



COVID-19 Literature Digest – 12/03/2021

Dr Catherine Heffernan is a consultant in public health, providing public health advice on the Advice and Guidance Team in PHAGE (Public Health Advice, Guidance and Expertise). Catherine is on secondment from her post as Principal Advisor for Commissioning Early Years, Immunisations and Vaccination Services (PHE London).

If you read 3 papers this week...

If like me, you've been waiting with bated breath on the impact of the UK C-19 vaccination programme, then you'll welcome this [preprint](#) by PHE's national immunisation team. Using a case control methodology, Lopez Bernal et al set out to estimate the real-world effectiveness of the Pfizer BioNTech (BNT162b2) and the Oxford-Astra Zeneca (ChAdOx1) vaccines. They looked at all adults in England aged 70 years and older who reported symptoms and were tested in the community between 8th December 2020 and 19th February 2021. They compared the outcomes of symptomatic PCR confirmed SARS-CoV-2 infection, hospitalisations and deaths with COVID-19 between the non-vaccinated cohorts and the vaccinated cohorts. Vaccination with a single dose of either vaccine was associated with a significant reduction in symptomatic SARS-CoV2 positive cases, with even greater protection against severe disease. Vaccine effects were noted from 10-13 days after vaccination, reaching an effectiveness of 70% from 28-34 days, then plateauing. The protection was maintained for the duration of follow-up (>6 weeks). From 14 days after the second dose, a vaccine effectiveness of 89% was seen. In the over 80s, data suggests a single dose of either vaccine is over 80% effective at preventing hospitalisation after 3-4 weeks and a single dose of Pfizer-BioNTech was 85% effective against death. The study also found that both vaccines were effective against the UK variant of concern.

The following two modelling studies caught my eye as they relate to the reopening of retail shops and other amenities. This is both of an academic interest and personal (those who know me know I like fashion and shoes!). The paper by [Shumsky et al](#) is a mathematical model of customer flow and COVID-19 transmission in retail stores, looking at direct exposure (customers in close contact or proximity) and wake exposure (one customer in direct airflow behind another). The study reports that disease transmission rate depends on customer flow, store size and speed of customers coming through. One-way restrictions reduce direct transmission but have no effect on wake transmission; with full compliance the rate of transmission is less than one third of the rate observed with two-way traffic. For wake exposure, reducing the speed variance of customers and throughput control can be effective. There were several assumptions or caveats with this model – e.g. it didn't include stopping to examine an item on the shelf – nevertheless it was an interesting read on how and why one-way traffic systems work in the retail environment.

The second [modelling article](#) integrated human mobility data and geographical factors to identify superspreading environments. The authors analysed pre-pandemic data on mobility and geographic interconnections of 6 popular facilities (bars, shopping centres, karaoke/cinemas, mega shopping malls, public libraries and sports centres) to create different classes of potential spatial risk. These were integrated into a city-level 'risk map' of superspreading environment for Hong Kong, with pre-identified areas

that overlapped with the actual disease clusters. Bars and small to medium shopping centres were associated with users of higher mobility and bar-related transmission was dominant. The authors concluded that a 'risk map' could be a useful tool for targeting non-pharmaceutical interventions, which may help to avoid national or citywide lockdown.

Catherine

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

On behalf of the PHE COVID-19 Literature Digest Team

Report for 12.03.2021 (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](#)

