NIHR | National Institute for Health Research

Best Research for Best Health: The Next Chapter

Our Operational Priorities

Funded by

Department of Health & Social Care

Contents

Foreword

The COVID-19 pandemic has demonstrated clearly the vital contribution that research into health makes to society. Lives have been saved at home and across the world due to UK-based COVID-19 research, much of it funded and delivered by the NIHR. We say a huge thank you to patients and the public, health and care professionals and the wider research community whose collective efforts have found, through research, new paths to help us emerge from the pandemic.

Across the NIHR, we have reflected deeply on our experiences over recent years, including during the pandemic, and what they mean for the future of the research that we fund and help to deliver.

Many areas of health research have been consistently successful. Remarkable improvements in heart disease, stroke, many cancers, major infections and rheumatological diseases are testament to the power of science to save and improve lives. We need to expand our capabilities and our output in the many fields of mental health research, and vastly improve the science behind understanding and addressing the needs of people with multiple long-term conditions (sometimes termed multimorbidity). Research to underpin strategies for prevention of ill health at population level must be boosted.

In a world that is increasingly breaking down the barriers between what we currently differentiate as 'healthcare', 'public health' and 'social care' delivery, NIHR research will need to become much more integrated across disciplines and better serve the more holistic research questions that we will increasingly be asked to address in years to come.

Health and social care research also has a fundamental role to play in helping to reduce the disparities that exist in health outcomes caused by socio-economic factors, geography, age and ethnicity.

> **Working with partners, NIHR needs to tackle the ingrained injustices that exist in the world of research in terms of who is involved, engaged or participating and also the inequities which exist in the professional research workforce.**

Research needs to be practically and meaningfully embedded as part of the experience of patients and service users, regardless of where they live or whether the health and social care professionals who care for them are traditionally 'research active'. Furthermore, applied health and care research, whether to improve clinical outcomes, public health or social care, should be conducted with patients and citizens in those communities and geographies most affected. To support this, NIHR will of course need to weave research experience into the daily lives of health and social care professionals across the country.

Research presents huge economic opportunities. NIHR will be intensifying its work to help the NHS and wider health and social care system adapt practice to improve both the quality and the cost-effectiveness of care. It will also build on its success to date in helping to make the UK a great place for the global life sciences industry to invest and for funders of research across the charity and public sectors to have maximum impact.

NIHR is not only ready to tackle these challenges, it is already working to resolve them. We are determined to play our part in ensuring that people receive the quality of care that they should rightly expect from an increasingly connected world of health, public health and social care.

In this document, we set out how NIHR aims to address health and social care challenges across the nation and further afield, through a re-affirmation of our core workstreams, by clarifying the principles which guide our work, and by setting out areas of strategic focus where significant changes are needed in how we will work in future.

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Introduction

NIHR's mission is to improve the health and wealth of the nation through research.

We were established in 2006 under the government's health research strategy 'Best Research for Best Health' (Department of Health 2006) to complement the Medical Research Council (MRC), a long-established funder of biomedical research (Atkinson et al 2019). The goal was to create a health research system in which the NHS supported outstanding researchers, working in world-class facilities, conducting leading-edge research focused on the needs of patients and the public. Within ten years, we were acknowledged for having transformed R&D in and for the NHS and the people it serves (Davies et al 2016; Bell 2016; Hanney & González-Block 2016; Morgan Jones et al 2016).

Funded by the Department of Health and Social Care (DHSC), NIHR focuses on the elements of the 'innovation pathway' from early 'translational' research (translating discoveries from the laboratory to the clinic) through clinical research and on to applied health and social care research. We work in partnership with funders of discovery science and those elements of the system focused on adoption and diffusion of innovation. Centred on England, we collaborate with the devolved administrations in Scotland, Wales and Northern Ireland which co-fund many of our research programmes.

Our remit has grown over time. Since 2016 we have been able to support a significant portfolio of applied global health research for the benefit of people in low and middle income countries, principally using Official Development Assistance (ODA) funding. At a national level, social care has become a greater area of focus for NIHR, reflecting the shift from the Department of Health to DHSC in early 2018, as has public health. And we have taken on responsibility for DHSC's policy research programme, which commissions research to help Ministers and DHSC Arms-Length Bodies make policy decisions that can improve people's health and wellbeing.

We deliver against our mission through six core workstreams:

Funding high quality, timely research

Investing in world-class expertise, facilities and a skilled delivery workforce

Partnering with patients, service users, carers and communities

Attracting, training and supporting the best researchers

Collaborating with other public funders, charities and industry

Funding applied global health research and training

Each of these workstreams is explored later in this document.

In recent years, we have had much to be proud of. For example we have:

- Led the world in terms of research into COVID-19, working in partnership with the NHS (Lamontagne et al 2021; Angus et al 2021; Lurie et al 2021). We recruited over a million people to studies, providing the evidence needed to support the use of corticosteroids such as dexamethasone and immunosuppressive drugs and to discourage the use of ineffective interventions, and delivering large-scale vaccine trials at speed. Dexamethasone alone is estimated to have saved one million lives worldwide (NHS 2021).

- Strengthened our relationship with the public by developing, with the devolved administrations, UK Standards for Public Involvement (NIHR 2021) for use by everyone undertaking health or social care research. The NIHR-funded James Lind Alliance has celebrated 100 Priority Setting Partnerships, through which clinicians, patients, service users and carers collaborate to identify and prioritise evidence gaps where research is needed.

- Developed new ways of diagnosing and treating health conditions affecting millions of people across the world. For example, through our experimental medicine infrastructure we delivered the world's first successful gene therapy trial to treat haemophilia A (Rangarajan et al 2017) and demonstrated the efficacy of the first new cough drug in 50 years (Smith et al 2020). Through our clinical and applied research, we demonstrated that a simple blood test could accelerate diagnosis of pre-eclampsia (Duhig et al 2019), that MRI was more effective than biopsy at detecting prostate cancer (Ahmed et al 2017; Kasivisvanathan 2018), that trastuzumab treatment could be cut from 12 to six months in women with early breast cancer (Earl et al 2019), and that a computerised test could support diagnosis of attention deficit hyperactivity disorder (Hollis et al 2018).

- Delivered significant cost savings to the NHS. For example, we funded trauma research that informed a widely-used NICE guideline and is estimated to be saving over 500 lives and £6 million in NHS costs each year (CRASH-2, 2010; NICE 2016). We also funded research that supported the use of 'biosimilar' rituximab and infliximab in the NHS in place of the original versions of these medicines, leading to savings of nearly £100 million and over £50 million (respectively) in 2017/18 alone (NHS 2018).

- Successfully informed government policy, for example by demonstrating that companies implementing the Soft Drinks Industry Levy continued to experience positive share price growth (Law et al 2020), and by highlighting that care workers directly employed by disabled people had been overlooked in government Personal Protective Equipment guidelines for COVID-19 (Woolham et al 2020).

- Generated an estimated £8 billion of gross value added to the UK economy and 47,467 full time equivalent jobs through our clinical research network between 2016 and 2019 (Iacobucci 2019).

- Funded nearly 3,600 career development awards across 118 different professions and specialties since 2016.

- Worked with the Care Quality Commission to include key research-related questions in its inspection framework for NHS Trusts, based on a growing body of evidence that research-active hospitals have better health outcomes (Ozdemir et al 2015; Jonker & Fisher 2018; Downing et al 2017; Bennett et al 2012; Boaz et al 2015).

Many of our successes have been enabled by our significant, long-term investment in translational, clinical and applied research infrastructure, firmly anchored in the NHS and the wider health and social care system.

We have an absolute commitment to continuing these long-term investments, as they have resulted in world-class research outputs that are delivering benefits to people today and will continue to deliver benefits into the future.

We have, however, identified several areas of health, public health and social care research where we need to accelerate the pace of development if we are to fully address the changing needs of people and communities in the 21st Century. Each of these 'areas of strategic focus' is explored later in this document.

We also recognise the need to improve our ways of working, making it easier for people to understand and work with us, access our evidence and evaluate our impact:

- We are committed to strengthening our communications in order to engage and involve stakeholders in the work of NIHR, support the dissemination of our research findings, and promote the value of health and social care research more broadly.
- We are collaborating with other research funders, sponsors and regulators to harmonise research processes and reduce the burden of unnecessary bureaucracy, while maintaining high standards of transparency and accountability and ensuring we have sufficient information for robust decision-making.
- We are improving how we provide evidence of our impact on the health and wealth of the nation, tracking progress against the outcomes we are aiming to achieve and adjusting course as needed.

