



**National Core
Studies Immunity**

Impact Report

April 2023

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What is National Core Studies Immunity?

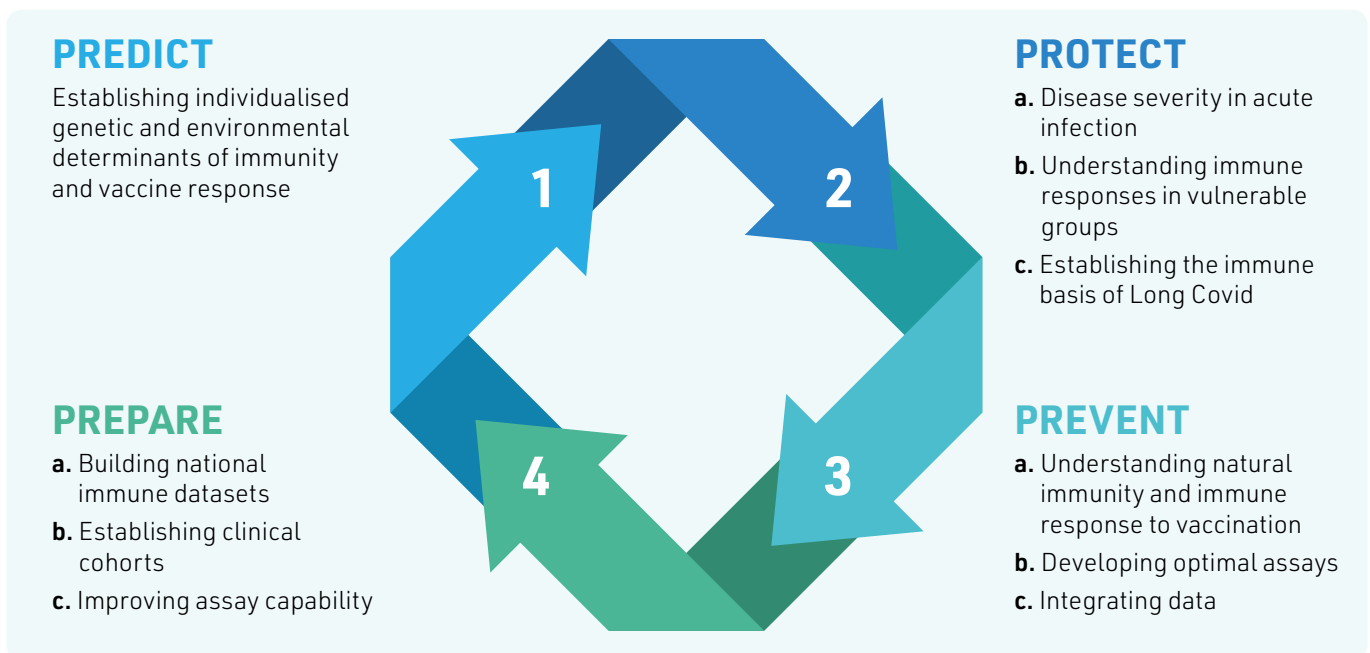
At the start of the COVID-19 pandemic, UK funders of research and development, together with relevant experts, identified a number of areas where additional resource was needed to respond to urgent unanswered questions about COVID-19. The Government Office for Science subsequently established the National Core Studies (NCS) programme in the summer of 2020, to ensure that critical questions about the virus – and ways to combat it – could be answered quickly and effectively.

The National Core Studies were a crucial part of the UK's ongoing pandemic response, helping to ensure that health data and research informed the UK's responses to the pandemic, as well as accelerating progress to establish a world-leading health data and research infrastructure for the future.

Six National Core Studies were set up, including the Immunity programme, which was funded by UK Research and Innovation and led by Paul Moss, Professor of Haematology at the University of Birmingham.

The immune response to SARS-CoV-2 is a key determinant in any effort to control the COVID-19 pandemic. NCS Immunity aimed to deepen our understanding of immunity against the virus, including how to predict individual risk and protect against serious infection, how to use vaccines most effectively, and how to prepare for future pandemics.

The programme was formulated around four main principles:



NCS Immunity was overseen by an Advisory Board with the following membership:

Chair: Professor Sir Robert Lechler, King's College London and King's Health Partners Academic Health Sciences Centre.

