Research & Innovation

NHS
Northern Care Alliance
NHS Foundation Trust

Research and Innovation Strategy 2022 - 2027

Saving lives, Improving lives

Executive summary

Northern Care Alliance NHS Foundation Trust (NCA) provides care to a diverse and geographically wide population, with many health inequalities. The Trust's clinical and research infrastructure, expertise in digital health, relationships with neighbouring HEIs and collaboration with Pharma partners provide huge potential for excellent patient-centred research that can address local and national priorities. It is important to harness these opportunities as it is well-established that research active organisations are more likely to provide higher quality, evidence-based care, with increased patient satisfaction and the ability to attract, retain and develop staff of the highest quality.

The current academic strengths of NCA include several long-established University of Manchester (UoM) linked departments (Dermatology, Gastroenterology, Musculoskeletal and Stroke), and others such as Nephrology, that has developed its own strong research base, and Neuroscience that now has a MAHSC domain and Geoffrey Jefferson Brain Research Centre in partnership with the UoM. The clinical academics in these departments include international key opinion leaders, and successes are manifest by academic grant funding and numerous high-quality publications. NCA has focused on clinical trial delivery and performs competitively in NIHR CRN supported and commercial trials, reliant on a sizeable, engaged trials assistant and nurse workforce, as well as streamlined governance processes delivered by our Joint Research Office. Biosample collections are invaluable, and several expanding collections already exist in the Clinical Sciences Building. As well as stimulating academic collaborations, the combination of biobanked tissue with associated clinical data is much sought after by industry collaborators. The NCA Research Collection (NCARC) has exemplified this by enabling the Trust to participate in cutting edge COVID-19 research during the recent pandemic.

However, there is far greater untapped research potential that the NCA Research and Innovation Strategy for 2022-27 intends to harness. Clinical research is dependent upon capture of high-quality data, and the Trust's digital infrastructure, with excellent EPR, provides a huge opportunity for cross-cutting patient level research and it lends itself to many internal and external innovations. Early engagement with the NCA future digital state to develop this resource for research purposes will further enhance this. Innovations such as artificial intelligence (AI), robotics and automation are advancing rapidly and transforming the way health and care are organised, delivered, and experienced by our users. Neighbouring HEIs have expertise in this field, which would raise NCA digital capability to another level. There is minimal nurse, AHP, pharmacist and healthcare scientist-led research undertaken across NCA, but the recent appointment of a Professor of Nursing will energise an approach that will fill this void. Trials with bespoke treatments at early phases of development for rare diseases are lucrative and have been undertaken by the Metabolic Medicine team over 2 decades, and there is opportunity to expand this activity into other specialty areas, and to incorporate gene therapies and stem cell research in the Trust's own Early Phase Clinical Trials Unit. Further research infrastructure development in key specialties, notably Neurosciences, is overdue and the creation of the new James Potter Trauma Centre has obvious academic potential. Importantly, at present only a minority of the patients treated at NCA have opportunity to participate in research and this needs to change, with special focus on engaging previously under-served patient groups across our communities. We will ensure that our R&I activity is better shaped by and will reach the people, communities and regions which have the greatest health and social care needs.

Strategy components

This **Research and Innovation Strategy** is ambitious, wide-ranging and inclusive, the key components being:

- To embed an academic culture of inclusivity across all NCA services and in all 4 care organisations, with opportunities available for academic development of all grades of staff
- To be an international leader of research, innovation and health improvement across key specialist services aligned to organisational expertise and to exploit maximally those opportunities that are unique to NCA
- Strengthen the R&I infrastructure of those key specialties within the Trust that have great academic potential (eg neurosciences and trauma), with development of academic investment plans (AIPs) and HEI co-investment in staff
- Implementation of a 'consent for approach' system to encourage patient sign-up for future research at first clinical interaction in the Trust
- Significantly expand the digital interface for research and innovation within the Trust, to facilitate access to our unique data set so that it can be utilised to deliver "real world" research, innovation and improvement science encompassing population health and epidemiology-based programmes of activity
- Develop a strong and visionary Innovation team to increase external partnerships, and develop systems that enable findings from projects to be translated at pace and scale in each place and closer to home with resulting income generation and ultimate benefits to patient care
- Encourage more clinical teams to develop bio-collections (samples and data) and to have greater academic interaction with local HEI and industry. Resulting investment will be used to develop the academic infra-structure of the team, as part of bespoke AIP
- Creation of a Centre for Clinical and Care Research (CCCR) with a focus on NMAHP will provide a springboard for these staff groups to gain confidence and the necessary skills to ultimately become the next generation of research leaders.
- To be at the cutting edge of early phase trial delivery within key clinical specialities

To realise the ambition of the strategy the following are the **essential enablers**:

- **Digital:** Deputy Director for Digital R&I has been appointed to lead this part of the strategy; essential that several digital analysts are appointed to underpin research
- **Innovation:** a Head and Deputy Director for Innovation and a partnerships manager have been appointed. Further expansion with leads for academic grant support and commercial interaction are required to increase project and funding opportunities
- **Early phase clinical trials unit:** there is opportunity to work with the NIHR and an external partner to develop this; a Deputy Director for Early Phase trials has been appointed
- **Nurse/AHP led research:** pump priming funding required for fellowships and grants
- **Academic focus in all clinical teams:** this requires pro-active executive level endorsement to ensure incorporation and opportunities for supporting key individuals within each team
- **Academic strengthening of key specialties:** each to develop its own AIP; co-investment with HEIs necessary to support academic appointments

Foreword

Northern Care Alliance NHS Foundation Trust (NCA), one of the largest NHS organisations in the country, was established to provide safe, reliable and high-quality care. We provide a range of hospital, community, and social care services, to around 1 million people in four main places – Bury, Oldham, Rochdale, and Salford – and for some wider populations in the North of Greater Manchester and beyond. The formation of NCA presents an opportunity to further develop our research infrastructure and encourage wider participation of our staff and patients in research, innovation and health improvement activities with the ultimate aim of always providing the highest quality of care to our service users and developing a vibrant workforce which is enthusiastic and 'on message' with the need to continually improve.

The R&I Department is a Trust-wide service that has already highlighted the material benefits of scale. Indeed, over recent years NCA has been ranked amongst the very top NHS organisations regarding recruitment to NIHR National Institute for Health Research Clinical Research Network (NIHR CRN) studies. These are high quality studies on the NIHR portfolio that are either pharma sponsored or have been awarded funds as a result of open national competition, for research that is of clear value to the NHS and which takes account of Department of Health and NHS priorities. The Joint Research Office is also one of the best performers in the UK in terms of study set-up times. Until the devastating effects of Covid hit the UK, NCA was ranked among the very best recruiting trusts (top 5%) across 8 NIHR specialities and performed particularly well in terms of recruiting to trials with industry partners where we were ranked within the top 5 nationally. In addition to this, NCA typically hosts approximately 30 high profile grants (NIHR, MRC, etc) at any one time.

Salford Care Organisation already has an established international reputation for Quality Improvement and embedding of this methodology across an organisation to improve outcomes. There are significant opportunities for cross-organisational collaboration and learning between R&I, Quality Improvement, and Learning & Organisational Development with these services contributing to the overarching "Service Improvement" agenda.

It is essential that we build upon this performance and further develop internal and external opportunities. We are in a strong position to achieve this ambition given that we already have many talented researchers, possess international profiles across key specialist clinical areas (e.g., Dermatology, Renal, Intestinal Failure, Musculoskeletal), and have strong and well-established academic links. We wish to engender a culture of inclusivity, facilitating academic development for all grades of staff, and aligning with our People and OD Strategy. Through changes to the organisational culture, R&I and other improvement-related activities will be considered core facets of service delivery. All key programmes of R&I and health improvement must be aligned to NCA's vision and goals.

Vision

Our vision is to embed a vibrant culture for research, innovation and improvement, with pioneering opportunities for all, that advances and rapidly translates knowledge to save and improve lives, bringing benefits for the whole organisation and the populations we serve.

