Health and Social Care Committee inquiry: Future cancer – Cancer Research UK submission, April 2023

Summary

- Innovation has the potential to transform cancer diagnosis and care, for example by increasing clinicians' capacity, facilitating improvements in treatment planning, detecting cancer earlier, facilitating kinder treatment or enabling the delivery of more personalised and precise treatment.
- The below response sets out which innovations have the greatest potential to optimise and transform cancer care in the short-, medium- and long-term.
- For innovations in diagnosing and treating cancer to be successfully transitioned into frontline clinical settings, the correct infrastructure must be in place. This includes ensuring appropriate staffing levels and research capability, dedicated staff time for research and opportunities to build research expertise, ensuring the necessary digital infrastructure and equipment is in place, as well as appropriate access to data.
- Clinical research is also an essential part of transitioning innovative diagnostics and treatment into frontline clinical settings, therefore it is important that the NHS fosters a strong research culture.
- Innovations have the potential to ease pressure on the cancer workforce. However, for innovations to reach their full potential, the workforce must have sufficient capacity and training in the necessary skills for their successful adoption.
- Staff shortages across the NHS workforce limit the NHS's ability to develop and adopt innovation. The forthcoming NHS Long Term Workforce Plan must address the workforce crisis head on by setting out transparent projections for the need for growth in the cancer workforce in the next 5, 10 and 15 years, alongside measures to improve staff retention and maximise capacity today. Crucially, this must be underpinned by the funding needed to make a robust workforce plan a reality.
- In addition to workforce growth, in the coming years the roles and skills required within the health workforce will need to adapt, for example, for the likely increase in the use of genomics. The forthcoming NHS Long Term Workforce Plan must account for the future of cancer care in its 10- and 15- year projections and make fully funded commitments to expand and upskill the workforce where necessary.
- To continue driving innovation forward, workforce plans must also address three key challenges to embedding a culture of research in the NHS:
    - dedicated research time
    - research skills and training
    - inequalities in staff access to research
- Life-changing improvements in cancer care and survival are not distributed equitably across society. Addressing inequalities in patient access to clinical trials and new innovations will be key if innovations are to have maximum impact on reducing health inequalities.
- Inequalities in patients' access to clinical trials mean that new medicines and treatments are often not trialled adequately across different groups. The consequence of this requires further investigation, however it is likely that research disparities could be contributing to wider cancer inequalities.
- In order to comprehensively understand the impact of innovations in cancer diagnostics and treatment on health inequalities, better data capture is needed.

1. What are the innovations with the greatest potential to transform cancer diagnosis and treatment in the short, medium and long term?

1. There are several key factors to consider when determining the potential of an innovation to transform cancer diagnosis and treatment. Innovations can have significant impact in increasing clinicians' capacity and facilitating improvements in treatment planning. Innovations can offer an improved understanding of risk across the pathway, including ways to assess it and interventions to reduce risk, or detect cancer earlier. They can also aid us in developing a greater characterisation of disease in patients. Crucially, innovations can facilitate kinder treatment, and reduce the need for invasive procedures. Finally, innovations could enable the delivery of more treatment options, and more personalised and precise treatment, improving patient outcomes. Cancer Research UK's response will consider which innovations have the greatest potential, but also the wider changes required to optimise more established innovations.

Short term

2. CRUK defines the short term as innovations that are likely to be ready for adoption and implementation in the next three years (please see appendix for infographic demonstrating the different stages of translation).[1] The immediate priority is to optimise existing technology that we have at our disposal to provide improvements in efficiencies now, as well as technology underpinning infrastructure for future innovation to build on.

