



COVID-19 Literature Digest – 24/07/2020

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 The reports include both preprints, which should be treated with caution as they are NOT peer-reviewed and may be subject to change, and also research that has been subject to peer review and wider scrutiny.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Report for 30.04.2021 (please note that papers that have **NOT been peer-reviewed** are highlighted in red).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
24.04.2021	Protection of previous SARS-CoV-2 infection is similar to that of BNT162b2 vaccine protection: A three-month nationwide experience from Israel	medRxiv (non-peer reviewed) / Article	<ul style="list-style-type: none">• Analysis of population-level data in Israel found COVID-19 vaccination was highly effective: overall estimated efficacy for documented infection 92.8%; hospitalisation 94.2%; severe illness 94.4%; and death 93.7% .• Overall estimated level of protection from prior SARS-CoV-2 infection for documented infection 94.8%; hospitalisation 94.1%; and severe illness 96.4%.• These results question the need to vaccinate previously-infected individuals.

[Back to menu](#)

Vaccines

Publication Date	Title/URL	Journal / Article type	Digest
23.04.2021	Impact of vaccination on SARS-CoV-2 cases in the community: a population-based study using the UK's COVID-19 Infection Survey	medRxiv (non-peer reviewed) / Article	<ul style="list-style-type: none">• Longitudinal COVID-19 Infection Survey (373,402 participants aged ≥ 16 years) found odds of new SARS-CoV-2 infection reduced 65% in those ≥ 21 days since first vaccination with no second dose versus unvaccinated individuals without evidence of prior infection.• In those vaccinated, the largest reduction was seen post second dose (70%). No evidence that these benefits varied between Oxford-AstraZeneca and Pfizer-BioNTech vaccines.• No evidence of difference for individuals having received two vaccine doses and with evidence of prior infection but not vaccinated.• Vaccination had a greater impact on reducing SARS-CoV-2 infections with evidence of high viral shedding $Ct < 30$ (88% reduction after two doses) and with

			self-reported symptoms (90% reduction after two doses); effects were similar for different gene positivity patterns.
23.04.2021	Interim findings from first-dose mass COVID-19 vaccination roll-out and COVID-19 hospital admissions in Scotland: a national prospective cohort study	Lancet / Article	<ul style="list-style-type: none"> • Between 8.12.2020 - 22.02.2021, a total of 1 331 993 people were vaccinated over the study period. The mean age of those vaccinated was 65 years. • The first dose of the BNT162b2 mRNA vaccine was associated with a vaccine effect of 91% for reduced COVID-19 hospital admission at 28–34 days post-vaccination. Vaccine effect at the same time interval for the ChAdOx1 vaccine was 88%. • Results of combined vaccine effects against hospital admission due to COVID-19 were similar when restricting the analysis to those aged 80 years and older (83% at 28–34 days post-vaccination). • See associated comment: https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(21)00765-0/fulltext
27.04.2021	Vaccine side-effects and SARS-CoV-2 infection after vaccination in users of the COVID Symptom Study app in the UK: a prospective observational study	The Lancet Infectious Diseases / Article	<ul style="list-style-type: none"> • UK prospective observational study: proportion/probability of self-reported systemic and local side-effects within 8 days of vaccination; 627 383 individuals reporting via COVID Symptom Study app. • Local side-effects reported by 71.9% of individuals after first dose of BNT162b2 (Pfizer), 68.5% after second dose; by 58.7% after first dose of ChAdOx1 nCoV-19 (AstraZeneca). • Systemic and local side-effects were more common among individuals with previous SARS-CoV-2 infection than among those without known past infection. • Infection rates in a vaccinated subset compared with unvaccinated controls: reductions in infection risk seen starting 12 days after first dose, reaching 60% for ChAdOx1 nCoV-19 and 69% for BNT162b2 at 21–44 days and 72% for BNT162b2 after 45–59 days.
27.04.2021	Safety and immunogenicity of one versus two doses of the COVID-19 vaccine BNT162b2 for patients with cancer: interim analysis of a prospective observational study	The Lancet Oncology / Article	<ul style="list-style-type: none"> • BNT162b.2 (Pfizer-BioNTech) vaccine was largely well tolerated in a study of 54 healthy controls and 151 mostly elderly cancer patients with solid and haematological malignancies. • Immune efficacy of a single inoculum in solid cancer patients and haematological cancer patients (38% and 18%, respectively) was very low compared to healthy controls (94%). • Efficacy increased by boosting at 21-days (95% of patients with solid cancers, 60% of patients with haematological cancers and 100% of healthy patients were seropositive two weeks following the boost).
29.04.	Effectiveness of the Comirnaty (BNT162b2, BioNTech/Pfizer) vaccine in preventing SARS-CoV-2 infection among healthcare	Eurosurveillance / Rapid	<ul style="list-style-type: none"> • Study of healthcare workers (n=6,423) in Treviso Province, Italy, vaccinated with BNT162b2 (Pfizer) vaccine.

