



Research and Innovation Annual Report 2020/2021

Our vision is to create an environment in which Research and Innovation lead to sustained improvements in the quality of patient care.



Executive summary

The COVID-19 pandemic shone a light on the importance of research and innovation as a pillar to providing the evidence synthesis required to drive novel treatments to improve health care outcomes. The Research and innovation (R&I) Department plays a vital role in embedding a culture of the highest standards of healthcare delivery underpinned by evidence. Our overall aim continues to be one of increasing the profile, quality and quantity of clinical research and innovation, viewed as an essential and valued activity by all members of the organisation and the wider community. The R&I Department supports an active portfolio of studies and projects across all clinical specialties ensuring compliance with all regulatory frameworks and legislation.

Key research successes during the year:

- Delivered 131 research studies
- Recruited 3520 new participants
- Supported 7 urgent public health studies
- Rated amongst the top 5 medium acute trusts nationally
- Listed in the top 3 medium acute trusts for set up timelines
- Listed in the top 4 medium acute trusts for the number of studies open to recruitment

We supported 21 innovation projects providing opportunities to develop and evaluate new medical devices, digital health solutions and diagnostics. Through new knowledge, innovation and enterprise we aim to transform the lives of our patients and their families.

1. Introduction

1.1 Background

The overall aim of the BHT Research and Innovation (R&I) Department continues to be one of increasing the profile, quality and quantity of clinical research and innovation, viewed as an essential and valued activity by all members of the organisation and the wider community.

The R&I Department is at the heart of clinical research and innovation. We offer a quality assured Trust-wide service providing an agile workforce of highly skilled medical, scientific, nursing, midwifery and research administrative staff. The profile of health and social care research and its impact on people's health and wellbeing has never been higher, and this year we are proud to have not only supported vital studies but to have used this work as a springboard to develop our new Innovation service including bespoke maps for a Trust led Innovation accelerator programme.

1.2 Activity

The emerging urgent public health (UPH) studies took centre stage and other trials had to be put on hold to allow staff to focus on the fight against the emerging COVID-19 pandemic, collecting research data that contributed to national policy. During the year, a total of 131 research studies were active with a total of 3520 new participants. These included 7 urgent public health studies and 10 other COVID-19 studies.

Trust recruitment figures have consistently been rated amongst the top 10 medium acute Trusts nationally and this year we were amongst the top 5. We were listed in the top 3 medium acute Trusts for set up timelines and in the top 4 for the number of studies open to recruitment. Our performance demonstrates exceptional operational management to set studies up quickly, provide dedicated



clinical research delivery support and work collaboratively across different specialties to maximise opportunities for patients to participate in research.

An impressive 21 innovation projects were supported providing opportunities for new devices, AI solutions and digital platforms to our staff and patients. This demonstrates a steady increase of 11% compared to the previous year complementing our newly developed Innovation maps for internal and external innovators.

2. Challenges

Our performance this year has been shaped by the national and global response to COVID-19. Many COVID-19 studies were prioritised by Public Health and the local Clinical Research Network (CRN) re-diverted research resource to urgently review, approve and deliver a significant number of COVID-19 trials recruiting staff and patients across the Trust. The Trust as a whole rose to the challenge that the pandemic presented, radically adapting services to enable COVID-19 studies to be fast-tracked through set up and delivery. Most non COVID-19 studies had to be put on hold redirecting our workforce to support clinical services, Trust COVID -19 studies and the Oxford led vaccine studies.

3. R&I Workforce and Performance

3.1 Workforce

We support a varied portfolio of research and innovation opportunities across all specialties. The R&I Department consists of approx. 35 core staff supporting a minimum of 100 studies at any one time across the region. The staff infrastructure is designed to deliver a high-quality patient focused service. The Department consists of two main teams; the governance team responsible for regulatory compliance/quality assurance, contracts and Intellectual Property (IP), performance reporting and finance accountability. A key strength is highly efficient set up timelines especially for commercial research. The second and largest team is the clinical research delivery team. They are responsible for research service delivery working closely with clinical staff across specialties to ensure regulatory compliance, patient safety and target driven performance across the study portfolio.

3.2 Research activity

Over the last year, we supported a total of 131 studies including 28 new studies, see Table 1 for a breakdown per Specialty. Out of the 131 studies, 67 (51%) were interventional clinical trials and 64 (49%) were observational studies. During the year, we supported delivery of 20 commercial trials which accounts for 15% of the total study portfolio.

