



UK Health
Security
Agency

COVID-19 Literature Digest – 05/11/2021

Dear all,

Please find [today's report](#) below.

UKHSA's COVID-19 Literature Digest has been produced since February 2020. A selection of our previous Digests [can be found here](#). This resource aims to highlight a small selection of recent COVID-19 papers that are relevant to UK settings, contain new data, insights or emerging trends. The Digest Team generate a report once per week (Fri). The reports include both preprints, which should be treated with caution as they are NOT peer-reviewed and may be subject to change, and also research that has been subject to peer review and wider scrutiny. The Digest is very rapidly produced and does not claim to be a perfect product; the inclusion or omission of a publication should not be viewed as an endorsement or rejection by UKHSA. We do not accept responsibility for the availability, reliability or content of the items included in this resource.

To join our email distribution list, or to be removed, please send a request to COVID.LitDigest@phe.gov.uk. If you are interested in papers relating to behaviour and social science please contact COVID19.behaviouralscience@phe.gov.uk to sign up to receive the Behavioural Sciences Weekly Report.

Best wishes,

Emma Farrow, James Robinson, Kester Savage, Nicola Pearce-Smith, Michael Cook
On behalf of the UKHSA COVID-19 Literature Digest Team

Report for 05.11.2021 (please note that papers that have **NOT been peer-reviewed** are highlighted in red).

Sections:

[Serology and immunology](#)

[Vaccines](#)

[Diagnostics and genomics](#)

[Epidemiology and clinical - children and pregnancy](#)

[Epidemiology and clinical - long-term complications / sequelae](#)

[Epidemiology and clinical - risk factors](#)

[Epidemiology and clinical - other](#)

[Infection control / non-pharmaceutical interventions](#)

[Transmission](#)

[Treatment](#)

[Modelling](#)

[Overviews, comments and editorials \(no digest\)](#)

Serology and immunology

Publication Date	Title/URL	Journal / Article type	Digest
29.10.2021	Anti-spike antibody response to natural SARS-CoV-2 infection in the general population	Nat Commun / Article	<ul style="list-style-type: none">• Representative data from 7,256 UK COVID-19 infection survey participants with positive PCR tests from 26.04.2020 – 14.06.2021• Whilst 24% of participants did not seroconvert after testing PCR positive, restricting to those with strong evidence for a true-positive PCR result ($Ct \leq 32$, ≥ 2 genes detected), this figure was reduced to 11%• Non-responders had fewer symptoms and lower viral loads. They were also older, which is consistent with being genuine non-responders• Of those who seroconvert, anti-spike IgG antibodies remained above positivity threshold for an average of 380–590 days for 20-year-olds, 410–649 days for 40-year-olds, 441–703 days for 60-year-olds and 471–755 days for 80-year-olds.• Individual symptoms were independently associated with generating antibodies. Cough, loss of smell/taste and fever were the strongest predictors.
02.11.2021	Viral loads of Delta-variant SARS-CoV-2 breakthrough infections after vaccination and booster with BNT162b2	Nat Med / Brief communication	<ul style="list-style-type: none">• Analysis of over 16,000 infections during current wave in Israel (28.06.2021 - 24.08.2021), dominated by Delta• Data suggests breakthrough infections in recently vaccinated patients (within 2 months of second dose) have lower viral loads compared to unvaccinated patients with extent of viral load reduction similar to pre-Delta breakthrough observations.• Protection starts diminishing for patients two months post vaccination and ultimately vanishes for patients 6 months or longer post vaccination; diminishing vaccine effectiveness on breakthrough infection viral loads is restored following the booster vaccine.• Preprint previously included

03.11.2021	Determinants of pre-vaccination antibody responses to SARS-CoV-2: a population-based longitudinal study (COVIDENCE UK)	medRxiv (non-peer reviewed) / Article	<ul style="list-style-type: none"> • Prospective population-based study in SARS-CoV-2 vaccine-naive UK adults between 01.05.2020 – 02.11.2020. 1696 (15.2%) of 11,130 participants were seropositive. • Online questionnaires were used to gather information about 88 potential risk factors, and combined IgG/IgA/IgM responses to SARS-CoV-2 spike glycoprotein were determined in dried blood spots. • Higher alcohol consumption and reduced physical exercise represent new modifiable risk factors for SARS-CoV-2 infection. Recognised associations between Asian/Asian British ethnic origin and obesity and increased risk of SARS-CoV-2 seropositivity were independent of other sociodemographic, clinical, or behavioural factors investigated.
31.10.2021	Germinal centre-driven maturation of B cell response to SARS-CoV-2 vaccination	bioRxiv (non-peer reviewed) / Article	<ul style="list-style-type: none"> • Vaccine-responding B cells differentiate into memory B cells (MBCs) and long-lived bone marrow plasma cells (BMPCs). Latter is a hallmark of durable immunity. • Anti-SARS-CoV-2 spike (S)-binding GC B cells detectable in draining lymph nodes for at least six months in 10/15 BNT162b2 [Pfizer] double vaccinated individuals. • 6 months post-vaccination: circulating S-binding MBCs detected in all participants (n=42); S-specific IgG-secreting BMPCs detected in 9/11 participants. • Using a combined approach of (i) single-cell RNA sequencing of responding blood and lymph node B cells from eight participants, (ii) expression of corresponding monoclonal antibodies, authors tracked evolution of 1540 S-specific B cell clones.
03.11.2021	Waning of the Humoral Response to SARS-CoV-2 in Pregnancy is Variant-Dependent	medRxiv (non-peer reviewed) / Article	<ul style="list-style-type: none"> • Nationwide multicentre study including 494 pregnant women found the maternal humoral response to Alpha variant infection was weaker and shorter when compared to Wildtype infections or mRNA BNT162b2 vaccination during pregnancy. • Placental transport compensated for the maternal waning of immunity. • Findings are consistent with a shift in disease etiology and severity induced by the Alpha variant.

