COVID-19 weekly update

February 8th 2022

**clinical management**

**Title:** Long covid: “Holistic” approach is best, given range of symptoms, say researchers

BMJ|8th february

New research on long covid in adults and children supports the multidisciplinary approach to clinical care that is being provided at long covid clinics in England, experts have said.

“Long covid seems to be a condition where multiple symptoms are very common,” said Terence Stephenson, Nuffield professor of child health at the UCL Great Ormond Street Institute of Child Health in London, told a Science Media Centre briefing.

“I think the services that have been set up in England for young people do address that. They are holistic and comprehensive in their approach, rather than addressing single organs or single problems,” said Stephenson, who is the lead author of the Children and Young People with Long Covid (Clock) study, published in *Lancet Adolescent and Child Health*.[**1**](https://www.bmj.com/content/376/bmj.o336#ref-1) “If you have a mixture of symptoms of headache, cough, and dizziness, you probably want to go to a service that can deal with you holistically with all your symptoms,” he added.

There are currently around 80 long covid clinics in England that take referrals from primary care for adults or children who are experiencing a range of symptoms that might include brain fog, anxiety, depression, breathlessness, and fatigue.

Full news article: [Long covid: “Holistic” approach is best, given range of symptoms, say researchers | The BMJ](https://www.bmj.com/content/376/bmj.o336)

Original research article: [Physical and mental health 3 months after SARS-CoV-2 infection (long COVID) among adolescents in England (CLoCk): a national matched cohort study - The Lancet Child & Adolescent Health](https://www.thelancet.com/journals/lanchi/article/PIIS2352-4642(22)00022-0/fulltext)

**Title:** BMJ BEST PRACTICE Evidence Summaries on COVID-19

Free access to clinical decision support information on Coronavirus (covid-19) and related topics

[Coronavirus Disease (COVID-19) and Differentials | BMJ Best Practice](https://bestpractice.bmj.com/info/coronavirus_covid-19/)

**Title:** People carrying excess weight have an increased risk of severe covid-19

BMJ| 2nd February

The study: Gao M, Piernas C, Astbury NM, et al. Associations between body-mass index and COVID-19 severity in 6.9 million people in England: a prospective, community-based cohort study. *Lancet Diabetes Endocrinol* 2021;9:6.

To read the full NIHR Alert, go to: <https://evidence.nihr.ac.uk/alert/excess-weight-increases-risks-of-severe-covid-19/>

Full news article: [People carrying excess weight have an increased risk of severe covid-19 | The BMJ](https://www.bmj.com/content/376/bmj.o141)

**Title:** Randomized trials on non-pharmaceutical interventions for COVID-19: a scoping review

bmj Evidence based practice| 27th january

**Objective** We aimed at providing a systematic overview of randomised trials assessing non-pharmaceutical interventions (NPIs) to prevent COVID-19.

**Design** Scoping review.

**Methods** We included all randomised trials assessing NPIs to prevent COVID-19 in any country and setting registered in ClinicalTrials.gov and the WHO International Clinical Trials Registry Platform using the COVID-evidence platform (until 17 August 2021). We searched for corresponding publications in MEDLINE/PubMed, Google Scholar, the Living Overview of Evidence platform, and the Cochrane COVID-19 registry as well as for results posted in registries (until 14 November 2021). Descriptive statistics using numbers and percentages were used in the narrative synthesis of the results.

**Results** We identified 41 randomised trials. Of them, 12 were completed (29.3%) including 9 with published results. The 41 trials planned to recruit a median of 1700 participants (IQR 588–9500, range 30–35 256 399) with a median planned duration of 8 months (IQR 3–14, range 1–24). Most came from the USA (n=11, 26.8%). The trials mostly assessed protective equipment (n=11, 26.8%), COVID-19-related information and education programmes (n=9, 22.0%), access to mass events under specific safety measures (n=5, 12.2%), testing and screening strategies (n=5, 12.2%) and hygiene management (n=5, 12.2%).

**Conclusions** Worldwide, 41 randomised trials assessing NPIs have been initiated with published results available to inform policy decisions for only 9 of them. A long-term research agenda including behavioural, environmental, social and systems level interventions is urgently needed to guide policies and practices in the current and future public health emergencies.

