



Precision Prevention: A new opportunity for UK health and life sciences

How the UK Government can drive progress through research

Policy report, June 2026

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Executive Summary

Stopping cancer before it starts has long been a strategic priority for Cancer Research UK. Preventing cancer reduces the emotional and physical burden on individuals and families; eases pressure on the NHS; and saves lives.

Cancer Research UK has played a major role in identifying behavioural and environmental risk factors, such as tobacco and obesity, and in campaigning for interventions to reduce population exposure to these risk factors. However, there is still more to do.

Recent scientific advances have led to new opportunities to go further. Against a backdrop of growing cancer burden and its impact on individuals and the health services, we are exploring opportunities to push the boundaries of what is considered possible in prevention.

Currently, 40% of cancers can be considered preventable through reducing known risk factors.¹ But what if we could target the biological changes that drive cancer, rather than risk factors alone? Precision prevention research aims to do this – and in doing so, could significantly increase the proportion of cancers considered preventable.²

We have therefore made a strategic move to fund more precision prevention research, which precisely targets the processes driving cancer. Early signs show that this investment is building momentum. But greater progress will require coordinated action across funders and government.

The burden of cancer and other long-term conditions is growing. Now is the time to embrace innovative approaches to prevention.

- **Our mission:** Every cancer diagnosis can have a devastating impact on the health and wellbeing of the individual, their family, and their community.
- **The Government's ambition:** as highlighted in 'Fit for the Future: The 10 Year Health Plan for England', long-term conditions such as cancer account for the majority of NHS spending. As such, 'from sickness to prevention' has been identified as one of the three shifts that will be essential to build an NHS that is fit for future needs.³
- **An emerging new field:** Precision prevention is a rapidly developing area with the potential to transform prevention of long-term conditions.⁴

While reducing exposure to risk factors remains essential, this report focuses on the additional impact biology-based approaches could deliver.

There is also a clear economic case for investing now.

- **The Government has committed to developing UK life sciences:** The Industrial Strategy identified life sciences as one of the UK's highest-potential sectors to drive economic growth.⁵ The subsequent Life Sciences Sector Plan set out the goal for the UK to become one of the world's leading life sciences economies by 2035.⁶
- **Precision prevention is an emerging field in which the UK could establish a unique research capability:** It is a novel field, around which momentum is starting to build. It represents a

strong opportunity for the UK to build capability in an underserved field of research that could transform what we consider possible in disease prevention.

- **This could attract large investments:** Prevention research is already attracting interest from the pharmaceutical industry.⁷ From our conversations with industry stakeholders, we know there is a keen interest in biology-based approaches to prevention. Building a precision prevention research capability has the potential to attract commercial investment to the UK. This drives positive economic impact, such as new jobs.

Global shifts in research funding have negatively impacted opportunities for prevention research internationally. Now is a crucial moment for the UK to emerge as a leading research nation for disease prevention.

Activity in precision prevention is increasing, but significant challenges remain.

Cancer Research UK has driven activity around precision prevention research, through:

- Strategic prioritisation in our [2022 Prevention Research Strategy](#).
- Investment in precision prevention research projects, and in understanding risk and risk interception.
- Precision prevention-focused individual funding opportunities, such as our [Biology to Prevention Award](#).

This has increased research activity and sparked international interest.

However, it has also exposed significant barriers within the UK's research environment. In developing this report, we have consulted funders, regulators, industry, and senior researchers in the precision prevention field to gain an understanding of these barriers and develop recommendations to address them.

Precision prevention research is an emerging field; as such, policy work around developing the field is also in its early stages. This report is intended as an initial foundation to set out some of the key barriers affecting precision prevention research, and engage relevant policy stakeholders to develop a coordinated approach to addressing them. Cancer Research UK would welcome the opportunity to advise on practical steps towards the delivery of these recommendations.

This is a critical window of opportunity. Charitable funders like Cancer Research UK can't do it alone. Government backing is imperative to unblock precision prevention research and leverage the full health and economic benefit of the field.

Recommendations

To allow the UK to seize the significant opportunity that precision prevention research presents for the nation's health and wealth, the UK Government, including the Department of Health and Social Care (DHSC) and the Department for Science, Innovation and Technology (DSIT) must ensure that:

Precision prevention research is adequately funded and supported – [Page 11](#)

1. The UK Government should ensure that precision prevention research is explicitly prioritised throughout delivery of Life Sciences Sector Plan (LSSP) commitments to increase investment in prevention research. This should be supported by:
 - Funding for precision prevention research, as government funding agencies UKRI and NIHR shift their portfolio in response to the LSSP.
 - Clear definitions of prevention research that include precision prevention.
 - The development of systems to classify, track and report prevention research spend.
2. NIHR and UKRI should take a coordinated, long-term approach to developing a national precision prevention research capability, working in consultation with the sector. Future core-funded infrastructure should:
 - Support long-term, multidisciplinary research and trials.
 - Enable collaboration across academia, industry, and the NHS.

The researcher capacity gap in precision prevention research is addressed through targeted support – [Page 16](#)

3. NIHR and UKRI should build on current efforts to develop targeted training and capacity-building interventions in precision prevention research. This should:
 - Support key transition points in the research career pipeline, particularly at postdoctoral stage, by building on opportunities such as the Biology to Prevention Award.
 - Promote multidisciplinary collaboration across discovery, clinical, and methodological disciplines.
 - Include recognition and assessment frameworks that reflect the long-term, lower-output nature of prevention research.
4. UKRI and NIHR should prioritise precision prevention within existing clinician academic funding programmes (e.g. NIHR Academy's Academic Clinical Fellowships and UKRI's Clinician Scientist Fellowships). This would:
 - Develop a pipeline of clinical academics that bring the clinical insight that is essential to precision prevention research.
 - Support existing cross-sector efforts to increase the clinician academic workforce.
 - Build workforce capacity in a research area that contributes towards key government health and economic priorities.