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

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

Serology and immunology

Publication Date	Title/URL	Journal / Article type	Digest
10.03.2021	Antibody Responses in Seropositive Persons after a Single Dose of SARS-CoV-2 mRNA Vaccine	N Engl J Med / Correspondence	<ul style="list-style-type: none">• Study of 110 study participants with or without documented pre-existing SARS-CoV-2 immunity found that a single dose of mRNA vaccine elicited rapid immune responses in seropositive participants, with post-vaccination antibody titers similar to or exceeding titers found in seronegative participants who received two vaccinations.
06.03.2021	SARS-CoV-2 501Y.V2 (B.1.351) elicits cross-reactive neutralizing antibodies	bioRxiv (non-peer reviewed) / Article	<ul style="list-style-type: none">• Examined antibody response in a cohort (N=89) of South African patients hospitalised with COVID-19 in early 2021, when over 90% of infections in South Africa were attributed to 501Y.V2.• Robust binding and neutralizing antibody titers to the 501Y.V2 variant were detected. Binding antibodies showed high levels of cross-reactivity for the original variant, from the first wave.• Sera from 501Y.V2-infected patients maintained good cross-reactivity against viruses from the first wave, in contrast to an earlier study.• Sera from 501Y.V2-infected patients neutralised the 501Y.V3 (P.1) variant first described in Brazil.
09.03.2021	Epidemiological and evolutionary considerations of SARS-CoV-2 vaccine dosing regimes	Science / Research article	<ul style="list-style-type: none">• Model for robustness of immune response elicited by a single dose, compared to natural and two-dose immunity.• In the short-term, focusing on one dose generally decreases infections, but longer-term outcomes depend on this relative immune robustness.• Explores three scenarios of selection. Found a one-dose policy may increase the potential for antigenic evolution under certain conditions of partial population immunity.• Critical need to test viral loads and quantify immune responses after one vaccine dose, and to ramp up vaccination efforts throughout world.
01.03.2021	Negligible impact of SARS-CoV-2 variants on CD4+ and CD8+ T cell reactivity in COVID-19 exposed donors and vaccinees	bioRxiv (non-peer reviewed) / Article	<ul style="list-style-type: none">• Results demonstrate that CD4+ and CD8+ T cell responses in convalescent COVID-19 subjects or COVID-19 mRNA vaccinees (Moderna or Pfizer/BioNTech) are not substantially affected by mutations found in the SARS-CoV-2 variants B.1.1.7, B.1.351, P.1, or CAL.20C.

08.03.2021	Antibody Resistance of SARS-CoV-2 Variants B.1.351 and B.1.1.7	Nature / Article	<ul style="list-style-type: none"> • Findings suggest variant B.1.1.7 is refractory to neutralisation by most monoclonal antibodies (mAbs) to the N-terminal domain (NTD) of the spike and relatively resistant to a few mAbs to the receptor-binding domain (RBD). It is not more resistant to convalescent plasma or vaccinee sera. • Variant B.1.351 is refractory to neutralisation by most NTD mAbs but also by multiple individual mAbs to the receptor-binding motif on RBD, largely owing to an E484K mutation. It is markedly more resistant to neutralization by convalescent plasma (9.4 fold) and vaccinee sera (10.3-12.4 fold).
05.03.2021	Robust SARS-CoV-2-specific T cell immunity is maintained at 6 months following primary infection	Nat Immunol / Article	<ul style="list-style-type: none"> • Authors analysed the magnitude and phenotype of the SARS-CoV-2-specific T cell response in 100 donors at 6 months following infection. • Median T cell responses 50% higher in donors who had experienced a symptomatic infection, indicating severity of primary infection establishes a 'set point' for cellular immunity. • Data shows that functional SARS-CoV-2-specific T cell responses are retained at 6 months following infection.

[Back to menu](#)

Vaccines

Publication Date	Title/URL	Journal / Article type	Digest
08.03.2021	Coronavirus and vaccine hesitancy, Great Britain: 13 January to 7 February 2021	Office for National Statistics / Report	<ul style="list-style-type: none"> • Reports data from the Opinions and Lifestyle Survey (13 January to 7 February 2021). • 91% of adults reported positive sentiment towards the vaccine; 9% reported vaccine hesitancy. • 17% of adults aged 16 to 29 years reported vaccine hesitancy - the highest of all age groups. • 44% of Black or Black British adults reported vaccine hesitancy - the highest of all ethnic groups. • 16% of parents living with a dependent child aged 0 to 4 years reported vaccine hesitancy, compared with 8% of non-parents or parents not living with a dependent child. • 16% of adults in the most deprived areas of England reported vaccine hesitancy, compared with 7% of adults in the least deprived areas.