Full article: [Randomized trials on non-pharmaceutical interventions for COVID-19: a scoping review | BMJ Evidence-Based Medicine](https://ebm.bmj.com/content/early/2022/01/31/bmjebm-2021-111825)

**Title:** Long COVID symptoms in SARS-CoV-2-positive adolescents and matched controls (LongCOVIDKidsDK): a national, cross-sectional study

the lancet child and adolescent health| 7th February

Background

Many adolescents have been affected by the COVID-19 pandemic either directly by being infected with the virus or indirectly by lockdowns and restrictions influencing normal living. We aimed to investigate health, including symptoms of long COVID, in adolescents (aged 15–18 years) who tested positive for SARS-CoV-2 compared with a control group.

Methods

LongCOVIDKidsDK was a national, cross-sectional study carried out in Denmark, which included SARS-CoV-2-positive adolescents and matched controls. All Danish adolescents aged 15–18 years with a positive SARS-CoV-2 test during the period Jan 1, 2020, to July 12, 2021, and a control group matched (1:4) by age and sex were sent a survey from July 20, 2021. Participants had until Sept 15, 2021, to respond. Symptoms associated with COVID-19, school attendance, and health-related quality of life were investigated using ancillary questions and validated questionnaires (Paediatric Quality of Life Inventory [PedsQL] and Children's Somatic Symptoms Inventory-24 [CSSI-24]). Statistical analyses included descriptive statistics and logistic regression. This study is registered at [ClinicalTrials.gov](http://clinicaltrials.gov/), [NCT04786353](http://clinicaltrials.gov/show/NCT04786353).

Findings

24 315 adolescents with a positive SARS-CoV-2 test (case group) and 97 257 matched controls were invited to participate. 3013 matched controls were excluded because of suspected SARS-CoV-2 infection. 6630 (27·3%) responded in the case group and 21 640 (22·3%) responded and were eligible to participate in the control group. Across both groups, median age was 17·6 years (IQR 16·4–18·5), 16 277 (57·6%) of 28 270 responders were female, and 11 993 (42·4%) were male. Participants in the case group had greater odds of having at least one long COVID symptom lasting at least 2 months compared with the control group (3159 [61·9%] *vs* 12 340 [57·0%], odds ratio 1·22 [95% CI 1·15–1·30]; p<0·0001). Participants in the case group reported significantly lower symptom scores (ie, less somatic distress) on the CSSI-24 than in the control group: mean 10·7 (SD 11·4, median 7·0 [IQR 2·0–15·0]) versus 11·9 (10·6, 9·0 [4·0–17·0]; p<0·0001). Participants in the case group had better quality of life scores on the PedsQL than in the control group: physical functioning mean score 88·7 (SD 13·9, median 93·8 [IQR 84·4–100·0]) versus 86·5 (14·3, 90·6 [81·3–96·9]; p<0·0001); emotional functioning 77·1 (20·3, 80·0 [65·0–95·0]) versus 71·7 (21·4, 75·0 [60·0–90·0]; p<0·0001); social functioning 93·1 (12·5, 100·0 [90·0–100·0]) versus 88·4 (16·2, 95·0 [80·0–100·0]; p<0·0001); and school functioning 66·9 (22·5, 65·0 [60·0–85·0]) versus 62·9 (22·1, 65·0 [50·0–80·0]; p<0·0001). More participants in the case group than in the control group reported 16 or more sick days (1205 [18·2%] *vs* 2518 [11·6%]; p<0·0001) and 16 or more days of school absence (695 [10·5%] *vs* 1777 [8·2%]; p<0·0001).

Interpretation

Participants with SARS-CoV-2-positive tests had more long-lasting symptoms and sick leave, whereas participants in the control group had more short-lasting symptoms and worse quality of life. Knowledge of long COVID in adolescents is important to guide clinical recognition and management of this condition.