A total of 3520 new participants were recruited:

- 2523 taking part in COVID-19 studies
- 997 taking part in non COVID-19 studies

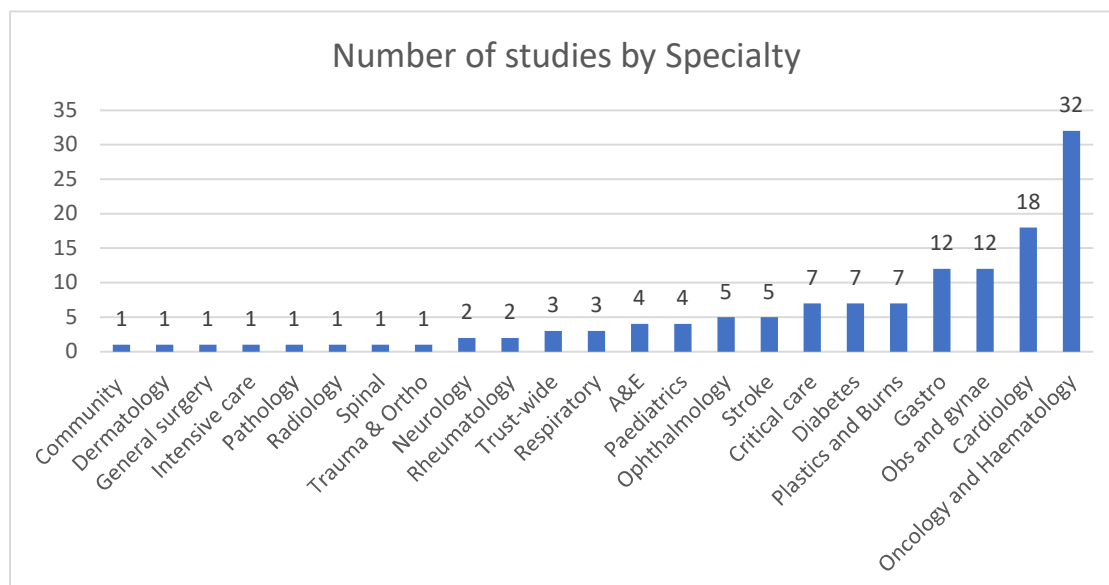


Table 1. Number of research studies per Specialty

3.2.1 Urgent Public health studies (UPH)



An impressive 2523 patients and healthcare staff have willingly participated in COVID-19 studies playing a vital role in the fight against this disease. The Trust has Sponsored six COVID-19 studies contributing to improved patient outcomes. We were in the top 20 recruiting sites (out of 200) for the GENOMICC study during August and September thanks to the support of an excellent research team. Within a period of two months, over 270 BHT staff were recruited to the SIREN study, studying antibodies in their blood and having COVID swabs every 2 weeks. Our contribution and performance to UPH studies has been noticed nationally and we can be proud of how BHT was consistently one of the top performing Trusts nationally, see Table 2.

Equally important but not classed as UPH were the Medical Detection dog study recruiting 80 participants and the Coagulopathy associated with COVID-19 study recruiting 55 participants.

Study name	Study aim	Recruits	National rating
GENOMICC	Identify genes that cause susceptibility to help prioritise treatments	55	74/124
RECOVERY	Evaluate drugs to treat COVID patients	286	50/161
ISARIC	Collect data to advance knowledge on infectious disease pandemics	1379	47/209
PAN COVID	Collect data of COVID in pregnancy and the neonates to inform the global community about the natural history of the disease and guide improvements in clinical care	44	62/125
UKOSS	Develop a UK-wide Obstetric Surveillance System to describe the epidemiology of the virus in pregnancy	94	10/53
FALCON	Discover accurate new and faster tests to detect COVID	277	48/135
SIREN	Determine if prior SARS-CoV-2 infection in health care workers confers future immunity to re-infection	253	9/21

Table 2. Summary of recruitment figures and national rating for UPH studies

3.2.2 Top recruiting studies

- The RECOVERY trial is a platform study, trialling various treatments of hospitalised COVID-19 patients. At BHT 286 patients gave their consent to take part.
- The SIREN study involved 277 of BHT staff. The SIREN team are studying the behaviour of antibodies to the COVID virus.
- The top recruiting non COVID-19 study for the year was INGR1D, a screening test to identify the risk of a child developing type-1 diabetes. The study was conducted by the Obstetrics and Gynaecology research team and recruited 241 babies with consent.

3.3 Innovation activity

Through our Innovation service we tackle challenges and drive improvement in products, clinical pathways, MedTech and Artificial intelligence solutions as well as product evaluation and accelerated adoption to improve patient outcomes. We are building on our strengths to become leaders in digital health supporting AI solutions to transform traditional service delivery.

