COVID-19 weekly update

25th July 2022

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| --- | --- | --- |
| [Clinical management](#Clinical) Long-term effects  [Infection control](#Infection) | [Health management & workforce well-being](#Management) [Recovery](#Recovery1) | [Public health & health inequalities](#Public) |

**clinical management**

**title:** A monoclonal antibody stands out against omicron subvariants: a call to action for a wider access to bebtelovimab [correspndence]

the lancet infectious diseases | 18th JULY 2022  
  
…Beneficence is one of the basic principles of health-care ethics and should be respected by all actors in the health arena, including by those entities who develop therapeutic options. Here, we advocate that bebtelovimab should be made available outside the USA for patients worldwide. Bebtelovimab should be evaluated against current predominant variants in clinical independent research, alone or in combination with other antiviral options, and should be used for clinical care when no other therapeutic options exist, especially in immunocompromised populations.  
<https://www.thelancet.com/journals/laninf/article/PIIS1473-3099(22)00495-9/fulltext>

**title:** Covid-19: Recovery trial set to lose funding as proposal to examine flu drugs is rejected

bmJ| 13th july 2022  
  
Funding for the UK’s Randomised Evaluation of Covid-19 Therapy (Recovery) trial—which has been instrumental in finding cheap and effective covid-19 treatments—is to end in October, the trial’s co-leads have said.

The team’s funding proposal to study treatments for severe influenza within Recovery has also been rejected by the National Institute for Health Research (NIHR) and UK Research and Innovation (UKRI). The bodies said this was because “funding for a flu platform should be competed through a fair and open competition.”

The Recovery team has said the cost of studying influenza drugs on top of covid-19 treatments would be low, and highlighted that Roche has provided the antiviral drugs free of charge and that the protocol has already been approved by the NIHR and the Medicines and Healthcare Products Regulatory Agency. They added that there is no relevant funding competition that they can currently apply for.

Trial co-leads Martin Landray and Peter Horby told The BMJ that they are now going to request that they be allowed to use the unspent funding from their current grant to continue for another year and complete the studies of current covid-19 drugs. Meanwhile, they are looking for alternative sources of funding to support the study of influenza treatments…  
<https://www.bmj.com/content/378/bmj.o1809>

**title:** FDA Authorizes Pharmacists to Prescribe Oral Antiviral Medication for COVID-19

JAMA|19th july 2022  
  
The US Food and Drug Administration (FDA) has revised the Emergency Use Authorization (EUA) for nirmatrelvir/ritonavir, commonly known as Paxlovid, to allow state-licensed pharmacists to prescribe the medication to eligible patients with COVID-19 who are at high risk of progressing to severe disease, with certain limitations. The action is expected to widen access to the drug during the brief period after the onset of symptoms when it is effective…  
<https://jamanetwork.com/journals/jama-health-forum/fullarticle/2794626>

**title:** Association Between Vaccination and Acute Myocardial Infarction and Ischemic Stroke After COVID-19 Infection  
  
JAMA| 22nd july 2022  
  
Studies have suggested an increased incidence of acute myocardial infarction (AMI) and ischemic stroke after COVID-19 infection related to an increased risk of thrombosis.1,2 Vaccines against SARS-CoV-2 are effective against COVID-19 and its progression to severe disease.3 However, it is unclear if vaccines also prevent secondary complications. We examined the association between vaccination and AMI and ischemic stroke after COVID-19 infection…  
  
…This study found that full vaccination against COVID-19 was associated with a reduced risk of AMI and ischemic stroke after COVID-19. The findings support vaccination, especially for those with risk factors for cardiovascular diseases…  
<https://jamanetwork.com/journals/jama/fullarticle/2794753>

**title:** EFFICACY OF ANTIBODIES AND ANTIVIRAL DRUGS AGAINST OMICRON BA.2.12.1, BA.4, AND BA.5 SUBVARIANTS

new england journal of medicine | 20th july 2022  
  
In this study, we examined the neutralizing ability of FDA-approved monoclonal antibodies, individually and in combination, against omicron BA.2.12.1 (hCoV-19/USA/NY-MSHSP-PV56475/2022), BA.4 (hCoV-19/USA/MD/HP30386/2022), and BA.5 (hCoV-19/Japan/TY41-702/2022) isolates…  
  
… Overall, our data suggest that the three small-molecule antiviral drugs remdesivir, molnupiravir, and nirmatrelvir may have therapeutic value against the sublineages BA.2.12.1, BA.4, and BA.5 of SARS-CoV-2 omicron variants. Our data also indicate that bebtelovimab is effective against BA.2.12.1, BA.4, and BA.5. However, in clinical use, these variants may be less susceptible to combination therapy with casirivimab and imdevimab and with tixagevimab and cilgavimab. In addition, sotrovimab may not provide effective treatment against BA.2.12.1, BA.4, or BA.5. Our findings show that the selection of monoclonal antibodies to treat patients who are infected with omicron variants should be carefully considered.  
<https://www.nejm.org/doi/full/10.1056/NEJMc2207519>

**long term effects**

**title:** Covid-19: Infection raises risk of diabetes and heart disease diagnoses in following weeks, study finds

BMJ |22nd july 2022  
  
Patients who contract covid-19 are at increased risk of being diagnosed with cardiovascular disorders and diabetes in the three months following infection, although the risk then declines back to baseline levels, a large UK study has found. Researchers from King’s College London say patients recovering from covid-19 should be advised to consider measures to reduce diabetes risk including adopting a healthy diet and taking exercise.

