



COVID-19 Literature Digest – 24/09/2021

Dear all,

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

PHE'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 The reports include both preprints, which should be treated with caution as they are NOT peer-reviewed and may be subject to change, and also research that has been subject to peer review and wider scrutiny.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 PHE. We do not accept responsibility for the availability, reliability or content of the items included in this resource.

To join our email distribution list 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 PHE Behavioural Sciences Weekly Report.

Best wishes,

Emma Farrow, James Robinson, Kester Savage
On behalf of the PHE COVID-19 Literature Digest Team

Report for 24.09.2021 (please note that papers that have **NOT been peer-reviewed** are highlighted in red).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](#)

[Treatment](#)

[Modelling](#)

[Guidance and consensus statements \(no digest\)](#)

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

Serology and immunology

Publication Date	Title/URL	Journal / Article type	Digest
23.09.2021	Adaptive immunity and neutralizing antibodies against SARS-CoV-2 variants of concern following vaccination in patients with cancer: The CAPTURE study	Research Square (non-peer reviewed) / Article	<ul style="list-style-type: none">• Evaluates 585 cancer patients with following two doses of Pfizer-BioNTech or Oxford-AstraZeneca vaccines• Seroconversion rates were 85% and 59% in patients with solid and haematological malignancies, respectively• Patients with haematological malignancies more likely to have undetectable neutralising antibody titers (NAbT) and lower median NAbT vs solid cancers against both wild-type and variants of concern (VOC)• Patients with haematological, but not solid, malignancies had reduced NAb responses• Seroconversion showed poor concordance with NAbT against VOCs; prior SARS-CoV-2 infection boosted NAb response including against VOCs; and anti-CD20 treatment was associated with undetectable NAbT.• Vaccine-induced T-cell responses detected in 80% of patients, and were comparable between vaccines or cancer types.
17.09.2021	Identification of immune correlates of fatal outcomes in critically ill COVID-19 patients	PLoS Pathog	<ul style="list-style-type: none">• A study comparing immune abnormalities linked to critical illness and death in COVID-19 patients on ICU (n=41), and a cohort of severe influenza patients (n=18). Immunophenotyping of viral antigen-specific and unconventional T cell responses were performed, together with studies of neutralizing antibodies, and serum proteins.• Mucosal-associated invariant T (MAIT) cell activation was identified as an independent and significant predictor of death in COVID-19. MAIT cell activation correlated with several other mortality-associated immunologic measures including elevated levels of cytokines and chemokines, such as GM-CSF and CXCL10.• Key potential biomarkers and targetable pathways in critical viral illness were observed. Many of these were shared between influenza and COVID-19 and some unique to each infection.

[Back to menu](#)

Vaccines

Publication Date	Title/URL	Journal / Article type	Digest
21.09.2021	Johnson & Johnson Announces Real-World Evidence and Phase 3 Data Confirming Strong and Long-Lasting Protection of Single-Shot COVID-19 Vaccine in the U.S.	Johnson & Johnson (non-peer reviewed) / Press Release	<ul style="list-style-type: none"> • New data showing protection increases with a Johnson & Johnson booster (second) shot. • Booster at 2 months provided 94% protection; booster at 6 months provided 12-fold increase in antibodies.
22.09.2021	Safety and immunogenicity of a recombinant adenovirus type-5-vectored COVID-19 vaccine with a homologous prime-boost regimen in healthy participants aged 6 years and above: a randomised, double-blind, placebo-controlled, phase 2b trial	Clin Infect Dis / Article	<ul style="list-style-type: none"> • 430 participants enrolled aged 6-17 years (n=150), 18-55 years (n=30), and ≥56 years (n=250) • A single dose in children and adolescents was safe and tolerable, and induced higher antibody responses than that elicited by two doses in adults. • Adverse reactions included injection-site pain, fever and headache and were less common after the boost vaccination than after the first dose • A suspected unexpected serious adverse reaction (SUSAR), diagnosed as gastrointestinal disorder, was reported in participants aged 6 to 13 years.
20.09.2021	Pfizer and BioNTech Announce Positive Topline Results From Pivotal Trial of COVID-19 Vaccine in Children 5 to 11 Years	Pfizer (non-peer reviewed) / News	<ul style="list-style-type: none"> • Phase 2/3 study; data for 2,268 participants, aged 5 to 11, who received a 10 µg dose level in a two-dose regimen. • Vaccine was safe, well tolerated and showed robust neutralizing antibody responses one month after second dose. Response compares well to 16 - 25 year old control group. • Full release: https://www.businesswire.com/news/home/20210920005452/en/
22.09.2021	Efficacy of the mRNA-1273 SARS-CoV-2 Vaccine at Completion of Blinded Phase	N Engl J Med / Article	<ul style="list-style-type: none"> • Efficacy and safety data from blinded phase of trial. • 30,415 volunteers at high risk for Covid-19 or its complications were assigned 1:1 to receive 2 dose mRNA-1273 [Moderna] vaccine (15,209) or placebo. • Vaccine efficacy 93.2%; 55 confirmed cases in vaccine group / 744 in placebo. • Vaccine efficacy consistent across ethnic and racial groups, age groups, participants with coexisting conditions.

