

<i>Title of Trust-wide PPS:</i>	
RESEARCH & DEVELOPMENT STRATEGY 2022-2026	
eLibrary ID Reference No: <i>This id will be applied to all new Trust-wide PPSs by the Quality Department and will be retained throughout its life span.</i>	GOV-STRAT-001-10
<i>Newly developed Trust-wide PPSs will be allocated an eLibrary reference number following Trust approval. Reviewed Trust-wide PPSs must retain the original eLibrary reference number.</i> <i>The Quality department will progress all new, re-written and reviewed PPSs for final Trust approval.</i>	
Version: <i>(Must be a rounded number, i.e. 6.0,7.0 etc.)</i>	6.0
Title of Approving Committee:	Trust Board
Date Approved:	07/04/2022
Risk Rating: <i>(this must be applied by the Author prior to being submitted to the Quality Dept. (refer to PPS guidance pack on eLibrary)</i>	Moderate
Next Review Date: <i>(this must be applied by the Author dependant on risk rating or record alternative date if required to meet national guidance)</i>	January 2025
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Trust-wide PPS to be read in conjunction with:	Research Governance Policy Intellectual Property Policy
Relevance:	Operational
Superseded Trust-wide PPSs (if applicable):	Research & Development Strategy V5

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Version	Consulting & Endorsing Stakeholders, Committees/Meetings/Forums etc for this version only <i>List all Consulting & Endorsing Stakeholders for this version, this can include direct consultation with individuals, Committees/Forums/Bodies/Groups, refer to guidance pack.</i>	Date
6.0	Trust Board	7 th April 2022
6.0	Medical Education & Research Committee	16 th March 2022
6.0	Research & Development Strategy Committee	24 th March 2022

UNIVERSITY HOSPITALS COVENTRY & WARWICKSHIRE NHS TRUST

RESEARCH AND DEVELOPMENT STRATEGY 2022-2026

Author: Harpal S Randeva

VISION

*To conduct transformational and impactful research
that empowers UHCW staff to be truly world-class in their practice*

MISSION

*Inspiring research innovation and collaboration
for the benefit of our patients and the communities we serve*

Strategy and Financial Implications

This document sets out major strategic directions for the next five years, to guide decision-making about appropriate investments in Research and Development (R&D) projects, infrastructure and staffing at clinical and higher academic levels at University Hospitals Coventry & Warwickshire (UHCW) NHS Trust.



University Hospitals Coventry and Warwickshire NHS Trust providing state-of-the-art amenities for our community.



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Foreword – Kiran Patel, Chief Medical Officer & Andy Hardy, Chief Executive Officer

Welcome to our Research and Development Strategy for the next 5 years 2022-2026. We know that there is strong evidence to show that research active organisations deliver better health outcomes. The reasons for this are multifactorial of course and our duty is to ensure all of the ingredients for the recipe of success are provided and nurtured at UHCW so that our clinical and managerial staff are inspired and enabled to develop and deliver great research, and our patients and population are able to benefit from participation within it.

Of course, it is not enough to generate and publish research. We have a duty to disseminate it and drive adoption and diffusion across health systems. Our role as a major teaching hospital therefore extends into catalysing research and improving population health. Over the coming 5 years as health systems seek to integrate across the sectors of primary, secondary and tertiary care, across the interface of health and social care and across professional groups, our strategy for the same period is equally bold. We will improve and develop our research portfolio to embrace a pace and structure which responds to the rapidly developing world of healthcare provision, seeking partnerships for commercial and non-commercial research and enabling all of our staff to engage with research. Every member of staff at UHCW should either participate in or contribute to the research agenda at our University hospital and we will enable that so that the fabric of research underpins our ability to deliver great healthcare. We can do this. Our response during the pandemic demonstrated our ability to develop pace and structure in an agile manner. With that in mind, we look forward to what the next 5 years may bring.

Yours sincerely,

Professor Andy Hardy
Chief Executive Officer

Professor Kiran Patel
Chief Medical Officer &
Deputy CEO.

EXECUTIVE SUMMARY

Based on the ambitions highlighted in the UHCW Mission, Vision and Values statements, this new strategy (2022- 2026) will build on our existing research and innovation framework formed by the tireless efforts of our experienced and hardworking staff. It sets the vision to conduct transformational and impactful research that empowers UHCW staff to be truly world-class in their practice. The research strategy guided by its own operating principles will construct an innovative and visionary environment, through establishing Institutes and Units of specialism and support which will uplift and propel excellence in the spheres of transdisciplinary and collaborative research.

Other new initiatives are influenced by our efforts to address health inequalities, engaging with the new Integrated Care Services framework, and our health and social care responsibilities. The harnessing of opportunity elicited from the remarkable acceleration in health-informatics and current data driven and digital technological age will be significant enablers. Collectively, these will be critical drivers for extending our capability and responsiveness essential for the national, international and global challenges of the future.

The strategy will assist direct investment and activity across our University Hospitals aimed at developing a fully world class profile, that integrates our R&D activities to enhance our national and global reputation. This will strengthen our preparedness to become a national and international leader in healthcare and importantly to serve and deliver the highest quality of care to our patients, relatives and carers, and wider community.

Enhancing our compliance and governance processes of quality assurance and accountability through strengthening of the policy environment will ensure research activity, outputs and impact translate into quality research delivery at the coal face.

We have seven operating principles which shape and reflect our culture and guide our decision-making and we will embed an ethos in which research is part of the 'DNA' of the service.

KEY PRIORITIES AND AMBITION

- **Influence and respond to regional, national, and international research priorities, building on our learning from the Covid-19 pandemic and our contribution to the national research effort**
- **Galvanise strategic engagement with academic partners across healthcare and social sectors, Integrated Care Systems (ICSs), NHS Organisations, Industry, and globally recognised research themes**
- **Strengthen a patient-centred, pro-innovation and digitally enabled clinical research environment that empowers our patients, our staff and the public and ensures that clinical groups are better engaged with research and its impact**
- **Secure sustainable R&D capital and economic development that can address future need and global challenge**
- **Establish innovative drivers such as Institutes for Excellence, Health Inequalities Research Unit, and Digital and Data Driven Research Unit**
- **Take full advantage of digital technologies to build on our capacity and capability**
- **Foster a progressive, enabling, inclusive, and supportive research environment, conducive to normalising research and making it more visible and accessible**

1.0 SCOPE

As an integral part of the Trust's vision to be a national and international leader in healthcare, there is a requirement for a clear strategy to develop research within the Trust. By developing and delivering this research strategy, we will also contribute to the delivery of the other Trust strategic priorities.

As such, this strategy sets out our future direction as an organisation and galvanises us around the knowledge that research has the power to improve care and outcomes.

By setting an ambitious goal to be a national leader for healthcare research, positioning ourselves as the first port of call for our patients, participants, commercial and academic partners, we will be recognised as a pro-active and responsive research partner that delivers high quality research and thereby excellent care.

“The research strategy persuaded by its own operating principles will construct an innovative and visionary environment, through establishing Institutes and Units of specialism and support which will uplift and propel excellence in the spheres of transdisciplinary and collaborative research”

2.0 INTRODUCTION

The University Hospitals Coventry & Warwickshire Research and Development Strategy has been developed within the overall context of the UHCW Organisational Strategy (2022-2030) and its Quality Strategy (2016-2021).

Foremost is recognition that it is our staff who make everything possible, with understanding that the environment in which they operate is a powerful catalyst, and that appropriate resource provides critical tools to navigate, facilitate and deliver on significant challenges that world class research activity will inevitably demand.

There is a growing body of evidence that research-active hospitals have better health outcomes. There is a strong independent association between survival and participation in interventional clinical studies for all patients with colorectal cancer (Downing et. al., 2017). Research active Trusts have lower risk-adjusted mortality (Bennett et.al., 2012), even after adjustment for staffing/other structural factors (Ozdemir et. al., 2015) and research-active institutions are typically better able to recruit and retain good clinical staff (Rees & Bracewell, 2019).

Evidence suggesting that hospitals that support high quality patient-centred research have better healthcare outcomes for patients has led to the Care Quality Commission (CQC) including research indicators as part of their inspection programme. The latest CQC strategy endorses that services *'play an active part in research to improve care for all, foster innovation and enhance people's experiences of care'* (CQC, 2021). Indeed, high CQC ratings correlate with high clinical trial activity levels and lower mortality rates (Jonker and Fisher, 2018).

The Department of Health and Social Care (DHSC) also stipulates that improving visibility and research delivery matters to the NHS. It is engaging with health and care staff and leadership to embed the idea that clinical research is an essential and rewarding part of effective patient care. We will tap into this to create incentives and levers in the system to ensure staff feel empowered to support research and see the benefits it brings to their patients. It further advocates capturing, monitoring and promoting research activity across the NHS and suggests building research into healthcare regulator requirements for NHS bodies and revalidation requirements for doctors and nurses.

The NIHR recently published its first formal reporting on diversity data (NIHR 2021d, Diversity Data Report 2020/21) examining sex, ethnicity, disability and age. The Award Funding and Selection Committees Analysis highlights several areas of concern. *'For example, the proportion of females applying for career awards decreases with the seniority*

of award, and researchers from ethnic minority backgrounds were less successful for research funding than white applicants. In addition, the data displayed several areas of need for improved diversity within selection committee membership, with variability across the committees and member types.’ The report goes on to stress that wider collaborative efforts are required across the sector to address these challenges and sets out key actions which we will work to support.