The GP medical records from more than 428 650 covid-19 patients were matched with the same number of controls and followed up to January 2022. All patients with pre-existing diabetes or cardiovascular disease were excluded from the study, published in the open access journal PLOS Medicine. According to the analysis, diabetes mellitus diagnoses were increased by 81% in acute covid-19 and remained elevated by 27% from 4 to 12 weeks after infection (adjusted rate ratio 1.81, 95% confidence interval 1.51 to 2.19).

Acute covid-19 was associated with a sixfold increase in cardiovascular diagnoses overall (adjusted rate ratio 5.82, 95% CI 4.82 to 7.03). This included an 11-fold increase in pulmonary embolism, a sixfold increase in atrial arrhythmias, and a fivefold increase in venous thromboses. The risk of a new heart disease diagnosis began to decline five weeks after infection and returned to baseline levels or below from 12 weeks to one year…  
<https://www.bmj.com/content/378/bmj.o1838>

**title:** Post–COVID-19 Conditions Among Children 90 Days After SARS-CoV-2 Infection

jama| 22nd JULY 2022  
  
Question What proportion of children infected with SARS-CoV-2 who were tested in emergency departments (EDs) reported post–COVID-19 conditions (PCCs) 90 days after their ED visits?

Findings In this cohort study of 1884 SARS-CoV-2–positive children with 90-day follow-up, 5.8% of patients, including 9.8% of hospitalized children and 4.6% of discharged children, reported PCCs. Characteristics associated with PCCs included being hospitalized 48 hours or more, having 4 or more symptoms reported at the index ED visit, and being 14 years of age or older.

Meaning This study suggests that, given the prevalence of PCCs, appropriate guidance and follow-up are required for children testing positive for SARS-CoV-2.  
<https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2794484>

**title:** Post-COVID era: Time to re-introduce “cardiorespiratory fitness” as a vital sign

the lancet eclinical medicine| september 2022  
  
With the acute burden of novel coronavirus 2019 (COVID-19) winding down in many parts of the world, there is an increased appreciation for those living with COVID-19 sequelae. Clavario and colleagues1 found almost a third of COVID-19 survivors with functional limitations identified from cardiopulmonary exercise testing (CPX). This illustrates the role of CPX in identifying symptoms of long COVID. Keeping in mind that the acute phase of COVID-19 could also be asymptomatic, the true incidence and prevalence of long COVID is currently unclear. Evidence indicates that the acute pathophysiologic cascade triggered by COVID-19 infection can lead to chronic symptoms.2 This long term-sequelae of COVID-19 supports the evaluation of cardiorespiratory fitness (CRF) to identify compromised exercise tolerance…  
<https://www.thelancet.com/journals/eclinm/article/PIIS2589-5370(22)00276-0/fulltext>

**infection control**

**title:** A seven point plan to suppress covid infections and reduce disruptions

BMJ |19th july 2022  
  
… We can do better. We need measures to suppress infection and reduce disruption. The measures that are required to suppress transmission are far less draconian than in the past because most of the population has some degree of immunity. What is more, many of these measures offer benefits beyond the immediate threat posed by the pandemic. As well as reducing the risks associated with covid, they will protect and promote health and wellbeing in the longer term, with consequent benefits to productivity and the economy.

They are:

1. Clear and consistent messaging concerning covid risk and risk mitigation, reinforced by public statements by those in positions of authority3;

2. Increased efforts to promote vaccine uptake, among all age groups,4 and with particular emphasis on groups among whom uptake has been low, in particular ethnic minority communities.5 This should be coupled with a clear long term plan to address waning immunity and immune escape by new variants6;

3. Installing and/or upgrading ventilation/air filtration in all public buildings, with schools an urgent priority over the summer holidays7;

4. Provision of free lateral flow tests to enable everyone to follow existing public health guidelines8;

5. Financial and other support for all workers to self-isolate if infected9;

6. Systematic promotion of the use of FFP2/FFP3 masks in indoor public spaces and public transport when infection rates are high10;

7. Increased support for the equitable global provision of vaccines and anti-virals.11

If implemented, these measures will make it possible for people to make informed decisions that will reduce the risk of illness to them, their families, and the communities in which they live and work. By reducing infections they will also reduce the disruption to the lives of individuals and society.  
<https://www.bmj.com/content/378/bmj.o1793>

**title:** Comparative effectiveness of ChAdOx1 versus BNT162b2 covid-19 vaccines in health and social care workers in England: cohort study using OpenSAFELY

BMJ| 20th JULY 2022  
  
Objective To compare the effectiveness of the BNT162b2 mRNA (Pfizer-BioNTech) and the ChAdOx1 (Oxford-AstraZeneca) covid-19 vaccines against infection and covid-19 disease in health and social care workers.

Design Cohort study, emulating a comparative effectiveness trial, on behalf of NHS England.

Setting Linked primary care, hospital, and covid-19 surveillance records available within the OpenSAFELY-TPP research platform, covering a period when the SARS-CoV-2 Alpha variant was dominant.

Participants 317 341 health and social care workers vaccinated between 4 January and 28 February 2021, registered with a general practice using the TPP SystmOne clinical information system in England, and not clinically extremely vulnerable.

Interventions Vaccination with either BNT162b2 or ChAdOx1 administered as part of the national covid-19 vaccine roll-out.

