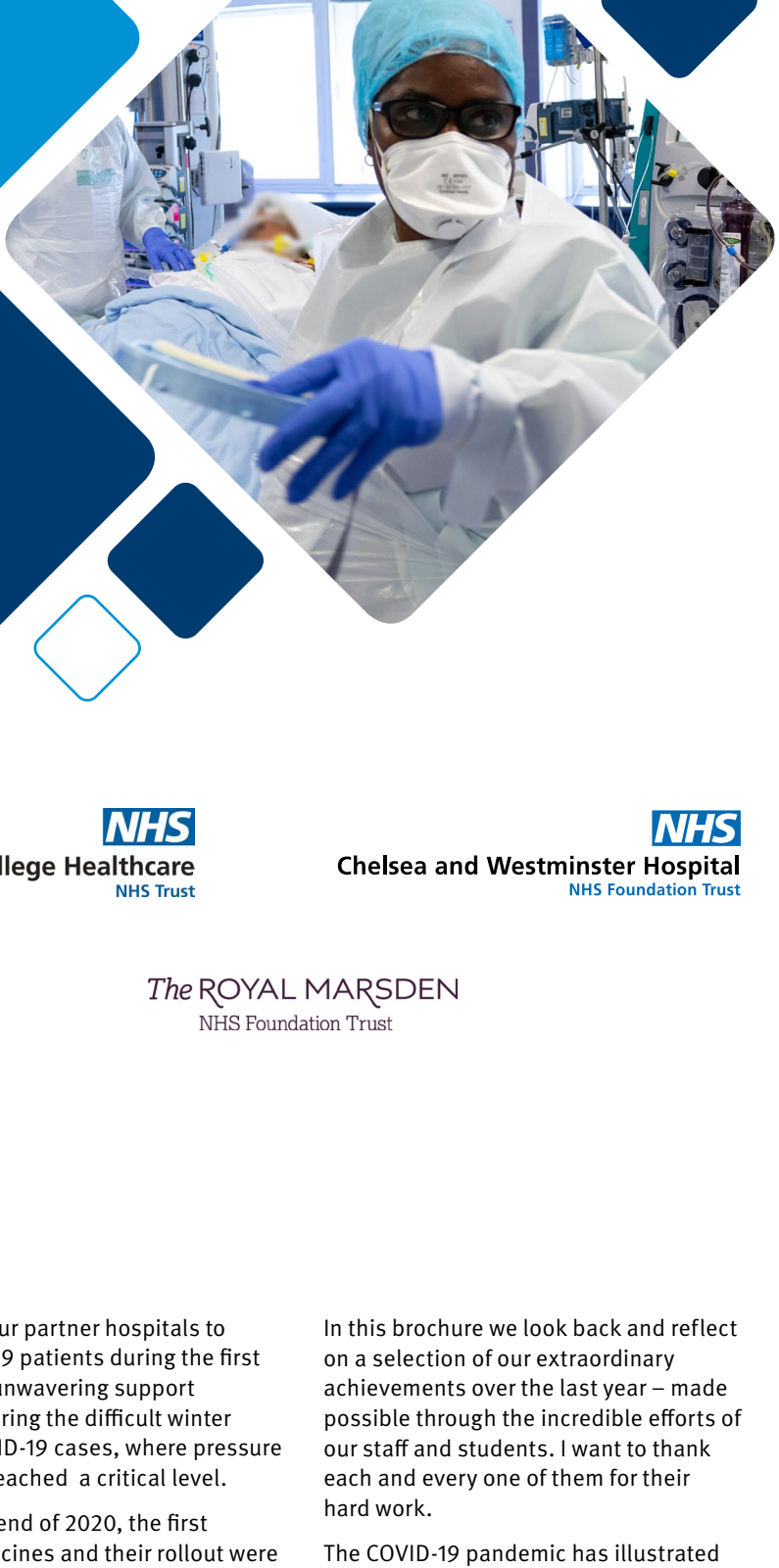


Our  
COVID-19  
response

Reflecting on an  
extraordinary year



Imperial College  
London

Imperial College Healthcare  
NHS Trust

Chelsea and Westminster Hospital  
NHS Foundation Trust

ICRC The Institute of Cancer Research

The Royal Marsden  
NHS Foundation Trust

Introduction

Just over a year ago, the first cases of COVID-19 were reported and as they rapidly increased, the UK was placed into its first lockdown.