15.09.2021	Safety and immunogenicity of an inactivated COVID-19 vaccine, BBIBP-CorV, in people younger than 18 years: a randomised, double-blind, controlled, phase 1/2 trial	Lancet Infect Dis / Article	<ul style="list-style-type: none"> • Phase 1/2 trial in Henan, China in which participants were stratified in three age cohorts [3-5, 6-12, and 13-17 years]. • In phases one and two, eligible participants (n=288 and n=720, respectively) were randomly assigned to 2 µg, 4 µg, or 8 µg of BBIBP-CorV (Sinopharm) COVID-19 vaccine or control. • Findings suggest BBIBP-CorV was safe and well tolerated at all tested dose levels in participants aged 3-17 years and also elicited robust humoral responses against SARS-CoV-2 infection after two doses. • Findings support the use of a 4 µg dose and two-shot regimen BBIBP-CorV in phase 3 trials in the population <18 years.
05.09.2021	Sub-cutaneous Pfizer/BioNTech COVID-19 vaccine administration results in seroconversion among young adults	Vaccine / Article	<ul style="list-style-type: none"> • Subcutaneous injection of Pfizer-BioNTech vaccine was accidentally administered to 790 military personnel and serological blood sampling performed prior to the administration of dose 2 in order to assess the immune response • Females had a significantly higher serological response than males and IgG titres were negatively correlated with age. There was no correlation between BMI and seroconversion rates in this cohort. • Authors conclude that subcutaneous injection of the Pfizer/BioNTech vaccine (intended for intramuscular administration) resulted in high immunogenicity, precluding the need for another vaccine dose.
17.09.2021	Comparative Effectiveness of Moderna, Pfizer-BioNTech, and Janssen (Johnson & Johnson) Vaccines in Preventing COVID-19 Hospitalizations Among Adults Without Immunocompromising Conditions — United States, March–August 2021	MMWR Morb Mortal Wkly Rep / Article	<ul style="list-style-type: none"> • Case-control analysis among 3,689 adults without immunocompromising conditions hospitalised at 21 U.S. hospitals across 18 states during 11 March to 15 August 2021. • Vaccine effectiveness against COVID-19 hospitalisation was higher for the Moderna vaccine (93%) than the Pfizer-BioNTech vaccine (88%) and the Janssen vaccine (71%).
21.09.2021	Vaccine effectiveness and duration of protection of Comirnaty, Vaxzevria and Spikevax against mild and severe COVID-19 in the UK	medRxiv (non-peer reviewed) / Article	<ul style="list-style-type: none"> • Test-negative case-control study estimates vaccine effectiveness (VE) of Comirnaty (Pfizer–BioNTech), Vaxzevria (Oxford-AstraZeneca) and Spikevax (Moderna) vaccines in England • VE against symptomatic disease peaked in the early weeks after second dose and fell to 47.3 and 69.7 by 20+ weeks against the Delta variant for Vaxzevria and Comirnaty, respectively. Waning of VE greater for 65+ year-olds compared to 40-64 year-olds. • VE fell less against hospitalisations to 77.0 and 92.7 beyond 20 weeks post-vaccination and 78.7 and 90.4 against death for Vaxzevria and Comirnaty, respectively. Greater waning observed among 65+ year-olds in a clinically extremely vulnerable group and 40-64-year olds with underlying medical conditions.

