovery and clinical trials should be undertaken to ensure that the involvement remains relevant and meaningful. Acting on these recommendations will provide the impetus to deliver a truly person-centred approach to oncology drug development and its implementation for the benefit of people with cancer.

Introduction

This White Paper has been developed following the Cancer Drug Development Forum (CDDF)'s *'Patient Access and Involvement in Oncology Drug Development'* multi-stakeholder workshop, which took place on 19th - 20th September 2022 in Amsterdam, The Netherlands[1]. The aim of this multi-stakeholder event, which brought together nearly 70 experts (people with cancer and their advocates, researchers, clinicians, industry stakeholders, regulators and policy makers) was to learn about the latest developments and examples of best practice in Patient and Public Involvement and Engagement (PPIE) in cancer research and to debate how the involvement of people with cancer in oncology drug development can be enhanced to ensure a truly person-centred approach to developing and delivering innovative medicines. The White Paper makes a series of recommendations to enhance the involvement of people with cancer in oncology drug development research and innovation for the benefit of people with cancer.

Involving and engaging people with cancer is critical to delivering better research and improved outcomes for those living with and beyond the disease. The European Cancer Patient's Bill of Rights[2], launched in the European Parliament on World Cancer Day 2014, and the recipient of the prestigious 2018 European Health Award for pan-European health initiatives with impact[3], and the European Code of Cancer Practice[4] both specifically stated that cancer patients are active participants rather than passive recipients in their own care (See Panel 1). This principle is also espoused by the European Patients' Academy on Therapeutic Innovation (EUPATI), the European Forum for Good Clinical Practice (EFGCP), the Patient-Focused Medicines Development (PFMD) and the James Lind Alliance where people with cancer are empowered partners in medicines research and development as well as regulatory processes (See Panel 2 A-C). These principles must underpin all aspects of oncology drug development research efforts going forward. The collective experience of empowering people with cancer, their carers, and members of the public to be co-creators has demonstrated the power to develop and deliver innovative oncology drug development research that responds to the real unmet needs of people with cancer. It also enhances transparency in the decision-making process e.g., by establishing the criteria as to when and why patient experience data (e.g., PROs) can be considered as valid evidence in regulatory decision making / or not.[5]

Why patients must be involved in cancer research and innovation

Taking cognisance of patients' experiences to help shape policies and ensuring their seat at the decision-making table ultimately ensures that the research questions being asked are relevant, meaningful, and acceptable to people with cancer. Representative groups of people with cancer need to be involved throughout the lifecycle of clinical research, from the concept and planning stage, study design, consideration of regulatory issues through to the conduct of the research study to its completion, generation of results and their dissemination to all stakeholders.[6,7] As part of this process, people with cancer must be encouraged to challenge researchers, to make suggestions and to be equal partners in the development and implementation of the research.

- During the concept phase, representative cancer patient groups and people with cancer can be instigators of research ideas, can provide relevant guidance on study design relating to patient burden and patient preferences, can consider and highlight endpoints that are important to people with cancer and can provide input into which PROs are most appropriate and their timing. Representative cancer patient groups and people with cancer can also co-create recruitment

materials, protocols, and consent forms, edit lay language summaries, and be involved in developing grant applications.

- During the conduct of the study, representative cancer patient groups and people with cancer can help refine the research question(s) being asked, can define relevant patient populations and the data to collect, can identify and mitigate ongoing barriers to accrual, and can provide additional input into patient information, patient consent information and educational materials.
- Upon completion of the study, representative cancer patient groups and people with cancer can participate in developing and disseminating lay summaries of the clinical study results, can be involved in co-authoring manuscripts and their plain language summaries, and can co-present the research results that they contributed to at relevant events.[8]

Patient advocates involved specifically in research must bring the perspectives of the community they represent, in addition to providing their personal experiences of their own cancer. For people with cancer to be involved in oncology drug development research, they require a basic understanding of not only the cancer research but also the research and regulatory environments, increasing their ability to make meaningful contributions. How patient experts are identified needs to be clarified. Appropriate and recognised training should be an integral component of patient-facing and patient empowered cancer research activities,[8,9] both at the European and national levels. At the same time, the research team should also ensure that the questions asked to patient experts are relevant and not overly scientific. Patient organisations can furthermore assist with considerations about data generation, so that the critical indicators can already be included in clinical research for verification and subsequently be part of the clinical evaluation going forward.