National Core Studies oversight: Professor Sir Michael Ferguson, University of Dundee, Wellcome Trust and National Core Studies Board.

Members: Professor Anne O'Garra, Imperial College London and The Francis Crick Institute, London. Professor Julie Williams, Cardiff University and Chief Scientific Advisor to the Welsh Government.

Dr Michelle Linterman, University of Cambridge. Professor Ian Young, Queen's University Belfast and Chief Scientific Advisor to the Department of Health Northern Ireland.

Professor Sir Michael Ferguson, University of Dundee, Wellcome Trust and National Core Studies Board. Professor Matthew Snape, University of Oxford. Professor Adrian Hayday, King's College London

Message from Professor Paul Moss

Paul Moss is Professor of Haematology at the University of Birmingham and Principal Investigator for National Core Studies Immunity.



When the COVID-19 pandemic began, the first thought of most immunologists was to help in whatever way they could. Many set aside their existing research without a second thought, and applied their skills and time to the national efforts to combat the virus.

The six National Core Studies provided a framework for this enthusiasm, organising skillsets into work streams that would focus effort where it was most needed, and bringing together teams of scientists in a way that could drive progress forward. The emphasis was on answering questions that would have a direct and immediate benefit in terms of protecting populations, including those who were likely to be most at risk.

I am immensely proud of how the teams that came together as part of NCS Immunity embraced the spirit of 'team science', and were determined to be more than the sum of each individual team's contribution. By the time we came together in Birmingham for the NCS Immunity conference in March 2022, it was abundantly clear that our teams were grasping every opportunity to get under the skin of the problems and questions facing them. They pooled resources, unpicked problems and saw past limitations, asking instead – what would happen if we went about it differently?

Importantly, they understood the imperative to present their findings to policy makers at the very first opportunity, and found practical ways to do this, carving time out of their busy schedules. This meant that the very latest evidence directly informed high-level decisions that had a substantial bearing on people's lives.

And despite this being a race against the clock, they understood that the contribution of patients and the public would be integral to their success. They dedicated time and effort to seeking the views and feedback of people affected by the issues and conditions they were studying, and this undoubtedly resulted in faster, better and more focused research.

Here, we set out some of their incredible achievements. I hope you find them as fascinating and inspiring as I do.

The full impact of this work, though, will be felt long into the future. NCS Immunity leaves a legacy that goes far beyond the knowledge it has generated thus far. I am excited to see what future breakthroughs will come of the innovative techniques, the wealth of data and samples, and the new alliances that have been struck.

Just as important, I truly believe that every researcher who has played a part in this journey will be better equipped to take on the research challenges of the future.

"I am immensely proud of how the teams that came together as part of NCS Immunity embraced the spirit of 'team science', and were determined to be more than the sum of each individual team's contribution."

The studies

PREDICT

Cytokine autoimmunity: anti-interferon autoantibodies in COVID-19

Led by Professor Ken Smith at the University of Cambridge

Understanding the link between severe COVID-19 and autoimmunity to 'immune messenger' molecules called interferons.

Determining the Immune Response in Ethnic minority healthcare workers to COVID-19 infection (BE-DIRECT)

Led by Professor Manish Pareek at the University of Leicester

Determining if immunity plays a role in disparities seen between ethnic minority healthcare workers and those of White ethnicity.

EVITE Immunity

Led by Professor Helen Snooks at Swansea University
Investigating the effects of shielding in Wales.

Asymptomatic COVID-19 in Education (ACE)

Led by Professor Lucy Fairclough at the University of Nottingham

Studying asymptomatic cases of COVID-19 in student populations to understand protective immunity.

COVIG (COvid-19 Immune Vaccine Immune Genetics): An immunogenetic approach to guide the need for booster shots and combat immune failure in SARS-CoV-2 vaccine response

Led by Professor Julian Knight at the University of Oxford

Examining how genetic variation impacted immune responses to the COVID-19 vaccines.

SARS-CoV-2 Immunity and Reinfection Evaluation Study (SIREN)

Led by Professor Susan Hopkins at the UK Health Security Agency

This large-scale study monitored COVID-19 infections and immune response in healthcare workers, and was part-funded by NCS Immunity.