[Back to menu](#)

Vaccines

Publication Date	Title/URL	Journal / Article type	Digest
26.10.2021	Vaccine hesitancy among working-age adults with/without disability in the UK	Public Health / Short Communication	<ul style="list-style-type: none"> • UK cross-sectional survey with 10,114 respondents aged 16-64, of which 21.5% were identified as having a disability • Prevalence for vaccine hesitancy amongst respondents with a disability was 7.1% compared to 8.2% of those without a disability • There are slightly higher rates of vaccine hesitancy in women and people from ethnic minorities with disabilities
04.11.2021	SARS-CoV-2 vaccine protection and deaths among US veterans during 2021	Science / Report	<ul style="list-style-type: none"> • Authors report vaccine effectiveness against infection (VE-I) and death (VE-D) by vaccine type (n = 780,225) in Veterans Health Administration, 2.7% of U.S. population. • From February to October 2021: VE-I declined from 87.9% to 48.1%. Decline greatest for Janssen, resulting in a VE-I of 13.1%. • From July to October 2021: VE-D for age 65 years was 73.0% [Janssen], 81.5% [Moderna], 84.3% [Pfizer] • VE-D for age ≥65 years was 52.2% [Janssen], 75.5% for Moderna, and 70.1% [Pfizer] • Although breakthrough infection increased risk of death, vaccination remained protective against death in persons who became infected during the Delta surge.
29.10.2021	Safety and immunogenicity of a high-dose quadrivalent influenza vaccine administered concomitantly with a third dose of the mRNA-1273 SARS-CoV-2 vaccine in adults ≥ 65 years of age: a Phase II, open-label study	medRxiv (non-peer reviewed) / Article	<ul style="list-style-type: none"> • Ongoing Phase II study: concomitant high-dose quadrivalent influenza vaccine (QIV-HD) and mRNA-1273 [Moderna] booster in older adults (≥ 65 years) immunised with two mRNA-1273 doses approx. five months previously. • 306 (of which 296 analysed) adults randomised 1:1:1 to concomitant QIV-HD and mRNA-1273 vaccination (Coad), QIV-HD alone, or mRNA-1273 vaccine alone. • Interim results, up to 21 days after vaccination: no evidence of safety concern / interference in immune response of concomitant QIV-HD and mRNA-1273 vaccine.
01.11.2021	Anti-SARS-CoV-2 vaccination does not induce the formation of autoantibodies but provides humoral immunity following heterologous and homologous vaccination regimens: Results from a clinical and prospective	medRxiv (non-peer reviewed) / Article	<ul style="list-style-type: none"> • Participants recruited Apr – Aug 2021 to systematically analyse immune responses after homologous mRNA regimen (n=41) or vector virus-based vaccines (n=38) or after heterologous Vector/mRNA vaccinations (n=42) • Antibody levels were 90% lower after homologous vector vaccination than with homologous mRNA and heterologous Vector/mRNA vaccination.

	study within professionals of a German University Hospital		<ul style="list-style-type: none"> • Heterologous Vector/mRNA vaccination was found to be more effective than homologous mRNA vaccination in terms of IgM and IgA responses against SARS-CoV2. • Increases in autoantibody generation were only detected after booster vaccination in those with pre-existing autoantibodies; vaccinees showing no autoantibody formation before vaccination, did not respond with sustained autoantibody production upon vaccination. • Findings suggest SARS-CoV2 vaccines do not significantly foster autoantibody production over time but provide humoral immunity
01.11.2021	Efficacy and Safety of SOBERANA 02, a COVID-19 conjugate vaccine in heterologous three doses combination	medRxiv (non-peer reviewed) / Article	<ul style="list-style-type: none"> • A randomised, double-blinded, placebo-controlled, phase 3 trial with 44,031 participants, aged 19-80 years • Participants were assigned to the following groups in a 1:1:1 ratio, administered 28 days apart: a) 2 doses of 25µg SOBERANA 02 b) 2 doses of 25µg SOBERANA 02 + 1 dose 50 µg SOBERANA Plus, or c) 2 doses of placebo. • 2 doses of SOBERANA 02 was safe and attained efficacy of 71.0% in adults; incorporating SOBERANA Plus after two doses of SOBERANA 02, increased efficacy from 71.0 % to 92.4%