Regulators (e.g., European Medicines Association (EMA), Food and Drug Administration (FDA)) have worked with people with cancer and their advocates to establish frameworks for engagement and interaction[10,11] that should ensure that the voice of people with cancer is included in the different regulatory activities of a medicine's lifecycle. Activities range from input of people with cancer into scientific advice,[12] representation of people with cancer on the regulatory agencies' scientific or advisory committees, to outreach initiatives and capacity building. In addition, several activities are on-going to foster development of guidance and methodologies to increase collection and use of relevant experience data of people with cancer in the context of regulatory decision making. While a series of guidances have been released by FDA,[13] stakeholders would appreciate further guidance from EU regulators on criteria and requirements for experience data for people with cancer for decision-making. In addition, transparency and sharing lessons learnt [14] on actual use of experience data of people with cancer (e.g., PRO, patient preference) for regulatory decision-making would be considered very helpful, as highlighted at a recent workshop at EMA.[5]

Empowering involvement of people with cancer in clinical cancer research

As already referred to, a number of initiatives (See Panel 1, 2) have provided significant impetus for a more people-focussed cancer research and care agenda, empowering people with cancer to be co-creators of, and equal partners in clinical cancer research activities and their implementation.

Recent developments that are empowering people with cancer to be active participants in cancer research include the Joint Declaration of the German, Portuguese and Slovenian Trio Presidency of the Council of the EU:[15] and the European Cancer Groundshot (Panel 2G, H) The Trio Presidency of the EU emphasises that "*patients must not be viewed as mere research objects…. they should hold an*

appropriate share of decision-making power in the research process." The European Cancer Groundshot calls for a more patient focussed, data-informed approach to cancer research in Europe.

Enhancing the involvement of people with cancer in oncology drug development and cancer clinical trial delivery

Evidence for the benefit of increased participation of patients in the design of clinical trials comes from a number of sources, including the finding that close to 20 research funding organisations in the Netherlands have patient participation advisory teams who significantly contribute to the research agenda-setting, the calls for proposals and the eventual research funding decisions.[16] The study found that all the research organisations faced the same challenges, experiencing difficulties in finding people with cancer from different sociocultural backgrounds to participate in the research agenda, to decide if and what training they should be provided with in order to become active participants and the view that not all investigators are open to involving people with cancer in their research. Similarly, most American members of the PAIR – Patient Advocates in Research (Panel 2E) informal online community of patient advocates,[17] are expert patient advocates serving on various cancer research advisory bodies and teams (FDA, NCI, Foundations, Cancer Centres) and are leaders of patient advocacy groups that focus on research. *SWOG*—(Southwest Oncology Group) one of the largest cancer clinical trial network groups in the United States (Panel 2F) that is funded by the National Cancer Institute (NCI), has developed a structured process to engage patient and community advocates in the development and implementation of their trials.

Cancer research activity in the UK has experienced a particular surge in patient involvement in research, due to the work of the National Cancer Research Institute (NCRI) and its PPIE Subcommittee.[18] Additionally, organisations such as the National Institute for Health Research (NIHR), now expect active patient involvement in the research that it funds.[19] The *Independent Cancer Patients' Voice* (ICPV)[20] is a patient group that has a particular focus on research (Panel 2I).

The cancer patient community has been a key driver of patient involvement in cancer research. WECAN, the Workgroup of the 22 pan-European cancer patient advocacy networks, have educated patient advocates across Europe on effective patient engagement in cancer research, patient-driven evidence generation, evidence-based advocacy, data protection (GDPR), the new EU clinical trials regulation 536/2014 as well as quality of life measurement.[21] The patient community has also contributed to EU projects like IMI-SISAQOL[22] and the HARMONY Alliance.[23]

Patient involvement in cancer research at European level is also supported by the European Cancer Patient Coalition (ECPC),[24] an umbrella organisation representing more than 450 different cancer patient organisations in Europe. ECPC emphasizes the importance of involving patients as co-researchers, and strongly advocates for early participation of people with cancer in defining research priorities and continuing to provide input right up to completion of the study and afterwards.

IMI-PREFER has developed recommendations for how and when it is best to perform and include patient preferences in decision making during the oncology drug development life cycle. Supporting the development of guidelines for structured patient input into decision-making for the pharmaceutical industry, regulatory authorities, health technology assessment bodies and reimbursement agencies, the IMI-PREFER sets the rules for patient involvement in medicines development.