PROTECT

Vaccine response in people over 80

Led by Professor Paul Moss at the University of Birmingham

Studying the effectiveness of the COVID-19 vaccines in people over 80, including assessment of the longevity of protection and the effect of different vaccine dosing intervals.

Vaccine response in people with chronic lymphocytic leukaemia

Led by Professor Paul Moss at the University of Birmingham

Establishing effectiveness of the COVID-19 vaccines in people with chronic lymphocytic leukaemia.

Understanding how diet and environment influence immune responses to the COVID-19 vaccines. SARS-CoV-2 vaccine ResPonse In Obesity (SCORPIO)

Led by Professor Sadaf Farooqi at the University of Cambridge

Understanding if and how body mass index influences COVID-19 vaccine responses.



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PREVENT

OCTAVE, OCTAVE-DUO and OCTAVE adolescents

Led by Professor Iain McInnes at the University of Glasgow

Establishing the effectiveness of COVID-19 vaccines for clinically at-risk groups.

Blood cancer: follicular lymphoma

Led by Professor Andy Pettitt at the University of Liverpool

Understanding the effectiveness of COVID-19 vaccines for people with follicular lymphoma before, during and after treatment.

The Vaccine Breakthrough Project

Led by Professor Sir Aziz Sheikh at the University of Edinburgh

Understanding who is most at risk from COVID-19 despite being vaccinated.

A comparison of antibody levels post-vaccination using multiple NCS Immunity datasets - data harmonisation and exemplar analysis

Led by Professor Sir Aziz Sheikh at the University of Edinburgh

A data harmonisation project to link datasets from different studies for a comprehensive analysis of vaccination responses in diverse groups.

Determining the immunological basis for weakened SARS-CoV-2 vaccination outcomes

Led by Dr Laura McCoy at UCL

Establishing the strength and durability of COVID-19 vaccine responses in people with HIV or B cell lymphoma.

The Durability of immune Responses to vaccination against SARS-CoV-2 and its Variants (DuRaCoV)

Led by Professor Rosemary Boyton at Imperial College London

Understanding how long protection from the COVID-19 vaccines lasts, including against different variants.

Vaccine Immunity, Breakthrough, Re-infection: ANTibodies and T cells (VIBRANT)

Led by Professor Alex Richter at the University of Birmingham

A sub-study of SIREN, VIBRANT set out to investigate breakthrough COVID-19 infections and immune failure.

PREPARE

Studies delivered as part of the 'Assays for SARS-CoV-2 cellular immune responses' call, delivered by Innovate UK on behalf of NCS Immunity:

T Cell Responder

Imperial College London

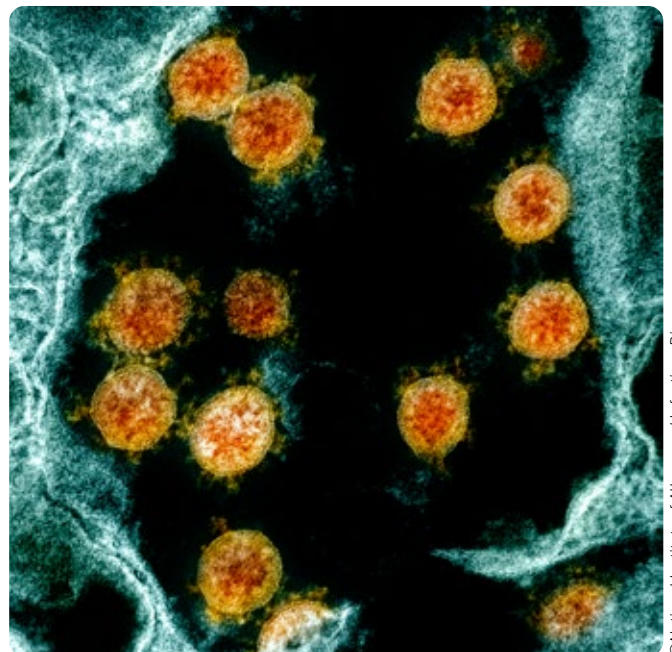
Development of an accessible, rapid test for evaluating T cell immunity in COVID-19 and other health settings.

