

# Showcasing the UK's scientific contributions to tackling the COVID-19 pandemic

Summary report of the 2021 FORUM Sir  
Colin Dollery Lecture

### **The Academy of Medical Sciences**

The Academy of Medical Sciences is the independent body in the UK representing the diversity of medical science. Our mission is to promote medical science and its translation into benefits for society. The Academy's elected Fellows are the United Kingdom's leading medical scientists from hospitals, academia, industry and the public service. We work with them to promote excellence, influence policy to improve health and wealth, nurture the next generation of medical researchers, link academia, industry and the NHS, seize international opportunities and encourage dialogue about the medical sciences.

Opinions expressed in this report do not necessarily represent the views of all participants at the event, the Academy of Medical Sciences, or its Fellows.

This event was hybrid. In addition to in-person attendees (Annex-II), over 120 people joined us online. The event was held in accordance with UK COVID-19 guidelines in place at the time.

All web references were accessed in April 2022.

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# Executive summary

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**The arrival of COVID-19 in the UK in January 2020 presented an unprecedented and uncertain threat to the health and wellbeing of the public. The UK's public health and healthcare systems responded to the extraordinary challenge at great speed, with considerable innovation and rapid adoption of new practices in both primary and hospital-based care. Similarly, research funders and researchers across industry, academia and the NHS rapidly pivoted to focus their efforts on understanding the virus and identifying ways to detect, treat and prevent infection, supported by streamlined processes introduced by regulatory authorities.**

**Even so, the UK has been badly hit by the COVID-19 pandemic. There are lessons to be learned based not just on areas where the UK excelled but also on the situations where responses were not optimal, where the pandemic exposed pre-existing, systemic issues and inequalities in the practice of science or medicine, and the impact of the pandemic on the public.**

The 2021 FORUM Sir Colin Dollery Lecture featured a series of presentations and discussions on some of the scientific, medical and health community's most important contributions to tackling the COVID-19 pandemic, as well as the lessons that could be learned to shape future scientific, medical, and regulatory practice.

Some of the key contributions highlighted included the implementation of new care practices, rapid identification of effective treatments for severe disease, and the development of effective vaccines at unprecedented speed, which cut mortality rates despite soaring case numbers. Also discussed was the introduction and development of virtual primary and secondary care services, and the rapid appraisal of new technologies and implementation within the health service.

Notably, many new practices addressed issues that existed before COVID-19. The pandemic catalysed changes that had already been identified as desirable but had not yet been achieved. The pandemic also highlighted systemic problems in clinical research and beyond such as lack of inclusion and engagement with many underserved demographics and a lack of inclusion of pregnant women in clinical trials. The response to the pandemic can therefore provide key learnings for enabling change across other areas of biomedical and health research, policy, and practice.

Discussions highlighted some key factors associated with the scientific contributions to the COVID-19 pandemic response in the UK. These included increased levels of communication and data sharing among stakeholders, close alignment of activities towards common goals, and strong commitments to working collaboratively. This spirit of cooperation extended across national borders; disciplinary boundaries; and the academic, health service and industry sectors.

There was a consensus that the beneficial changes of the past 18 months should be sustained, and shortcomings exposed by the pandemic addressed. Key themes included:

- **Clinical research:** More strongly embedding clinical research in the healthcare system, with patients routinely offered the opportunity to take part in research, both for new therapeutics and vaccines but also to improve care provision and provide essential data sets for research.
- **Digital services:** Extending the trustworthy use of digital and data-driven technologies to make clinician–patient contacts more productive and to enhance the patient experience, while ensuring that lack of access to digital technologies does not exacerbate health inequalities.
- **Coordinated research:** Focusing national research efforts on specific priority areas of medicine or to address major societal or health challenges, based on a strategic, coordinated and goal-driven approach. The pandemic has highlighted what can be achieved if there is coordination and commitment, and this model could be applied to other areas of high unmet need.
- **Collaboration:** Building on the high levels of interdisciplinary, cross-sector and international collaboration and information exchange during the COVID-19 pandemic to improve the delivery of services and address health inequalities.
- **Enabling responsive regulation:** Exploring new ways to accelerate the assessment of innovations addressing unmet medical needs without sacrificing rigour, with regulatory processes being responsive to emerging scientific opportunities and facilitating the rapid development of safe and effective interventions. Taking the best of these new approaches and applying them to other therapy areas could accelerate the development of new interventions.
- **Public and patient involvement (PPI):** Ensuring that PPI is more deeply embedded in planning, evaluation, and production of research, and planning of service delivery, recognising its potential to improve the quality of research carried out and to strengthen public trust in research and medicine.
- **Representative participation:** Expanding community engagement to ensure that ethnic minority populations and disadvantaged groups are fully represented in clinical trials and other research studies, and equitably share the benefits of research, thereby helping to reduce health inequalities.

## 2021 FORUM Sir Colin Dollery Lecture

The Academy's prestigious FORUM Lecture, now in its 19<sup>th</sup> year, provides an opportunity for FORUM member organisations, Academy Fellows, invited guests and members of the public to hear from key figures in biomedical science. The FORUM Sir Colin Dollery Lecture is newly named in honour of Sir Colin Dollery FMedSci.

Reflecting on Sir Colin's many contributions to science and medicine in the UK and internationally at the start of the meeting, **Professor Sir Keith Peters GBE FRS FLSW FMedSci** noted that the FORUM was the brainchild of Sir Colin. Remembering Sir Colin at the event's conclusion, **Lady Dollery** stressed how concerned Sir Colin had been to ensure that the Academy should succeed, given that medicine was retreating into ever smaller silos:

“For him, it was important that scientists should work together, including with those outside their field, and they should also work with industry, who make the medicines that keep us alive and the vaccines that enable us to be here today.”

To close the meeting, she urged all those present to continue what Sir Colin had started: “Go forward, continue to question, embrace new concepts and prepare for the next ‘black swan’ event.”



*From left to right: Simon Denegri OBE; Dr Caroline Dollery; Elinor Dollery; Peter Dollery; Lady Dollery; Sir Keith Peters GBE FRS FLSW FMedSci; Dr Clare Dollery; Professor Dame Anne Johnson DBE PMedSci.*

The 2021 FORUM Sir Colin Dollery Lecture was chaired by **Professor Dame Anne Johnson DBE PMedSci**, President of the Academy of Medical Sciences. Presentations were given by:

- **Professor Natalie Pattison**, Professor of Clinical Nursing, University of Hertfordshire
- **Professor Charlotte Summers**, Professor of Intensive Care Medicine, University of Cambridge, and Honorary Consultant in Critical Care Medicine, Cambridge University Hospitals NHS Foundation Trust
- **Dr Dave Triska**, GP Partner, Witley and Milford Medical Partnership
- **Mr Jacob Haddad**, Co-Founder, accuRx
- **Kimberley Featherstone**, RECOVERY trial participant
- **Professor Patrick Chinnery FMedSci**, Professor of Neurology & Head of the Department of Clinical Neurosciences at University of Cambridge, and Chair of the National Core Study on Clinical Trials and of the UK COVID-19 Therapeutics Advisory Panel