2021	workers, Treviso province, Veneto region, Italy, 27 December 2020 to 24 March 2021	communication	<ul style="list-style-type: none"> • Estimated vaccine effectiveness in preventing SARS-CoV-2 infection was 84% at 14–21 days from the first dose and 95% at least 7 days from the second dose.
28.04.2021	Effectiveness of Pfizer-BioNTech and Moderna Vaccines Against COVID-19 Among Hospitalized Adults Aged ≥65 Years — United States, January–March 2021	MMWR Morb Mortal Wkly Rep / Early release	<ul style="list-style-type: none"> • Study of patients in a multistate network of U.S. hospitals from January to March 2021, vaccinated with either Pfizer-BioNTech or Moderna COVID-19 vaccines (n=417; Median age 73). • Vaccines were 94% effective against COVID-19 hospitalisation among fully vaccinated adults and 64% effective among partially vaccinated adults aged ≥65 years.
23.04.2021	Real World Effectiveness of COVID-19 mRNA Vaccines against Hospitalizations and Deaths in the United States	medRxiv (non-peer reviewed) / Article	<ul style="list-style-type: none"> • Retrospective cohort study of 91,134 patients in the US: 70.2% were not immunised; 4.5% were partially immunised and 25.4% were fully immunised with an mRNA COVID-19 vaccine. • mRNA vaccines were 96% effective at preventing Covid-19 related hospitalisation and 98.7% effective at preventing Covid-19 related death when participants were fully vaccinated. • Partial vaccination was 77% effective at preventing hospitalisation and 64.2% effective at preventing death. • Effectiveness at preventing hospitalisation was conserved across sub-groups of age, race, ethnicity, Area Deprivation Index, and Charlson Comorbidity Index.
25.04.2021	COVID-19 vaccination beliefs, attitudes, and behaviours among health and social care workers in the UK: a mixed-methods study	medRxiv (non-peer reviewed) / Article	<ul style="list-style-type: none"> • Surveyed 1658 UK healthcare workers (HCWs) and 261 social care workers (SCWs); 20 participants were interviewed. • SCWs more likely to not be offered COVID-19 vaccination than HCWs (OR:1.453). SCWs reported uncertainties around accessing vaccination. • Those who agreed more strongly with the statement "I feel/felt under pressure from my employer to get a COVID-19 vaccine" were more likely to have declined vaccination (OR:1.75). Among interviewees, employer pressure to get vaccinated exacerbated vaccine concerns and increased distrust. • Black African and Mixed Black African participants more likely to have declined vaccination (OR:5.55) compared to White participants. Reasons for declining included distrust in COVID-19 vaccination, healthcare providers, and policymakers.
28.04.2021	Ethnic differences in SARS-CoV-2 vaccine hesitancy in United Kingdom healthcare workers: Results from the UK-REACH prospective nationwide cohort study	medRxiv (non-peer reviewed) / Article	<ul style="list-style-type: none"> • Nationwide prospective cohort study (n=11,584) and qualitative study (n=99) in a multi-ethnic cohort of UK healthcare workers (HCWs). • Vaccine hesitancy reported by 23% (2704). In adjusted analysis, Black Caribbean (aOR 3.37), Black African (aOR 2.05), White Other ethnic groups (aOR 1.48) were significantly more likely to be hesitant. • Other independent predictors of hesitancy: younger age, female sex, higher score on a COVID-19 conspiracy beliefs scale, lower trust in employer, lack of influenza vaccine uptake in the previous season, previous COVID-19, and pregnancy.