Our aspiration is to be an international leader of research, innovation and health improvement across key specialist services aligned to organisational expertise and to exploit maximally those opportunities that are unique to NCA, such as our digital capability which has potential to be developed exponentially with expansion and artificial intelligence to underpin a slicker and safer patient journey. Moreover, in accordance with national NIHR objectives, all services and clinical specialities across our Care Organisations and localities will be committed to supporting high quality research, innovation and improvement initiatives. We will specifically be committed to ensuring that our research activities are highly inclusive and reflect diversity amongst users and staff.

We will develop our assets to support integration in each place and deliver an increased number of research and innovation activities closer to home, and reduce health inequalities and unwanted variation in care/outcomes. There will be an increased focus on developing research opportunities and the research skills of specific professional groups such as Nurses, Midwives and Allied Health Professions (NMAHP), Pharmacists and Healthcare Scientists who have not traditionally led research.

The national picture

The UK's life sciences environment is unique. We have an enviable competitive advantage because of our outstanding research base in world-class universities and dedicated research institutes; thriving pharmaceutical and medical technology industries; significant capabilities in clinical and translational research in the NHS; and considerable support provided by the medical research charities.

The NHS is committed, through the NHS constitution, to the promotion, conduct and use of research and innovation to improve the current and future care of the population. NHS England has a legal duty to promote research and innovation and use the evidence generated to improve clinical services5. Since 2019, the Care Quality Commission (CQC) has included questions on research as a priority for improving patient care, as part of its well-led framework6.

The NIHR was created in 2006 and is the largest public funder of health research in the UK. The vision of the NIHR is 'to improve the health and wealth of the nation through research' and is focused on clinical research, directly involving patients. It has radically transformed the funding mechanisms for health research in the NHS, including directed infrastructure initiatives such as Biomedical Research Centres, and funding for research delivery via Clinical Research Networks, based on number and complexity of patients recruited to studies.

The NIHR's role is complemented and supported by the Research Councils, including the MRC, which invest around £3 billion into research in biological and medical fields each year.

Recruitment of patients to research and the subsequent research visits take place across all our Care Organisations in emergency departments, in-patient areas, outpatients and our three adult (Salford, Bury and Oldham) and one paediatric (Oldham) Clinical Research Facilities. Recruitment to NIHR studies across NCA is consistently ranked amongst the best in England. Our R&I delivery team works flexibly to maximise recruitment and their excellence has been recognised with prestigious national awards (e.g., HSJ Awards – progressive research culture, HSJ Nursing Times, Pharmatimes).

The importance of undertaking high quality research and its impact on the healthcare system and society has been highlighted during the COVID-19 pandemic. The ability and agility with which the NCA research workforce responded to this new high priority portfolio has been impressive. Since the outbreak of COVID-19, NCA has recruited more than 10,750 patients/participants to over 25 NIHR COVID studies. This is amongst the best performance of any NHS organisation in England. Much of this recruitment occurred in those studies given Urgent Public Health status such as RECOVERY, REMAP-CAP, RECOVERY-RS etc which have led to new life saving treatments being rapidly translated into clinical practice. NCA has also led the way in delivering UPH vaccine trials across our sector.

Providing a pioneering service that continuously seeks to innovate and improve services to improve care and patient experience is a central part of the organisation's Vision 10 (NCA 10 Year Strategy). Each research and innovation project/initiative is an opportunity for patients and staff to access information, advice and care, which might not otherwise be available, or to discover new findings that can improve care. Translating the findings from these projects at scale in each place and closer to home has the potential to revolutionise existing treatments and services.

Although trial recruitment performance is strong, the performance of academics in securing NIHR and other competitive charitable grants is limited in comparison with other trusts of similar size. This needs to improve and will be a key priority.

The Research and Innovation Department

The Research & Innovation Department is a Trust-wide function. Our Research delivery staff are based across the care organisations, co-located with clinical teams, while research support services are based virtually via remote working arrangements or in the NCA R&I office on the Salford site when required. The Group's biobanking facilities and research laboratories are located on the Salford site.

NCA Research Office - Research Support

The NCA Research Office provides a comprehensive range of support for research and innovation activities across Northern Care Alliance, including:

- **R&I management and support** – a central point of contact, covering all four care organisations, facilitating study/project set up, providing standardised and harmonised processes for contract negotiations, study/project initiation and amendments, and sponsorship support.
- **Monitoring and Auditing** – support monitoring and auditing of all in-house sponsored studies to ensure regulatory compliance for research and innovation activities across the Trust.
- **Patient and public engagement** – we are fully committed to keeping patients aware and informed of opportunities linked to research, innovation and improvement activities and to actively engage them in these programmes of work.
- **Finance** – specialist finance staff are based within the R&I team, providing support for costing, invoicing and budget management.
- **Partnerships and business development support** to facilitate research and innovation collaborations across industry and academia, and to identify/attract new funding opportunities and income streams. This unit will also assist with the identification, deployment, and evaluation of new interventions
- **Research IT** – a small team providing specialist support for research staff based across the Trust, including the development of research tools. Given the digital research aims of the trust, this activity needs expansion.
- **Statistical support** – support provided by the University of Manchester.
- **Biobanking** – Salford Royal already holds a number of sample collections, and the ethically-approved NCA Research Collection (NCARC), a landmark generic biobank enabling collection of surplus diagnostic tissue and linkage to patient records which can enrol any patient receiving care in the trust. The sample and data collections have enormous potential to generate new academic and commercial opportunities.
- **Research laboratories** – Our research laboratories support clinical trials and other research by processing, storing, and distributing thousands of samples every year. Skilled technical staff are based within the laboratories, using a range of facilities to prepare and analyse specimens, based on specific project needs.
- **Research skills support and development** – staff of all disciplines and grades are provided with support and guidance when undertaking research. However, traditionally NMAHP have engaged less in leading research. Creation of a Centre for Clinical and Care Research (CCCR) with a focus on NMAHP, will provide a springboard for these staff groups to gain confidence and the necessary skills to ultimately become research leaders.

Innovation and improvement science

Delivering high quality services at scale by continuously innovating and improving our services is a central component of our strategy. It is also a central feature of the NCA Service Development Strategy. NCA is already an innovative organisation although there is potential to innovate and improve services and care much more effectively and at scale with an improved infrastructure and understanding of activity. Innovations are often delivered without reference to an over-arching strategy, with a limited evidence base and with little or no evaluation of their effectiveness in practice. Furthermore, innovation often takes place in silos, with little connectivity across the organisation.

Being pioneering requires us to continuously explore ways in which our health and care services can be improved, and how we can contribute to improve the health of our populations. A new Digital and Innovation Committee, led by the Deputy Directors for R&I (specific remit for R&I), will be developed to ensure that we adopt a "needs driven" and "what matters most to you" approach to our innovation activities and so that we capitalise on the opportunities that become available as digital, pharma and device science advances. Such a model will ensure that the requirements of our local healthcare system are scoped, articulated and validated. Collaborations will be established across a network that draws upon, where possible, local academic and industry expertise to address the problem statement. Standardising our approach to innovation will optimise opportunities for multi-disciplinary / organisational collaboration. Processes to encourage a culture of openness, challenging custom and practice, will be developed.

Innovation activity taking place across NCA will be captured and tracked by R&I, regardless of who is leading, to ensure that all activity is recognised and connected. There will be enhanced connectivity between research, innovation (including digital innovations) and other improvement-related programmes of work to ensure cross-organisational opportunities are optimised and effort and resource are not duplicated. Research and innovation will be considered a key element of transformation activities taking place across NCA, and effective processes will be established to ensure that opportunities are identified and supported throughout key transformation gateways. Transformation of these advances into healthcare improvements is often delayed or overlooked in the modern NHS.

Where innovation results in Intellectual Property, we will put appropriate arrangements in place for its capture and, where possible, commercialisation. In partnership, we will work with all services and clinical teams to encourage opportunities to embrace entrepreneurial drive and ambition

Finance

Research and Innovation activities contribute to the wealth of the nation, with every £1 invested in medical research delivering a return equivalent to around 25p every year, in perpetuity7,8. In addition to wider benefits of clinical research to the UK economy, NHS organisations also benefit financially from participating in research and innovation via increased revenue from investments by life sciences companies and pharmaceutical cost savings9-12. It has been estimated that over the financial years 2016/17 to 2018/19, the NIHR Clinical Research Network supported clinical research activity that generated £8 billion in gross value added, and that each patient recruited into a commercial clinical trial (Drug trial), resulted in a cost saving of between £4,143 and £7,48313.