Main outcome measures Recorded SARS-CoV-2 positive test, or covid-19 related attendance at an accident and emergency (A&E) department or hospital admission occurring within 20 weeks of receipt of the first vaccine dose.

Results Over the duration of 118 771 person-years of follow-up there were 6962 positive SARS-CoV-2 tests, 282 covid-19 related A&E attendances, and 166 covid-19 related hospital admissions. The cumulative incidence of each outcome was similar for both vaccines during the first 20 weeks after vaccination. The cumulative incidence of recorded SARS-CoV-2 infection 20 weeks after first-dose vaccination with BNT162b2 was 21.7 per 1000 people (95% confidence interval 20.9 to 22.4) and with ChAdOx1 was 23.7 (21.8 to 25.6), representing a difference of 2.04 per 1000 people (0.04 to 4.04). The difference in the cumulative incidence per 1000 people of covid-19 related A&E attendance at 20 weeks was 0.06 per 1000 people (95% CI −0.31 to 0.43). For covid-19 related hospital admission, this difference was 0.11 per 1000 people (−0.22 to 0.44).

Conclusions In this cohort of healthcare workers where we would not anticipate vaccine type to be related to health status, we found no substantial differences in the incidence of SARS-CoV-2 infection or covid-19 disease up to 20 weeks after vaccination. Incidence dropped sharply at 3-4 weeks after vaccination, and there were few covid-19 related hospital attendance and admission events after this period. This is in line with expected onset of vaccine induced immunity and suggests strong protection against Alpha variant covid-19 disease for both vaccines in this relatively young and healthy population of healthcare workers.  
<https://www.bmj.com/content/378/bmj-2021-068946>   
Linked editorial: [Rapid covid-19 vaccination for health workers](https://www.bmj.com/content/378/bmj.o1674)

**title:** Burden of SARS-CoV-2 infection in healthcare workers during second wave in England and impact of vaccines: prospective multicentre cohort study (SIREN) and mathematical model  
  
BMJ| 20th JULY 2022  
  
Objective To describe the incidence of, risk factors for, and impact of vaccines on primary SARS-CoV-2 infection during the second wave of the covid-19 pandemic in susceptible hospital healthcare workers in England.

Design Multicentre prospective cohort study.

Setting National Health Service secondary care health organisations (trusts) in England between 1 September 2020 and 30 April 2021.

Participants Clinical, support, and administrative staff enrolled in the SARS-CoV-2 Immunity and Reinfection Evaluation (SIREN) study with no evidence of previous infection. Vaccination status was obtained from national covid-19 vaccination registries and self-reported.

Main outcome measure SARS-CoV-2 infection confirmed by polymerase chain reaction. Mixed effects logistic regression was conducted to determine demographic and occupational risk factors for infection, and an individual based mathematical model was used to predict how large the burden could have been if vaccines had not been available from 8 December 2020 .

Results During England’s second wave, 12.9% (2353/18 284) of susceptible SIREN participants became infected with SARS-CoV-2. Infections peaked in late December 2020 and decreased from January 2021, concurrent with the cohort’s rapid vaccination coverage and a national lockdown. In multivariable analysis, factors increasing the likelihood of infection in the second wave were being under 25 years old (20.3% (132/651); adjusted odds ratio 1.35, 95% confidence interval 1.07 to 1.69), living in a large household (15.8% (282/1781); 1.54, 1.23 to 1.94, for participants from households of five or more people), having frequent exposure to patients with covid-19 (19.2% (723/3762); 1.79, 1.56 to 2.06, for participants with exposure every shift), working in an emergency department or inpatient ward setting (20.8% (386/1855); 1.76, 1.45 to 2.14), and being a healthcare assistant (18.1% (267/1479); 1.43, 1.16 to 1.77). Time to first vaccination emerged as being strongly associated with infection (P<0.001), with each additional day multiplying a participant’s adjusted odds ratio by 1.02. Mathematical model simulations indicated that an additional 9.9% of all patient facing hospital healthcare workers would have been infected were it not for the rapid vaccination coverage.

Conclusions The rapid covid-19 vaccine rollout from December 2020 averted infection in a large proportion of hospital healthcare workers in England: without vaccines, second wave infections could have been 69% higher. With booster vaccinations being needed for adequate protection from the omicron variant, and perhaps the need for further boosters for future variants, ensuring equitable delivery to healthcare workers is essential. The findings also highlight occupational risk factors that persisted in healthcare workers despite vaccine rollout; a greater understanding of the transmission dynamics responsible for these is needed to help to optimise the infection prevention and control policies that protect healthcare workers from infection and therefore to support staffing levels and maintain healthcare provision.  
<https://www.bmj.com/content/378/bmj-2022-070379>   
Linked editorial: [Rapid covid-19 vaccination for health workers](https://www.bmj.com/content/378/bmj.o1674)

**title:** WANING EFFECTIVENESS OF BNT162B2 AND CHADOX1 COVID-19 VACCINES OVER SIX MONTHS SINCE SECOND DOSE: OPENSAFELY COHORT STUDY USING LINKED ELECTRONIC HEALTH RECORDS

BMJ| 20th JULY 2022  
  
Objective To estimate waning of covid-19 vaccine effectiveness over six months after second dose.

Design Cohort study, approved by NHS England.

Setting Linked primary care, hospital, and covid-19 records within the OpenSAFELY-TPP database.

Participants Adults without previous SARS-CoV-2 infection were eligible, excluding care home residents and healthcare professionals.

