

National Institute for Health Research (NIHR) – Written evidence (COV0041)

The Department of Health and Social Care invests over £1 billion a year in health and care research through the National Institute for Health Research (NIHR) to improve the health and wealth of the nation.

How the NIHR has responded to COVID-19

The NIHR has played and continues to play a critical role in prioritising, funding and delivering research into COVID-19. This submission focuses on areas defined for this Inquiry.

1. Prioritising urgent clinical research

To ensure the best use of NHS resources for clinical research during the acute phase of the pandemic, the NIHR established a single UK-wide process to prioritise COVID-19 research as Urgent Public Health Research. This process covered funded studies (whether funded by the public sector, industry or charities).

Through this process the NIHR Clinical Research Network is providing support to expedite delivery of urgent public health research, including phase II and phase III clinical trials, by fast tracking the local set-up, management and delivery of COVID-19 studies and placing them onto the NIHR CRN Portfolio. Early in the pandemic a decision was taken to pause the set-up of non-urgent studies in the CRN. The UPH system ensured that recruitment would continue for urgent studies. This system also ensures that these studies will be supported to recruit during a possible second wave, when other studies may need to be paused again.

Over 100,000 participants have been enrolled by NIHR in urgent COVID19 research studies. A total of 48 studies that will deliver an impact within 12 months have been prioritised (<https://www.nihr.ac.uk/covid-studies/>). The system was designed initially for studies on therapeutics and vaccines. In May 2020 the decision was taken to extend the remit so that mental health studies are eligible for UPH badging. Two such studies have been approved to date.

Now that the numbers of new COVID-19 cases have declined substantially, the NIHR is working towards the restoration of a diverse and active portfolio of research funded and/or supported by the NIHR – including both non-COVID-19 research and important COVID-19 research which does not meet our urgency criteria. To help initiate this process, the NIHR has developed a 'Framework for restart' (<https://www.nihr.ac.uk/documents/restart-framework/24886>), which is a guidance document to support local decision-making.

2. Funding COVID-19 research in partnership with UKRI

The NIHR and UKRI have committed £24.6 million to UK researchers through a joint Rapid Response Call run during February and March 2020. Twenty-seven awards were made in response to this call: four on vaccines; four on therapeutics; four on diagnostics and underpinning platforms; eight on epidemiology; and seven on social science. All have a delivery date of 12 months or less.

Since early April the NIHR and UKRI have been running a Rapid Response Rolling Call for research (delivering within 12 months) that could make a significant contribution to the understanding, prevention and/or management of the COVID-19 outbreak. The selection panel meets weekly to consider applications.

As part of the Rolling Call, NIHR has published a number of highlight notices to seek research proposals on high-priority areas, and separate subpanels have been set up to consider applications.

- COVID-19 and ethnicity: Emerging evidence of an association between ethnicity and Covid-19 incidence and adverse health outcomes led to a highlight notice in April for research proposals to further understanding of potential differences in risk for ethnic groups, which groups are at greatest risk of a range of adverse outcomes and, based on that understanding, what can be done to reduce morbidity and mortality. Five studies have been selected for funding.
- Transmission, risk factors, seroprevalence and priority groups: In May, two highlight notices were published inviting proposals in these areas. The first notice identified the need for further rapid research using epidemiological methods to determine risk factors for transmission, which groups are most likely to become infected, and in what environments transmissions occur. Research applications were invited to investigate the routes of transmission in different environments and groups. The second notice called for further research with children, health and social care workers, and residents in nursing and residential care homes. Four applications have been selected for funding.
- Mental health: A highlight notice was published in June for research proposals with potential for significant public mental health impact and to encourage proposals focussing on preventative approaches/interventions. The aim is to reduce the emergence of new, and exacerbation of existing, mental health problems, and to improve outcomes for those whose mental health has already been adversely impacted by the COVID-19 pandemic. Applications are being assessed in early July.

So far 23 projects have been agreed for funding through the Rolling call. Substantial investments in immunology and in the longer-term effects of COVID-19 on patients are being made. The call closes to applications at the end of June 2020. A list of all projects from the rapid call and those from the rolling call currently in the public domain is at Annex A. An updated list of the funded projects will be sent to the Committee when the call ends.

3. Infrastructure

The NIHR also funds infrastructure to provide capacity to support high-quality early translational, clinical and applied research. This infrastructure includes:

- NIHR Biomedical Research Centres (BRCs) based within our leading NHS and University partnerships that drive progress on innovation and translational research in biomedicine into NHS practice;
- NIHR Clinical Research Facilities (CRFs) providing the dedicated purpose-built facilities that are necessary to support high intensity world-class early translational (experimental medicine) research to translate scientific advances into benefits for patients.