Full article: [Long COVID symptoms in SARS-CoV-2-positive adolescents and matched controls (LongCOVIDKidsDK): a national, cross-sectional study - The Lancet Child & Adolescent Health](https://www.thelancet.com/journals/lanchi/article/PIIS2352-4642(22)00004-9/fulltext)

**Title:** Efficacy and safety of baricitinib plus standard of care for the treatment of critically ill hospitalised adults with COVID-19 on invasive mechanical ventilation or extracorporeal membrane oxygenation: an exploratory, randomised, placebo-controlled trial

the lancet respiratory medicine| 3rd February

Background

The oral, selective Janus kinase 1/2 inhibitor baricitinib has shown efficacy in studies of hospitalised adults with COVID-19. COV-BARRIER ([NCT04421027](http://clinicaltrials.gov/show/NCT04421027)) was a multinational, phase 3, randomised, double-blind, placebo-controlled trial of baricitinib in patients with confirmed SARS-CoV-2 infection. We aimed to evaluate the efficacy and safety of baricitinib plus standard of care in critically ill hospitalised adults with COVID-19 requiring invasive mechanical ventilation or extracorporeal membrane oxygenation.

Methods

This exploratory trial followed the study design of COV-BARRIER in a critically ill cohort not included in the main phase 3 trial. The study was conducted across 18 hospitals in Argentina, Brazil, Mexico, and the USA. Participants (aged ≥18 years) hospitalised with laboratory-confirmed SARS-CoV-2 infection on baseline invasive mechanical ventilation or extracorporeal membrane oxygenation were randomly assigned (1:1) to baricitinib (4 mg) or placebo once daily for up to 14 days in combination with standard of care. Participants, study staff, and investigators were masked to study group assignment. Prespecified endpoints included all-cause mortality through days 28 and 60, number of ventilator-free days, duration of hospitalisation, and time to recovery through day 28. The efficacy analysis was done in the intention-to-treat population and the safety analysis was done in the safety population. This trial is registered with [ClinicalTrials.gov](http://clinicaltrials.gov/), [NCT04421027](http://clinicaltrials.gov/show/NCT04421027).

Findings

Between Dec 23, 2020, and April 10, 2021, 101 participants were enrolled into the exploratory trial and assigned to baricitinib (n=51) or placebo (n=50) plus standard of care. Standard of care included baseline systemic corticosteroid use in 87 (86%) participants. Treatment with baricitinib significantly reduced 28-day all-cause mortality compared with placebo (20 [39%] of 51 participants died in the baricitinib group *vs* 29 [58%] of 50 in the placebo group; hazard ratio [HR] 0·54 [95% CI 0·31–0·96]; p=0·030; 46% relative reduction; absolute risk reduction 19%). A significant reduction in 60-day mortality was also observed in the baricitinib group compared with the placebo group (23 [45%] events *vs* 31 [62%]; HR 0·56 [95% CI 0·33–0·97]; p=0·027; 44% relative reduction; absolute risk reduction 17%). In every six baricitinib-treated participants, one additional death was prevented compared with placebo at days 28 and 60. The number of ventilator-free days did not differ significantly between treatment groups (mean 8·1 days [SD 10·2] in the baricitinib group *vs* 5·5 days [8·4] in the placebo group; p=0·21). The mean duration of hospitalisation in baricitinib-treated participants was not significantly shorter than in placebo-treated participants (23·7 days [SD 7·1] *vs* 26·1 days [3·9]; p=0·050). The rates of infections, blood clots, and adverse cardiovascular events were similar between treatment groups.

Interpretation

In critically ill hospitalised patients with COVID-19 who were receiving invasive mechanical ventilation or extracorporeal membrane oxygenation, treatment with baricitinib compared with placebo (in combination with standard of care, including corticosteroids) reduced mortality, which is consistent with the mortality reduction observed in less severely ill patients in the hospitalised primary COV-BARRIER study population. However, this was an exploratory trial with a relatively small sample size; therefore, further phase 3 trials are needed to confirm these findings.

Full article: [Efficacy and safety of baricitinib plus standard of care for the treatment of critically ill hospitalised adults with COVID-19 on invasive mechanical ventilation or extracorporeal membrane oxygenation: an exploratory, randomised, placebo-controlled trial - The Lancet Respiratory Medicine](https://www.thelancet.com/journals/lanres/article/PIIS2213-2600(22)00006-6/fulltext)

**Title:** COVID-19 vaccine-induced antibody responses in immunosuppressed patients with inflammatory bowel disease (VIP): a multicentre, prospective, case-control study

The lancet gastroenterology and hepatology| 3rd February

Background

The effects that therapies for inflammatory bowel disease (IBD) have on immune responses to SARS-CoV-2 vaccination are not yet fully known. Therefore, we sought to determine whether COVID-19 vaccine-induced antibody responses were altered in patients with IBD on commonly used immunosuppressive drugs.