Exposures People who had received two doses of BNT162b2 or ChAdOx1 (administered during the national vaccine rollout) were compared with unvaccinated people during six consecutive comparison periods, each of four weeks.

Main outcome measures Adjusted hazard ratios for covid-19 related hospital admission, covid-19 related death, positive SARS-CoV-2 test, and non-covid-19 related death comparing vaccinated with unvaccinated people. Waning vaccine effectiveness was quantified as ratios of adjusted hazard ratios per four week period, separately for subgroups aged ≥65 years, 18-64 years and clinically vulnerable, 40-64 years, and 18-39 years.

Results 1 951 866 and 3 219 349 eligible adults received two doses of BNT162b2 and ChAdOx1, respectively, and 2 422 980 remained unvaccinated. Waning of vaccine effectiveness was estimated to be similar across outcomes and vaccine brands. In the ≥65 years subgroup, ratios of adjusted hazard ratios for covid-19 related hospital admission, covid-19 related death, and positive SARS-CoV-2 test ranged from 1.19 (95% confidence interval 1.14 to 1.24)to 1.34 (1.09 to 1.64) per four weeks. Despite waning vaccine effectiveness, rates of covid-19 related hospital admission and death were substantially lower among vaccinated than unvaccinated adults up to 26 weeks after the second dose, with estimated vaccine effectiveness ≥80% for BNT162b2, and ≥75% for ChAdOx1. By weeks 23-26, rates of positive SARS-CoV-2 test in vaccinated people were similar to or higher than in unvaccinated people (adjusted hazard ratios up to 1.72 (1.11 to 2.68) for BNT162b2 and 1.86 (1.79 to 1.93) for ChAdOx1).

Conclusions The rate at which estimated vaccine effectiveness waned was consistent for covid-19 related hospital admission, covid-19 related death, and positive SARS-CoV-2 test and was similar across subgroups defined by age and clinical vulnerability. If sustained to outcomes of infection with the omicron variant and to booster vaccination, these findings will facilitate scheduling of booster vaccination.  
<https://www.bmj.com/content/378/bmj-2022-071249>

**title:** Prediction of hospital-onset COVID-19 infections using dynamic networks of patient contact: an international retrospective cohort study

the lancet digital health | august 2022  
  
Real-time prediction is key to prevention and control of infections associated with health-care settings. Contacts enable spread of many infections, yet most risk prediction frameworks fail to account for their dynamics. We developed, tested, and internationally validated a real-time machine-learning framework, incorporating dynamic patient-contact networks to predict hospital-onset COVID-19 infections (HOCIs) at the individual level…  
  
…Dynamic contact networks are robust predictors of individual patient risk of HOCIs. Their integration in clinical care could enhance individualised infection prevention and early diagnosis of COVID-19 and other nosocomial infections.  
<https://www.thelancet.com/journals/landig/article/PIIS2589-7500(22)00093-0/fulltext>

**title:** Surveillance testing using salivary RT-PCR for SARS-CoV-2 in managed quarantine facilities in Australia: A laboratory validation and implementation study  
  
the lancet regional health western pacific| 7th july 2022  
  
In this multi-centre evaluation, we aimed to validate RT-PCR using salivary swab testing of SARS-CoV-2 for large-scale surveillance testing and assess implementation amongst staff working in the hotel quarantine system in Victoria, Australia…  
  
… Salivary RT-PCR had an acceptable level of agreement compared to standard nasal/oropharyngeal swab RT-PCR within early symptom onset. The scalability, tolerability and ease of self-collection highlights utility for frequent or repeated testing in high-risk settings, such as quarantine or healthcare environments where regular monitoring of staff is critical for public health, and protection of vulnerable populations.  
<https://www.thelancet.com/journals/lanwpc/article/PIIS2666-6065(22)00148-1/fulltext>

**title:** Effectiveness of BNT162b2 Vaccine against Omicron in Children 5 to 11 Years of Age  
  
new england journal of medicine | 20th july 2022  
  
…To our knowledge, this study represents the first report of the clinical efficacy of the initial   
In a study conducted from January 21, 2022, through April 8, 2022, when the omicron variant was spreading rapidly, we analyzed data on children in Singapore who were 5 to 11 years of age. We assessed the incidences of all reported SARS-CoV-2 infections (confirmed on polymerase-chain-reaction [PCR] assay, rapid antigen testing, or both), SARS-CoV-2 infections confirmed on PCR assay, and coronavirus disease 2019 (Covid-19)–related hospitalizations among unvaccinated, partially vaccinated (≥1 day after the first dose of vaccine and up to 6 days after the second dose), and fully vaccinated children (≥7 days after the second dose). Poisson regression was used to estimate vaccine effectiveness from the incidence rate ratio of outcomes…  
  
… During a period when the omicron variant was predominant, BNT162b2 vaccination reduced the risks of SARS-CoV-2 infection and Covid-19–related hospitalization among children 5 to 11 years of age.  
<https://www.nejm.org/doi/full/10.1056/NEJMoa2203209>

**title:** BNT162b2 Vaccine Effectiveness against Omicron in Children 5 to 11 Years of Age  
  
new england journal of medicine | 21st july 2022  
  
Using data from the largest health care organization in Israel, we identified a cohort of children 5 to 11 years of age who were vaccinated on or after November 23, 2021, and matched them with unvaccinated controls to estimate the vaccine effectiveness of BNT162b2 among newly vaccinated children during the omicron wave…  
  
… Our findings suggest that as omicron was becoming the dominant variant, two doses of the BNT162b2 messenger RNA vaccine provided moderate protection against documented SARS-CoV-2 infection and symptomatic Covid-19 in children 5 to 11 years of age.  
<https://www.nejm.org/doi/full/10.1056/NEJMoa2205011>

**title:** UNCERTAINTIES ABOUT THE OPTIMAL TIMING OF FOURTH DOSE OF COVID-19 VACCINES

JAMA| 21st july 2022  
  
…The optimal timing of booster vaccinations is therefore a priority unanswered question for vaccine developers and policy makers alike, aiming to develop and implement vaccination programs that protect people most efficiently as we transition to endemic COVID-19.