Investing in our digital capabilities supports all of these objectives. We are committed to speeding up the research process by linking and automating the flow of data through each stage of the research pathway, and by integrating our systems with those of our regulatory partners. We will also use digital tools to disseminate our evidence more widely, to broaden our communications with the public and to build lasting relationships with research participants. And we will make it easier to track the impact of our work by making better use of the data we hold.

This document is called Best Research for Best Health: The Next Chapter to signify that the strategy which underpinned our creation is still relevant. It is, however, 15 years since NIHR was founded and the environment has changed. Recognising these wider changes, this document sets out our current operational priorities, re-affirming our core workstreams and highlighting the areas of strategic focus that will underpin a forward-looking strategy for NIHR which will be developed and published at a later date.

Our operating principles

We have five operating principles which shape and reflect our culture and guide our decision-making

Impact

We prioritise the challenges that are most important to those who use, work in and manage health and social care services and that could most benefit from research evidence. We accelerate the translation of discoveries and partner with others to ensure our evidence is used to improve everyday practice. We track progress against our goals and strive to ensure that our research addresses the needs of patients, service users, carers, communities and the public.

Excellence

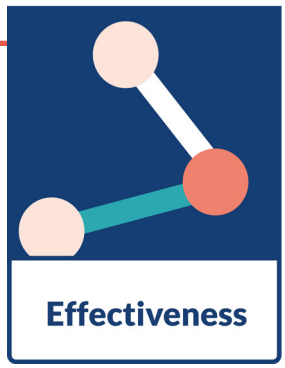
The quality of our researchers, research outputs and training is world-leading, and we have a highly skilled research design and delivery workforce. We embrace the latest developments in technology, research data and methods and knowledge mobilisation. We operate to the highest standards of integrity and transparency in our funding and commissioning processes, and ensure that our evidence is accessible and actively disseminated.

Inclusion

We are committed to equality, diversity and inclusion in everything we do. Diverse people and communities shape our research, and we strive to make opportunities to participate in research an integral part of everyone's experience of health and social care services. We develop researchers from multiple disciplines, specialisms, geographies and backgrounds, and work to address barriers to career progression arising from characteristics such as sex, race or disability.

Collaboration

We partner with the NHS, public health and social care systems, people and communities, universities, government, regulators, the devolved administrations, industry, charities and other research funders to maximise our collective impact. We encourage collaboration across disciplines and specialisms, between researchers and the public, and within our own organisation. We foster equitable partnerships with researchers and institutions in low and middle income countries.

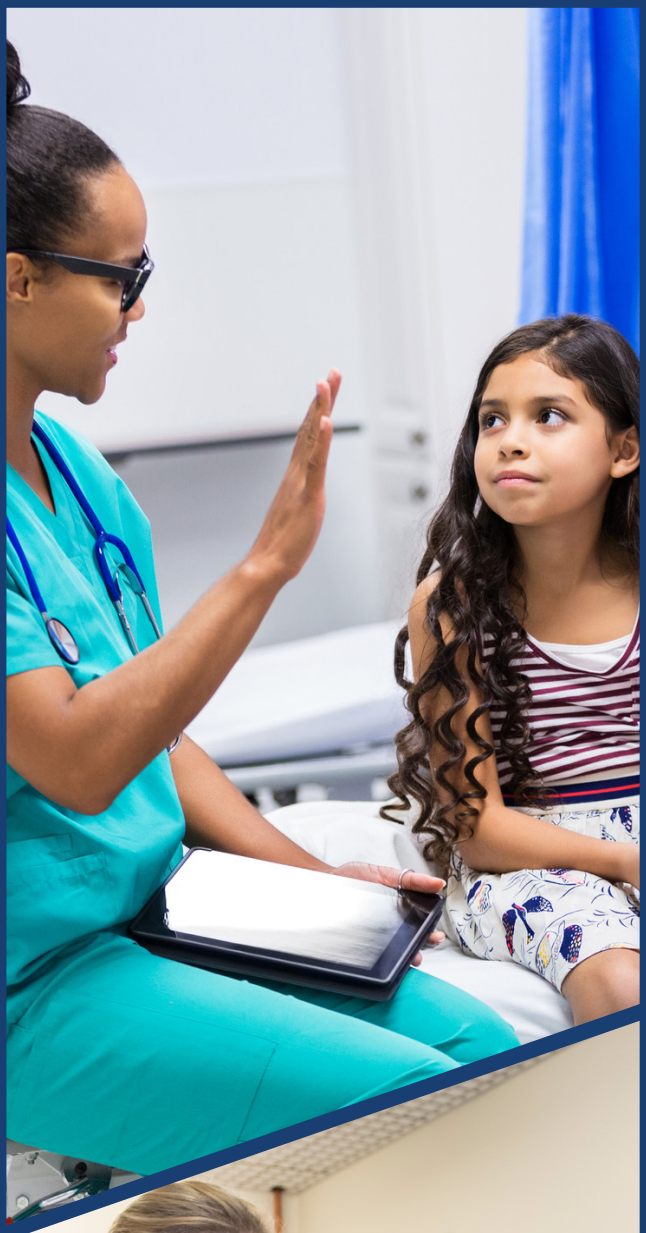


Effectiveness

We are sound custodians of public money. We have a strong track record of improving the efficiency of research and of generating evidence that enables health and social care systems to become more effective. We have a culture of continuous improvement, finding ways to simplify and streamline our processes, improve our communications and accessibility, harness the power of digital technology, and enhance people's experience of working with and for us.

Our core workstreams

We deliver against our mission through six core workstreams



We fund high quality, timely research that benefits the NHS, public health and social care

We invest in world class expertise, facilities and a skilled delivery workforce to translate discoveries into improved treatments and services

We partner with patients, service users, carers and communities, improving the relevance, quality and impact of our research

We attract, train and support the best researchers to tackle complex health and social care challenges

We collaborate with other public funders, charities and industry to shape a cohesive and globally competitive research system

We fund applied global health research and training to meet the needs of the poorest people in low and middle income countries

Our core workstreams

Funding high quality, timely research... that benefits the NHS, public health and social care

NIHR is committed to funding high quality health, public health and social care research that translates into improvements in outcomes for patients, service users, carers and the public, and improvements in the efficiency, effectiveness and safety of the health and social care system.

We have a number of distinct funding programmes. These range from the long-established Health Technology Assessment programme - which funds research on the clinical- and cost-effectiveness of treatments and tests within our health and social care system and supports the evidence base used by the National Institute for Health and Care Excellence (NICE) - through to a new programme set up to improve the way adult social care is delivered for service users, carers and the public.

Some of our funding programmes are open to researchers working in the private as well as the public sector, for example we have a programme that helps small and medium-sized enterprises (SMEs) to generate evidence for promising medical devices, in vitro diagnostics and digital health technologies.

We also have research schools that fund outstanding research in primary care, public health and adult social care, and research units that fund vital research in priority areas related to health, health protection and health and social care policy.

As part of our ongoing efforts to avoid waste in research and achieve maximal societal, economic and academic impact, NIHR has developed an internationally-recognised model (Hilton 2017; Nasser et al 2017; Cochrane 2017) to ensure that the research we fund answers the most important questions and that it is well-designed, efficiently delivered, unbiased, published in full, widely disseminated, and usable. We expect researchers to make research outputs openly available for analysis, dissemination, adoption, and to inform further research.

We have a clear view of the challenges the NHS and broader health, public health and social care system are facing over the coming years, based on the NHS Long Term Plan (NHS 2019), ongoing conversations with NHS England and NHS Improvement (NHSE/I), local authorities and others, and a range of evidence sources (Corbett et al 2017; Academy of Medical Sciences 2016; Campaign for Social Sciences 2017; DHSC 2020).

Challenges include:

- Transforming the organisation and delivery of health and social care, enabling greater integration and ensuring that these systems are resilient and sustainable.
- Helping people to recover from the medium and longer-term impacts of COVID-19 infection, and the NHS and wider health and social care system to recover and learn from the pandemic.
- Responding to demographic pressures, including the challenges faced by our ageing population and the growing number of people living with dementia, multiple long-term conditions and frailty.
- Tackling environmental and lifestyle drivers of disease risk such as air pollution, obesity, smoking and physical inactivity, through improved strategies for public health and prevention.
- Tackling health inequalities and their wider determinants.
- Ensuring that the research we fund is truly inclusive and that it is shaped by and reaches the people, communities and regions which have the greatest health and social care needs.
- Encouraging the safe, effective and equitable implementation of advances in technology and medical science.
- Addressing the causes and effects of mental ill health.
- Improving maternal and child health as part of a life-course approach.
- Responding to global health challenges and changing patterns of disease, including climate change, emerging infectious diseases and potential future pandemics, and the continued threat of antimicrobial resistance.