These centres and facilities are supporting the early phase trials to rapidly assess new candidates as treatments or vaccines for COVID-19.

The Clinical Research Network (CRN) provides the infrastructure to support the set-up and timely delivery of commercial and non-commercial studies and trials throughout England, enabling patients and health professionals to participate in relevant research. The CRN provides efficient support for the initiation and delivery of funded research, including providing services to assist industry and contract research organisations. The NIHR CRN provides capacity to support clinical studies and trials, across the country (outside of the traditional research centres) as has been pivotal in supporting the delivery of numerous clinical trials and studies for COVID-19 including the Phase III platform trials such as RECOVERY.

The NIHR Applied Research Collaborations have been contributing to research and service change, evaluating newly emerging service models and reconfigurations, enhancing the ability of the NHS to deliver effective care during the pandemic and develop an evidence base to support recovery and learning in the health and care system.

Analytical and clinical evaluation of diagnostics for COVID19 in hospital and community settings is being supported by a new platform (CONDOR) developed by the NIHR Medtech and In vitro diagnostics Co-operatives.

4. NIHR Health Protection Research Units

DHSC provides long term support to a number of NIHR Health Protection Research Units (HPRUs), each a partnership between a university and Public Health England, with additional collaborating institutions. These Units undertake multi-disciplinary research to inform the delivery of PHE's objectives and functions for the protection of the public's health. The NIHR has 14 specific HPRUs which are funded for five years to research high priority areas, including: antimicrobial resistance; emerging infections; emergency preparedness, resilience and response and immunisation. They also retain a responsive research capacity in the event of a major health protection incident and to respond to emerging health protection research requirements.

The HPRUs are undertaking a broad portfolio of research in response to the COVID-19 pandemic. Five key units are making a particularly significant contribution to COVID-19 research. These are:

- NIHR HPRU in Emergency Preparedness and Response (King's College London)
- NIHR HPRU in Modelling Methodology (Imperial College London)
- NIHR HPRU in Emerging and Zoonotic Infections (University of Liverpool)
- NIHR HPRU in Respiratory Infections (Imperial College London)
- NIHR HPRU in Behavioural Science and Evaluation (University of Bristol)

5. Rapid Prioritisation Process for NIHR Policy Research

A rapid prioritisation process has been developed for the NIHR Policy Research Programme (PRP) to assess requests for policy research and analysis related to immediate COVID-19 policy questions from within the Department of Health and Social Care and ALBs, as well as suggestions for research from Policy Research

academics. The requests and suggestions are currently reviewed on a weekly basis. A range of projects have been approved through this process, with the titles published on the NIHR website: <https://www.nihr.ac.uk/documents/policy-research-programme-covid-19-research/24757>.

6. NIHR Recovery and Learning call / PRP Recovery, Renewal, Reset call

The NIHR has launched a call for research to inform recovery and learning from and responses to the COVID-19 pandemic. This extends across NIHR's Research Programmes and includes an NIHR Policy Research Programme initiative to inform national policies for recovery, renewal and reset of the health and care system.

7. Repurposed sleeping contracts, ISARIC, GenOMICC

The NIHR is also supporting either through direct funding or co-funding and/or through the Clinical Research Network a number of other studies. These include:

- a number of sleeping contracts set up following the Swine-flu pandemic have been rapidly adapted for COVID-19 and activated.
- ISARIC - Coronavirus Clinical Characterisation Consortium (ISARIC-4C) study – 'Clinical Characterisation Protocol for Severe Emerging Infection' uses a UK-wide consortium to gather patient data and samples to understand disease mechanisms and individual susceptibility.
- GenOMICC (Genetics of Susceptibility and Mortality in Critical Care) study, which will recruit up and examine the genetic code of up to 20,000 people currently or previously in an intensive care unit with coronavirus, and 15,000 individuals who have mild or moderate symptoms. Data from patients' genomes will also be linked to virus genome data collected by the COVID-19 Genomics UK Consortium (COG-UK) viral sequencing programme.

8. Global Health Research and International Collaboration

The NIHR has launched the Global Effort on COVID-19 Health Research funding call to tackle COVID-19 in low- and middle-income countries (LMICs), in partnership with UKRI. This call will use ODA (Official Development Assistance) research funding to support applied health research to understand the pandemic and mitigate its health impacts in LMICs.