			<ul style="list-style-type: none"> • Qualitative data identified contributors to hesitancy: lack of trust in government and employers; safety concerns due to the speed of vaccine development; lack of ethnic diversity in vaccine studies; and confusing and conflicting information.
27.04.2021	Updated Recommendations from the Advisory Committee on Immunization Practices for Use of the Janssen (Johnson & Johnson) COVID-19 Vaccine After Reports of Thrombosis with Thrombocytopenia Syndrome Among Vaccine Recipients — United States, April 2021	MMWR Morb Mortal Wkly Rep / Early release	<ul style="list-style-type: none"> • On 23 April 2021, the U.S Advisory Committee on Immunization Practices concluded that the benefits of resuming Janssen COVID-19 vaccination among persons aged 18 years and older outweighed the risks and reaffirmed its interim recommendation under FDA’s Emergency Use Authorization, which includes a new warning for rare clotting events among women aged 18–49 years.

[Back to menu](#)

Diagnostics and genomics

Publication Date	Title/URL	Journal / Article type	Digest
29.04.2021	Validation testing to determine the sensitivity of lateral flow testing for asymptomatic SARS-CoV-2 detection in low prevalence settings: Testing frequency and public health messaging is key	PLoS Biol / Research Article	<ul style="list-style-type: none"> • Presents data on the performance of Lateral Flow devices to test almost 8,000 students at the University of Birmingham from 2 to 9 Dec 2020. • Performance was validated against almost 800 samples using PCR, and theoretically validated on thousands of Pillar 2 PCR testing results performed on low-prevalence care home testing samples. • Data suggests Lateral Flow Devices do not detect infections presenting with PCR Ct values over 29 - 30; these levels of infection are indicative of very early or very late stages of infection. • Strongly recommend that LFD testing is used to screen people at very regular frequency / that a negative result should not be used to determine that someone is free from SARS-CoV-2 infection. • Preprint previously included.
23.04.2021	Diagnostic accuracy of loop mediated isothermal amplification coupled to nanopore sequencing (LamPORE) for the detection of SARS-CoV-2 infection at scale in symptomatic and asymptomatic populations	Clin Microbiol Infect / Article	<ul style="list-style-type: none"> • An asymptomatic cohort of 1200 UK health care workers supplied 23,427 samples (3,966 swab, 19,461 saliva) over a three-week period in September 2020. • SARS-CoV-2 detection using LamPORE was 0.95%. Diagnostic sensitivity and specificity of LamPORE was >99.5% (reducing to ~98% when clustered estimation was used) in both swab and saliva asymptomatic samples when compared to a reference RT-qPCR test. • In a retrospective symptomatic cohort (n=848), incidence was 13.4% with LamPORE and the sensitivity and specificity were 100%.

24.0 4.20 21	Convergent evolution of SARS-CoV-2 spike mutations, L452R, E484Q and P681R, in the second wave of COVID-19 in Maharashtra, India	bioRxiv (non-peer reviewed) / Article	<ul style="list-style-type: none"> • Predominant clade in circulation in the State of Maharashtra, India was a distinct newly identified lineage B.1.617 possessing common signature mutations D111D, G142D, L452R, E484Q, D614G and P681R, in the spike protein including within the RBD. • Of these mutations, those at residue positions 452, 484 and 681 have been reported in other globally circulating lineages. • Structural analysis of several mutations suggests potential increase in ACE2 binding and rate of S1-S2 cleavage, resulting in increased transmissibility.
27.0 4.20 21	Introduction of ORF3a-Q57H SARS-CoV-2 Variant Causing Fourth Epidemic Wave of COVID-19, Hong Kong, China	Emerg Infect Dis / Dispatch	<ul style="list-style-type: none"> • Describe introduction of clade GH SARS-Cov-2 causing a fourth wave of disease in Hong Kong. • The virus has an ORF3a-Q57H mutation, causing truncation of ORF3b, and it evades induction of cytokine, chemokine, and interferon-stimulated gene expression in primary human respiratory cells.