In delivering the ambitious R&I strategy, it is essential that R&I-related activities across NCA remain financially sustainable. At present all income for Research & Innovation is externally generated through payment for research and innovation activity such as grant income, research network funding or industry-sponsored trial activity. A key goal will be to increase income generation by 50% over the next 5 years. This will be achieved by developing key strategic partnerships with academic and industry partners, increasing our capacity to deliver clinical trials, particularly early phase, and improving our academic grant success rates, and also expanding our innovation work as described earlier. To facilitate this, we will seek to increase our business development capability within the R&I office via the appointment of Business Development/Partnership Managers, and a grant writer. These colleagues will have a specific remit for increasing revenue streams by developing new collaborative partnerships across academic, industry and charitable sectors. A self-generating funding model will underpin many of the key strategic themes and objectives. A capacity building element will form a central part of our cost-recovery model enabling further development of the R&I infrastructure helping to provide R&I opportunities for the NCA work force with research time allocation, research posts and support for projects. Key funding streams will be monitored over time according to a profit/loss methodology.

Charitable funding

Charitable funding is a notable source of income for many R&I departments across the UK. We will work alongside NCA charities to achieve substantial income growth that can be utilised strategically to develop new programmes of research, personal research fellowships, as well as fund state of the art R&I equipment and creation of the Centre for Clinical and Care Research (CCCR). Neuroscience and Major Trauma are specific areas where an increase in charitable income could be achieved. The use of charitable funds and other philanthropy to pump prime emerging areas, such as digital research capability, is a key priority of the NCA charity.

Achieving our vision

Four overlapping, fundamental areas of development will underpin successful delivery of the R&I Strategy. A number of very specific, medium to longer-term goals/ objectives will be developed in relation to these areas of development. Examples of these can be found in the R&I Roadmap presented in Appendix 1. A balanced scorecard will be developed to enable progress to be monitored against these key strategic objectives.

The four key areas of development are outlined below:

Our people

The main contributory factor for the improved performance in research active NHS organisations is the workforce. Research active organisations are more likely to attract and retain high quality staff and their engagement with research and innovation activity positively impacts on patient care (Boaz, 2015).

More than 500 staff across NCA are presently involved in clinical research, including more than 250 clinicians taking on the role of Principal Investigator and leading studies. Approximately 160 staff are directly employed in the delivery and support of research and innovation across the Trust (83% direct patient-facing research delivery), with many more supporting and taking part in research and innovation as part of their routine clinical role, including support from pharmacy and diagnostic services. Many of these delivery staff are research nurses who require development and career opportunities, in the form of leadership or academic scholarship, preparing them for future research delivery roles or clinical academic opportunities.

Nursing, Midwifery, Allied Health Professional (NMAHP), Pharmacists and Healthcare Scientists (HS) as research leaders are currently limited in the trust, with but a few AHP post-doctoral research leaders actively pursuing and successfully obtaining research income and undertaking applied health research.

We are not aware of any Pharmacy or Healthcare Scientists who are actively engaged in undertaking research. A small pipeline of clinicians (mainly AHPs) are developing early research skills with the intention of submitting external fellowship awards. Currently the aspiration and pursuit of these opportunities for NMAHP, Pharmacists and HS are underdeveloped. Opportunities abound with respect to clinical service research and improvement science; a key ambition is to harness these opportunities, inspire individuals to foster and develop a cadre of clinical academic NMAHP, Pharmacist and HS within the trust, creating senior clinical academic appointments and opportunities for doctoral and masters study with the University of Salford and other Higher Education Institution (HEI) partner organisations. Talent spotting across the workforce and sign posting to internal and external research skills development opportunities (and mentorship) are required through a specific strategy. The activities and strategies required to develop the research skills and confidence of the workforce are numerous and require focussed and directed sign posting for staff. A focal point for development and implementation of the strategy will be provided through the creation of a Centre for Clinical and Care Research (CCCR). This will provide staff and patients with a central point to gain support, mentorship and guidance. Embedding processes for R&I Talent management will be aligned to the seven elements of the People and OD Strategy.

R&I will not only support the growth of this existing infrastructure but will work to enthuse and provide opportunities for all staff who have not previously been active in research and innovation, from all services and clinical backgrounds (medical, nursing, allied health professionals) in order to motivate greater involvement and inclusivity. This will take a number of forms:

- Supporting a culture across all services and clinical services where practice is informed by robust evidence obtained from research, innovation and other improvement activities.
- Enabling and developing staff who wish to lead research, innovation and/or improvement projects and to encourage other staff to take opportunities for participation in these activities.
- Encouraging and embracing entrepreneurial drive and ambition enabling staff to contribute their ideas and practical experience to support innovation activity, including the identification and deployment of key innovations

Our people

The Salford renal department illustrates how a research focus and infrastructure can be developed within a clinical team with clinical academic supervision of 21 specialist registrars to completion of higher degree (MD or PhD) at the University of Manchester over the last 15 years. Eleven of them are now established consultant nephrologists within the NCA renal team, and as most are pursuing a research active career this has translated into an ethos that emphasises the importance of research, innovation and health improvement. Clear benefits to both the research and innovation infrastructure and also the clinical service are demonstrated by:

- procurement and retention of high quality consultant staff - grants and commercial income are now being used to fund research PAs for key investigators, enabling career development, grant applications and further expansion of the infrastructure
- an innovative funding model for the research fellows sees them contribute to clinical activities within the department and cover almost 50% of the on call slots in the renal middle grade rota (avoiding the need for expensive locum cover)
- funding digital analyst time to access EPR data to support departmental research projects

All or part of this approach can be replicated by other clinical teams, whether currently research active or not.

As part of our commitment to embedding R&I and developing our workforce, we will work closely with Divisions and Clinical Teams to explore co-funding arrangements particularly for posts that are aligned to areas of organisational excellence, such as Neuroscience, Trauma and Digital Health. These co-funding models will be critically important in effectively establishing national/international profiles across key areas. Indeed, protected time for research, innovation and improvement activities will need to be considered a core component of our key specialist services and other essential support services. This also helps us recruit and retain our best people. Moreover, in order to increase the appeal of NCA as a leader for life sciences, all key NCA services will need to be better connected to ensure research and innovation activities are viewed as central and "normal" parts of their service delivery – eg, Digital, IM&T, Information Governance, Workforce, Finance, Diagnostics and Pharmacy. This improved cross-organisational connectivity will be facilitated via reconstituting the membership of key R&I committees. Greater interaction with neighbouring University departments will also provide more opportunities for early career workers as they look to develop their career paths.

Clinical academics and honorary appointments

Clinical academics are clinically active colleagues who undertake R&I activities, aligned to and typically part-funded by a specific Higher Education Institute (HEI) that has academic expertise in their field of practice, to deliver better outcomes for the patients. These roles enable research to be grounded in the day-to-day delivery of treatment and care and allow the clinical academic to combine a clinical and research career rather than having to choose between the two. Many of our clinical academics have developed their own strong research portfolios and have had academic and pharma grant successes. Historically, there has been a greater emphasis on clinical academic careers for doctors and dentists, resulting in fewer NMAHP, Pharmacists and Healthcare Scientists pursuing these career routes.

A key objective within this R&I strategy is to significantly increase the number of University funded Clinical Academics across NCA. We will work with our academic partners to co-develop academic investment plans (AIPs) across key specialities. New models to effectively support these academic posts will be created. We must invest in our leaders and future leaders of R&I, to ensure strong succession within the organisation. In addition, there are many clinicians undertaking important academic work in the trust who possess Honorary University titles, their academic work either being unfunded or, in a few cases, benefitting from bespoke R&I funding. It is our ambition to increase the number of Honorary appointments with local Universities and to encourage opportunity for greater funding for key individuals, which can be derived from the clinical teams, from self-acquired grant or commercial funding or from R&I.