3. Ensuring that the digital infrastructure underpinning the health system is fit for purpose, agile and up to date across the country, and reducing variation in access to technology, will be crucial in optimising innovations. In the short term, effort should be focused on applications that are easy to implement and improve (or provide alternative options for) access to care and ways of working without compromising patient safety. Focusing on optimising the existing applications is the most impactful way to address current system needs without placing further burden on frontline staff to implement new and disruptive technologies. This includes harnessing digital technology and software to aid patient triage, recognition and referral (e.g., clinical decision support tools), provide alternative ways of accessing services (e.g. telehealth) and digitally enabled workflows (e.g. virtual multidisciplinary team (MDT) meetings). Digital pathology also has the potential to improve patient care and support the pathology workforce by making the diagnosis and monitoring of disease more efficient. However, to ensure even implementation, further investment in IT infrastructure, staffing and training is needed.
4. Simple digital interventions, such as sending text messages to remind patients of screening appointments, supports improving uptake, and realising the full potential of digital platforms such as the NHS App underpin the success of innovations like tomosynthesis), used for breast screening. This could be transformative for patients by reducing unnecessary biopsy.

5. More complex digital and IT infrastructure is needed to support innovations in risk stratified screening. This aims to build a more sophisticated understanding of a person's likelihood of developing cancer which is used to optimise the screening they receive- for example, when they first start being screened, how often they are screened, and which test is used. Research is ongoing, but a shift to stratified screening based on risk factors beyond age, is possible for breast cancer (e.g. breast density risk stratification). The implications for more sophisticated risk stratification for screening will be significant in terms of IT capability. Existing infrastructure would struggle to facilitate complex call/recall arrangements that mean different people are offered different tests, or screening at different intervals. CRUK is aware of ongoing efforts to

[1] CRUK agrees with NHS England's definition of adoption as 'putting a new idea, product, or service into practice that has been used elsewhere', including prototyping, piloting, testing, and evaluating its safety and effectiveness. CRUK defines implementation as best practice on new interventions being rolled out consistently, effectively and equitably across health systems to benefit everyone.

ensure that this is part of the Digital Transformation of Screening; it is vital that this happens at the earliest opportunity.

6. Automation has the potential to improve efficiency within secondary care and increase clinicians' capacity, with computers taking on simple routine tasks. This ranges from using automation for image analysis, including auto contouring CT scans, improving image quality and the use of computer aided analysis for pathology and radiology images. The rapid growth of precision medicines coming online will continue to impose an increased demand on genomic and pathology laboratory testing. Automation will therefore play an essential role in preparing labs for an exponential growth in demand. Attention should be paid to automating aspects of genomic analysis and interpretation, where it is safe to do so.

7. It is likely that innovations such as robotic surgery and MR guided radiotherapy will continue to expand in the number of indications they are used for. These innovations improve accuracy and precision of treatment for some indications and cancer sites, which result in improved recovery, quality of life and reduce the risk of complications and adverse side effects. Both robotic surgery and MR guided radiotherapy are being evaluated for other indications and cancer sites, which means they could rapidly increase over the next few years. However, this is dependent on access to the appropriate technology and expertise, which will require further funding.

Medium term

8. CRUK defines the medium term regarding the innovation landscape as the next five years. Looking at this period, and innovations that are further down the pipeline, it is crucial to consider evaluation and the role of the health system within this. It is important to consider how the UK can create a fair and transparent market for innovations, and that the best technologies are being implemented, not just those from companies that can afford wide-scale, real-world, evaluation. This could involve examining the cost of the NHS evaluating innovations and examining how evaluation from other countries where innovations are being tested could translate to a UK context.

9. Biomarker tests are becoming more sophisticated and their potential to improve patient triage, guiding treatment decisions, predicting recurrence and monitoring for relapse will continue over the next five years. The number of biomarkers for cancer detection and diagnosis will continue to expand alongside novel methods of biomarker detection, such as liquid biopsy. Point of need tests for screening and triage are also becoming more advanced, including urine dipstick tests and breath biopsies, which offer the potential to accelerate early detection and diagnosis (ED&D).

10. In the next five years, we expect advances in artificial intelligence (AI) software to come into fruition for a range of healthcare applications. It is anticipated that AI will improve healthcare professionals' ability to determine aggressiveness of cancers, for example prostate cancer, and predict prognosis and outcomes which could inform treatment decisions.