Methods

In this multicentre, prospective, case-control study (VIP), we recruited adults with IBD treated with one of six different immunosuppressive treatment regimens (thiopurines, infliximab, a thiopurine plus infliximab, ustekinumab, vedolizumab, or tofacitinib) and healthy control participants from nine centres in the UK. Eligible participants were aged 18 years or older and had received two doses of COVID-19 vaccines (either ChAdOx1 nCoV-19 [Oxford–AstraZeneca], BNT162b2 [Pfizer–BioNTech], or mRNA1273 [Moderna]) 6–12 weeks apart (according to scheduling adopted in the UK). We measured antibody responses 53–92 days after a second vaccine dose using the Roche Elecsys Anti-SARS-CoV-2 spike electrochemiluminescence immunoassay. The primary outcome was anti-SARS-CoV-2 spike protein antibody concentrations in participants without previous SARS-CoV-2 infection, adjusted by age and vaccine type, and was analysed by use of multivariable linear regression models. This study is registered in the ISRCTN Registry, ISRCTN13495664, and is ongoing.

Findings

Between May 31 and Nov 24, 2021, we recruited 483 participants, including patients with IBD being treated with thiopurines (n=78), infliximab (n=63), a thiopurine plus infliximab (n=72), ustekinumab (n=57), vedolizumab (n=62), or tofacitinib (n=30), and 121 healthy controls. We included 370 participants without evidence of previous infection in our primary analysis. Geometric mean anti-SARS-CoV-2 spike protein antibody concentrations were significantly lower in patients treated with infliximab (156·8 U/mL [geometric SD 5·7]; p<0·0001), infliximab plus thiopurine (111·1 U/mL [5·7]; p<0·0001), or tofacitinib (429·5 U/mL [3·1]; p=0·0012) compared with controls (1578·3 U/mL [3·7]). There were no significant differences in antibody concentrations between patients treated with thiopurine monotherapy (1019·8 U/mL [4·3]; p=0·74), ustekinumab (582·4 U/mL [4·6]; p=0·11), or vedolizumab (954·0 U/mL [4·1]; p=0·50) and healthy controls. In multivariable modelling, lower anti-SARS-CoV-2 spike protein antibody concentrations were independently associated with infliximab (geometric mean ratio 0·12, 95% CI 0·08–0·17; p<0·0001) and tofacitinib (0·43, 0·23–0·81; p=0·0095), but not with ustekinumab (0·69, 0·41–1·19; p=0·18), thiopurines (0·89, 0·64–1·24; p=0·50), or vedolizumab (1·16, 0·74–1·83; p=0·51). mRNA vaccines (3·68, 2·80–4·84; p<0·0001; *vs* adenovirus vector vaccines) were independently associated with higher antibody concentrations and older age per decade (0·79, 0·72–0·87; p<0·0001) with lower antibody concentrations.

Interpretation

For patients with IBD, the immunogenicity of COVID-19 vaccines varies according to immunosuppressive drug exposure, and is attenuated in recipients of infliximab, infliximab plus thiopurines, and tofacitinib. Scheduling of third primary, or booster, doses could be personalised on the basis of an individual's treatment, and patients taking anti-tumour necrosis factor and tofacitinib should be prioritised.

Full article: [COVID-19 vaccine-induced antibody responses in immunosuppressed patients with inflammatory bowel disease (VIP): a multicentre, prospective, case-control study - The Lancet Gastroenterology & Hepatology](https://www.thelancet.com/journals/langas/article/PIIS2468-1253(22)00005-X/fulltext)

**Title:** Association of SARS-CoV-2 Infection With Serious Maternal Morbidity and Mortality From Obstetric Complications

jama| 7th February

**Question**  Among pregnant and postpartum individuals, is SARS-CoV-2 infection associated with increased risk of maternal mortality or serious morbidity from obstetric complications?

**Findings**  In this retrospective cohort study that included 14 104 patients, a composite outcome of maternal death or serious morbidity related to hypertensive disorders of pregnancy, postpartum hemorrhage, or infection other than SARS-CoV-2 occurred significantly more frequently in individuals with SARS-CoV-2 infection compared with individuals without SARS-CoV-2 infection (13.4% vs 9.2%, respectively).