Digital Learning platforms for an online delivery of training to patients: The European School of Oncology learning platform and the International Agency for Research on Cancer (IARC) repository platform provide opportunities to develop educational materials to inform people with cancer at the national level about the need for and the steps required to support their involvement in cancer research. This will be implemented through the research project *CCI4EU Horizon2020* coordinated by the Organisation of European Cancer Institutes (OECI), together with the European Academy of Cancer Sciences (EACS) and ECPC. In the US, The National Breast Cancer Coalition (NBCC) runs a five-day intensive Leadership Education Advocacy Workshop to teach people who have been affected by breast cancer how to review research proposals, read papers, collaborate with breast cancer scientists, and think critically. The most important outcome from this project has been the empowerment of trained patient advocates to make meaningful contributions to the grant peer-review process.[14]

At national level, organisations, such as the Patient Expert Centre in Belgium,[25] are designing appropriate collaboration processes between patient organisations on the one hand, and industry and university hospitals on the other hand. Working groups with representatives from all three parties indicated that patient engagement in clinical research as a priority service should be developed and evaluated.

IMI initiatives, including PREFER,[26] identify patient preferences throughout the medicine's life cycle. The choice of patient-relevant endpoints may show which characteristics of a medical product or disease are most important to people with cancer (qualitative assessment), and how much they matter to people with cancer (quantitative assessment), while PARADIGM (Patients Active in Research and Dialogues for an Improved Generation of Medicines)[27] is another multi-stakeholder platform that identifies meaningful engagement of people with cancer as a critical component in the life cycle of medicines for better health outcomes. While these initiatives are not cancer-specific, their outputs can be applied to oncology clinical trials.

However, there is still a need for studies to be designed to demonstrate the additional value of including the involvement of people with cancer in the design and delivery of cancer research studies. Early involvement of people with cancer in research studies offers opportunities for identifying, influencing and prioritising research questions and defining meaningful study endpoints. Patient empowerment, as far as cancer research is concerned, is mostly related to unmet needs of people with cancer.[28] Challenges to assessing the impact of the engagement of people with cancer include lack of well-defined endpoints, the delayed nature of impact, absence of reliable measurement tools and accepted criteria for judging success of PPIE. Research is also needed to determine how to overcome the barriers of involving people with cancer as co-investigators.[29]

Why involve patients in designing cancer research?

It is now being increasingly recognised that involving people with cancer in cancer research helps improve the overall quality, efficiency, and impact of the research. In cancer clinical trial design for example, patients help to focus the study's outcomes on the measures that patients value, such as reduced toxicity and tolerability and the ability to maintain sufficient physical and mental function to return to work or keep up social engagement.

Input of people with cancer is needed to include endpoints that are relevant to patients and to identify which PRO measurements are appropriate to consider and collect. In addition, as currently assessed by WECAN's European Atlas on Clinical Trials in Cancer and Hematology (EuroACT),[21] it is also

important to identify the utilization of PROs and PROMs[30] that measure meaningful domains of health related Quality-of-Life, symptom burden and daily functioning in cancer trials. Not including the input of people with cancer in the research process risks devaluing the ability to deliver patient-relevant oncology medicines that enhance the lives of those affected by cancer. Design of validated PRO questionnaires should have significant input from people with cancer and be prepared so as to balance meaningful input without overburdening the patient.[31] Also, we need to work to consensus on principles of how PROs are applied in the clinical trial design and used in reports and publication.

Poor recruitment and retention of participants in clinical trials is a major source of research inefficiency, delaying delivery of findings, increasing costs, and potentially leading to biased results. However, the value drivers, expected net present value and impact of involvement of people with cancer in medicines development can be quantified. When co-designing studies, people with cancer and care givers can provide insights into reasonable expectations of clinical trial involvement, such as number of repeated clinic visits, biopsies and scans that will be tolerated by people with cancer. Early involvement of people with cancer in research offers opportunities for identifying and influencing research questions and defining meaningful study endpoints. Patient empowerment, as far as cancer research is concerned, is mostly related to unmet needs of people with cancer.[28]

Evidence from the IMI-PARADIGM suggests that involving people with cancer early in the design phase leads to faster enrolment, higher retention and better compliance with study procedures.[29] Involvement of people with cancer can potentially increase enrolment rates by achieving greater access to potential participants, helping create more patient-relevant and lay-person-friendly invitation letters and information sheets encouraging people with cancer to join the trial, ensuring a more patient-centred trial design, and developing research questions that are more patient-relevant and more likely to be endorsed by people with cancer.