			<ul style="list-style-type: none"> • Top reasons for reporting negative vaccine sentiment include "Side effects", "long term effects on health" and "how well the vaccine works".
08.03.2021	Acute Allergic Reactions to mRNA COVID-19 Vaccines	Jama / Research letter	<ul style="list-style-type: none"> • In a cohort of health care employees (n=52,805), approximately 98% did not self-report any symptoms of an allergic reaction after receiving an mRNA COVID-19 vaccine (Moderna or Pfizer-BioNTech). • The remaining 2% (n=1365) reported some allergic symptoms; however, severe reactions consistent with anaphylaxis occurred at a rate of 2.47 per 10 000 vaccinations (16 employees). All individuals with anaphylaxis cases recovered without shock or endotracheal intubation.
08.03.2021	Self-reported real-world safety and reactogenicity of COVID-19 vaccines: An international vaccine-recipient survey	medRxiv (non-peer reviewed) / Article	<ul style="list-style-type: none"> • Surveyed recipients of a first COVID-19 vaccine dose ≥ 7 days prior to survey completion: 2,002 respondents, 26.6% of which had prior COVID-19 infection (68.8% laboratory confirmed). • People with prior COVID-19 illness appear to experience significantly increased incidence and severity of side effects after receiving the COVID-19 vaccine. • Compared to viral vector vaccines, mRNA vaccines appear to cause milder, less frequent systemic side effects but more local reactions.
05.03.2021	Age-dependent immune response to the Biontech/Pfizer BNT162b2 COVID-19 vaccination	medRxiv (non-peer reviewed) / Article	<ul style="list-style-type: none"> • Data from this cohort study (N = 179) suggests that significantly lower frequencies of neutralising antibodies after BNT162b2 vaccination in the elderly population (80 years or older) may require earlier revaccination to ensure strong immunity and protection against infection.
01.03.2021	Potential benefits of delaying the second mRNA COVID-19 vaccine dose	ArXiv (non-peer reviewed) / Article	<ul style="list-style-type: none"> • Modelling in Germany suggests that delaying the second vaccine dose of mRNA vaccines BNT162b2 (BioNTech/Pfizer) and mRNA-1273 (Moderna) may prevent deaths in the four to five digit range, should the incidence resurge. • A large-scale online survey (N=1001) suggests changing vaccination protocols may lead to small reductions in vaccination intention.
08.03.2021	COVID-19 vaccine hesitancy in care home staff: a survey of Liverpool care homes	medRxiv (non-peer reviewed) / Article	<ul style="list-style-type: none"> • Anonymised online survey distributed to all care home managers in Liverpool between 21 and 29 January 2021: 46/87 (53%) of care homes responded. • Mean staff vaccination rate per home was 51.4%. • The most common reasons for staff not receiving the vaccine were: concerns about lack of vaccine research (37.0%), staff being off-site during vaccination sessions (36.5%), pregnancy and fertility concerns (5.6%), and concerns about allergic reactions (3.2%).

			<ul style="list-style-type: none"> • Care home managers reported the necessity to combat vaccine hesitancy through meetings and conversations with health professionals, and provision of supporting evidence to dispel vaccine misinformation.
08.03.2021	Safety and immunogenicity of an inactivated SARS-CoV-2 vaccine, BBV152: interim results from a double-blind, randomised, multicentre, phase 2 trial, and 3-month follow-up of a double-blind, randomised phase 1 trial	The Lancet Infectious Diseases / Article	<ul style="list-style-type: none"> • In an earlier phase 1 trial, BBV152 (Covaxin) vaccine induced high neutralising antibody responses that remained elevated in all participants at 3 months after the second vaccination. • In this phase 2 trial (380 participants), BBV152 showed better reactogenicity and safety outcomes, and enhanced humoral and cell-mediated immune responses compared with phase 1. • The 6 µg with Algel-IMDG formulation has been selected for the phase 3 efficacy trial.
11.03.2021	Immunogenicity of the Ad26.COV2.S Vaccine for COVID-19	JAMA / Original Investigation	<ul style="list-style-type: none"> • In this phase 1 study (25 participants), a single immunisation with Ad26.COV2.S (Janssen) vaccine induced rapid binding and neutralisation antibody responses as well as cellular immune responses. • Two phase 3 clinical trials are currently underway to determine efficacy.

