



NHS

North Bristol
NHS Trust



COVID-19

research

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**Hi,
I'm Becca Smith, the
Head of Research
for North Bristol
NHS Trust.**

Research is one of the government's three key strategies for dealing with the COVID-19 pandemic.

Here at NBT we have a dedicated research team who are part of a national effort working alongside NHS Trusts and other research organisations across the country to help us understand more about COVID-19.

As the virus affects so many different people from different populations, we are running a number of trials, looking at different treatment options for different patients. The aim of each of these trials is to make sure we can deliver the best care for every individual.

We are really proud of both our staff and patients who are supporting us through this difficult time and also proud to be part of the national effort to find effective treatments for this virus.

Dr Becca Smith



Vaccine research has been backed by governments across the globe and public health organisations. This support has meant that research into COVID-19 has advanced much quicker than previous immunisations, with many organisations fighting to produce a vaccine.



The race to develop a vaccine for the COVID-19 virus is progressing at an unprecedented speed and scale with approximately 135 vaccines in development worldwide.

Protecting the nation

The UK government has announced that it has secured early access to over 357 million vaccine doses with several separate vaccine developers.

There is now light at the end of the tunnel with the MHRA approving both the Pfizer/BioNTech & Oxford-AstraZeneca vaccines as safe to use. The UK is now in the process of one of the biggest vaccination programmes in history.

How do the coronavirus vaccines work?

Although the inner workings of each complex vaccine differ, they essentially all use the same strategy to protect us from coronavirus: fooling our bodies into thinking we've been infected.

By doing this, it allows our immune systems to build a memory of COVID-19, meaning it is better prepared to fight against it in future.

Clinical Trials

The vaccine rollout would not have been possible without the support of clinical trials. Researchers at North Bristol NHS Trust have been part of this global race to find effective vaccines to fight this devastating virus.

Earlier in the year, volunteers across the South West took part in the Oxford/AstraZeneca vaccine clinical trial which has proved to be highly effective at stopping people developing COVID-19 symptoms and is now being rolled-out across the country.

Oxford-AstraZeneca Vaccine Trial

Vaccines are the most cost effective way of controlling outbreaks and the demand for COVID-19 vaccine research has been backed by governments and public health organisations.

Adam Finn, Honorary Consultant at Bristol Royal Hospital for Children, Professor of Paediatrics at the University of Bristol and Director of the Bristol Children's Vaccine Centre at Bristol Medical School, said:

“We are delighted to be supporting our colleagues in Oxford by collaborating on this extremely important study.”

Dr Rajeka Lazarus, Consultant in Infectious Diseases and Microbiology at UHBW and one of the Principle Investigators for the study in Bristol, said:

“This vaccine aims to turn the virus’ most potent weapon, its spikes, against it – raising antibodies that stick to them allowing the immune system to lock onto and destroy the virus.”

What are the different phases?

Phase I

The phase I trial in healthy adult volunteers (18-55 year olds) began in April 2020. This phase of the trial assessed how well the vaccine works to prevent people from becoming infected with COVID-19. It also provided valuable information on safety aspects and how well participants' immune systems responded to immunisation with the vaccine.

Phase II

The phase II part of the study involved expanding the age range of people the vaccine is assessed in, to include a small number of older adults.

- Aged 56-69
- Aged over 70

For these groups, researchers assessed the immune response to the vaccine in people of different ages, to find out if there was variation in how well the immune system responded in older people.

Phase III

The phase III part of the study involved assessing how the vaccine works in a large number of people over the age of 18.

RECOVERY^{study}

Dexamethasone is the first drug to be shown to improve survival in COVID-19.



The Randomised Evaluation of COVID-19 Therapy (RECOVERY) trial was launched in the early stages of the global coronavirus outbreak and is currently the world's largest trial of potential COVID-19 treatments. The results have shown some promising evidence so far...

What have the results revealed?

Peter Horby, Professor of Emerging Infectious Diseases in the Nuffield Department of Medicine, University of Oxford, and one of the Chief Investigators for the trial, said:

“Dexamethasone is the first drug to be shown to improve survival in COVID-19. This is an extremely welcome result. The survival benefit is clear and large in those patients who are sick enough to require oxygen treatment, so dexamethasone should now become standard of care in these patients. Dexamethasone is

*inexpensive, on the shelf, and can be used immediately to save lives worldwide.’ **

What was the study investigating?

The study was comparing several different treatments given in addition to the usual care that may be useful for patients with COVID-19. Although these treatments show promise, research was needed to test if any of them will turn out to be more effective in helping patients recover than the usual standard of care.

The RECOVERY Trial tested some of these suggested treatments:

- Low-dose Dexamethasone
- Azithromycin (a commonly used antibiotic)

- Tocilizumab (an anti-inflammatory treatment given by injection)
- Convalescent plasma (collected from donors who have recovered from COVID-19 and contains antibodies against the SARS-CoV-2 virus)
- REGN-COV2 (a combination of monoclonal antibodies directed against coronavirus).