2.1 Background and Context

The Research and Development Strategy has been developed with reference to:

- Our ambition, strategy and plans for delivery (Informed by DHSC, the UK Innovation Strategy papers, and the Life Sciences Vision) along with conversations with professorial colleagues, clinicians, researchers and academics and commercial partners over the past 12 months)
- Our current position (informed by the R&D profile from the UHCW annual report 2020/21 + R&D annual progress report + Subsection - Research and Development)



“Foremost is recognition that it is our staff who make everything possible, with understanding that the environment in which they operate is a powerful catalyst, and that appropriate resource provides critical tools to navigate, facilitate and deliver on significant challenges that world class research activity will inevitably demand”

3.0 DETAILS OF POLICY

3.1 OUR AMBITION, STRATEGY AND PLANS FOR DELIVERY

The Trust is already recognised as a major teaching trust and aims to become a significant player in clinical research that will enhance its reputation as a world leading organisation.

UHCW Research & Development has faced many challenges that the pandemic has raised over the past 18 months. In the post pandemic and recovery phase, we have an opportunity to harness key lessons from the research response to Covid-19. Furthermore, we seek to capitalise on the incredible hard work of our staff, their expertise, and dedication which contributed to the national research effort. In addition to development of a research portfolio throughout the Covid-19 disease progression pathway, including basic science through to treatment, rehabilitation and recovery, whilst also delivering detection studies and a vaccine trial.

We will build our R&D infrastructure to create a robust environment capable of addressing our future needs and fully realising the potential outreach of global interaction enabled through the digital revolution recently accelerated through our healthcare systems. Investment, building on our capacity and capability through a visionary mindset, and exemplary leadership will be critical to achieving this ambition.

The creation of a combined research-embedded and innovation-led clinical environment at its heart requires a cultural shift in mindset alongside the necessary infrastructure for its propagation. This needs to be interwoven into the fabric of the clinical research ecosystem, including NIHR infrastructure initiatives. These include Clinical Research Facilities (CRFs), Experimental Cancer Medicine Centres (ECMCs), Biomedical Research Centres (BRCs) and Collaborations for Leadership in Applied Health Research and Care (CLAHRCs), and continuing engagement with NIHR Clinical Research Networks (CRNs), with partnership and collaboration with other leading regional national and international R&D strategies and programmes, including government agencies and R&D funding bodies, such as UK Research and Innovation (UKRI), Innovate UK and NIHR Applied Research Collaboration ARC West Midlands.

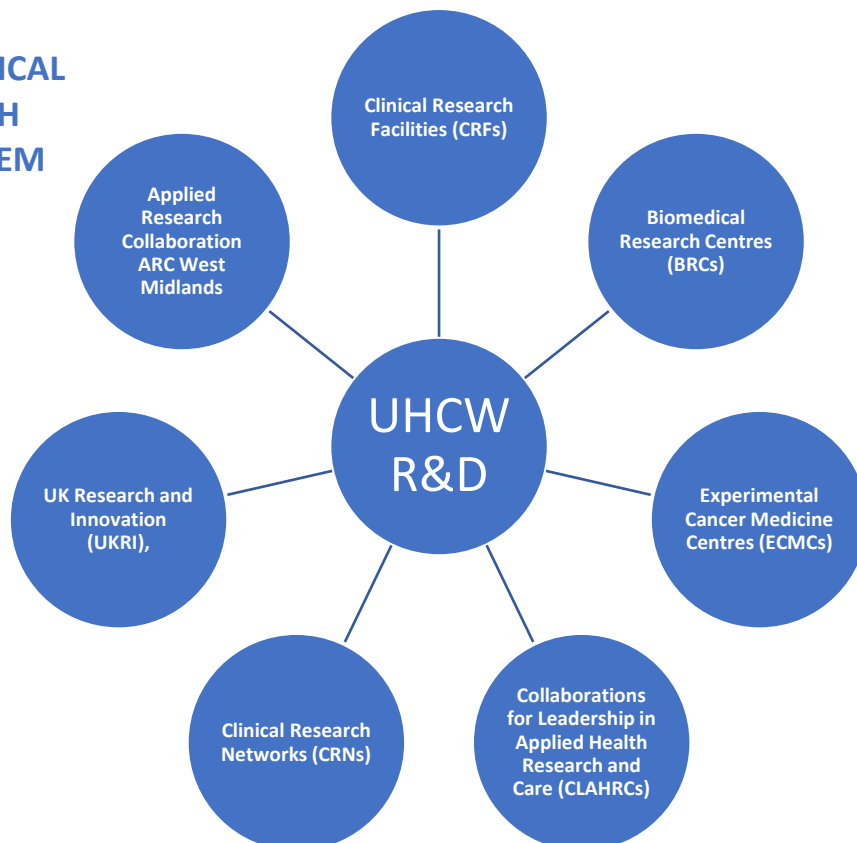
The foundations for such a programme will be strengthened by embedding within it our Trust values. At its heart, drivers of innovation will be fundamental to delivering objectives. Our trust has a proud record of nurturing innovation, and our aspiration to be world class can be further catalysed through supporting innovation across healthcare and social sectors, academic partners, and industry. The pandemic has also laid bare the unacceptable health inequalities that persist across our country, serving as a catalyst for change.

BOX 1: Clinical Research and Healthcare Innovation

Clinical research is widely attributed as the backbone of healthcare innovation, for the improvement, prevention, detection, diagnosis and treatment of disease. Research contributes to the health and wealth of the nation. The UK led the world in terms of research into COVID-19, with the national effort resulting in over a million people being recruited into COVID-19 studies, providing the evidence needed to prevent and treat this disease (NIHRa, 2021). Within UHCW, we not only contributed to national research trials, but also developed a research portfolio throughout the COVID-19 disease progression pathway, including basic science through to treatment, rehabilitation and recovery, whilst also delivering detection studies and a vaccine trial.

“We will build on our R&D infrastructure to create a robust environment capable of addressing our future needs and fully realising the potential outreach of global interaction enabled through the digital revolution recently accelerated through our healthcare systems. Investment, building on our capacity and capability through a visionary mindset, and exemplary leadership will be critical to achieving this ambition”

THE CLINICAL RESEARCH ECOSYSTEM



BOX 2: UK Government Innovation Strategy and Research in Healthcare

The policy paper **Saving and improving lives: the Future of UK Clinical Research Delivery** from the **DHSC** – outlines a UK vision to unleash the full potential of clinical research delivery to tackle health inequalities, bolster economic recovery and to improve the lives of people across the UK. The government plan for economic prosperity, in its UK Innovation Strategy, titled ‘Leading the future by creating it’, aims to ensure research, development & innovation institutions serve the needs of businesses and places across the UK and positions this as one of its central pillars. The UK Government actions to increase investment in R&D to a record £22 billion with allocation of £127 million through the UKRI Strength in Places Fund to develop R&D capacity.

The policy themes will champion our research framework and develop the specific drivers required to make meaningful contribution to these areas. This approach will require no less than vision and ingenuity to meet the UK’s research and innovation needs, and towards tackling health and social care inequalities over the next 5 years. Embedded within its ethos will be inclusiveness, conducive to normalising research and making it more visible and accessible.

The policy outlines the future of clinical research delivery aimed at creating a patient-centred, pro-innovation and digitally enabled clinical research environment. Five key themes underpin this vision:

- 1. Clinical research embedded in the NHS – to create a research-positive culture in which all health and care staff feel empowered to support and participate in clinical research as part of their job.**
- 2. Patient-centred research – to make access to and participation in research as easy as possible for everyone across the UK, including rural, diverse and under-served populations.**
- 3. Streamlined, efficient and innovative research – so the UK is seen as the best place in the world to conduct fast, efficient and cutting-edge clinical research.**
- 4. Research enabled by data and digital tools – to ensure the UK has the most advanced and data-enabled clinical research environment in the world, which capitalises on our unique data assets to improve the health and care of patients across the UK and beyond.**
- 5. A sustainable and supported research workforce – which offers rewarding opportunities and exciting careers for all healthcare and research staff of all professional backgrounds – across the length and breadth of commercial and non-commercial research.**

“The policy themes will champion our research framework and develop the specific drivers required to make meaningful contribution to these areas. This approach will require no less than vision and ingenuity to meet the UK’s research and innovation needs, and towards tackling health and social care inequalities over the next 5 years. Embedded within its ethos will be inclusiveness, conducive to normalising research and making it more visible and accessible”

In the policy paper the UK government also sets out an ambitious vision for the future of clinical research delivery. It stresses that *‘this means embedding clinical research at the heart of patient care across the NHS, making participation as easy as possible and ensuring all health and care staff feel empowered to support research. And it means capitalising on our strengths in health data and creating new digital infrastructure to make study set-up and delivery faster, more efficient and more innovative, so that the UK remains one of the best places in the world to deliver cutting-edge research.’*

Based on the policy paper, we will align ourselves to the specific areas for action:

- 1. Improving the speed and efficiency of study set-up**
- 2. Building upon digital platforms to deliver clinical research**
- 3. Increasing the use of innovative research designs**
- 4. Aligning our research programmes and processes with the needs of the UK health and care systems**
- 5. Improving visibility and making research matter to the NHS**
- 6. Making research more diverse and more relevant to the whole UK**
- 7. Strengthening public, patient and service user involvement in research**

3.2 Improving the Culture of Research

The culture of research is an area where the UK internationally, and UHCW locally, have historically led the way; however, there is still work to be done to improve research culture and make the most of the wealth of talent at UHCW. We also have an opportunity to recognise and maintain some of the positive behaviours we have seen at UHCW as a result of COVID-19: in-patient research (really not seen within the NHS before), collaboration, knowledge-sharing and early re-start of trials and studies.

The policy paper *Saving and Improving lives: the Future of UK Clinical Research Delivery from the Department of Health and Social Care* (DHSC, 2021) reinforces: “Clinical research embedded in the NHS – to create research positive culture in which all health and care staff feel empowered to support and participate in clinical research as part of their job.”