During this uncertain and worrying time, Imperial College Academic Health Science Centre (AHSC) took swift and determined action to utilise the academic and clinical abilities of its partners to respond robustly and effectively to the pandemic.

Since then, the AHSC's COVID-19 research and clinical commitment has had a significant impact on both national and a global scale.

Our researchers have informed the government's response to both the pandemic and the lifting of lockdown restrictions. Our engineers have developed a rapid COVID-19 test to diagnose the virus at the bedside.

We have carried out clinical trials of interventions in critically ill COVID-19 patients, reducing mortality and length of hospital stay. We described the rare but serious COVID-19-related inflammatory syndrome in children, which we have explored its diagnosis and treatment. We have led a nationwide programme on the prevalence of SARS-CoV-2, the virus responsible for the pandemic, and used new technology to push for a vaccine. These are just a few examples of our work.

The AHSC's partners have been able to respond to each other's needs by providing additional staffing support as demands on the NHS increased. Around 200 of our clinical academics volunteered to be seconded to the

frontline of our partner hospitals to treat COVID-19 patients during the first waves. This unwavering support continued during the difficult winter surge of COVID-19 cases, where pressure on the NHS reached a critical level.

Towards the end of 2020, the first COVID-19 vaccines and their rollout were approved and our staff and students have been facilitating this by working with NHS colleagues to vaccinate healthcare workers in hospitals.

The vaccines, alongside other key medical and scientific developments, provide us with hope. As we move towards the easing of restrictions and containing virus transmission, it is timely to look back on this extraordinary year.

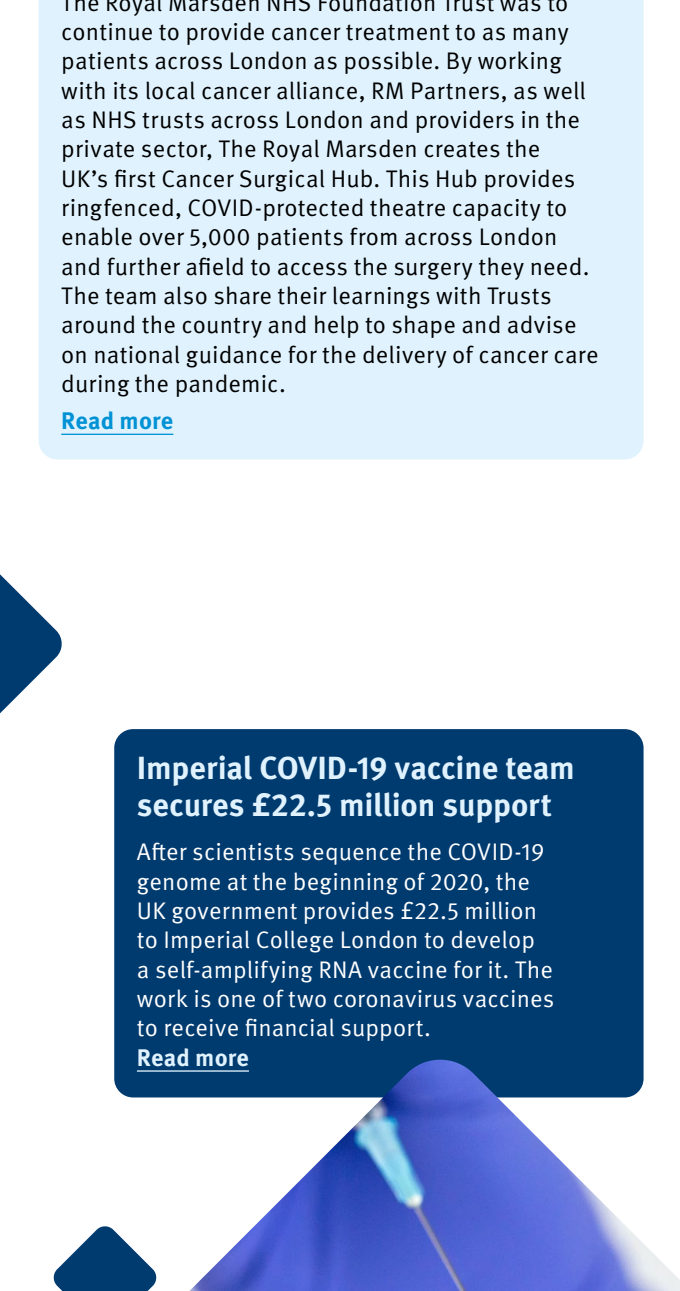
The year has resulted in heavy loss of life, devastated communities and has put unprecedented strain on our healthcare system and economy.