We will increase our focus on these challenges, working closely with stakeholders across the health, public health and social care system to ensure we are responsive to their research needs. We will work with our partners in the NHS's Accelerated Access Collaborative to promote adoption and diffusion of proven innovations and decommissioning of ineffective or superseded interventions.

'Big data' and advances in technology and medical science such as artificial intelligence and genomics-based medicine will be increasingly important enablers of research and help underpin new models of diagnostic and therapeutic development. New methodologies, better use of 'real-world' evidence and the involvement of a wider range of disciplines (including the social sciences and implementation science) will be critical if we are to accelerate progress.

Our research funding schemes – programmes, schools and research units – will adapt to meet these evolving priorities. We will work across our portfolios to fund a coherent programme of research in key areas, including both response mode and commissioned research, and strike a balance between providing a long-term research base and adapting with pace to meet changing needs.

Our core workstreams

Investing in world-class expertise, facilities and a skilled delivery workforce... to translate discoveries into improved treatments and services

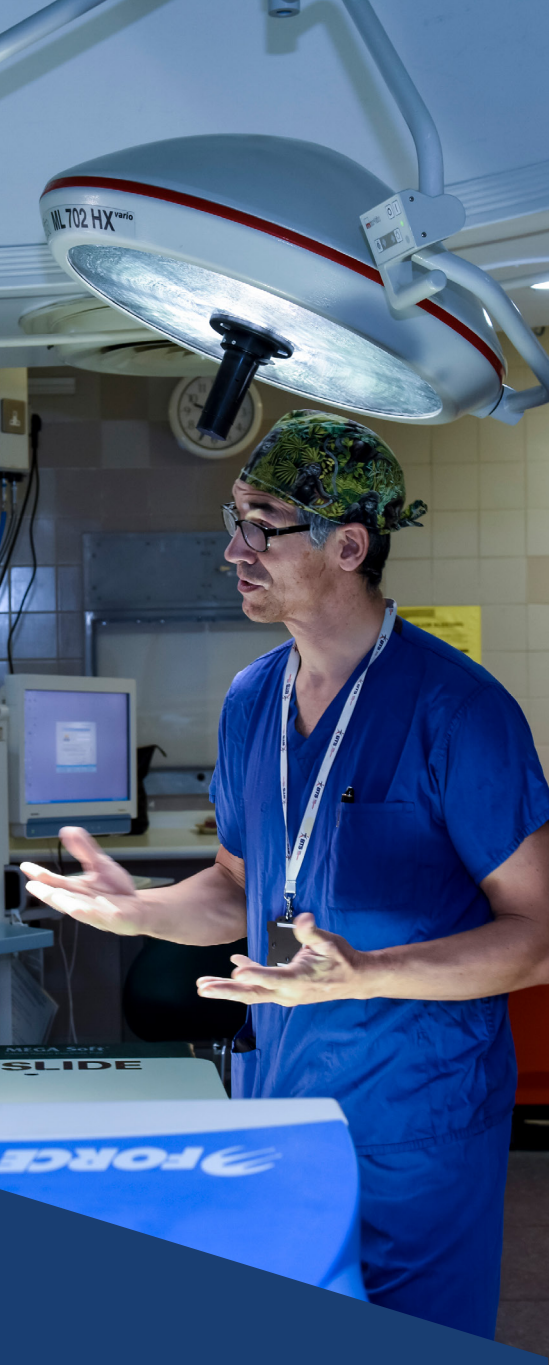
Since our establishment, we have sustained our investment in research expertise, specialist facilities, a research delivery workforce and support services - what we term our 'infrastructure'. This infrastructure spans the innovation pathway, from early translational research – including in our Biomedical Research Centres - through to the design and delivery of clinical trials and applied health and social care research across the nation.

NIHR infrastructure delivers and disseminates high quality research throughout the health and social care system, working in partnership with the nation's universities. It has transformed the system's ability to translate scientific discoveries into new or improved treatments, diagnostics, medical technologies and services, and to conduct high quality applied research studies that enable uptake of these innovations across the nation. It also provides an important environment for nurturing talent and building capacity and skills.

Our infrastructure supports the research we fund and also plays a crucial role in underpinning research funded by others: UK Research and Innovation (UKRI), medical research charities, the life sciences industry (biopharmaceuticals, medtech, genomics, diagnostics and digital health), and other relevant industries.

The life sciences industry chooses to work with NIHR infrastructure to access expertise in designing, setting up and delivering high quality, innovative research. By offering this support to multinational companies, we encourage them to conduct their clinical studies in the UK, allowing researchers, patients and the public access to potential new treatments as well as growing the UK's share of the global market.

We also help home-grown SMEs to establish themselves and thrive. Through our support for companies large and small, we make a significant contribution to the UK economy.



We will continue to invest in our infrastructure. Specifically, we will:

- Maximise opportunities for patients and the public to influence and participate in research taking place in our facilities, or being delivered by our national clinical research network in the NHS and in community settings such as homes, schools, care homes and hospices.
- Develop new infrastructure to support public health and social care research.
- Integrate research delivery into 'real world' health and social care settings, reducing the barriers to all staff contributing to research endeavours.
- Increase the use of flexible workforce and innovative delivery models, making it easier for people from diverse communities to participate in research by bringing it to 'where they are'.
- Build our capacity to help innovators, particularly SMEs, build the evidence required for the development, evaluation and uptake of new medical technologies and diagnostics.
- Increase collaboration across the NIHR infrastructure to drive progress in priority areas and create opportunities to build research capacity across the country.

Through our sustained support for world-class infrastructure, we will ensure that the health and social care system can work in partnership with leading academics and experts on research that addresses the needs of the public, increases the productivity and sustainability of the system locally and nationally, stimulates inward investment and supports wider economic growth.

Our core workstreams

Partnering with patients, service users, carers and communities… improving the relevance, quality and impact of our research

Since our inception, our research has increasingly been shaped in collaboration with patients, service users, carers and the public. People contribute at every stage of the research pathway, shaping priorities and research questions, the design of studies, the evaluation of research proposals, the conduct of research and the dissemination of results. They also play a vital role by volunteering to participate in studies and trials.

We are guided by the strategy set out in our Going the Extra Mile report (NIHR 2015), with its vision of a population 'actively involved in research to improve health and wellbeing for themselves, their families and their communities'. We know that we have much further to go if we are to ensure that the involvement of diverse patients, service users, carers and communities in research is inclusive, consistently makes a difference and avoids tokenism.

We are determined that people's perspectives and lived experiences in relation to their health and care are heard and acted upon, and that their contributions are valued and appropriately recognised. By constantly strengthening our collaborations with people and communities, we know that we can make improvements in the relevance of our research (NIHR 2020) and also in its quality and impact (Crocker et al 2018; Kovlund et al 2020).

Looking ahead, our commitments include:

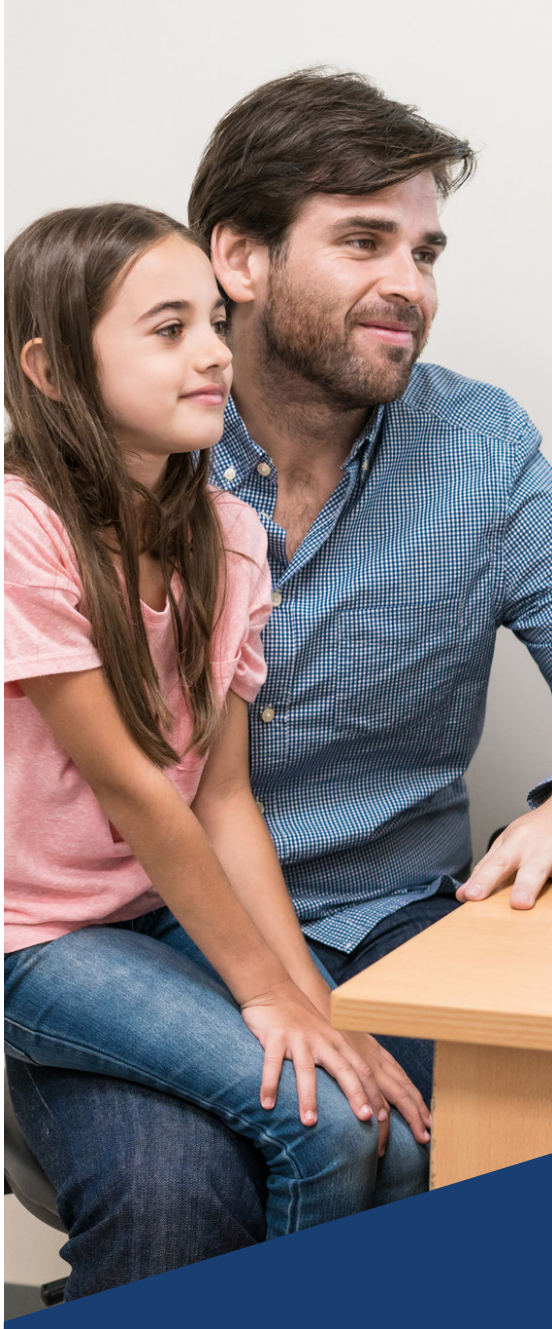
- Creating a diverse and inclusive research environment founded on close and equitable partnerships with communities and groups, including those who have previously not had a voice in research. As the COVID-19 pandemic starkly illustrated, the people at highest risk of ill-health are often the least likely to engage with research or to participate as volunteers in studies. This will require NIHR to work differently, taking research closer to people in the communities where they live and work and building relationships of trust over time.