Combined SARS-CoV-2 T cell & antibody capillary blood test for high-throughput population immunity screening

ImmunoServ Ltd

Development and validation of an easily accessible, whole-blood test for the assessment of natural and vaccine-induced T cell responses to SARS-CoV-2

Indoor Biotechnologies



©National Institute of Allergy and Infectious Disease



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Key scientific achievements

Here we summarise a selection of the insights and discoveries made by NCS Immunity teams since the programme began. Work is still ongoing at the time of publication and many teams are expecting to publish further results in the coming weeks and months.

Understanding immune responses in people with weakened immune systems

A number of NCS Immunity studies focused on understanding immune responses in people with weakened immune systems. This included people with blood cancers, autoimmune and inflammatory conditions, HIV and organ transplants. Several studies helped to improve our understanding of how a person's response to the COVID-19 vaccines can be impacted by certain treatments that work by suppressing the immune system (such as infliximab and tyrosine kinase inhibitors). These studies helped to highlight the need for additional measures and treatments to protect people with a range of conditions. For example, it was shown that 20% of people with chronic lymphocytic leukaemia still have no antibodies to fight COVID-19 after four vaccine doses.

Understanding immunity in older people

A team at the University of Birmingham investigated vaccine response in people aged 80 and over, following participants through their first five vaccine doses. This was the first study to show that current COVID-19 vaccines generate a strong immune response in this age group, and that the extended 12-week interval between doses of mRNA vaccines led to a better antibody response than the standard 3-week interval. It was also the first to show that the AstraZeneca vaccine gave better T cell responses compared to the Pfizer vaccine, which was important to counter early doubts in Europe as to the effectiveness of the AstraZeneca vaccine.

Exploring the link between ethnicity and immunity to COVID-19

It became clear early in the pandemic that COVID-19 posed a greater risk to people from some ethnic minority groups than to people of White ethnicity. Healthcare workers are also known to be at higher risk. The BE-DIRECT study set out to examine immune responses (to vaccination and infection) in healthcare workers from minority ethnic groups, in order to determine if immunity plays a role in these disparities. It was the only COVID-19 immunology study in the UK to focus primarily on ethnicity. The BE-DIRECT team's results to date suggest that both antibody and T cell responses to initial doses of COVID-19 vaccines are stronger in healthcare workers from South Asian ethnic groups, compared to those from White groups. Upcoming work will determine if this effect is also seen with booster vaccines, and whether there are also differences in the rate at which antibody levels drop after vaccination.

Understanding who is at greatest risk from COVID-19 despite being vaccinated

A 'breakthrough infection' occurs when someone gets COVID-19 despite being vaccinated. The Vaccine Breakthrough Project, led by Professor Sir Aziz Sheikh at the University of Edinburgh, established who was most at risk of severe illness and death from such infections during the Omicron wave. It confirmed that age remained the factor most associated with the risk of death, and that men were at higher risk than women. People with immune deficiency, blood cancer or dementia were also identified as being at high risk. This work was important for establishing who should be given priority for COVID-19 therapeutics and further booster doses.

Establishing a link between severe COVID-19 and autoimmunity to interferons

The study led by Professor Ken Smith at the University of Cambridge set out to investigate the link between severe COVID-19 and autoimmunity to immune messenger molecules called interferons, which are important for fighting viral infections. The team found that the composition of these antibodies in people with COVID-19 was different to those found in other illnesses, and also discovered new antibodies against other important immune messengers. They are now working to understand how these antibodies relate to COVID-19 severity, and whether they also play a role in Long Covid. They hope their results will help to develop tests that can predict COVID-19 progression, as well as to develop new treatments.

Impact of the pandemic on healthcare workers

The SIREN study used regular samples from nearly 45,000 healthcare workers to monitor COVID-19 infections across the UK. In two years, it carried out over a million PCR tests and more than 400,000 blood tests. SIREN has helped to shape our understanding of COVID-19 infections, reinfections and the protection offered by vaccines. The study also played an important

role in national surveillance, offering insight into infection trends and monitoring emerging COVID-19 variants. SIREN gave rise to several sub-studies, including VIBRANT, which compares data from people who experienced breakthrough infections with data from those that did not, in order to identify risk factors for vaccine breakthrough.