Further challenges lie ahead and the AHSC is leading efforts to address these. We will be using our vaccine technology to respond to new and more infectious mutations of the virus, investigating more effective treatments and carrying out work to better understand and treat long COVID-19.

In this brochure we look back and reflect on a selection of our extraordinary achievements over the last year – made possible through the incredible efforts of our staff and students. I want to thank each and every one of them for their hard work.

The COVID-19 pandemic has illustrated clearly to me the importance of our partnership, and how collaboration is vital in tackling this global health crisis at pace and at scale.

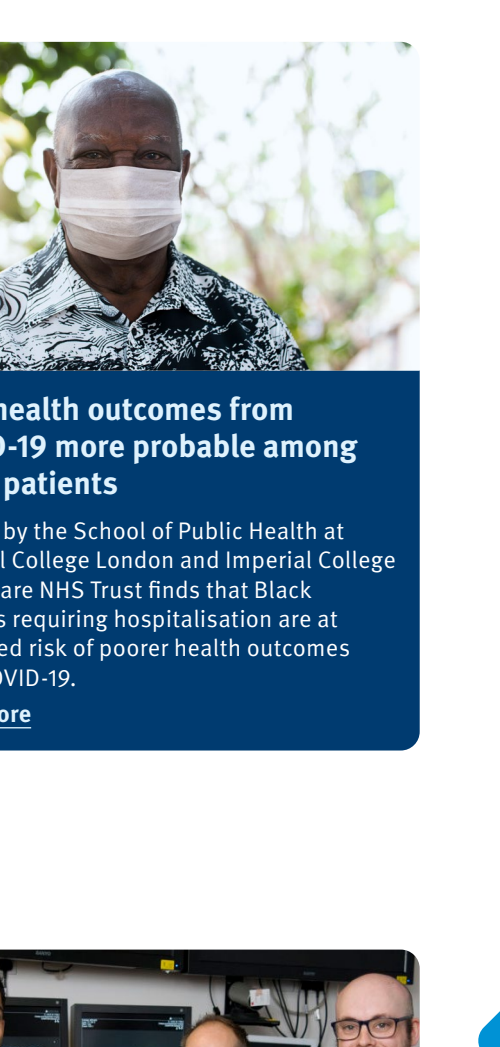
Professor Jonathan Weber  
Director of the Imperial College  
Academic Health Science Centre  
March 2021



Imperial researchers model likely impact of public health measures

Researchers from Imperial College London are at the forefront of the UK government's response. Researchers in the MRG Global Infectious Disease Analysis (GIDA)/I-DIEA team model the likely spread and impact of COVID-19 and their data informs the UK government's policy, as well as that of other governments around the world. Over the coming year, the team produce more than 40 vital reports covering the impact of non-pharmaceutical interventions and the impact of the virus on disadvantaged and vulnerable communities.

[Read more](#)

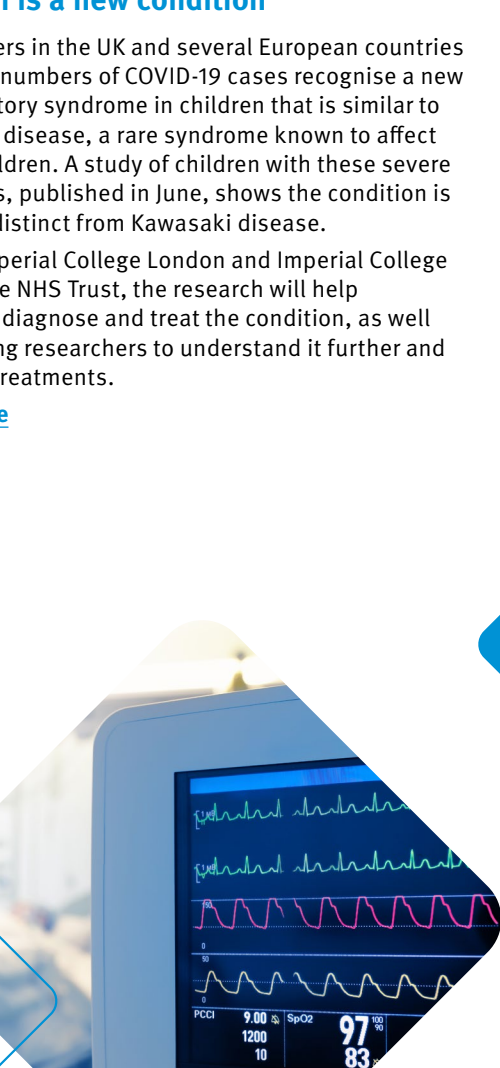


Researchers find being male or overweight can lead to more serious COVID-19 hospital admissions