11. Within treatment, there are exciting developments in enhanced surgical tools that detect molecules released from incisions to determine whether the tissue is healthy or cancerous, such as the iKnife. This could transform surgery, potentially enabling surgeons to make decisions live in the operation based on immediate, accurate feedback on tumour boundaries. CRUK has funded the REI-EXCISE trial, which is being conducted by a team at the CRUK Imperial College London Centre, examining whether one of these tools, iKnife, can be used during breast cancer surgery. However, use of these types of tools would require substantial investment in infrastructure.

12. In radiotherapy, as more advanced methods and technology are embedded into services, it is likely that research will increase and there will be an expansion in the number of indications for areas such as proton beam therapy and molecular radiotherapy. Proton beam therapy allows

radiation doses to be precisely targeted to the tumour, meaning a lower dose is given to the healthy tissue. Proton beam therapy is currently used in a few indications where precise targeting is vital. Ongoing research may provide evidence to support its use for other indications, which will have implications for staff capacity and access to technology.

13. In addition, we expect to see more novel and personalised advanced therapeutic medicinal products receiving approval, such as targeted immunotherapies. Immunotherapies can be used to engage or prime the immune system against cancer cells.

Long term

14. CRUK defines the longer term regarding the innovation landscape as the next ten years. In the next decade, improvements in our understanding of the development and progression of cancer at the biological level will likely lead to better biomarkers for predicting the risk of consequential disease, relapse, and response to treatment. We are also likely to start seeing improvements in the ability to determine risk in the asymptomatic population, which could have implications for precision prevention strategies, as well as stratified screening and care.

15. One of the most innovative areas for early detection and diagnosis of cancer is the development of multi-cancer early detection (MCED) tests. These tests typically use liquid (blood, saliva, urine) or breath biopsies to screen for multiple cancers in one sample. A growing market of MCED tests are in development, which use different methods and technologies to detect and interpret results. There are several applications for MCED tests, and it is likely that their use within symptomatic pathways to improve patient triage may come into fruition first. These tests could also be transformative for improving early-stage cancer detection if they are used in the asymptomatic population. However, there are many unanswered questions around the fundamental biology of early cancer, the performance of MCED tests, behavioural implications for patients and care givers and how they will be evaluated and implemented. Research will be key for informing whether these tests should be available on the NHS. If so, there will be significant implications for new models of care/pathway development, IT and service infrastructure including onward diagnostics, and communications. It is therefore vital to consider system readiness for innovations in the long term, to ensure that those with the greatest potential to transform diagnosis and treatment can be readily adopted and accessed by patients.

16. Another area to highlight is cancer vaccines. Some vaccines being developed and trialled target specific antigens (proteins) present on particular tumour types. Others are personalised to individual patients' tumours, using algorithms to identify the antigens that are most likely to stimulate an immune response. Cancer vaccines could be transformative for patients, offering improved outcomes.

17. As technology advances, there are many potential innovations that could transform a cancer patient's experience of care. For example, self/ home monitoring of treatment response, side effects and symptoms, enabled by clinically validated smart tools would allow for closer monitoring of treatment response and post-treatment management as well as potentially enhancing patients' role in their care. Enabling clinicians to remotely track patients' conditions could streamline service delivery, improve patient outcomes, and reduce workforce burden.

2. How best can innovations in diagnosing and treating cancer be transitioned into frontline clinical settings?

18. For innovations that detect, diagnose, and treat cancer to be successfully transitioned into frontline clinical settings, the necessary infrastructure must be in place. This includes appropriate staffing levels and research capability, dedicated staff time for research and opportunities to build research expertise, as well as appropriate access to data. Ensuring that

the health system is prepared for the implementation of new innovations is essential. It is vital that cancer services have the capacity – both in terms of workforce and equipment – not only to swiftly conduct tests and report on results, but also for clinical leaders to have sufficient time and capacity to engage with, understand and implement new innovations. Implementing innovative approaches to cancer treatment demands staff training, modern equipment, adequate IT infrastructure to share expertise, quality assurance, and the right digital resources and tools.

The role of clinical trials and a strong NHS research culture

19. Clinical trials are pivotal to improving health outcomes for cancer patients, both by providing access to the latest drugs and technologies and testing the effectiveness of the next generation of treatments for use within the NHS. Research is therefore an essential part of transitioning innovative diagnostics and treatments from bench to bedside.