23.09.2021	Multimorbidity and adverse events of special interest associated with CoronaVac (Sinovac) and Comirnaty (Pfizer-BioNTech)	Research Square (non-peer reviewed) / Article	<ul style="list-style-type: none"> • Retrospective cohort study of patients with chronic diseases in Hong Kong immunised with CoronaVac (Sinovac) or Comirnaty (Pfizer-BioNTech) COVID-19 vaccine (n=883,416 patients) • By 28 days follow-up, 2,807 (0.3%) patients had adverse events of special interest (AESI). • Weighted Cox models suggests: i) vaccinated patients had lower risks of any AESI than unvaccinated; ii) multimorbidity was associated with increased risk regardless of vaccination status, and: iii) there was no significant effect modification of the association of vaccination with AESI by multimorbidity status.
17.09.2021	COVID-19 vaccine effectiveness against hospitalizations and ICU admissions in the Netherlands, April- August 2021	medRxiv (non-peer reviewed) / Article	<ul style="list-style-type: none"> • Study included 15,571 patients, aged ≥15 years, hospitalised with COVID-19 between 04.04.2021 – 29.08.2021, of whom 5.7% were fully vaccinated • Vaccine effectiveness (VE) against hospitalisation and ICU admission was estimated at 94% and 93% respectively in the Alpha period and 95% and 97% in the Delta period • VE was high in all age groups and did not wane with time for 20 weeks after full vaccination
23.09.2021	mRNA vaccine effectiveness against COVID-19-related hospitalisations and deaths in older adults: a cohort study based on data linkage of national health registries in Portugal, February to August 2021	Euro Surveill / Rapid Communication	<ul style="list-style-type: none"> • Analysis of national health data in Portugal during February to August 2021 regarding older adults (n=1,880,351) vaccinated with Pfizer-BioNTech or Moderna mRNA vaccine. • Vaccine effectiveness (VE) against hospitalisation for those 65–79 and ≥ 80 years old was 94% and 82% respectively, with no evidence of waning 98 days after dose two, and VE against mortality was 96% and 81% in these groups.
08.09.2021	Inequalities in coverage of COVID-19 vaccination: A population register based cross-sectional study in Wales, UK	Vaccine / Article	<ul style="list-style-type: none"> • Study includes census linkage to look at vaccine coverage, enabling a population-scale analysis of inequalities. • Adults (over 50 years) in Wales less likely to be vaccinated if live in a more deprived area or belong to an ethnic group other than White. • Analysis highlights the need for ongoing monitoring of inequity in uptake of vaccinations.
07.09.2021	Prenatal maternal COVID-19 vaccination and pregnancy outcomes	Vaccine / Article	<ul style="list-style-type: none"> • 913 of 4,399 participants, were vaccinated during pregnancy, in this retrospective cohort study between January and June 2021. 155 (17.0%) received one dose, and 758 (83.0%) received two doses. 3,486, (79.2%) were not vaccinated during or before pregnancy. • Complications concerning the pregnancy, delivery or health of the newborn child were compared between those who had 1 or 2-dose vaccines and unvaccinated women

			<ul style="list-style-type: none"> • Authors conclude that prenatal Pfizer-BioNTech vaccination was not associated with adverse immediate pregnancy outcomes or newborn complications.
17.09.2021	Seroresponse to SARS-CoV-2 vaccines among maintenance dialysis patients over six months	medRxiv (non-peer reviewed) / Article	<ul style="list-style-type: none"> • In a retrospective cohort study with 1898 maintenance dialysis patients, 1567 (84%) had no prior history of COVID-19. These patients had declining titres over time. • Pfizer recipients' (n=441), median SAb-IgG titre declined from 20 U/L in month 1 to 1.30 U/L by month 6. • Moderna recipients' (n=779), median SAb-IgG titre declined from 20 in month 1 to 6.20 by month 6. • The 347 Janssen recipients (n=347) had a lower titre response (<1 U/L) than mRNA vaccine recipients over all time periods. • The maximum titre reached in the first two months after full vaccination was predictive of the durability of the SAb-IgG seroresponse; patients with SAb-IgG titre 1-19.99 U/L were more likely to have loss of seroresponse compared to patients with SAb-IgG titre ≥ 20 U/L

[Back to menu](#)

Diagnostics and genomics

Publication Date	Title/URL	Journal / Article type	Digest
15.09.2021	Limit of detection in different matrices of 19 commercially available rapid antigen tests for the detection of SARS-CoV-2	Sci Rep / Article	<ul style="list-style-type: none"> • Manufacturer-independent evaluation of the limit of detection (LOD) of 19 marketed Ag-RDT using live SARS-CoV-2 spiked in different matrices: direct culture supernatant, a dry swab, and a swab in Amies. • 14 of 19 Ag-RDTs exceeded the minimal sensitivity proposed by the WHO using direct culture supernatant applied to the Ag-RDT. • 6 tests had false positive results when using Amies media and sensitivity was also reduced. • 11 Ag-RDTs showed a loss of sensitivity by up to 20-fold when analysing the effect of storage at -80°C followed by a single freeze-thaw cycle.
01.09.2021	Assessment of a Program for SARS-CoV-2 Screening and Environmental Monitoring in an Urban Public School District	JAMA Netw Open / Original investigation	<ul style="list-style-type: none"> • US pilot study at 3 urban schools for school-based SARS-CoV-2 testing and surveillance.