The regulatory environment is adapted to better facilitate precision prevention research – [Page 20](#)

5. The MHRA should work with NICE, HRA, and the wider sector to address the regulatory needs of precision prevention trials. This should include:
 - The development of guidance or position statements around key methodological barriers to designing and delivering precision prevention trials.
 - Ensuring greater consistency in regulatory decision-making and feedback.
6. The MHRA should establish a specialised and accessible advice pathway for precision prevention research, similar to its Innovative Licencing and Access Pathway. This should:
 - Provide early, consistent, and ongoing advice for precision prevention trials from design to delivery.
 - Offer support from specialists, helping researchers to design studies that generate appropriate evidence to support regulatory decision-making.
 - Be financially accessible to academic teams.

Definitions

Prevention research refers to all types of research into preventing disease, including non-precision approaches. E.g. preventative interventions that would apply to the whole population, not just people at high risk of developing the disease; and research that aims to prevent disease by reducing exposure to risk factors, such as tobacco or obesity.

Cancer prevention research refers to all types of research into preventing cancer, including non-precision approaches.

Precision prevention research is a new subtype of prevention research. It is a cutting-edge field which utilises discoveries about how disease develops on a molecular level to develop interventions that target those biological processes in those at highest risk, stopping the disease developing in the first place.

Precision cancer prevention research refers to precision prevention research that seeks to prevent cancers specifically.

Introduction

By 2040, new cancer cases in the UK are projected to rise by almost a third, to over half a million every year.⁸ Cancer diagnosis can have devastating emotional, financial, and health impacts on individuals and communities, while the costs of cancer detection and treatment adds to pressure on the UK's already-stretched health systems.

Primary prevention of cancer – preventing cancer before it develops – is increasingly recognised as the most effective way to save lives and alleviate the burden of long-term illness on health systems.

Pushing the boundaries of prevention research

Cancer Research UK has funded research that has transformed understanding of behavioural and environmental risk factors, and how to reduce them.⁹ We also have a strong history of working with government to develop policies that reduce exposure to major cancer risk factors, and will continue to do so.¹⁰

However, to meet the growing burden of cancer, we are building new and innovative approaches to prevention research. In 2022, we published our Prevention Research Strategy, which prioritised 'precision prevention' research. This shift is rooted in a clear vision: a better understanding of the biological processes that cause cancer, and ways to intercept them. Precision prevention is an emerging field in which the UK has early strengths and a significant opportunity to lead globally.

This aims to stop more cancers before they start, by:

- identifying individual risk levels;
- targeting preventative interventions to those most likely to benefit; and
- improving understandings of how and why cancer develops in different demographics to reduce inequalities.

Cancer Research UK's Prevention Research Strategy

In 2022 Cancer Research UK published a new [Prevention Research Strategy](#), which guides how we fund cancer prevention research. In recognition of the growing cancer burden, the strain on health systems resulting from the pandemic, and historical barriers that have constrained cancer prevention research, we explored opportunities to push the boundaries of what is possible in cancer prevention research.

We consulted over 100 experts in the UK and internationally, including the prevention research community, the pharmaceutical industry, patients, and the public. The strategy drew on the input of leading experts, but also sought perspectives from a diverse range of fields, to invite disruptive and innovative thinking.

Through this consultation, Cancer Research UK identified a disconnect between research to understand the underlying biology of cancer risk and initiation, and population research. In light of this gap, and the potential associated with integrating discovery science into prevention research, Cancer Research UK highlighted precision prevention as a key strategic theme in the Prevention Research Strategy.

A step change in prevention research

Precision prevention represents a step change, unlocking new possibilities. Currently, 40% of cancers can be considered preventable.¹¹ However, this reflects only cancers preventable through reducing exposure to behavioural and environmental risk factors such as tobacco, obesity, and ultraviolet radiation. By targeting biological changes rather than risk factors alone, precision prevention has the potential to significantly increase the proportion of cancers considered preventable.¹²

Greater understanding of cancer biology could also help reduce inequalities in incidence. Cancer affects people unequally, for multifaceted reasons. The biological basis of these disparities is not yet well-understood. For example, Black women are disproportionately affected by faster-growing breast cancer subtypes: but the underlying biology is not fully explained.¹³ Where cancer affects different groups disproportionately, building out our understanding of the biological processes driving disease, and how to tackle them, could help to address cancer inequalities.

Beyond cancer: the potential for precision prevention research

Precision prevention targets the biological changes that drive cancer. This approach could increase the proportion of cancers considered preventable and reduce inequalities.^{14,15}

However, this is not limited to cancer. The same approach could be applied in other disease contexts, and similarly deliver a step change in prevention.

This paper draws on examples from Cancer Research UK-funded research and researchers. However, Cancer Research UK is calling for support to develop a broad precision prevention capability. The research capacity, innovative methods, and knowledge generated would create a feedback loop, opening new possibilities across disease prevention.

LungVax: A precision prevention research case study

In November 2025, Cancer Research UK announced an over £2M award for a clinical trial to test the world's first vaccine to prevent lung cancer. The LungVax project started with the discovery of fundamental changes that occur in cells at the earliest stages of lung cancer. Scientists discovered a unique collection of neoantigen proteins (abnormal proteins produced when mutations alter a cell's DNA) that appear on certain precancerous cells in the lungs.

This discovery allowed the team to develop a vaccine that operates in a similar way to the COVID-19 vaccine. It gives the immune system a set of genetic instructions to recognise these neoantigens and destroy the cells, preventing them from developing into cancer.