20. Following decades of world-leading cancer research, the UK's life sciences offer risks becoming internationally uncompetitive, making it harder to attract and keep companies here[i]. The UK Government's independent review of industry clinical trials is therefore welcome[ii] as without strong intervention, there is a considerable risk that UK patients lose access to potentially life-saving treatments, now and in the future. One of the main barriers to progress continues to be the NHS's weak research culture, with research too often seen as a burdensome, albeit beneficial, add-on to standard care[iii]. This in turn can hamper the development and transition of innovations into clinical settings. CRUK's report, Creating Time for Research, revealed that 43% of NHS staff in research-inactive Trusts felt culture was a key barrier to research[iv]. When the NHS is under pressure – like it is now – research often suffers disproportionately.

21. The Health and Care Act (2022) took an important step towards establishing a stronger research culture, including by mandating that ICBs publish clinical research plans in their annual reports and joint forward plans. NHSE's commitment to develop a set of research metrics across UK administrations is also key[v]. The current dearth of research metrics makes it difficult for NHS leaders to see and understand the benefits of research.

22. **To help ensure the right research metrics, CRUK recommends that NHSE develops research metrics in partnership with the clinical research community, including medical research charities.**

23. Concerningly, there is insufficient capacity and accountability across delivery partners and DHSC to adequately coordinate, develop and roll-out such commitments, despite their essential role in translating the above legislative change into clinical settings. Without more dedicated capacity for implementation, or greater prioritisation of high-impact activities, we are concerned the plans described in the Clinical Research Vision[vi] and in Lord O'Shaughnessy's advice will not achieve the desired impact.

Data access and linkage

24. Data is an essential enabler of research and innovation; technological and computational advances are enabling researchers to produce and collect vast quantities of disparate and diverse data about patients and biological processes. Without secure and responsible access to data, organisations would not be able to produce new diagnostics, treatments, and drugs for cancer. Improved data collection and access can also help accelerate the development of new treatments by facilitating the recruitment of eligible patients for clinical trials. Data can improve understanding of individual risk and the ability to detect and treat disease earlier, underpinning innovations such as risk-stratified screening.[vii]

25. However, limitations in data access act as a barrier to the development and implementation of innovations. More work remains to be done to optimise appropriate data access for innovation.

Insufficient data linkage can hamper robust research, as researchers require access to large amounts of data to identify trends and patterns within diseases. This is particularly important in innovative areas such as genomics. This has been recognised by Government and the NHS- the Government's Data Saves Lives strategy[viii] was a welcome development in progressing the UK environment for data-led health and care system.

26. **All data captured by the NHS should be appropriately made available for research purposes.**

27. **The UK Government should consider how to ensure timely access to data that is appropriate to the organisation requesting it and the purpose of the study, and how the different processes across the four UK nations affect access to data – and therefore delay research outputs which could improve patient outcomes.**

Removing barriers to commercialisation

28. There are significant barriers to overcome to ensure commercialisation and adoption of ED&D innovations, including a complex regulatory landscape, inappropriate reimbursement, and an unclear health economic model.[ix]

29. **DHSC and devolved equivalents should commit to addressing market failures in the commercialisation and adoption of early detection and diagnosis innovation, through an action plan to remove barriers, incentivise industry investors and accelerate adoption.**

30. This work should be developed in collaboration with relevant Government departments, agencies, and devolved nations equivalents. CRUK would also like to see DHSC initiating the development of a comprehensive health economic model for ED&D to incentivise R&D and support adoption, delivered through a cross-sector working group.

Streamlined adoption pathway

31. When considering how innovations in diagnosing and treating cancer can best be transitioned into frontline clinical settings, creating clear pathways to adoption is key. Innovations are not always adopted equally across the NHS and routes to adoption for some modalities are poorly defined or not fit for purpose. Processes for evaluating, adopting, and implementing innovative cancer treatments must therefore continue to improve and evolve to ensure equitable and timely access for patients. Where formal processes exist, such as MHRA and NICE approval, these should be joined up through clear pathways to adoption, as is the case through the Innovative Licensing and Access Pathway (ILAP) and the Innovative Devices Access Pathway (IDAP).