			<ul style="list-style-type: none"> • Weekly screening of asymptomatic staff and students by saliva testing was associated with increased case detection, exceeding infection rates reported at county level. • SARS-CoV-2 was detected in school wastewater samples each week, and in air and surface samples from choir classrooms.
22.09.2021	Genomic Surveillance in Japan of AY.29—A New Sub-lineage of SARS-CoV-2 Delta Variant with C5239T and T5514C Mutations	medRxiv (non-peer reviewed) / Article	<ul style="list-style-type: none"> • Authors report a new sub-lineage of the SARS-CoV-2 Delta variant, AY.29, which has C5239T and T5514C mutations. • Among the total Japanese Delta variants up to 3 September 2021, the AY.29 sub-lineage accounted for 88.4%. The sequences became predominant in June 2021 • The number of Delta variants imported from abroad during the Tokyo 2020 Olympics and Paralympics (held in August 2021) was extremely low; suggests epidemic of Delta variant is attributable to a newly occurring mutation in Japan.
23.09.2021	Defining variant-resistant epitopes targeted by SARS-CoV-2 antibodies: A global consortium study	Science / Report	<ul style="list-style-type: none"> • International consortium mapping the epitope landscape on the SARS-CoV-2 Spike • Findings are shared here, provide a framework for selecting antibody treatment cocktails / understanding how viral variants might affect antibody therapeutic efficacy.
17.09.2021	In vitro selection of Remdesivir resistance suggests evolutionary predictability of SARS-CoV-2	PLoS Pathog / Article	<ul style="list-style-type: none"> • Investigation demonstrates the potential of SARS-CoV-2 variants to develop mutations of the spike protein which confer full or partial resistance to Remdesivir (RDV), the only FDA approved antiviral against SARS-CoV-2 and widely used in the US. • Whilst selection of RDV resistance can occur, there is no evidence of global spread of RDV-resistant strains as the RDV resistance mutation identified provides a cost to viral fitness
21.09.2021	A novel B.1.1.523 SARS-CoV-2 variant that combines many spike mutations linked to immune evasion with current variants of concern	bioRxiv (non-peer reviewed) / Article	<ul style="list-style-type: none"> • Authors describe a B.1.1.523 variant that shares many spike mutations with current variants of concern • Receptor-binding domain mutations E484K and S494P were observed but also a deletion (position 156-158) in the N-terminal antigenic supersite, similar to the delta-variant • This variant has been reported in various different countries and continents despite the dominance of B.1.1.7 (alpha) and B.1.617.2 (delta) variant.

[Back to menu](#)

Epidemiology and clinical - children and pregnancy

Publication Date	Title/URL	Journal / Article type	Digest
21.09.2021	Immunological assessment of SARS-CoV-2 infection in pregnancy from diagnosis to delivery: A multicentre prospective study	PLoS One / Article	<ul style="list-style-type: none"> • Study conducted between 24.03.2020 – 31.08.2020 with one cohort of 23 pregnant women symptomatic of SARS-CoV-2, 10 of whom tested positive, and a second cohort of 608 asymptomatic pregnant women. • In asymptomatic cohort, 608 consented to nasopharyngeal swab, 1 of whom tested positive, and 598 gave blood samples for serological testing. • Combining both cohorts, IgM anti SARS-CoV-2 antibodies were detected in 28 women, IgG antibodies were detected in 15 women and 13 women were positive for both IgG and IgM. • Low prevalence of asymptomatic SARS-CoV2 was observed. <p>Transplacental migration of antibodies was identified in cord blood of women who demonstrated antenatal antibodies, raising the possibility of passive immunity.</p>
17.09.2021	Comparison of children and young people admitted with SARS-CoV-2 across the UK in the first and second pandemic waves: prospective multicentre observational cohort study	medRxiv (non-peer reviewed) / Article	<ul style="list-style-type: none"> • Between 17.01.2020 and 31.01.2021, 2044 CYP aged <19 years reported from 187 hospitals across England, Scotland, and Wales (764 in W1, 1,280 in W2). 75.3% had symptoms at presentation, 20.6% had asymptomatic or incidental SARS-CoV-2 infection and 3.8% were missing data on symptoms. Of the symptomatic CYP, 91 were identified as having MIS-C. • CYP in W2 were significantly older (median age 6.5 years) than W1 (median age 4). CYP of South Asian ethnicity were over-represented in W2 (19.1%) compared to W1 (13.6%). W2 saw a lower proportion of likely hospital-acquired SARS-CoV-2 (2.2%) vs W1, (6.9%) • Severe disease in CYP admitted with symptomatic SARS-CoV-2 in the UK remains rare. 20% in this cohort had asymptomatic/incidental SARS-CoV-2 infection. No evidence was found of increased disease severity in W2 compared with W1.

[Back to menu](#)

Epidemiology and clinical - long-term complications / sequelae

Publication Date	Title/URL	Journal / Article type	Digest
15.09.2021	Postacute Sequelae of Severe Acute Respiratory Syndrome Coronavirus 2 Infection: A State-of-the-Art Review	JACC Basic Transl Sci / Review	<ul style="list-style-type: none"> • Systematic review of 143 published reports through 31.05.2021, found that manifestations of post-acute sequelae of SARS-CoV-2 (PASC) affect between 33% and 98% of COVID-19 survivors • A wide range of symptoms and complications have been reported in the pulmonary, cardiovascular, neurologic, psychiatric, gastrointestinal, renal, endocrine, and musculoskeletal systems in both adult and paediatric populations • Whilst further evidence is needed, research suggests racial and ethnic minorities, rural residents, older patients, and patients with pre-existing conditions may be more likely to develop PASC
17.09.2021	Post-viral parenchymal lung disease following COVID-19 and viral pneumonitis hospitalisation: A systematic review and meta-analysis	medRxiv (non-peer reviewed) / Article	<ul style="list-style-type: none"> • Systematic review including 95 papers, of which 70 were suitable for meta-analysis • Inflammatory changes during hospitalisation were observed in over 90% of CT scans, reducing to 44% at 3 months • Fibrotic changes were observed in 25-30% scans, though estimates remained more consistent between hospitalisation and follow-up, suggesting a more persistent fibrotic change • Restrictive impairment of lung function was estimated at 15%, impaired gas transfer was observed in 39% • Parenchymal lung damage as a result of viral insult may be common, offering a possible explanation for breathlessness in the months following COVID-19 infection