- **Dr Waseem Bani**, Junior Doctor, North West England; National COVID Response Group, British Islamic Medical Association (BIMA)
- **Dr Melanie Saville**, Director of Vaccine Research & Development, Coalition for Epidemic Preparedness Innovations (CEPI)

These were followed by a panel discussion, chaired by **Sir Patrick Vallance KBE FRS FMedSci**, Chief Scientific Adviser to HM Government. Sir Patrick was joined by:

- **Professor Kamlesh Khunti CBE FMedSci**, Chair of the Ethnicity Subpanel and Member, Scientific Advisory Group for Emergencies (SAGE); Professor of Primary Care Diabetes & Vascular Medicine, University of Leicester
- **Lynn Laidlaw**, Co-chair, Patient and Care Reference Group, Academy of Medical Sciences' COVID-19: preparing for the future report
- **Dr Najeem Rahman**, Consultant in Emergency Medicine, Leeds Teaching Hospitals NHS Trust; Member, National COVID Response Group, BIMA; Trustee, Doctors Worldwide; Founder, Frontline Collaboration Against COVID-19.
- **Dame June Raine CBE FMedSci**, Chief Executive, Medicines and Healthcare products Regulatory Agency

The Academy of Medical Sciences' FORUM provides an independent platform for senior leaders from across academia, industry, government, and the charity, healthcare and regulatory sectors to come together and take forward national discussions on scientific opportunities, technology trends, and associated strategic choices for healthcare and other life sciences sectors. The FORUM network helps address our strategic challenge – 'To harness our expertise and convening power to tackle the biggest scientific and health challenges and opportunities facing our society' as set out in our Strategy 2017–21.

# Introduction

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**In late January 2020, the first cases of COVID-19 were detected in the UK. Almost immediately, the UK health and medical research sectors mobilised to address this new pandemic threat. Initially, little was known about the condition and the virus responsible for it, SARS-CoV-2. However, with remarkable speed, effective treatments were identified, care regimens developed, and insights gained into the biology of the virus and its transmission.**

In addition, like many other sectors, healthcare had to maintain the delivery of services while protecting both healthcare staff and patients from infection. Faced with these challenges, the healthcare sector was forced to adapt and adopt innovative new practices. Indeed, the UK has been a global leader in the response to COVID-19, with UK science informing practice throughout the world, while also embracing knowledge and innovations generated elsewhere.

The UK science and healthcare communities have made important contributions to the response to the COVID-19 pandemic. These have included extensive genomic surveillance for SARS-CoV-2 variants, rapid development of effective vaccines, research into the effectiveness of antiviral and other treatments, and epidemiological studies that have provided important insights into the trajectory of the pandemic. Much of this work has been of direct relevance to healthcare and social policy. A scientific risk-based approach was also an important aspect of vaccine and antiviral procurement policy, which put the UK in a strong position to organise rollout programmes for vaccines and therapeutics.



*From left to right: Professor Tom Solomon CBE FMedSci; Professor Ijeoma Uchegbu FMedSci; Dr Melanie Saville.*



Even so, the UK has been badly hit by the COVID-19 pandemic. Any lessons to be learned need to be based not just on areas where the UK excelled but also on the situations where responses were not optimal, or where the pandemic exposed deep-seated fault lines in the practice of science or medicine.

While COVID-19 remains a threat to health and wellbeing, a permanent 'emergency' state is not sustainable for the healthcare system or society as a whole. However, recovery need not necessarily mean a return to pre-pandemic practice, particularly when new approaches introduced during the pandemic have been shown to be demonstrably superior. There is an opportunity to examine the achievements of the past two years – and where things went less well – to learn lessons for the future.

The 2021 FORUM Sir Colin Dollery Lecture, chaired by **Professor Dame Anne Johnson DBE PMedSci**, President of the Academy of Medical Sciences, featured presentations and discussion on topics spanning primary and secondary healthcare, medical research, regulation, and public and patient involvement (PPI), highlighting key lessons learned and identifying potential ways to sustain or expand the use of innovative new practices.

# Innovations in clinical practice

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**With the arrival of COVID-19 in the UK, the NHS faced the immediate challenge of learning how to treat patients with a novel and poorly understood condition. As COVID-19 case numbers began to increase, the capacity of the health service to deliver care to both COVID-19 and other patients became a growing concern.**

**Professor Natalie Pattison**, Professor of Clinical Nursing at the University of Hertfordshire and East and North Herts NHS Critical Care, described some of the ways in which critical care was impacted by the arrival of COVID-19. With so many unknowns initially, there was a need to be flexible and rapidly adopt innovations as more was learned about care of COVID-19 patients. Of particular importance was the adoption of insights from European countries such as Italy that were the first to experience a major wave of COVID-19.

Early on, the importance of keeping patients in a prone position (on their fronts) was recognised. Staff from all levels, including consultants, contributed to the regular turning of patients. The practice soon spread from intensive care units to general wards, and to patients on continuous positive airway pressure (CPAP) breathing assistance or nasal high flow oxygen. Consequences of these practices were also important considerations in terms of critical care recovery, and evidence-based practice guidelines were swiftly created to support ongoing rehabilitation and recovery.

Little was known about appropriate drug treatments until the results of the RECOVERY trial identified the survival benefits associated with use of the steroid dexamethasone.<sup>1,2</sup> The value of such studies highlighted the importance of research integrated within clinical care.

During the height of the pandemic, the numbers of acutely ill patients placed great strains on staffing, leading to an increase in the numbers of critical care patients being looked after by each member of nursing staff and each critical care consultant. Although ratios have generally returned to near pre-pandemic levels, flexibility has been retained, in part to manage chronic shortages of healthcare workers. Research studies have explored the impact of emergency changes of practice to inform future responses to pandemics or other large-scale incidents.<sup>3</sup> In addition, modelling is being used to explore possible impacts on outcomes. Other studies have examined impacts on critical care staff and coping mechanisms.<sup>4</sup> Such work will identify potential measures that could be taken to protect the physical and mental health of healthcare staff during periods of extreme stress.

**Professor Charlotte Summers**, Professor of Intensive Care Medicine, University of Cambridge, and Honorary Consultant in Critical Care Medicine, Cambridge University Hospitals NHS Foundation Trust, recalled how multidisciplinary teams began to meet in early February 2020 to map out a response to the anticipated wave of cases. Similar preparations were being

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<sup>1</sup> The RECOVERY Collaborative Group (2021). *Dexamethasone in Hospitalized Patients with Covid-19*. New England Journal of Medicine **384(8)**, 693-704

<sup>2</sup> <https://www.recoverytrial.net/>

<sup>3</sup> Endacott R, Pearce S, Rae P *et al.* (2021). *How COVID-19 has affected staffing models in intensive care: A qualitative study examining alternative staffing models (SEISMIC)*. Journal of Advanced Nursing **78(4)**, 1075-1088

<sup>4</sup> Montgomery CM, Humphreys S, McCulloch C *et al.* (2021). *Critical care work during COVID-19: a qualitative study of staff experiences in the UK*. BMJ Open **11(5)**, e048124

made at the national level, with the launch of the Ventilator Challenge highlighting the chilling risk that the UK could run out of ventilators.<sup>5</sup> Remarkably, the first new ventilator arrived for testing in Cambridge within a month, a testament to the effectiveness of cross-sector collaboration in an emergency situation.