People with cancer play a very important role in communication and dissemination of research findings beyond academic audiences. In reaching wider audiences, people with cancer have a role to play in co-creating plain language summaries of study results. The Good Lay Summary Practice Guideline, a European Commission Guideline setting the standard for the planning, development, translation and dissemination of lay summaries of clinical trial results, developed in collaboration between the multi-stakeholder Roadmap Initiative to Good Lay Summary Practice and the European Commission DG Santé recommends the involvement of people with cancer with different levels of drug development competence in the lay summary process for clinical trial result communication. To ensure patients can act as authors, co-authors or peer-reviewers of scientific publications, WECAN and ENVISION have provided an open-access training course for patient advocates to educate them about the publication process, author responsibilities, publication plans, journal selection, peer-review and dissemination.[32] One issue regarding patient authorship, highlighted in a recent commentary[33] , is the challenge of conducting research into patient authorship when publishers use no clear or consistent way of identifying patient authors. The commentary calls for the introduction of a suitable standard 'metatag' or set of 'metatags' that would enable the identification of patient authors, thereby facilitating a wide range of quantitative and qualitative research studies to take place on patient authorship.

Involvement of people with cancer also provides a conduit to address societal expectations around transparency and accountability of research that is often publicly funded, or funded from charitable contributions. It supports the moral argument that those affected by a medical condition or providing

funding support for the research be involved in guiding what the research should be and how it should be performed, including priority setting and the prompt translation of the research for clinical benefit. It also promotes the concept of open science and data sharing[20] and thereby helps contribute to optimum use of the collected data. Transparency around the input of people with cancer can also be improved by including PROs in the product information of oncology drugs and to support coming to consensus on principles of how PROs are applied in the clinical trial design and used in reports and publication.

There are however challenges associated with co-design, including the increased time required to undertake research, the need for additional financial resources, a perceived tension between researchers and end-users and the need to ensure research rigour while incorporating end-users' preferences.[34]

DATA-CAN: a real-world example of how patients are involved in co-creation of cancer research.

DATA-CAN,[35] the UK's Health Data Research Hub for Cancer is a *prima facie* example of the benefits PPIE can bring to cancer research and its translation (See Box). From the onset, PPIE activity was embedded within the DATA-CAN programme of research, with the objective of ensuring data are used in a transparent and responsible way, benefitting the NHS, people with cancer, and society. People with cancer were involved in the initial writing of the grant application that led to DATA-CAN's establishment and helped to draw up its initial strategy. They also made suggestions for inclusion in DATA-CAN's partnership agreement that were adopted, co-designed the PPIE role specification/ PPIE group terms of reference and sat on interview panels for senior positions, such as the chief operating officer.[36]

People with cancer are involved in all DATA-CAN's discussions with academic, public sector and private sector potential partners and have the right to veto any DATA-CAN proposal or contract. For instance, the PPIE group objected to a particular commercial company's proposed terms, so this project was not undertaken. Other examples of PPIE member's influence include lobbying DATA-CAN to collect and curate historic data from patients with early stage triple negative breast cancer.[36]

Critically, DATA-CAN's PPIE ethos and activities have been recognised as sector leading, *"Patients are not only empowered, they feel empowered."*[36]

The opportunity presented by the proposed European Health Data Space

In May 2022, the European Commission published the proposal for a European Health Data Space (EHDS) regulation, which aims to empower people in relation to control over their own health data and to improve the re-use of health data for research, innovation, and policymaking.[37,38] Of note are the rules regulating the secondary use of health data (Chapter IV of the EHDS proposal). The EHDS proposal establishes a permit-based system that allows health data to be shared for specific purposes,[39] including scientific research. It envisages a new actor: health data access bodies at national level, which will be public service bodies, responsible for granting access to health data for secondary use. The health data access bodies will be required to *"actively cooperate with stakeholders' representatives, especially with representatives of patients"*. This obligation, although showing a positive evolution towards involvement at people with cancer at EU level, requires further specification to fully embody the PPIE ethos.