[Back to menu](#)

Diagnostics and genomics

Publication Date	Title/URL	Journal / Article type	Digest
26.10.2021	Systematic review with meta-analysis of diagnostic test accuracy for COVID-19 by mass spectrometry	Metabolism / Systematic review	<ul style="list-style-type: none"> • Systematic review including 23 retrospective observational cohort studies (n=2858) up to and including 14.09.2021. Risk of bias assessed via a QUADAS-2 questionnaire • The sensitivity and specificity of some diagnostic tests are encouraging, but are limited by biases and applicability of the research undertaken so far. • Results based on proteomics and blood metabolomics delivered the most compelling performance but further validation is required. • In the case of less invasive matrices, the potential advantages are attractive, but as yet there is little agreement between studies on suitably robust and reproducible targets.

26.10.2021	Fitbeat: COVID-19 Estimation Based on Wristband Heart Rate Using a Contrastive Convolutional Auto-Encoder	Pattern Recognit / Article	<ul style="list-style-type: none"> • Heart rate based identification of individuals with suspected COVID-19 infection • Test set of 19 participants with MS with reported symptoms of COVID-19, 1:1 paired with a MS participant with no COVID-19 symptoms • Unweighted average recall of 95.3%, a sensitivity of 100% and a specificity of 90.6%. • Maximum successful detection of symptoms in given heart rate measurement period, whilst low false alarm rate.
27.10.2021	Predictive usefulness of RT-PCR testing in different patterns of Covid-19 symptomatology: analysis of a French cohort of 12,810 outpatients	Sci Rep / Article	<ul style="list-style-type: none"> • Authors present a clinical strategy for prescribing RT-PCR to patients based on data from COVIDOM, a French cohort of 54,000 patients with clinically suspected Covid-19, including 12,810 patients tested by RT-PCR. • A machine-learning algorithm is used to show that symptoms alone are sufficient to predict RT-PCR outcome with a mean average precision of 86%. Patients with fever and cough be tested by RT-PCR in priority. • RT-PCR does not provide useful results for patients with breathlessness and chest pain or oppression, for whom chest imaging should be a first line of investigation.
04.11.2021	Rapid assessment of SARS-CoV-2 evolved variants using virus-like particles	Science / Report	<ul style="list-style-type: none"> • Authors explore why new SARS-CoV-2 variants demonstrate improved fitness, via SARS-CoV-2 virus-like particles (SC2-VLPs) that package and deliver exogenous transcripts. • Approach enabled analysis of mutations within all structural proteins and at multiple steps in viral life cycle. • In SC2-VLPs, four nucleocapsid (N) mutations found in more-transmissible variants independently increased mRNA delivery and expression by ~10-fold. In a reverse genetics model, S202R and R203M each produced >50-fold more virus. • N mutations and particle assembly could explain the increased spread of variants, including Delta (R203M).
01.11.2021	Equipment-free detection of SARS-CoV-2 and Variants of Concern using Cas13	medRxiv (non-peer reviewed) / Article	<ul style="list-style-type: none"> • SHINEv2, a Cas13-based nucleic acid diagnostic, was benchmarked against state-of-the-art antigen-capture tests using 96 patient samples; demonstrated 50-fold greater sensitivity / 100% specificity. • Designed for discriminating Alpha, Beta, Gamma and Delta variants, which can be read out visually using lateral flow technology. • SHINEv2 is an important advance towards rapid nucleic acid tests that can be performed in any location / outside of centralized clinical laboratories.

[Back to menu](#)