Eliakim-Raz and colleagues2 report on a study that aims to help answer this question. Conducted in Israel, a country that has recommended fourth doses of the Pfizer-BioNTech BNT162b2 vaccine to all adults aged 60 years or older since January 2022, this observational study compared immune response—measured as anti–spike protein immunoglobulin G (IgG) antibody titers—before and after third and fourth vaccine doses, thereby providing information on the magnitude and duration of the immune boost. The results show a significant but transient increase in IgG titers after the third dose, decreasing approximately 10-fold after 5 months; titers were then restored immediately after a fourth dose. Sex, age, time since vaccination (which varied only minimally), and presence of comorbid conditions were not associated with postvaccination IgG titres, providing limited evidence that boosters are suitable for most people…  
<https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2794466>

**title:** Antibody Titers After a Third and Fourth SARS-CoV-2 BNT162b2 Vaccine Dose in Older Adults

jama | 21st JULY 2022  
  
“The essence of global health equity is the idea that something so precious as health might be   
…This study, which is an extension of a prior study,1 compared the response to the third and fourth BNT162b2 vaccine doses among individuals aged 60 years or older by evaluating antispike (anti-S) immunoglobulin G (IgG) antibody titers before and after each dose. This population is at high risk of developing severe SARS-CoV-2 disease and was the first to receive authorization for a third and fourth vaccine dose…  
  
…This study found that the third and fourth BNT162b2 doses in adults aged 60 years or older were associated with a significant increase in anti-S IgG titers approximately 2 weeks after the vaccination, with no major adverse events. Data on the response to the fourth BNT162b2 dose among healthy older adults are lacking.  
<https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2794465>

**title:** Safety and Adverse Events Among Long-term Care Residents Receiving a Third COVID-19 mRNA Vaccine Booster Dose in Quebec

JAMA | 21st JULY 2022  
  
…We examined adverse events following mRNA booster vaccination in LTC residents within the context of factors unique to the province of Quebec that may increase reactogenicity: extended interval between doses 1 and 2,3 heterologous vaccination, full dose mRNA-1273 (100 µg) booster,4 and high prevalence of previous COVID-19 infection.5  
  
…In comparison with previous reports of third doses’ reactogenicity,2,4 our findings indicate a high proportion of systemic adverse events, specifically among LTC residents with prior infection. SAEs were also more likely with MPM compared with MPP and PPP, suggesting that the mRNA-1273 100-µg booster dose and heterologous vaccination may increase reactogenicity.6 The extended interval between doses 1 and 2 may have increased immunogenicity.3 Although LTC residents are disproportionately at risk of severe outcomes following COVID-19 infection, our findings suggest that they may also be at greater risk of postvaccination adverse effects. As additional booster doses are considered due to waning immunity and variants, examination of past vaccines and intervals, immunity status, and booster dosage may be required to weigh their potential benefits against the risk of adverse effects.

Limitations of our study include absence of antibody testing for prior infections, infections prior to the Omicron variant, and no direct comparison of SAEs between the third and previous doses. Our results may not be generalizable to other older adult populations.  
<https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2794464>

**title:** Protection Associated with Previous SARS-CoV-2 Infection in Nicaragua

the lancet | 11th JULY 2022  
  
…From March 2020 through October 2021 in the Household Influenza Cohort Study (HICS) study, we followed 2353 participants, ranging in age from newborn infants to elderly persons up to 94 years of age, in 437 households in Nicaragua for the presence of SARS-CoV-2 infection (Figure 1A). The study was approved by the institutional review boards at the Nicaraguan Ministry of Health, the University of Michigan, and the University of California, Berkeley. All the participants (or their parents or guardians if they were under the age of 18 years) provided written informed consent; children who were 6 years of age or older also provided assent.

Here, we report on immunity levels in the second wave of the pandemic (from April through October 2021), during which the P.1 (gamma) and B.1.617.2 (delta) variants predominated, to evaluate protection induced by previous SARS-CoV-2 infection against coronavirus disease 2019 (Covid-19) (Fig. S2 in the Supplementary Appendix, available with the full text of this letter at NEJM.org). Starting in March 2021, vaccines against Covid-19 became available in the community, so in this analysis we excluded participants who had received one or more vaccine doses in order to assess protection associated only with previous infection…  
<https://www.nejm.org/doi/full/10.1056/NEJMc2203985>

**title:** Mix-and-Match COVID-19 Boosters After Inactivated Virus Vaccine

JAMA | 11th JULY 2022  
  
A booster shot of mRNA or viral vector SARS-CoV-2 vaccine after 2 doses of an inactivated virus vaccine better protected patients against severe disease and death from COVID-19 than 3 doses of the inactivated virus vaccine, according to a large-scale study in The Lancet Global Health. The findings give additional support for a mix-and-match approach to COVID-19 boosters, the authors wrote.