**Meaning**  Among pregnant and postpartum individuals, SARS-CoV-2 infection was associated with increased risk of a composite outcome of maternal mortality or serious morbidity from obstetric complications.

Full article: [Association of SARS-CoV-2 Infection With Serious Maternal Morbidity and Mortality From Obstetric Complications | Infectious Diseases | JAMA | JAMA Network](https://jamanetwork.com/journals/jama/fullarticle/2788985)

**Title:** Extending Rivaroxaban After COVID-19 Hospitalization

jama| 2nd February

Patients who are hospitalized with COVID-19 have elevated rates of postdischarge thrombotic events, but uncertainty exists about whether thromboprophylaxis should continue beyond the hospital stay. In a recent phase 3 [trial](https://doi.org/10.1016/S0140-6736(21)02392-8), continuing thromboprophylaxis after patients hospitalized with COVID-19 were discharged reduced major and fatal thromboembolic events without increasing major bleeding.

The trial randomized 320 patients hospitalized with COVID-19 at centers in Brazil to 10-mg/d rivaroxaban or no anticoagulation for 35 days after discharge. All patients received thromboprophylaxis while hospitalized and were at high risk of venous thromboembolism at discharge.

At day 35, about 3% of the rivaroxaban group and about 9% of the control group had an efficacy outcome event, a composite of venous and arterial thromboembolism and cardiovascular death. No major bleeding occurred in either group. Two patients in the rivaroxaban group experienced allergic reactions. The findings appeared in *The Lancet.*

Full article: [Extending Rivaroxaban After COVID-19 Hospitalization | Anticoagulation | JAMA | JAMA Network](https://jamanetwork.com/journals/jama/fullarticle/2788849)

**Infection control**

**Title:** Covid-19: Past infection may not protect against future variants, researcher warns

bmj| 7th February

Past infection with covid-19 does not necessarily confer protection against future infection, especially when it comes to the delta and omicron variants, researchers have warned.

Wendy Barclay, head of infectious disease at Imperial College London, told an event organised by the Zoe study group[**1**](https://www.bmj.com/content/376/bmj.o334#ref-1) on 3 February, “Each variant is different from the starting virus, but it’s not necessarily a linear difference. If you can picture in three dimensional space the original Wuhan one sitting in the middle—some of the other variants have sort of gone out from Wuhan but in different directions. The two that are most different from each other are delta and omicron.”

She said people who think their past infection will give them good protection against future variants may be mistaken, and that this is a powerful reason to get vaccinated. “You’re actually better off being vaccinated, even if you get infected on top of that vaccine, as we can see that it broadens out the immune response and gives you potentially better protection against all the other variants that are going to come a little later,” Barclay said.

Full news article: [Covid-19: Past infection may not protect against future variants, researcher warns | The BMJ](https://www.bmj.com/content/376/bmj.o334)

**Title:** Covid-19: UK approves Novavax’s protein based vaccine

bmj| 4th February

The UK’s regulator has approved Novavax’s covid-19 vaccine that uses an established technology and so may prove attractive to people who are reluctant to be vaccinated.

Nuvaxovid is the fifth covid vaccine authorised by the Medicines and Healthcare Products Regulatory Agency and the first protein based vaccine for the UK. It was approved by the European Medicines Agency in December.

At the start of the pandemic there was much excitement about the Novavax vaccine, but its development and approval has been beset by delays.[**1**](https://www.bmj.com/content/376/bmj.o309#ref-1)

A phase III trial involving 15 000 people in the UK showed the vaccine to be 89.7% effective at preventing symptomatic disease caused by the original Wuhan virus and the alpha variant.[**2**](https://www.bmj.com/content/376/bmj.o309#ref-2) A study conducted in the US and Mexico with almost 30 000 people showed that the vaccine offers 90.4% overall efficacy against illness and 100% efficacy against serious disease. The incidence of serious adverse events was low in both studies.

A recent phase II study, published as a preprint and not peer reviewed, suggests that its protection holds up much better against omicron than that of most other vaccines.[**3**](https://www.bmj.com/content/376/bmj.o309#ref-3) The vaccine is stable in a refrigerator at 2-8oC, making it easy to distribute.