Nurses, midwives and AHPs (NMAHPs)

The Chief Nursing Officer for England's framework for NMAHPs, 'Leading Change, Adding Value' outlines the requirement to support nurses, midwives and allied health professionals to "lead and drive research" and highlights the need to provide training in research and to offer career progression in order to develop clinical academic career opportunities for nurses and midwives.

Although there are examples of excellent R&I and improvement projects being led by NMAHPs, this only contributes a very small part of the NCA's portfolio. A key aim is to encourage growth in this area and to develop further opportunities for NMAHPs. Whilst a significant percentage of our R&I workforce is comprised of nursing colleagues and AHPS (NMAHPs), our NMAHP-led programmes of R&I activity remain low.

We will create a Centre for Clinical and Care Research (CCCR) which will be a focus on advancing research opportunities for NMAHP. The CCCR will facilitate some branding and allow creation of a sense of community or faculty for those wishing to pursue a clinical academic career, or for those seeking to gain research skills and a greater understanding of the value research brings to improving care. Such a centre will also bring greater communication opportunities and will shine a light on the successes and attainment of our staff. Our aim is to demonstrably increase the number of NMAHPs who hold clinical academic posts and/or honorary appointments with local Universities. These academic posts will be at all levels of seniority ranging from Honorary Fellow through to Honorary Professorship. There is a desire to provide encouragement, support and development opportunities for staff across NCA to ensure that they have the skills and confidence to engage in R&I activities. In conjunction with our academic partners, we will co-develop training opportunities that help engender a culture in which NMAHPs consider the application of research and innovation to be a core component of all roles, contributing to the development of a culture of continuous improvement. A key ambition is to develop a cadre of academic nurses within the trust.

It is envisaged that all staff will have the opportunity to engage with R&I and improvement activity in some way to benefit patient care, whether this be through using robust evidence from R&I to inform practice, involvement in supporting R&I projects, or leading their own programmes of research, innovation and/or improvement.

Increasing the number of NCA Clinical Academics alongside development of the CCCR and stimulating more NMAHPs to participate in R&I will afford numerous benefits including:

- Engendering an organisational culture that is open to research, innovation and improvement at all levels.
- Ensuring our key clinical teams are responsive to the changing healthcare landscape and able to identify and translate research ideas into meaningful research activity.
- Rapid translation of research and innovation findings into practice to improve clinical outcomes and improve patient experience.
- Increasing opportunities for funding from the NIHR and other research funders, which itself can further expand R&I funds via research capability funding
- Support staff recruitment and retention.

We will support our staff to lead on, and participate in, research, innovation and improvement projects that address local as well as national clinical needs.

Centre for Clinical Care Research

Saving *lives*, Improving *lives*

Partnerships

To realise our vision, we will further develop effective academic and commercial partnerships (local, national and international). When developing key programmes of work, we will increase our focus on and positive role in each of our localities to help local people and communities to thrive. Our local health and care partners, with whom we collaborate in Local Care Organisations, also differ in their cultures, ambitions, and ways of working. Focusing on place will help ensure our contribution is aligned to those characteristics and can add the greatest value from our actions. We will seek to align local priorities with the strategic priorities of our key partners, primarily the University of Manchester, the University of Salford, Manchester Metropolitan University (MMU), NIHR and key industry partners. Indeed, we have already begun early discussions with several of our academic partners regarding co-developing programmes of work that maximally impact on the healthcare of our local population, reduce health inequalities and unwanted variation in care/outcome.

Particular opportunities are presented by the geographic situation of our care organisations. In Rochdale, where there is a high level of deprivation and poorer health and life expectancy, there are also excellent community services with novel intermediate care tiers, and the ambition of the trust is to provide first class integrated care here. This presents an excellent opportunity for R&I and improvement science, and the aim is to make key strategic appointments to develop programmes of work in integrated care and to address the health inequalities that exist. NIHR consider the latter to be essential evidence and translational gaps that need to be addressed, and funding opportunities should be extensive.

In Oldham there is a high level of ethnicity in the local population demographic, and there are cultural barriers for some sections of the population in accessing healthcare and especially engaging in research. Several large recent studies have shown that although around 15% of the population have BAME backgrounds only 3% of study recruits derive from these communities. Similar issues are faced in Bury. This aspect presents a huge R&I opportunity to understand the barriers and to implement change to improve clinical and research engagement.

The relationship with the University of Manchester (UoM) is a longstanding and fruitful one and several clinical departments have major University profiles (Dermatology, Stroke, Musculoskeletal and Gastroenterology) and an increasing number of NCA consultants have honorary titles. However, relationships can be further enhanced to provide more opportunities for interaction between basic science and clinical teams for both mutual and patient-orientated benefit. In conjunction with senior UoM colleagues, a specific Academic Investment Plan (AiP) to further strengthen collaborative opportunities with NCA will be developed and agreed, with focus on research areas of mutual interest.

Over the past year, we have worked closely with senior colleagues at MMU to establish new programmes of R&I activity. Emerging partnerships are being established with the following MMU research centres:

- Bioscience (including cardiovascular)
- Musculoskeletal Science and Sports Medicine
- Applied Social Sciences
- Health, Psychology and Communities
- Advanced Computational Science, including artificial intelligence (AI)

Manchester Metropolitan University

Partnerships

We will continue to develop partnerships with MMU and develop specific programmes of work across numerous areas including wearable technologies, musculoskeletal disorders, diabetes, respiratory disease, cardiology, neurological conditions, renal disorders, oral health and dementia. Collaborative grants have been submitted in digital health and cardiovascular science and several NCA clinicians and R&I staff now hold honorary titles at MMU.

Partnership with the University of Salford (UoS) and their School of Health and Society has been very productive and strategies for co-developing research and innovation programmes aligned to our local priorities are progressing well. Key partnerships have been established with academic groups with expertise in the following areas: digital health (including patient experience), robotics and applied technology, orthotics and prosthetics, wearable technologies, frailty and deconditioning, social prescribing and diabetes. A primary focus of this partnership will be to develop new models of pioneering care that enable healthcare to be delivered in the community and closer to home. The recently appointed Chair of Nursing between NCA and UoS has further strengthened the strategic commitment for collaboration and co-investment. This collaboration with UoS and the opportunity for co-investment across our major R&I themes will be a key priority over the next 5 years.

To facilitate development and delivery of key programmes of work, we have identified Senior Research leads at UoM, UoS & MMU to support the development of distinct research and innovation plans in the fields of Neuroscience, Trauma and Acute Care, and Digital/Artificial Intelligence Research. These colleagues will be core members of relevant NCA R&I committee structures. As already mentioned, clinicians who are active within research, innovation and education will be encouraged to seek honorary titles at our partner academic institutions, increasing visibility and profile, and encouraging individual academic development. In addition, we will develop a standardised process whereby academic colleagues can be offered honorary appointments with NCA, to further strengthen the collaborative links between our organisations.

NCA is a partner in Health Innovation Manchester (HInM) and the NIHR Manchester Biomedical Research Centre (BRC). Salford hosts the HInM Neuroscience MAHSC Domain, focused on research, innovation and its translation into practice, and this offers huge potential to impact on the care and outcomes for patients under this umbrella. The BRC is an academic hub that facilitates experimental research in key themes, including dermatology and musculoskeletal health. The application process for the next funding round in 2022 is underway and we are supporting and encouraging these existing areas as well as other strong specialties within our Trust, especially neurosciences (stroke), renal, and adult inherited metabolic disease, to be included in the next BRC portfolio. Such opportunities do exist as the next BRC bid aims to be more inclusive and will focus upon themes (eg discovery of mechanisms in inflammation or repair) as well as some specific specialties.