[Back to menu](#)

Diagnosics and genomics

Publication Date	Title/URL	Journal / Article type	Digest
10.03.2021	Lateral flow device specificity in phase 4 (post marketing) surveillance	Gov.uk / Research and analysis	<ul style="list-style-type: none"> • New analysis of community testing data shows lateral flow tests to have a specificity of at least 99.9%. This is fewer than one false positive in every 1,000 lateral flow tests carried out.
05.03.2021	Infection sustained by lineage B.1.1.7 of SARS-CoV-2 is characterised by longer persistence and higher viral RNA loads in nasopharyngeal swabs	Int J Infect Dis / Short communication	<ul style="list-style-type: none"> • Statistically significant higher RNA loads were observed in nasopharyngeal swabs collected from 313 individuals in Italy infected with lineage B.1.1.7, compared to those infected by other SARS-CoV-2 lineages. • A significantly longer persistence of SARS-CoV-2 RNA in nasopharyngeal swabs was observed in B.1.1.7-infected individuals (16 days) in comparison to those infected by other lineages (14 days).
07.03.2021	Rapid increase of SARS-CoV-2 variant B.1.1.7 detected in sewage samples from England between October 2020 and January 2021	medRxiv (non-peer reviewed) / Article	<ul style="list-style-type: none"> • Investigates the use of environmental surveillance (ES) for the rapid detection and quantification of B.1.1.7 viruses in sewage. • B.1.1.7 mutations were first identified in a sample collected in London on 10th November 2020 and shown to rapidly increase in frequency to

			<p>>95% in January 2021, in agreement with clinical data over the same period.</p> <ul style="list-style-type: none"> • Demonstrates that ES can provide an early warning of variant B.1.1.7 and potentially other variants of concern.
05.03.2021	Virological and serological characterization of critically ill patients with COVID-19 in the UK: a special focus on variant detection	medRxiv (non-peer reviewed) / Article	<ul style="list-style-type: none"> • High viral loads in seropositive B.1.1.7-infected subjects (n=1129) are consistent with increased replication capacity and/or less effective clearance by innate or adaptive immune response of B.1.1.7 strain than wild-type. • As viral genotype was associated with diverse virological and immunological phenotypes, metrics of viral load, antibody status and infecting strain should be used to define subgroups for analysis of treatment efficacy.
08.03.2021	Case fatality risk of the SARS-CoV-2 variant of concern B.1.1.7 in England	medRxiv (non-peer reviewed) / Article	<ul style="list-style-type: none"> • Study suggests increased risk of death for B.1.1.7 variant of concern (VOC) compared with non-VOC cases in England (HR: 1.67). • Absolute risk of death by 28-days increased with age and comorbidities. • VOC has potential to spread faster with higher mortality than the pandemic to date.
05.03.2021	The emergence and ongoing convergent evolution of the N501Y lineages coincides with a major global shift in the SARS-CoV-2 selective landscape	medRxiv (non-peer reviewed) / Article	<ul style="list-style-type: none"> • Findings provide evidence of a major change in the selective forces acting on immunologically important SARS-CoV-2 genes (such as N and S) that likely coincided with the emergence of the 501Y lineages (B.1.1.7, B.1.351 and P.1). • A significant portion of the ongoing adaptive evolution of the 501Y lineages also involves further convergence between the lineages.
09.03.2021	Quantifying the potential value of antigen-detection rapid diagnostic tests for COVID-19: a modelling analysis	BMC Med / Research article	<ul style="list-style-type: none"> • Modelling suggests that in a hospital setting, an antigen-detection rapid diagnostic test (Ag-RDT)-led strategy would avert more deaths than a nucleic acid test (NAT)-based strategy, and at lower cost per death averted, when the sensitivity of clinical judgement is less than 90%, and when NAT results are available in time to inform clinical decision-making for less than 85% of patients. • The use of an Ag-RDT is robustly supported in community settings, where it would avert more transmission at lower cost than relying on NAT alone, under a wide range of assumptions.
09.03.2021	Transmission, infectivity, and antibody neutralization of an emerging SARS-CoV-2 variant in California carrying a L452R spike protein mutation	medRxiv (non-peer reviewed) / Article	<ul style="list-style-type: none"> • Sequencing of 2,172 swab samples from 44 counties in California, USA identified a novel SARS-CoV-2 variant named B.1.427/B.1.429 or 20C/L452R • Emerging around May 2020, it increased from 0% to >50% of sequenced cases from 1 September 2020 to 29 January 2021, an