The MHRA approval authorises the use of the vaccine in people aged 18 and over for a first and second dose. The manufacturer said it will shortly be applying for approval for it to be used as a booster and for adolescents.

Full news article: [Covid-19: UK approves Novavax’s protein based vaccine | The BMJ](https://www.bmj.com/content/376/bmj.o309)

**Title:** Covid-19: Vulnerable adult must be vaccinated against parents’ wishes, judge rules

bmj| 4th february

The High Court has ruled that a highly vulnerable young adult who lacks the capacity to make his own decisions must be vaccinated against SARS-CoV-2, despite his parents’ fears that the vaccine could seriously harm or even kill him.[**1**](https://www.bmj.com/content/376/bmj.o308#ref-1)

DC, aged 20, lives in a care home in the north west of England where he is the only unvaccinated resident. He has schizencephaly, microcephaly, cerebral palsy, curvature of the spine, dystonia, intermittent stridor, and pseudomonas of the lungs. He weighs as little as a small child and has several hospital admissions every year for respiratory illnesses.

Judge Simon Burrows accepted that DC’s “highly intelligent” parents, who were not opposed to vaccines in general, had a rational basis for their stance and that they would be “distraught” at his decision. DC’s father is a professional risk assessor, although outside the medical or pharmaceutical fields, and had carried out an “enormous” amount of research on mRNA vaccines, which he regarded as experimental. He was particularly concerned about a family history of blood clots.

Burrows said he had found the balancing exercise to determine DC’s best interests “very demanding.” He hesitated to go against DC’s mother’s instinct that the vaccine might do him more harm than good and his parents’ analysis.

But the judge said he was satisfied that the risks of the vaccine did not outweigh the advantages. His main reason for allowing the local clinical commissioning group’s application for the vaccination to go ahead was the positive effect on DC’s enjoyment of life. Unvaccinated, he was not allowed to attend outdoor events and had to be isolated in his room for 10 days after home visits.

Full new article: [Covid-19: Vulnerable adult must be vaccinated against parents’ wishes, judge rules | The BMJ](https://www.bmj.com/content/376/bmj.o308)

**Title:** Covid-19: Trust in government and other people linked with lower infection rate and higher vaccination uptake

bmj| 2nd February

Trust in the government and in the people around us correlates with lower covid-19 infection rates, a study using data from 177 countries has found.

Pandemic preparedness, democracy, income inequality, universal healthcare, and hospital capacity failed to show a significant relationship with coronavirus infection or fatality rates.

Higher levels of government and interpersonal trust were also associated with higher vaccine coverage, the study published in the *Lancet* suggested.[**1**](https://www.bmj.com/content/376/bmj.o292#ref-1)

Full news article: [Covid-19: Trust in government and other people linked with lower infection rate and higher vaccination uptake | The BMJ](https://www.bmj.com/content/376/bmj.o292)

**Title:** Pandemic preparedness and COVID-19: an exploratory analysis of infection and fatality rates, and contextual factors associated with preparedness in 177 countries, from Jan 1, 2020, to Sept 30, 2021

The Lancet| 1st February

Background

National rates of COVID-19 infection and fatality have varied dramatically since the onset of the pandemic. Understanding the conditions associated with this cross-country variation is essential to guiding investment in more effective preparedness and response for future pandemics.

Methods

Daily SARS-CoV-2 infections and COVID-19 deaths for 177 countries and territories and 181 subnational locations were extracted from the Institute for Health Metrics and Evaluation's modelling database. Cumulative infection rate and infection-fatality ratio (IFR) were estimated and standardised for environmental, demographic, biological, and economic factors. For infections, we included factors associated with environmental seasonality (measured as the relative risk of pneumonia), population density, gross domestic product (GDP) per capita, proportion of the population living below 100 m, and a proxy for previous exposure to other betacoronaviruses. For IFR, factors were age distribution of the population, mean body-mass index (BMI), exposure to air pollution, smoking rates, the proxy for previous exposure to other betacoronaviruses, population density, age-standardised prevalence of chronic obstructive pulmonary disease and cancer, and GDP per capita. These were standardised using indirect age standardisation and multivariate linear models. Standardised national cumulative infection rates and IFRs were tested for associations with 12 pandemic preparedness indices, seven health-care capacity indicators, and ten other demographic, social, and political conditions using linear regression. To investigate pathways by which important factors might affect infections with SARS-CoV-2, we also assessed the relationship between interpersonal and governmental trust and corruption and changes in mobility patterns and COVID-19 vaccination rates.