The observational study involved about 4.1 million patients in Chile who received 2 doses of the CoronaVac (Sinovac Biotech) inactivated virus SARS-CoV-2 vaccine. Among them, 4.5% also received a CoronaVac booster while 48.9% received a BNT162b2 (Pfizer-BioNTech) mRNA vaccine booster and 46.5% received an AZD1222 (Oxford-AstraZeneca) viral vector vaccine booster…  
<https://jamanetwork.com/journals/jama/fullarticle/2794352>

**title:** Cutaneous T-Cell–Rich Lymphoid Infiltrates After SARS-CoV-2 Vaccination

JAMA | 21st JULY 2022  
  
This case series found cutaneous T-cell–rich lymphoid infiltrates to be rare but potential complications after Pfizer/BioNTech COVID-19 mRNA vaccination. Although the Moderna and Pfizer/BioNTech mRNA vaccines have demonstrated similar efficacy and immunogenicity, reporting of vaccine-related cutaneous lymphoid proliferations has been more common after the latter.3,4 It is difficult to comment on this association owing to the small and anecdotal character of our study and lack of supportive literature. Furthermore, this study is limited in its ability to assess true incidence owing to a scarcity of reported reactions and possible confirmation bias intrinsic to self-reported data…  
<https://jamanetwork.com/journals/jamadermatology/fullarticle/2794398>

**title:** Finite neutralisation breadth of omicron after repeated vaccination

the lancet microbe | 21st JULY 2022  
  
Exposure to SARS-CoV-2 antigens by vaccination or infection expands the breadth of neutralising antibodies to better recognise mutated variants,1 which is part of the reason why ancestral SARS-CoV-2-based vaccines still protect against immune evasive variants like omicron.2 However, since natural expansion of neutralisation breadth relies on antibody affinity maturation, a process consisting of somatic hypermutation and clonal selection of B cells, neutralisation breadth might be limited by the time since first antigen exposure.3 We therefore wonder whether repeated vaccination in individuals with existing broad neutralisation breadth could trigger this limit, and if true, whether less frequent vaccination could maintain neutralisation breadth in those individuals.  
  
…Without artifacts due to variant infection, our data provided preliminary evidence that neutralisation breadth of omicron sublineages was finite in individuals at 2 years who were convalescing with repeated vaccination. Individuals who are convalescing with broad baseline neutralisation breadth thus might not need frequent booster vaccination. In contrast, individuals who are uninfected might need timely boosters or ideally variant-based vaccines to acquire optimal neutralisation breadth against omicron and future variants.  
<https://www.thelancet.com/journals/lanmic/article/PIIS2666-5247(22)00193-8/fulltext>

**health management & workforce well-being**

**title:** The NHS is not living with covid, it’s dying from it

BMJ | 14th july 2022  
  
The government must be honest about the threat the pandemic still poses

Today may be the most difficult day the NHS has ever experienced. The headlines will focus on the pressures created by the heatwave and that most visible sign of healthcare failure—ambulances queuing outside hospitals.1 But, as readers of The BMJ and HSJ know all too well, this brutal situation is the culmination of many factors, which include but are not limited to prolonged periods of underfunding in the past decade,2 lack of an adequate workforce plan,34 and a cowardly and shortsighted failure to undertake social care reform.5

There is one more problem. Most people (including many in the NHS) are so tired of it that they are wilfully pushing it to the back of their minds, but now is the time to face the fact that the nation’s attempt to “live with covid” is the straw that is breaking the NHS’s back. In 2020 and 2021 the NHS coped with pandemic peaks by stopping or slowing much of its routine work. 2022 was meant to be the year of full speed recovery, when we would build back better and fairer, when record waiting lists in elective care, cancer diagnosis and treatment, and mental health would begin to reduce, and the workload on primary care would begin to ease.

One of the assumptions underpinning this hope was that covid-19 would be nothing more than an irritant for most of the year, with perhaps a winter wave in December. It is now July, and not counting the first omicron surge that peaked in January, the UK and the NHS have experienced two further covid waves,6 with gaps of just under three months between peaks (https://coronavirus.data.gov.uk/). The current wave of hospital admissions78 driven by the BA.4 and BA.5 variants is likely to peak in the next few days, but other variants will be ready for global distribution soon….  
<https://www.bmj.com/content/378/bmj.o1779>

**title:** David Oliver: My personal pandemic experience is just one of many

BMJ |20th july 2022  
  
…After two years of dodging the bullet I then caught covid myself in March, and, while not sick enough to be admitted, I haven’t been right since. Some of my symptoms have doubtless been covid related, but others were due to burnout, anxiety, and depression—eventually leading to my being signed off work sick in mid-May, unsure when I can return to clinical work. Having been elected as president of the Royal College of Physicians in April, I reluctantly and with great sadness had to withdraw from the role last week, as I no longer felt able to do it justice. If this has happened to me—a veteran, stress tempered NHS doctor, 33 years in the job, with no long term conditions and previously fairly robust—then few of us are likely to be exempt from the strains of the past couple of years.

The NHS is now battling such a major backlog of cancelled elective procedures and relentless pressure on urgent care that this week every ambulance trust declared a major emergency. The service faces huge recruitment and retention issues, staffing gaps, social care pressures, and health inequalities, further adding to the strife. The timing—where so many staff find themselves tired, burnt out, demoralised, or unwell—could not be worse.