Now we clearly understand what treatments work best, we can easily implement this into caring for our patients with COVID-19. **Professor Nick Maskell**, a Chest Consultant at North Bristol NHS Trust and the local Principal Investigator for the RECOVERY study stated

“I would like to thank all the patients that have participated in this study and the fantastic research team that have helped recruit these patients.”

REMAP-CAP^{study}

The National Institute for Health Research (NIHR) and NBT is supporting REMAP-CAP; a nationally-prioritised study which aims to provide answers about the best treatment options for COVID-19 patients who develop Community-Acquired Pneumonia (CAP) including viral Pneumonia like COVID-19.



> **Dr. Matt Thomas,**
Consultant in Intensive
Care and the Principal
Investigator

19 countries investigating COVID-19 intensive care drugs

What is the purpose of the trial?

The purpose of REMAP-CAP during the pandemic is to test treatments that may be effective for COVID-19.

Dr. Matt Thomas, Consultant in Intensive Care and the principal investigator for the REMAP-CAP study Said.

“Remap-CAP is a really exciting study that’s now running in 19 countries worldwide from North America through Europe down into Australia and New Zealand. The reason it’s exciting for us is the trial design is very new, it’s called an adaptive trial and that means that we can test multiple different interventions simultaneously. We can retain a lot of flexibility about the interventions that are available for patients here at Southmead Hospital and those that they might be able to benefit from the study.”

What are the benefits of this trial?*

- 1** Investigating multiple treatment simultaneously for patients with CAP/ COVID-19
- 2** The information about these treatments are combined to gain more insight
- 3** The design allows us to learn during the trial and incorporate knowledge immediately
- 4** The trial adapts to randomise more patients to the most promising of interventions
- 5** The trial allows us to find the best treatment for CAP /COVID-19 faster

Why is research of this type so important?***

Previous pandemics and outbreaks of emerging infectious diseases have outlined the urgent need for evidence, preferably from Randomised Controlled Trials (RCTs), to guide best treatment. REMAP-CAP is ideally positioned to adapt, in the event of a respiratory pandemic, such as COVID-19, to evaluate existing treatments as well as novel approaches.

In the air: Innovative aerosol research



> **Nick Maskell**, Professor of Respiratory Medicine at NBT and Bristol Medical School: Translational Health Sciences (THS), and Principal Investigator.

What is the aim of the study?

The AERATOR study is measuring the amount and type of aerosols generated when medical procedures are performed, and how infectious this aerosol is.

Why is this research needed?

Many operations have been delayed or have required additional personal protective equipment (PPE) due to the potential risk of COVID-19 aerosols being generated, greatly reducing NHS services. This study will identify which medical procedures are truly aerosol generating and whether the virus remains viable in the aerosol produced. The findings will be crucial in providing guidance about the safe day to day activity of essential NHS services. The research will also advise guidelines on the appropriate level of PPE for staff, as well as the length of time aerosol is present for and how it spreads in a real-world clinical setting.

What are aerosols and what procedures generate them?

Aerosol generation occurs when tiny droplets of liquid are suspended in the air. Aerosols can be generated during many medical procedures. Some procedures might produce more aerosols than others, and droplets of different sizes, but this is largely unknown at the moment. However, aerosols can carry viruses, like coronavirus, which risks further infections if inhaled by healthcare staff or patients.

How does it work?

Specialist equipment will be used in operating theatres and wards to measure real-life aerosol generation in five clinical settings: dental, orthopaedic, respiratory, critical care and ophthalmology. The research team will also investigate how long coronavirus survives while airborne and how environmental conditions impact on the infectivity of the virus.

Professor Nick Maskell, said:

“A systematic improvement of the evidence would then allow procedures that are truly low risk to go ahead without the need for patient testing, air-cycling protocols or extensive PPE. Our study will ensure that higher risk procedures are performed efficiently in the appropriate clinical settings and without risk to staff or patients.

“Given how often these routine procedures are performed across the NHS, even a small improvement in efficiency will have a vast impact on clinical services, waiting times and costs.”

The AERosolisation And Transmission Of SARS-CoV-2 in Healthcare Settings (AERATOR) study, led by North Bristol NHS Trust (NBT) together with the University of Bristol and University Hospitals Bristol and Weston NHS Foundation Trust (UHBW). A new National Institute for Health Research (NIHR) and UK Research and Innovation (UKRI) - funded study.

As the virus is new, little is known about its effect on certain groups of people, including pregnant women. Here at Southmead Hospital there are a range of studies looking into COVID-19 within pregnancy...

UKOSS

Mary Alvarez, Senior Research Midwife at North Bristol NHS Trust, shares with us the Urgent Public Health UKOSS study.

“This is a national UK obstetrics surveillance system (UKOSS) for women hospitalised with confirmed COVID-19 in pregnancy. Funded by the National Institution for Health Research, this study will inform ongoing guidance for women and maternity staff as we respond to the pandemic.”