[Back to menu](#)

Epidemiology and clinical - children and pregnancy

Publication Date	Title/URL	Journal / Article type	Digest
08.03.2021	Severe acute respiratory syndrome coronavirus 2 infections in primary school age children after partial reopening of schools in England	Pediatr Infect Dis J / Article	<ul style="list-style-type: none"> • National surveillance in England did not identify any increase in COVID-19 cases among more than a million primary school pupils after the partial re-opening of schools from 1 June 2020. • Hospitalisations for COVID-19 were rare, but 2.7% (7/259) had persistent symptoms 1 month later.
29.04.2021	Association of Maternal SARS-CoV-2 Infection in Pregnancy With Neonatal Outcomes	JAMA / Original Investigation	<ul style="list-style-type: none"> • Swedish nationwide, prospective cohort study: 88 159 infants (92% of all live births, 11.03.2020 - 31.01.2021) • SARS-CoV-2 infection in pregnancy significantly associated with higher risk of any neonatal respiratory disorder (2.8% vs 2.0%; odds ratio, 1.42) and some other neonatal morbidities, but not neonatal mortality (0.30% vs 0.12%; odds ratio, 2.55). • See associated editorial: https://jamanetwork.com/journals/jama/fullarticle/2779587 : low risk of perinatal mother-to-infant SARS-CoV-2 transmission relevant in context of Sweden's response to the pandemic.

[Back to menu](#)

Epidemiology and clinical - long-term complications / sequelae

Publication Date	Title/URL	Journal / Article type	Digest
22.04.2021	High-dimensional characterization of post-acute sequelae of COVID-19	Nature / Article	<ul style="list-style-type: none"> • Data from a cohort of 73,435 non-hospitalised COVID-19 patients 30 days after testing positive was compared with almost 5 million non-COVID-19 patients in a US health system. • Identifies sequelae in the respiratory system and several others including nervous system and neurocognitive disorders, mental health disorders, metabolic disorders, cardiovascular disorders, gastrointestinal disorders, malaise, fatigue, musculoskeletal pain, and anemia. • Found increased use of pain medications (opioids and non-opioids), antidepressants, anxiolytics, antihypertensives, and oral hypoglycemics and evidence of laboratory abnormalities in multiple organ systems.

[Back to menu](#)

Epidemiology and clinical – risk factors

Publication Date	Title/URL	Journal / Article type	Digest
28.04.2021	Associations between body-mass index and COVID-19 severity in 6.9 million people in England: a prospective, community-based, cohort study	The Lancet Diabetes & Endocrinology / Article	<ul style="list-style-type: none"> • Prospective, community-based, cohort study. Of 6 910 695 eligible individuals (mean BMI 26.78 kg/m²), 13,503 (0.20%) admitted to hospital, 1601 (0.02%) to ICU, 5479 (0.08%) died after positive test. • For BMI of more than 23 kg/m², linear increase in risk of severe COVID-19 leading to admission to hospital and death / admission to ICU, not attributable to excess risks of related diseases. • Relative risk due to increasing BMI is particularly notable people younger than 40 years and of Black ethnicity.
23.04.2021	Systematic review of the association between ABO blood type and COVID-19 incidence and mortality	medRxiv (non-peer reviewed) / Article	<ul style="list-style-type: none"> • Systematic review (24 papers) did not find sufficient evidence to conclude a biological relationship between ABO blood types and COVID-19 infection or severity. Most existing studies are low quality and suffer methodological flaws.
22.04.2021	Association of working shifts, inside and outside of healthcare, with severe COVID-19: an observational study	BMC Public Health / Article	<ul style="list-style-type: none"> • A UK study of 235,685 participants aged 40-69 using UK Biobank with linked COVID-19 data available from 16/03/2020 – 31/08/2020. • Study found odds of developing severe Covid-19 were higher in health workers (2.32), shift workers (2.06) and more than seven times higher in health workers who worked shifts (7.56). • Being a health worker and a shift worker had possible greater odds of developing severe Covid-19 in South Asian and Black and African Caribbean ethnicities compared to white individuals.