[Back to menu](#)

Epidemiology and clinical – risk factors

Publication Date	Title/URL	Journal / Article type	Digest
16.09.2021	Development and presentation of an objective risk stratification tool for healthcare workers when dealing with the COVID-19 pandemic in the UK: risk modelling based on hospitalisation and mortality statistics compared with epidemiological data	BMJ Open / Original research	<ul style="list-style-type: none"> • Authors applied general population risk factors to healthcare workers, to generate a simplified biological risk stratification tool. • Distinguished between people of black African descent /people of other non-European backgrounds; higher risk to those of West African descent.

			<ul style="list-style-type: none"> • Freely available via British Medical Association: https://www.bma.org.uk/media/3820/bma-covid-19-risk-assessment-tool-february-2021.pdf.
17.09.2021	Risk prediction of covid-19 related death and hospital admission in adults after covid-19 vaccination: national prospective cohort study	BMJ / Research	<ul style="list-style-type: none"> • UK study identifies risk factors for severe covid-19 (hospitalisation / death), ≥ 14 days after vaccination (first or second dose). • Incidence of covid-19 mortality increased with age and deprivation, male sex, Indian and Pakistani ethnic origin. • Clinical risk factors: Down's syndrome, kidney transplantation, sickle cell disease, care home residency, chemotherapy, recent bone marrow transplantation or a solid organ transplantation ever, HIV/AIDS, dementia, Parkinson's disease, neurological conditions, and liver cirrhosis.
03.09.2021	Sarcopenic obesity and the risk of hospitalization or death from coronavirus disease 2019: findings from UK Biobank	JCSM Rapid Commun / Article	<ul style="list-style-type: none"> • Analysis of data from 490 301 UK Biobank participants (median age 70.0 years, 46% male) • Those with probable sarcopenia, defined as low handgrip strength, were 64% more likely to have had severe COVID-19. Obesity increased the likelihood of severe COVID-19 by 76%. Those with sarcopenic obesity were 2.6 times more likely to have severe COVID-19. • Sarcopenic obesity may increase the risk of severe COVID-19, over that of obesity alone, which may be a result of a reduction in respiratory functioning, immune response, and ability to respond to metabolic stress.
12.09.2021	Severe COVID-19 is associated with endothelial activation and abnormal glycosylation of von Willebrand factor in patients undergoing hemodialysis	Res Pract Thromb Haemost / Brief Report	<ul style="list-style-type: none"> • Severe COVID-19 in patients undergoing haemodialysis is associated with both acute and sustained activation of the endothelium, leading to alteration of the VWF/ADAMTS-13 axis. • Lower VWF sialic acid content represents altered VWF processing and further confirms the disturbance caused to the endothelium in COVID-19.
22.09.2021	Association Between Antipsychotic Use and COVID-19 Mortality Among People With Serious Mental Illness	JAMA Psychiatry / Research Letter	<ul style="list-style-type: none"> • US retrospective cohort study of Schizophrenia spectrum disorders: 464 patients, 196 (42.2%) treated with antipsychotic medication. • Forty-one patients (8.8%) died. Antipsychotic treatment was not significantly associated with mortality. • Schizophrenia spectrum disorder associated with near 3-fold increased risk of mortality compared with bipolar disorder.
08.09.2021	Complications after discharge with COVID-19 infection and risk factors associated with development of post-COVID pulmonary fibrosis	Respir Med / Article	<ul style="list-style-type: none"> • Of 387 patients discharged following hospitalisation with COVID-19, 123 needed further investigation and respiratory review. 9.3% of this cohort had post-COVID fibrosis

		<ul style="list-style-type: none"> • Consistent with previous studies, many patients suffer fatigue (45.1%), breathlessness (36.5%), myalgia (20.5%) and psychological symptoms (19.5%) 6 weeks following discharge • Patients who received invasive ventilation and those who have persistent breathlessness (especially men), those who had high risk inpatient chest x-ray, high inpatient CT scores and high markers of cytokine storm are at risk of developing post-COVID fibrosis and should have a HRCT Chest and respiratory review
--	--	--

[Back to menu](#)