- Making it easier for people to participate in research by investing in user-friendly and accessible digital and online approaches. We will build on the success of the registry which was instrumental in the development of COVID-19 vaccines, as well as platforms such as Be Part of Research and Join Dementia Research. We will also strengthen non-digital channels, working with patient and user groups, charities and the wider voluntary sector as well as our network of research champions. We know we have a long way to go before people see opportunities to take part in research as a routine part of care and treatment (HRA and NIHR 2017).

- Helping the research community become more skilled and confident in partnership working by embedding the UK Standards for Public Involvement, sharing learning about how to implement effective approaches such as co-production and community engagement, and building an evidence base that supports practitioners.

- Collaborating with other public funders, research charities and the life sciences industry to help build the widest possible culture of partnership working in research.

All these efforts will take place in the context of broader efforts to engage with the public. Our overall approach is to foster openness and transparency, build trust and understanding in health and social care research, and stimulate people's confidence and motivation to get involved in every aspect of our research endeavour.



Our core workstreams

Attracting, training and supporting the best researchers... to tackle complex health and social care challenges

NIHR is the nation's largest funder of health and social care research training. Since our establishment in 2006, we have developed career pathways for clinical academics and created new opportunities for nurses, midwives and allied health professionals (AHPs) to integrate research with clinical practice. We have also grown our training portfolio to attract a broad range of non-clinical scientists into careers that are both exciting and sustainable.

In 2018 we launched the NIHR Academy following a strategic review of our training programmes (NIHR 2017). This led to sweeping changes that have simplified NIHR's training offer and increased the flexibility and accessibility of our schemes so that they are attractive to a wider group of health and social care researchers as a route into an academic career.

Through the NIHR Academy, we are delivering our long-term vision for training, career development and capacity building and responding to the complex and changing needs of the health and social care system, as well as embracing new technologies and ways of working. We will continue to innovate, developing our programmes and initiatives to build research capacity and capability, particularly in priority areas such as prevention, public health and social care.

Bringing together NIHR-funded health and social care researchers under the umbrella of the NIHR Academy provides us with opportunities to create a collegiate ethos that includes our research delivery workforce. This inclusive culture enables researchers to make connections important to their work and sparks innovative new ways of working across disciplines and specialisms - vitally important if we are to bring new thinking to complex issues such as multiple long-term conditions.

Working in partnership with Health Education England will continue to be important, not only to ensure our programmes dovetail with those of other funders (including UKRI, Wellcome and the devolved administrations), but also to ensure a more cohesive approach to flexible career pathways for health and social care researchers from all backgrounds. We are extending our reach by creating joint fellowships with research charities and the life sciences industry, and will go beyond the established partnerships between universities and NHS Trusts to integrate research and practice within local authorities and other sectors.

We are facilitating the involvement of early career researchers in NIHR's strategic initiatives, listening to what they have to say about creating an inclusive culture and establishing a stronger community of support for our current and next generation leaders.

Looking ahead, we will:

- Boost areas of high research need and historical under-investment by developing new networking and partnership structures and initiatives to attract and develop under-represented sectors such as primary care and public health, as well as groups such as nurses, pharmacists and social scientists.
- Develop additional capacity in disciplines such as bioinformatics, data science, medical statistics, health economics and machine learning so that our research workforce is professionally supported in dealing with the opportunities and challenges associated with big data.
- Collaborate with other funders and key stakeholder groups to make research careers attractive to a broader range of people and to identify and address barriers to career progression, especially for women (who often do not progress at the post-doctoral stage), ethnic minorities and under-represented professions.
- Support the new medical schools to develop their roles in clinical academic training, helping to spread opportunity across the country and strengthen geographical areas where disease burden is often the greatest.
- Expand NIHR's mentorship programme to reach more people in non-clinical roles, public health and social care where additional support would enhance career progression.
- Increase opportunities and strengthen development and support packages for career stages where we know that current provision is limited.
- Keep our investment at all career stages under review to ensure we provide attractive pathways and the right balance of opportunities for health and social care researchers with an interest in research.
- Collaborate with partners from the life sciences industry, charities and other sectors to provide researchers with new skills, experiences and training opportunities and encourage entrepreneurship.

Our core workstreams

Collaborating with other public funders, charities and industry... to shape a cohesive and globally competitive research system

A key ingredient in our success has been working with partners from across the public sector and with charities and industry to create an integrated research system that meets the needs of the public, is at the forefront of research internationally and attracts inward investment.

We work closely with UKRI and its constituent bodies, who jointly fund a number of our programmes and initiatives and provide us with important opportunities for interdisciplinary working. We also partner with the UK's remarkable charity sector, for example in the fields of cancer, arthritis, cardiovascular disease and dementia, and charities actively inform our research priorities. And we increasingly collaborate with the devolved administrations in Scotland, Wales and Northern Ireland who both co-fund and participate in much of our work.

We also have long-standing relationships with regulators, with whom we have worked closely to accelerate and adapt research processes during the COVID-19 pandemic, and newer relationships with bodies responsible for digital technology and data science.

We continue to strengthen our strategic relationship with the NHS, working together to simplify research processes and enhance our data infrastructure (NHS England and NIHR 2017), and as the research capacity of public health and social care expands will engage these areas also.

We work with all of these stakeholders - and with industry, both directly and through trade associations - to coordinate, streamline and expedite end-to-end research processes. In this way, we play our part in delivering the government's life sciences industrial strategy (Office for Life Sciences 2017), strengthening the environment for commercially-supported studies and ensuring the UK remains a globally attractive destination for high quality clinical research.

Looking ahead, we will:

- Collaborate with other research funders and regulators on creating a more supportive, diverse and inclusive research community, lessening the burden of unnecessary bureaucracy, and encouraging open access publication of publicly-funded research.
- Partner with key stakeholders to more fully embed research in the Care Quality Commission's monitoring of standards of care in the health and social care system.
- Play our part in implementing the government's strategy to extend the UK's leadership in genomic healthcare and research (DHSC 2020a).
- Help to shape the research ecosystem through supporting implementation of the government's R&D Roadmap (Department for Business, Energy & Industrial Strategy 2020) and via established partnership bodies such as the Office for Strategic Coordination of Health Research (OSCHR), the Life Sciences Council Clinical Research Working Group and Innovation, Research and Data Expert Group, and the UK Clinical Research Collaboration (UKCRC).

Our core workstreams

Funding applied global health research and training... to meet the needs of the poorest people in low and middle income countries

Our global health research portfolio, principally funded through Official Development Assistance (ODA), was established in 2016 and has since grown and developed at pace. We fund high-quality global health research for the direct and primary benefit of people in low and middle income countries (LMICs), and build R&D capacity and capability in both the UK and in LMICs through mutual learning and knowledge exchange.

Working closely with the global health research community, we commission and invest in applied health research and training that responds to the diverse needs of LMIC communities, anticipates the evolving global burden of disease and addresses health system priorities. We fund work in more than 50 countries through:

- Programmes that award research funding to equitable partnerships between groups of researchers or groups of research institutions in LMICs and the UK.
- Partnerships with other global health research organisations, supporting existing, high quality funding schemes and co-creating new initiatives to respond to areas of need.
- Investment in People, funding the career development of researchers at all career stages and supporting research managers and support staff in LMICs and the UK.

In support of the UK's global commitments, our portfolio is aligned to the sustainable development goals, promotes universal health coverage, and contributes towards addressing emerging health challenges such as COVID-19 and climate change. We are committed to transparency, accountability and value for money for the UK taxpayer.