As it was clear that existing capacity would be insufficient, additional wards were converted into makeshift critical care spaces. Equipment shortages led to creative thinking such as the repurposing of anaesthetic machines. Across the country, the equivalent of more than 140 new intensive care units were established. Many doctors from other disciplines joined the response, undertaking whatever activities were required for units to function, including turning of patients.

Maintaining supply chains was a further challenge. For example, stocks of neuromuscular blockade drugs ran so low that older superseded drugs had to be re-introduced.

As access to the care setting was limited to essential personnel only, communication with patients' families and friends was essential but presented a major practical challenge. iPads were provided so that patients could stay in touch, which was mostly welcomed by patients and families. However, the discussion of patients' deterioration with families was made more challenging for critical care staff and families as these conversations could not be held in person.

Research rapidly became integral to practice. As well as the establishment of new initiatives such as the RECOVERY platform clinical trial for testing treatments, existing initiatives pivoted to focus on COVID-19 – including the International Severe Acute and Respiratory and Emerging Infections Consortium (ISARIC),<sup>6</sup> which began to collect data to characterise the clinical impacts of SARS-CoV-2 infection. Many such initiatives drew on existing resources and infrastructure, particularly that of the National Institute for Health Research (NIHR).

Professor Summers suggested that there remains a strong desire to maintain research within routine practice. It was suggested that it could be considered unethical not to conduct research to learn and enhance future practice, and that it was an expectation of many patients.

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<sup>5</sup> <https://www.ventilatorchallengeuk.com/>

<sup>6</sup> <https://isaric.org>

# Providing digital access to healthcare services

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**Because of the high transmissibility of SARS-CoV-2, personal contact inevitably carries a risk of disease transmission. Digital healthcare services, accessed online or through mobile devices, offer a way in which care can be provided without direct contact between clinicians and patients. The urgency of maintaining healthcare services during the pandemic led to rapid innovation and the deployment of new digital services.**

GP **Dr David Triska**, GP Partner, Witley and Milford Medical Partnership, described how his practice had adapted in the face of the COVID-19 pandemic. This included the introduction of new technologies, to enable more efficient and productive encounters with patients.

Dr Triska noted that, even before COVID-19, primary care faced multiple challenges, with many patients struggling to obtain timely appointments and consultations being restricted to 10 minutes irrespective of a patient's individual needs. Despite some progress, it has often proven frustratingly difficult to integrate new digital technologies into general practice.

Using the new digital system, patients could provide information in advance of a consultation through an online portal, enabling the practice to prepare in advance. Dr Triska suggested that this approach – known as 'asynchronous' communication – enabled doctors to make best use of the time spent in direct contact with patients. Other valuable innovations include the ability to send summaries of consultations directly to patients, as well as appointment reminders.

Dr Triska suggested that general practice was still learning how best to integrate technology and what works for which patient. Over the longer term, similar solutions could potentially support greater integration of health and social care.

A commonly used digital communications tool in primary care is Chain SMS, provided by the company accuRx,<sup>7</sup> and **Jacob Haddad**, co-founder of accuRx, described the thinking that had gone into its development. Healthcare, he argued, is a communication industry, and the need for greater digitalisation existed before the COVID-19 pandemic took root and will remain regardless of the future pandemic trajectory. COVID-19 has accelerated the development and implementation of new technologies; before the pandemic, he suggested, decision-making on possible innovations in practice typically prioritised minimisation of risk rather than exploitation of new opportunities.

Asynchronous communication offers the potential for greater efficiency, ensuring that each patient contact is more productive. AccuRx positions itself as a company offering tools that aid communication and sharing of information between all those involved in the care of a patient. Mr Haddad suggested that early industry expectation of a large appetite for video-

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<sup>7</sup> <https://www accurx.com>

consultations among GP practices and patients had not been met but simple tools such as text messaging had been particularly useful.

His recipe for success included focusing on GPs and their needs and taking the time to understand the root causes of their challenges. He argued in favour of bottom-up adoption, particularly of simple and adaptable tools that enable users to innovate for themselves. Rapid updating of software can fix bugs and continually add new functionality. Although challenges such as the pandemic can place great pressures on health systems, he suggested that there are opportunities to harness these pressures to generate urgency for change.

The response to the pandemic has highlighted the many opportunities that exist for digital technologies to enhance practice in primary care and the wider healthcare system. The accuRx experience has illustrated what can be achieved and shown that, contrary to perception, the NHS can successfully adopt new technologies. Nevertheless, Mr Haddad suggested that inertia in the health system remains an important obstacle to the wider use of technologies to improve the efficiency and quality of care.

In discussions, it was noted that patient satisfaction with digital tools is generally high. However, it was emphasised that technology was not an alternative to contact with clinicians, but a tool to make the best use of human interactions. The potential utility of healthcare 'bots' was thought to be limited – by analogy with the automobile industry, new healthcare technology is likely to provide the equivalent of 'driver assistance' rather than self-driving cars.

It was also recognised that use of technologies could exacerbate the 'digital divide' and health inequalities. However, experience to date has shown high levels of use in areas such as COVID-19 appointment booking. Even so, it was acknowledged that care models need to incorporate non-digital routes, with equivalent care provided across all pathways.

The potential for patient, clinician and end user involvement in product design was also raised. Mr Haddad suggested this was beginning to happen and has revealed a wide variety of needs and preferences for individuals in different contexts. This emphasises the need for flexibility in product development.

# Clinical trials to identify new treatments

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**As the numbers of cases of COVID-19 began to accumulate, there was an urgent need to identify effective treatments. Many potential treatments were identified based on past clinical experience with respiratory infections. However, anecdotal evidence and data from small-scale studies were not a good foundation for clinical decision-making, and there was a critical need for robust, large-scale clinical studies to generate reliable evidence on treatments. Alongside this need, it was also recognised that regulatory processes would need to be adapted to ensure rapid but rigorous regulatory decision-making.**

**Professor Patrick Chinnery FMedSci**, Professor of Neurology, University of Cambridge, and Honorary Consultant at Cambridge University Hospital NHS Foundation Trust, noted that the beginning of the pandemic was marked by huge gaps in knowledge about how to treat COVID-19. Clinicians and funders responded rapidly and within weeks calls for funding were launched and studies approved. Key studies supported included the RECOVERY and REMAP-CAP trials of therapeutics for severe disease and the PRINCIPLE trial of treatments for mild disease.<sup>8,9,10</sup>

Although these studies delivered important results, relying on individual investigators to identify key research questions had its limitations. Research was fragmented and gaps remained, and researchers were competing for financial and other resources. Recruitment of participants into trials was generally good, but patchy, offering scope for improvement. In addition, the first wave of studies focused on repurposing existing treatments, and there was also a need to begin the hunt for new therapeutics.