“The information is being analysed on a continuous basis to inform ongoing guidance for women and maternity staff as we respond to the pandemic. The anonymous information will describe the instance management and outcomes of COVID-19 in pregnancy and identify factors associated with better outcomes for women and their babies.”

Pan-Covid

Nichola Bale, is a Senior Research Midwife and local Principal Investigator for the nationally-prioritised Pan-Covid study. She explains that the purpose of this study is

to better understand some specific research questions as to how COVID-19 affects early pregnancy, fetal growth, prematurity and virus transmission to the baby.

“The study is a global registry of women aged between 18 and 50 who have had suspected or confirmed COVID-19 in pregnancy and their babies. Data is being collected retrospectively from January 2020 to March 2021.”

North Bristol NHS Trust’s Maternity Research department would like to thank all the women and families that have taken part in the studies so far.”



Monitoring the long-term effects of COVID-19

Dr. David Arnold and Dr. Fergus Hamilton at North Bristol NHS Trust are proud to be leading the DISCOVER study. With ongoing support from the Southmead Hospital Charity, the study involves researchers at Southmead Hospital and University of Bristol analysing blood tests, rehabilitation therapies and psychological support of patients admitted to hospital with COVID-19.

“There’s still so much we don’t know about the long-term effects of coronavirus, but this study has given us vital new insight into what challenges patients may face in their recovery and will help us prepare for those needs.”

“We’re pleased that researchers at Southmead Hospital are leading the way, and hope our findings can help patients and their GPs understand the cause of post-COVID illness and the role of routine tests.”

“So far the study has found that, three quarters of a group of patients who received care for coronavirus were still suffering ongoing symptoms three months later.”

Deputy Director of Research & Innovation at North Bristol NHS Trust **Dr Rebecca Smith**.

Dr David Arnold from North Bristol NHS Trust, who is leading the DISCOVER research project, said:

“This research helps to describe what many coronavirus patients have been telling us: they are still breathless, tired, and not sleeping well months after admission. Reassuringly, however, abnormalities on X-rays and breathing tests are rare in this group. Further work in the DISCOVER project will help us to understand why this is, and how

we can help coronavirus sufferers.”

The research was funded by Southmead Hospital Charity thanks to donations from their supporters. The charity’s Coronavirus Appeal is ongoing to continue to support more COVID-19 research at the Trust including the next stages of the DISCOVER project. Director of Southmead Hospital Charity, **Sarah Harrison**, said:

“We are proud to have been able to support this vital research project which has already enabled clinicians to develop their understanding of this disease and its longer term effects. This research firmly puts Bristol at the heart of advancing the knowledge of coronavirus and how it shapes the medical landscape going forward.”



> **Dr David Arnold & Dr Fergus Hamilton**

Image taken before enhanced social distancing rules.

Anne Marie's Story



> **Anne Marie**

Anne Marie was struck down with COVID-19 in March which left her in a coma in the Intensive Care Unit at Southmead Hospital. She is now taking part in the DISCOVER trial, funded by donations to the Southmead Hospital Charity.

What were your symptoms?

In March I quickly developed a fever, terrible muscle pains and a headache. I was having difficulty breathing and felt terribly unwell. Worse than I ever have before. Thankfully, my daughter rang for an ambulance and I was admitted to Southmead Hospital.

I was fighting for every breath and within days I was taken to the Intensive Care Unit. I was ventilated for nine days and put in an induced coma for seven days. I was frightened and didn't know if I'd ever see my family again.

How was your treatment at Southmead Hospital?

The care I received was phenomenal. I never felt alone. I remember kind eyes, my hand being held, and even my hair being stroked.

The NHS staff showed me photos of my children and played my favourite music – all the time putting their own lives at risk. Thank you isn't enough.

I'm now on the road to recovery and it is thanks to the team of specialists at Southmead Hospital that I am still here. The NHS undoubtedly saved my life for which I will always be eternally grateful.

What made you want to take part in the DISCOVER trial?

I know that research is critical in fighting the debilitating effects of coronavirus. COVID-19 research is being carried out right here on our doorsteps, at Southmead Hospital.

This research will look into possible tests for coronavirus, the complications the virus can cause, and crucially, work to advance potential drug treatments for it.

Researchers are working alongside doctors and nurses on the frontline to give our NHS clinicians right here in Bristol better ways of treating people who have coronavirus and helping them with their recovery.

The research will also look at why and for how long patients with coronavirus remain unwell, so that we can better understand, and plan for, long term treatments.

How can people help?

We need the public's help to ensure this essential work can happen. We need to find solutions today that will save lives. I hope that by sharing my story with you, you will consider supporting this vital work provided by donations to the Southmead Hospital Charity.

After her recovery from the virus she rallied her friends and family to walk the virtual equivalent of Mount Kilimanjaro (62km), raising more than £4,000 for Southmead Hospital Coronavirus Appeal.



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