32. This should include comprehensive horizon scanning for early identification of promising innovations and mechanisms, as part of which services signal clinical need to the research community, for example where unmet need exists and treatment options are lacking. Regulators must be better resourced to ensure that regulation for medical devices and in vitro diagnostic devices (IVDs) is fit for purpose and supports adoption. Initiatives such as the IDAP are promising but require appropriate funding so that they are able to improve the adoption of new and emerging diagnostic tools.

33. Improvement in data capabilities will also be required to enable use of real-world evidence in understanding the benefits of innovations to patients and services, particularly for innovations where other methods such as clinical trials are not appropriate or feasible.

34. **NHS England, in conversation with clinicians and researchers, should clearly define and resource routes to adoption for different types of innovation, outlining accountability and responsibilities of the relevant partners as well evidence and cost-effectiveness requirements.**

35. There is often a mismatch between resources for innovation and resources for adoption and spread, which remain a substantial barrier to the implementation of innovations in frontline clinical settings.[x] Research from the King's Fund suggests that innovators and adopters in the NHS need to be able to access appropriate, sustained funding quickly to ensure rapid adoption of innovation, rather than just receiving short-term funding, which underestimates how long spread takes in practice.[xi] Without this, there is a risk that innovators have to quickly revert to passive dissemination, and that programmes lose momentum well before they have been adopted across large parts of the NHS.[xii]

Ensuring the necessary digital infrastructure and equipment is in place

36. Having the requisite digital infrastructure in place to underpin both existing and future innovations is vital to their successful transition and adoption in frontline clinical settings. Integrating some new technologies will not be possible until the IT infrastructure across the health system is improved. Ageing IT infrastructure remains a major barrier to implementation of innovations, such as digital pathology. Transitioning innovation into clinical frontline settings can be achieved when there is adequate investment and a coordinated approach driven by national-level commissioners in NHS England.

37. **DHSC and NHS England must ensure there is sufficient transformation funding to support Integrated Care Systems and Cancer Alliances to test innovative approaches and technologies and continually improve the digital capabilities to role these out in the long-term. This should include improving interoperability within and across different care settings, and digitisation in diagnostic and screening services, factoring actual or likely innovation requirements into IT development at the earliest reasonable opportunity**.

38. The effective transition of innovation in cancer care also often relies on up-to-date equipment. For example, radiotherapy departments rely on modern machines to consistently deliver conventional radiotherapy with as little downtime as possible, but also to deliver innovative high-precision forms of radiotherapy and evaluate new technology and techniques.

Training, skills, and development for staff necessary to implement innovations

39. As new technologies are rolled out, staff must be given appropriate training to be able to understand and implement new innovations. Currently there is regional variation in access to training and development opportunities for staff, as well as issues around the cost of training and being able to take time out to participate. Making use of the opportunities presented by technology also requires the cancer workforce to improve their digital literacy.

40. For innovations to be implemented effectively, it is vital that staff skills development keeps pace, and that training is iterative. For example, AI radiology reporting is predicted to have a profound impact on the way cancer scans are interpreted and could improve radiologists' efficiency. Consideration is needed regarding how this new technology will be implemented and how to upskill the radiology workforce to ensure it delivers benefits for future cancer patients. More widely, AI has potential to improve demand modelling and resource management, help in the interpretation of images for radiology and pathology, and with planning for radiotherapy and surgery. However, AI will never reach its full potential unless the workforce feels confident in the technology, and its role in clinical decision making is understood. Staff will also need to have the right expertise to evaluate implementations once implemented.

4. To what extent is workforce planning keeping up with innovations in the diagnosis and treatment of cancer?

41. For innovations to reach their full potential, system leaders must invest in adoption, including workforce capacity and training, as well as the innovation itself.