To provide a more coordinated and comprehensive approach, the National Core Study Clinical Trials Infrastructure platform was established. This initially covered phase I and phase IIa trials, phase II trials and phase III trials; prophylaxis and long COVID were added later. The platform provides infrastructure for end-to-end evaluation of drug candidates. Responsibility for selecting candidates was given to a new body, the UK COVID-19 Therapeutics Advisory Panel (UK-CTAP),<sup>11</sup> which established a transparent and open prioritisation process. Submissions were reviewed by expert groups, supported by a secretariat drawn from academia, the health service and industry, with recommendations passed to a decision-making committee.

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<sup>8</sup> <https://www.recoverytrial.net/>

<sup>9</sup> <https://www.remapcap.org/coronavirus>

<sup>10</sup> <https://www.principletrial.org/>

<sup>11</sup> <https://www.ukri.org/about-us/policies-standards-and-data/data-collection/uk-covid-19-therapeutics-advisory-panel/>

A potential treatment could be submitted by anyone through an online portal. From nearly 500 submissions, 30 were recommended for trials and seven treatments have subsequently been recommended for use in the NHS.

Lessons learned from these initiatives include the need for coordination and leadership, the importance of independence and agility, and the value of open data sharing. Embedding research activities in the NHS has helped to accelerate implementation of new treatments soon after approval. Scale and simplicity have been important for ensuring robust statistical power while not overburdening the health system.

Professor Chinnery suggested that the UK-CTAP model could be extended to other diseases, but this would require central coordination, with agreed mechanisms for progression through different stages of evaluation. Activities would also need to be coordinated with regulators and industry. There would also be a need to build capacity and capabilities within the NHS.

Potential risks include the creation of 'cartels' and stifling of innovation if funding focused primarily on already well-funded and well-connected groups. In addition, the focus on specific conditions could also lead to the deprioritisation of other diseases. However, benefits could include faster progress towards improved health outcomes and lower healthcare costs, an efficient system embedded in the NHS, the agility to respond to new challenges, and the chance to demonstrate the UK's global leadership in research, attracting inward investment.

In discussions, it was noted that great agility has been demonstrated within academia, the health service and in regulatory agencies during the pandemic. It was hoped that the civil service could likewise maintain some of the flexibility achieved during the COVID-19 pandemic. The value of having scientifically qualified people in positions of influence in the civil service was stressed. Also highlighted was the leadership role played throughout the pandemic by the UK Government's Chief Medical Adviser and the Chief Scientific Adviser, both of whom have substantial experience of medical research.

A question was also raised about the communication of scientific findings through press releases. It was acknowledged that this could be problematic, with incomplete results being hard to interpret. However, the importance of rapid and open publishing, particularly through preprints, was also emphasised.

**Dame June Raine DBE FMedSci**, Chief Executive of the MHRA, noted that, even before the pandemic, the MHRA was striving to become an 'enabling' regulator rather than just an enforcer of regulations. This shift in emphasis was critical early in the pandemic, when there was an urgent need for new interventions. While there had been many discussions about innovative new approaches to trial design and working practices, the pandemic proved the catalyst for their introduction.

These shifts led to a dramatic cut in the time taken for regulatory approvals. Dame June emphasised that these changes were only possible because of close interactions with all stakeholders, in academia, industry, and the NHS, with the MHRA retaining its independence. The close involvement of the NHS ensured that MHRA decisions could be immediately acted upon by the health service. Coordination extended further, nationally to include the National Institute for Health and Care Excellence (NICE) and internationally through the International Coalition of Medicines Regulatory Authorities (ICMRA).

In discussion, Dame June noted that shortened timelines had depended on the hard work of MHRA staff, who continued their ongoing work and responded to the time pressures of COVID-19-related tasks. Over the longer term, an organisational transformation is being

planned, with a focus on the end-to-end pathway of innovation, in order to improve efficiency and accelerate the evaluation of medical innovations.

In comparison with other countries, the UK's contribution to COVID-19-related research matched its global standing in R&D. However, unlike some other countries with leading research bases, the UK has been one of those most likely to generate actionable results. This may suggest that, in other countries, too many underpowered studies are being approved. The possibility of a 'quality mark' for trials was suggested, although it was noted that regulatory approval for a trial should in itself represent such a mark. The MHRA is also working with trial sponsors to explore ways to broaden participation, for example by enabling data collection within people's homes.

Discussions suggested that the field of diagnostics required a more effective regulatory framework. The diagnostic development landscape differs significantly from that for pharmaceuticals, and Dame June noted that diagnostic development represents a challenging mix of science, technology, public health needs and demand. Successes have included the development of internationally influential target product profiles. In addition, the UK has established a nationwide testing infrastructure that could be leveraged in future responses.

The future of the 'yellow card' system for reporting adverse events was also discussed. It was noted that this was a long-established mechanism and a vital 'hotline' open to all. Dame June suggested that there may be ways to enrich data collection and accelerate data analysis. The possibility of incorporating more qualitative input was also raised.



# Experience of participating in a clinical trial for COVID-19

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**Clinical trials have delivered reliable evidence only because patients have been willing to participate in research. Former COVID-19 patient Kimberley Featherstone described her experience of taking part in a trial of monoclonal antibody therapeutics.**

A teaching assistant, **Kimberley Featherstone** contracted COVID-19 in October 2020, eventually ending up in hospital. Having previously been keen to contribute to the COVID-19 response but having no training in healthcare delivery, she was an enthusiastic volunteer when approached to participate in the RECOVERY trial. She was also aware of how important research had been to the identification of dexamethasone as an effective treatment, and was grateful to those who had previously participated in the trial.

Miss Featherstone was impressed with the dedication of the staff running the trial and found it rewarding to be contributing to the battle against COVID-19 – particularly when results from the study she was involved in showed that monoclonal antibody therapeutics were a life-saving intervention. She went on to provide a patient perspective in news releases and now acts as a patient research ambassador for Calderdale and Huddersfield NHS trust.<sup>12</sup>

She particularly emphasised her trust in scientists and the NHS, which gave her confidence that the study would be well conducted and that any risks would be minimised. If care is to be improved, it is important for people to volunteer for such studies, she pointed out.