Findings

The factors that explained the most variation in cumulative rates of SARS-CoV-2 infection between Jan 1, 2020, and Sept 30, 2021, included the proportion of the population living below 100 m (5·4% [4·0–7·9] of variation), GDP per capita (4·2% [1·8–6·6] of variation), and the proportion of infections attributable to seasonality (2·1% [95% uncertainty interval 1·7–2·7] of variation). Most cross-country variation in cumulative infection rates could not be explained. The factors that explained the most variation in COVID-19 IFR over the same period were the age profile of the country (46·7% [18·4–67·6] of variation), GDP per capita (3·1% [0·3–8·6] of variation), and national mean BMI (1·1% [0·2–2·6] of variation). 44·4% (29·2–61·7) of cross-national variation in IFR could not be explained. Pandemic-preparedness indices, which aim to measure health security capacity, were not meaningfully associated with standardised infection rates or IFRs. Measures of trust in the government and interpersonal trust, as well as less government corruption, had larger, statistically significant associations with lower standardised infection rates. High levels of government and interpersonal trust, as well as less government corruption, were also associated with higher COVID-19 vaccine coverage among middle-income and high-income countries where vaccine availability was more widespread, and lower corruption was associated with greater reductions in mobility. If these modelled associations were to be causal, an increase in trust of governments such that all countries had societies that attained at least the amount of trust in government or interpersonal trust measured in Denmark, which is in the 75th percentile across these spectrums, might have reduced global infections by 12·9% (5·7–17·8) for government trust and 40·3% (24·3–51·4) for interpersonal trust. Similarly, if all countries had a national BMI equal to or less than that of the 25th percentile, our analysis suggests global standardised IFR would be reduced by 11·1%.

Interpretation

Efforts to improve pandemic preparedness and response for the next pandemic might benefit from greater investment in risk communication and community engagement strategies to boost the confidence that individuals have in public health guidance. Our results suggest that increasing health promotion for key modifiable risks is associated with a reduction of fatalities in such a scenario.

Full article: [Pandemic preparedness and COVID-19: an exploratory analysis of infection and fatality rates, and contextual factors associated with preparedness in 177 countries, from Jan 1, 2020, to Sept 30, 2021 - The Lancet](https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(22)00172-6/fulltext)

**Title:** Prevalence and Durability of SARS-CoV-2 Antibodies Among Unvaccinated US Adults by History of COVID-19

jama| 3rd February

As of December 28, 2021, approximately 27% of the US population was unvaccinated against SARS-CoV-2,[1](https://jamanetwork.com/journals/jama/fullarticle/2788894#jld220008r1) yet the prevalence of natural immunity remains unknown. Blood donor studies may have selection bias and lack clinical information.[2](https://jamanetwork.com/journals/jama/fullarticle/2788894#jld220008r2) Previous COVID-19 infection is a possible surrogate for natural immunity, but 1 study suggested that 36% of COVID-recovered individuals are serologic nonresponders.[3](https://jamanetwork.com/journals/jama/fullarticle/2788894#jld220008r3) Even among individuals who develop antibodies, durability of this response beyond 6 months remains unknown. We characterized natural immunity and long-term durability among unvaccinated individuals using anti–spike antibodies, the first line of defense against SARS-CoV-2.

Full research letter: [Prevalence and Durability of SARS-CoV-2 Antibodies Among Unvaccinated US Adults by History of COVID-19 | Coronavirus (COVID-19) | JAMA | JAMA Network](https://jamanetwork.com/journals/jama/fullarticle/2788894)

**Health management**

**Title:** Covid-19: Government writes off £10bn on unusable, overpriced, or undelivered PPE

bmj| 3rd February

The government has written off almost £10bn of spending on personal protective equipment (PPE) that was either unusable, above market price, or was not delivered, official accounts show.

The Department of Health and Social Care’s annual report and accounts[**1**](https://www.bmj.com/content/376/bmj.o296#ref-1) for 2020-21, show that £8.7bn worth of PPE purchased early in the pandemic was written off. This included £673m for defective PPE not suitable for any use, £2.6bn for items not suitable for NHS use that may be suitable for other uses, £4.7bn from paying inflated prices because of global demand, and £750m for “excess” inventory that passed its expiry date and is held for resale or donation.