The Phase I clinical trial for LungVax is expected to begin in summer 2026. It will target a small group of people who have already been treated for early-stage lung cancer but have a high risk of their disease returning, as well as some who are at high risk of lung cancer due to smoking history.

The Phase I trial aims to determine the optimal dose to give people at high risk of lung cancer, and to examine any possible side effects. If results are promising, wider cohorts of high-risk people could be tested in future phases of the trial.¹⁶

Precision prevention and the UK's health ambitions

Long-term conditions, such as cancer, account for 65% of NHS spending.¹⁷ As the population ages, pressure on health services will increase. The UK Government has acknowledged the urgent need to address this by preventing disease before it develops, through one of the three key shifts outlined in the 10 Year Health Plan – ‘From sickness to prevention’, which identified prevention and early intervention as central to improving population health and reducing demand on services.¹⁸ Given its potential to increase the proportion of preventable cancers, precision prevention research is essential to help deliver on this shift.¹⁹ Delivering this shift will require coordinated action across government, NHS England and the research system, particularly to support workforce development and adoption of preventative interventions.

The 10 Year Health Plan also recognises that the NHS has been “behind the technological curve” and that science will be key to underpinning its transformation.²⁰ Precision prevention represents a fitting example of how the power of science and technology can be better leveraged to address the population’s growing needs.

“The NHS of the future will be a service that... predicts and prevents ill health, rather than simply diagnosing and treating it.”

Fit for the Future: The 10 Year Health Plan for England

The economic potential of precision prevention

Alongside benefits for health and wellbeing, and reducing the significant strain on health systems that is associated with long-term conditions, cancer prevention also presents broad-reaching economic benefits. Premature death from cancer costs the UK up to £11.6 billion per year in lost productivity.²¹ Funding research that enables the prevention of cancer and other long-term conditions will support the UK workforce to stay healthier for longer.

Precision prevention research also represents a direct economic opportunity. The Life Sciences Sector Plan set out the ambition for the UK to become one of the world’s leading life sciences nations by 2035, by harnessing and building upon existing strengths in the sector.²² Precision prevention research offers an opportunity to drive towards achieving this ambition:

- Prevention research as a whole is chronically understudied. As a developing field, precision prevention presents a prime opportunity for the UK to carve out an R&D specialism in a vital but underserved area.
- Precision prevention has potential to attract commercial investment: pharmaceutical industry interest in prevention research is growing, and industry stakeholders are already engaging in exploratory conversations with Cancer Research UK-funded researchers.²³
- The UK is a world-leading discovery and translational science destination, ranking 2nd globally for both its universities and its research quality.²⁴ This reputation attracts leading scientific expertise and develops a strong talent pipeline that enables growth.
- The UK also benefits from world-class research infrastructure, such as the UK Biobank, Our Future Health, and Francis Crick Institute. This provides the talent, equipment, and

capabilities that are critical to research and development (R&D).²⁵ The UK Government's £600M investment in the Health Data Research Service will allow research teams to leverage the power of NHS data in a globally competitive data ecosystem, further strengthening the UK's attractiveness as a life sciences destination.

Precision prevention offers clear benefits for health, productivity and economic growth.

Global shifts in prevention research funding have created a window of opportunity for the UK to emerge as the world's leading research nation for prevention research. Precision prevention, as a nascent field with high potential to bring about a paradigm shift in disease prevention, is a strong avenue through which the UK can take its place at the cutting edge of R&D.

The gap: what we need from government

However, there are multiple barriers to conducting precision prevention research efficiently and bringing interventions into practice. Cancer Research UK has engaged extensively with funders, regulators, industry and senior researchers who are leading the way in precision prevention, to understand the nature of these barriers.

This has identified key issues, including:

- **Strategic prioritisation and long-term, sustained funding:** insufficient funding in precision prevention, and particularly the need for core-funded infrastructure that offers the long-term stability and collaboration that the discipline requires.
- **Supporting researchers:** there is limited researcher capacity to drive progress in the field.
- **Regulatory engagement:** the need for a regulatory environment that supports precision prevention research.

This report is not exhaustive. Precision prevention research is in its infancy and has not previously been a subject of focused policy work. It provides a foundation to engage policy stakeholders to unlock the benefits of precision prevention research in the UK. Cancer Research UK would welcome the opportunity to discuss the high-level recommendations further, and advise on the practical detail of their delivery.

The insight and experiences of the expert advisory group, and the recommendations that have been developed based on these insights, have been predominantly relevant to the regulatory bodies that apply in England.

Section 1: Prioritisation and long-term funding

Precision prevention research is an emerging field with strong potential to prevent more disease and strengthen the UK's life sciences sector. Precision prevention should be considered a core component of primary prevention, as it aims to stop disease before onset through targeted, biology-led approaches.

However, this potential will not be realised without strategic investment from government research funders, by:

- Prioritising long-term, sustained funding for precision prevention as part of Life Sciences Sector Plan commitments to increase the investment in prevention research.
 - Ensuring that the scope of primary research is clearly defined to include precision prevention research, with frameworks in place to classify, track, and quantify spend.
- Working with the sector to build core-funded infrastructure that delivers precision prevention research.

Delivery of these ambitions will require leadership and coordination from DHSC and DSIT, alongside the Office for Life Sciences (OLS).

The challenge

Historically, cancer prevention research has not been led by understandings of the underlying biological processes that drive disease. Instead it has focused on epidemiology, and behavioural and policy interventions.

While these approaches remain vital to delivering a shift from sickness to prevention, precision prevention targets the biological processes driving cancer. This could enable swifter translation to patients, and could significantly increase the proportion of cancers considered preventable.²⁶ Further, the same approach could be applied to other diseases, especially where lifestyle risk factors are less clear. This could expand possibilities in disease prevention.