Recognising the critical relevance of people with cancer in helping to drive oncology drug development research and its integration into clinical care as articulated above, we have developed a series of recommendations:

Recommendations

1. People with cancer, their advocates and cancer patient organisations should be involved from the earliest stages of the oncology drug development research cycle, including helping to generate the research hypothesis, assisting in setting study goals, contributing to study design, choosing study endpoints and patient-reported outcome measures as well as preparing documents as necessary.
2. To focus on the unmet needs and priorities of people with cancer, avoid tokenism and provide balanced representation of the perspective of people with cancer, patient organisations should be involved in the PPI consultation to ensure a representative sample of people with cancer from different backgrounds contributes to oncology drug development research programmes
3. Participation of people with cancer in cancer research for drug development should be facilitated and appropriate guidance and capacity building should be offered by pertinent national authorities to people with cancer and their advocates to enable their meaningful involvement.
4. People with cancer and their advocates who actively contribute to the study design and conduct of the research should be offered co-authorship of any resulting publications as per journal guidelines, clearly signalling the importance of involving people with cancer in research.
5. In addition to bringing their lived experiences and evidence from their community, people with cancer can also offer their own specific professional skills to enhance the cancer research agenda.
6. People with cancer should have access to all information to allow them to make a meaningful, informed contribution to oncology drug development and its implementation
7. People with cancer should have access to training on data protection related topics, especially in the context of increased digitalisation, and the importance of secondary use of data. Training such as the EUPATI Open Classroom or the WECAN Academy should be more frequently deployed to enhance people with cancer's technical knowledge about research and development.
8. People with cancer must be appropriately compensated for their contribution to clinical cancer research and oncology drug development.
9. In making funding research decisions, grant awarding bodies should give higher priority to research studies that provide meaningful involvement of people with cancer and people with cancer should be involved in the grant reviewing process. Existing guidance such as from the Rising Tide Cancer Research Foundation provides a basis for research funding institutions
10. Guidelines are needed around methodology of patient generated evidence in regulatory decision making (collection, integration, and impact), and there is also a need to increase transparency in the use of patient experience data in the regulatory decision making process, as well as clear and communicated timelines and deadlines in R&D and regulatory processes.
11. Research is needed to evaluate barriers to participation of people with cancer in cancer research, particularly in underserved communities, and to determine how to overcome these barriers.
12. Existing frameworks on value of performance metrics and financial value should be used to assess the value and benefit of involvement of people with cancer in research. Further research investigating evidence of benefit of involving people with cancer in oncology drug development and the design of cancer clinical trials should be undertaken to ensure that PPIE input remains relevant and impactful and proves its value for all stakeholders.

Conclusion

In this White Paper, we have highlighted the critical role that people with cancer, their advocates and those in a caregiving capacity can contribute to the cancer research effort, with particular emphasis on the importance of PPIE in oncology drug development and clinical cancer research. We are advocating for a much more patient focussed research effort, with the significant voice of people with cancer included in helping to define and implement the cancer research agenda. Empowering people with cancer, their advocates and those in a caregiving capacity to be more active participants in cancer research can significantly enhance both the quality and the relevance of the research undertaken. In the context of oncology drug development, this can lead to the development of innovative approaches that maximise the benefit of the medicines produced, so that they not only deliver more efficacy, particularly against "difficult to treat" cancers, but that they also address the need for safer medicines with less side effects. Our Recommendations, if acted upon, will firmly embed the voices of people with cancer in both cancer research agenda setting and its implementation, leading to an enhanced people with cancer centred oncology drug development agenda that delivers benefit and value for people with cancer, health services, researchers, and the private sector.

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Annex

Panel 1: The European Cancer Patient's Bill of Rights and the European Code of Cancer Practice

The European Cancer Patient's Bill of Rights:[2] Co-created by cancer patients and their advocates, the European Cancer Patient's Bill of Rights was designed to challenge the inequalities that cancer patients in Europe experience on a daily basis and to act as a catalyst for change to provide every European citizen with the right to optimal standards of care. The 2nd Article of the Bill of Rights states *"The right of every European citizen to optimal and timely access to appropriate specialised care, underpinned by research and innovation"***,** emphasising the importance of research and innovation to improving cancer care and outcomes. The 3rd Article of the Bill of Rights states *"The right of every European citizen to receive care in health systems that ensure improved outcomes, patient rehabilitation, best quality of life and affordable healthcare";* of particular relevance are two subsections. - Subsection 3.7 stating the need to, *"Recognise patient advocacy organizations as equal partners in all aspects of cancer care, research and innovation,"* and Subsection 3.13 indicating the need to *"Involve patients, care-givers and patient advocacy organizations in all aspects of design and conduct of patient-centred clinical research".*[2]

The European Code of Cancer Practice:[4] The European Code of Cancer Practice, co-produced by an equally balanced group of people with cancer and their advocates and cancer professionals was launched with EU Health and Food Safety Commissioner Stella Kyriakides in September 2020, providing a citizen- and people with cancer-centred manifesto that signposts what Europeans with cancer should expect from healthcare systems, once more empowering them to become active participants rather than passive recipients in their care. The 6th Right of the Code emphasises the importance of Research and Innovation in helping to deliver the best possible care for people with cancer (see Figure 1).