28.0 4.20 21	Deprivation and Exposure to Public Activities during the COVID-19 Pandemic in England and Wales	medRxiv (non-peer reviewed) / Article	<ul style="list-style-type: none"> • Analysed data from the Virus Watch cohort in England and Wales during the Autumn-Winter phase of the COVID-19 pandemic (20120 to 25228 participants across the surveys) • Participants in the most deprived postcode areas persistently exhibited elevated risk of exposure to vehicle sharing (aRR range across time points 1.73-8.52), public transport (aRR 3.13-5.73), work or education outside of the household (aRR 1.09-1.21), essential shops (aRR 1.09-1.13) and non-household contacts (aRR 1.15-1.19) across multiple survey periods. • Authors suggest public health interventions and support to enable low-paid workers to stay at home during periods of intense transmission.
27.0 4.20 21	Mortality of care home residents and community-dwelling controls during the COVID-19 pandemic in 2020: matched cohort study	medRxiv (non-peer reviewed) / Article	<ul style="list-style-type: none"> • Study matched 83,419 English care home residents (97%) with 312,607 community-dwelling adults (controls) based on age, gender and general practice • The highest first wave age-specific mortality rate was 6.02 per 100 patients per week in men aged 95-104 years between 13-19 April 2020. • Compared with controls, the adjusted rate ratio for mortality of care home residents was 4.95 in February 2020, increasing to 8.34 in April 2020, declining to 3.93 in December 2020. • During the week of 13-19 April 2020, mortality of care home residents was 10.74 times higher than controls.
22.0 4.20 21	Clinical outcomes and risk factors for COVID-19 among migrant populations in high-income countries: a systematic review	Journal of Migration and Health / Systematic Review	<ul style="list-style-type: none"> • Systematic review (158 studies from 15 countries) to assess clinical outcomes of COVID-19 in migrant populations, indirect health and social impacts, and to determine key risk factors. • Data suggests migrants are at increased risk of infection and disproportionately represented among COVID-19 cases / reported deaths. • Migrants who are undocumented, working in health and care, or housed in camps and labour compounds may have been especially affected. • Migrants generally have higher levels of risk factors, such as high-risk occupations, overcrowded accommodation, and linguistic or financial barriers to healthcare. • Preprint previously included.

[Back to menu](#)

Epidemiology and clinical – other

Publication Date	Title/URL	Journal / Article type	Digest
27.04 .2021	Epidemiology of Confirmed COVID-19 Deaths in Adults, England, March-December 2020	Emerg Infect Dis / Article	<ul style="list-style-type: none"> • Of 58,186 coronavirus deaths among adults in England March–Dec 2020: 77% occurred in hospitals; 93% were in patients >60 years; 91% occurred within 28 days of positive specimen. • Cumulative mortality rates were highest among persons of Black, Asian, other, or mixed ethnicities and in socioeconomically deprived areas.