42. Innovative technologies have the potential to ease pressure on the cancer workforce through better triaging of patients to reduce demand, or by reducing the administrative burden. However, as new technologies are rolled out, staff need training in the necessary skills and knowledge to use them. The Topol Review suggests that nearly all NHS staff will require digital skills in the near future.[xiii] Given the opportunities to improve cancer care through data science and AI, fostering lifelong learning of these skills is essential. However, when over half of nurses feel that workload pressures impact on their ability to access training,[xiv] clinical leadership must prioritise creating a culture of learning and development. Attention also needs to be paid to ensuring there are the right number and mix of support roles including IT, data scientists and administration staff. Data on these roles is poorly collected, and they have not been included in previous attempts at workforce planning, such as Health Education England's Cancer Workforce Plan.[xv]

43. The future of cancer care is likely to see genomic medicine improving the early diagnosis of cancer, enabling more precise diagnosis of cancer, and changing the types of treatments available for patients. As such, the types of roles and skills required within the health workforce will need to adapt, with demand for pathology and clinical science likely. Emphasis was rightly placed on growing the genomics workforce in the NHS strategy for embedding genomics in the NHS over the next 5 years,[xvi] and DHSC's Genome UK 2022-25 implementation plan for England.[xvii] These ambitions now need to be translated into national and local workforce planning, which must take a forward-looking view of the skills needed for an effective cancer workforce, coupled with funding to train new staff and upskill the existing workforce.

44. **The NHS England LTWP must consider the future of cancer care, such as the genomics and data science workforce, in their 10- and 15-year projects, making fully funded commitments to growing this workforce.**

45. **NHSE's new training, workforce and education directorate should ensure that all new medical and nursing graduates have a good awareness and knowledge of genomics, and that the healthcare science workforce receive iterative advanced genomics training and education.**

46. Ultimately the NHS's ability to develop and adopt innovation is limited by chronic staff shortages, which are evident across the cancer pathway. The forthcoming NHS England Long Term Workforce Plan is a positive first step towards addressing this by making assessments of how many staff will be needed to keep pace with demand in the next 5, 10 and 15 years. It is crucial that these projections are published in full, alongside measures to improve staff retention and maximise capacity today. Crucially, this plan must be underpinned by the funding needed to make a robust workforce plan a reality.

Embedding research in the NHS

47. To continue to drive innovation forward, upcoming workforce plans must also deliver the Government's ambition to embed a culture of research in the NHS. To achieve this, workforce plans should address three key issues: **access to dedicated research time; research skills and training; and inequalities in staff access to research**.

Access to dedicated time

48. Even in Trusts considered research-active, 51% of NHS staff reported insufficient access to research time[xviii]. For prospective researchers, the scarcity of dedicated time makes it harder to start getting involved in research; and for established researchers, the lack of time forces many

to self-fund their research (e.g., by using annual leave)[xix], disincentivising them from staying in research and developing their expertise and experience.

49. **NHSE and its devolved equivalents should adopt the Academy of Medical Sciences' costed proposal of a pilot scheme offering a cohort of consultant's contracts that include dedicated time for research[xx]. We also recommend offering similar contracts to staff in professions that are underrepresented in research.**

Improving access to research training and skills-building

50. Improving access to training and research is essential to help fill skills gaps and increase clinical research capacity, especially as new innovations emerge. Providing one-off research opportunities rarely gives staff the training and experience needed to drive research and innovation longer-term. For example, NHS staff that get the opportunity to study and develop research skills can then struggle to find jobs that utilise their research training[xxi].

51. In workforce plans, National and local-level NHS leaders must therefore take a systematic approach and provide staff with sustained opportunities to advance their careers and cumulatively develop expertise. This should include targeted support for those from under-represented groups.

- **NHS R&D offices working with local universities to increase the number of opportunities for students to undertake research in clinical settings[xxii].**
- **NHS Trusts establishing mentorship programmes that pair prospective researchers with established researchers, including those from neighbouring Trusts and universities[xxiii].**

Inequalities in staff access to research

52. Whilst research barriers can impact all staff, underrepresented professions (such as nurses, midwives, and Allied Health Professions (AHPs)) face the greater barriers to accessing support and often receive less recognition for their contributions to research[xxiv]. The Royal College of Physicians found physicians from ethnic minority backgrounds and female physicians had fewer opportunities to participate in research[xxv]. By limiting the opportunities available to under-represented professions, women, and ethnic minorities to participate in NHS research, you also limit the NHS's capacity to conduct research and improve cancer outcomes.