Epidemiology and clinical - children and pregnancy

Publication Date	Title/URL	Journal / Article type	Digest
05.11.2021	SARS-CoV-2 in children with cancer or after haematopoietic stem cell transplant: An analysis of 131 patients	Eur J Cancer / Original research	<ul style="list-style-type: none">• Multinational, observational study of children (aged <19 years) with cancer or after haematopoietic stem cell transplant (HSCT) and confirmed SARS-CoV-2.• 131 patients, across 10 countries: 78 (60%) had leukaemia/lymphoma, 48 (37%) had solid tumour, 5 had primary immunodeficiency and HSCT.• Most had asymptomatic/mild disease, 13% had severe COVID-19 and 3% died.• Comorbidity, coinfection and neutropenia may increase the risk of severe disease.
02.11.2021	Association of Ethnicity With Multisystem Inflammatory Syndrome in Children Related to SARS-CoV-2 Infection: An International Case-Referent Study	Front Pediatr / Article	<ul style="list-style-type: none">• Study to quantify association between Black, Asian, or other non-White genetic background and COVID-19-related MIS-C in children and infants.• 73 cases from nine distinct geographical regions• In comparison to White children, relative risk for developing MIS-C after SARS-CoV-2 infection: 15 for Black children, 11 for Asian, 1.6 for other ethnic background.• Risk of COVID-19-related MIS-C is severely increased in Black children.
26.10.2021	Severity of Illness Caused by Severe Acute Respiratory Syndrome Coronavirus 2 Variants of Concern in Children: A Single-Center Retrospective Cohort Study	medRxiv (non-peer reviewed) / Article	<ul style="list-style-type: none">• Retrospective single-centre cohort study including all children ≤ 18 years-old diagnosed with COVID-19 between 15.10.2020 and 31.08.2021. SARS-CoV-2 isolates were sequenced using the Illumina platform.• Among the 499 (35.1%) patients whose isolate was sequenced, 256 (51.3%) isolates were a variant of concern (VOC): 96 (37.5%) alpha, 38 (14.8%) gamma, and 119 (46.5%) delta.• Compared to non-VOC COVID-19 infections, the gamma VOC, but not alpha or delta, was associated with increased severity.

[Back to menu](#)

Epidemiology and clinical - long-term complications / sequelae

Publication Date	Title/URL	Journal / Article type	Digest
03.11.2021	Prevalence and impact of COVID-19 sequelae on treatment and survival of patients with cancer who recovered from SARS-CoV-2 infection: evidence from the OnCovid retrospective, multicentre registry study	Lancet Oncology / Article	<ul style="list-style-type: none"> • Retrospective study: longer term impact of COVID-19 in patients with cancer. • 2634 patients ≥ 18 years old with a history of solid or haematological malignancy, and confirmed SARS-CoV-2 infection 27.02.2020 - 14.02.2021. • Sequelae more common: in men, patients ≥ 65 years old, two or more comorbidities, history of smoking. Associated with hospitalisation for COVID-19, complicated COVID-19, COVID-19 therapy. • Sequelae post-COVID-19 affect up to 15% of patients with cancer and adversely affect survival and oncological outcomes after recovery. • Adjustments to systemic anti-cancer therapy can be safely pursued in treatment-eligible patients.
27.10.2021	COVCOG 2: Cognitive and Memory Deficits in Long COVID: A Second Publication from the COVID and Cognition Study	medRxiv (non-peer reviewed) / Article	<ul style="list-style-type: none"> • UK COVID and Cognition Study; second paper tests memory, language and executive function of 181 individuals who had suffered COVID-19 / 185 who hadn't. • Consistent pattern of memory deficits in those that had suffered COVID-19, with deficit increasing with severity of self-reported ongoing symptoms. • Fatigue/Systemic symptoms during initial illness and ongoing neurological symptoms were predictive of cognitive performance. • Fatigue/Systemic and Dermatological symptoms during initial 3 weeks of illness were associated with reduced memory performance and slower reaction times on executive function tasks respectively.
03.11.2021	What are the recommendations for returning athletes who have experienced long term COVID-19 symptoms?	Ann Med / Systematic Review	<ul style="list-style-type: none"> • Systematic review of published recommendations (Aug 2019-Jul 2021) returned 8 eligible professional recommendations for managing long-term effects of COVID-19 • Despite a high prevalence of long covid, with up to 25% of patients reporting symptoms for ≥4 weeks, this study found limited research reporting the symptoms of long covid in athletes or recommendations for returning athletes • Recommendations in conclusion include multidisciplinary medical clearance with comprehensive screening of the cardiovascular, pulmonary, neurological and muscular systems, with clinical re-evaluation a maximum of one year later.

Epidemiology and clinical – risk factors

Publication Date	Title/URL	Journal / Article type	Digest
25.10.2021	Diabetes, hypertension, body mass index, smoking and COVID-19-related mortality: a systematic review and meta-analysis of observational studies	BMJ Open / Systematic Review	<ul style="list-style-type: none"> • A meta-analysis to estimate the risk of, and proportion of, deaths attributable to diabetes, hypertension, obesity and smoking in patients with COVID-19 (search up to 14.11.2020) included 186 observational studies • Diabetes, hypertension, obesity and smoking in patients with COVID-19 is associated with a 1.54-fold, 1.42-fold, 1.45-fold and 1.28-fold greater risk of mortality, respectively • Proportion of death attributable to diabetes, hypertension, obesity and smoking was 8%, 7%, 11% and 2%, respectively. • Limitations: did not investigate the association between presence of two or more coexisting comorbidities and risk of death in COVID-19 patients
22.10.2021	Thyroid disease and hypothyroidism are associated with poor COVID-19 outcomes: A systematic review, meta-analysis, and meta-regression	Diabetes Metab Syndr / Systematic Review	<ul style="list-style-type: none"> • Systematic review of 21 studies (n=31,339) up to 20.08.2021, including research articles and letters reporting COVID-19 patients with information on thyroid disorders, presented as categorical data with measurable composite poor outcomes • Thyroid disorder was associated with poor outcome, including higher disease severity, ICU admission, mortality and hospitalisation. Age was a significant influence affecting this association. • Hypothyroidism, but not hyperthyroidism was associated with poor outcomes in those infected with SARS-CoV-2.
28.10.2021	Risks of and From SARS-CoV-2 Infection and COVID-19 in People With Diabetes: a Systematic Review of Reviews	Diabetes Care / Systematic review	<ul style="list-style-type: none"> • A systematic review of reviews looking at extent to which people with diabetes (PWD) are at increased risk of SARS-CoV-2 infection and mortality (search up to 03.12.2020) included 112 reviews containing mainly observational data • Consistent evidence from multiple meta-analyses shows that diabetes is a risk factor for severe disease and death from COVID-19; higher blood glucose levels were associated with worse COVID-19 outcomes • No data on whether diabetes predisposes to infection with SARS-CoV-2 • Limitations: majority of studies were judged to be at high risk of bias.
04.11.2021	Clinical presentation, disease course, and outcome of COVID-19 in	Eur Heart J / Article	<ul style="list-style-type: none"> • Study of association between different types of pre-existing heart disease and in-hospital COVID-19 mortality.