University of Salford
A Greater Manchester University

Health Innovation Manchester

Partnerships

NCA has successful commercial research partnerships across life sciences, biotech, pharma and digital health sectors to undertake novel research as well as develop innovations. We will continue to build and strengthen our partnerships with industry via new interactions and strategic partnerships aligned to key disciplines. These strategic partnerships will be facilitated via increased business development capability achieved through the appointment of an R&I Business Development/ Partnership Managers. We will also continue to work closely with the NIHR Industry Team and maintain and/ or develop new relationships with Clinical Research Organisations. We will seek to develop specific strategic partnerships with industry across our key specialist services as well as other areas such as Digital Health, as well as in emerging themes such as obesity and multi-morbidity.

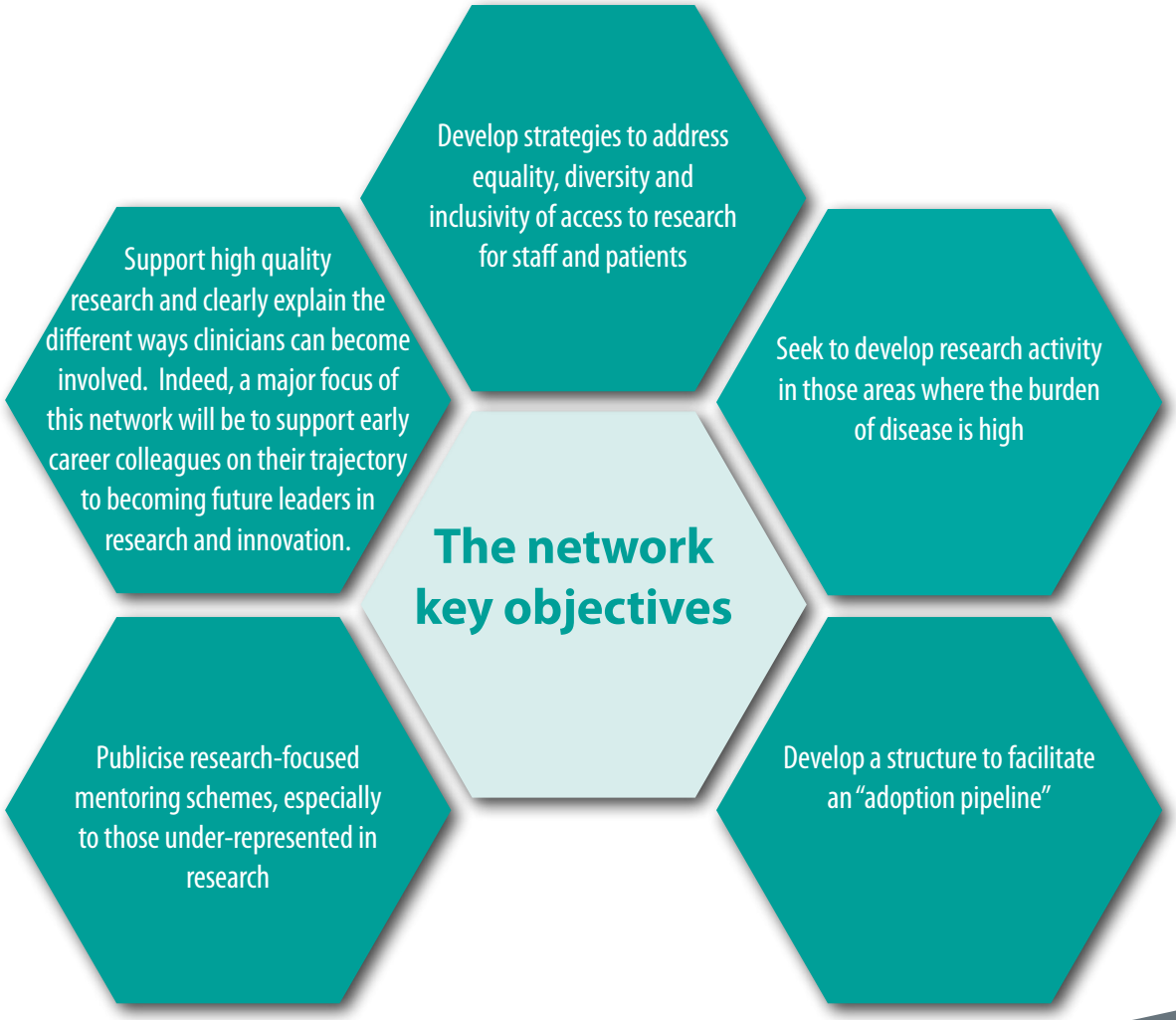
The recent establishment of the NCA Research Collection (NCARC) represents a significant opportunity to expand our existing network of partners. NCARC enables us to collect, via a transparent and ethically approved process, surplus tissue including biosamples from any consenting patient in the trust following routine procedures or hospital visits. Following approval from an NCA-based access committee, patients' tissue and their data can be accessed for specific research and innovation purposes. During the COVID-19 pandemic, NCARC was the first biobank in the Northwest to release tissue for research purposes, highlighting the robust, yet streamlined governance process underpinning this asset. We will develop the opportunities linked with NCARC and seek to curate specific collections that have academic and commercial value. An important strategic partnership with the Medicines Discovery Catapult (MDC) has now been agreed with a view to developing key partnerships with SMEs, biotechs, HEIs and other innovators, and facilitating their access to NCARC.

Our 5-year ambition is to be seen as a leading centre for research, innovation and improvement programmes, supporting researchers and innovators, removing barriers, making connections and bringing benefits for the whole organisation and the population we serve. We will work with all services and clinical divisions to prioritise and monitor innovation and improvement activities that meet the needs of NCA. Importantly, where necessary we will support the acceleration of key innovations/improvements at pace and scale into health, care and wellness delivery.

In addition to the above, we will pro-actively seek to develop mutually beneficial partnerships, both academic and commercial, with organisations rooted in our local communities, thus ensuring that we positively contribute to local areas beyond the provision of health care alone.

NCA Research and Innovation Network

In conjunction with our local HEI partners we will co-develop a new NCA R&I Network with a remit to build R&I capacity across NCA. The network will develop pipelines aligned to key R&I and other service objectives and support the deployment of innovations into clinical practice. It aims to encourage and support established or emerging researchers and innovators from any healthcare background and facilitate collaboration and opportunity. Mentorship and research grant expertise will be provided, via a "college of experts", to support early career researchers.



Participation and engagement

Patients are at the centre of NHS research and we are committed to providing every patient seen across our Care Organisations with the opportunity to take part in research and innovation. We will work in close conjunction with other services such as Quality Improvement and Learning & Organisational Development to ensure better connectivity and will engage our workforce to become more innovative and undertake R&I activities as part of improving care.

Surveys show that the public want opportunities to be involved in trials of new medicines or treatments, and that they believe that the NHS should play an important role in supporting research for new treatments. Being involved in research and innovation initiatives empowers our patients. We will therefore work closely with each of our localities and ensure that local people are at the centre of our NCA-driven R&I activities. In working with our local communities, we will ensure that we are inclusive and reflect the diversity of our local population. Our local communities have personal knowledge and experience, and bring a different perspective. Working in close partnership with these communities will ensure that our R&I activities are meaningful and relevant to the clinical needs of our population.

It is essential that we communicate effectively with patients across all our localities regarding our on-going commitment to research, innovation and improvement projects. Specific engagement strategies will be developed, and we will deploy a 'consent for approach' process enabling patients to register as a potential research participant at their point of entry to the Trust. Deploying an organisation-wide system of patient engagement such as this is a significant undertaking and high level support will be required to deliver this effectively. For instance, protected R&I time within Information Governance, Digital, and IM&T to support this ambitious initiative will be required. Implementing a successful large-scale consent process will provide unique opportunities for digital and population health schemes of activity relating to research, innovation and health improvement, and will be a critical part of the Digital Research Strategy.

In addition to the above, establishing an effective consent to approach process would offer notable opportunities for developing and deploying a system that could utilise our Electronic Patient Record for the rapid identification of patients for research and health improvement projects. This will provide a competitive advantage when seeking to recruit to complex clinical trials and early discussions have already commenced with key partners regarding the opportunities that currently exist in this space.