*“I hope to be able to encourage other patients to get involved in research... We all want better; better cancer treatments, better cold and flu remedies, and better contraceptives. For that research has to happen. Someone somewhere has to put their faith in science and just do it. I’m more than happy to be one of those people.”*

*Kimberley Featherstone*

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<sup>12</sup> <https://www.bbc.co.uk/news/health-57488150>

# Patient and public involvement in research

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**Patient and public involvement (PPI) is increasingly viewed as an integral aspect of the research process in the UK. PPI is the involvement of people not just as participants but as partners in the development of studies and oversight of research. The COVID-19 pandemic presented a significant challenge to PPI, given the many unanswered questions that needed to be addressed, the high workloads of research and clinical staff, and the need to rapidly generate evidence.**

Speaking during the panel discussion, **Lynn Laidlaw**, patient and public contributor and patient researcher, noted that, in general, people were keen to be involved in research. However, participation is sometimes made difficult for people, and potential practical barriers such as the timing of meetings and provision of expenses need to be addressed. Ensuring outcome measures are relevant to patients is also critical, with ill-chosen measures likely to discourage participation in clinical trials as well as the relevance of the results to patients.

Mrs Laidlaw was one of the co-authors of the Academy of Medical Sciences' report that provided a people's perspective on COVID-19.<sup>13</sup> Patients have an obvious stake in research and can provide unique insight into what truly matters. Despite the challenges presented by the pandemic, useful patient-driven research studies have been conducted throughout, for example on the experience of shielding (minimisation of physical contact with other people among those at high risk of COVID-19 complications). Communities have also worked together to counter vaccine hesitancy and groups have self-organised to focus attention on areas where there are still large evidence gaps, such as 'long COVID' - symptoms that last weeks, months or years after the initial infection has gone.

Although PPI has increasingly become a priority for UK research, Mrs Laidlaw suggested that it is not as embedded in research as is presumed. Involvement fell early in the pandemic (from 78% in 2019 to 20% in the first 40 trial submissions received during the COVID-19 pandemic),<sup>14</sup> in part because it was assumed, erroneously, that people would not be able to respond in compressed timeframes.

An Academy of Medical Sciences' FORUM workshop in May 2020 discussed some causes and consequences of reduced PPI early in the pandemic.<sup>15</sup> Important challenges were highlighted such as a lack of central coordination of PPI in COVID-19-related research and the disproportionate impact of the pandemic on ethnic minority groups. It called for stronger efforts to engage the public and patients in COVID-19-related research, particularly those from ethnic minority groups, to enhance research quality and build trust with public groups.

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<sup>13</sup> Academy of Medical Sciences (2021). *Covid-19: Preparing for the future*. <https://acmedsci.ac.uk/file-download/4747802>

<sup>14</sup> <https://www.hra.nhs.uk/about-us/news-updates/involving-public-covid-19-research-guest-blog-bec-hanley-and-maryrose-tarpey/>

<sup>15</sup> Academy of Medical Sciences (2020). *Public involvement and engagement in research during the COVID-19 pandemic*. <https://acmedsci.ac.uk/file-download/77957062>

# Health inequities highlighted by the COVID-19 pandemic

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**One of the most striking early findings during the pandemic was that certain underserved populations in the UK, such as ethnic minority groups and pregnant women among others, were experiencing particularly poor COVID-19 outcomes. In addition, following the development of COVID-19 vaccines, take up of vaccination has been found to be lower in many of these groups. However, these issues highlight the more general challenge of health inequities affecting underserved populations in the UK, which were present before the pandemic.**

During the height of the pandemic, **Dr Waseem Bani**, a junior doctor in the north-west of England and member of the British Islamic Medical Association's (BIMA) National COVID Response Group, was a final-year medical student working in a GP practice. An encounter with a patient with learning difficulties who had missed both flu and COVID-19 vaccinations introduced him to a wider problem – how this group of patients were often slipping through the cracks in the health system and consequently suffering or even dying from avoidable health conditions. To help tackle this, he adopted the principle of 'reasonable adjustments' – changes that can be made relatively easily to accommodate differing patient needs. For example, ensuring a patient with a learning disability has their favourite DVD so that they remain in hospital for the full course of their treatment rather than discharging themselves early. Using reasonable adjustments, local vaccination uptake in these patients was increased from 50% to 80% and Dr Bani shared their best practice among general practices regionally.

In partnership with BIMA, he applied similar principles of introducing 'reasonable adjustments' to enhance engagement with Islamic communities during the pandemic. Activities included development of a Ramadan safety guide, including infection prevention measures in mosques, and engagement with religious leaders so that they can reassure members of the community that vaccination does not break guidance on fasting. Vaccination sessions outside the hours of fasting were also organised for those with remaining concerns. Other activities have included translation of resources to address gaps in knowledge and to counter misinformation.

**Professor Kamlesh Khunti** CBE FMedSci, Professor of Primary Care Diabetes and Vascular Medicine, University of Leicester, highlighted the disproportionate effects of COVID-19 on ethnic minority communities. After anecdotal signs of differential impacts began to emerge, these were confirmed by rigorous data analyses showing that ethnic minority groups were experiencing worse COVID-19 outcomes.

Professor Khunti noted that this is an area in which the UK had been particularly proactive in some ways, being one of the few countries to collect data on COVID-19 impacts stratified by ethnic group. He argued that linkage to additional data sources could provide a way to identify differential impacts of COVID-19.

He also highlighted the fact that ethnic minority populations are typically under-represented in clinical trials. He suggested that more targeted efforts were needed to encourage

participation and ensure more proportional representation, and that results should be stratified by ethnic background (and also by socioeconomic factors such as level of deprivation). Recruitment needs to go beyond routine methods, such as sending alerts to GPs, and be based on active sourcing of participants from under-represented communities. Funders need to be aware that representative recruitment will incur additional costs.

Professor Khunti also noted that COVID-19 was highlighting long-standing issues in access to health services. Vaccine hesitancy, for example, was relatively high among ethnic minority communities prior to the pandemic.

**Dr Najeeb Rahman**, Consultant in Emergency Medicine, Leeds, member of the BIMA's National COVID Response, and a trustee of Doctors Worldwide, offered a humanitarian response perspective on COVID-19-related inequalities. He argued that access to medical services should be considered a fundamental human right, and that transferrable lessons from the humanitarian sector could be applied to the UK's COVID-19 responses. These include key principles such as coordination across multiple stakeholders, working with community representatives, and defining a minimal set of standards for a response, and considering how best to engage with different communities.

Work with the BIMA has revealed that lack of access to scientific and medical information is a significant issue. In addition, a Community Opinions on Vaccine Issues and Decisions (COVID) Survey, sent to the congregations of two mosques, provided insights into knowledge, attitudes and practice.<sup>16</sup> This informed the development of a range of initiatives, including multi-stakeholder webinars,<sup>17</sup> 'mythbuster' resources, and briefings for imams so they are better able to respond to questions from their communities.

Dr Rahman also argued that community trust in people and institutions is critical, and lack of trust is a major contributor to low participation in research and uptake of medical services. Communities in the UK vary in the degree of trust they have in medical authorities, for a range of complex reasons. In the absence of trust, misinformation becomes even more potent and can have a major impact on attitudes and behaviour. A key question is how best to reach out to communities and build trust. Potentially, lessons could be learned from methods used by civil society organisations to increase organ donation rates in ethnic minority communities.