In order for this to embed and flourish, reward and recognition of these positive changes will be central to the evolution of UHCW research culture. *We must ensure assessment systems and processes are fair, efficient and free of bias. We will embed research leadership and commitment* within each clinical and professional group to support this strategy. In time, this will allow us to invest in developing inspiring leaders who will then nurture and develop future talent.

Equality, diversity and inclusion (EDI) is a critical aspect of research culture and improving EDI requires a multifaceted response, which includes the need to increase the participation, retention and promotion of a diversity of talent into R&D.

3.2.1 Nurturing a research positive and innovative mindset

Part of our core ambition is to use our expertise to nurture a new generation of healthcare professionals (clinical and managerial) who think differently and go on to be instrumental in transforming understanding and treatment of human disease.

Currently we are at the intersection between biotech and info tech. Medicine is on the cusp of an Artificial Intelligence revolution that is increasingly focused on individualised treatment coupled with revolutionary stem cell research. Furthermore, health informatics will play a key role in improving lives. Inspiration is required to create a research-positive culture in which all health care staff feel empowered to support and participate in clinical research as part of their roles.

The DHSC encourages increasing the use of innovative research designs; we are seeing study teams across the country adapt research delivery methods to take advantage of virtual processes and technologies in the current environment. We need these new approaches to be adopted across commercial and non-commercial research in future. This will make

research easier for people to access and will also release capacity within the NHS. By helping to deliver the best research where it is most needed. We will continue to support innovative studies for cutting-edge treatments and technologies across all phases, for all therapies and for all conditions.

3.2.2 Realising our Full Potential – “Research is for all”

- **R&D is everybody’s business**
- **We all contribute to R&D**
- **R&D is a core function of UHCW**
- **UHCW is a core beneficiary of R&D**

The development of a world-class multi-professional clinical academic workforce promotes the accessibility and translation of translation of high-quality evidence to inform decision-making. Clinical academics are ideally placed to facilitate the adoption and spread of best practice, innovation and new technology. However, within the Trust NHS colleagues are delivering world class research that needs support.

Clinical and managerial academics lead and contribute to the generation of new knowledge about care and treatment and support the development of a dynamic innovative and world-class workforce that actively seeks out the best evidence to help improve outcomes and experiences for patients. Having a large active academic workforce also enables us to provide leadership within research and education they have a key role in developing more junior staff and in helping us to attract and retain other quality staff to work at UHCW NHS trust. We will appoint research leads to each clinical group. We also need to embed the R&D philosophy of evaluating, improving, presenting and publishing.

SYSTEMS DEVELOPMENT

Review our governance structure and ensure it reflects the growth and consolidation of research activity throughout the Trust. This will support our efforts to continually improve decision making and communication as we increase capacity and improve capability to better support the delivery of the Trust’s research portfolio. Our systems will capture research activity, outputs and impact, with additional mechanisms to drive and manage researcher career development across all staff groups.

SECURING INCOME

Research offers the opportunity to secure external income to fund staff and their departments from NIHR funding streams also attracts additional research capability funding of circa 28% of the grant value for the NHS. The financial value of medical research was calculated by the MRC; for every pound of research money invested in medical research in cardiovascular disease there was a return of 39 pence per year in perpetuity with an overall estimated return on investment for all areas of medical research to be 30% per year. KPMG data (2019) data shows an average income of £6,658 per patient recruited into a commercial research trial, plus additional savings of around £5,250 per patient due to the provision of free treatments, savings that will have system-wide benefit.

SUPPORT

In addition to attracting external researchers, we also need to focus our activities towards identifying and developing our own staff. We will continue build UHA's recommendations for the allocation of programmed activities to reward, support and recognise those staff engaging in research. A British Medical Association review paper informed that every career structure for doctors should include on-going involvement in research and medical education as integral components (<https://www.bma.org.uk/media/1376/bma-mid-career-entrants-to-medical-academia-july-2018.pdf>).

APPOINTMENTS

We will work with our clinical departments and partner organisations to ensure that new appointments have appropriate research expertise for proposed posts. To further develop the research culture to that expected of a leading UK research active Trust, we will work with our academic partners to lever funds for joint appointments.

MULTIDISCIPLINARY

Nurses, Midwives and AHPs are practice based professions and their practice must be informed by research. We must support the AUKUH ambitions for 1% of qualified staff to be in a clinical academic role by 2030. Further to this, we will continue to enhance our research activity amongst all staff, including Healthcare Scientists and managers, with the aim of developing research leaders in these professions.

3.2.3 Raising the profile of research and development

- embedding R&D as core business
- awareness of research and its impact in clinical groups
- increase communication to increase engagement
- remind value of evidence-based practice for decision-making

We will raise the profile of research and development and our engagement; embedding R&D as core business through involvement of our patients, our staff and the public and ensuring that clinical groups are better aware of research and its impact. It will assist to galvanise the value of evidence-based practice for decision making. We will develop a communication and dissemination strategy which will give greater visibility to the excellent research being conducted including awareness of key publications and trials, the impact of research in clinical groups, and case studies illustrating the benefit to patient care.

3.2.4 Staff and patient engagement

We are the largest employer in the area and thereby of importance to the local economy and healthcare impacts on many sectors. We need to support our staff, patients and local community by ensuring that research benefits them.

We will underpin the philosophy is that “research is for all”, whether that is a member of staff who wants to run a research project or develop a research career or a patient being treated at The Trust who chooses to be a part of a research project.

STAFF ENGAGEMENT

We will include research in the Trust staff induction process, broadening our reach across all staff groups. We will create a bespoke “Introduction to Research” course for all staff, particularly staff at an early stage in their career and develop a suite of CPD-accredited training courses that instil the specialist skills needed to work in a clinical research environment, supporting the development of our research workforce. We will strengthen our Patient and Public Involvement and Engagement function and work with our NIHR Patient Research Champions to support their activities and make it easier and user-friendly for people to participate in research.

PATIENT ENGAGEMENT

The DHSC wants to make access to and participation in research as easy as possible for everyone across the UK. It recommends strengthening public, patient, and service user involvement in research – it will:

- expand support to help sponsors easily access patient groups who can support the development of their studies.
- ensure publicly funded research models the highest standards of public, patient and service user involvement in research design and delivery,
- continue to partner with other funders to improve diversity and engagement across all clinical research.

The NIHR Going the Extra Mile report (NIHR 2015), also advocates patient involvement, with the vision of a population *‘actively involved in research to improve health and wellbeing for themselves, their families and their communities’*.

We will continue to develop our patient and public involvement and engagement in line with the UK Standards for Public Involvement (2017) and NIHR (2021b) Public Involvement in Research Guidance. We will implement guidance from the NIHR INCLUDE project (2021c) to improve inclusion of under-served groups in clinical research.

We will implement the **Trial Forge (2020)** ethnicity framework and work to support the findings and actions of the **NIHR Diversity Data Report (NIHR, 2021d)** which highlights several areas of concern. *‘For example, the proportion of females applying for career awards decreases with the seniority of award, and researchers from ethnic minority backgrounds were less successful for research funding than white applicants’*.



THE ETHNICITY FRAMEWORK (TRIAL FORGE 2020)

The Ethnicity Framework has been developed by the NIHR, INCLUDE initiative, Trial Forge, the Medical Research Council-NIHR Trial Methodology Research Partnership, the Health Research Board Trial Methodology Research Network, the Centre for BME Health and Patient and Public Partners. INCLUDE is an initiative from the UK's National Institute of Health Research (NIHR) that aims to improve trial delivery for under-served groups. This will improve the applicability of the trial results and be in line with Principle 13 of the Declaration of Helsinki (*'Groups that are underrepresented in medical research should be provided appropriate access to participation in research.'*). The INCLUDE Ethnicity Framework aims to help trial teams think specifically about which ethnic groups should be included in their trial for its results to be widely applicable, and what challenges there may be to making this possible. Having identified potential challenges, the trial team can then consider ways to reduce those challenges. For this to work, the Framework needs to be used at the trial design stage before funding is in place. Trial teams need to do everything possible to make their trial relevant to the people for whom the results are intended to apply (often patients) and those expected to apply them (often healthcare professionals). We will implement the Trial Forge (2020) ethnicity framework within our Trial Management Unit and for all trials that we Sponsor, to engender a more inclusive approach to trial design and improve the relevance and quality of our research for our patients.

NIHR DIVERSITY DATA REPORT (Key actions 2020/21)

Improving equality and inclusivity of our application process: To achieve greater equality and inclusivity, it is imperative that we understand the barriers that researchers face when they apply to the NIHR, increase applications from underrepresented groups and better understand any disparities in application outcomes for particular groups.

Improving diversity of selection committees: We have introduced positive action statements and accessibility statements to our committee recruitment process. Widening the reach of recruitment campaigns and advertisements has enabled us to get the most from our academic partnerships, for example with Black British Academics. We will set diversity targets for our funding committees, to ensure they are more representative of the people that NIHR serves.

3.3 Collaboration and Strategic Partnership

We will cultivate engagement and remove regressive boundaries through advancing collaboration and strategic partnership. Our strategic aim is to align UHCW R&D to provide health & social care. It will require significant strengthening of strategic engagement across:

- **Academic Partners**
- **Integrated Care Systems (ICSs)**
- **NHS Organisations**
- **Industry**
- **International Collaboration**

We will commit to building a stronger alliance with academic institutions, strong and effective engagement with industry, embedding R&D in Integrated Care Systems (ICSs), and increasing our commercial research portfolio through working with pharmaceutical and medical device companies. We will further increase memberships of networks and engage with the international research ecosystem to create new opportunities which will advance collaboration and enhance our research output and most importantly, advantage improved patient care.