Historically, the focus has been on increasing recruitment to research studies year on year. However, rather than solely focusing on increasing overall participation rates, we will re-prioritise delivery resources to fully develop emerging opportunities that exist in key specialist areas including Neurosciences, Trauma and Acute Care, and Digital Health. We will focus on increasing the proportion of commercially funded activity taking place across NCA. This will be enabled by further developing the Clinical Trials Facilities on the Salford, Bury and Oldham sites and enhancing our organisational ability to deliver innovative health improvement programmes at pace that address the needs of our local population.

Alignment with organisational expertise

NCA delivers high quality clinical services, over a broad range of specialties across a large and diverse population. It is critical that these specialist services continue to provide reliable, trusted, evidence-based, pioneering treatments that represent best value. Many of our specialist services have well developed research and innovation programmes and some are already aligned to key NIHR Infrastructure programmes such as Dermatology and Musculoskeletal. Other clinical services have significant potential to develop their research and innovation outputs and academic profile, and specific effort and resource will be directed towards pump priming activities within these clinical specialities.

Targeted investment will be critical to develop international profiles in the areas of Neuroscience and Trauma-related research. Clinical and Operational R&I leads will need to be identified and embedded within these clinical services to facilitate development and delivery of these programmes of R&I and Health Improvement. Whilst not appropriate for all clinical services, those services of greatest strategic importance will be encouraged to develop 5-year plans explicitly outlining the R&I and other Health Improvement work that will be undertaken. Neurosciences has recently produced a plan such as this as part of its MAHSC Domain designation.

Examples of those clinical services where resource should be prioritised for R&I and other health improvement activities are outlined below. Our key specialist services must collaborate both within and between themselves. A key target over the next 5 years will be to notably increase the number of successful research and innovation programmes involving collaboration of multiple clinical specialties and other areas of expertise, allowing the sharing and spread of innovative ideas and approaches. It is critical that our improvement activities extend across multidisciplinary health and care teams and have patient and public engagement. Building alliances to jointly tackle existing and urgent health and care challenges, such as health inequalities and multimorbidity across our localities and beyond is a central part of the strategy.infrastructure. Significant opportunities exist in the early phase trial space within Neuroscience and we will seek to progress opportunities in this area by developing new partnerships.

NIHR | National Institute for Health Research

Alignment with organisational expertise

- **Neuroscience**

Our 5-year aim is to be a national and international leader in Neuroscience research and innovation. The Geoffrey Jefferson Brain Research Centre (GJBRC), has been established as a partnership between NCA, University of Manchester and MAHSC with the goal of becoming a global leader in brain research. The centre builds on the success of the MAHSC Neuroscience Domain, hosted at Salford, and will bring together neuroscience academics from across Greater Manchester, driving collaborations and increasing opportunities to attract research and innovation funding to the region. Longstanding relationships with the University of Manchester have been further strengthened with the addition of increased collaboration with the University of Salford and Manchester Metropolitan University. An Academic Investment Programme will be developed with the University of Manchester, to support the development of new clinical academic roles across the professional groups and at all levels.

Specific areas of focus include brain tumours, stroke and dementia, Parkinson's disease, brain inflammation, rehabilitation, brain pathology, and brain imaging disorders. Developing and building on the existing research tissue collections is a key objective for the next five years; the Manchester Brain Bank is a major resource and several neuroscience NCARC collections are now established. Increasing the scale and range of these well curated collections will not only improve the quality of research taking place but also provide a source of income through external collaborations, to pump-prime further activity and support the infrastructure. Significant opportunities exist in the early phase trial space within Neuroscience and we will seek to progress opportunities in this area by developing new partnerships.

- **Trauma and Emergency care**

Developing a strong portfolio of Trauma and Acute Care research and teaching alongside NCA's clinical excellence in this area will be a key priority. A specific strategy for an Institute of Trauma will be developed to maximise opportunities associated with the development of our Acute Receiving Centre (ARC). The Trauma Institute will harness our existing multidisciplinary expertise in a cohesive fashion to drive research excellence, high quality teaching and training and state of the art trauma quality improvement and assurance activities. Continuously innovating and improving services provided within the ARC will be essential to maintain the clinical excellence and reputation of our Trauma-based services.

The establishment of a Trauma Institute offers exciting opportunities to collaborate with clinical and academic colleagues across Greater Manchester and beyond, from a range of disciplines and throughout the trauma pathway. The strategy is being developed with input from our academic partners, and with a clear focus on understanding the causes and impacts of trauma in the broadest sense, as well as building on existing areas of clinical research and health improvement expertise. This will include understanding the causes of trauma, managing the complications of trauma, staff roles, Alf or imaging and beyond.

Alignment with organisational expertise

- **Renal**

The Salford renal research team, although only having honorary university links, has a major international profile that has benefitted from a series of high calibre academically focused appointments, most of whom have been 'home grown'. The team includes a previous Academic Vice President of the UK Renal Association, as well as national leads in 2 rare renal diseases. A core strength is the Salford Kidney Study, one of the 3 largest cohorts of chronic kidney disease patients in the world, with comprehensive data and bio-sample collections whose value is being realised with national and international collaborations with academic and Pharma partners and an MRC precision medicine grant. The significant funding obtained has enabled over 25 renal SpRs to pursue PhD projects during the last 15 years and it currently funds research sessions for consultant clinical staff who are determined to ensure a flourishing legacy for the late Professor Donal O'Donoghue, the first National Clinical Director for Renal Diseases and national icon.

- **Dermatology**

Dermatology offers huge opportunities for the delivery of new and innovative approaches to research and delivering research in new locations. Its stand-alone BRC theme undertakes internationally leading research in biologics and this work has led development, trialling, NICE approval and NHS implementation of biologics for psoriasis, which is also the subject of an MRC precision medicine theme. The group has strong industry interaction with 3 spin-out companies generated. Manchester Dermatology is rated number one in the UK by RAND bibliometrics, and 4th in the world for citation impact.

- **Musculoskeletal (MSK)**

There is a strong track record of MSK academic research in partnership with the University of Manchester. This is being strengthened by new collaborations with the University of Salford and MMU, with the aim of ensuring that research is available to as much of this large group of patients as possible. Salford has world-leading expertise in systemic sclerosis, pain, psoriatic arthritis and myositis. REMORA and other projects are investigating the use of digital technology and big data in the management of rheumatoid arthritis, which have huge potential for translation to other long-term conditions.

Alignment with organisational expertise

- **Adult inherited metabolic diseases**

The Metabolic Medicine Department is one of only 4 dedicated adult inherited metabolic disease centres in England and therefore is at the forefront of global research into inherited metabolic disorders. The team undertakes drug trials into these rare disorders and supports the maintenance of international registries. A number of Advanced Therapy Medicinal Products [ATIMP] (eg gene therapy) studies are in the pipeline for this team and there is huge potential for income generation. This group of patients and the complexity of the studies present challenges for the delivery of research and the support required from across the organisation.

- **Gastroenterology and intestinal failure**

The Gastroenterology department has strong links with the University of Manchester that date back to the 1980s and an era when the Presidents of the two main Royal Colleges (Physicians and Surgeons) were simultaneously practising in Salford, both leading research in GI disorders. The current academic team has successfully acquired Research Council, Wellcome and NIHR funding to support themes of the gut-brain axis in health and disease and in molecular/cellular gut physiology. The intestinal failure group is internationally recognised, has been awarded National Reference Centre status, has multi-disciplinary research leads, and its research has demonstrated quality and safety of care in a unique and high-risk population.

- **Adapting to changing health research requirements: COVID-19**

It is also very important for an organisation to be agile and able to adapt rapidly to urgent changes in priority for health research. This has been exemplified by the response of NCA research teams to the current COVID-19 pandemic. During this hugely difficult period the Trust's research efforts have prioritised COVID-19 research, developing 5 studies sponsored by the trust, setting up > 25 national studies which have enabled NCA research teams to contribute, including 3 vaccination trials, and research delivery staff have been re-directed to these important studies.