In discussions, it was suggested that it may be time to 'mainstream' engagement with Islamic and ethnic minority communities in the UK, to address inequalities and improve representation. Other initiatives could include the recruitment of more diverse groups in clinical pharmacology studies. Detection and reporting of adverse events was acknowledged to be another area where ethnic minority populations were under-represented.

As well as ethnic minority populations, pregnant women were highlighted as a further group that had experienced poor COVID-19 outcomes. A lack of data from early clinical trials on this group led to minimal or confused messaging about vaccination, providing a context in which misinformation could thrive. It was acknowledged that a better approach was needed to ensure that the needs of pregnant women were given the attention they deserved.

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<sup>16</sup> Rahman N (2021). *The Community Opinions on Vaccine Issues and Decisions (COVID) Survey: Using a rapid Knowledge, Attitude and Practice (KAP) survey in supporting a community engagement approach to address COVID-19 vaccine uptake initiatives*. medRxiv. <https://doi.org/10.1101/2021.04.11.21255260>

<sup>17</sup> <https://britishima.org/operation-vaccination/hub/webinars/>

# Global pandemic preparedness and mitigation

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**Pandemics are global phenomena, and some responses are best considered at the global level. International cooperation and collaboration in research can focus attention and funding on agreed global priorities, minimise duplication of effort, and thereby accelerate progress in intervention development. Such cross-sectoral, cross-border partnerships are fundamental to the Coalition for Epidemic Preparedness Innovations (CEPI).**

The goals of CEPI are to prevent outbreaks from becoming global threats and to accelerate vaccine development. It was established after the 2014–16 West African Ebola outbreak, where no medical interventions were available despite the known risk of a serious epidemic. It primarily focuses on a list of priority pathogens and adaptable vaccine platform technologies.

**Dr Melanie Saville**, Director of Vaccine Research and Development, CEPI,<sup>18</sup> discussed how, although the COVID-19 pandemic shifted CEPI from a predominantly proactive to a predominantly reactive standpoint, CEPI's response to COVID-19 was built on its ongoing work in epidemic preparedness. This included work related to Middle Eastern respiratory syndrome (MERS), also caused by a coronavirus, and its rapid response platform technology projects. This foundation enabled a quick response and partnership agreements were rapidly signed by the end of January 2020.

During the early stages of the pandemic, CEPI directly supported the development of a 'wave 1' portfolio of 14 vaccine candidates. Supporting enabling projects was also a priority for CEPI; for example to harmonise assays to ensure the comparability of results, to develop a network of laboratories, and to track variants and their impact on the effectiveness of vaccines.

CEPI has also supported studies to close gaps in knowledge, including investigating the impact of using combinations of different vaccines in the UK. In addition to its research and development work, it has examined ways to accelerate scale up of manufacturing and create a healthy COVID-19 marketplace.

Equitable access continues to be an important priority for CEPI, with agreements with manufacturers ensuring supply to a global fair allocation mechanism called COVAX. Dr Saville commented that high income countries have been able to deliver many more vaccines than lower income countries and there is a lot of work to be done before equity is reached.

The UK has played a pivotal role in CEPI's response to COVID-19. It has been a major funder and supporter of COVAX, UK institutions have been important R&D partners, and bodies such as the National Institute of Biological Standards and Control (NIBSC) and the MHRA have made key contributions to assay standardisation and regulatory discussions.

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<sup>18</sup> <https://cepi.net>

As the pandemic matures, CEPI plans to support development of a second generation of vaccines, such as variant-proof vaccines, vaccines better at reducing transmission, and vaccines to protect against a broad range of coronaviruses. In addition, they will continue to build the knowledge base about families of viruses that could cause a pandemic or epidemic in future and begin to develop a library of vaccines for them. Dr Saville reemphasised the importance of collaboration and pre-clinical/clinical networks in future epidemic preparedness and CEPI's aim to support all regions of the world in their plans.

The principles of partnership, building on a mature evidence base, and providing support for all elements of the vaccine pipeline during the response to COVID-19 saw vaccine development achieved at unprecedented speed. It took just over 300 days from when work started to the vaccines receiving emergency use authorisation. Moving forwards, CEPI is supporting the 100 Day Mission, led by the G7 Group, which aims to make diagnostics, therapeutics and vaccines available within 100 days of a new pandemic causing infection emerging.<sup>19</sup>

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<sup>19</sup> G7 Group (2021). *100 days mission to respond to future pandemic threats*.  
[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/992762/100\\_Days\\_Mission\\_to\\_respond\\_to\\_future\\_pandemic\\_threats\\_\\_3\\_.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/992762/100_Days_Mission_to_respond_to_future_pandemic_threats__3_.pdf)

# Conclusions

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**Commenting on the presentations and discussions, Sir Patrick Vallance KBE FRS FMedSci, Chief Scientific Adviser to the UK Government, noted that science holds the route of escape from the COVID-19 pandemic. He highlighted four areas where science had played crucial roles.**

First, rapid action and coordination of funders across multiple disciplines has helped to generate a full understanding of the nature of the threat posed by COVID-19. Secondly, monitoring, tracking and detection provided the tools to follow the pandemic as it unfolded. At early stages, genomic studies had provided critical information; at one point, 50% of genome sequences in global databases had been generated in the UK. Surveys such as those organised by the Office for National Statistics (ONS) and the REACT study have been globally influential.

Thirdly, in terms of clinical responses, the RECOVERY trial, a pragmatic trial on hospitalised patients, has had a profound impact, not least through its identification of dexamethasone as an effective treatment for severe COVID-19. The Vaccine Taskforce has been highly successful in ensuring the UK population's access to vaccines. Notably, its work extended beyond simple procurement, incorporating expertise in science and manufacturing, and adopting a portfolio-based approach. The Antivirals Taskforce looks likely to achieve similar success. Both have been dependent on partnerships across academia and industry. This cross-sector approach is also central to the National Core Studies.

Finally, multiple mechanisms have been used to inform policy, particularly the Scientific Advisory Group for Emergencies (SAGE). Importantly, these structures have drawn on insights from multiple scientific disciplines, including the social sciences. The UK's learned societies have played key roles in providing robust independent advice, including the Academy's own influential reports on the likely effects of winter on COVID-19,<sup>20 21</sup> the Royal Academy of Engineering on building safety,<sup>22</sup> the British Academy on social issues,<sup>23</sup> and the Royal Society on a range of topics.<sup>24</sup>

Sir Patrick also noted how the meeting's discussions highlighted the importance of international collaboration and information exchange, as well of interdisciplinary approaches to shape the delivery of services and to address inequities. Although the vaccine rollout programme has been a great success, more needs to be learned about the best approaches for engagement with ethnic minority and disadvantaged communities to ensure high uptake across the board. Sir Patrick also pointed out the importance of the MHRA's role as a flexible

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<sup>20</sup> Academy of Medical Sciences (2021). *Preparing for a challenging winter 2020/21*. <https://acmedsci.ac.uk/file-download/51353957>

<sup>21</sup> Academy of Medical Sciences (2021). *COVID-19: Preparing for the future*. <https://acmedsci.ac.uk/file-download/4747802>

<sup>22</sup> Royal Academy of Engineering (2021). *Infection Resilient Environments: Buildings that keep us healthy and safe*. <https://www.raeng.org.uk/publications/reports/infection-resilient-environments>

<sup>23</sup> The British Academy (2021). *The COVID Decade: understanding the long-term societal impacts of COVID-19*. <https://www.thebritishacademy.ac.uk/documents/3238/COVID-decade-understanding-long-term-societal-impacts-COVID-19.pdf>

<sup>24</sup> <https://royalsociety.org/whats-new/covid-19/related-content/>

and enabling regulator, and reiterated that engagement with patients is essential at all stages.