However, growth in this emerging field is constrained by limited funding opportunities.

The opportunity

Investment in precision prevention aligns with government ambitions to safeguard the NHS by shifting 'from sickness to prevention'²⁷, and to support economic growth. In 2025, the UK Government published the Life Sciences Sector Plan, which sets out an ambition for the UK to drive economic growth by stimulating the life sciences sector, with the goal of becoming one of the world's leading research nations by 2035.

Action 10 of the Plan committed the Government to "shift investment in health R&D with a focus on primary and secondary prevention and Multiple Long-Term Conditions".²⁸ This commitment recognises the value of primary (stopping disease before it starts) and secondary (detecting disease early) prevention research, as part of the overall goal to unlock the economic potential of the UK's life sciences sector.

Cancer Research UK calls on government funders to ensure that innovative approaches, including precision prevention, are prioritised in the delivery of that commitment.

As a novel field, precision prevention research could form the basis of a new UK R&D specialism. Global shifts in research funding have reduced opportunities across prevention research in other leading research nations. This creates a window of opportunity for the UK to step forward as a hub for prevention research. Investing in a developing field, in which the UK is well positioned to build early leadership, could help to carve out this specialism.

The impact of Cancer Research UK's Prevention Research Strategy

Cancer Research UK has begun to address funding gaps and build momentum around precision prevention research in cancer. Prioritising the field through our [Prevention Research Strategy](#)²⁹ has driven a step change, attracting increasing numbers of funding applications incorporating biological insights.

It has also sparked interest in precision prevention research funding globally. In Canada, the government-funded Institute of Cancer Research has highlighted the need for deeper biological understandings of the development of cancer as the first of its three priority research areas in its Research Priority Plan 2024–2029.³⁰ Cancer Research UK participated in the consultation process as part of the development of this strategy.³¹ The Institute has also provided dedicated funding opportunities for biology-driven cancer prevention research, similar to Cancer Research UK's Biology to Prevention award.³²

Cancer Research UK is helping to lead the transition to more precise, biologically-driven disease prevention.

“You can see what a difference the Cancer Research UK push towards biology-based prevention has made to applications. Ultimately, people will go where the funding is.”

Professor Karen Brown

Priority actions

However, charitable funders cannot do this alone. We identify three actions that government should take to address the challenges around funding for precision prevention research.

Prioritise precision prevention research as part of the commitment to fund more prevention research

Clear commitment from government funders is required to catalyse the growth of precision prevention research.

Funding not only provides the resources for more of this research to take place; it also has a powerful signalling effect. The experience of Cancer Research UK shows that setting clear strategic focuses through funding strategy draws attention to the field of research, sparking ideas and attracting expertise. Funding commitments from the UK Government have broad reach across the life sciences research community, and could be transformative in developing the field.

The UK Government has already committed to shifting NIHR and UKRI funding flows to focus on prevention research.³³ Cancer Research UK is calling for the Government to ensure that precision prevention research is prioritised within the delivery of that commitment.

Priority themes for funding

This work identified a number of gaps and priority areas that should be considered as part of efforts to fund more precision prevention research.

Industry-academia partnerships

Prevention research has historically presented barriers to investment from the pharmaceutical industry.³⁴ The long timelines before outcomes can be measured, and the often smaller patient populations who could benefit from the intervention, limit the attractiveness of prevention research in comparison to alternative investment opportunities.

As such, precision prevention research has been primarily driven forward by academic research teams. However, the pharmaceutical industry is increasingly engaging with prevention research.³⁵

During consultations, Cancer Research UK-funded researchers flagged that research partnerships with the pharmaceutical industry are key to accelerating precision prevention research, and in some cases, conversations are already taking place to explore potential for partnering on precision prevention work.

These partnerships bring together the innovative ideas and array of experiences found in the academic environment, with the additional resources and specialist expertise of the pharmaceutical industry. This accelerates research, maximises outputs, and builds momentum and activity in precision prevention research by raising its profile across sectors.³⁶

As research funding shifts to prioritise precision prevention, government funders will have a key role in facilitating and incentivising collaborations between academia and industry. Regulatory clarity, as discussed in [Section 3](#), will be essential to unlocking this industry investment.

Precision prevention research methodology and evaluation

This work has identified gaps around research methodology and evaluative frameworks which are holding back the development of innovations in precision prevention research.

Surrogate endpoints:

- Surrogate endpoints can be used as a validated outcome proxy instead of cancer incidence or mortality. They could offer a strong opportunity to shorten trial times and costs, bringing interventions to patients faster (see [Section 3](#) for more detail). However, significant funding is needed to identify and validate surrogate endpoints in the context of cancer prevention.
- Cancer Research UK has convened an expert advisory group to identify and prioritise the most promising avenues for surrogate endpoints in cancer prevention. This work aims to identify evidence gaps to set out a direction of travel for research funding on this theme, and ultimately drive progress around surrogate endpoints. However, a collaborative approach across funders is needed to support future research to develop and validate surrogate endpoints for cancer.

Health economic analysis frameworks for the precision prevention context:

- Health economic analysis is essential to ensure that interventions are cost-effective, and therefore more likely to receive a positive recommendation from the National Institute of Health and Care Excellence (NICE) and be delivered into the NHS.
- Lack of data and health economic frameworks for the precision prevention context currently act as barriers to adequately assessing the health economic value of prevention interventions.
- These questions require funding to explore and develop solutions. Further, health economic analysis must be a feature of research projects at an early stage of intervention development, to ensure that interventions are cost-effective and therefore likely to be incorporated into clinical practice.

These and other methodological and evaluation gaps within precision prevention research should be key targets for funding.