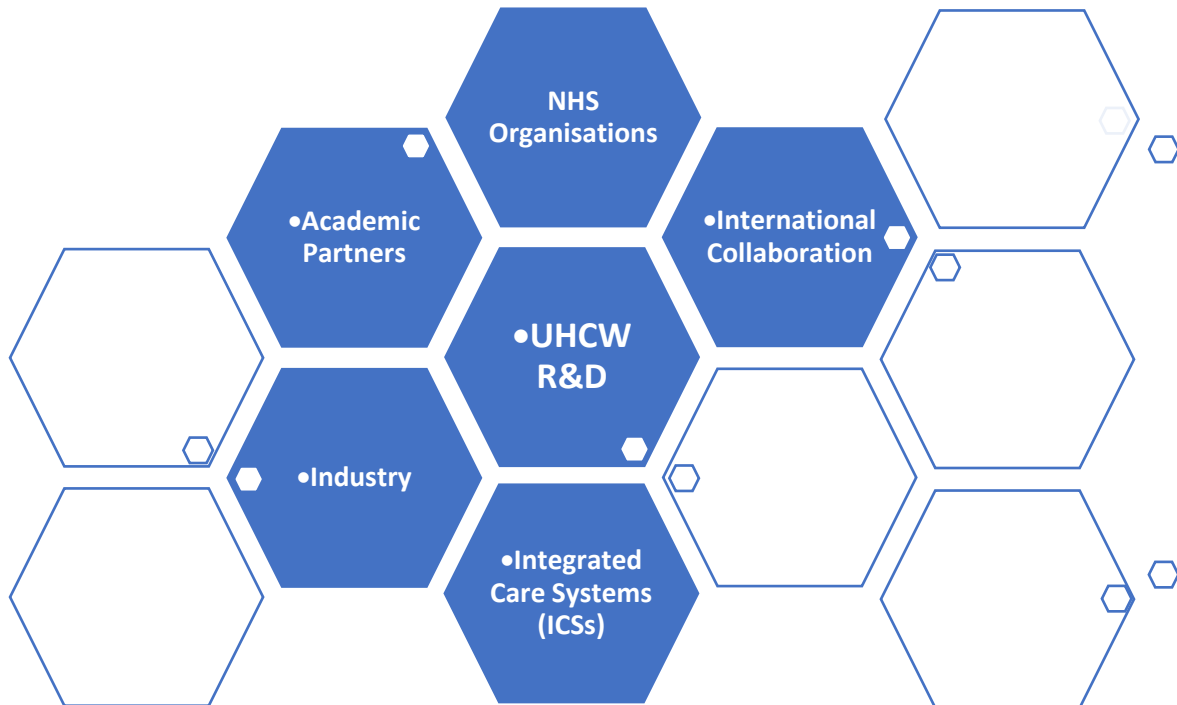
In its UK R&D Roadmap (HM Government, 2020), the government outlines its ambitions to use NHS England as one of the world's largest single procurers of technology and health innovation to take a greater role in seeding and adopting innovation. This will start with our Innovative Medicines Fund but also through the work of the Accelerated Access Collaborative (AAC), supported by the National Institute for Health Research (NIHR) so that doctors can use the most advanced, life-saving treatments.

Towards inspiring and enabling talented people and teams, the UK Research and Development Roadmap informs its aim of working with key stakeholders including the major funders of research – UKRI, NIHR, the devolved funding bodies, Public Sector Research Establishments (PSRE) and National and Devolved Academies, academics, universities, businesses and charities - to develop a comprehensive new R&D people and culture strategy.

“In its UK R&D roadmap the government outlines its ambitions to use NHS England as one of the world’s largest single procurers of technology and health innovation to take a greater role in seeding and adopting innovation. This will start with our Innovative Medicines Fund but also through the work of the Accelerated Access Collaborative (AAC), supported by the National Institute for Health Research (NIHR) so that doctors can use the most advanced, life-saving treatments”



UHCW R&D Collaboration and Strategic Partnership



3.3.1 Academic Partners

Academic Partners

We will continue to work closely with the University of Warwick and with Coventry University and further strengthen our existing relationships with both Warwick Medical School and Coventry University Faculty of Health & Life Sciences. We will also be ambitious and forge strong strategic partnerships with other key universities to succeed in our objectives and priorities. We will reach out to other faculties within universities by liaising with their respective Pro-Vice Chancellors.

We need more clinical academics of sufficient quality to be able to lead the research and education culture at UHCW. Broadening our collaboration with academic partners will secure effective academic leadership, which will need to be supported by responsive finance and HR systems with assurance that universities deliver a commitment to matched funding for such posts.

3.3.2 NHS Organisations

NHS Organisations

We aim to explore opportunities to work better across organisational boundaries, enhancing patients' opportunities with the Institute of Health and Social Care to address: population health, health care & social care.

“We will continue to work closely with the University of Warwick and with Coventry University and further strengthen our existing relationships with both Warwick Medical School and Coventry University Faculty of Health & Life Sciences. We will also be ambitious and forge strong strategic partnerships with other key universities to succeed in our objectives and priorities. We will outreach to other faculties within universities by liaising with their respective Pro-Vice Chancellors”

3.3.3 Integrated Care Systems

Integrated Care Systems

Integrated care systems (ICSs) are partnerships of health and care organisations that come together to plan and deliver joined up services and to improve the health of people who live and work in their area.

They exist to achieve four aims:

- **Improve population health and healthcare**
- **Tackle unequal access, experience and outcomes**
- **Enhance productivity and value for money**
- **Support broader social and economic development.**

The board of the ICS NHS body will be responsible for ensuring that the body meets its statutory duties. It is expected these duties will include promoting innovation and research.

ICSs will coordinate services and to plan in a way that will improve population health and reduce inequalities between different groups.

In terms of relationships the ICS framework sets out that enablers of effective provider collaboratives on building and nurturing strong relationships among trust leaders, clinical teams and with system partners at all levels, based on honesty and transparency, is critical. It further acknowledges that this is a continuous process, requires hard work and commitment, and even with these can be challenging at times.

The policy paper Saving and Improving Lives: The Future of UK Clinical Research Delivery (DHSC, 2021) states that patients and participants are the '**foundation**' of research, but access to clinical research in the UK 'is not currently universal'. It stipulates to achieve this research delivery should be integrated into '*day-to-day care and services should make use of new technologies to recruit people where they are*'. This would include designing studies that minimise the number of GP visits by using virtual systems so that research can '*take place close to home*'.

It is vital that Research and Development is a key contributor to this planning and coordination of services, ensuring equal access to research across an ICS footprint. It is also imperative that through Research and Development robust service and health economic evaluation is undertaken.

3.3.4 Industry

Industry

The UK Research and Development Roadmap in supporting long-range, fundamental, underpinning science and research, sets out an ambitious commitment to increase public investment in R&D by 2024/25 (HM Government, 2020). A significant proportion of this will be to restore and increase support for long-range discovery research. Stating; *we will diversify the way we fund discovery research to enable researchers to embrace the cutting-edge techniques and approaches needed to solve the most complex and difficult questions. This could include more support for investigator-led and team-based funding, supporting projects for a longer timeframe, and introducing lighter-touch and quicker ways to fund good research ideas. We should be prepared to take risks. Research by its very nature has uncertain outcomes, but we need to accept this uncertainty, and the risk of failure, if we are to garner the successes. We are committed to supporting the most creative, innovative and radical ideas for the long term, accepting inherent risk where there is transformative potential.*

Greater engagement between the NHS and the pharmaceutical, biotechnology and medical device industries can improve quality of care through involvement in the development of new products, and access to new sources of income to support the research and development strategy. In recognition of the national agenda, we will focus on specific areas: 1) acting as a test bed for new products or new service delivery solutions and 2) collaborating with external partners (industry, other NHS Trusts or academic institutions) to develop and/or research new treatments, products and technologies 3) more commercial trials and phase I/II trials.

“The UK’s leading researchers and innovators want to collaborate with the best talent in the world, in the best facilities in the world, regardless of borders. These international collaborations lead to new advances and discoveries, pushing the frontiers of knowledge faster and further”



3.3.5 International Collaboration

International Collaboration

The Government affirms it will work with academics and universities to ensure that more parts of the UK are attractive to private investment – including from overseas – to unlock their full potential for R&D growth. In turn enabling international collaboration of UK R&D and strengthening current collaboration mechanisms. **Further asserting that research and innovation are inherently global, and international collaboration and mobility of talent are associated with more impactful research.**

The UK's leading researchers and innovators want to collaborate with the best talent in the world, in the best facilities in the world, regardless of borders. These international collaborations lead to new advances and discoveries, pushing the frontiers of knowledge faster and further. Deconstructing boundaries inevitably benefits streamlined, efficient and innovative research – so the UK is seen as the best place in the world to conduct fast, efficient, and cutting-edge clinical research.

We will build stronger international collaborations to enhance research output and contribute to improving Global Health Inequalities.

CAREPATH is an International £ 4,391,528 EU Horizon 2020 funded project (10 European sites) developing integrated and infrastructure-based approach for multi-morbidity. UHCW is one of 3 clinical partners supporting design and deployment of the digital infrastructure.

3.4 Fostering a progressive, enabling, and supportive research environment

A progressive research active organisation capable of achieving and contributing to national international and global health requires an equally innovative and visionary model. As highlighted during the pandemic, the UK led the world in terms of research into Covid-19.

Our UHCW R&D ecosystem interweaved with the clinical groups will enable responsive delivery on national themes and areas identified for action by DHSC and other national guiding and regulatory organisations.

Embedding research into routine clinical care across the core medical & surgical specialities will be critical to attracting and maintaining high performing professionals and research teams, and an environment of equally high-quality clinical research delivery.

We need innovative platforms to address Health Inequalities & Social Care Research, harness precision diagnostics and translational medicine, addressing needs of cardio-metabolic medicine, and invigorating research ethos in the surgical environment. This will be enabled through the creation of a Health Inequalities Research Unit (HIRU) and a series of Institutes of Excellence, initially for each of these disciplines and in due course establishment steered by regional, national, and international health & social care need.