	hospitalized patients with and without pre-existing cardiac disease: a cohort study across 18 countries		<ul style="list-style-type: none"> • 16,511 patients included, 31.5% had history of heart disease. • Associations with in-hospital mortality by heart disease subtypes differed considerably. Strongest association for heart failure, particularly severe heart failure. • No other heart disease subtypes, including ischaemic heart disease, remained significant after multivariable adjustment. • Associated editorial: https://doi.org/10.1093/eurheartj/ehab622
25.10.2021	COVID-19-associated psychosis: A systematic review of case reports	Gen Hosp Psychiatry / Systematic review	<ul style="list-style-type: none"> • A systematic review to describe the comorbidities, presentations and outcomes of adults with psychosis and COVID-19 (search up to 22.09.2021) included 40 case reports comprising 48 patients from 17 countries • 7 (15%) had a documented psychiatric history, 6 (13%) had a substance use history, 11 (23%) had a comorbid medical condition; delusions were most common psychiatric sign and psychosis lasted between 2 and 90 days • Case descriptions lacked clinically relevant details, including if delirium was excluded in patients with COVID-19-associated psychosis; non-delirious psychosis related to COVID-19 might therefore be overreported • Limitations: case reports are anecdotal and were of low quality
29.10.2021	Association Between COVID-19 Diagnosis and In-Hospital Mortality in Patients Hospitalized With ST-Segment Elevation Myocardial Infarction	JAMA / Original Investigation	<ul style="list-style-type: none"> • Retrospective cohort study from USA examining outcomes of concordant ST-segment elevation myocardial infarction (STEMI) (also known as Heart Attack) and COVID-19 diagnosis • 80,449 participants in study – 803 with COVID-19 at time of STEMI from Jan 19 to Dec 20. • Higher rates of in-hospital mortality for those with concomitant COVID-19 diagnosis and STEMI (78.5%) than just STEMI (46.1%) • Associated comment: https://jamanetwork.com/journals/jama/fullarticle/2785894
01.11.2021	Visceral Fat Inflammation and Fat Embolism are associated with Lung's Lipidic Hyaline Membranes in COVID-19 patients	bioRxiv (non-peer reviewed) / Article	<ul style="list-style-type: none"> • Histomorphologic analysis of autoptotic visceral adipose tissues (VAT), lungs and livers of 19 COVID-19 and 23 non-COVID-19 subjects. • Findings describe novel COVID-19-related features possibly underlying the unfavourable prognosis in obese SARS-CoV2-infected-subjects: • Higher local VAT inflammation in COVID-19 subjects and the ability of SARS-CoV-2 to infect human adipocytes • First evidence supporting fat embolism as a complication of obesity, exacerbated by the COVID-19-induced inflammatory status • The presence of lung's lipidic hyaline membranes among all infected subjects, a novel feature associated with visceral adipose tissue inflammation and fat embolism in COVID-19

[Back to menu](#)