Deepening our understanding of how vaccination and infection shape our immunity

A team at Imperial College London achieved a deeper understanding of how different combinations of infection and vaccination influence an individual's future protection against COVID-19, helping to explain why breakthrough infections and repeat infections were a common feature of the Omicron wave. Among others things, the team demonstrated that being infected with Omicron provided little immune protection against repeat infection with the same variant, even in people who were triple-vaccinated.





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Investigating the value and impact of shielding

The EVITE Immunity study investigated the effects of shielding in Wales, and whether the policy reduced COVID-19 infections, serious illness and deaths. It found that people advised to shield were more likely to be older, frailer and to live in a deprived area. The COVID-19 infection rate was higher among people who shielded, compared to the general population. However, rates of testing were also higher in this group, and deprivation and pre-existing health conditions may also have had an impact on infection rates. Deaths from all causes were higher among people who shielded, and they were more likely to use healthcare services than people in the general population. People's experiences of shielding varied widely, with some having a positive experience and others a negative one. The researchers also found that healthcare staff altered how they offered support to people who shielded – for example, they were more concerned about delays to treatment and limited access to healthcare in this group.

Effects of Body Mass Index (BMI) on vaccine effectiveness

People with a very high Body Mass Index (BMI) are known to be at increased risk of severe COVID-19. The SCORPIO study investigated the effect of BMI on COVID-19 vaccine effectiveness, including by analysing data from 50,000 people participating in a range of UK studies. The researchers aimed to establish biomarkers relating to nutrition and metabolism that would indicate likely vaccine response, and to test whether weight loss can improve vaccine responses in some cases. They found that people with a very high BMI were more likely to have no detectable antibodies against COVID-19 six months after their second vaccine dose. Antibody levels were restored by a third dose of vaccine, but declined more rapidly than in people with a lower BMI.

A number of NCS Immunity studies focused on the development of new tools and assays to help more rapid assessment of immune responses to either COVID-19 infection or vaccination.

A home test kit to detect T cells that can fight COVID-19

A new home test for T cells against COVID-19 was developed, with support from NCS Immunity, by Cardiff-based biotech company ImmunoServ. The test gives individuals the option of finding out their levels of T cells capable of fighting COVID-19, without visiting a clinic. It is particularly valuable for people who have a condition that affects their immune system, or who are being treated with drugs that suppress the immune response. It is the first kit of its kind to be made available anywhere in the world.

Developing a way of measuring antibodies against COVID-19 in saliva

Immunoglobulin A is an antibody that plays a key role in the immune function of mucous membranes, and is present in our saliva. It is particularly important as an early defence against viruses and other pathogens. A team at the University of Nottingham developed a test to measure levels of Immunoglobulin A able to fight COVID-19 in saliva samples. This test will be important for predicting future protection from re-infection.



©ImmunoServ

ImmunoServ's home test kit for T cells against COVID-19



Delivering rapid benefit to the population

A primary function of NCS Immunity was to feed important scientific findings directly to policy makers in order to shape the measures taken by the Government to protect the UK population during the pandemic. This was done in a variety of ways, including by liaising directly with groups like the Joint Committee on Vaccination and Immunisation, the Department of Health and Social Care, the Medicines and Healthcare products Regulatory Agency, the Department for Business, Energy and Industrial Strategy and the Office for Life Sciences, as well as with individual policy makers such as the Chief Medical Officer and Chief Scientific Advisor.

NCS Immunity's work helped to inform a number of UK Government policies, including the decision to offer a third primary vaccine dose to immunocompromised people and other at-risk groups, plans for the autumn 2022 vaccination programme, the decision to use mRNA vaccines for the booster programme, and decisions around eligibility for specific COVID-19 medicines. The programme's findings have been cited in NHS guidelines and used as evidence to respond to parliamentary questions.

For example, findings from the Vaccine Breakthrough Project led by Professor Sir Aziz Sheikh were presented to the Joint Committee on Vaccination and Immunisation, and informed the UK Government's strategy to roll out a second booster dose. Professor Iain McInnes, Principal Investigator for the OCTAVE and OCTAVE-DUO studies, was appointed Chair of the advisory group convened by the Government's Deputy Chief Medical Officer to identify those at highest risk of severe COVID-19.