21.04 .2021	Real-world SARS CoV-2 Testing in Northern England during the first wave of the COVID-19 Pandemic	Journal of Infection / Article	<ul style="list-style-type: none"> • Results from 208,083 SARS-CoV-2 tests carried out by Public Health England during the first wave of the pandemic (11.02.2020 – 31.08.2020). • 8.90% tests returned positive, of which the highest positive results came from nasal swabs (20.99%) and broncho-alveolar lavage (12.50%). • None of the faecal, fluid or cerebrospinal samples were positive for SARS-CoV-2.
29.04 .2021	Effective in vitro inactivation of SARS-CoV-2 by commercially available mouthwashes	J Gen Virol / Article	<ul style="list-style-type: none"> • UK research, supported by PHE, into seven mouthwashes with different active ingredients and their potential for reducing the viral load in patient saliva and limiting the spread of SARS-CoV-2 • Demonstrates ≥ 4.1 to ≥ 5.5 log(10) reduction in SARS-CoV-2 titre following a 1 min treatment • Mouthwashes containing 0.01-0.02 % stabilised hypochlorous acid or 0.58 % povidone iodine, and mouthwashes with both alcohol-based and alcohol-free formulations designed for home use • Products containing 1.5 % hydrogen peroxide or 0.2 % chlorhexidine gluconate were ineffective against SARS-CoV-2 in these tests • Study contributes to evidence surrounding virucidal efficacy of mouthwashes/oral rinses against SARS-CoV-2, and has important applications in reducing risk associated with aerosol generating procedures in dentistry and potentially for infection control more widely.
23.04 .2021	Frequency of neurological manifestations in COVID-19: a systematic review and meta-analysis of 350 studies	medRxiv (non-peer reviewed) / Article	<ul style="list-style-type: none"> • Systematic review and meta-analysis (350 papers; 145,634 COVID-19 patients) to investigate neurological manifestations reported in COVID-19 patients. Low risk of bias observed in 85% of studies. • Identified 41 neurological manifestations (24 symptoms and 17 diagnoses). Pooled prevalence of the most common symptoms included: fatigue (32%), myalgia (20%), taste impairment (21%), smell impairment (19%) and headache (13%). • Stroke was the most common neurological diagnosis (pooled prevalence: 2%). • In patients aged over 60 years: pooled prevalence of acute confusion/delirium was 34%; presence of any neurological manifestation was associated with mortality (OR 1.80).

[Back to menu](#)

Infection control / non-pharmaceutical interventions

Publication Date	Title/URL	Journal / Article type	Digest
27.04.2021	Successful Control of an Onboard COVID-19 Outbreak Using the Cruise Ship as a Quarantine Facility, Western Australia, Australia	Emerging infectious diseases / Case report	<ul style="list-style-type: none"> • Report on a successful health-led, 14-day regime based on established principles of outbreak management and experiences of coronavirus disease outbreaks on cruise ships elsewhere. • This outbreak resulted in 51 known cases and 1 death in crew members and 30 cases and 3 deaths in passengers. Isolation of case-patients, quarantining of exposed persons, and segregating onboard crew into essential crew (EC) and non-essential crew (nEC) groups were key response measures.

			<ul style="list-style-type: none"> No crew members became symptomatic after completion of quarantine. Infection surveillance involved telephone correspondence, face-to-face visits, and testing for SARS-CoV-2. No serious health issues were reported, no response staff became infected, and only 1 quarantine breach occurred among crew.
30.0 4.20 21	Measurement-based evaluation of Google/Apple Exposure Notification API for proximity detection in a commuter bus	PLoS One / Article	<ul style="list-style-type: none"> Study on a commuter bus in Dublin, Ireland using Google/Apple Exposure Notification (GAEN) API. Measurements were collected between 60 pairs of handset locations. Attenuation level reported by the GAEN API need not increase with distance between handsets, likely due to signal reflections within the metal-rich bus environment. No exposure notifications would have been triggered despite the fact that all pairs of handsets were within 2m of one another for at least 15 minutes. This API is likely to be widely used by Covid-19 contact tracing apps.
25.0 4.20 21	Efficacy of universal masking for source control and personal protection from simulated cough and exhaled aerosols in a room	medRxiv (non-peer reviewed) / Article	<ul style="list-style-type: none"> Study used a respiratory aerosol simulator (source) and a breathing simulator (recipient) in a 3m x 3m chamber. In front-to-front coughing, masks reduced 15-minute mean aerosol concentration at the recipient by 92% at 0.9 and 1.8 m separation. When side-by-side, masks reduced the concentration by 81% at 0.9 m and 78% at 1.8 m. During breathing, masks reduced the aerosol concentration by 66% when front-to-front and 76% when side-by-side at 0.9 m. Similar results seen at 1.8 m. When unmasked, changing orientations from front-to-front to side-by-side reduced cough aerosol concentration by 59% at 0.9 m and 60% at 1.8 m. When masked, changing orientation did not significantly change concentration at either distance during coughing or breathing. Increasing distance from 0.9 m to 1.8 m during coughing reduced the aerosol concentration by 25% when both unmasked but had little effect when both were masked.