Work begins at Imperial College London to learn more about the SARS-CoV-2 virus – the virus that causes coronavirus disease. The SARICA/C study is the largest European study to systematically collect and analyse thousands of samples from COVID-19 patients to learn more about the natural history of the disease and how the virus causes it. By July, more than 66,000 COVID-19 patients are enrolled across the UK.

The first analysis from the SARICA/C study finds that being male or obese reduces the chance of survival from severe coronavirus disease (COVID-19).

[Read more](#)



Imperial begins trials of Oxford COVID-19 vaccine at Imperial Centre

Imperial College London and Imperial College Healthcare NHS Trust join an Oxford-led clinical trial to begin testing a vaccine against COVID-19 in healthy volunteers. The team enables researchers to assess if people can be vaccinated against COVID-19 in the community, which is being co-developed with AstraZeneca. The trial provides the first evidence of the safety of the Oxford/AstraZeneca vaccine and its ability to generate good immune responses against the virus.

[Read more](#)



Poor health outcomes from COVID-19 more probable among Black patients

A study by the School of Public Health at Imperial College London and Imperial College Healthcare NHS Trust finds that Black patients requiring hospitalisation are at increased risk of poorer health outcomes from COVID-19.

[Read more](#)

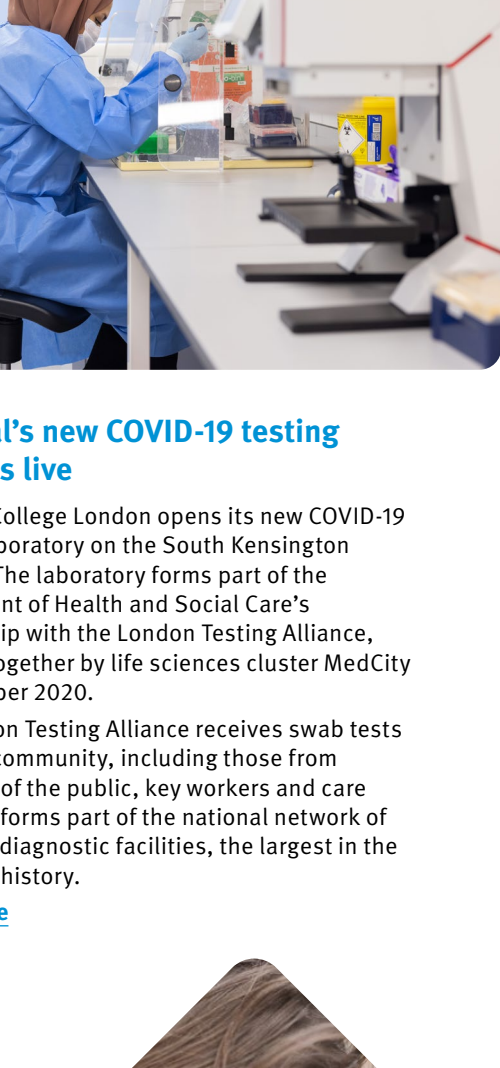


Scientists develop AI to help cancer patients during the COVID-19 pandemic

A study using artificial intelligence (AI) to help analyse cancer patients' scans during the pandemic is launched by The Royal Marsden NHS Foundation Trust, the Institute of Cancer Research, London, and Imperial College London. People with cancer are at an increased risk of developing COVID-19 and are more vulnerable to serious diseases due to their weakened immune systems, while people with lung cancer – one of the most common cancers worldwide – are particularly vulnerable as the virus severely impacts the respiratory system.

The researchers use AI tools to analyse scans to help clinicians prioritise which patients to get treatment first and infection or targeting cancer treatment side-effects.