The SIREN study played a key role in informing the UK's pandemic response, providing data to inform rapid real-time risk assessments. Its fortnightly reports on infection trends and COVID-19 variants were shared with all four Chief Medical Officers to inform risk assessment briefings provided to Government. The SIREN team regularly presented data to a range of key decision-making groups to inform national policy decisions.

"By channelling findings directly to the people making decisions about how to protect the population, we were able to ensure that our teams' discoveries had an impact as they emerged. The situation was changing rapidly and we were able to keep with that pace and deliver swift benefit to the public."

Professor Doreen Cantrell, Deputy Lead for NCS Immunity

Forging lasting collaborations

From the start, it was clear that the challenges posed by the pandemic would require an attitude of teamwork and collective problem-solving that went beyond the usual bounds of research activity. Individual researchers stepped outside their field and applied their expertise in new and unfamiliar contexts.

The SIREN study



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SIREN is inherently collaborative, involving 135 NHS hospital sites, all four UK public health agencies, and the 13 organisations that make up the SIREN Consortium. The PITCH and VIBRANT studies, which are part of SIREN, undertake additional sampling of SIREN participants to study T cell responses, as well as wider clinical and immunological characteristics. This joint working has brought together a wide range of expertise and laboratory testing capabilities, to make best use of the samples collected. For example, the team drew on the expertise of The Francis Crick Institute, Humoral Immune Correlates for COVID19 (HICC) and the G2P-UK National Virology Consortium for its analyses of reinfection and vaccine breakthrough. SIREN data is shared across all consortium members.

VIBRANT

The SIREN study gave rise to a number of separate studies, including VIBRANT, which integrated with various national platform studies to investigate why some people experience breakthrough infections or fail to mount an immune response, and whether there are specific factors associated with vaccine failure. The VIBRANT team works closely with the UK-Coronavirus Immunology Consortium, SIREN, ISARIC4C, the Post-hospitalisation COVID-19 study (PHOSP), the COVID-19 Genomics UK Consortium, and Humoral Immune Correlates for COVID19 (HICC).

The Vaccine Breakthrough Project

This study draws on data from the SAIL Databank, the Honest Broker Service in Northern Ireland, the ORCHID national surveillance dataset, and the EAVE II study in Scotland. Other collaborators include Public Health Scotland; the universities of St Andrews, Strathclyde, Swansea and Oxford; the Office for National Statistics; Queen's University Belfast; the Public Health Agency (Northern Ireland); Public Health Wales; the EAVE II Public Advisory Group and the DaC-VaP study. These connections not only enable access to a vast and diverse range of data and analysis techniques, but mean the team can feed results directly to those that rely on them to make ongoing decisions about protecting UK populations.



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"NCS Immunity saw researchers in very different fields join forces for the first time. They pooled resources and found ways of speeding up processes and avoiding duplication of effort. As such, we became more than a research programme – we became a community."

Professor Doreen Cantrell, Deputy Lead for NCS Immunity

DuRaCoV

This study works with partners in the UK, South Africa and Brazil to bring together data on a range of vaccines used to combat numerous COVID-19 variants, and to compare data across vaccinated and unvaccinated cohorts. The team also works closely with the CLARITY IBD and CML-Co-vax teams, to investigate how vaccine immune responses are impacted by treatments for inflammatory bowel disease and chronic myelogenous leukaemia (for example infliximab and tyrosine kinase inhibitor (TKI) therapy).

Asymptomatic COVID-19 in Education (ACE) Immunity Study

This study is a collaboration between the universities of Nottingham, Cambridge and Cardiff, established early in the pandemic to make use of the substantial asymptomatic cohorts of students identified by university in-house testing facilities. By pooling these cohorts and other resources, and comparing analyses with symptomatic cases, the team has been able to address important questions about protective immunity. In addition, each team has used its particular expertise to develop sophisticated tests to measure levels of antibodies and T cells, and to measure the capacity of these to neutralise COVID-19.