Ensuring the processes are in place to track and quantify research spend

As a first step, government health research funders must ensure that processes are in place to define, track, and quantify prevention research spend.

During consultations, stakeholders noted limited clarity on definitions of primary and secondary prevention research, and how these are bucketed as part of research classification systems. Precision prevention research, which may include or draw on discovery science projects to understand the biological processes driving the disease, may present further challenges in classification according to existing structures.

In order to deliver on the Life Sciences Sector Plan commitment to fund more prevention research, government funders must be able to adequately assess their existing prevention research spend. Major funders must work together to ensure that definitions and classification systems for primary and secondary prevention research, and where precision prevention research projects fit within these definitions, are clear.

Recommendation 1

The UK Government should ensure that precision prevention research is explicitly prioritised throughout delivery of Life Sciences Sector Plan (LSSP) commitments to increase investment in prevention research. This should be supported by:

- Funding for precision prevention research, as government funding agencies UKRI and NIHR shift their portfolio in response to the LSSP.
- Clear definitions of prevention research that include precision prevention.
- The development of systems to classify, track, and report prevention research spend.

Develop core-funded infrastructure for precision prevention research

While project funding is essential, consultations highlighted the need for long-term core funding to enable the best quality of research.

- As with all prevention research, precision prevention trials require long-term follow-up to demonstrate the effectiveness of the intervention. Core-funded infrastructure offers the stability to support these time frames.
- Precision prevention research particularly relies on collaboration, which core-funded infrastructure can facilitate. Co-locating discovery scientists who identify the molecular processes that drive disease with clinical researchers is essential. This ensures that fundamental scientific discoveries about disease initiation are translated into effective interventions that are acceptable to patients and the public, and can be integrated into health systems.

“A precision prevention unit or institute to bring together people focused on prevention - statisticians, basic scientists, clinicians, trial delivery experts – would be amazing. This is needed as precision prevention will always be a long-term team effort.”

Professor Ruth Langley

As with project funding, visible government backing is essential to provide the resources and signalling required to catalyse activity in precision prevention research.

The field sits at the intersection of UKRI’s and NIHR’s remits: it is rooted in discovery research, while requiring translational expertise to develop interventions that effectively target the processes driving disease. Bringing together the expertise and networks associated with UKRI and NIHR is essential to creating the most effective environment in which precision prevention research can thrive.

Further, government-backed core-funded infrastructure reinforces the signalling effect produced by strategic prioritisation of precision prevention research. This not only promotes increased research ideas and a snowballing of activity, but also reinforces the UK as the natural home of precision prevention research.

Recommendation 2

NIHR and UKRI should take a coordinated, long-term approach to developing a national precision prevention research capability, working in consultation with the sector. Future core-funded infrastructure should:

- Support long-term, multidisciplinary research and trials.
- Enable collaboration across academia, industry, and the NHS.

Section 2: Supporting researchers, supporting research

People are at the heart of research. To build the critical mass required to deliver the shift from sickness to prevention, early- and mid-career researchers must be able to build a career in precision prevention.

Cancer Research UK is supporting researchers to enter precision prevention. However, realising this ambition will require a coordinated approach across all funders. UKRI and NIHR must:

- Develop funding opportunities to attract and retain talent in precision prevention.
- Encourage clinician academics to specialise in precision prevention by prioritising it within existing funding programmes.

The challenge

Challenges in attracting and retaining research talent to prevention are long-established. Prevention studies are associated with long follow-up periods and fewer interim results. This results in fewer outputs, such as publications. As funding decisions are often based on these outputs, it can be difficult for early- and mid-career researchers to establish a career in the field.³⁷

Consultation with senior researchers highlighted that challenges around long-term security are even more acute in an emerging field such as precision prevention research. This has limited the development of a future research pipeline.

Strong, visible support through consistent, long-term funding is essential to address this issue of career security. The recommendations outlined in Section 1 must be delivered as a fundamental precursor to driving greater capacity in precision prevention research.

“We used to hear it said that there was no long-term career in prevention, because there’s no funding in it. That perception is getting less and less common, but we still need to ensure that there’s a robust pipeline of funding after fellowship – otherwise we train them for career failure.”

Professor Sarah Blagden

However, further issues must be addressed to build precision prevention research capacity. Researchers highlighted a number of recognised challenges at the early- to mid-career stage. This included difficulties around obtaining funding following doctoral training and the transition to research independence. These pressure points create a leak in the talent pipeline, limiting research capacity in precision prevention.

“Postdoc is where we lose people. Getting a fellowship in this area is extremely difficult, we need targeted support.”

Professor Karen Brown

Researchers also highlighted that precision prevention research is a broad research field:

- Methodological expertise is needed to address challenges such as small cohort numbers and protracted timelines.
- The field is rooted in discovery science, requiring strong links across the research pipeline.
- Clinical insight is essential to develop interventions that meet patient and NHS needs.

As such, precision prevention research requires multidisciplinary teams. Capacity must be developed across backgrounds and disciplines, with a strong emphasis on collaboration.

The opportunity

The Life Sciences Sector Plan recognises the value of life sciences in creating highly skilled, high-value jobs for the UK economy.³⁸ As a developing field drawing on a wide range of skills, precision prevention research represents a particularly strong opportunity to drive life sciences growth.

Government funders have a key role in delivering this benefit. NIHR has already recognised this role: as two of its core strategic focuses, the organisation has committed to “strengthening careers for research delivery staff” and to “building capacity and capability in preventative, public health and social care research”.³⁹ Supporting researchers to build a career in precision prevention research would help to deliver on both of these commitments.