Key enablers

Accommodation - visibility

Research studies are carried out in many locations across our care organisations, in our dedicated Clinical Research Facilities, outpatient areas, wards, critical care units and emergency departments. However, our R&I staff are spread widely across the sites, with research delivery staff often not located with the clinicians leading their projects, and R&I support staff located away from the main hospital site at Salford. This makes it virtually impossible to fully embed research and innovation into the "core business" of our clinical services. It also means that R&I and other improvement-related activities have little visibility on the main site where most clinical staff are based and where much of our patient and visitor activity takes place. Visible accommodation on the main site as well as in each of our localities would help significantly to raise the profile of NCA as an organisation that is committed to research, innovation and improvement science. Moreover, having all "improvement-related" services co-located would enhance cross-organisational connectivity, enhance collaboration and enable synergies to be realised.

Early Phase Clinical Trial Unit

We are committed to being at the forefront of early phase experimental clinical research and Advanced Therapy Medicinal Product studies (ATMPs), including gene therapy trials and stem cell research. Providing our patients with access to these very latest treatments is a central part of our strategy. Therefore, a major objective for NCA is to develop our capability to successfully deliver early phase clinical trial work. An emerging pipeline within clinical trials relates to gene therapy and other early phase work which has the potential to offer life-changing benefits to our patients as well as being potentially lucrative for the organisation. This activity, particularly across our specialist services, presents a unique opportunity for NCA, which needs to be fully exploited. To successfully deliver these ground-breaking trials, the development of an accredited Phase 1 Clinical Trials Unit will be required in the longer-term. For safety and practicality, with the requirement for 24-hour cover, this would need to be located on the main Salford site, close to emergency and other hospital facilities.

Key enablers

Digital, Research and Innovation – "A living laboratory"

We will be dynamic and enterprising in our approach to Digital, Research and Innovation, supporting staff and directly enabling patients to have greater control and influence over their health, care and well-being. Enabling access to linked health and social data on large populations provides an enormous opportunity to improve healthcare across our localities and globally. Salford Royal has an established reputation for excellence in Digital Health (eg Global Digital Exemplar, Digital innovation, Salford Lung Study), and with its well-established electronic patient record it has an unprecedented opportunity to use data and digital technologies to drive innovation and health improvement, and support the pharmaceutical and life sciences industries to improve healthcare of the population. The development and deployment of an NCA shared patient record provides a unique opportunity to proactively design our clinical systems to support care delivery and secondary use. This considered approach will enhance the value of our existing data resources – the R&I team will engage with the future digital board in this domain. A move towards a more open architecture for clinical systems will streamline our ability to collect patient derived data, allowing us to build expertise in linking patient reported and wearable data into routine clinical care. A specific and comprehensive strategy for Digital Health research will be developed. This strategy will outline processes to facilitate access to our unique data set so that it can be utilised to deliver "real world" research, innovation and improvement science encompassing population health and epidemiology-based programmes of activity. This important work will help identify patterns, causes/determinants of disease and outcomes and importantly provide real-world evidence for patients and clinicians, industry (pharma; digital health companies) and regulators and payers. Utilising our many sources of information/data in a way that is underpinned by good scientific methodologies will provide essential intelligence that supports better clinical and non-clinical decision-making and enhances our planning capacity.

Fully exploiting these digital health opportunities will also enable us to establish new partnerships and deliver novel interventional projects. For example, we could accurately evaluate the impact of changes in clinical practice and/or service reconfiguration(s) and support pragmatic real-world real-time trials. The opportunity also exists for us to develop a leading position in the literature on how to deliver value and safety benefits from the use of digital health tools. Given our local population, an area of notable opportunity relates to multi-morbidity and health inequality related work and we are already having discussions with big pharma regarding opportunities in this space. It is also an area of particular interest for the NIHR and Medical Research Council.

A digital solution is key to developing a trust-wide 'consent to approach' scheme through which all patients interfacing with the Trust's clinical services will be invited to consider willingness to be involved in current or future research. Digital technology will also underpin maximisation of research opportunities in the Rapid Diagnostics platform. These developments would support the delivery of an NCA Trusted Digital Research environment, which would support local clinical research and commercial product evaluations in an accessible but controlled and secure manner.

Key enablers

Digital, Research and Innovation – "A living laboratory"

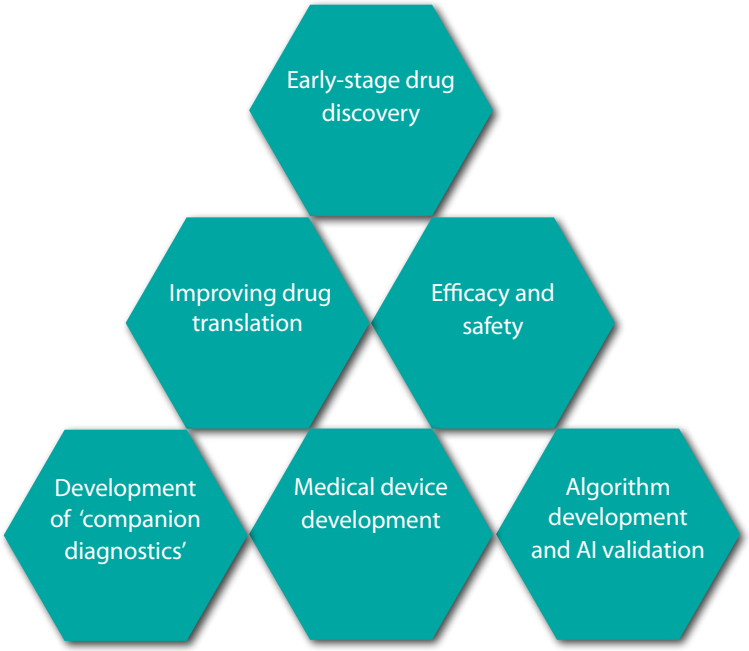
We will establish a Centre for Digital Research and Improvement, which will build on our existing digital strengths (eg GDE status) and local clinical academic expertise. Establishing new, and further developing existing, relationships with key partners across health care industries, technology and academia, such as the University of Manchester's Christabel Pankhurst Institute for Health Technology Research and Innovation, North West eHealth, the Health eResearch Centre, University colleagues, NHSx and commercial partners will be required to ultimately develop the infrastructure required to deliver our digital health ambition.

Some initial "pump priming" resource will be required in the first instance in order to develop the digital framework and processes required to attract external partners. Developing effective digital health processes that facilitate access to our data (through an NCA controlled trusted digital research environment) would offer significant opportunities to academic and commercial partners. These include:

- Early-stage drug discovery
- Improving drug translation
- Efficacy and safety
- Clinical trial recruitment and patient stratification
- Development of 'companion diagnostics'
- Medical device development
- Algorithm development and AI validation

We will work with the Centre for Advanced Computational Science at MMU to develop a partnership for AI in health and social care, identifying key areas and projects across our localities that would benefit from academic AI expertise.

Funding has been obtained to develop dashboards utilising the GM Care Record, which will offer huge potential for research in the future.



Key enablers

Embedding a Culture of Research, Innovation and Health Improvement

To successfully deliver this ambitious strategy, all levels and all parts of the organisation will need to be committed to research, innovation and health improvement science. Embedding a positive culture of continuous improvement and programmes of transformation across all clinical areas will be critical. Research and innovation needs to be part of "how things are done". We will engage at every level of the organisation, sharing the vision for research, innovation and improvement. We will foster a greater understanding of research and innovation and its impact on service delivery and quality. Staff and patients will be encouraged to become more involved in research and innovation activities.

We will support clinical specialities in increasing their research, innovation and health improvement portfolios. It is essential that these portfolios are driven by the clinical service and their "service specific" priorities and/or problem statements to ensure that programmes of work are most relevant in enhancing service delivery and patient outcomes. To facilitate this, "R&I Champions" will be identified for key clinical and non-clinical services. These "Champions" will, with support from R&I, be responsible for driving forward research, innovation and other health improvement work within their department and fostering a culture of continuous improvement amongst their colleagues. The establishment of the NCA Research & Innovation Network (5.2.1) will be essential in providing "Champions" with the support and mentorship required to co-create a culture for high quality research, innovation and health improvement within their service.