A common theme across all these areas is the importance of diversity – in the range of disciplines being brought to bear on problems, in countries learning from one another, in ensuring that the benefits of science reach all populations, and in ensuring that scientific research draws on fresh thinking and novel ideas from all relevant stakeholders.

Presentations and discussions during the 2021 FORUM Sir Colin Dollery Lecture identified some possible ways in which scientific and medical practice in the UK could draw on the experience of the past two years, to ensure the UK is better prepared for both the next public health crisis but also for the many other scientific, medical and social challenges it faces. For this to happen, there is a need to strengthen, embed and build on key changes that have been catalysed by the COVID-19 pandemic, in areas such as the embedding of research in clinical practice, reimagining the role of the regulator, and incorporating digital technologies into the NHS to improve efficiency and service quality.

In particular, further efforts are needed to address issues that existed before the pandemic, but that have been brought into sharp relief by COVID-19, not least glaring health inequalities affecting ethnic minority communities and socially disadvantaged groups. This will require a renewed commitment to PPI in research, recognising the rich diversity of patients and the public in the UK. Such PPI will help to ensure that a public voice is heard across all stages of research, from identification of national priorities through to the practice of research and dissemination of research findings.



*Sir Patrick Vallance KBE FRS FMedSci giving his closing remarks.*



# Annex-I: Agenda

Thursday 25 November 2021, 14:00-17:00

Time	Start
14.00-14.05	Opening remarks from chair and speaker introduction <b>Professor Dame Anne Johnson DBE PMedSci</b>
14.05-14.10	In memory of Sir Colin Dollery FMedSci <b>Professor Sir Keith Peters GBE FRS FLSW FMedSci</b>
<b>Session 1</b>	
14.10-14.25	1. <u>On the frontline: Innovations in clinical practice during the pandemic</u> <ul style="list-style-type: none"> <li>• <b>Professor Natalie Pattison</b>, Professor of Clinical Nursing, University of Hertfordshire</li> <li>• <b>Professor Charlotte Summers</b>, Professor of Intensive Care Medicine, University of Cambridge, and Honorary Consultant in Critical Care Medicine, Cambridge University Hospitals NHS Foundation Trust</li> </ul>
14.25-14.40	2. <u>Going virtual: digitalisation of healthcare during the pandemic</u> <ul style="list-style-type: none"> <li>• <b>Dr Dave Triska</b>, GP Partner, Witley and Milford Medical Partnership</li> <li>• <b>Mr Jacob Haddad</b>, Co-Founder, accuRx</li> </ul>
14.40-14.55	Q&A session with speakers from 1 and 2 and introducing the next speakers
<b>Session 2</b>	
14.55-15.10	3. <u>Clinical trial innovation during COVID-19</u> <ul style="list-style-type: none"> <li>• <b>Kimberley Featherstone</b>, RECOVERY trial participant</li> <li>• <b>Professor Patrick Chinnery FMedSci</b>, Professor of Neurology &amp; Head of the Department of Clinical Neurosciences at University of Cambridge, and Chair of the National Core Study on Clinical Trials and of the UK COVID-19 Therapeutics Advisory Panel</li> </ul>
15.10-15.25	4. <u>Arming the nation against COVID-19: Vaccine development and rollout</u> <ul style="list-style-type: none"> <li>• <b>Dr Waseem Bani</b>, Junior Doctor, North West England; National COVID Response Group, British Islamic Medical Association (BIMA)</li> <li>• <b>Dr Melanie Saville</b>, Director of Vaccine Research &amp; Development, Coalition for Epidemic Preparedness Innovations (CEPI)</li> </ul>
15.25-15.40	Q&A session with speakers from 3 and 4
15.40-15.55	Break
<b>Session 3</b>	
15.55-16.45	<u>Stretch and challenge: lessons learned from the pandemic for the future</u> <i>A panel discussion about the achievements of UK science during the pandemic and where there are powerful lessons to be learned for the future life sciences ecosystem and pandemic preparedness to better achieve impact for and with patients.</i> <ul style="list-style-type: none"> <li>• Panel chair: <b>Sir Patrick Vallance KBE FRS FMedSci</b>, Chief Scientific Adviser to HM Government</li> <li>• Panellists:</li> </ul>

	<ul style="list-style-type: none"> <li>○ <b>Lynn Laidlaw</b>, Co-chair, Patient and Care Reference Group, Academy of Medical Sciences' <i>COVID-19: preparing for the future</i> report.</li> <li>○ <b>Dame June Raine CBE</b>, Chief Executive, Medicines and Healthcare products Regulatory Agency</li> <li>○ <b>Professor Kamlesh Khunti CBE FMedSci</b>, Chair of the Ethnicity Subpanel and Member, Scientific Advisory Group for Emergencies (SAGE); Professor of Primary Care Diabetes &amp; Vascular Medicine, University of Leicester</li> <li>○ <b>Dr Najeeb Rahman</b>, Consultant in Emergency Medicine, Leeds Teaching Hospitals NHS Trust; Member, National COVID Response Group, BIMA; Trustee, Doctors Worldwide; Founder, Frontline Collaboration Against COVID-19.</li> </ul>
16.45-17.00	<p><u>Closing remarks</u></p> <ul style="list-style-type: none"> <li>• Closing reflections from Sir Patrick Vallance KBE FRS FMedSci</li> <li>• In memory of Sir Colin Dollery from Lady Dollery</li> <li>• Closing reflections from Professor Dame Anne Johnson DBE PMedSci</li> </ul>

# Annex-II: In-person participants

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*Please note that this event was a hybrid event. In addition to the in-person attendees listed here, over 120 people joined us online.*

## Chair, speakers and panellists

**Dr Waseem Bani**, Junior Doctor, North West England; National COVID Response Group, British Islamic Medical Association (BIMA)

**Professor Patrick Chinnery FMedSci**, Professor of Neurology & Head of the Department of Clinical Neurosciences at University of Cambridge, and Chair of the National Core Study on Clinical Trials and of the UK COVID-19 Therapeutics Advisory Panel