Precision prevention also supports existing research capacity priorities. In its January 2025 report, the Office for the Strategic Coordination of Health Research (OSCHR) highlighted that numbers of clinician academics (researchers who also practice medicine) are in decline. The OSCHR report emphasised that the decline in numbers of clinical academics must be reversed to ensure patients can access lifesaving innovations as quickly as possible, and ensure that the UK remains at the global forefront of biomedical sciences.⁴⁰

Precision prevention research offers an opportunity to help reverse the decline in numbers of clinician academics, while building capacity in a high-potential novel field for UK R&D.

“Precision prevention is really exciting – you’re developing interventions that you can see changing people’s futures. Clinician academics are in danger of extinction, but precision prevention research could rescue the profession.”

Professor Sarah Blagden

How we’re addressing the capacity gap: Cancer Research UK’s Biology to Prevention award

Cancer Research UK offers support for early- to mid-career researchers to conduct cancer precision prevention research through [the Biology to Prevention award](#). The funding reflects the multidisciplinary nature of precision prevention research, encouraging applications involving collaborations.

Individual funding opportunities are essential for early career researchers to develop a specialism, particularly in challenging areas such as precision prevention research. These awards help researchers to build experience in their field, demonstrating their ability to develop and deliver research projects. In some cases, they can form the basis of their next career step. Early-

and mid-career researchers can use the data from these discrete projects to develop larger subsequent studies, potentially helping them to secure the funding to establish themselves as an independent researcher.

“Being able to apply for the Biology to Prevention Award has been incredibly valuable, helping me to demonstrate a track record in precision prevention research. This experience will also support my future fellowship applications as I move towards applying for independent research funding.”

Dr. Nadia Nasreddin, recipient of Cancer Research UK’s Biology to Prevention award,

If government funders adopt similar approaches in developing funding opportunities for individuals in precision prevention research, this will allow the UK to move further and faster in building the research capacity that will drive forward progress in this field.

Priority actions

Cancer Research UK has identified two actions that the UK Government and government funders should take to address the capacity issue, while building the right skills into the research workforce to deliver precision prevention research. This would allow the UK to realise the health and economic benefits of increased numbers of research jobs.

Individual funding opportunities

At Cancer Research UK, our Biology to Prevention award has already demonstrated the impact of individual funding opportunities on building precision prevention researcher capacity. However, a coordinated effort across all major funders is needed to build on this momentum.

NIHR and UKRI should adopt similar approaches focusing on precision prevention, in order to both deliver on existing commitments to build capacity in prevention research, and leverage the opportunity to develop a UK specialism through the development of a high-potential and novel research field.

Funding for individuals in precision prevention research should:

- Support early- to mid-career researchers, targeting vulnerable points in the career pipeline such as the postdoctoral stage.
- Be open to a range of scientific backgrounds and encourage multidisciplinary collaborations. This brings together research teams with the range of skills required to tackle the complex challenges associated with precision prevention research.
- Include recognition and retention frameworks that reflect the long-term nature of precision prevention research. This could set a world-leading precedent for a shift in research culture that facilitates, and rewards, contributions to prevention research.

Recommendation 3

NIHR and UKRI should build on current efforts to develop targeted training and capacity-building interventions in precision prevention research. This should:

- Support key transition points in the research career pipeline, particularly at postdoctoral stage, by building on opportunities such as the Biology to Prevention Award.
- Promote multidisciplinary collaboration across discovery, clinical, and methodological disciplines.
- Include recognition and assessment frameworks that reflect the long-term, lower-output nature of prevention research.

Support clinician academics to specialise in precision prevention research

Clinician academics are researchers who also practice medicine. They have a first-hand understanding of care pathways and patient needs and preferences. Consultations highlighted that this is fundamental to developing prevention interventions that are fit for purpose and therefore likely to deliver impact on cancer outcomes.

There is already a recognised need to expand the clinician academic workforce. In response to the OSCHR report highlighting the decline in clinician academics in the UK⁴¹, the Academy of Medical Sciences brought together experts on this issue from across the UK. This Clinical Academic Summit secured commitment from participants, including representatives from Cancer Research UK, DHSC and NIHR, and UKRI, to take urgent action to address this decline.⁴² Further, Cancer Research UK has worked with NIHR, UKRI, and other organisations on a co-ordinated response to the funder recommendations in the OSCHR report.⁴³ NHS England also has a critical role in supporting clinical academic career pathways and balancing service pressures with participation in research.

There is an opportunity to maximise these efforts, by targeting this capacity towards fields that align with identified government priorities. Precision prevention would support the shift ‘from sickness to prevention’, while building a globally unique life sciences capability in an underserved research field.

Recommendation 4

UKRI and NIHR should prioritise precision prevention within existing clinician academic funding programmes (e.g. NIHR Academy’s Academic Clinical Fellowships and UKRI’s Clinician Scientist Fellowships). This would:

- Develop a pipeline of clinical academics that bring the clinical insight that is essential to precision prevention research.
- Support existing cross-sector efforts to increase the clinician academic workforce.
- Build workforce capacity in a research area that contributes towards key government health and economic priorities.

Section 3: Regulatory engagement

Existing health research regulatory processes present barriers to the design and delivery of precision prevention research. There is an opportunity to develop regulatory support structures that both unblock this work and position the UK as a world leader in this research field, by:

- Working with experts to develop guidance and build consensus on key methodological questions.
- Developing a rapid access pathway to provide early, consistent, and joined up support for trial design and delivery.

The challenge

The Medicines and Healthcare products Regulatory Authority (MHRA) assesses the evidence from clinical trials and ensures that new medicines and medical devices are safe and effective. However, regulation pathways are largely designed for treatment, which creates barriers for all types of prevention research.⁴⁴ This is particularly acute in precision prevention studies, which require a coordinated, multidisciplinary approach and are inherently more difficult to set up.