Looking ahead, we will continue to shift the 'centre of gravity' of our global health research portfolio, strengthening LMIC-led research teams, partnerships and consortia to address locally identified health challenges.

In future, we envisage our funding will focus on three strategic priorities:

- Improving the treatment, management and care of disease and chronic conditions.
- Strengthening health systems and resilience to respond to population needs.
- Reducing preventable deaths across the life course.

In addressing these, we will build on our established expertise in fostering equitable partnerships, engaging and involving communities (Tembo et al 2021) and strengthening research capacity.

Specifically, we will:

- Promote equity of opportunity for LMIC-led research, strengthening global health research capability at individual, institutional and systems levels.
- Increase our direct funding to research partnerships led by LMIC institutions and directly fund proposals from LMIC researchers to design, lead and author high-quality research on an equal footing with researchers in the UK.
- Embed community engagement and involvement among our award-holders across our portfolio, giving people and communities a genuine voice in research design, delivery and dissemination to enable real-world impact.
- Monitor and improve equality, diversity and inclusion across our portfolio, recognising that the contexts in LMICs can be different to the UK and that we have much to learn from our LMIC research partners.
- Foster a culture of learning and knowledge sharing among our award-holders, and promote communication, dissemination and uptake of research findings by policy makers and health service providers in the UK and in LMICs.
- Encourage and enable uptake into the UK health and care system of innovation, technologies and processes developed through our award-holders in LMICs, including in areas such as diabetes, cardiovascular disease, respiratory health and surgery.

We recognise the need to develop more efficient mechanisms to facilitate knowledge exchange across our UK and global programmes. Building this evidence base and fostering greater exchange of applied knowledge and expertise will enable us to strengthen health systems and improve health outcomes in the UK as well as in LMICs.

Image Credit: Jyothi Karat.

Our areas of strategic focus

We have identified seven areas where we need to deliver transformative change

Image Credit: Centre for Ageing Better

We are proud of our work and continuously innovate in order to deliver against our mission of improving the health and wealth of the nation through research.

We have, however, identified seven areas where the environment is changing or there are potential structural weaknesses and we need to work with urgency and in fundamentally different ways if we are to deliver transformative change over the next five to ten years. We call these our 'areas of strategic focus'.

We will:

- **Build on learnings from the research response to COVID-19 and support the recovery of the health and social care system**
- **Build capacity and capability in preventative, public health and social care research**
- **Improve the lives of people with multiple long-term conditions through research**
- **Bring clinical and applied research to under-served regions and communities with major health needs**
- **Embed equality, diversity and inclusion across NIHR's research, systems and culture**
- **Strengthen careers for research delivery staff and under-represented disciplines and specialisms**
- **Expand our work with the life sciences industry to improve health and economic prosperity**

Our areas of strategic focus

Building on learnings from the research response to COVID-19 and supporting the recovery of the health and social care system

Through studies funded, co-funded or supported by NIHR, the UK is at the forefront of international research efforts to find new ways to diagnose, treat and prevent the spread of COVID-19.

Whilst the emergence of vaccines gives us hope for the future, we know that COVID-19 will cast a long shadow and that research will continue to be needed to tackle its long-term impacts, including in relation to the operation and resilience of the NHS and social care.

Furthermore, our experiences of COVID-19 have provided us with evidence to strengthen our abilities to fund and support research across health, public health and social care and to tackle future pandemics and other global health challenges.

We continue to tackle the ongoing threat from COVID-19, for example by commissioning further research into 'Long COVID' and vaccines and scoping the role of antiviral therapies.

Looking ahead, we plan to:

- Prepare for future pandemics by ensuring that the whole research system is aligned and ready to develop, fund and deliver pandemic research studies.
- Incentivise greater use of platform studies to rapidly evaluate the effectiveness of multiple interventions to tackle new infectious diseases.
- Support the work of the UK Health Security Agency through close partnership working, including via our Health Protection Research Units.
- Provide the research outputs which the NHS and wider health and social care system need to recover post COVID-19. Knowledge generated by NIHR will help them not only to restore services for patients and the wider public but also to design and deliver them in a way that builds resilience.
- Ensure that lessons learned from COVID-19 help to shape the future of research more generally. We will aim for greater integration of research within the NHS and wider health and social care services, and seek to deploy expedited processes of research approval and delivery into topic areas beyond COVID-19. We will also scale up our use of digital enablers and develop new ways of realising the potential of patient data to accelerate recruitment into clinical research studies.
- Support plans to develop a coordinated cross-agency response to a pandemic or other future health emergency.
- Build on heightened awareness of research as a result of COVID-19 to strengthen our engagement of people and communities, including through better use of digital technologies and by reaching out more effectively to communities under-served by research.

Our areas of strategic focus

Building capacity and capability in preventative, public health and social care research

Preventing ill health (including early diagnosis) and improving public health and social care represent some of the most difficult and important challenges facing the nation today.

We need to build up research capacity to provide a stronger evidence base in these fields. This is particularly important in local authorities and third sector organisations working in social care, which typically lack the research infrastructure, experience and resources that can be widely found in NHS Trusts. Research capacity in primary and community care is also vitally important.

It is incumbent on us to increase the volume of research in populations with high disease burden across the life-course, which have historically been under-served by research.

To improve people's health and wellbeing, reduce health inequalities and lessen the burden on public services, we need to have a greater understanding of how to affect the wider determinants of health. This will require us not only to incentivise the most able researchers to get involved in these areas, but also to access radically new thinking from a much broader range of disciplines and specialisms than are engaged in health and social care research at present.

We have made some progress in recent years but we know more is needed.

For example, we are funding local authorities to think about how they could build a local research system, identifying the resources they have and the gaps that need plugging, and helping them to evaluate the interventions they are undertaking. Furthermore, the NIHR Academy is running 'incubators' in public health, social care, primary care and mental health to support research capacity building and multi-disciplinary career development, and is working with our research schools to offer fellowships in public health, social care and primary care. And we are strengthening research capability and supporting career pipelines in global health, both in the UK and in low and middle income countries.

Looking ahead, we will:

- Work to draw in new communities of researchers, particularly those working in areas of deprivation, giving them the freedom and flexibility to find innovative solutions to long-standing prevention challenges.
- Research how to reach those populations with the poorest health and how to encourage them to engage with screening and other preventative and early detection services.
- Work across government and with researchers from a broad range of disciplines to drive a more joined-up approach to obesity research generation and policy-making.
- Widen the geographical spread of research excellence in mental health to reach more patients and service users across the nation.
- Increase our funding for dementia research, working in partnership with UKRI to deliver against government commitments.
- Invest in public health and social care research in local authority settings, where many of the levers for change to the wider determinants of health reside.
- Create new fellowship and placement schemes that will enable individuals to undertake roles that combine research and practice.

Our areas of strategic focus

Improving the lives of people with multiple long-term conditions through research

The term 'multiple long-term conditions' (MLTC) refers to the co-existence of two or more chronic conditions (physical or mental) in a single individual (Academy of Medical Sciences 2018). In medical and research circles, this is often known as multimorbidity.

It is estimated that more than 14 million people in England alone are living with MLTC and that they account for over half of NHS primary and secondary care costs (Stafford et al 2018). These numbers are expected to rise in line with our ageing population, making MLTC arguably the biggest health and social care challenge we face.

While a substantially greater proportion of older people have MLTC, often combined with frailty, they can occur across the life-course. For example, we know that people living in deprived circumstances are more likely to have MLTC earlier in their lifetime, that MLTC often present during pregnancy, and that there are many children and young people with complex care needs who experience the health and social care system in a way that is similar to that of people living with MLTC.