BOX 3: Innovative Platforms

1 Creation of Institutes for Excellence

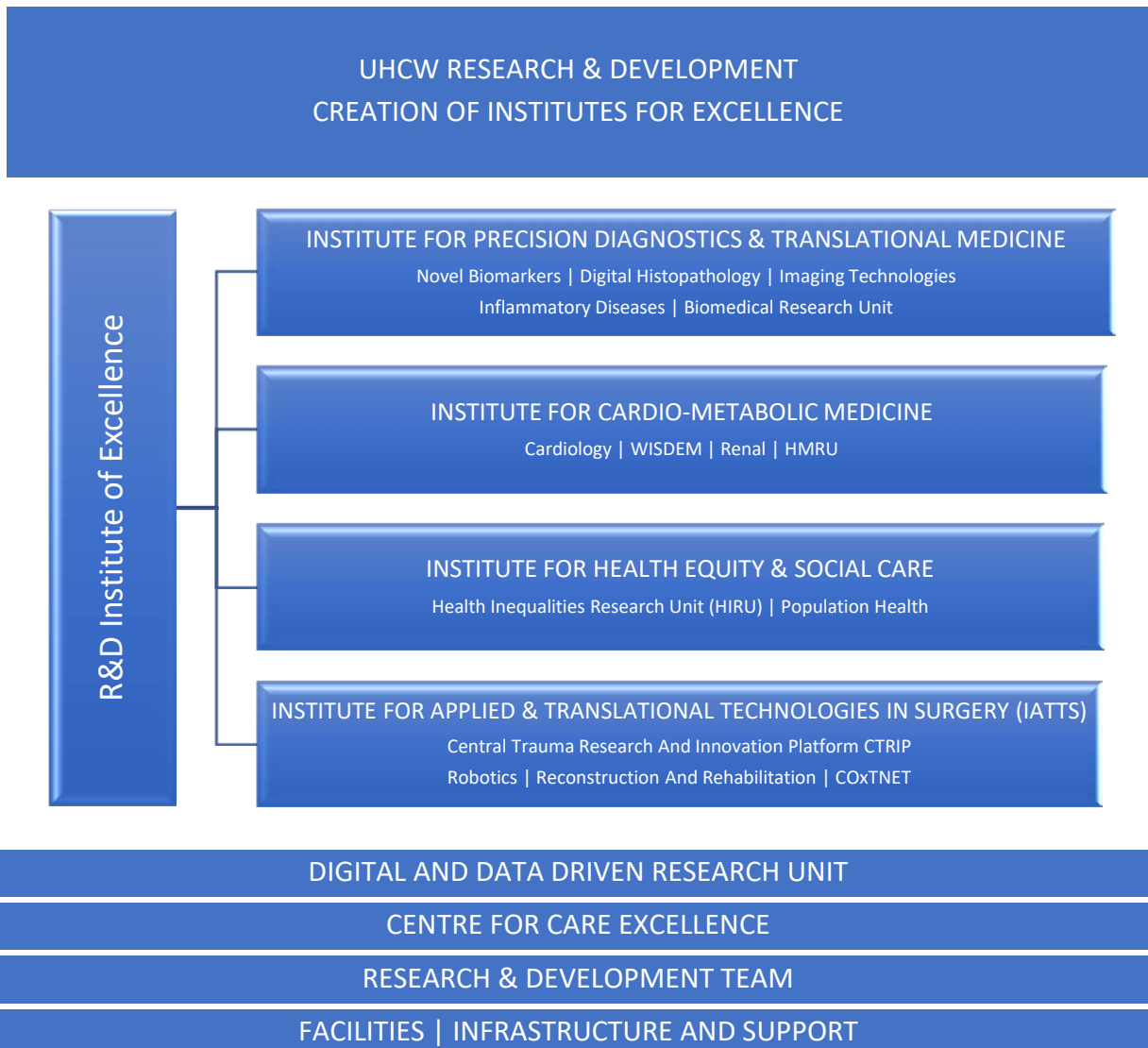
2 Health Inequalities Research Unit

3 Digital and Data Driven Research Unit

3.4.1 Creation of Institutes for Excellence:

The establishment of Institutes for Excellence will underpin a positive research culture and make research central to our activities. In time they will give every patient an opportunity to take part in research. These principal Institutes will spearhead this visionary initiative:

- **INSITUTE FOR PRECISION DIAGNOSTICS & TRANSLATIONAL MEDICINE**
- **INSTITUTE FOR CARDIO-METABOLIC MEDICINE**
- **INSTITUTE FOR HEALTH EQUITY & SOCIAL CARE**
- **INSTITUTE FOR APPLIED & TRANSLATIONAL TECHNOLOGIES IN SURGERY**



Institutes for Excellence:

- **INSITITUTE FOR PRECISION DIAGNOSTICS & TRANSLATIONAL MEDICINE**
- **INSTITUTE FOR CARDIO-METABOLIC MEDICINE**
- **INSTITUTE FOR HEALTH EQUITY & SOCIAL CARE**
- **INSTITUTE FOR APPLIED & TRANSLATIONAL TECHNOLOGIES IN SURGERY**

The Institute structure has been determined by reviewing current research activity and outputs. This has been completed cognizant of the need to align with national healthcare and research priorities whilst also responding to the needs of our local population and local academic and industrial strengths. We have also constructed the Institutes by focussing on those areas with the most potential to attract external collaborations, thereby presenting the most opportunity to become sustainable. However, this does not limit research in other areas and there will be development of new Institutes in the future.

The Institutes will provide a supportive and nurturing structure to maximise the opportunities on offer and allow our staff and students to develop and grow, experiencing the breadth of their subject area in addition to the specialism of their chosen project. The Institutes will provide clinical, laboratory and population-based research and education.

They will foster high quality research leadership and commitment from each clinical and professional group. The model will enable our current academic leadership to increase the output of existing teams.

These Institutes will also identify actions we can take to increase support for early career researchers and giving them the skills, knowledge and experience needed to progress their careers inside or outside academia

The Institutes will each develop their respective Clinical Academic Strategies and have professorial heads for each group within 5 years, research leads of each department, advisory boards and steering committees and academic project management. They will actively foster engagement with industrial, local and academic partners, health and social care providers, NHS commissioners, local authorities, universities, public advisers, third sector partners, the Innovation Agency (Academic Health Science Network or AHSN).

As an example, the Institute for Precision Diagnostics and Translational Medicine will deliver a state-of-the-art scientific and technological incubator for precision diagnostics to translate innovation. It will forge development of clinical research networks and enhance

multispecialty research efforts. This will bring in close proximity the Trust's and our strategic partners' clinical research in order to develop a pipeline of complementary and synergistic collaborations that will deliver the innovative Precision Biomarker tools of the future and suitable projects to achieve educational and training aspects and pave the way to downstream career paths. The Institute will produce a functional symbiosis of researchers and clinicians from diverse academic and clinical specialist settings, focussing primarily on pathology, imaging and novel technologies.

“The Institutes regulatory structure will comprise of professorial heads for each group rotating every 5 years, research leads of each department, advisory boards and steering committees, academic project management. They will actively foster engagement with industrialised, local, and academic partners, health and social care providers, NHS commissioners, local authorities, universities, public advisers, third sector partners, the Innovation Agency (Academic Health Science Network or AHSN)”

INSITUTE FOR PRECISION DIAGNOSTICS & TRANSLATIONAL MEDICINE

The essential components of translational precision medicine include multi-omics profiling, digital biomarkers, model-based data integration, artificial intelligence, biomarker-guided trial designs and patient-centric companion diagnostics. The Institute's collaborative, interdisciplinary research environment and integrative 'bench to bedside and back' approach enables development of new therapeutics, diagnostics, interventions and approaches to prevent, detect and treat devastating diseases, enhance patient outcomes, and improve global healthcare. The Institute for Precision Diagnostics & Translational Medicine at UHCW enables translating research into innovative laboratory medicine and further will allow UHCW to lead the way in translating new technologies to clinical practice which will be truly world-class. Its Current research focus is on Digital Histopathology, Imaging, Radiomics, Gastroenterology, Pathology management, and Women's Health. The Institute draws together scientists, clinicians and expertise from across the spectrum of medical research and health technology, to conduct world-class laboratory and clinical research.

INSTITUTE FOR CARDIO-METABOLIC MEDICINE

With the worldwide epidemic of diabetes, significant challenges lie ahead in understanding the mechanisms of complications and in developing new strategies for therapeutic intervention. Cardiovascular disease remains the second most common cause of death in the UK. In the future increasing life expectancy and the global epidemics of obesity, physical inactivity, and diabetes threaten to reverse favorable trends in cardiovascular disease. The Institute for Cardio-Metabolic Medicine will utilize expertise to nurture a new generation of scientists who think differently and go on to be instrumental in transforming understanding and treatment of cardiovascular, metabolic diseases, and cardiology including cardiac arrhythmias, heart failure and obesity. It will focus on identifying pathogenic mechanisms that link obesity, diabetes and cardiometabolic complications and can be used in therapeutic approaches or as diagnostic, prognostic or therapeutic biomarkers. It will endeavor to improve the detection and treatment of cardiovascular disease through the development of better diagnostic markers, predictors, and novel therapies for cardiometabolic disorders.

INSTITUTE FOR HEALTH EQUITY & SOCIAL CARE

The Institute for Health Equity & Social Care will help build the evidence base and support greater health equity and work to ensure that up to date, high quality research evidence is used in the design and implantation of policies and practices. Its work will influence the delivery of interventions to ensure they incorporate action on health and social and economic inequalities and to ensure learning from practice. It will also work to build capacity of the health and public health workforce, of policy makers, community organisations and related national and local practitioners, to understand and deliver on action to reduce health inequalities.