Panel 2A – 2I: Descriptor of different initiatives referred to in the main text

Panel 2A: *The European Patients' Academy on Therapeutic Innovation(EUPATI):* [40] The IMI-funded consortium project with 32 project partners, initially coordinated by the European Patients' Forum and now established by an independent foundation in the Netherlands, has been a significant co-driver of involvement of people with cancer in medicines R&D and regulatory processes since 2012. It has developed tools and frameworks as well as educational resources to empower people with cancer, their advocates, industry, academia and regulators concerning involvement of people with cancer in the development of new medicines. EUPATI has also published appropriate guidance, covering principles, codes of practice, input, suggested working practices, identification of appropriate partners and compliance issues. Similar training is offered by other organisations including European Organisation for Research and Treatment of Cancer (EORTC) , American Association for Cancer Research (AACR), Cancer Research Advocacy Group/ Patient-Centred Outcomes Research Institute (CRAG/PCORI), RAN, and Progress for Patients.

Panel 2B *The non-profit Patient-Focused Medicines Development (PFMD),*[41] established in 2015, as a global multi-stakeholder initiative coordinated by The Synergist, has developed and implemented globally standardized frameworks, tools and services to involve people with cancer as partners in research and development, including the "Patient Engagement Management Suite",[42] the Patient Engagement Quality Criteria to assess the interactions with patients as well as SYNAPSE[43] as the digital network interconnecting patient engagement actors, initiatives, organisations and resources.

Panel 2C *The Rising Tide Foundation for Clinical Cancer Research (RTFCCR),* a private philanthropy that funds academic research, and Patvocates, a patient advocacy and engagement network, have developed a set of guiding documents and resources for funding institutions, grant applicants and patient advocacy organisations to establish effective patient involvement in funding mechanisms and academic collaborative research activities.[44]

Panel 2D *Friends of Cancer Research* Founded in 1996, to commemorate the 25th anniversary of the National Cancer Act in the USA, *Friends of Cancer Research* is committed to creating and implementing policies ensuring patients receive the best treatments in the fastest and safest way possible. They work to accelerate policy change, support ground breaking science, and deliver new therapies to patients quickly and safely. To this purpose, they unite scientists, pharmaceutical companies, and policy makers with shared trust and guide them toward meaningful cooperation. They work for people with cancer, their families, and anyone impacted by cancer.

Panel 2E *Patient Advocates In Research (PAIR*) is an informal, international communication network that injects patient realities into medical research and healthcare to get better answers to people more quickly. The international network of patient advocates share information, issues, and strategies to get more out of every research dollar for cancers and other diseases. They follow on emerging sciences and communication strategies to focus efforts on better ways to discover, develop and deliver treatment, healthcare and prevention. PAIR members serve on boards and committees for the National Institutes of Health (NIH), National Cancer Institute (NCI), Food and Drug Administration (FDA), Office of Human Research Protections (OHRP), Department of Defense, (DOD), Centers for Disease Control (CDC), Agency for Healthcare Research & Quality (AHRQ), private foundations, professional associations, disease and patient advocacy organizations, companies, and academic institutions.

Panel 2F *SWOG (*formerly Southwest Oncology Group)—one of the largest cancer clinical trial network groups in the United States that is funded by the National Cancer Institute (NCI), has developed a structured process to engage patient and community advocates in the development and implementation of their trials. Research advocates are involved in all aspects of trial design and

development, ensuring that the concerns of people with cancer are addressed and that patients understand the risks and benefits of joining a trial. Community advocates assist with building awareness within communities. Rigorous training and mentoring programs are put in place to ensure advocates can offer optimal support to the research programmes.[45]

Panel 2G *Joint declaration of the German, Portuguese and Slovenian Trio Presidency of the Council of the EU* Involvement of people with cancer in cancer research was further strengthened by the joint declaration of the German, Portuguese and Slovenian Trio Presidency of the Council of the EU, who in September 2021 adopted *'Principles of successful patient engagement in cancer research'*.[15] The document, representing a compilation of many national, European and international initiatives to foster patient involvement, echoes the Bill of Rights and the Code of Cancer Practice and declares that people with cancer should be actively involved in research design from the outset and calls for a cultural change in science towards more participation of people with cancer. *"Above all, patients must not be viewed as mere research objects. They should be systematically involved as active partners or co-researchers at eye-level, and they should hold an appropriate share of decision-making power in the research process."*[15]