			<p>estimated 18.6-24% increase in transmissibility relative to wild-type strains.</p> <ul style="list-style-type: none"> • Characterised by three mutations in the spike protein, including a L452R substitution in the receptor-binding domain. • Analyses reveal 2-fold increased viral shedding in vivo and increased L452R pseudovirus infection of cell cultures and lung organoids. • Antibody neutralization assays showed 4.0 to 6.7-fold and 2.0-fold decreases in neutralising titers from convalescent patients and vaccine recipients, respectively.
09.03.2021	Emergence of a SARS-CoV-2 variant of concern with mutations in spike glycoprotein	Nature / Article	<ul style="list-style-type: none"> • Authors describe a new SARS-CoV-2 lineage (501Y.V2) characterised by eight lineage-defining mutations in spike protein, including three at important residues in the receptor-binding domain (K417N, E484K and N501Y) that may have functional significance. This lineage was identified in South Africa.
05.03.2021	Zoonotic spillover of SARS-CoV-2: mink-adapted virus in humans	bioRxiv (non-peer reviewed) / Article	<ul style="list-style-type: none"> • Authors report spillover of mink-adapted SARS-CoV-2 from farmed mink to humans after extensive adaptation that lasted at least 3 months. • The presence of four mutations in the S gene (that gave rise to variant: G75V, M177T, Y453F and C1247F) and others were found in an isolate obtained from a SARS-CoV-2 positive patient.

[Back to menu](#)

Epidemiology and clinical - children and pregnancy

Publication Date	Title/URL	Journal / Article type	Digest
10.03.2021	Clinical manifestations, risk factors, and maternal and perinatal outcomes of coronavirus disease 2019 in pregnancy: living systematic review and meta-analysis	BMJ / Research	<ul style="list-style-type: none"> • This living systematic review has been updated to include 115 new studies. Pregnant women continue to be at increased risk of severe covid-19. • In addition to high body mass index and advancing maternal age, evidence suggests that non-white ethnic origin might also be a risk factor for severe covid-19.
10.03.2021	Children and young people remain at low risk of COVID-19 mortality	The Lancet Child & Adolescent Health / Correspondence	<ul style="list-style-type: none"> • Analysis updated to Feb 2021, in light of increases in adult mortality through the 2020–21 winter, and concerns about variant B.1.1.7, first identified in UK in Dec 2020.

05.03.2021	Neurologic Involvement in Children and Adolescents Hospitalized in the United States for COVID-19 or Multisystem Inflammatory Syndrome	JAMA Neurol / Original Investigation	<ul style="list-style-type: none"> • U.S study of 1695 patients 21 years or younger hospitalized for acute COVID-19 or multisystem inflammatory syndrome: 365 (22%) had neurologic involvement. • Forty-three patients (12%) developed COVID-19–related life-threatening neurologic disorders, 11 (26%) died, and 17 (40%) survived with new neurologic sequelae.
------------	--------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------	-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

[Back to menu](#)

Epidemiology and clinical - long-term complications / sequelae

Publication Date	Title/URL	Journal / Article type	Digest
03.03.2021	COVID-19: Long-Term Effects of COVID-19. Rapid review	Norwegian Institute of Public Health / Systematic Review	<ul style="list-style-type: none"> • This rapid review is a first look at possible long-term effects of COVID-19 (>28 days), including long COVID. • Due to an over representation of hospitalised patients with severe COVID-19 in reviewed studies, findings are not considered representative for those with milder symptoms.

[Back to menu](#)

Epidemiology and clinical – risk factors

Publication Date	Title/URL	Journal / Article type	Digest
04.03.2021	Risk of adverse outcomes in patients with underlying respiratory conditions admitted to hospital with COVID-19: a national, multicentre prospective cohort study using the ISARIC WHO Clinical Characterisation Protocol UK	Lancet Respir Med / Article	<ul style="list-style-type: none"> • Analysis of patients in a national, multicentre prospective cohort study identified as having underlying respiratory disease (75,463 patients). • Patients with asthma were more likely, and those with chronic pulmonary disease less likely, to receive critical care than patients without underlying respiratory disease. • In patients ≥ 16 years old, severe asthma was associated with increased mortality compared to non-severe asthma. • Results suggest the use of inhaled corticosteroids, within 2 weeks of admission, improves survival for patients aged 50 years and older with asthma, but not for those with chronic pulmonary disease.
08.03.2021	Body Mass Index and Risk for COVID-19–Related Hospitalization, Intensive Care Unit Admission, Invasive	MMWR Morb Mortal Wkly Rep / Early release	<ul style="list-style-type: none"> • A nonlinear relationship was found between body mass index (BMI) and COVID-19 severity among 148,494 U.S. adults with COVID-19:

	Mechanical Ventilation, and Death — United States, March–December 2020		<p>overall there were lower risks at BMIs near the threshold between healthy weight and overweight, and increasing risk with higher BMI.</p> <ul style="list-style-type: none"> • Among adults aged <65 years, obese status was a risk factor for hospitalisation and death. • Overweight or obesity status were risk factors for invasive mechanical ventilation.
05.03.2021	Excess mortality for care home residents during the first 23 weeks of the COVID-19 pandemic in England: a national cohort study	BMC Med / Article	<ul style="list-style-type: none"> • Up to 7 Aug 2020 there were an estimated 29,542 excess deaths in all care homes in England. • Excess deaths represented 6.5% of all care home beds, higher in nursing (8.4%) than residential (4.6%) homes, and 64.7% of the excess deaths were confirmed/suspected COVID-19. • Almost all excess deaths were recorded in the quarter (27.4%) of homes with any COVID-19 fatalities. • Odds of experiencing COVID-19 attributable deaths were higher in homes providing nursing services (OR: 1.8); to older people and/or with dementia (OR: 5.5); among larger (vs. small) homes (OR: 13.3); belonging to a large provider/brand (OR: 1.2). There was no significant association with for-profit status of providers. • Preprint previously included in Digest.
10.03.2021	COVID-19 is associated with multiple sclerosis exacerbations that are prevented by disease modifying therapies	medRxiv (non-peer reviewed) / Article	<ul style="list-style-type: none"> • In a cohort of 404 COVID-19 patients with multiple sclerosis (MS), 57% (230/404) experienced MS exacerbation during their infection; 82 developed new MS symptoms, 207 experienced worsened pre-existing MS symptoms, and 59 reported both. • Disease modifying therapies reduced the likelihood of developing new MS symptoms during infection. • Participants with a higher pre-COVID-19 webEDSS (web-based Expanded Disability Status Scale) score and longer MS duration were more likely to experience worsening of pre-existing MS symptoms during infection.
08.03.2021	OpenSAFELY: Risks of COVID-19 hospital admission and death for people with learning disabilities - a cohort study	medRxiv (non-peer reviewed) / Article	<ul style="list-style-type: none"> • Analysis of NHS patient-level data in England suggests people with learning disabilities have markedly increased risks of hospitalisation and mortality from COVID-19 in waves 1 and 2 of the pandemic, over and above that seen for non-COVID causes of death. • Associations were stronger among those classed as severe-profound and among those in residential care. • Down syndrome and cerebral palsy were associated with increased hazard of both events in both waves; Down syndrome to a much greater extent.

04.02.2021	Disproportionate impact of SARS-CoV-2 on ethnic minority and frontline healthcare workers: A cross-sectional seroprevalence survey at a North London hospital	J Infect / Letter to the editor	<ul style="list-style-type: none"> • Study of 3285 healthcare workers (HCW) at a north London hospital found those of four particular ethnicities (Black African; mixed ethnicity; Black Caribbean; or Asian Chinese/Other) had significantly increased odds of seropositivity compared with White British/Irish colleagues. • Staff in emergency department and Covid-19 inpatient wards (non-aerosol generating procedures) had highest occupational risk. • Highest seropositivity rates occurred in HCW living in more deprived areas local to the hospital.
11.03.2021	Experiences of Latinx Individuals Hospitalized for COVID-19: A Qualitative Study	JAMA Netw Open / Original investigation	<ul style="list-style-type: none"> • Qualitative study of 60 Latinx adults: participants reported COVID-19 misinformation, felt COVID-19 compounded existing social disadvantage, risked infection due to need to work. • Invited commentary: https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2777396