53. **NIHR and its devolved equivalents should increase their provision of research training and funding opportunities to groups that are underrepresented in clinical cancer research[xxvi].**

5. Is the impact of innovations in cancer diagnosis and treatment on health inequalities being sufficiently taken into account?

54. Currently, the impact of innovations in cancer diagnosis and treatment on health inequalities isn't systematically considered when innovations are first developed. Awareness of inequalities is improving in certain parts of the ecosystem but considering or demonstrating how a potential innovation could impact health inequalities is not a requirement as part of regulatory approval. We must consider who is developing cutting edge technology, including AI and digital tools, and who these are created for. These can be narrowly focused, and unrepresentative of the overall population, with certain groups not accounted for even in the inception phases of innovation. Addressing this necessitates a focus on increasing diversity in the R&D workforce and encouraging inclusivity in how research funding decisions are made. Ensuring good data quality will also be vital so that interventions can be tested, and that impact can be assessed using comprehensive data.

55. We know that life-changing improvements in cancer care and survival are not distributed equitably across society. Below we highlight the importance of representative research, which aims to understand the root causes of different inequalities, who they affect most, and how they can be addressed, particularly through innovation. It is also vital for insights to be derived from, and applicable to, all relevant populations. Addressing discrepancies in patient access to clinical trials, and to innovative treatments, where unwarranted, will also be key if innovations are to have maximum impact on reducing health inequalities.

Patient access to clinical trials

56. Inequalities in patients' access to clinical trials mean that new medicines and treatments are often not trialled adequately across different groups, meaning decision-makers have less information about safety and effectiveness among these groups. Illustrating the scale of the problem, a recent report by the National Institute for Health and Social Care Research (NIHR) revealed that despite representing 13.8% of the UK population, people from ethnic minority backgrounds only accounted for 5.7% of participants in COVID-19 vaccine studies[xxvii].

57. Potential explanations for these disparities include cultural differences, investigator bias, geographical factors, and poor patient and clinician awareness of relevant opportunities. People from rural communities often face additional time, distance and financial barriers when accessing clinical trials, with some patients from rural areas reporting journeys of over 100 miles[xxviii]. This is partly caused by an imbalance in funding, with more investment in larger Trusts/Health Boards based in urban centres that have specialist infrastructure and personnel[xxix].

58. The consequence of these location-based disparities, and their impact on health inequalities, requires further investigation. However, given studies show that research-active hospitals deliver higher-quality care and better patient outcomes[xxx], including for cancer[xxxi], it is likely research disparities could be contributing to wider cancer inequalities. We therefore welcomed the Levelling Up White Paper's commitment to review the Clinical Research Network's funding formula and increase the proportion of patients recruited from underserved groups.[xxxii]

59. **The UK Government must now set out additional steps to develop clinical research capacity. This should include a regional review of clinical cancer research activity and an evaluation of the impact that regional disparities have on cancer outcomes. Their findings should then inform how DHSC's £5 billion health research allocation is spent.**

60. **UK and Devolved government and health services should provide specific funding opportunities to develop and pilot evidence-based interventions that reduce health disparities, including for modifications of existing approaches. These should be based on open calls for innovation that require trial participants to reflect the target population. If proven successful, sustained long-term funding will be essential for the roll out of these interventions by ICSs and Cancer Alliances to address poorer outcomes within marginalised groups and regional disparities in cancer services. Mechanisms to share examples of best practice between systems will also be critical.**

Patient access to innovations

61. To comprehensively understand the impact of innovations in cancer diagnosis and treatment on health inequalities, we would need to gather a clear picture of patient access. It is hard to judge the extent of regional variation in access to treatments, as this can largely be ascribed to regions having different demographics and therefore different optimal access rates. This makes it challenging to understand what might be driving variation and to determine whether this is warranted or represents under-provision of treatment. Significant variation exists in the type of

diagnostics used across the country, but access to innovation isn't based solely on what is or isn't provided in different regions. Access also depends on logistical barriers for patients. Whilst we know that efforts are underway to improve equity of access to innovations, to fully understand the drivers of inequity better data is needed.