A George Cross won’t compensate for this, and the mood music created by intransigence on terms and conditions won’t help. Without sufficient clinical and care staff, in sufficiently good health, and with sufficient support, energy, and morale, there will soon be no viable NHS or social care system.  
<https://www.bmj.com/content/378/bmj.o1761>

**title:** Addressing Well-being Throughout the Health Care Workforce: The Next Imperative

jama |18th july 2022  
  
…Everyone wants a brilliant NHS. But to achieve that in this new context, we are going to need a   
uch of the clinician well-being movement has focused on physicians and nurses.1 But as the May 2022 Surgeon General’s Advisory Addressing Health Worker Burnout2 and ongoing deliberations of the National Academy of Medicine’s Action Collaborative on Clinician Well-Being and Resilience highlight, the coronavirus pandemic has underscored the need to attend to the well-being of the entire health care workforce, including nursing assistants, transport personnel, clerical staff, and others.

In a survey of 10 284 primary care health care personnel conducted before the pandemic, 19.4% of nonphysician clinical staff reported burnout.3 The pandemic has magnified the problem. In a nationwide survey of 125 717 health care workers, the highest turnover rates among all health care workers during the beginning of the pandemic (April 2020 to December 2020) were reported by health care aides and assistants, technicians, and licensed practical and vocational nurses.4 Even though turnover rates recovered somewhat between January and October 2021, they remained highest for health aides and assistants and for those whose race and ethnicity were identified as American Indian/Alaska Native/Pacific Islander, Black, or Latino.4 Ominously, a recent report based on international surveys that also included 434 US clinicians suggested that 47% of the current US health care workforce plan to leave their current role within the next 2 to 3 years…  
<https://jamanetwork.com/journals/jama/fullarticle/2794541>

**title:** Childcare Stress, Burnout, and Intent to Reduce Hours or Leave the Job During the COVID-19 Pandemic Among US Health Care Workers

JAMA |18th july 2022  
  
Question Is high childcare stress (CCS) associated with burnout, intent to reduce clinical hours, and intent to leave the job among US health care workers during the COVID-19 pandemic?

Findings In this survey study, with 58 408 respondents conducted between April and December 2020, high CCS was associated with 80% greater odds of burnout in all health care workers.

Meaning These findings suggest there is an association between reporting high CCS and burnout, and programs to reduce CCS may be beneficial for workers and health systems.  
<https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2794300>

**recovery**

**title:** Covid-19: Up to £2.7bn of public money at risk from PPE disputes, says watchdog

BMJ |20th july 2022  
  
Up to £2.7bn of taxpayers’ money is at risk in UK government disputes with contractors over the supply of personal protective equipment (PPE) during the covid-19 pandemic, the parliamentary spending watchdog has warned. In its latest report, the Commons Public Accounts Committee blasts the government for slowness in progressing the disputes, most of which relate to the quality of PPE provided. It also accuses the Department of Health and Social Care for England of failure to act on fraud in the procurement process. “There is little sign of action against potentially fraudulent suppliers despite the department’s estimate that as much as 5% of PPE expenditure may have involved fraud,” says the report.

The committee says that the department is in dispute with PPE suppliers on 176 contracts, with up to £2.7bn of taxpayers’ money at risk. The government has been left with 3.9 billion items of PPE that are unusable or unneeded, it says…  
<https://www.bmj.com/content/378/bmj.o1817>

**title:** Opinion: Covid-19: One year on from “Freedom Day,” what have we learnt?

BMJ |19th july 2022  
  
 If we are to successfully live with covid, we need to draw on past lessons, say Simon Williams and Susan Michie

Although many people in the UK may think that the covid-19 pandemic is over1—an understandable conclusion given its relative lack of media coverage and the government’s “Living with Covid” strategy2—it is still very much ongoing. In June and July we witnessed the third wave of cases and hospitalisations in 2022 alone,3 with another potentially more severe wave predicted for the coming autumn or winter.4 In between these waves, the level of transmission has remained high. This is unsustainable for many reasons, including the pressure it puts on the NHS, the large scale illness and absenteeism it leads to, the burden of long covid, and the potential for further, more deadly variants to evolve.

Recent data suggest that protective behaviours, like mask wearing or self-isolating when ill, have been falling in recent months.5 Moreover, the government has removed protections like free testing and financial support for self-isolation, and has not taken steps to make the environment safer—either by ensuring adequate ventilation and/or air filtration in public spaces or maintaining momentum in the covid vaccination and communication campaigns.

A year ago, ahead of the so called “Freedom Day” in the UK on 19 July 2021, the government published a SAGE paper that looked at how we maintain behaviours that reduce the transmission of infection.6 The report argued that, with the removal of legal measures, protective behaviours against covid-19 would not be sustained without a variety of coordinated interventions across the private and public sector.