Epidemiology and clinical – other

Publication Date	Title/URL	Journal / Article type	Digest
02.11.2021	Exponential growth, high prevalence of SARS-CoV-2, and vaccine effectiveness associated with the Delta variant	Science / Research article	<ul style="list-style-type: none"> • Assessment of RT-PCR swab-positivity in the in the REal-time Assessment of Community Transmission-1 (REACT-1) study in England found sustained exponential growth with average doubling time (June-July 2021) of 25 days driven by complete replacement of Alpha variant by Delta, and by high prevalence amongst younger, unvaccinated age groups. • Rapid vaccination roll-out in England has so far limited the number of infections and serious cases relative to the unvaccinated population. • Without additional interventions, increased mixing, including indoors, during the autumn and winter in the presence of the Delta variant may lead to renewed growth, even at high levels of vaccination.
22.10.2021	University of Warwick: Projections of SARS-CoV-2 transmission and COVID-19 disease until June 2022, 12 October 2021	Gov.uk / Research and analysis	<ul style="list-style-type: none"> • Modelling study presented to SAGE 2022 using data up to 08.10.2021 finds considerable uncertainty about the long-term dynamics of the epidemic • Most scenarios project a slow decline in deaths and hospitalisations for the remainder of 2021 • Continued decline in vaccine efficacy may generate large-scale waves of hospital admissions, which may be exacerbated by seasonal forcing; however these may be tempered by booster vaccinations and extending the vaccination among the younger population. • Other studies presented: https://www.gov.uk/government/collections/sage-meetings-october-2021
28.10.2021	Tissue Proteomic Analysis Identifies Mechanisms and Stages of Immunopathology in Fatal COVID-19	Am J Respir Cell Mol Biol / Article	<ul style="list-style-type: none"> • Targeted proteomic analysis of pulmonary and splenic tissues using lung parenchymal and splenic tissue obtained from 13 post-mortem examinations of patients with fatal COVID-19 • Data confirm the relevance of myeloid cell immunopathology as a central pathologic process in life-threatening COVID-19 and found evidence of some of the mediators of this at a protein level in inflamed tissues.

			<ul style="list-style-type: none"> • Potential therapeutic targets are identified with the discovery of mechanistic insight into previously described pathophysiological features of COVID-19, including early and late disease stages, inflammation, monocyte/macrophage recruitment, thrombosis, plasmacytosis and splenic lymphocyte depletion.
03.11.2021	Effects of covid-19 pandemic on life expectancy and premature mortality in 2020: time series analysis in 37 countries	BMJ / Research	<ul style="list-style-type: none"> • Time series analysis; estimates changes in life expectancy and years of life lost (YLL) in 2020 associated with pandemic. Includes England and Wales, Scotland. • Reduction in life expectancy in men and women in all 37 countries studied; except New Zealand, Taiwan, Norway where there was a gain in life expectancy in 2020. • More than 28 million excess YLL lost in 2020 in 31 countries; higher rate in men than women. Excess YLL five times higher than associated with 2015 seasonal influenza epidemic.
01.11.2021	Vaccinating adolescents against SARS-CoV-2 in England: a risk-benefit analysis	J R Soc Med / Article	<ul style="list-style-type: none"> • Using national linked electronic health records of all confirmed SARS-CoV-2 infections in 12-17 years between 01.07.2020 - 31.03.2021, authors calculated historical rates of hospital admission, Intensive Care Unit (ICU) admission and death for SARS-CoV-2 • Data used alongside a range of estimates for incidence of long COVID, vaccine efficacy and vaccine-induced myocarditis, to estimate hospital and ICU admissions, deaths and cases of long COVID over a period of 16 weeks under assumptions of high and low case incidence. • The case rates as of 15.09.2021 (680/100,000 population/week in 10–19 year olds) in England, support vaccination of adolescents against SARS-CoV2.
03.11.2021	REACT-1 round 15 interim report: High and rising prevalence of SARS-CoV-2 infection in England from end of September 2021 followed by a fall in late October 2021	medRxiv (non-peer reviewed) / Article	<ul style="list-style-type: none"> • Interim findings from 15th round of REACT-1 study look at swab tests from 67,000 people across England. • Highest prevalence of infection since programme began in May 2020, with 1.72% of people infected. • Highest number of infections in school-aged children, with 1 in 17 infected. • Viral genetic code of 126 positive samples showed all Delta, 10% variant under investigation AY.4.2. sub-lineage. • Associated press release: https://www.imperial.ac.uk/news/231715/react-study-records-highest-coronavirus-prevalence/
03.11.2021	FAIR, ethical, and coordinated data sharing for COVID-19 response: a	Research Square (non-peer reviewed) / Article	<ul style="list-style-type: none"> • Comprehensive overview of COVID-19-related platforms and registries that harmonize and share participant-level clinical, OMICs, and imaging data and metadata.

[review of COVID-19 data sharing platforms and registries](#)

• Authors describe how these initiatives map to best practice for ethical, equitable, and FAIR management of data resources.