The NIHR is also supporting a number of other funding calls with global partners focusing on COVID-19 research in LMICs. The NIHR has contributed to efforts by the Coalition for Epidemic Preparedness and Innovation (CEPI) to fund and coordinate vaccines research, and to an emergency call for research in sub-Saharan Africa and capacity strengthening for pandemic responses through the European and Developing Countries Clinical Trials Partnership.

In addition, the NIHR is working with the Department for International Development on a rapid response research call through its Research for Health in Humanitarian Crises (R2HC) partnership, to support the COVID-19 response in humanitarian settings.

9. Patient and public involvement, engagement and participation in research

Engaging and involving patients, carers and the public in order to improve the reach, quality and impact of research is a fundamental operating principle of NIHR. New commitments for patient and public engagement during covid-19 pandemic were published. <https://www.nihr.ac.uk/news/nihr-reaffirms-its-support-for-patient-and-public-involvement-engagement-and-participation-during-the-covid-19-pandemic/24641>

The NIHR has published information about COVID-19 for patients in the Be Part of Research section of its website, (<https://bepartofresearch.nihr.ac.uk/>) including how to get involved and information on supporting research in Black, Asian and minority ethnic communities (<https://www.bepartofresearch.nihr.ac.uk/COVID-19-Research/COVID-19-for-BAME-communities/>).

The NIHR has also supported the development of a website by UK Research and Innovation - Coronavirus: the science explained (<https://coronavirusexplained.ukri.org/en/>)- that lays out the evidence and the facts about the virus, the disease, the epidemic, and its control.

NIHR Research in Key Areas of interest to the S&T Committee

1. Virology and research needs

- The Rapid Response Call is funding a study in Oxford which aims to identify cellular mechanisms for blocking virus transmission. This work may inform production of therapeutic models and the design of vaccines.

2. Epidemiology, modelling and testing

- UKRI/NIHR are funding 'VirusWatch', a large-scale population study to understand rates and routes of transmission, and rates of healthcare-seeking, hospitalisation and death.
- The NIHR Health Protection Research Unit in Emergency Preparedness and Response undertakes behavioural research including how the public responds to emergencies and how to communicate public messages effectively. One study looked at evidence of factors affecting adherence to quarantine during infectious disease outbreaks and how this might be increased.
- UKRI/NIHR are funding a Diagnostic Research and Evaluation Platform (CONDOR), which provides a national mechanism for accelerating promising COVID-19 diagnostics, developed by the life sciences industry, to real-world use.

3. Vaccines and Treatments

- Over 100,000 participants have been enrolled by NIHR in urgent COVID19 research studies.
- Funded Oxford University and Imperial College vaccines trials via the UKRI/NIHR Rapid Research call. Oxford vaccine trials are now in phase II/III and Imperial vaccine trials are in Phase I.
- The NIHR CRN has been working with the Vaccines Task Force to support preparations for large scale recruitment into multiple vaccines trials later in the year.
- The NIHR is working with NHS Digital to develop a permission-to-contact (about research) register system for people registering for COVID-19 testing. This should enable large scale vaccine trials to get underway more rapidly.
- UKRI/NIHR funded world's biggest and fastest recruiting phase III trial of repurposed drugs (RECOVERY trial) which has demonstrated that dexamethasone significantly reduced mortality in hospitalised patients, and that hydroxychloroquine has no effect.
- The NIHR is supporting the testing of convalescent plasma in two trials (REMAP-CAP and RECOVERY) as a potential treatment in both ICU and acute care settings.

4. Technology and global preparedness

- A COVID-19 Symptom Tracker App has been developed by researchers at King's College London and the health data science company ZOE. NIHR Guy's and St Thomas' Biomedical Research Centre is involved in this work.

- Through the UK Aid budget the NIHR is supporting a variety of COVID-19 relevant research, including work on applying genomics and modelling to virus control in East Africa. This is informing policy development in Kenya.

ANNEX A

Studies funded through the NIHR/UKRI Rapid Response and Rolling Calls (to be updated)

Virology and research needs

- The nature of the SARS-CoV-2 virus, including its structure, genome, antigenic properties and likely origin.

Sumana Sanyal University of Oxford	A protease activity profiling strategy to inhibit cell-to-cell transmission of SARS-CoV-2
Allan Bennett Public Health England	Understanding environmental and airborne routes of transmission

Epidemiology, modelling and testing

- The modes of transmission of the virus among people, including modelling of the epidemiology and the impact of social-distancing policies on the spread.
- Diagnostic tests for the virus, including PCR (nucleic acid) tests and antibody tests: their accuracy, reliability, supply and distribution.