[Read more](#)



Researchers outline how COVID-19 changes to lead to worsening health inequalities

A study from the School of Public Health at Imperial College London and Chelsea and Westminster NHS Foundation Trust finds that the pandemic further widens existing health inequalities, such as access to services for clinical support.

[Read more](#)

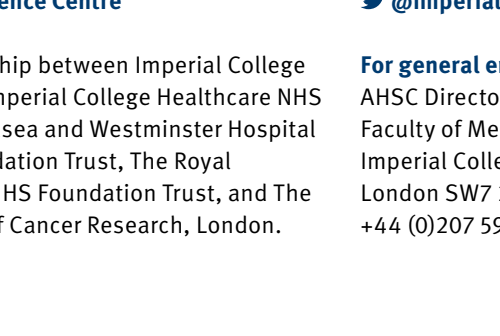


Researchers find Kawasaki-like syndrome linked to COVID-19 in children is a new condition

Researchers in the UK and several European countries with high numbers of COVID-19 cases recognise a new inflammatory syndrome in children that is similar to Kawasaki disease, a rare syndrome known to affect young children. A study of children with these severe symptoms, published in June, shows the condition is new and distinct from Kawasaki disease.

Led by Imperial College London and Imperial College Healthcare NHS Trust, the research will help clinicians diagnose and treat the condition, as well as enabling researchers to understand it further and find new treatments.

[Read more](#)



March 2020

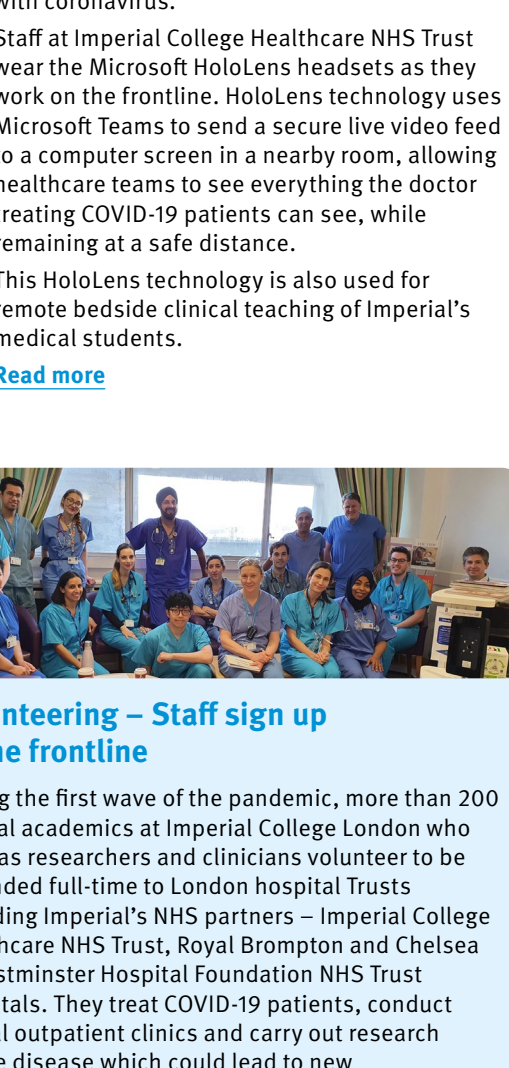


Cancer Hub delivers treatment during coronavirus pandemic

When the COVID-19 pandemic hit, the aim of The Royal Marsden NHS Foundation Trust was to continue to provide cancer treatment to as many patients across London as possible. By working with its local cancer alliance, RM Partners, as well as NHS trusts across London and providers in the private sector, The Royal Marsden creates the UK's first Cancer Surgical Hub. This Hub provides ringenced, COVID-protected theatre capacity to enable over 5,000 patients from across London and further afield to access the surgery they need. The team also share their learnings with trusts around the country and help to shape and advise on national guidance for the delivery of cancer care during the pandemic.