[Back to menu](#)

Transmission

Publication Date	Title/URL	Journal / Article type	Digest
27.04 .2021	Indicators for Risk of Airborne Transmission in Shared Indoor Environments and their application to COVID-19 Outbreaks	medRxiv (non-peer reviewed) / Article	<ul style="list-style-type: none"> Proposes two simple parameters as indicators of infection risk in shared rooms where social distance is maintained. Combines key factors that control airborne disease transmission indoors: virus-containing aerosol generation rate, breathing flow rate, masking and its quality, ventilation and air cleaning rates, number of occupants, and duration of exposure.

			<ul style="list-style-type: none"> • COVID-19 outbreaks show a clear trend in relation to these parameters consistent with an airborne infection model, supporting the importance of airborne transmission for these outbreaks.
29.04 .2021	COVID-19 Outbreaks at Two Construction Sites - New York City, October-November 2020	Clin Infect Dis / Case Report	<ul style="list-style-type: none"> • Investigations carried out between 23.10.2020 and 16.11.2020 by the New York City Department of Health and Mental Hygiene (DOHMH) • On Site A 46% of employees tested positive (11 confirmed cases, 4 probable cases and 1 suspected case) amongst a crew of 35 people from 6 of the 7 different companies working on site • On Site B 4% of employees tested positive (13 confirmed cases, 5 probable cases and 2 suspected cases) amongst a crew of 450 people from 6 of the 70 companies working on site. • Study highlights challenges within the construction industry in adhering to aspects of the reopening guidelines, contributing to delays in identifying, intervening in, and slowing COVID-19 outbreaks at construction sites • In response to these two outbreaks, DOHMH assisted construction companies with improved implementation and adherence to reopening guidelines.
29.04 .2021	Widespread SARS-CoV-2 Transmission Among Attendees at a Large Motorcycle Rally and their Contacts, 30 US Jurisdictions, August-September, 2020	Clin Infect Dis / Article	<ul style="list-style-type: none"> • National count of reported SARS-CoV-2 cases following event of approximately 462,000 attendees in South Dakota between 07.08.2020 and 16.08.2020 • At least 649 COVID-19 cases were identified, including secondary and tertiary spread to close contacts • Findings highlight the risk of SARS-CoV-2 transmission associated with a mass gathering event that resulted in preventable illness, hospitalizations, and at least one reported death across multiple jurisdictions.
24.04 .2021	Transmission of SARS-CoV-2 on a Patient Transport Van	Clinical Infectious Disease / Article	<ul style="list-style-type: none"> • Article demonstrates substantial risk for SARS-CoV-2 transmission on patient transport vans through a report on two incidents of transmission from van drivers to passengers despite the use of masks and physical distancing. • Whole genome sequencing confirmed relatedness of driver and passenger SARS-CoV-2. • With the heater operating, fluorescent microspheres were transported by airflow >3 meters from the front to the back of the van.
30.04 .2021	COVID-19 Outbreak Among Farmworkers - Okanogan County, Washington, May-August 2020	MMWR Morb Mortal Wkly Rep	<ul style="list-style-type: none"> • Among 4,955 known orchard employees of a US fruit grower, 3,739 (75%) were included in this analysis, including 348 (9%) test confirmed cases and 71 (2%) suspected of having COVID-19. • SARS-CoV-2 incidence was higher among those living in the community (12%) than among those living in congregate temporary housing (4%). • Incidence was higher among farmworkers packing and sorting fruit indoors (28%) than among those working alone or in small groups indoors or working outdoors (6%–10%).