Diagnostics:

Richard Tedder Imperial College London	nCoV: Serological detection of past SARS-CoV-2 infection by non-invasive sampling for field epidemiology and quantitative antibody detection
Richard Body University of Oxford	COVID-19 National Diagnostic Research and Evaluation Platform (CONDOR)

Population surveillance

Andrew Hayward University College London	Virus Watch: Understanding community incidence, symptom profiles, and transmission of COVID-19 in relation to population movement and behaviour.
Eleni Nastouli University College London	Healthcare Workers: an in depth virological analysis and behavioural study during the outbreak
Matthew Snape University of Oxford	Coronavirus STORY (Serum Testing of Representative Youngsters)
Aziz Sheikh University of Edinburgh	Early Assessment of COVID-19 epidemiology and Vaccine/anti-viral Effectiveness (EAVE II)
Christoph Lees Imperial College	nCoV: A global registry of women affected by COVID-19 in pregnancy, understanding natural history to guide treatment and

London	prevention
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Transmission and mathematical modelling:

John Edmunds London School of Hygiene and Tropical Medicine	Understanding the dynamics and drivers of the COVID-2019 epidemic using real-time outbreak analytics
Anne Presanis MRC Biostatistics Unit, University of Cambridge	Estimating severity from multiple data sources using Bayesian evidence synthesis
Leon Danon University of Exeter	Spatial heterogeneity in transmission and the impact of interventions: a mathematical modelling approach
Martie van Tongeren University of Manchester	Chinese gig workers: unsung heroes and a strategic role in national response to the COVID-19 epidemic
Michael Tildesley University of Warwick	Mathematical modelling and adaptive control to inform real time decision making for the COVID-19 pandemic at the local, regional and national scale

Vaccines and treatments

- Vaccines, including obstacles to be overcome in the case of SARS-CoV-2 and methods for speeding up and increasing the success rate of vaccine development.
- Therapeutic treatments for COVID-19, including antiviral drugs, monoclonal antibodies and convalescent plasma.

Vaccines:

Vaccine studies	
Sarah Gilbert University of Oxford	nCoV: Rapid Clinical Development of ChAdOx1 nCoV-19
Robin Shattock Imperial College London	saRNA SARS-CoV-2 vaccine
Alexander (Sandy) Douglas University of Oxford	Enabling availability for clinical use of 1 million doses of chimpanzee adenovirus-vectored COVID-19 vaccine by summer 2020

Underpinning assays and animal models	
Miles Carroll Public Health England	Development of an NHP model of infection and ADE with COVID-19 (SARS-CoV-2)

Treatments:

Clinical trials	
Peter Horby University of Oxford	RECOVERY Trial*
Christopher Butler University of Oxford	PRINCIPLE Trial
Therapy development	
Xiao-Ning Xu Chelsea and Westminster Hospital, Imperial College London	nCoV: Developing CoV-bnMABs for therapy of highly pathogenic coronaviruses including SARS-CoV-2
Stuart Dowall Public Health England	Development of an ovine polyclonal immunoglobulin therapy against COVID-19.
Ultan Power Queen's University Belfast	Repurposing FDA-Approved Drugs for Treatment of 2019-nCoV-induced Disease
Underpinning	
Kenneth Baillie University of Edinburgh	ISARIC - Coronavirus Clinical Characterisation Consortium (ISARIC-4C)

*Note: Convalescent plasma arms of RECOVERY and another phase III platform trial, REMAP-CAP, have been funded by NIHR but do not constitute an award made through the UKRI-NIHR joint call.

Other – behaviour and social science research:

Isabel Oliver Public Health England	A mixed-methods evaluation of advice on isolation and health-seeking to contain transmission
Jane Duckett University of Glasgow	Understanding Chinese government containment measures and their societal impacts
Lucy Yardley University of Southampton	Rapid co-design, implementation and evaluation of a digital behaviour change intervention to improve hand hygiene and limit spread of the COVID-19 outbreak
Sally Sheard University of Liverpool	nCoV: Understanding the dynamics of policy development and healthcare worker behaviour in the UK during the Covid-19 public health emergency
Trudie Lang The Global Health Network, University of Oxford	Strengthening & Accelerating the Global Research Response to COVID-19 by Sharing Methods and Knowledge Between Countries, Networks and Organisations
Ethnicity and COVID-19:	
Five studies have been funded. Details are to follow.	
Mental Health	
Mental health applications are being considered in early July 2020	
Other – health and care	
Irene J Higginson, King's College London	Rapid evaluation of the COVID-19 pandemic response in palliative and end of life care: national delivery, workforce and symptom management (CovPall)