INSTITUTE FOR HEALTH EQUITY & SOCIAL CARE (continued)

The Institute will support the programme of work of the Institute for Health Equity (IHE) which sets out the commitments of the (government funded) IHE, to develop work within the National Health Service in England to help reduce health inequalities; identifying specific approaches which can be implemented by health service professionals. Its key recommendations or actions include: Incorporating social determinants knowledge and approaches in medical training and professional development; Improving access to medical careers for students from all backgrounds; Using the purchasing and employment powers of hospitals and health centres to meet equitable goals; Enabling practitioners to work better with individuals and communities and support multi-agency partnerships; Health services acting as advocates for policy changes.

INSTITUTE FOR APPLIED & TRANSLATIONAL TECHNOLOGIES IN SURGERY

The Institute for Applied & Translational Technologies in Surgery (IATTS) will nurture an interdisciplinary consortium of academics working on *applied and translational* projects designed to provide solutions to ongoing and emerging unmet healthcare needs. Strengthening basic life science expertise at UHCW will be a natural priority towards complementing our close connections with both the University of Warwick and Coventry University and the medical school. It will capitalise on a key asset of our availability of onsite lab space at UHCW. Surgical research will be developed at UHCW as the loci for technological innovation in surgery, with view to translational research that underpins this as well as the development of surgical training courses, followed by basic science life science work to support this. IATTS will support clinicians in each speciality to develop and expand research within their specialist area. Potential areas in which IATTS advancement of research will benefit patient care include:

- Advancing E-Nose technology for the diagnosis of infarcted or ischaemic bowel. UHCW is currently the loco-regional centre of expertise for ischaemic bowel and will hopefully develop as a centre for intestinal failure.
- Developing transcutaneous PO₂ PCO₂ and pH sensors in vascular surgery and in applications such as Diabetic foot management, non-invasive PO₂ measurement in children, continuous monitoring in ITU and wearable technology for early detection of disease states, along with computational modelling of EVAR graft failure.
- Delivery on project areas covering Central Trauma Research and Innovation Platform (CTRIP), robotics, reconstruction and rehabilitation, and the Coventry & Oxford Transplant Network (COxTNET).
- In Ophthalmic surgery, we will develop a triage application and a deep learning project for AI to reliably stream patients to direct access clinics.
- Through education we will provide training courses relevant to research areas such as in robotic surgery or EVAR training by using 3D printing technology at the University of Warwick to reproduce actual aneurysm morphology from CT scans to train surgeons in techniques. Along with training courses using augmented reality and HoloLens, 3D printing to replace the need for cadavers as well as deep learning to train diagnostic algorithms.

3.4.2

Health Inequalities Research Unit

Health inequalities are defined by the NHS as *'unfair and avoidable differences in both physical and mental health across the population'* (Public Health England, 2017). Inequalities can be mapped across interacting domains including geographies, socio-economic background, protected characteristics or being in a vulnerable group. It is widely understood that health inequalities have impacted society for years; the long-term impact of the Covid-19 pandemic has renewed focus and attention on this issue. Raising the issue how the pandemic has affected health inequalities, and the long-term implications and consequences for health inequalities policymaking going forward, also questioning the extent to which it will worsen pre-existing social gradients in health.

The DHSC pledges to align research programmes and processes with the needs of the UK health and care system. We are looking to the future health needs of the population and the health service – to better understand the demands that will be placed on it, and to ensure we identify the research that is most needed to support patients and the NHS across the UK.

The Health Inequalities Unit (HIRU) will enable high-quality research which will support the health and social care system to reduce health inequalities regionally as well as nationally and improve the health and wellbeing of our disadvantaged and marginalised groups. It will draw together health and social care providers, NHS commissioners, local authorities, universities, public advisers, third sector partners, the Innovation Agency (Academic Health Science Network or AHSN) and others to address disparities in the health of the region.

The HIRU will engage closely with NIHR Applied Research Collaboration (ARC) West Midlands to deliver benefits to patients and the public by implementing safe, efficient and person-centred health and social care. Nationally each of the 15 ARC's undertake research on a range of themes - such as dementia, long-term conditions and public health - to improve health and care systems to benefit patients, staff and the public. The ARCs also work together on a number of national leadership areas.

3.4.3

Digital and Data Driven Research Unit

We already use digital tools to support our work and are trying to make it easier for people to participate in research via virtual methods. We now need to develop world leading digital research infrastructures as the effective design, development and deployment of digital health focused R&D infrastructure will promote UHCW as a national and international leader in healthcare research. Ultimately, investing in our digital capabilities supports all our objectives. Research enabled by data and digital tools – to ensure the UK has the most advanced and data-enabled clinical research environment in the world, which capitalises on our unique data assets to improve the health and care of patients across the UK and beyond.

The Digital and Data Driven Research Unit (DDDRU) will realise NIHR policy towards leveraging its commitment 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. In the NIHR paper Best Research for Best Health: The Next Chapter (NIHR, 2021a.) highlights that **'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.

The DHSC stipulates building upon digital platforms to deliver clinical research. We have seen the power of digital research platforms during Covid-19, with NHS DigiTrials supporting the rapid delivery of vaccine and therapeutic trials. We now need to build on these successes and increase the capacity for digital platforms to improve the delivery of research. This will help address other important population health burdens, such as cancer and cardiovascular disease, reduce the burden on frontline health and care staff and support research delivery for cutting-edge treatments and technologies, including genomic medicines.

BOX 3 Current DDDRU Projects

CAREPATH is an International £ 4,391,528 EU Horizon 2020 funded project (10 European sites) developing integrated and infrastructure-based approach for multi-morbidity. UHCW is one of 3 clinical partners supporting the design and deployment of the digital infrastructure

REmote Digital Monitoring in Clinical Research (REDIM-CR) is a UHCW led, NIHR Clinical Research Network funded, project to design, develop and disseminate a novel regional standardised approach to the remote/virtual delivery of clinical research. National dissemination of the model is planned (£98,830)

The West Midlands COVID Digital Collaborative is a second UHCW led, NIHR Clinical Research Network funded project to link COVID samples with clinical data from 3 other major pathology networks in the West Midlands to create one unified database (£96,500)

3.4.4 UHCW Covid-19 Vaccine Action Centre

The University Hospitals Coventry & Warwickshire Covid-19 Vaccine Action Centre (UVAC) aims to adopt an academic approach to the investigation of COVID-19 vaccine delivery that derives recommendations & innovation with real world impact. Whilst it is acknowledged that vaccination is only one element to protecting the population from COVID-19 and future infectious diseases, by evaluating vaccination delivery approaches we can identify examples of excellent practice. Similarly, increasing understanding of the operational processes, we can determine steps towards optimisation and prepare for potential future directions in COVID-19 vaccine-based management including managing current/future variants and hard to reach populations.

We have already completed and published work on staff vaccine and testing perceptions and are evaluating digital interventions for optimising the underlying health of the population increases health resilience and reduces the burden of chronic disease.

We need to “Make Every Contact Count” with patients to optimise their health, but frequently we neglect underlying lifestyle risk factors, UVAC will facilitate the utilisation of vaccine interactions to embed and evaluate other healthcare interventions, maximising opportunities for our patients.



3.4.5 R&D Footprint & Infrastructure Development

- Addressing current capacity issues
- Utilise research suites for research

An optimal environment is critical to maximise the research potential of our existing and future workforce.

The NIHR Coventry and Warwickshire Clinical Research Facility (CRF) aims to speed up the translation of advances in basic biomedical research into effective treatments for patients. The CRF comprises the Human Metabolism Research Unit (HMRU), the Biomedical Research Unit in Reproductive Health (BRU-RH), and the Research Trials Treatment Centre.

Early phase and experimental research studies are highly intense and require extensive monitoring of participants over a period of time, often overnight, to ensure the safety of the participants and compliance with the research protocol. Opening our **dedicated overnight facility** for clinical research participants in 2022, will bring great kudos to the Trust; bringing the CRF in line with NIHR funded CRFs and greatly benefiting UHCW patients, research participants and the Trust.

Its benefits include:

- **National and international recognition as a site for early phase/experimental studies;**
- **Growth in recruitment to early phase/experimental studies will increase revenue**
- **Supports the UHCW objective to ‘Be a front runner in research, innovation and education’**
- **Increasing the portfolio of early phase studies will increase the probability of securing future NIHR funding for the CRF**

The Creation of the Institutes will require space and infrastructure development. Additionally, our successful MRC Doctoral Training Partnership with Warwick Medical School (WMS) will increase the number of PhD students requiring laboratory space. Likewise, the Institutes will identify PhD students interested in experimental science. WMS Clinical Sciences Research Laboratories (CSRL) are on site, providing access to purpose-built laboratories equipped with the latest technology for clinical research, and an excellent base for experimental medicine research. As part of our strategy we will work with our academic partners to expand the UHCW footprint into CSRL allowing UHCW staff access to laboratories and office space.

“An optimal environment is critical to maximise the research potential of our existing and future workforce”

3.5 OUR CURRENT POSITION

3.5.1 Background & Progress

Our previous R&D strategy has enabled us to demonstrate significant progress, with increasing numbers of staff and patients being involved in research, supported by expanded facilities, pragmatic research support and increased national and international awareness through publications and awards. We already have independently successful, world class themes, with many other developing areas of research.

However, there is opportunity to do more research, to recruit more patients, to secure further income and esteem and to translate more of what we learn into practice for patient benefit. As aforementioned this document provides an overview of the context in which we work and seeks to provide a strategy for development as we look forward.

3.5.2 Building on existing strengths

Our 'Centre for Care Excellence' is another enabler (<https://www.uhcw.nhs.uk/leading-research/centre-for-care-excellence/>). Created with Coventry University, the Centre is believed to be the first of its kind in the country set up to support Nurses, Midwives and Allied Health Professions to further enhance patient care and academic excellence through research, practice development, education and innovation.