Panel 2H *The Lancet Oncology European Cancer Groundshot Commission*,[46] launched at the European Cancer Summit in November 2022, represents the most in depth study of cancer research activity in Europe to date. It has deployed this data intelligence to illuminate the need for a more patient focussed, data-informed approach to cancer research in Europe, defining through a Call to Action a series of 12 citizen/patient centred recommendations that will help inform the European cancer research effort over the next decade. This Call to Action underpins an ambitious 70:35 Vision, an average of 70% 10-year survival for patients treated for cancer in Europe by 2035.[46]

Panel 2I The *Independent Cancer Patients' Voice* (ICPV)[20] was started in July 2009 by a group of breast cancer patients with a keen interest in research. ICPV involve patients in clinical research (including clinical trials, working with clinical/academic units, tissue banks etc) putting the patient perspective and helping to improve clinical research. This leads to better recruitment to clinical trials and faster improvements in treatments and outcomes for all cancer patients. To enable patients to get involved, ICPV run study days where people with cancer meet academics and clinicians who work in cancer research at their centres of excellence. The study days aim to raise the patients' level of clinical knowledge of new treatments, latest scientific developments, statistics, basic biology and to help the academics and clinicians understand the patients' perspective. The days also empower patients to speak as equals with the professionals as patient advocates. The VOICE: Science for Patients Advocates five-day course has been developed with Barts Cancer Centre. Their members work within the NCRI at a strategic level with clinicians and clinical researchers in order to improve clinical research and are involved in the design and/or running of at least one clinical trial. Examples of ICPV activities are the editing of patient information leaflets, to make enrolment in clinical trials attractive for cancer patients; interventions to the ethics committee to prevent unnecessary barriers

to research; influencing consent procedures for the use of tissue; supporting work with Breast Cancer Now's Tissue Bank's board of management and tissue access committee; contributing to clinical trials.

Box 1: DATA-CAN: embedding the patient perspective to drive better cancer research

DATA-CAN was launched in September 2019 to break down silos between many different sources of cancer data and intelligence and instead unite them to drive better research and deliver greater individual and societal benefits. DATA-CAN was developed to work in partnership with data custodians in universities, charities, industry and NHS organisations to make high quality health data more accessible for cancer researchers, clinicians and other health professionals.

DATA-CAN provides a conduit for cancer researchers to perform high quality, patient relevant research. For example, use of 'real-time' cancer data from hospitals in the UK across the NHS has enabled health services to identify issues and respond to events such as the COVID-19 pandemic, when DATA-CAN rapidly pivoted from an overarching cancer data agenda to focus on addressing the pandemic's effect on cancer services and patients with cancer. At the European level, this work has underpinned the European Cancer Organisation's 7-point plan47 and Time To Act campaign48 that are focussed on mitigating the impact of COVID-19 on cancer.

PPIE members were invited to be involved at all levels of the organisation. Thus, two patient representatives sit on the DATA-CAN steering group (all other stakeholders only have single representation); two patient representatives sit on the DATA-CAN management group and at least two patients are involved in all DATA-CAN project boards.

PPIE has been embedded in DATA-CAN since its inception. PPIE members were selected after a call advertised in patient organisation newsletters, on social media, and the NHS's website https://www.peopleinresearch.org, with the application including questions about what attracted them to the role and what they could contribute. Applicants were then selected after an informal 'discussion' that assessed their ability to listen, speak and collaborate proactively. As well as these qualities, the selection process took into consideration other factors such as their life experience as patients and carers. Different life experiences influence people's perceptions and guide their feedback on projects. Additionally, opinions vary according to cancer type, stage of cancer, geographical region, socioeconomic status and race/ethnicity. There was a need to ensure those with poor survival and rare diseases were well represented.

PPIE members are proactively offered training to empower them in their roles with DATACAN. PPIE members identified a range of themes where they felt greater knowledge was needed, including legal aspects, international data comparisons, research access to data, and commercial uses of data. To address these, nearly 20 drop-in sessions have been held online with each topic including a briefing pack, presentation from an expert on the topic, and an open Q&A session. All sessions are recorded, providing a learning resource for members and one-on-one training is also delivered where required. It was also recognised that patient's professional skills experience can be valuable, with patients who had backgrounds in IT and data intelligence contributing greatly to the work of the DATA-CAN project.