Treatment

Publication Date	Title/URL	Journal / Article type	Digest
22.04.2021	Efficacy of the TMPRSS2 inhibitor camostat mesilate in patients hospitalized with Covid-19-a double-blind randomized controlled trial	EclinicalMedicine / Article	<ul style="list-style-type: none"> • Hospitalised COVID-19 patients randomised to either TMPRSS2 inhibitor camostat mesilate (n=137) or placebo (n=68) within 48 hours of admission • Key findings: i) median time to clinical improvement was 5 days in both groups; ii) hazard ratio for 30-day mortality in camostat compared with placebo group was 0.82; iii) frequency of adverse events was similar in both groups; iv) Median change in viral load from baseline to day 5 in the camostat group was -0.22 log(10) copies/mL and -0.82 log(10) in the placebo group. • Suggests camostat mesilate was not associated with increased adverse events during hospitalisation for Covid-19 and did not affect time to clinical improvement, progression to ICU admission or mortality.
27.04.2021	A randomised clinical trial of azithromycin versus standard care in ambulatory COVID-19 - the ATOMIC2 trial	medRxiv (non-peer reviewed) / Article	<ul style="list-style-type: none"> • Clinical trial of 298 UK adults with mild-moderate COVID-19, randomised (1:1) to azithromycin or to standard care. • Primary endpoint (subsequent hospitalisation or death) was not significantly different between the azithromycin and control groups (adjusted OR 0.91). Rates of respiratory failure, progression to pneumonia, all-cause mortality, and adverse events, including serious cardiovascular events, were not significantly different between groups. • These findings do not support the use of azithromycin in patients with mild-moderate COVID-19.
27.04.2021	Vaccinated and convalescent donor-derived SARS-CoV-2-specific T cells as adoptive immunotherapy for high-risk COVID-19 patients	Clinical Infectious Disease / Article	<ul style="list-style-type: none"> • Research demonstrates the causal relationship between the expansion of endogenous CoV-2-specific T cells (CoV-2-STs) and the disease outcome and the feasibility of generating powerful CoV-2-ST products from both convalescent and vaccinated donors as an "off-the shelf" T-cell immunotherapy for high-risk patients of both the unmutated virus and its B.1.1.7 variant. • CoV-2-STs originating from critical COVID-19 patients failed to expand, recapitulating the in vivo failure of CoV-2-specific T-cell immunity to control the infection. • CoV-2-STs generated from asymptomatic PCR+ individuals presented only weak responses whereas their counterparts originating from exposed to other seasonal coronaviruses subjects failed to kill the virus, thus disempowering the hypothesis of protective cross-immunity.

Modelling

Publication Date	Title/URL	Journal / Article type	Digest
23.04.2021	Simulated Identification of Silent COVID-19 Infections Among Children and Estimated Future Infection Rates With Vaccination	JAMA Network Open / Original investigation	<ul style="list-style-type: none">• In this simulation modelling study of a synthetic US population, in absence of vaccine availability for children / 40% vaccination coverage of adults / $Re = 1.2$, a targeted approach that identifies 11% of silent infections among children within 2 days and 14% within 3 days after infection would bring attack rates to less than 5%• Findings suggest that without measures like contact tracing / routine testing to interrupt transmission chains from silent infections, vaccination of adults is unlikely to contain outbreaks in near term.• See invited commentary: https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2779056

[Back to menu](#)

Overviews, comments and editorials

Publication Date	Title/URL	Journal / Article type
19.04.2021	Human challenge trial launches to study immune response to COVID-19	University of Oxford / News
23.04.2021	Covid-19: Infections fell by 65% after first dose of AstraZeneca or Pfizer vaccine, data show	BMJ / News
29.04.2021	No country or continent is on its own in the ongoing COVID-19 pandemic	Eurosurveillance / Editorial
20.04.2021	COVID-19 vaccine efficacy and effectiveness-the elephant (not) in the room	Lancet Microbe / Comment
28.04.2021	Covid-19: MHRA is concerned over use of rapid lateral flow devices for mass testing	BMJ / News
01.05.2021	Overview of SARS-CoV-2 infection in adults living with HIV	The Lancet HIV / Review
22.04.2021	Covid-19: What do we know about airborne transmission of SARS-CoV-2?	BMJ / Briefing
29.03.2021	Risk of SARS-CoV-2 transmission from newly-infected individuals with documented previous infection or vaccination	European Centre for Disease Prevention and Control / Technical report

[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