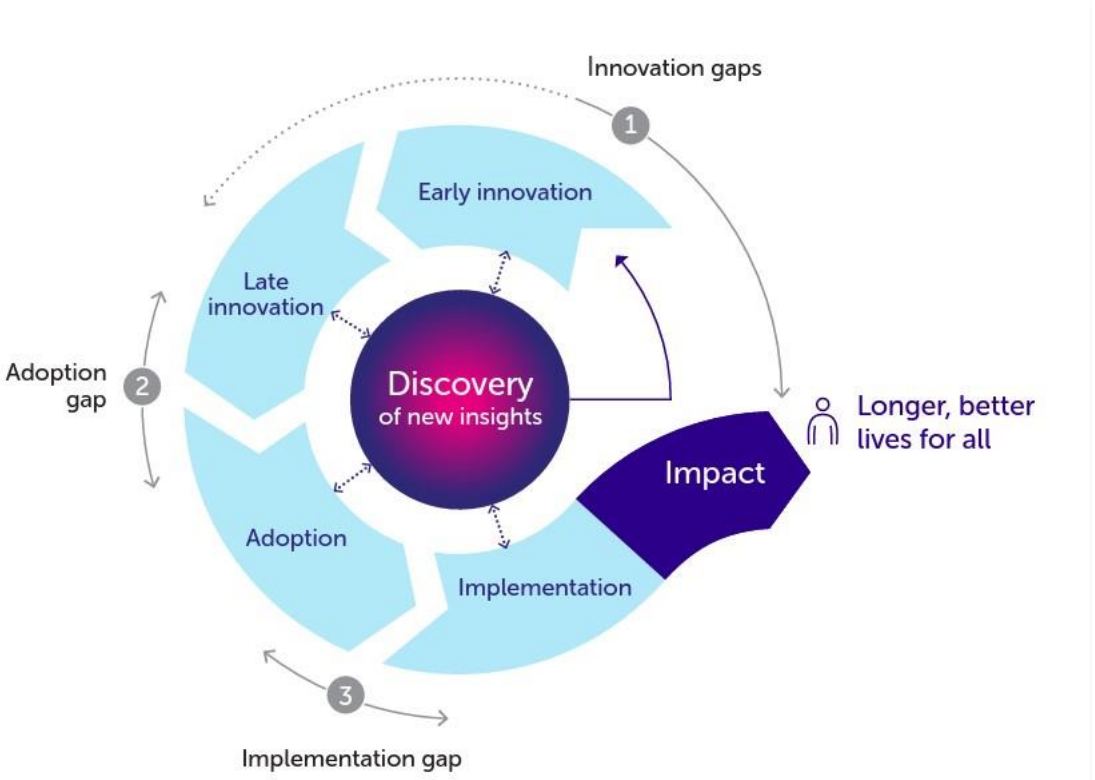
62. **Further improvements to cancer data capture and access should be made priority**. Better capture of data on cancer stage at decision to treat as well as on 31- and 62-day waiting times, broken down by more cancer types and by type of first treatment would improve identification and understanding of variation in access.

This response was developed by the Policy Development and Strategic Evidence team at Cancer Research UK. For any queries or more information please contact Abby Lever, Westminster Public Affairs Officer at abby.lever@cancer.org.uk.

About Cancer Research UK

Cancer Research UK (CRUK) is the world's largest cancer charity dedicated to saving lives through research. We support research into over 200 types of cancer, and our vision is to bring forward the day when all cancers are cured. Our long-term investment in state-of-the-art facilities has helped to create a thriving network of research at 90 laboratories and institutions in more than 40 towns and cities across the UK, supporting the work of over 4,000 scientists, doctors and nurses. In 2021/22, Cancer Research UK invested £443 million on cancer research projects.

Appendix



Cancer Research UK, translation wheel infographic

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