[Read more](#)

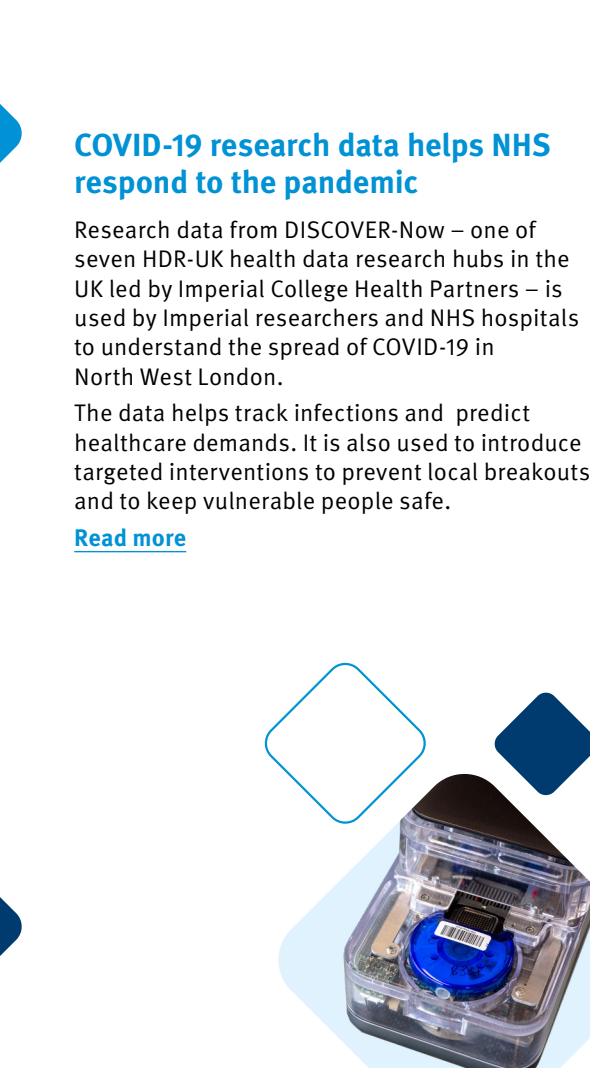
April 2020



Imperial COVID-19 vaccine team secures £22.5 million support

After scientists sequence the COVID-19 genome at the beginning of 2020, the UK government provides £22.5 million to Imperial College London to develop a self-amplifying RNA vaccine for it. The work is one of two coronavirus vaccines to receive financial support.

[Read more](#)



Home testing for coronavirus tracks levels of infection in the community

The Real-time Assessment of Community Transmission (REACT-1) programme, led by the UK Health Security Agency, the Institute of Cancer Research, London, and Imperial College Healthcare NHS Trust, helps to improve understanding of how many people are currently infected with COVID-19. It also indicates how many have already been infected and recovered since the COVID-19 outbreak began by looking for markers – virus antibodies – of previous infection. The high-profile findings from the REACT programme continue to be used to guide the government's response to the pandemic.

[Read more](#)

May 2020



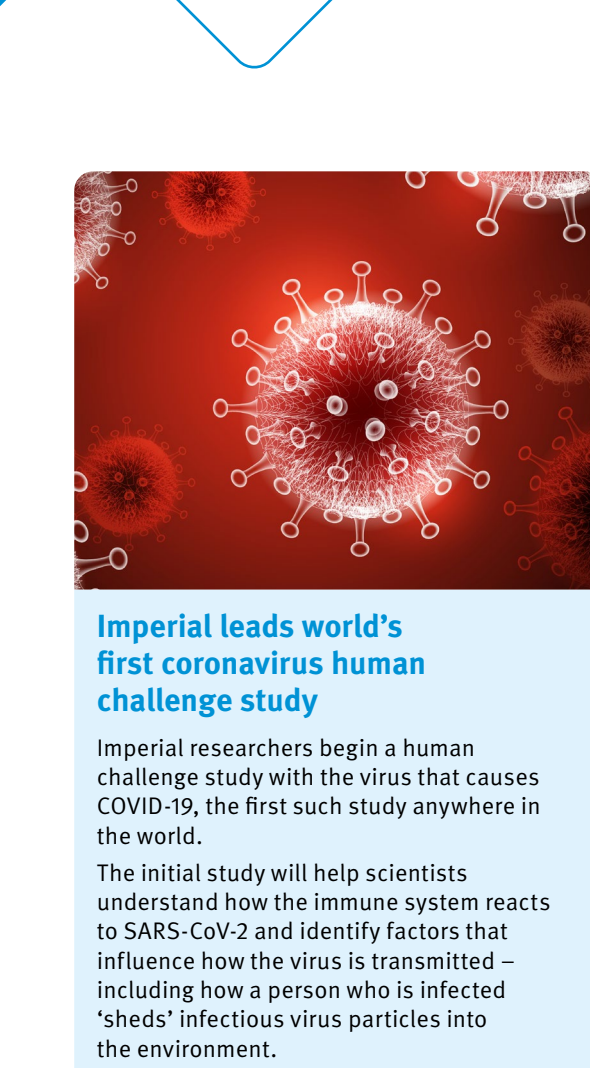
Trust use mixed-reality headsets in hospitals to help protect doctors

Clinicians and researchers lead a project to use mixed-reality headsets in hospitals to help keep doctors safe as they treat patients with coronavirus.