Epidemiology and clinical – other

Publication Date	Title/URL	Journal / Article type	Digest
13.09.2021	Systematic Review and Meta-Analysis of Olfactory and Gustatory Dysfunction in Coronavirus Disease 2019 Patients	SSRN (non-peer reviewed) / Systematic Review	<ul style="list-style-type: none"> • Systematic review included 26 studies with a total of 13,813 patients. • Pooled data indicates that sex (OR, 1.47), age (SMD, -5.80), smoking (OR, 2.04), and comorbidity (OR, 1.21) had no effect on gustatory dysfunction in COVID-19 patients. • Elderly patients with COVID-19 were more prone to olfactory dysfunction (SMD, -5.22), in addition to COVID-19 patients with nasal congestion (OR, 3.41) and rhinorrhoea (OR, 2.35).
22.09.2021	Clinical Characteristics of Multisystem Inflammatory Syndrome in Adults: A Systematic Review	JAMA Netw Open / Systematic review	<ul style="list-style-type: none"> • Literature review of multisystem inflammatory syndrome in adults (MIS-A), covering 01.05.2020-25.05.2021. Plus CDC reports (voluntary / surveillance) • 221 patients with MIS-A, where data available: median age 21; 154/219 (70%) men; 60/169 (36%) non-Hispanic Black individuals; 122/209 (58%) had no underlying comorbidity. • 102/149 (68%) noted a previous symptomatic COVID-19–like illness. • Presentation: fever (197/205 [96%]), hypotension (133/220 [60%]), cardiac dysfunction (114/210 [54%]), shortness of breath (102/198 [52%]), and/or diarrhoea (102 of 197 [52%]). Median number of organ systems involved was 5. • Findings suggest MIS-A is a serious hyperinflammatory condition, presents approx. 4 weeks after onset of acute COVID-19 with extrapulmonary multiorgan dysfunction.

21.09.2021	Characteristics and outcomes of an international cohort of 400,000 hospitalised patients with Covid-19	medRxiv (non-peer reviewed) / Article	<ul style="list-style-type: none"> • Among the ISARIC COVID-19 cohort (n=439,922 hospitalised COVID-19 patients from 49 countries) both age (adjusted hazard ratio [HR] per 10 years 1.49) and male sex (1.26) were associated with a higher risk of death. • Rates of admission to ICU and use of invasive mechanical ventilation increased with age up to age 60, then dropped. • Symptoms, comorbidities, and treatments varied by age and had varied associations with clinical outcomes. • Tuberculosis was associated with an 86% higher risk of death, and HIV with an 87% higher risk of death. • Case fatality ratio varied by country partly due to differences in the clinical characteristics of recruited patients.
21.09.2021	Are the chilblain-like lesions observed during the COVID-19 pandemic due to SARS-CoV-2? Systematic review and meta-analysis	J Eur Acad Dermatol Venereol / Systematic review	<ul style="list-style-type: none"> • Meta-analysis included 63 studies with 2919 cases of chilblain-like lesions (CLL). A subgroup of these patients underwent diagnostic tests for COVID-19 (PCR: n = 1154, 39.5%; serology: n= 943, 32.3%). • Pooled prevalence of COVID-19 in the overall sample and in the subgroup who were tested was, respectively: (a) positive PCR: 2.6% and 5.5% (b) positive serology for SARS-CoV-2: 7.2% and 11.8%; and (c) positive PCR and/or serology, 15.2% and 7.5% • CLL often appear during the convalescent phase, (weeks 1-5 after symptom onset). Whilst this may offer an explanation for the negative PCR tests, the prevalence estimates based on antibody testing were still quite low • Despite temporal association between the increased cases of CLL and the COVID-19 pandemic, the low proportion of positive diagnostic tests for SARS-CoV-2 in these patients does not support the hypothesis that there is a relationship between the two pathologies.
15.09.2021	Influence of IL-6 levels on patient survival in COVID-19	J Crit Care / Research Letter	<ul style="list-style-type: none"> • 86 patients aged ≥ 18 years included in a study to explore the association between patient demographics, respiratory failure severity, and interleukin-6 (IL-6) levels on mortality in a cohort of hospitalized COVID-19 patients who were naïve to immunotherapy. • Cohort included 44 (51%) patients with mild disease, 22 (26%) with critical illness who survived, and 20 (23%) who died in hospital. • Patients who died were older than those who survived critical illness or those with mild disease. • Compared to patients with mild disease, progression to critical illness and death was associated with severity of respiratory failure and higher levels of C-reactive protein (CRP) on admission