COVIG

This study is a collaboration between a number of departments and centres at the University of Oxford, as well as the MRC Human Genetics Unit in Edinburgh, The Pirbright Institute and the Office for National Statistics (ONS). The team saw an opportunity to make use of the fact that participants in the National COVID-19 Infection Survey (run by the University of Oxford and the ONS) had consented to be contacted about future studies. They asked participants to send a saliva sample so that possible genetic factors in COVID-19 immunity could be investigated, resulting in 4,775 samples being obtained. In a feat of logistics, they then convened a team of volunteer phlebotomists and medical students to drive over 9,000 miles around the UK to collect hundreds of blood samples for more sophisticated testing.

Anti-interferon autoantibodies in COVID-19

This study led to the establishment of the National Centre for Cytokine Autoimmunity, in order to help answer important questions about antibodies to interferon, as well as other key parts of the immune system. Through the Centre, the team worked alongside local and national partners including large UK-based COVID studies such as ISARIC4C and the Post-hospitalisation COVID-19 study (PHOSP).

“The partnerships and alliances that have been formed during the programme will certainly outlast it, and have delivered valuable lessons in how different skillsets, approaches and resources can be combined in a way that drives rapid progress.”

Professor Paul Moss, lead for the National Core Studies Immunity Programme.

Patient and public involvement and engagement

Many of the individual teams working as part of NCS Immunity were involving patients and the public to great effect from the very beginning of the programme. For example, people who were advised to shield at the start of the pandemic helped design the EVITE Immunity study, were involved in the funding bid, and then every aspect of the study thereafter. The BE-DIRECT study convened a panel of healthcare workers from minority ethnic groups, who were instrumental in shaping the study, co-authored papers and reviewed all project materials. Many teams engaged with relevant charities and patient groups and gave talks about their work in a range of settings.

To build on this work and provide a central focus on involvement, the British Society for Immunology was enlisted in March 2022 to provide dedicated support for patient and public involvement (PPI). They convened and coordinated a panel of ten patients and members of the public, whose role it would be to provide expertise, feedback and views to NCS Immunity teams.

"The PPI Panel really made me think about how I will manage certain aspects of future studies. In particular, I am rethinking my approach to participant feedback and communications, and plan to seek advance ethical approval for a regular newsletter for my next study. I am currently preparing a new grant application and have met with three participant representatives to talk through my plans, and they have agreed to review the grant application too."

Dr Laura McCoy, UCL



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"Following our meeting with the PPI Panel, we plan to amend our commercially available Immuno-T test to re-introduce combined antibody measurements (which will tell someone if they've previously been infected with COVID-19), and we are also reviewing the price of the product to make it more accessible."

Dr Martin Scurr, ImmunoServ Ltd

More than a dozen NCS Immunity teams met with the PPI Panel to gain invaluable perspectives on their work from this group of experienced public contributors with a wide range of backgrounds. Each two-hour meeting generated lively and thought-provoking discussion on the work being undertaken, possible new avenues to consider and any potential improvements.

"Meeting with the PPI Panel enabled us to 'sense-check' our own approach to participant involvement within the SIREN study. It reassured us that we were on the right track. The discussion gave us plenty of food for thought and prompted us to reflect on where SIREN sits within the wider landscape of COVID-19 studies."

Anna Howells, UK Health Security Agency



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The PPI Panel helped to produce a report* on patient and public involvement in COVID-19 research, featuring practical examples from four NCS Immunity studies. The report presents the experiences of researchers and public contributors side by side, and is intended as a tool to encourage more research teams to involve patients and the public in their work.

The PPI Panel also helped to develop and deliver a course for NCS Immunity researchers on patient and public involvement, which was delivered in March 2023.

*The report, *Patient and public involvement in COVID-19 research: bridging the gap between theory and practice* is available [here](#).

The UK Covid Vaccine Research Hub

NCS Immunity asked the British Society for Immunology to develop and run a website to provide up-to-date information and updates for the public, policymakers and researchers on COVID-19 vaccine research being conducted in the UK. The UK COVID Vaccine Research Hub (www.covidvaccineresearch.org) is now a highly successful website that reports on new developments in COVID-19 vaccine research as they happen, and signposts to the best sources of information for researchers, policy makers and the general public, including a section dedicated to people with weakened immune systems.