Despite the challenges of the global COVID-19 pandemic, innovation activity continuous to increase. We developed a bespoke BHT Innovation service introducing our own accelerator programme and publishing two innovation maps: one for internal innovators and the other for external small and medium sized enterprises. A total of 21 projects were supported with dedicated project management time (10 internal and 11 external), an increase of 11% on the previous year. Over the year, 5 COVID-19 related projects were supported (2 internal and 3 external). We have been successful partnering on 3 Innovate UK grants with more Innovate UK and projects in the pipeline at various stages. Other success stories have seen us partner with an intellectual property management and exploitation service, develop relationships with key enablers across the region including the Oxford Academic Health Science Network and local Universities, looking at knowledge transfer opportunities. Through our partnerships we push the boundaries of what we can do providing a range of opportunities where staff feel empowered to innovate and collaborate.

4. Financial position

The total R&I income for the year accounted to £1,141,946 which was £76,410 higher (3.5% increase) compared to the year before and our highest income to date. The Trust's commercial research income rose to £66,160 compared to £59,980 the year before despite opening less trials. We continue to contribute 20% of all commercial R&I income to support Trust overheads. Following a review of national and local financial principles the Department developed the R&I income distribution



guidelines that provide robust financial principles across the Trust aiding transparency of income streams and distribution across the different specialties. A separate review of R&I costings, prices and invoices took place to ensure we remain competitive and able to cost studies accurately leading to enhanced income streams. An emerging strength is starting to receive R&I grant income as we are successful in applying and securing prestigious national R&I grants such as Innovate UK grants. We have been successful partnering on 3 Innovate UK grants generating £62,400 in innovation income establishing a new income stream for the Department.

Key income streams remained the following for the year:

- NIHR CRN income allocation which is reviewed annually and reflects the numbers of patients recruited to trials, trial complexity and meeting efficiency targets.
- Industry funding from pharmaceutical companies for recruitment to commercial studies. This funding is wholly dependent on our recruitment figures and pays for some research staff, directorate costs, trust overheads and some consumables.
- Non-commercial grant income to fund research and innovation costs and activity.

5. Public engagement and celebrating success

Research has been at the forefront of this pandemic publicised as part of developing new treatments and novel therapies for those affected by COVID-19 and also as preventative measures against COVID 19.

5.1 Public engagement

The R&I teams have been promoting study participation, sharing patient stories and providing training. The R&I Department in collaboration with the local CRN supported several broadcasts for the public in relation to the Recovery study with BHT staff and patients sharing their experiences. We actively promoted and participated in the national Red 4 Research Day and Be Part of Research initiatives. The R&I website has been further improved to promote engagement with our patients, staff and partners. Promotion and engagement is ongoing through social media accounts and the R&I twitter account has grown to 447 followers.

5.2 Participant feedback

The National Institute for Health Research asked all NHS Trusts to collect information from patients about their experience of taking part in NHS research. The Participant in research Experience Survey underlines the importance of listening to and learning from study participants to improve how we deliver research. In 2020/21, 34 people gave their views and the feedback from research participants has been overwhelmingly positive. Of the 34 responses received, 100% recorded having had a positive experience of taking part in the study and the responses shared by participants show enthusiasm and satisfaction in contributing to research and more than half of their responses indicated they took part in research to help others.

See some of the written comments posted by participants:

- *'Research staff are always helpful and answer any queries swiftly. Always kept informed of any changes'*
- *'I feel that I am a valued member of the research programme. The info I receive is very interesting'*
- *'It felt good to be able to help'*
- *'The research nurse made me feel very motivated to participate in the research study'*
- *'Research nurse fully informed me about the reason for the research, consent and use of the mask socks etc research is important and this was an easy thing to do to help. It is good to be part of research'*
- *'That I am taking part of this study which will help all the people in future with regards to their treatment'*

5.3 Equality and diversity

This year we appointed our first Inclusion and Diversity Research Lead to ensure we promote and develop inclusive research across the trust. We are promoting a research culture that includes, rather than excludes, unrepresented groups. This means we have to further develop our skills and knowledge and be willing to hear the voices of those who have been excluded, in order to understand which research processes work, and which do not. We are actively looking to engage with



researchers challenging traditional research cultures to make a lasting commitment to engage in accessible and inclusive research practices.

5.4 Awards

The following awards list demonstrates research excellence amongst our Department and staff as recognised locally and regionally:

- R&I Clinical Research Delivery Team, Winner Chief Nurse & Midwife Team of the year, BHT awards
- R&I Department, Finalist in the Health Care Team award category, Buckinghamshire Health & Social Care awards
- Dr Raha West, Winner Outstanding Principal Investigator, NIHR TV&SM awards
- Katarina Manso, Winner Research Nurse of the Year, NIHR TV&SM awards
- Christa Dyson, Winner Outstanding Research Champion (patient) , NIHR TV&SM awards
- Nicola Bowers, Highly Commended Outstanding Research Team Leader, NIHR TV&SM awards

5.4 Sharing research and patient stories

The following list demonstrates commitment to share Trust research stories, celebrate successes and promote active patient participation widely across the region and beyond.