Staff at Imperial College Healthcare NHS Trust wear HoloLens mixed-reality headsets on the frontline. HoloLens technology uses Microsoft Teams to send a secure live video feed to a computer screen in a nearby room, allowing healthcare teams to see everything the patient or treating COVID-19 patients can see, while remaining at a safe distance.

This HoloLens technology is also used for remote bedside clinical teaching of Imperial's medical students.

[Read more](#)



Volunteering – Staff sign up to the frontline

During the first wave of the pandemic, more than 200 clinical and non-clinical staff from Imperial College London and Imperial College Healthcare NHS Trust volunteered as research workers and clinicians, volunteer to be seconded full-time to London hospital trusts including Imperial's NHS partners – Imperial College Healthcare NHS Foundation Trust, Chelsea & Westminster Hospital Foundation NHS Trust and Westminster Hospital Foundation NHS Trust. They treat COVID-19 patients, conduct virtual outpatient clinics and carry out research on the disease which could lead to new breakthrough treatments.

[Read more](#)

June 2020



COVID-19 research data helps NHS respond to the pandemic

Research data from DISCOVER-Now – one of seven HDR-UK health data research hubs in the UK led by Imperial College Health Partners – is used by Imperial researchers and NHS hospitals to understand the spread of COVID-19 in North West London.

The data helps track infections and the healthcare demands. It is also used to predict targets in interventions to prevent local outbreaks and to keep vulnerable people safe.

[Read more](#)

August 2020



90-minute COVID-19 tests: Government orders 5.8 million DnaNudge kits

The government places a £161 million order for 5.8 million high-speed DnaNudge COVID-19 test kits to be used in NHS hospitals from September. The tests, developed by an Imperial College London spin-out company, build on work carried out by electrical and biomedical engineers at the College. The COVID Nudge test is a rapid, accurate, portable, out-of-laboratory, sample-to-answer RT-PCR test that delivers results on the spot, at the point of need and in just over an hour.

Chelsea and Westminster NHS Foundation Trust and Imperial College Healthcare NHS Trust are early adopters of the technology.

[Read more](#)

September 2020



Steroid improves survival rates of critically ill COVID-19 patients

A major study finds that treating critically ill COVID-19 patients with the steroid hydrocortisone improves their chances of recovery.

The REMAP-CAP trial finds that patients requiring critical care support who are treated with a regular fixed dose of the steroid hydrocortisone for seven days have a better chance of recovery, compared with the patients who are not treated with the steroid. Imperial College Healthcare NHS Trust Hospitals are amongst the 88 UK hospitals taking part in the study.

[Read more](#)

November 2020



Imperial vaccine trial begins of the Janssen COVID-19 vaccine in West London

Researchers at Imperial College London and clinicians at Imperial College Healthcare NHS Trust begin testing a COVID-19 vaccine developed by the Janssen Pharmaceutical Companies of Johnson & Johnson on healthy volunteers.

The trial helps to provide evidence that a single-dose vaccine is 66 per cent effective against COVID-19, and offers complete protection against hospitalisation and death.

The government orders 30 million doses of the vaccine as it awaits regulatory approval from the Medicines and Healthcare Products Regulatory Agency (MHRA).

[Read more](#)

December 2020



Imperial College Healthcare NHS Trust reaches patient recruitment milestone

Imperial College Healthcare NHS Trust recruits more than 4,000 patients to COVID-19 Urgent Public Health (UPH) clinical research studies, putting the Trust among the top 10 recruiting sites for patient recruitment.

At the start of the pandemic, the National Institute for Health Research (NIHR) asked NHS Trusts, universities and other research organisations to prioritise particular studies and Imperial College Healthcare NHS Trusts were amongst those to be supported to COVID-19.

More than 20 UPH studies are currently underway at the Trust. These studies look at everything from potential new anti-viral treatments, population testing, further understanding of how the virus is transmitted to finding a vaccine that could prevent it, as well as validating testing to help pave the way for life to return to normal.