The department also purchased an additional £1.2bn of PPE that had not been delivered as of 31 March 2021, but which it was committed to buying, the accounts show.

Gareth Davies, the head of the National Audit Office, described delivering the department’s accounts as “challenging” and gave them only qualified approval.

Full news article: [Covid-19: Government writes off £10bn on unusable, overpriced, or undelivered PPE | The BMJ](https://www.bmj.com/content/376/bmj.o296)

**other**

**Title:** Covid-19: Only a third of children in need accessed mental health support in the pandemic

BMJ| 7th February

The number of children experiencing mental health problems has risen sharply during the covid-19 pandemic, but fewer have been able to access support because of disruptions to services, says a report by the children’s commissioner for England.[**1**](https://www.bmj.com/content/376/bmj.o335#ref-1)

Around one in nine children had a probable mental health disorder in 2017, the report says, but this jumped to one in six in 2021 with only around a third (32%) able to access treatment.

Full news article: [Covid-19: Only a third of children in need accessed mental health support in the pandemic | The BMJ](https://www.bmj.com/content/376/bmj.o335)

**Title:** Covid-19: Pandemic waste threatens human and environmental health, says WHO

BMJ| 1st February

The World Health Organization has called for urgent improvements in waste management systems in light of the tens of thousands of tonnes of extra medical waste produced in response to the covid-19 pandemic.

It has warned in a report that the massive amount of covid-19 related healthcare waste has put tremendous strain on waste management systems around the world, threatening human and environmental health.[**1**](https://www.bmj.com/content/376/bmj.o266#ref-1)

Full news article: [Covid-19: Pandemic waste threatens human and environmental health, says WHO | The BMJ](https://www.bmj.com/content/376/bmj.o266)

**Title:** SARS-CoV-2 RNA elements share human sequence identity and upregulate hyaluronan via NamiRNA-enhancer network

Ebiomedicine|3rd february

Background

Since late 2019, SARS-CoV-2 infection has resulted in COVID-19 accompanied by diverse clinical manifestations. However, the underlying mechanism of how SARS-CoV-2 interacts with host and develops multiple symptoms is largely unexplored.

Methods

Bioinformatics analysis determined the sequence similarity between SARS-CoV-2 and human genomes. Diverse fragments of SARS-CoV-2 genome containing Human Identical Sequences (HIS) were cloned into the lentiviral vector. HEK293T, MRC5 and HUVEC were infected with laboratory-packaged lentivirus or transfected with plasmids or antagomirs for HIS. Quantitative RT-PCR and chromatin immunoprecipitation assay detected gene expression and H3K27ac enrichment, respectively. UV-Vis spectroscopy assessed the interaction between HIS and their target locus. Enzyme-linked immunosorbent assay evaluated the hyaluronan (HA) levels of culture supernatant and plasma of COVID-19 patients.

Findings

Five short sequences (24–27 nt length) sharing identity between SARS-CoV-2 and human genome were identified. These RNA elements were highly conserved in primates. The genomic fragments containing HIS were predicted to form hairpin structures *in silico* similar to miRNA precursors. HIS may function through direct genomic interaction leading to activation of host enhancers, and upregulation of adjacent and distant genes, including cytokine genes and *hyaluronan synthase 2 (HAS2)*. HIS antagomirs and Cas13d-mediated HIS degradation reduced *HAS2* expression. Severe COVID-19 patients displayed decreased lymphocytes and elevated D-dimer, and C-reactive proteins, as well as increased plasma hyaluronan. Hymecromone inhibited hyaluronan production *in vitro*, and thus could be further investigated as a therapeutic option for preventing severe outcome in COVID-19 patients.

Interpretation

HIS of SARS-CoV-2 could promote COVID-19 progression by upregulating hyaluronan, providing novel targets for treatment.

Full article: [SARS-CoV-2 RNA elements share human sequence identity and upregulate hyaluronan via NamiRNA-enhancer network - eBioMedicine (thelancet.com)](https://www.thelancet.com/journals/ebiom/article/PIIS2352-3964(22)00045-7/fulltext)

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