			<ul style="list-style-type: none"> • IL-6 levels, which correlated well with CRP, were significantly higher among patients who develop critical illness or who subsequently die compared to patients with mild illness.
20.09.2021	Levels of SARS-CoV-2 population exposure are considerably higher than suggested by seroprevalence surveys	PLoS Comput Biol / Article	<ul style="list-style-type: none"> • Authors present a method to estimate population exposure to SARS-CoV-2 that combines multiple datasets (serology, mortality, and virus positivity ratios) to estimate seroreversion time and infection fatality ratios (IFR). • The results indicate that the average time to seroreversion is around 6 months, IFR is 0.54% to 1.3%, and true exposure may be more than double the current seroprevalence levels reported for several regions of England.
22.09.2021	Infections, hospitalisations, and deaths averted via a nationwide vaccination campaign using the Pfizer-BioNTech BNT162b2 mRNA COVID-19 vaccine in Israel: a retrospective surveillance study	Lancet Infect Dis / Article	<ul style="list-style-type: none"> • Israeli retrospective surveillance study, estimates number of infections and COVID-19-related hospitalisations and deaths averted by nationwide vaccination campaign. • Estimate 124,597 hospitalisations, 17,432 severe or critical hospitalisations, and 5532 deaths averted (91.0% among ≥ 65 year olds). • Associated comment: https://www.thelancet.com/journals/laninf/article/PIIS1473-3099(21)00616-2/fulltext
21.09.2021	Outbreak of SARS-CoV-2 B.1.617.2 (Delta) Variant Infections Among Incarcerated Persons in a Federal Prison — Texas, July–August 2021	MMWR Morb Mortal Wkly Rep / Article	<ul style="list-style-type: none"> • SARS-CoV-2 B.1.617.2 (Delta) outbreak among 233 incarcerated persons; 185 (79%) were fully vaccinated • 172 (74%) tested positive: 39 of 42 unvaccinated (93%); 129 of 185 fully vaccinated (70%) • Attack rates, hospitalizations, and deaths were higher among unvaccinated, but duration of positive serial test results was similar for both groups. • Infectious virus was cultured from vaccinated and unvaccinated infected persons.
22.09.2021	SARS-CoV-2 lineage B.1.1.7 is associated with greater disease severity among hospitalised women but not men: multicentre cohort study	BMJ Open Respir Res / Article	<ul style="list-style-type: none"> • Sequences were obtained from 2341 hospitalised COVID-19 patients in the UK (786 being cases of hospital-onset COVID-19 infections) from 16 November 2020 to 10 January 2021. Analysis of clinical outcomes carried out in 2147 patients with all data available. • Compared to other lineages B.1.1.7 showed no overall increase in mortality or ITU admission (both HR 1.01). • Females infected with B.1.1.7 showed increased risk of mortality (HR 1.30) and ITU admission (HR 1.82) while males did not (mortality HR 0.82; ITU HR 0.74). • Preprint previously included

[Back to menu](#)

Infection control / non-pharmaceutical interventions

Publication Date	Title/URL	Journal / Article type	Digest
22.09.2021	Efficient and targeted COVID-19 border testing via reinforcement learning	Nature / Article	<ul style="list-style-type: none"> • Summer 2020, reinforcement learning system, nicknamed 'Eva', deployed across all Greek borders to: (i) limit influx of asymptomatic travellers; (ii) inform border policies through real-time estimates of COVID-19 prevalence. • Eva identified 1.85 times as many asymptomatic, infected travellers as random surveillance testing, rising to 2-4 times as many during peak travel / 1.25-1.45 times as many asymptomatic, infected travellers as testing policies that only utilize epidemiological metrics. • Associated news item: https://www.nature.com/articles/d41586-021-02556-w
22.09.2021	The removal of airborne SARS-CoV-2 and other microbial bioaerosols by air filtration on COVID-19 surge units	medRxiv (non-peer reviewed) / Article	<ul style="list-style-type: none"> • Crossover study 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 four out of five days when the filter was off. Airborne SARS-CoV-2 was infrequently detected in the ICU • Filtration significantly reduced the burden of other microbial bioaerosols in both the ward (48 pathogens detected before filtration, two after) and the ICU (45 pathogens detected before filtration, five after).

[Back to menu](#)

Treatment

Publication Date	Title/URL	Journal / Article type	Digest
14.09.2021	Bamlanivimab improves hospitalization and mortality rates in patients with COVID-19: A systematic review and meta-analysis	J Infect / Systematic review	<ul style="list-style-type: none"> • Systematic review including 8 studies up to 09.08.2021 with a total of 12,573 adult patients found Bamlanivimab was associated with lower a