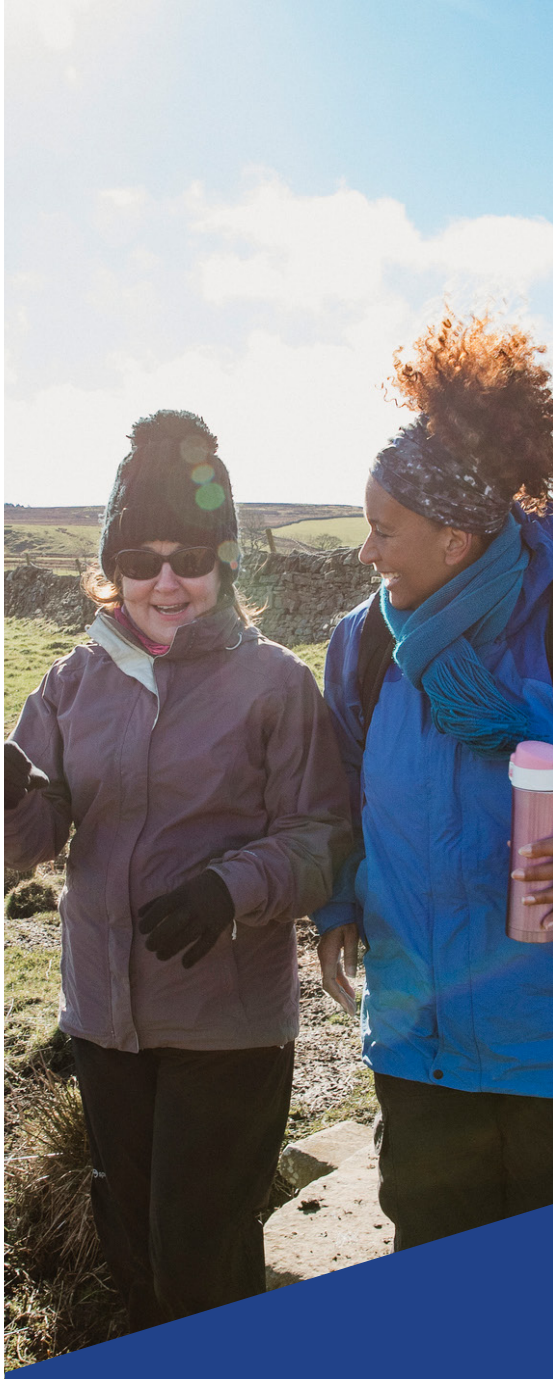
The needs of people living with MLTC are not well served either by clinical services or by science, both of which are organised vertically around single conditions. NIHR is taking steps to address these needs through research, working in partnership with the Academy of Medical Sciences, the MRC, Wellcome and a number of medical research charities, but we know that more needs to be done.

We are funding large-scale, multidisciplinary research to identify and map common clusters of disease and their trajectories, using artificial intelligence and data science methods. We are also funding research into methods to support the rapid uptake of research findings into routine practice, and have run workshops to identify the problems and outcomes that matter most to people with MLTC and their carers and how they would like to see services configured to meet their needs. And we have commissioned global MLTC research in recognition that this challenge is not limited to the UK.

We have published a strategic framework for MLTC research (NIHR 2020a) which sets out priority research aims and a pathway to foster the cultural changes set out above.

In particular, we plan to:

- Review all our funding processes to ensure they actively support MLTC applications throughout the commissioning pathway.
- Require panel members across prioritisation and funding committees to accommodate the inevitable complexity of MLTC studies and encourage collection of appropriate and consistent outcomes measures relevant to MLTC.
- Ensure our research studies do not unjustifiably exclude people with MLTC.
- Build capacity by providing and promoting MLTC research opportunities and encouraging researchers to move between, and collaborate across, multiple disciplines and disease areas. A 'team science' approach across health, social care and public health will be needed.
- Deliver research that enables the health and social care system to reconfigure services and improve system efficiency, taking a whole person approach and focussing on what matters to people with MLTC and their carers.
- Support design and delivery of interventions to prevent people progressing from one long-term condition to MLTC.
- Engage with delivery and implementation partners to ensure that MLTC is recognised as a challenge and that research is pulled through into practice.



Our areas of strategic focus

Bringing clinical and applied research to under-served regions and communities with major health needs

While it makes sense for early translational research to be concentrated in the big urban centres of excellence, it is important for clinical and applied research to take place in the regions and communities with the greatest health and social care needs. That includes not only cities but also the coastal towns, rural and semi-rural areas where many older people live.

People in regions and communities where the burden of need is greatest are often under-served by research. For example, research into long-term conditions such as mental ill-health and diabetes indicates that recruitment is disproportionately low in areas with higher prevalence (Bower et al 2020), and NIHR data suggest that the picture is similar for liver disease and chronic obstructive pulmonary disease.

For both scientific and ethical reasons, we must support the nation's best researchers to extend their research into these regions and communities, which may not be adjacent or easily accessible to them.

This will help to ensure that research is well-designed and relevant to the end-user, that results are generalisable to a broad and diverse population, and that any resulting intervention can be successfully delivered to the people who most need it. It will also provide people and communities across the nation with earlier access to innovative treatments, facilitate an improvement in local health and social care services, and give everyone the ability to shape, participate in and benefit from research.

These same principles apply to our work in low and middle income countries.

As a first step, we have developed a roadmap (NIHR 2021a) which identifies potential points along the research pathway where intervention could improve inclusion of regions and communities under-served by research. We have also developed a set of questions to help researchers, funders, reviewers and delivery teams to consider such inclusiveness when they design and assess research proposals. We are piloting approaches to encourage applicants to extend their research into regions and communities with a high disease burden. And we are actively working to extend the reach of our global health research portfolio through community engagement and involvement.

Looking ahead, we will:

- Gather together all the relevant initiatives that have been undertaken across the research ecosystem, both within and outside NIHR, to understand what has worked and what challenges have been encountered.
- Based on this intelligence, determine how NIHR should systematically gather information to help inform decisions on ideation, funding and initiation of new research priorities.
- Prioritise and orientate funding calls around the needs of under-served regions and communities, encouraging and enabling investigators to extend the reach of their research beyond 'tried and trusted' research sites.
- Encourage and support healthcare professionals and researchers in under-served regions to apply for and receive funding to build capacity and capabilities to support and conduct research.
- Foster greater local and national co-creation and collaboration, engaging communities in under-served regions in dialogue about research, building long-term relationships with community leaders and giving people the confidence to get involved.
- Nurture new NHS and non-NHS research sites located in regions that have high health and social care needs and have historically been less active in research, introducing new initiatives to enhance their capacity and capabilities.

Our areas of strategic focus

Embedding equality, diversity, and inclusion across NIHR's research, systems and culture

We are committed to equality, diversity and inclusion in terms of the people who lead NIHR, the people who sit on our funding committees and provide peer review, and the people who lead, deliver and are involved in our research.

However, we know that we are not fully representative of the society we serve, that there are inequalities in the type of research we fund, who we fund and our decision-making processes, and that we have not attracted a sufficiently diverse range of people to participate in our research studies. We must do more to embed diversity and inclusion in all our ways of working, not only nationally but also in low and middle income countries.

Consistent with the Equality Act 2010 (HM Government 2010), we are committed to tackling discrimination on the basis of protected characteristics, and are also concerned about imbalances and inequalities associated with socio-economic status, geographic location and ability to access health and social care. In addition to these priorities, NIHR will specifically consider intersectionality, recognising that multiple social identities overlap to exacerbate the experience of health inequities.

We have made some progress in fostering an inclusive culture in research, particularly in terms of addressing barriers to career progression for female academics. A number of interventions over the years have successfully promoted gender equality in our research workforce, and today half our research professors are women and two thirds of personal fellowships are awarded to women. We are now championing gender equality in our global research programming also.

NIHR is now systematically turning its attention to race and disability. As a first step, we have worked with partners to develop an ethnicity framework (Trial Forge 2020) to support clinical trial teams to understand the unique barriers for ethnic minorities and to encourage applicants and trial teams to take a more inclusive approach to research design.

Looking ahead, we will:

- Develop robust evidence to understand the impediments in our systems and the biases in our processes which have led to some communities, particularly ethnic minorities and people with disabilities, being under-represented in our research. We will introduce programmes of change, for example as part of our fellowship and research professorship programmes, testing our plans with relevant communities to ensure that we are deploying resources to the areas of greatest need.

- Diversify research participants in the studies we support and the voices of those who shape our research agenda, by redesigning our processes, introducing targeted interventions and the effective monitoring and evaluation of impact. Using an intersectional approach, we will ensure that we are reflecting diverse interests in our processes.

- Embed diversity in all our business processes. We will dedicate resources to the systematic tracking, reporting and evaluation of diversity within NIHR, including data on applications and awards for our research and training programmes, on our workforce and the constitution of our committees and advisory boards, and on the people who shape and participate in our research studies. We will use these data to set appropriate targets to diversify participation in our research and systems.

- Prioritise a cross-funder approach for addressing behavioural and culture change in research and the research environment, for example tackling bullying and harassment.

Through these measures, we will foster an inclusive environment, engage the talents and energy of diverse people in all areas of our work, and improve the relevance and quality of our research.

Our areas of strategic focus

Strengthening careers for research delivery staff and under-represented disciplines and specialisms

NIHR has been highly successful in developing academic career pathways that support individuals across a range of backgrounds, but we are increasingly aware that there are groups within our research community that lack recognition and career support. These include methodologists, such as statisticians, economists and qualitative researchers, as well as research assistants.