RECOVERY doctor and patient webinar

- https://youtu.be/k3jeGar_glg

RECOVERY patient story

- Story: <https://local.nihr.ac.uk/case-studies/katherine-taking-part-in-covid-19-research/26338>
- Video: https://twitter.com/NIHRCRN_tvsm/status/1278255806593499144
- Selection of media coverage:
- <https://www.youtube.com/watch?v=f4VKQ21sNw>
- <https://www.bbc.co.uk/news/av/health-53069122/coronavirus-patient-credits-dexamethasone-with-saving-her-life>
- <https://drive.google.com/file/d/1npuFuF0oXovQgsfq5l4aPd3MhhJWPV2l/view?usp=sharing> (BBC local radio)

Danielle Thornton staff story:

- Video: https://twitter.com/NIHRCRN_tvsm/status/1293555012837269504
- Blog: <https://local.nihr.ac.uk/news/working-in-covid-19-research-danielle-thornton/25456>

Raha West blog:

- <https://local.nihr.ac.uk/news/dr-raha-west-managing-a-covid-19-research-trial/25140>

Neil Mead patient story:

- <https://local.nihr.ac.uk/news/buckinghamshire-grandfather-takes-part-in-covid-19-drugs-trial/25143>

Virus Watch story:

- <https://www.bucksherald.co.uk/business/buckinghamshire-households-invited-join-study-monitor-spread-covid-19-3033337>

6. Impact from research and innovation projects

We support research across all clinical specialties offering our patients opportunities to participate into novel treatments and therapies finding new treatments, building a healthier future across the region and nationally. We aspire to bring together staff, academic, commercial partners and local communities promoting user involvement in all aspects of our research and innovation work. Table 3 highlights some of the impact of research studies and innovation projects across the Trust and improvements to patient outcomes.



Project title	Summary	Impact
RECOVERY	A platform study exploring different treatments for COVID19.	Drugs such as dexamethasone and tocilizumab have been shown to improve patient outcomes.
MEDICAL DETECTION DOGS	Assessing whether Medical detection dogs can be trained to detect the odour of COVID19 on symptomatic and non-symptomatic individuals.	The dogs can detect COVID19 odour. The potential is that the dogs can be deployed to high threat areas such as airports, stations and stadiums to screen attendees
SIREN	A study to determine whether prior COVID19 infection confers future immunity and to study antibody reaction to vaccination.	Data from the study has been used to determine national guidance and protocols
ISARIC/CCP	Comprehensive data collection of COVID19 patients admitted to hospital.	The data from this study has successfully described the clinical features of the disease, responses to treatment and identified determinants of severity and transmission. This data is used nationally by PHE, UK chief medical officers and scientific advisors, determining the government's response to the pandemic.
ICU DASHBOARD (IICSSIT)	An interactive digital platform to provide a real-time birds-eye view of ICU through the integration of multiple systems.	The Interactive Intensive Care Staffing Safety Information Tool (IICSSIT) pulls information from multiple systems, delivers improved situational awareness, efficiency, communication and decision making, as well as enhanced patient and staff safety, reducing burden on staff to save time and money. We are looking at options to spread adoption of innovation across BHT and create a platform for wider commercialisation.
COVID OXIMETRY AT HOME	The COVID oximetry at home project enabled patients at risk across Bucks to safely self-monitor at home using pulse oximeters.	Through this Oxford AHSN programme, mortality, hospital length of stay and pressure on ICU beds were reduced during the pandemic.

Table 3. Impact case studies

7. Next steps and closing statement

Building on the Stoke Mandeville Paralympic legacy we aspire to develop a regional Research and Innovation Centre of excellence bringing together staff, academics, entrepreneurs, industry and our local community. A key priority for the Department remains the launch of the new purpose-built R&I Centre which houses a bespoke Innovation hub, a clinical research facility with dedicated labs, specialist equipment and networking space. Once officially launched it will promote and attract ground-breaking research and innovation opportunities for our patients, staff, our partners and the region contributing to local economic growth. We will continue to build on our successes, act as an enabler to the trust's core strategy, enhancing knowledge and engagement.

The COVID-19 pandemic shone a light on the importance of research and innovation as a pillar to providing the evidence synthesis required to drive novel treatments to improve health care outcomes. Central to our success will be embedding a Trust culture where staff feel empowered by the Research and innovation Department to innovate, collaborate and provide outstanding care with our local community at the heart of our service.



Buckinghamshire
Health Research &
Innovation Centre

NHS
Buckinghamshire Healthcare
NHS Trust