As the field is still emerging, regulators may be less familiar with the nature of the studies and cohorts involved.⁴⁵ This creates challenges in designing trials that generate appropriate evidence to support a positive regulatory decision later.

As a result, designing and running precision prevention trials can become complicated, slow, and expensive. In some cases, international sponsors may choose not to run trials in the UK, because of the perception that there is no clear regulatory route to get the trials or their product approved. This uncertainty not only delays research but also limits industry investment, as sponsors require clear and predictable regulatory pathways to justify long-term investment in prevention trials.

There are several methodological challenges that impact trial design and delivery. Consultations identified the following examples.

Case study 1: Surrogate endpoints

What are surrogate endpoints?

In many cancer prevention trials, incidence of cancer or cancer-free survival are the primary outcomes measured. This can take years to track, meaning that prevention trials are often lengthy and costly. This can make prevention research unattractive to commercial investment, and difficult to finance through government and charity funders.⁴⁶

Surrogate endpoints are early indicators that can be used as a validated proxy for the end outcome, to assess whether an intervention is working. For example, in cardiovascular disease, blood pressure and cholesterol levels are surrogate endpoints used to measure whether preventative interventions work.⁴⁷

Utilising well-validated surrogate endpoints in clinical trials can reduce timeframes, and therefore the overall cost of research projects. This makes these projects easier to fund; better aligns timelines with those of commercial organisations; and can bring interventions to patients more swiftly.

Long timelines in prevention research act as a barrier to funding. Surrogate endpoints offer strong potential to speed up trial times, and their use as part of research has been gaining traction internationally.⁴⁸ However, there is a widespread perception that the UK's regulatory system is reluctant to approve new interventions based on surrogate endpoints.

If regulators are open to considering data from trials that use surrogate endpoints as part of their decision-making, this strengthens the ability of UK funders to invest in prevention research that incorporates surrogate endpoints; and improves the UK's attractiveness as a prevention trial destination for international sponsors.

Surrogate endpoints must be credibly linked to the relevant clinical outcome. As noted in [Section 1](#), more funding is needed to develop and validate these endpoints.

However, regulatory engagement from the outset is needed to enable their use in trials. MHRA should work with experts to develop and build consensus on their use in the UK context for drug-based prevention interventions.

The UK's health technology assessment (HTA) agency, NICE, is already engaging with surrogate endpoints for health economic assessment, in recognition of the fact that surrogate endpoints are increasingly accepted as part of regulatory decisions internationally.⁴⁹ Cancer Research UK has also supported the UK National Screening Committee (UKNSC) by funding research into the use of surrogate endpoints in the early detection and diagnosis context.

Case study 2: Risk threshold definitions and distinction from healthy volunteer studies

Precision prevention trials in cancer target specific populations that have a high risk of developing cancer within their lifetimes but may not be patients yet. Researchers report that regulators classify these populations as healthy volunteers. This necessitates a large preclinical dataset to ensure adherence to toxicity standards for non-patients.

In most cases, a trial participant from a cancer precision prevention study will not have a cancer diagnosis at the time of a prevention trial. However, their risk level makes them different from a standard healthy volunteer cohort.

Participants are often under surveillance, may have precancerous changes or have had another primary cancer, and are at high risk of recurrence or new cancers. Their risk profile varies by the individual risk level, but in comparison to healthy volunteer cohorts, there is generally a far greater potential to benefit from the intervention. As such, participants often have a tolerance for risk that is more similar to patients with a cancer diagnosis, and they are generally willing to accept more uncertainty around side effects.

The extra work, resource and cost associated with classifying these groups as healthy volunteers makes it more difficult for funders and companies to sponsor research. It is disproportionate to the needs and preferences of a high-risk cohort of patients.

Clearer guidance on preclinical requirements for different risk groups would facilitate trials in high-risk patients. This would bring potentially lifesaving interventions to these individuals sooner, while also playing an important role in contributing to understandings of how cancer starts.

The impact on precision prevention research in the UK

Currently, MHRA engages with methodological questions around precision prevention trials, such as surrogate endpoints and healthy volunteer classifications, on an ad hoc, case-by-case basis. There is no clear contact point or framework to guide feedback. During consultations, researchers across academia and the pharmaceutical industry reported that this case-by-case approach leads to mixed responses from MHRA.

This can undermine investor confidence in supporting precision prevention research in the UK, because it is not clear that there is a route to delivery.

The opportunity

The UK has unique strengths that position it as a potential global hub for prevention research. Researchers highlight a perception that the UK is a small but diverse country with a higher uptake of clinical trials per capita compared to larger countries, allowing greater possibilities of recruiting a representative patient group. This advantage is underpinned by NHS England's role in coordinating trial delivery and access to patient populations.

In contrast to more fragmented and limited data systems and assets in the US and EU, the NHS and the National Cancer Registry have the potential to offer a single environment where study participant data can be tracked easily, cost-effectively, and reliably. The Government's commitment to transform access to health data for research purposes through the Health Data Research Service has high potential to augment the UK's competitiveness as a research nation.

The COVID-19 pandemic illustrated how these unique assets can be leveraged, with government, regulators, and research infrastructure working together to develop one of the most prominent COVID-19 vaccines at unprecedented speed – when backed with strong political will. Developing regulatory capability around precision prevention research would allow the UK to build on these successes in an area that aligns with the nation's health priorities.

This is a critical moment to act. Following global shifts in research funding, which have impacted prevention research, there is a window of opportunity to build a new specialism into the UK's research ecosystem, which not only aligns with the nation's health priorities but would also help to deliver on life sciences ambitions by carving out the UK's role as the world leader in this area of unmet need.