Our adaptable Research and Development team are a key part of our success as their expertise protects patients, supports new researchers and enables us to develop research leaders of the future. Our clinical delivery team are the frontline drivers of research, providing a professional service to enable increasing numbers of our patients to have the opportunity to take part. We will continue to evolve this team to support our research ambitions and the increasing clinical complexity of our work.

3.5.3 Quality Management and Support

We currently provide quality management and support for research, through a Research and Development team that complies with regulatory requirements, national frameworks and emerging best practice.

We need to further develop our quality research culture, where excellence is promoted and where participants' dignity, rights, safety and well-being are protected. As part of this, we have designed and delivered in-house training programmes on governance related matters, to ensure that our researchers or those helping with research, are aware of the standards they are expected to maintain. In addition, a robust monitoring and inspection process for

Trust sponsored studies is in place to ensure that individuals involved in research have the necessary skills to successfully complete their research and adhere to the standards and principles set out by the Health Research Authority (2020) UK Policy Framework for Health and Social Care Research.

To deliver our objectives, we need to provide the right offer to our staff. Whilst significant success has been had in securing more grant income, more work could be done to support our staff, particularly early career researchers. Our Trial Management Unit for Trust-sponsored research projects is experiencing increasing demand to explore earlier phase and new technology interventions. The Trust's current research data and analysis capacity is limited. To the frustration of medical colleagues, our clinical delivery and support departments team cannot support more research projects. We need to identify knowledge and capacity gaps resulting from this revised strategy, particularly intellectual property, early phase work, medical technology and big data legislation and risks and develop the skills and resources to respond.



3.5.4 UHCW Operating Income: Research and Development

UHCW has made considerable progress in its R&D and innovation performance. This can be evidenced by the significant growth that has resulted (particularly over the past decade). Nevertheless, the entire R&D sector faces considerable challenges, particularly as a result of increased global health, socio-economic, industrial and environmental challenges. In addition, insufficient allocation funding for university hospitals remains a threat to achievement of short-term objectives and longer term ambition.

The Trust's total operating expenditure for 2020/21 totalled £806.3 million of which research contributed 1% (£8.03 million). By way of comparison, University Hospitals Birmingham NHS Foundation Trust's 2020/21 research income was £24.8 million (1.2% of turnover) and Oxford University Hospitals Foundation Trust had a research income of £51.6million (3.9%) over the same period.

Our performance in regional and national research league tables is inextricably linked to future income. It is clear that the sector as a whole is rapidly shifting and that all university hospitals are lifting their performance. Our results provide us with a solid basis from which to grow our R&D and innovation income as well as an opportunity to do better over the next 5 years.

The integration and investment of research across clinical specialities will avert a piecemeal approach and enables utilisation of funds to strategically grow R&D capacity, activity, productivity and quality. In addition, the Trust needs to examine the return on investment in the funds that it provides across the range of activities associated with research and innovation. It is against this background and analysis that the progress of this new R&D strategy will be measured.

3.5.5 UHCW Annual Report: Subsection - Research and Development

Research is core to the development of new techniques, treatments and therapies in the prevention, diagnosis and treatment of disease. It enables us to provide the highest quality and most effective patient care. It ensures that we are a leader rather than a follower within healthcare provision and enables us to attract and retain highly skilled and motivated staff. As such, one of our Trust objectives is to be a frontrunner in research, innovation and education.

Covid-19 is one the biggest public health challenges faced to date and research is at the forefront of the national response. During 2020/21, the Research and Development team implemented national guidance for the prioritisation, management and delivery of clinical trials. Following operational and capacity review, almost all research recruitment was temporarily suspended in March 2020. This enabled the Research team to focus on the delivery of nationally-mandated urgent Public Health

studies, collecting data from, and providing research treatments to, our Covid-19 patients. We also up-skilled our clinical staff to support front-line clinical care duties and trained non-clinical research staff to undertake data entry for national priority studies. To provide appropriate governance, a Covid-19 Research Committee was set up to oversee and support Covid-19 research and to provide a single point of access for new trials. UHCWi methodology, such as daily Covid-19 R&D huddles to cascade information, review staffing and capacity enabled us to ensure that Covid-19 trials were safely delivered.

Other activities included implementing guidance on the management of clinical trials to reduce the risk of infection, including minimising clinical visits and utilising remote follow-up methods where possible. To enable those patients already enrolled in research studies to continue safely, a new 'Delivery to Doorstep' protocol was implemented, enabling over 200 patients to receive their medication directly at their homes.

As well as contributing to national research projects, UHCW set up its own investigator-led early phase Covid-19 treatment trial in collaboration with a commercial partner. The Trust also developed one of the first clinical trials to investigate treatment for the long-term symptoms of Covid-19 and received £1million from the National Institute for Health Research to support it. Many UHCW staff developed Covid-19 research projects, the results are currently being published.

Following the second wave, our research restoration rate is faster than the national average. In terms of re-starting non-Covid-19 research, we succeeded in re-opening 71% of studies that had been temporarily suspended (56/193 remain on hold) by the end of February 2021. This year, we secured additional funding of approximately £10 million to purchase capital equipment to roll out digital pathology to colleagues within the Midlands, securing our place as a national leader in this area. The project started in January 2021.

BOX 4 Successful Establishment of the National Centre of Excellence for Artificial Intelligence in Pathology

Led by UHCW, our 'PathLAKE' consortium is a partnership linking with University of Warwick, Queen's University Belfast, the Universities of Oxford and Nottingham and experts from NHS hospitals. The consortium has been funded via a £14 million government grant to advance the use of artificial intelligence in cancer diagnosis and is hosted by the UHCW Institute of Precision Diagnostics and Translational medicine to ensure rapid translation into clinical practice. It aims to revolutionise the future of cancer care by speeding up the detection of some cancers while being more accurate, as well as paving the way for personalised care. This new Centre for Artificial Intelligence (AI) is based at University Hospital in Coventry where digital pathology was first used to diagnose cancer and the project is focussed on breast, prostate, lung and colon cancers. The funding has established a 'Data lake' where anonymous patient data is collected and used in research to look for patterns and trends, helping to further advance cancer care and other treatments.

3.6 Our Goals and Key Performance Indicators

Public, patients and staff

Our research could not happen without all the people who give their valuable time. They support research and are keen to participate when asked. Working in partnership with the public and our patients will ensure that our research is high quality and relevant. We will follow recommendations for public involvement in research identified in the NIHR 'Going the Extra Mile' publication. We will share expertise, experience, learning opportunities, resources, strategies and policies to further develop our public involvement activities. We will make the full range of opportunities for patients and staff to engage in research clearly visible, including how to participate in relevant studies. Further our work will benefit our staff and accelerate the translation of research for the wider population.

KPI's:

1. Report the impact of 5 practice changing research studies in the next 5 years
2. Partner with the local and regional Patient Involvement Networks
3. Publish refreshed Patient and Public Involvement and Engagement strategies
4. By 2026 achieve a 50% increase in early-phase experimental medicine research activity
5. Achieve an annual increase in the percentage and diversity of UHCW patients participating in research studies
6. Develop mechanisms to record staff participation in research by 2026 determine realistic goal to increase and achieve by 2026
7. For recruitment of research participants to CRN portfolio studies, undertake the

challenge to be in the top 10 NHS Trusts for interventional studies and top 20 NHS Trusts for all studies

Workforce

Our aim is to nurture the potential of our research workforce to drive the next generation of clinical discoveries, enabling them to advance knowledge and improve healthcare. We will deliver both nationally and internationally in having highly effective training and education research development partnership, underpinned by comprehensive and effective training schemes. We will mobilise knowledge within our workforce, such that clinical need informs research and research informs clinical service as part of a Learning Health System. We will provide our staff with the skills and confidence to engage and support them to lead on and participate in research studies that address clinical need, focussed on enhancing opportunities for funding from the NIHR and other funders of clinical research including UK Research Councils and Association of Medical Research Charities (AMRC). We need to invest in our leaders and future leaders of research.

KPI's:

1. Increase the number of Principal and Chief Investigators by 50% and 20% respectively by 2026
2. For 3% of NIHR CRN portfolio studies to be led by UHCW Chief Investigators
3. Increase by >25% the number of UHCW staff included in the Research Excellence Framework in 2025

4. By 2026, increase number of UHCW Honorary Associate Professors & Professors by 50%
5. Secure NIHR Senior Investigator awards by 2026
6. Double the number of NIHR and other relevant doctoral, post-doctoral and senior fellowships across the professions by 2026

Partnerships

To achieve our vision, strong and effective partnerships are critical to enable us to enhance our research portfolio for patient benefit. Our primary research partners, the Universities of Coventry and Warwick are leading teaching and research universities. Working together we are better able to meet the strategic aims of all three organisations and drive improvements in the health and wealth of our patients and the wider public. Over the next 5 years, we will increase our combined capacity with relevant Faculties, jointly securing funding from NIHR and other major funders of healthcare research. We will develop strategies to increase integration of basic mechanism discovery through experimental medicine with a deeper understanding of disease states that may share common underpinning processes. Alliance and engaged in Local Delivery Systems forming part of the overarching Integrated Care System. The new emphasis on system working provides the opportunity for us and local partners to explore research opportunities and delivery in a broader system context. We will seek to increase our meaningful partnerships with NHS organisations in the West Midlands, including the CRN, a key partner in research delivery, the Academic Health Science Network (AHSN) and Integrated Care System (ICS). We will increase

membership of networks and build relationships with international research organisations.