			<p>risk of developing severe COVID-19, hospitalisation and lower overall mortality.</p> <ul style="list-style-type: none"> • Meta-analysis provides evidence of the effectiveness of Bamlanivimab in the treatment of COVID-19 patients.
23.09.2021	Colchicine for COVID-19 in adults in the community (PRINCIPLE): a randomised, controlled, adaptive platform trial	medRxiv (non-peer reviewed) / Article	<ul style="list-style-type: none"> • National trial at multiple primary care centres across the UK: 2755 SARS-CoV-2 positive adults in the community with comorbidities or shortness of breath were randomised to colchicine (n=156), usual care (n=1145), and other treatments (n=1454). • Time to first self-reported recovery was similar in colchicine group compared with usual care (estimated hazard ratio of 0.919; estimated increase of 1.14 days in median time to self-reported recovery for colchicine). • Probability of meaningful benefit in time to recovery was very low (1.8%); results were similar in comparisons with concurrent controls. • COVID-19 related hospitalisations/deaths were similar in colchicine group versus usual care (estimated odds ratio 0.76; estimated difference of -0.4%).
18.09.2021	Subcutaneous REGEN-COV Antibody Combination in Early Asymptomatic SARS-CoV-2 Infection: A Randomized Clinical Trial	medRxiv (non-peer reviewed) / Article	<ul style="list-style-type: none"> • In a randomized, double-blind, phase 3 trial, 314 asymptomatic, SARS-CoV-2 positive participants were randomized 1:1 to receive a single dose of subcutaneous REGEN-COV 1200mg (n=158) or placebo (n=156) • 1200 mg of subcutaneously administered REGEN-COV reduced progression of asymptomatic SARS-CoV-2 infection to symptomatic infection by 31.5% compared with placebo. • REGEN-COV also reduced the overall population burden of high viral load weeks (39.7% reduction vs placebo; 48 vs 82 total weeks)
16.09.2021	Treatment with Soluble CD24 Attenuates COVID-19-Associated Systemic Immunopathology	medRxiv (non-peer reviewed) / Article	<ul style="list-style-type: none"> • 22 patients were enrolled, and the clinical characteristics from the CD24Fc vs. placebo groups were matched. • In the placebo group systemic hyper-activation of multiple cellular compartments, including CD8+ T cells, CD4+ T cells, and CD56+ NK cells were observed. • Treatment with CD24Fc significantly attenuated induction of the systemic cytokine response, reducing systemic inflammation, and returning to homeostasis in both NK and T cells within days whilst still mounting an effective anti-Spike protein antibody response.

Modelling

Publication Date	Title/URL	Journal / Article type	Digest
21.09.2021	Understanding the Potential Impact of Different Drug Properties On SARS-CoV-2 Transmission and Disease Burden: A Modelling Analysis	Clin Infect Dis / Accepted manuscript	<ul style="list-style-type: none"> • Mathematical model of SARS-CoV-2 transmission, COVID-19 disease and clinical care to explore public-health impact of different potential therapeutics, under a range of scenarios. • COVID-19 drug development to date has focused on reducing deaths among hospitalised patients; greater public-health impact could come from drugs delivered to outpatients early in course of disease, that prevent hospitalisation and/or onwards transmission - particularly in low and middle income countries.
16.09.2021	The Relationship Between Frailty, Comorbidity and COVID-19 Mortality in Older COVID-19 Patients: Analysis of an Administrative Dataset Using Machine Learning Techniques	SSRN (non-peer reviewed) / Article	<ul style="list-style-type: none"> • Retrospective study (n=215,831 patients) using dataset from 1 March 2020 to 28 February 2021 for hospital patients in England aged 65 years and over • The Dr Foster Global Frailty Scale (GFS) and Charlson Comorbidity Index (CCI) significantly improved the model's ability to predict mortality in patients • The most important frailty items in the GFS were dementia/delirium, falls/fractures and pressure ulcers/weight loss • The most-important comorbidity items in the CCI were diabetes (without complications), pulmonary disease, heart failure and renal failure • The best-performing model had a predictive accuracy of 70% as well as an area under the curve of 0.78.

[Back to menu](#)

Guidance and consensus statements

Publication Date	Title/URL	Journal / Article type
17.09.2021	COVID-19 Transmission in Hotels and Managed Quarantine Facilities (MQFs), 9 September 2021	Gov.uk / Consensus Statement

[Back to menu](#)

Overviews, comments and editorials

Publication Date	Title/URL	Journal / Article type
14.09.2021	Considerations in boosting COVID-19 vaccine immune responses	Lancet / Comment
16.09.2021	COVID-19 vaccines: Keeping pace with SARS-CoV-2 variants	Cell / Commentary
01.10.2021	Booster shots for COVID-19 - the debate continues	Lancet Infect Dis / News
20.09.2021	Covid-19: How is vaccination affecting hospital admissions and deaths?	Bmj / News
01.09.2021	COVID-19 vaccination amongst persons experiencing homelessness: practices and learnings from UK, Canada and the US	Public Health / Article
17.09.2021	The biological and clinical significance of emerging SARS-CoV-2 variants	Nat Rev Genet / Review
20.09.2021	Impact of COVID-19 on the Endocrine System - a mini-review	Endocrinology / Mini-review
17.09.2021	Commentary: Long-Term Effects of Covid-19 on the kidney	Qjm / Comment
17.09.2021	Direct and Indirect Health Impacts of COVID-19 in England	Gov.uk (non-peer reviewed) / Research and analysis
21.09.2021	Covid-19: Monoclonal antibody treatment to be rolled out to hospital patients with no antibody response	BMJ / News
19.09.2021	Use of Novel Antithrombotic Agents for COVID-19: Systemic Summary of Ongoing Randomized Controlled Trials	J Thromb Haemost / Brief report
20.09.2021	The search for antivirals for covid-19	BMJ / Feature

[Back to menu](#)

Produced by the PHE COVID-19 Literature Digest Team

To sign-up, email COVID.LitDigest@phe.gov.uk

A selection of previous digests [can be found here](#)

www.gov.uk/phe Follow us on Twitter @PHE_uk

Protecting and improving the nation's health