Unfortunately, their advice on how to move from a rules based approach to one that manages risk in a more holistic way through our everyday behaviour has not been followed by the government. To start with, it would help to emphasise how key behaviours can still minimise risk, such as socialising outdoors, working from home when possible, and, crucially, staying at home when ill. We also need to remember that tackling a pandemic is not just down to an individual’s motivation, but also the capabilities and opportunities they are provided (or not provided) with.7 And individuals are of many types—employers, managers, planners, politicians—everyone has a part to play.6

The Swiss Cheese model of pandemic risk management proposes that multiple layers of protection are necessary in order to build a more resilient system that minimises risk of failure while maximising the ability to operate effectively.89 So, what behaviours and what supports do we still need to consider for the next phase of the pandemic?...   
[Face masks; covid testing; open windows; vaccinate; isolation; distancing]  
<https://www.bmj.com/content/378/bmj.o1803>

title: The UK COVID-19 Inquiry must examine the foundations of pandemic decision making

the lancet | 18TH JULY 2022  
  
As the UK Government has shifted its pandemic response to living with COVID-19,1 the long-awaited UK COVID-19 Inquiry started on June 28, 2022. Chaired by the Right Honourable Baroness Heather Hallett DBE, the Inquiry's Terms of Reference have been published after a public consultation and a final decision from the UK Prime Minister.2 However, we believe that the UK COVID-19 Inquiry risks missing scrutiny of important aspects of the pandemic response if it is built on the same foundations that produced government pandemic decision making. Crucially, the Inquiry must review if a culture of political expediency dictated the response at various key timepoints during this pandemic. We highlight two important examples of what we regard as gaps in the UK COVID-19 Inquiry's Terms of Reference.

First, long COVID is not centred in the Terms of Reference…  
  
…The second gap in the Terms of Reference is an inadequate focus on the implications of airborne transmission of SARS-CoV-2…  
<https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(22)01332-0/fulltext>

**title:** The COVID-19 inquiry: learning the lessons  
  
nhs confederation | 15th july 2022  
  
Our view on the situation facing the NHS when the pandemic began, how events unfurled and core considerations for the COVID-19 inquiry…  
<https://www.nhsconfed.org/publications/covid-19-inquiry-learning-lessons>

**public health & health inequalities**

**title:** Effect of Text Message Reminders and Vaccine Reservations on Adherence to a Health System COVID-19 Vaccination Policy: A Randomized Clinical Trial

JAMA| 20th july 2022  
  
Question Can a behavioral nudge delivered through text messages with a reserved date for vaccination over a 2-week period accelerate employee adherence with a health system COVID-19 vaccination policy?

Findings In this randomized clinical trial of 2000 participants, the behavioral nudge delivered through text messages significantly increased adherence to the health system COVID-19 vaccination policy by 4.9 percentage points compared with the control group during the 2-week intervention period. At the 4-week time point near the vaccination policy deadline, there was no longer a significant difference in the overall adherence rate between groups.

Meaning This randomized clinical trial found that a behavioral nudge delivered by text message with a reserved date for vaccination accelerated adherence to a health system COVID-19 vaccination policy; however, other approaches may be needed to change overall adherence rates by the time of the policy deadline.  
<https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2794447>

**title:** Factors associated with reversals of COVID-19 vaccination willingness: Results from two longitudinal, national surveys in Japan 2021-2022

the lancet regional health western pacific| 21st july 2022  
  
“The essence of global health equity is the idea that something so precious as health might be   
Research characterizing changes of heart with respect to vaccine intention is scarce, and very little research considers those who were initially vaccine willing but became hesitant. Here, we sought to assess the factors related to reversals of vaccine willingness…  
  
… Sociodemographic, health-related, psychologic/attitudinal, and information-related variables predicted the development of vaccine hesitancy among those with prior willingness. Most of these predictors were also associated with vaccination status.  
<https://www.thelancet.com/journals/lanwpc/article/PIIS2666-6065(22)00155-9/fulltext>

**title:** Characterising reasons for reversals of COVID-19 vaccination hesitancy among Japanese people: One-year follow-up survey

the lancet regional health western pacific| 21st july 2022  
  
“The essence of global health equity is the idea that something so precious as health might be   
Vaccine hesitancy is a global public health threat. We present unique data that characterises those who experienced reversals of COVID-19 vaccination hesitancy in Japan…  
  
…In the second survey we received 19195 responses (response rate 63.9%), of which 8077 responded ‘no’ or ‘not sure’ in the first survey regarding their intention to be vaccinated. Of these, 5861 responded having received or intending to receive the vaccine (72.6%). We detected six and five sub-populations (clusters) among the ‘no’ group and ‘not sure’ group, respectively. The clusters were characterized by perceived benefits of vaccination, including the COVID-19 vaccine, awareness of the COVID-19 vaccination status of those close to them, recognition of the social significance of COVID-19 vaccination for the spread of infection, and dispelled concerns about short-term adverse reactions and the safety of the COVID-19 vaccine. Work and personal relationship reasons were also found to be a unique overarching reason for vaccination changes of heart only among those who did not intend to vaccinate.  
  
Those who changed their intention to accept COVID-19 vaccination as well as their unique characteristics as detailed in this study will be important entry points when discussing how to promote vaccination to those who are hesitant to vaccinate in the future.  
<https://www.thelancet.com/journals/lanwpc/article/PIIS2666-6065(22)00156-0/fulltext>

We

[TRFT Library & Knowledge Service](https://www.trftlibraryknowledge.com/) aim to bring together the latest guidelines, research and news on Covid-19 through our [Covid-19 portal](https://www.trftlibraryknowledge.com/coronavirus.html). For daily updates on Covid-19 visit our '[Latest Health](https://trfthealthweeklydigest.wordpress.com/)' newsfeed, or use the hashtag [#covid19rftlks](https://twitter.com/hashtag/covid19rftlks?src=hashtag_click) to see our latest tweets on Covid-19 research, guidelines and news.

We also produce a range of subject-specific news feeds to ensure our clinical and professional teams stay up to date with developments in their work areas. Please visit our [website](http://www.trftlibraryknowledge.com/) for more information

<https://www.trftlibraryknowledge.com/health-newsfeeds.html>