[Back to menu](#)

Epidemiology and clinical – other

Publication Date	Title/URL	Journal / Article type	Digest
08.03.2021	The spatio-temporal distribution of COVID-19 infection in England between January and June 2020	Epidemiol Infect / Article	<ul style="list-style-type: none"> • Estimates the spatial and spatio-temporal risk of COVID-19 infection across England for the first six months of 2020 using test results from healthcare settings in England (Pillar 1 of the UK Government testing strategy). • Suggests widespread transmission was underway when partial lockdown measures were introduced on the 23rd March 2020 and the greatest risk erred towards large urban areas. • Rapid growth of the outbreak coincided with multiple introductions to England from the European mainland. The spatio-temporal risk was highly labile throughout. • Preprint previously included in the Digest.
10.03.2021	Inflammatory profiles across the spectrum of disease reveal a distinct role for GM-CSF in severe COVID-19	Sci Immunol / Research Article	<ul style="list-style-type: none"> • UK study of plasma samples from 471 patients: severe COVID-19 associated with elevated levels of numerous plasma mediators indicative of coagulation, endothelial activation and a broad inflammatory response including CXCL10, GM-CSF, and IL-6. • Amongst these, GM-CSF and IL-1α stood out as being characteristic of COVID-19 and were not found in samples from fatal influenza.

[Back to menu](#)

Infection control / non-pharmaceutical interventions

Publication Date	Title/URL	Journal / Article type	Digest
05.03.2021	Association of State-Issued Mask Mandates and Allowing On-Premises Restaurant Dining with County-Level COVID-19 Case and Death Growth Rates — United States, March 1–December 31, 2020	MMWR Morb Mortal Wkly Rep / Report	<ul style="list-style-type: none">• County-level data from the US found mandating masks was associated with a decrease in daily COVID-19 case and death growth rates within 20 days of implementation.• Allowing on-premises restaurant dining was associated with an increase in daily COVID-19 case growth rates 41–100 days after implementation and an increase in daily death growth rates 61–100 days after implementation.• Study limitations include: not controlling for other policies; compliance and enforcement not measured, and; no differentiation between indoor and outdoor dining, adequacy of ventilation, and adherence to physical distancing and occupancy requirements.

[Back to menu](#)

Transmission

Publication Date	Title/URL	Journal / Article type	Digest
09.03.2021	Risk of mortality in patients infected with SARS-CoV-2 variant of concern 202012/1: matched cohort study	BMJ / Research	<ul style="list-style-type: none">• Mortality hazard ratio associated with VOC-202012/1 infection versus previously circulating variants: 1.64 (95% confidence interval 1.32 to 2.04) in COVID-19 patients in community.• In this comparatively low risk group, this represents an increase in deaths from 2.5 to 4.1 per 1000 detected cases.• Individuals infected with the variant of concern, identified at UK community test centres, were between 32% and 104% (central estimate 64%) more likely to die than equivalent individuals infected with previously circulating variants
09.03.2021	Transmission of SARS-CoV-2 by children attending school. Interim report on an observational, longitudinal sampling	medRxiv (non-peer reviewed) / Article	<ul style="list-style-type: none">• Longitudinal study in London found no evidence of onward transmission of SARS-CoV-2 from school pupils to immediate classroom members, and no evidence of more widespread transmission among

	study of infected children, contacts, and the environment		<p>children remaining in school, with the exception of one unexpected cluster of three asymptomatic cases in one school.</p> <ul style="list-style-type: none"> • Infected children in this study shed viral RNA for up to 10 days from symptom onset, with levels peaking at 5-8 days. • Viral RNA was identified in the environment around children who were actively shedding virus in the home, but limited contamination was identified in schools. • Variant of Concern B.1.1.7 was identified in later cases studied.
15.03.2021	Modelling uncertainty in the relative risk of exposure to the SARS-CoV-2 virus by airborne aerosol transmission in well mixed indoor air	Build Environ / Article	<ul style="list-style-type: none"> • A mass-balance model is developed for the number of RNA copies inhaled over a period of time by the occupants of a well mixed indoor space, comprising six factors that can be moderated to reduce exposure risk. • The model is applied to a reference scenario: a standard school classroom • Identifies the need for a minimum airflow rate.