Co-dependencies

The essential infrastructure required in our supporting services to effectively deliver an increasing number of research trials in the longer-term needs to be fully recognized. For instance, pharmacy capacity, particularly across aseptics, will need to be increased as will general trial storage capacity. In addition, Radiology and Laboratory support for R&I and other improvement activities will need to be appropriately resourced and prioritised in order to achieve a competitive advantage. A unique opportunity also exists for NCA to utilise our digital expertise to identify potential participants and facilitate trial recruitment. This opportunity will be fully explored with the intention of deploying a system and associated pilot work in Year 2.

Benefits of the research strategy

Clinical and Operational Excellence

There is a growing body of evidence that patients in research-active healthcare settings have better outcomes and receive better care, with benefits extending to patients beyond those actively involved in research. There also appears to be a clear association between high levels of research activity and lower risk-adjusted mortality rates1-4in research active organisations.

Patient and Staff Experience

Patients have long been calling for opportunities to engage in research and surveys show that they want opportunities to be involved in trials of new medicines or treatments, and that the public believes that the NHS should play an important role in supporting research for new treatments and developing new innovations.

Caring for and Inspiring Staff

A recent survey by the Royal College of Physicians indicated that 67% of physicians are more likely to apply for a role that had dedicated time for research. Clinical services with national/international reputations in research and innovation find it easier to retain high calibre colleagues and to attract them when there are vacancies.

Participation in research, innovation and improvement science activities provides staff with an opportunity to enhance skills and experience, helping people to progress at all stages of their career, maintaining enthusiasm and avoiding burn out. This includes developing alternative roles that support key programmes of R&I activity

Sustainable Future / Affordability

Developing mutually beneficial collaborations with external partners provides notable opportunities for income generation. This income generation might relate to grants, trial income, strategic partnerships etc. In addition to this direct income generation, there are also several indirect financial benefits such as attraction and retention of staff from across all professional disciplines, improved quality of care, savings on medication costs etc. A self-generating funding model will underpin many of the key strategic themes and objectives. A capacity building element will form a central part of our cost-recovery model enabling further development of the R&I infrastructure helping to provide R&I opportunities for the NCA workforce with research time allocation, research posts and support for projects.

New Models of Care – doing things differently

Providing a pioneering service that continuously seeks to innovate and improve services to improve care and patient experience is a central part of this strategy. Each research and innovation project/ initiative is an opportunity for patients and staff to access information, advice and care, which might not otherwise be available, or to discover new findings that can improve care. Translating the findings from these projects at scale in each place and closer to home has the potential to revolutionise existing treatments and services. We will adopt a "needs driven" and "what matters most to you" approach to our R&I activities so that we are better able to pursue programmes of work that have a direct impact for staff and patients across our localities.

Summary

This strategy outlines the overarching 5-year vision for research, innovation and health improvement. It is an ambitious strategy that aims to create a vibrant and fully inclusive culture for research, innovation and health improvement, with pioneering opportunities, that advances and rapidly translates knowledge to improve clinical outcomes. Our R&I activity will be shaped by and will reach the people, communities and regions which have the greatest health and social care needs. Our ambition is to become a global leader of research, innovation and health improvement across key specialist services aligned to organisational expertise and to exploit maximally those opportunities that are unique to NCA. The intention is for research, innovation and health improvement to be considered a core part of service delivery and for it to be embedded within key programmes of transformation. This will establish NCA as an organisation that utilises robustly generated evidence as a key driver for providing safe, high quality, innovative care.

Key operational plans and associated schemes of work to secure funding will be produced to take forward many of those key initiatives outlined within the strategy. A self-generating funding model will underpin many of the key strategic themes and objectives. A capacity building element will form a central part of our cost-recovery model, enabling further development of the R&I infrastructure and helping to provide R&I opportunities for the NCA workforce with research time allocation, research posts and support for projects. A Roadmap is presented in Appendix 1 which highlights the major initiatives that will be achieved in delivering the strategy along with key enablers.

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APPENDIX 1 – R&I 5-YEAR ROADMAP

ROADMAP	2021 - 22	2022 - 23	2023 - 24	2024 - 26
Phase	Current	Capacity Building		Expansion
Initiatives (number in superscript denotes key enabler / dependency) * separate schemes to secure funding to be developed	• Host HinM Neuroscience Domain[5,9,] • Host Geoffrey Jefferson Brain Research Centre[7,9,20,21] • Lead BRC Theme[6,9,10] • Digital Research Strategy[1,9,14,18] • *Scope for new early phase unit[3,11,15,21] • Neuroscience 5-year Research Strategy[5-10,19,21] • Ranked top 5% nationally for participant recruitment across 8 NIHR CRN specialities[11,15,16,18,20] • Establish innovation team[2,7]	• Inclusive academic culture - non-medical research (NMAHPs); clinical academics, honorary appointments[4,7,9,10,17,19] • Centre for Clinical Care Research[4,9,10,17] • Institute of Trauma & Acute Care[7,8-10,18-20] • Consent for Approach Model[7,19] • NCA Research Collection – Further development/full cost recovery model implemented[2,7,9,12,19,20] • *Innovation & Adoption Pipeline Deployed [2,5,7,9,17,20] • Early Phase Clinical Trials Unit[3,11,15,16,19,20] • *Centre for Digital Research and Improvement[1,7,9,14,17,20] • *Delivery of new accommodation[7,10,20] • *Centre for Integrated Care Research[7,9,17,18,19] • NIHR Clinical Research Facility[3,6,11,15,16,18-20] • Maintain number of NIHR specialities where recruitment is ranked in top 5% nationally[11,15,16,18-20] • Deliver Phase 0 studies within Neurosciences[7,8,20] • Deliver Gene Therapy Trials and other ATIMPS[3,11,15,19,20] • Increase by 50% the income derived from R&I initiatives[1-3,8-10,11,12,15,16-20]		• Early Phase Clinical Trials Unit [3,11,15,19,20] • *Clinical Trials Centre at Rochdale[18-20] • *Centre for soft robotics and AI[1,2,9,20]
Enablers & Dependencies Achieved Progress being made	1. Deputy Director of R&I (Digital & AI) 2. Head & Deputy Director of Innovation and Partnerships 3. Deputy Director of Early Phase trials 4. Chair of Nursing 5. Partner Health Innovation Manchester 6. Partner NIHR Biomedical Research Centre (BRC) 7. Effective NCA Charity and other philanthropy 8. Academic Investment Plan with UoM	12. Medicines Discovery Catapult Partnership 13. ARC becomes operational 14. NCA shared Patient Record 15. Pharmacy capacity (esp. aseptics) 16. Partner NIHR Clinical Research Facility Network 17. Partnership with NIHR Applied Research Centre 18. Strengthen partnership with NIHR Clinical Research Network		

Essential to fulfil	9. University linkages (UoM, UoS, MMU) 10. Academic Investment Plan other HEIs 11. Develop relationships with Clinical Research Organisations	19. Develop Strategy & Academic Investment Plans for key Specialist Services 20. Partnerships with commercial partners 21. Endorsement of Exec Committee(s) for embedding clinical R&I culture in all directorates and Care Organisations
Examples of possible Key Measures & Outcomes Key measures to be monitored via Balanced Scorecard	1. First patient recruited to Advanced Therapy Investigational Medicinal Product (ATIMP) trial by Q1 2022 2. Double the number of collaborative projects (academic and commercial) that use collections held within NCARC 3. Double the number of NIHR applications led by NCA-employed staff by 2022 4. Increase the number of successful NIHR grant applications with local HEI 5. Ranked within top 10% of acute Trusts for recruitment to commercial studies 6. Increase number of specialities where recruitment is ranked in top 5% 7. Fully deployed Innovation and Adoption pipeline with a minimum of 20 SME introductions	8. Triple the number of key digital research collaborations with HEI and industry partners 9. Creation of the Centre of Clinical Care research 10. Triple the number of NMAHPs leading R&I projects 11. Develop 2 programmes of work within Integrated Care 12. 5000 patients signed up to consent for approach by 2025 13. Research champions identified for all Divisions and key specialities 14. Double the number of honorary academic appointments with HEIs 15. Double number of staff and specialities involved in the Bury, Oldham and Rochdale Care Organisations 16. R&I incorporated into all directorate plans by 2023

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