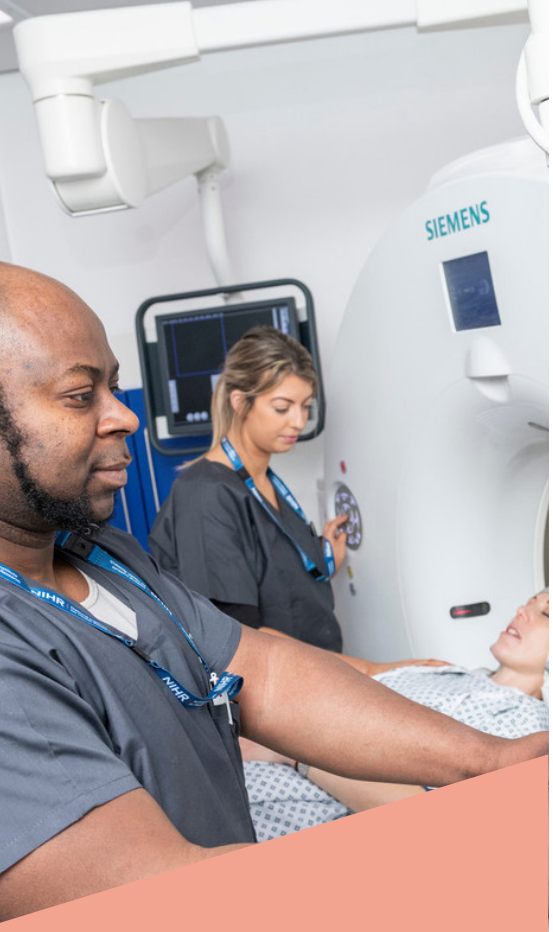
We also recognise that, in order to deliver research at scale and pace, we need to provide advancement opportunities for a breadth of roles and professions including research nurses and our growing community of clinical research practitioners.

These roles are critical to NIHR's success and it is imperative that we properly recognise their contribution and provide career structures that are exciting and attractive. By investing in skills, we can strengthen R&D delivery capacity, efficiency and cost-effectiveness, and enhance the country's global competitiveness as a partner of choice for the life sciences industry.

We have taken a number of steps but we know there is more to do.

We have introduced programmes to strengthen and promote nurse and midwife leadership in health and social care research, and have created an accredited register for clinical research practitioners, raising their profile and establishing a community of practice. We have also introduced an 'Associate Principal Investigator' scheme, endorsed by appropriate professional colleges, to fast track junior doctors, nurses and AHPs to become the PIs of the future. Our AHP Champions actively encourage more AHPs to get involved in research.

We have established an 'incubator' to examine career blocks and create better opportunities for methodologists, and are supporting the Royal Colleges and standard setting bodies to develop bespoke online learning resources to develop research capacity in their professional communities. We are also collaborating with partners to promote 'team science', shaping academic reward and recognition systems so that they mirror the trend toward teams working together to solve complex problems. Through our global programming, we are strengthening capability in research management functions to support the delivery of high quality research in LMIC institutions.



Looking ahead, we will:

- Build capacity across disciplines and in the practitioner, specialist and technical roles required across the sector, including in statistics, data science, economics, behavioural and social sciences.
- Examine postdoctoral careers that exist outside the academic track to understand the skills people need and the development opportunities that will enhance their career experience and help them succeed.
- Work with other funders to engage clinicians in research, including co-funding with MRC expansion of programmes designed to attract research-qualified full-time clinicians back into research.
- Introduce a new credentialing framework to recognise Clinician Researchers.
- Improve the attractiveness of academic career pathways for nurses, midwives and AHPs where advancement into senior research posts is still challenging.

Our areas of strategic focus

Expanding our work with the life sciences industry to improve health and economic prosperity

The life sciences industry is one of the pillars of the UK economy, is highly diversified and geographically dispersed, and plays a vital role in improving the health of patients and the public. In 2019, it generated almost £81 billion in turnover and employed over 250,000 people across the country (Office for Life Sciences 2021).

Since its inception, NIHR has supported industry's early stage development pipeline by facilitating access to the country's leading experts, enabled collaborations to support medtech and diagnostics development, and helped to drive major growth in commercial trials across the country.

The international clinical research market is changing, with new technologies transforming the diagnosis, treatment and prevention of illness and growing competition from countries around the world. Working with NHSE/I, regional medical teams and Integrated Care Systems, NIHR is determined to maintain and grow the UK's share of this market and to be at the forefront of the healthcare revolution.

During the COVID-19 pandemic, we demonstrated the extraordinary strength of NIHR and the broader UK research system and, as we emerge from the pandemic, we can use these same assets to restore and grow opportunities for industry investment.

To further increase our capacity to deliver large scale studies, we have established five national Patient Recruitment Centres dedicated to the rapid set-up and delivery of late-phase commercial clinical trials. These also increase opportunities for patients to access cutting-edge treatment and therapies that are not yet widely available through the NHS.

More broadly, we have the opportunity to increase our work with industry in areas where we have particular strength, including in early phase trials, innovative trial design, genomics and precision medicine, and to expand our industry partnerships into new areas such as artificial intelligence and digital health.

We have established initiatives to increase the number of researchers and clinical academics with experience of working at the interface of industry, academia and the health and care sector. We have also introduced a funding scheme that enables researchers to develop entrepreneurial skills and gain experience of working closely with an SME partner, and are partnering with life science companies over mutually-beneficial fellowships and training awards.

Looking ahead, we will:

- Work with partners to realise the vision for UK clinical research delivery (DHSC 2021) and deliver the associated action plan for England.
- Further the recommendations of the life sciences industrial strategy, helping the government meet its ambition of increasing R&D investment to 2.4% of gross domestic product by 2027.
- Expand our engagement with industry by developing and promoting a pan-NIHR offer for companies large and small across biopharma, diagnostics and medtech, identifying opportunities to support their pipelines.
- Deepen our engagement with nascent industries such as digital, design and artificial intelligence, and work with the university sector to develop new industries.
- Invest in the infrastructure and support that home-grown life science companies, from university spin-outs to more established SMEs, need to attract venture capital and accelerate the development and uptake of commercial medtech innovations.
- Partner with the Office for Life Sciences, universities, local government and Academic Health Science Networks to ensure our infrastructure can support the development of life science clusters across the country that will increase opportunities to establish new companies, create a critical mass of expertise that stimulates internal investment, and facilitate the rapid growth of home-grown SMEs.
- Support the NHS's Accelerated Access Collaborative as it enters into agreements with commercial companies to align research, manufacturing and deployment activities, ensuring the rapid delivery of necessary clinical trials and investigations.

In this document, we have set out how - consistent with our mission - NIHR funds, enables and delivers world-leading health and social care research that improves people's health and wellbeing and promotes economic growth.

We have shared our current operational priorities, highlighting areas where the environment is changing and where we need to work with urgency and in markedly different ways if we are to tackle the health and social challenges facing people and communities today. These areas of strategic focus will provide the foundation for a forward-looking strategy for NIHR that will be developed and published subsequently.

We remain committed to the principles of excellence, effectiveness and inclusion in everything we do, and to ensuring that our research has a positive impact on people's lives. We know that collaboration with others is fundamental to our success and look forward to building on the multitude of partnerships we have established with patients and the public, health and social care professionals and the research community.

References

Academy of Medical Sciences. Improving the health of the public by 2040: Optimising the research environment for a healthier, fairer future. Academy of Medical Sciences. 2016.

Academy of Medical Sciences. Multimorbidity: A priority for global health research. 2018.

Ahmed HU, El Shater Bosaily A, Brown LC, Gabe R, Kaplan R, Parmar MK, Collaco-Moraes Y, Ward K, Hindley RG, Freeman A Kirkham AP, Oldroyd R, Parker C, Emberton M. Diagnostic accuracy of multi-parametric MRI and TRUS biopsy in prostate cancer (PROMIS): a paired validating confirmatory study. The Lancet. 2017. 389(10071). 815-822.

Angus D, Gordon A, Bauchner H. Emerging Lessons From COVID-19 for the US Clinical Research Enterprise. JAMA. 2021. 325(12). 1159-1161.

Atkinson P, Sheard S, Walley T. 'All the stars were aligned'? The origins of England's National Institute for Health Research. Health Res Policy Syst. 2019. 17. 95.

Bell J. 10 years of the UK's National Institute for Health Research. Lancet. 2016. 387(10032). 1978-1979.

Bennett WO, Bird JH, Burrows SA, Counter PR, Reddy VM. Does academic output correlate with better mortality rates in NHS trusts in England? Public Health 2012. 126(Suppl 1). S40-S43.