[Back to menu](#)

Infection control / non-pharmaceutical interventions

Publication Date	Title/URL	Journal / Article type	Digest
28.10.2021	Risk factors associated with respiratory infectious disease-related presenteeism: a rapid review	BMC Public Health / Rapid review	<ul style="list-style-type: none"> • A rapid review looking at reasons and risk factors associated with presenteeism in workers with respiratory infectious diseases (RID) (search up to March 2021) included 54 studies (51 observational), 4 about COVID-19 • Prevalence of work presenteeism ranged from 14.1-55% for confirmed RID, and 6.6-100% for those working with suspected RID • RID-related presenteeism is associated with occupation, sick pay policy, age, gender, health behaviour and perception, vaccination, peer pressure and presenteeism culture • Limitations: most studies were low to moderate quality; geographical applicability may also be affected by the predominant U.S. bias of studies.
26.10.2021	Social distance capacity to control the COVID-19 pandemic: A systematic review on time series analysis	Int J Risk Saf Med / Systematic Review	<ul style="list-style-type: none"> • Systematic review: social distancing strategies / policies and their impact on pandemic. Search up to March 2021; 13 papers included. • Five general categories: restrictions, prohibitions, closures, incentives, punishments. • Main policies: transportation/travel restrictions, crowded places and schools closure, use of telecommunications/ virtual communications, financial and psychological support to society members.
30.10.2021	The removal of airborne SARS-CoV-2 and other microbial bioaerosols by air filtration on COVID-19 surge units	Clin Infect Dis / Article	<ul style="list-style-type: none"> • Crossover study over 3 weeks of portable air filtration and ultra-violet (UV) sterilisation devices in a repurposed surge COVID ward and surge ICU • Airborne SARS-CoV-2 was detected in the ward on all five days before activation of air/UV filtration, but on none of the five days when the air/UV filter was operational; SARS-CoV-2 was again detected on 3/5 days when the filter was off. • Airborne SARS-CoV-2 was infrequently detected in the ICU. This did not reflect a lack of bioaerosols in the ICU, but may have been due to reduced viral shedding by patients at a later stage of disease

- Filtration significantly reduced the burden of other microbial bioaerosols in both the ward and the ICU
- Preprint previously included

[Back to menu](#)

Transmission

Publication Date	Title/URL	Journal / Article type	Digest
28.10.2021	Household transmission of COVID-19 cases associated with SARS-CoV-2 delta variant (B.1.617.2): national case-control study	Lancet Reg Health Eur / Article	<ul style="list-style-type: none"> • Matched (1:2) case-control study to estimate odds of household transmission (≥ 2 cases within 14 days) for Delta variant index cases compared with Alpha cases using national surveillance data (March to June 2021). • 43.3% (n=2,586) of 5,976 genomically sequenced index cases in household clusters were confirmed Delta variant compared to 40.4% (n=4,824) of sporadic cases. • The odds ratio of household transmission was 1.70 among Delta variant cases compared to Alpha cases, potentially explaining its success at displacing Alpha variant as the dominant strain in England.
28.10.2021	Transmission dynamics of SARS-CoV-2 in a strictly-Orthodox Jewish community in the UK	medRxiv (non-peer reviewed) / Article	<ul style="list-style-type: none"> • This tightly-knit religious community had 64.3% seroprevalence following an outbreak in 2020. • Authors estimated relative contribution of different settings to transmission using explicit people-/place-data. • Highest shares of transmission: within households, then places of worship and primary schools. • Primary and secondary schools, ritual baths and places of worship had very similar relative risks. • A specific transmission model is needed as community have practices and requirements that increase chance of repeated contacts.
29.10.2021	COVID-19 transmission during swimming-related activities: a rapid systematic review	BMC Infect Dis / Systematic review	<ul style="list-style-type: none"> • Systematic review: association between swimming-related activities and COVID-19 transmission, and effects of strategies to prevent transmission (search up to 19.04.2021) included 3 studies, plus 50 guidance documents • One study did not find an association between compliance with precautionary restrictions and COVID-19 transmission

			<ul style="list-style-type: none"> • Guidance was consistent in relation to broad principles of social distancing, use of PPE, personal hygiene, and cleaning surfaces, but some inconsistencies in how to apply those principles • Findings show a major gap in research evidence on association between swimming-related activities and COVID-19 transmission, and on efficacy and safety of strategies related to this topic.
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[Back to menu](#)

Treatment

Publication Date	Title/URL	Journal / Article type	Digest
04.11.2021	Merck and Ridgeback's Molnupiravir, an Oral COVID-19 Antiviral Medicine, Receives First Authorization in the World	Merck (non-peer reviewed) / News	<ul style="list-style-type: none"> • U.K.'s Medicines and Healthcare Products Regulatory Agency authorizes Molnupiravir for the treatment of mild-to-moderate Covid-19 in adults with a positive Sars-cov-2 diagnostic test and who have at least one risk factor for developing severe illness. • Authorization based on positive results from a planned interim analysis from Phase 3 MOVE-OUT clinical trial, which evaluated molnupiravir 800 mg twice-daily in non-hospitalized, unvaccinated adult patients with confirmed mild-to-moderate COVID-19, symptom onset within five days of study randomization and at least one risk factor associated with poor disease outcomes (e.g., heart disease, diabetes). <p>[https://www.merck.com/news/merck-and-ridgebacks-investigational-oral-antiviral-molnupiravir-reduced-the-risk-of-hospitalization-or-death-by-approximately-50-percent-compared-to-placebo-for-patients-with-mild-or-moderat/]</p>
26.10.2021	Efficacy and safety of IL-6 inhibitors in patients with COVID-19 pneumonia: a systematic review and meta-analysis of multicentre, randomized trials	Ann Intensive Care / Systematic Review	<ul style="list-style-type: none"> • A systematic review looking at whether Interleukin-6 (IL-6) inhibition can improve outcomes for COVID-19 patients (search up to 1 Sept 2021) included 15 randomised controlled trials • IL-6 inhibitor administration in patients with COVID-19 pneumonia is associated with a significant reduction in longest follow-up mortality, and with a reduction in 28/30-day mortality, need for intubation and clinical worsening • Results are limited by overall high risk of bias of available studies and heterogeneity among inclusion criteria and concomitant treatments
02.11.2021	Inhaled and intranasal ciclesonide for the treatment of covid-19 in adult	BMJ / Research	<ul style="list-style-type: none"> • Canadian Phase II trial: does inhaled and intranasal ciclesonide decrease respiratory symptoms in adult COVID-19 outpatients?