The UK Covid Vaccine Research Hub offers:

- A directory of nearly 500 published scientific papers and preprints from UK teams
- Over 100 news articles about developments in COVID-19 vaccine research in the UK
- Information on 45 UK COVID-19 vaccine studies
- Links to over 50 high quality resources on COVID-19 vaccines

The British Society for Immunology also gave specialist communications support to NCS Immunity researchers to help them communicate their work to policymakers, the media and the public to maximise the impact and reach of their findings. This included delivering public webinars and producing public-facing materials to rapidly communicate findings to as wide an audience as possible. Many individual researchers communicated their work via media interviews, or at national media briefings such as those organised by the Science Media Centre.



“The science was moving forward at such a rate, and we wanted to make sure people had access to the latest, evidence-based information and resources. The obvious solution was to create an online resource that was freely accessible, and would bring all the latest information together in one place.”

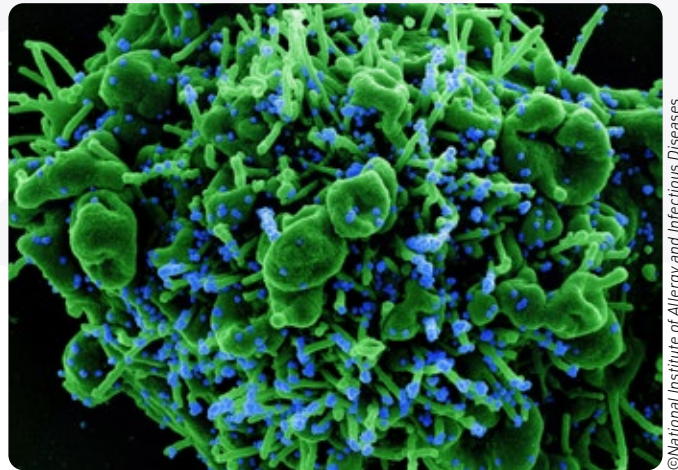
Professor Paul Moss, lead for the National Core Studies Immunity Programme.

Paving the way for future discoveries

From the outset, it was clear that it would be vital to consider the legacy of NCS Immunity every step of the way. The samples collected and the data generated had the potential to be of huge benefit to future research, and needed to be curated in a way that could easily be passed on.

To this end, a data harmonisation project was begun in early 2023 to bring together datasets of results from the different NCS Immunity teams into one vast database with the potential to deliver more accurate and detailed insights into how the immune system responds to COVID-19 vaccines. There are plans to publish a paper detailing this process, so that others in a position to do the same can follow suit.

A number of teams have found ways to continue and develop their work beyond March 2023, through new funding streams, long-term collaborations and by adapting their focus to look at areas such as Long Covid or other diseases. Already some of the work started under NCS Immunity is beginning to have an impact beyond COVID-19. The SIREN study, for example, has begun to use its cohort of around 45,000 healthcare workers to investigate the impact of flu and respiratory syncytial virus (RSV) on illness and staff absence in healthcare workers, in its new Flu and Winter Pressures sub-study.



©National Institute of Allergy and Infectious Diseases

We expect the scope of NCS Immunity's influence to continue expanding, as platforms and discoveries made by COVID-19 research teams begin to reap benefits in other fields such as cancer.

And lastly, the experiences that NCS Immunity researchers have gained from being part of the programme will doubtless leave them better equipped for the challenges they face in future. They will take with them a spirit of collaboration, determination and ingenuity that will invigorate scientific enquiry in years to come, reaping benefits for more people than ever before.

"Being part of NCS Immunity has been very rewarding and has helped me to form new collaborations, and it provided a stepping stone to my recently awarded MRC Clinician Scientist post."

Dr Helen Parry, University of Birmingham (Chronic Lymphocytic Leukaemia study)

"NCS Immunity gave me a great platform to connect with researchers in a field that was new to me (my background is in veterinary parasitology). It introduced me to novel technologies and linked me up with the British Society for Immunology, which in turn gave me a new appreciation for public engagement."

Dr Eleanor Karp-Tatham, University of Oxford (COVIG study)

"Being part of the NCS Immunity team has allowed me to be on the front line during the challenging times of the pandemic. From training in phlebotomy to collecting blood samples from participants, to then conducting complex tests in the lab, I have learned some valuable skills which have boosted my knowledge and experience within research."

Georgina Hopkins, University of Nottingham (ACE Study)



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