**Lady Diana Dollery**

**Miss Kimberley Featherstone**, Patient and Public Contributor and Co-Editor, Huddersfield Times

**Mr Jacob Haddad**, Co-founder, accuRx

**Professor Dame Anne Johnson DBE PMedSci**, Professor of Infectious Disease Epidemiology; Chair, Grand Challenge for Global Health, University College London (Chair)

**Professor Kamlesh Khunti CBE FMedSci**, Chair of the Ethnicity Subpanel and Member, Scientific Advisory (*joined virtually*)

**Lynn Laidlaw**, Co-chair, Patient and Care Reference Group, Academy of Medical Sciences' COVID-19: *preparing for the future* report

**Professor Natalie Pattison**, Clinical Professor of Nursing, University of Hertfordshire

**Sir Keith Peters GBE FRS FLSW FMedSci**, Emeritus Regius Professor of Physic, University of Cambridge

**Dr Najeeb Rahman**, Consultant in Emergency Medicine, Leeds Teaching Hospitals NHS Trust; Member, National COVID Response Group, BIMA; Trustee, Doctors Worldwide; Founder, Frontline Collaboration Against COVID-19

**Dame June Raine CBE FMedSci**, Chief Executive, Medicines and Healthcare products Regulatory Agency

**Dr Melanie Saville**, Director of Vaccine Research & Development, Coalition for Epidemic Preparedness Innovations (CEPI)

**Professor Charlotte Summers**, Professor of Intensive Care Medicine, University of Cambridge, and Honorary Consultant in Critical Care Medicine, Cambridge University Hospitals NHS Foundation Trust

**Dr Dave Triska**, GP Partner, Witley and Milford Surgeries

**Sir Patrick Vallance KBE FRS FMedSci**, Chief Scientific Adviser to HM Government

## In-person attendees

**Dr David Busse**, Epidemiology Adviser, Government Office for Science

**Charlotte Caplan**, Assistant Private Secretary to the Government Chief Scientific Adviser

**Professor Dame Jessica Corner FMedSci**, Pro-Vice-Chancellor for Research and Knowledge Exchange, University of Nottingham

**Tracey Croggon**, Photographer, bigT images

**Professor Chris Day FMedSci**, Vice-Chancellor and President, Newcastle University

**Dr Caroline Dollery**, Beacon Health Centre

**Dr Clare Dollery**, Clinical Director of The Heart Hospital, Whittington Health Trust

**Elinor Dollery**, Medical Student

**Peter Dollery**

**Professor Dame Anna Dominiczak DBE FRSE FMedSci**, Regius Professor of Medicine, University of Glasgow

**Professor Sir Martin Evans FRS FLSW FMedSci**, Regius Professor of Medicine, Cardiff University

**Dr Feliciy Gabbay FMedSci**, Founding and Senior Partner, Transcripp Partners

**Sir Charles George FMedSci**, Professor Emeritus

**Professor Keith Godfrey FMedSci**, Professor of Epidemiology & Human Development, University of Southampton

**Dr Jennifer Harris**, Head of Research Policy, The Association of the British Pharmaceutical Industry

**Susan Mechan**, Solicitor (England & Wales/Scotland)

**Dr Puja Mehta**, Clinical Research Fellow in Respiratory Medicine, University College London

**Michelle Pulman**, Clinical Nurse Specialist

**Dr Krishma Ramgoolam**, Postdoctoral Researcher, University College London

**Mr Ajan Reginald**, Chief Executive Officer, Celixir

**Professor Jonathan Shepherd CBE FMedSci FLSW**, Professor Emeritus of Oral and Maxillofacial Surgery, Professor, Crime and Security Research Institute, Cardiff University

**Shehzar Shah**

**Professor Reecha Sofat**, Professor of Clinical Pharmacology, University College London

**Professor Tom Solomon CBE FMedSci**, Director of the NIHR Health Protection Research Unit in Emerging and Zoonotic Infections; Professor of Neurology, University of Liverpool

**Professor Ijeoma Uchegbu FMedSci**, Chair in Pharmaceutical Nanoscience, University College London

**Alexandra Wakefield**, Royal Society

**Dr Pauline Williams CBE FMedSci**, Senior Vice President and Head of Global Health R&D, GlaxoSmithKline

**Academy Staff**

**Simon Denegri OBE**, Executive Director

**Dr James Squires**, Head of Policy (Interim)

**Sarah Porter**, Head of Fundraising

**Yasmin Allen** FORUM Policy Manager

**Angel Yiangou**, Policy Manager

**Russell Crandon**, Fellowship Manager

**Dr Anna Hands**, FORUM Policy Officer

**Dr Alice Fletcher-Etherington**, Policy Officer

**Rosie Tabor**, Fundraising Officer

**Gaby Richter**, Media and News Officer

**Eren Akademir**, Policy intern

# Annex-III: The Academy's COVID-19-related policy reports

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During the pandemic, the Academy of Medical Sciences has explored what lessons can be learned from the COVID-19 pandemic in a variety of areas, including mental health, diagnostics, and patient and public involvement. Reports, summaries and other outputs from the projects can be downloaded from the selection of project web pages linked below.

## Modelling the pandemic

- July 2021: [COVID-19: preparing for the future](#). As seen in *BBC News*, *The Sun*, *The Financial Times* and more.
- July 2020: [Preparing for a challenging winter 2020-21](#). As seen in *BBC News*, *Financial Times*, *The Guardian* and more.

## Patient and public involvement

- May 2020: [Public involvement and engagement in research during the COVID-19 pandemic](#). Part of the FORUM events programme.
- July 2021: [COVID-19: Preparing for the future – people's perspective](#)
- July 2020: [Preparing for a challenging winter 2020-21 – people's perspective](#)

## Antimicrobial resistance

- December 2021: [Antimicrobial resistance research: learning lessons from the COVID-19 pandemic](#). Part of the FORUM events programme.
- July 2021: [Advances in antimicrobial innovation](#). Part of the FORUM events programme.

## Diagnostics

- October 2022: [Diagnostics: building capacity and capability in the UK](#). Part of the FORUM events programme.
- March 2021: [Building a sustainable UK diagnostics sector](#). Part of the FORUM events programme.
- October 2020: [Lessons learnt: the role of academia and industry in the UK's diagnostic testing response to COVID-19](#)

## Mental health

- April 2021: [Progress and priorities for mental health sciences research since COVID-19](#)
- April 2021: [Tackling the impact of COVID-19 on mental health - summary](#)
- May 2020: [Remote and digital mental health interventions and COVID-19](#)
- May 2020: [Coordinating the collection of high-quality data on the mental, cognitive and neurological health impacts of COVID-19](#)

## International

- December 2021: [UK & France symposium on COVID-19 vaccines](#)
- November 2021: [Global pandemic perspectives: public health, mental health and lessons for the future](#).
- November 2020: [Learning from crisis: building resilient systems to combat future pandemics](#). As summarised in the *Lancet* [here](#).
- June 2020: [Addressing the challenge of the COVID-19 pandemic in LMICs](#)



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