DATA-CAN recognised that to place patients on an equal footing with other stakeholders, value needs to be given to their time and expertise. Compensation is by honoraria, aligned with INVOLVE guidelines,[49] with travel and other expenses also reimbursed. No expectation is set on the patient's time commitment, with DATACAN working on the basis that the average commitment will involve two to three hours per calendar month.

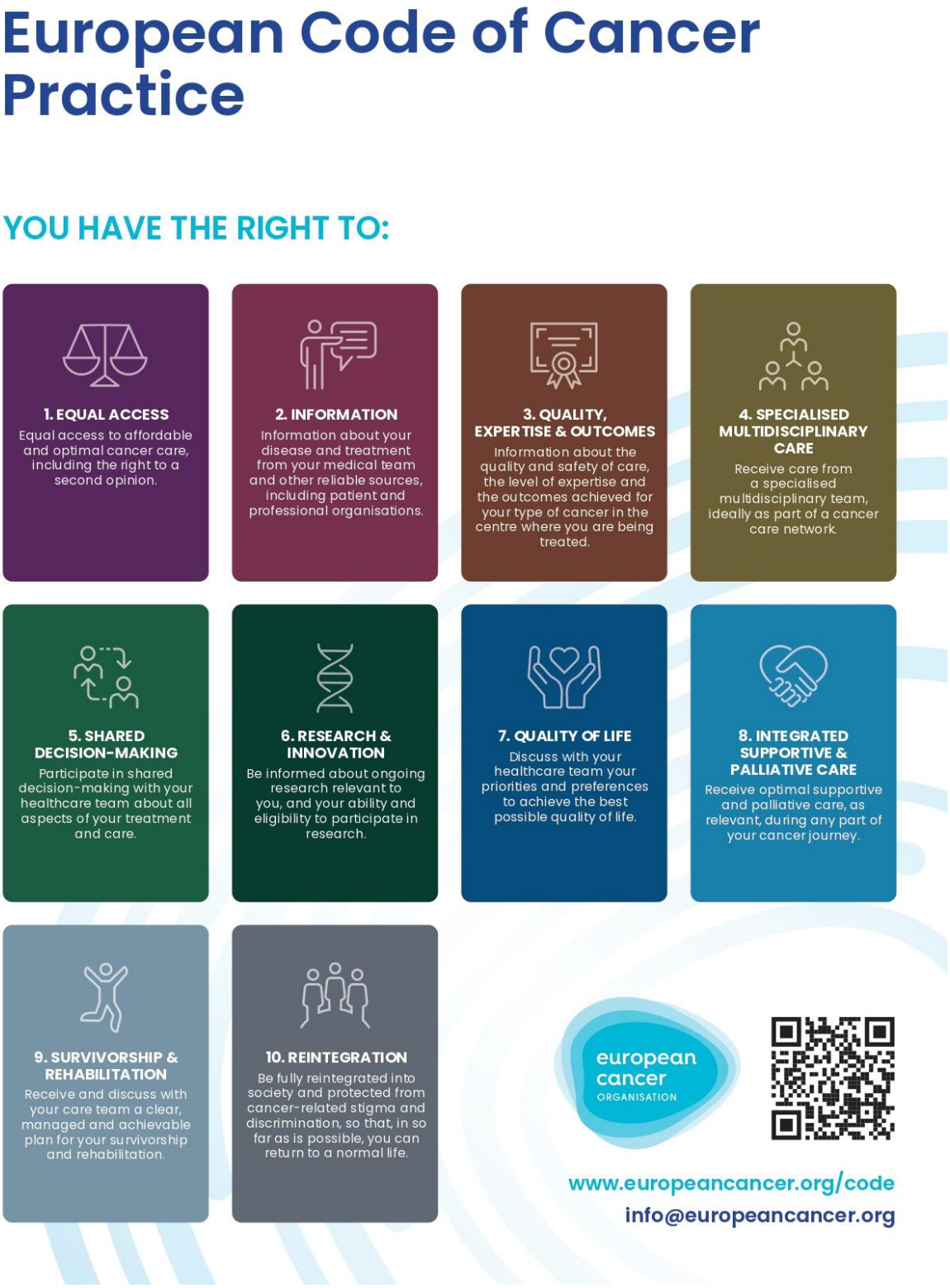

Figure 1. The European Code of Cancer Practice