[Back to menu](#)

Treatment

Publication Date	Title/URL	Journal / Article type	Digest
04.03.2021	Azithromycin for community treatment of suspected COVID-19 in people at increased risk of an adverse clinical course in the UK (PRINCIPLE): a randomised, controlled, open-label, adaptive platform trial	The Lancet / Article	<ul style="list-style-type: none"> • Findings do not justify the routine use of azithromycin for reducing time to recovery or risk of hospitalisation for people with suspected COVID-19 in the community. • 2120 (94%) of 2265 participants provided follow-up data and were included in primary analysis: azithromycin plus usual care group (n=500); usual care alone group (n=823) ; and in other intervention groups (n=797). • 402 (80%) of 500 participants in azithromycin plus usual care group and 631 (77%) of 823 participants in usual care alone group reported feeling recovered within 28 days.
04.03.2021	Sarilumab in patients admitted to hospital with severe or critical COVID-19: a randomised, double-blind, placebo-controlled, phase 3 trial	Lancet Respir Med / Article	<ul style="list-style-type: none"> • Phase 3 trial (416 participants in 11 countries) did not show efficacy of sarilumab in patients admitted to hospital with COVID-19 and receiving supplemental oxygen. Adequately powered trials of targeted immunomodulatory therapies assessing survival as a primary endpoint are suggested in patients with critical COVID-19.

10.03.2021	Convalescent plasma in patients admitted to hospital with COVID-19 (RECOVERY): a randomised, controlled, open-label, platform trial	medRxiv (non-peer reviewed) / Article	<ul style="list-style-type: none"> • In a randomised controlled trial of hospitalised COVID-19 patients, treatment with high-titre convalescent plasma (5795 patients) did not improve 28-day mortality, 28-day discharge from hospital, or progression to invasive mechanical ventilation compared to standard care alone (5763 patients).
------------	-----------------------------------------------------------------------------------------------------------------------------------------------------	---------------------------------------	------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

[Back to menu](#)

Modelling

Publication Date	Title/URL	Journal / Article type	Digest
28.01.2021	Real-time spatial health surveillance: Mapping the UK COVID-19 epidemic	Int J Med Inform / Article	<ul style="list-style-type: none"> • Demonstrates that using a combination of crowd-sourced app data and sophisticated geo-statistical techniques it is possible to predict hot spots of COVID-19 at fine geographic scales in the UK. • Model can be used in an anonymised databank environment (e.g. Secure Anonymised Information Linkage), thus preserving the privacy of individuals.
08.03.2021	Real-time tracking and prediction of COVID-19 infection using digital proxies of population mobility and mixing	Nat Commun / Article	<ul style="list-style-type: none"> • Authors findings show that accurate nowcast and forecast of COVID-19 epidemics can be obtained by integrating valid digital proxies of physical mixing into conventional epidemic models.
03.03.2021	COVID-19 in Europe: Dataset at a sub-national level	Data Brief / Data Article	<ul style="list-style-type: none"> • Authors present new dataset with socio-demographic, economic, public policy, health, pollution and environmental factors for EU at small regions level (NUTS3). • The database is freely accessible at http://dx.doi.org/10.17632/2ghxnkr9p.4

[Back to menu](#)

Guidance and consensus statements

Publication Date	Title/URL	Journal / Article type
08.03.2021	A global panel database of pandemic policies (Oxford COVID-19 Government Response Tracker)	Nat Hum Behav / Article

[Back to menu](#)

Overviews, comments and editorials

Publication Date	Title/URL	Journal / Article type
10.03.2021	The great escape? SARS-CoV-2 variants evading neutralizing responses	Cell Host & Microbe
06.03.2021	Single-dose Oxford-AstraZeneca COVID-19 vaccine followed by a 12-week booster	The Lancet / Comment
02.03.2021	An interactive website tracking COVID-19 vaccine development	Lancet Glob Health / Correspondence
05.03.2021	COVID-19 vaccines: modes of immune activation and future challenges	Nat Rev Immunol / Comment
10.03.2021	How can we improve self-isolation and quarantine for covid-19?	BMJ / Analysis

[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