[Read more](#)

January 2021



Over 600 Imperial medical students sign up to support with COVID-19 vaccinations

As COVID-19 vaccine efforts step up across London, Imperial's medical students are amongst the many volunteers who are helping out.

Imperial's School of Medicine works alongside Chelsea & Westminster Hospital NHS Foundation Trust to offer medical students the opportunity to be part of the effort, managed by the Trust on behalf of the North West London vaccine programme. Since then, over 600 students have signed up to volunteer to vaccinate.

[Read more](#)

Imperial leads new consortium to study threat from new SARS-CoV-2 variant

Imperial College London researchers lead a new consortium of UK virologists studying the threat from new SARS-CoV-2 variants too quickly. The G2P-UK National Virus Consortium will study how mutations in the pandemic virus affect transmissibility, its severity of COVID-19 cases, and the effectiveness of vaccines and treatments.

Backed by £2.5m in government funding from UK Research and Innovation, the team, led by Imperial Professor Wendy Barclay from the Faculty of Medicine, will work alongside the COVID-19 Genomics UK (COG-UK) consortium and Public Health England to boost the UK's capacity studying newly identified virus variants and rapidly inform government policy.

[Read more](#)



Modelling England's route out of lockdown

A report from Imperial College London's School of Public Health GIDA/I-DIEA team highlights the need to ease lockdown restrictions too quickly. The team's work is one of the reports which has informed the government's 'roadmap' out of lockdown and modelled multiple scenarios for lifting non-pharmaceutical interventions under different vaccine rollout speeds.

[Read more](#)



Imperial's new COVID-19 testing lab goes live

Imperial College London opens its new COVID-19 testing laboratory on the South Kensington campus. The laboratory forms part of the Department of Health and Social Care's partnership with the London Testing Alliance, brought together by life sciences cluster MedCity in December 2020.

The London Testing Alliance receives swab tests from the community, including those from members of the public, key workers and care homes. It forms part of the national network of COVID-19 diagnostic facilities, the largest in the country's history.

[Read more](#)



REACT study expands to help better understand long COVID

A team of Imperial College London researchers is awarded £5.5 million from the UK Government to study Long COVID.

The research will involve studying more than 120,000 people to better understand why some people who are infected with the coronavirus have symptoms for several weeks or even months – a condition called Long COVID – while others don't. In doing so, the team hopes to find new ways to diagnose, support and effectively treat Long COVID, which may affect up to a quarter of people who have had the virus.

[Read more](#)



March 2021



Heart damage found in half of COVID-19 patients discharged after hospitalisation

A study led by researchers at Imperial College London finds that half of patients who have been hospitalised with severe COVID-19 have damage to their hearts. The damage includes inflammation of the heart muscle (myocarditis), scarring or death of heart tissue (infarction), restricted blood supply to the heart (ischemia) and combinations of all three.

The study involves 148 patients from six hospitals in London, including Imperial College London and Chelsea and Westminster Hospital NHS Foundation Trust. The study could be used to identify patients at higher or lower risk and suggest potential strategies that may improve outcomes.

[Read more](#)

Our work continues



Imperial College Academic Health Science Centre

A partnership between Imperial College London, Imperial College Healthcare NHS Trust, Chelsea and Westminster Hospital NHS Foundation Trust, and The Royal Marsden NHS Foundation Trust, and the Institute of Cancer Research, London.

For general enquires contact: AHSC Directorate, Faculty of Medicine, Imperial College London, London SW7 2AZ, +44 (0)207 594 1770

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@imperialahsc



North West London Pathology reaches testing milestone

North West London Pathology (NWLP) reaches the milestone of processing more than half a million COVID-19 tests, providing vital information to help hospitals and communities safe the ongoing timely isolation and management.

Delivering pathology services on behalf of Imperial College Healthcare NHS Trust, Hillingdon Hospital NHS Foundation Trust, and Chelsea and Westminster NHS Foundation Trust, across seven hospital sites and beyond, NWLP have processed 513,518 polymerase chain reaction (PCR) test samples for COVID-19 since 11 March 2020. These tests are the 'gold standard' for COVID-19 testing, providing accurate information about the COVID-19 status of patients and staff in North West London.

[Read more](#)



Outwork continues



Imperial College Academic Health Science Centre

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