Boaz A, Hanney S, Jones T, Soper B. Does the engagement of clinicians and organisations in research improve healthcare performance: a three-stage review. BMJ Open. 2015. 5. e009415.

Bower P, Grigoroglou C, Anselmi L, Kontopantelis E, Sutton S, Ashworh M, Evans P, Lock S, Smye S, Abel K. Is health research undertaken where the burden of disease is greatest? Observational study of geographical inequalities in recruitment to research in England 2013–2018. BMC Medicine. 2020. 18. 133.

Campaign for Social Science. The Health of People: How the social sciences can improve population health. Campaign for Social Science. 2017.

Cochrane Collaboration. Cochrane-REWARD prizes for reducing waste: 2017 winners. 2017. [Accessed February 2021]

Corbett J, d'Angelo C, Gangitano L, Freeman J. Future of Health: Findings from a survey of stakeholders on the future of health and healthcare in England. London: Department of Health. 2017.

CRASH-2 trial collaborators. Effects of tranexamic acid on death, vascular occlusive events, and blood transfusion in trauma patients with significant haemorrhage (CRASH-2): a randomised, placebo-controlled trial. The Lancet. 2010. 376 (9734). 23-32.

Crocker JC, Ricci-Cabello I,Parker A, Hirst JA, Chant A, Petit-Zeman S, Evans D, Rees S. Impact of patient and public involvement on enrolment and retention in clinical trials: systematic review and meta-analysis. BMJ. 2018. 363.

Davies SC, Walley T, Smye S, Cotterill L, Whitty CJ. The NIHR at 10: transforming clinical research. Clin Med (Lond). 2016. 16(6). 501-502.

Department for Business, Energy & Industrial Strategy. UK Research and Development Roadmap. 2020.

Department of Health. Best research for best health: a new national health research strategy. 2006.

DHSC. Chief Medical Officer's annual report 2020: health trends and variation in England. 2020.

DHSC. Genome UK: the future of healthcare. 2020a.

DHSC. The future of UK clinical research delivery. 2021.

Downing A, Morris EJA, Corrigan N, Sebag-Montefiore D, Finan PJ, Thomas JD, et al. High hospital research participation and improved colorectal cancer survival outcomes: a population-based study. Gut. 2017. 66(1). 89-96.

Duhig KE, Myers J, Seed PT, Sparkes J, Lowe J, Hunter RM, Shennan AH, Chappell LC. Placental growth factor testing to assess women with suspected pre-eclampsia: a multicentre, pragmatic, stepped-wedge cluster-randomised controlled trial. The Lancet. 2019. 393(10183). 1807-1818.

Earl H, Hiller L, Vallier AL, Loi S, McAdam K, Hughes-Davies L. 6 versus 12 months of adjuvant trastuzumab for HER2-positive early breast cancer (PERSEPHONE): 4-year disease-free survival results of a randomised phase 3 non-inferiority trial. The Lancet. 2019. 393(10191). 2599-2612.

Hanney SR & González-Block MA. Building health research systems: WHO is generating global perspectives, and who's celebrating national successes? Health Res Policy Syst. 2016. 14(1). 90.

Hilton J. Rewarding systematic approaches to reducing research waste. European Science Editing. 2017. 43(3), 50.

Hollis C, Hall CL, Guo B, James M, Boadu J, Groom MJ, Brown N, Kaylor-hughes C, Moldavsky M, Valentine AZ. The impact of a computerised test of attention and activity (QbTest) on diagnostic decision-making in children and young people with suspected attention deficit hyperactivity disorder: single-blind randomised controlled trial.The Journal of Child psychology and Psychiatry. 2018. 59(12). 1298-1308.

Health Research Authority and NIHR. Survey of the general public: attitudes towards health research 2017. 2017.

HM Government. Equality Act 2010. 2010.

Iacobucci G. Clinical research adds billions to UK economy, analysis shows. BMJ. 2019. 367. 16052.

Jonker L, Fisher SJ. The correlation between National Health Service trusts' clinical trial activity and both mortality rates and Care Quality Commission ratings: a retrospective cross-sectional study. Public Health. 2018. 157. 1-6

Kasivisvanathan V, Rannikko AS, Borghi M Panebianco V, Mynderse LA, Vaarala MH, Briganti A, Budäus L, Hellawell G, Hidley RG, Roobol MJ, Eggener S, et al. MRI-Targeted or Standard Biopsy for Prostate-Cancer Diagnosis. N Engl J Med. 2018. 378. 1767-1777.

Kovlund PC, Nielsen BK, Thaysen HV, Schmidt H, Finset A, Hansen KA, Lombor K. The impact of patient involvement in research: a case study of the planning, conduct and dissemination of a clinical, controlled trial. Research Involvement and Engagement. 2020. 6. 43.

Lamontagne F, Rowan KM, Guyatt G. Integrating research into clinical practice: challenges and solutions for Canada. CMAJ. 2021.193(4). E127-31.

Law C, Cornelsen L, Adams J, Penney T, Rutter H, White M, Smith R. An analysis of the stock market reaction to the announcements of the UK Soft Drinks Industry Levy. Economics & Human Biology. 2020. 38. 100834.

Lurie N, Keusch, GT, Dzau VJ. Urgent lessons from COVID 19: why the world needs a standing, coordinated system and sustainable financing for global research and development. Health Policy. 2021. 397(10280). 1229-1236.

Morgan Jones M, Kamenetzky A, Manville C, Ghiga I, MacLure C, Harte E et al. The National Institute for Health Research at 10 Years: An impact synthesis: 100 Impact Case Studies. RAND Corporation, 2016.

Office for Life Sciences. Life Sciences Industrial Strategy. 2017.

Office for Life Sciences. Life Science Competitiveness Indicators. 2021.

Ozdemir BA, Karthikesalingam A, Sinha S, Poloniecki JD, Hinchliffe RJ, Thompson MM et al. Research activity and the association with mortality. PLoS ONE. 2015. 10(2). 0118253.

Nasser M, Clarke M, Chalmers I, Brurberg KG, Nykvist H, Lund H, & Glasziou P. What are funders doing to minimise waste in research? The Lancet. 2017. 389(10073). 1006-1007.

NHS England. The NHS saves £324 million in a year by switching to better value medicines. 2018.

NHS England. NHS Long Term Plan v1.2 August 2019. 2019.

NHS England. COVID treatment developed in the NHS saves a million lives. 2021.

NHS England and NIHR. 12 actions to support and apply research in the NHS. 2017.

NICE. Major trauma: assessment and management of major trauma. NICE Guideline NG39. 2016

NIHR. Going the Extra Mile. NIHR. 2015.

NIHR. Strategic Review of Training 2017. 2017.

NIHR. Living with Covid19 - Informative and accessible health and care research. NIHR Evidence. 2020.

NIHR. NIHR Strategic Framework for Multiple Long-Term Conditions (Multimorbidity) MLTC-M Research. 2020a.

NIHR. UK Standards for Public Involvement. Accessed May 2021.

NIHR. NIHR Include. Accessed May 2021a.

Rangarajan S, Walsh L, Lester W, Perry D, Laffan M, Hua Y, Vettermann C, Pierce GF, Wong, WY, Pasi, KJ. AAV5–Factor VIII Gene Transfer in Severe Hemophilia A. N Engl J Med. 2017. 377. 2519-2530.

Smith JA, Kitt MM, Morice AH, Birring SS, McGarvey LP, Sher MR, Li YP, Wu WC, Xu ZJ, Muccino DR, Ford AP. Gefapixant, a P2X3 receptor antagonist, for the treatment of refractory or unexplained chronic cough: a randomised, double-blind, controlled, parallel-group, phase 2b trial. Lancet Respiratory Medicine. 2020. 8(8). 775-785.

Stafford M, Steventon A, Thorlby R, Fisher R, Turton C and Deeny S. Briefing: Understanding the health care needs of people with multiple health conditions. The Health Foundation. 2018.

Tembo D, Hickey G, Montenegro C, Chandler D, Nelson E, Porter K, Dikomitis L, Chambers M, Chimbari M, Mumba N, Beresford P, O Ekiikina P, Musesengwa R, Staniszewska S, Coldham T, Rennard, U. Effective engagement and involvement with community stakeholders in the co-production of global health research. BMJ. 2021. 372.

Trial Forge. The Include Ethnicity Framework. 2020.

Woolham J, Samsi K, Norrie C, & Manthorpe J. The impact of the coronavirus (Covid-19) on people who work as social care Personal Assistants. NIHR Policy Research Unit in Health and Social Care Workforce. The Policy Institute, King's College London. 2020.