KPI's:

1. By 2026, increase UHCW research income by 30%
2. Double income from commercial research by 2026
3. Open new commercial research portfolios in one new clinical area per year
4. By 2026, deliver at least 5 CRN portfolio studies requiring cross system working in partnership with local NHS organisations and the CRN

Organisational

We understand the potential for clinical research to link our services to local and regional partners and support health system change across the full care pathway. We will engage at every level within and across the organisation, sharing the organisation's vision for research and information about research taking place. Our ultimate aim is for all clinical areas to have portfolios of research. Clinical services will be proactive in developing these portfolios, which will include commercial and non-commercial research studies relevant to their staff and patients. We will ensure our research addresses the challenges identified in the NIHR 'Health Futures' 20 year forward view. We will invest in emerging areas where we can take a lead nationally, e.g. genomics and data science, and make a significant contribution to the translation of science into new therapies through our initiatives. We will use the emerging digital architecture within the UHCW and the ICS footprint to extend our reach along the full cycle of care irrespective of location. Our ambition and platforms will enable us to make

maximum use of available data,
incentivising improvement in data quality
and support rapid cycle delivery of
healthcare improvement and innovation.

KPI's:

1. Establish new research portfolios in one clinical service per UHCW Division per annum
2. Aim to be one of the top 5 research active Trusts in the UK
4. Increase total value of successful grant applications led by UHCW by 10% per annum
5. Establish Institutes for Excellence



3.8 CONCLUSION

This strategy has outlined a visionary 5-year research and development blueprint (2022-2026) consciously influenced by national directive along with innovative framework which sets out the system and how we will nurture it.

The Covid-19 pandemic dissolved traditional boundaries and unleashed the potential of transdisciplinary working to benefit global health. We will safeguard the right conditions for all to engage with R&D and give confidence to do so. We will emphasise understanding that expanding collaboration with public sector research establishments, industry and research and innovation institutes will be the critical foundation for success.

It is equally important to secure the necessary investment in both leadership and additional resource in such a transformative programme. Our professors, senior clinicians and academics play a critical role in delivering this agenda and the development and maintenance of a track record of attractively reviewed research grants and/or generating income from innovation. This will by no means be an easy journey given the financial and resource challenges, from which we are seeking to further embed a pervasive research and innovation culture across UHCW. The next phase for this strategy lies in its implementation.

Our partnerships and collaboration will deliver our R&D priorities both locally and nationally and furthermore our ambition to contribute to the global health efforts in developing practical solutions to health needs, transforming health systems and improving health worldwide.

Delivering innovation-led growth will inevitably contribute to local, regional and global health economies and realise our mission of inspiring research innovation and collaboration for the benefit of our patients and the communities we serve.

4.0 DUTIES / RESPONSIBILITIES

The Chief Medical Officer is responsible for overseeing all research activities being undertaken within the Trust. The Director of Research & Development provides strategic direction and is responsible for delivering this strategy. Operationally, the Head of Research and Development holds day to day responsibility for Trust Research and Development activities. Research & Development reports to the Medical Education and Research Committee and Senior Management Committee and thence to the Trust Board. For Quality and Human Tissue, they also report to the Research Governance and Human Tissue Committee and then to Patient Safety and Effectiveness Committee.

5.0 DISSEMINATION AND IMPLEMENTATION

- 5.1. This Strategy will be shared with strategic partners and made available on the eLibrary.
- 5.2. Each Objective and Institute will have a defined work and implementation plan to deliver this strategy.

6.0 TRAINING

- 6.1 The requirements for training for researchers are detailed in the Research and Development Standard Operating Procedure 24 'Training Requirements and Records for Staff involved in Clinical Research Trials', available on the Trust Intranet.
- 6.2 Staff can access Research training via ESR. Further training and events are provided and advertised via usual Trust communication methods.

7.0 MONITORING COMPLIANCE

Progress will be monitored via a set of Key Performance Indicators reflecting national requirements, best practice and local Research and Development targets. These will be reviewed annually and fed into Trust scorecards as follows:

7.1 Monitoring Table

Aspect of compliance or effectiveness being monitored	Monitoring method (i.e. regular audits/reviews)	Individual/department responsible for the monitoring	Frequency of the monitoring activity (i.e. Monthly/Annually)	Group / committee which will receive the findings / monitoring report	Group / committee / individual responsible for ensuring that actions are completed
Key Performance Indicators	Scorecard Report On KPIs	R&D	Monthly	Trust Board	Trust Board
Delivery of strategic objectives	Board Reports On KPIs	R&D	Quarterly	Trust Board	Trust Board
Delivery of R&D implementation plan	Report Against plan	R&D	Quarterly	R&D Strategy Committee	Trust Board
Delivery of R&D implementation plan	Report Against plan	R&D Director	Bi-Annually	Medical Education & Research Committee	Trust Board
Overview, update and future direction of all aspects of R&D	Summary report / presentation	R&D Director	Annual	Trust Board	R&D

8.0 STAFF COMPLIANCE STATEMENT

All staff must comply with this Trust-wide Policy, Procedure or Strategy and failure to do so may be considered a disciplinary matter leading to action being taken under the Trusts Disciplinary Procedure. Actions which constitute breach of confidence, fraud, misuse of NHS resources or illegal activity will be treated as serious misconduct and may result in dismissal from employment and may in addition lead to other legal action against the individual/s concerned.

A copy of the Trust's Disciplinary Procedure is available from eLibrary.

9.0 EQUALITY & DIVERSITY STATEMENT

Throughout its activities, the Trust will seek to treat all people equally and fairly. This includes those seeking and using the services, employees and potential employees. No-one will receive less favourable treatment on the grounds of sex/gender (including Trans People), disability, marital status, race/colour/ethnicity/nationality, sexual orientation, age, social status, their trade union

activities, religion/beliefs or caring responsibilities nor will they be disadvantaged by conditions or requirements which cannot be shown to be justifiable. All staff, whether part time, full-time, temporary, job share or volunteer; service users and partners will be treated fairly and with dignity and respect.

10.0 ETHICAL CONSIDERATIONS

The Trust recognises its obligations to maintain high ethical standards across the organisation and seeks to achieve this by raising awareness of potential or actual ethical issues through the PPS consultation and approval process.

11.0 DEFINITIONS

ARC	Applied Research Collaboration
AUKUH	Association of United Kingdom University Hospitals
BRC	Biomedical Research Centre
CRF	Clinical Research Facility
CTRIP	Central Trauma Research & Innovation Platform
HIRU	Health Inequalities Research Unit
HMRU	Human Metabolism Research Unit
NIHR	National Institute for Health Research
PPIE	Patient and Public Involvement and Engagement
R&D	Research and Development

12.0 REFERENCES AND BIBLIOGRAPHY

- Bell, J. (2017). Life Sciences Strategy. <https://www.gov.uk/government/publications/life-sciences-industrial-strategy>
- 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.
- Care Quality Commission (2021). A new strategy for the changing world of health and social care - CQC's strategy from 2021. <https://www.cqc.org.uk/about-us/our-strategy-plans/new-strategy-changing-world-health-social-care-cqcs-strategy-2021>
- DHSC. (2021). Saving and Improving Lives. The future of UK clinical research delivery. <https://www.gov.uk/government/publications/the-future-of-uk-clinical-research-delivery>
- 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.
- HM Government (2020). UK Research and Development Roadmap. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/896799/UK_Research_and_Development_Roadmap.pdf
- Health Research Authority. (2020). UK Policy Framework for Health and Social Care Research. <https://www.hra.nhs.uk/planning-and-improving-research/policies-standards-legislation/uk-policy-framework-health-social-care-research/>
- 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.
- KPMG. (2019). Impact and Value Report for the NIHR. <https://www.nihr.ac.uk/documents/impact-and-value-report/21427>
- NHS. (2021). COVID treatment developed in the NHS saves a million lives. <https://www.england.nhs.uk/2021/03/covid-treatment-developed-in-the-nhs-saves-a-million-lives/>
- NHS England. (2019). NHS Long Term Plan. <https://www.longtermplan.nhs.uk/wp-content/uploads/2019/08/nhs-long-term-plan-version-1.2.pdf>

NIHR. (2015). Going the Extra Mile. <https://www.nihr.ac.uk/documents/about-us/our-contribution-to-research/how-we-involve-patients-carers-and-the-public/Going-the-Extra-Mile.pdf>

NIHR. (2021a). Best Research for Best Health: The Next Chapter.
<https://www.nihr.ac.uk/documents/best-research-for-best-health-the-next-chapter/27778>

NIHR. (2021b). Briefing notes for researchers - public involvement in NHS, health and social care research.
<https://www.nihr.ac.uk/documents/briefing-notes-for-researchers-public-involvement-in-nhs-health-and-social-care-research/27371>

NIHR. (2021c). Improving inclusion of under-served groups in clinical research: Guidance from INCLUDE project. <https://www.nihr.ac.uk/documents/improving-inclusion-of-under-served-groups-in-clinical-research-guidance-from-include-project/25435>

NIHR. (2021d) Diversity Data report, Award Funding and Selection Committees Analysis, 2020-21.
<https://www.nihr.ac.uk/about-us/our-key-priorities/equality-diversity-and-inclusion/NIHR-Diversity-Data-Report-2021.pdf>

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.

Public Health England. (2017). Reducing health inequalities: system, scale and sustainability.
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/731682/Reducing_health_inequalities_system_scale_and_sustainability.pdf

Rees, M. R. & Bracewell, M. (2019). Academic factors in medical recruitment: evidence to support improvements in medical recruitment and retention. Postgraduate Medical Journal. 95, 323–327.
UK Standards for Public Involvement. (2017). <https://sites.google.com/nihr.ac.uk/pi-standards/home>

13.0 UHCW ASSOCIATED RECORDS

- 13.1 Research Governance Policy
- 13.2 UHCW Organisational Strategy
- 13.3 Trust Corporate Plan.
- 13.4 UHCW We Care Patient Experience and Engagement Delivery Plan