	outpatients: CONTAIN phase II randomised controlled trial		<ul style="list-style-type: none"> • 203 adults randomised: (i) inhaled ciclesonide (600 µg twice daily) and intranasal ciclesonide (200 µg daily) or (ii) metered dose inhaler and nasal saline placebos for 14 days. • No statistically significant increase in resolution of symptoms among healthier young adults with covid-19 presenting with prominent respiratory symptoms. • Evidence is insufficient to determine benefit of inhaled and intranasal corticosteroids in treatment of covid-19
28.10.2021	A randomized, placebo-controlled clinical trial of bamlanivimab and etesevimab together in high-risk ambulatory patients with COVID-19 and validation of the prognostic value of persistently high viral load	Clin Infect Dis / Article	<ul style="list-style-type: none"> • Phase 3 of BLAZE-1 trial characterized the effect of bamlanivimab with etesevimab on overall clinical status and virologic outcomes in 769 ambulatory patients ≥12 years old, with mild-to-moderate COVID-19, and ≥1 risk factor for progressing to severe COVID-19 and/or hospitalization. • There was an 87% reduction in COVID-19-related hospitalization or all-cause death by Day 29 in patients that received bamlanivimab and etesevimab together as compared with those that received placebo • Patients receiving antibody treatment had a greater mean reduction in viral load from baseline to Day 7 • Findings support the use of bamlanivimab and etesevimab for ambulatory patients with a high risk of COVID-19

[Back to menu](#)

Modelling

Publication Date	Title/URL	Journal / Article type	Digest
04.11.2021	What effect might border screening have on preventing importation of COVID-19 compared with other infections? A modelling study	Epidemiol Infect / Article	<ul style="list-style-type: none"> • Model incorporating COVID-19 epidemiology is used to investigate impact of requiring all arriving air travellers to undergo thorough screening: assumes 100% compliance and use of a perfect test. • Primary results suggest that in a best-case scenario, screening may expect to detect 8.8% of travellers infected with COVID-19, compared to 34.8%, 9.7% and 3.0% for travellers infected with influenza, SARS and Ebola respectively. • Results suggest screening at point of entry alone insufficient against importation of COVID-19 cases. • Preprint previously included.

02.11.2021	Potential reduction in transmission of COVID-19 by digital contact tracing systems	medRxiv (non-peer reviewed) / Article	<ul style="list-style-type: none"> • Age-structured branching process model of COVID-19 transmission to estimate digital tracing systems potential. • Effective manual contact tracing can reduce R number from 2.4 to around 1.5. • Addition of digital tracing system with over 75% uptake rate could further reduce it to around 1.1. • Fully automated digital tracing without manual contact tracing is predicted to be much less effective.
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[Back to menu](#)

Overviews, comments and editorials

Publication Date	Title/URL	Journal / Article type
03.11.2021	Should children be vaccinated against COVID-19?	Arch Dis Child / Review
05.11.2021	Children and COVID-19 in schools	Science / Perspective
04.11.2021	Understanding Breakthrough Infections Following mRNA SARS-CoV-2 Vaccination	JAMA / Editorial
01.11.2021	Covid-19: FDA puts Moderna's paediatric application on hold to investigate side effects	BMJ / News
03.11.2021	Clinical and Infection Prevention Applications of SARS-CoV-2 Genotyping: An IDSA/ASM Consensus Review Document	Clin Infect Dis / Accepted manuscript
01.11.2021	A comprehensive review of vascular complications in COVID-19	J Thromb Thrombolysis / Review
02.11.2021	COVID-19 vaccination in pregnancy - number needed to vaccinate to avoid harm	Lancet Infect Dis / Correspondence
02.11.2021	Re-opening live events and large venues after Covid-19 'lockdown': Behavioural risks and their mitigations	Saf Sci / Review
03.11.2021	African scientists race to test COVID drugs — but face major hurdles	Nature / News

02.11.2021

[Why scientists worldwide are watching UK COVID infections](#)

Nature / News

[Back to menu](#)



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