These challenges and opportunities align with the findings of the O'Shaughnessy Review of UK clinical trials (2023), which highlighted the importance of streamlined regulation, faster study set-up, and improved sponsor confidence to maintain the UK's global competitiveness.⁵⁰

Priority actions

These advantages cannot be realised without clear engagement from MHRA on the regulatory needs of precision prevention research. Cancer Research UK-funded researchers identified two key actions that MHRA should take to develop a regulatory environment that unblocks this research.

Work with experts to produce guidance and position statements on key methodological questions

MHRA must engage with precision prevention researchers with the aim of producing guidance around methodological issues that are currently impeding precision prevention trial set-up. Where guidance is not yet possible due to evidence gaps, position statements should be produced.

Guidance on issues such as surrogate endpoints and risk thresholds would do more than remove barriers. It would also signal a clear route to implementation for precision prevention trials within the UK's research environment, ensuring that the UK remains competitive as a leading research nation.

Recommendation 5

The MHRA should work with NICE, HRA, and the wider sector to address the regulatory needs of precision prevention trials. This should include:

- The development of guidance or position statements around key methodological barriers to designing and delivering precision prevention trials.
- Ensuring greater consistency in regulatory decision-making and feedback.

Develop an advice pathway for designing and delivering precision prevention trials

Publishing guidance will address key barriers and improve the UK's attractiveness as a destination for these trials. However, to ensure that researchers are able to design and deliver trials that generate the correct data to support regulatory decision-making, there is a need for direct lines of communication with MHRA assessors.

MHRA provides scientific advice to research teams. Prevention research presents unique challenges in effective trial design and delivery. These are acutely felt in precision prevention, given that it is an emerging field that encompasses a broad range of biological targets and interventions, often acting in small cohorts with specific needs. Consultation identified that support needs are not being met through one-off scientific advice meetings.

The MHRA has developed rapid access pathways which intend to facilitate earlier, faster, and more joined-up support for research teams, such as the Innovative Licencing and Access Pathway (ILAP). However, the diversity of intervention types associated with precision prevention mean that these projects do not fit neatly into the ILAP or any other existing pathway.

Specialist expertise and joined-up support is required to effectively guide researchers in trial design and delivery. This need has been reflected across the life sciences sector. This [2026 paper](#) from the Association of the British Pharmaceutical Industry also recommends the development of a dedicated pathway for prevention medicines, to ensure early alignment on evidence standards to support regulatory approval in the prevention setting.⁵¹

Developing a dedicated pathway is both necessary, and a significant opportunity. In the context of global shifts in research funding which have impacted prevention research, developing a

regulatory capability that enables and promotes the delivery of precision prevention research would help to establish the UK as a world leader for prevention research.

Recommendation 6

The MHRA should establish a specialised and accessible advice pathway for precision prevention research, similar to its Innovative Licencing and Access Pathway. This should:

- Provide early, consistent, and ongoing advice for precision prevention trials from design to delivery.
- Offer support from specialists, helping researchers to design studies that generate appropriate evidence to support regulatory decision-making.
- Be financially accessible to academic teams.

Areas for further policy work

This report focuses on initial policy priorities to develop a research environment that supports precision prevention. However, this work raised further discrete issues that affect precision prevention research, which require further investigation and engagement with the sector to develop policy recommendations. Furthermore, as precision prevention interventions move beyond the research environment, there are a number of considerations around adoption that will need to be addressed.

- **Repurposing off-patent drugs:** There is a market failure that can impede existing drugs from being licenced and prescribed as cancer preventives, even when evidence shows that they are effective for this purpose. This market failure has been acknowledged across the R&D community, and previous policy work has identified potential avenues to resolve it.⁵²
- **Policy interventions to facilitate health economic assessment:** As indicated in [Section 1](#), further research is required to address challenges in health economic assessment of precision prevention interventions. In parallel with research, policy interventions and engagement with NICE may be necessary to ensure that health economic work for precision prevention interventions can be incorporated into NICE appraisal processes.
- **Routes to delivery in the health systems:** As precision prevention interventions vary, there is no single pathway by which they might be made available to payers within the NHS. Ensuring that the interventions developed could be integrated into health systems is key to facilitating research investment, and to ensuring that interventions reach patients.

Conclusion

This report sets out the potential of precision prevention research, the top-level barriers to the growth of the field in the UK, and key initial policy priorities to tackle these barriers. However, there are still a number of avenues to explore. For example, the role of data, AI, and related technology such as genomics in supporting precision prevention research.

Further, careful consideration will need to be taken to ensure that precision prevention research actively contributes to reducing health inequalities. Future work should explore how precision prevention research can target groups that are disproportionately affected by cancer and other disease, with the aim of reducing these inequalities.

This work is not exhaustive, and is intended as a starting point upon which further policy work can be developed in collaboration with aligned stakeholders.

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About Cancer Research UK

We're the world's leading cancer charity dedicated to saving and improving lives through research. We fund research into the prevention, detection and treatment of more than 200 types of cancer through the work of over 4,000 scientists, doctors and nurses. In the last 50 years, we've helped double cancer survival in the UK and our research has played a role in around half of the world's essential cancer drugs. Our vision is a world where everybody lives longer, better lives, free from the fear of cancer.



Cancer Research UK is a registered charity England and Wales (1089464), Scotland (SC041666), the Isle of Man (1103) and Jersey (247).

Our values

Our values help guide our behaviour and culture in an ever-changing world, building on the best of what we do today and what we aspire to be in the future. They unite and inspire us to achieve our ambitious plans and our mission of beating cancer, together.

Our values are:



Bold

Act with ambition, courage and determination



Credible

Act with rigour and professionalism



Human

Act to have a positive impact on people



Together

Act inclusively and collaboratively

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