



COVID-19 Literature Digest – 19/02/2021

Based on feedback received from our January survey, and our current staffing capacity, we have reduced the number of digests to one per week.

The following changes to the Digest are being trialled until mid-March:

- the frequency of the Digest will be reduced from three days a week to once a week (Friday)
- the frequency of the Guest Editorials will be reduced from once a week to once every two weeks – so you will receive the next editorial on Friday 26th February

Feedback welcome.

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 The reports include both preprints, which should be treated with caution as they are NOT peer-reviewed and may be subject to change, and also research that has been subject to peer review and wider scrutiny.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Report for 19.02.2021 (please note that papers that have **NOT been peer-reviewed** are highlighted in red).

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

Serology and immunology

Publication Date	Title/URL	Journal / Article type	Digest
11.02.2021	Impact of age, ethnicity, sex and prior infection status on immunogenicity following a single dose of the BNT162b2 mRNA COVID-19 vaccine: real-world evidence from healthcare workers, Israel, December 2020 to January 2021	Eurosurveillance / Rapid communication	<ul style="list-style-type: none"> • A single dose of the BNT162b2 mRNA COVID19 vaccine was immunogenic in 92% of a study cohort of Israeli healthcare workers (HCW) (N=514; 19–77 years old) at 21 days post vaccination • Thirty-nine HCWs who did not respond to the first dose were older (median age 57 vs 45 in other) and more likely to be Jewish. • No significant difference in antibody titres between males and females or between different ethnicities, but titres decreased with increasing age. • Post-vaccination IgG levels among those with previous infection were much higher (GMC 573 vs 61.5).
12.02.2021	Seroprevalence of antibodies to SARS-CoV-2 in healthcare workers: a cross-sectional study	BMJ Open / Original research	<ul style="list-style-type: none"> • In an observational cohort of healthcare workers (n=6062) in Los Angeles County, USA, seroprevalence was associated with Hispanic ethnicity (p=0.001) and African-American ethnicity (p=0.027), contact with a COVID-19-diagnosed individual in the household (p<0.001), or clinical work setting (p=0.002).

			<ul style="list-style-type: none"> • Hispanic or African-American ethnicity were associated with antibody positivity even after adjusting for personal COVID-19 diagnosis status.
16.02.2021	Characterization of humoral and SARS-CoV-2 specific T cell responses in people living with HIV	bioRxiv (non-peer reviewed) / Article	<ul style="list-style-type: none"> • Findings suggest the majority of people living with HIV (PLWH) mount SARS-CoV-2 Spike- and Nucleoprotein-specific antibodies with neutralising activity and SARS-CoV-2-specific T cell responses at similar levels to HIV negative subjects. • Humoral and cellular responses to SARS-CoV-2 were detected 5-7 months post-infection. • Incomplete immune reconstitution on ART and a low CD4:CD8 ratio may hamper development of immunity to SARS-CoV-2.
15.02.2021	Favourable antibody responses to human coronaviruses in children and adolescents with autoimmune rheumatic diseases	bioRxiv (non-peer reviewed) / Article	<ul style="list-style-type: none"> • Despite immune dysfunction and immunosuppressive treatment, children and adolescents with prevalent inflammatory rheumatic diseases, juvenile idiopathic arthritis (JIA), juvenile dermatomyositis (JDM) and juvenile systemic lupus erythematosus (JSLE) mounted comparable or stronger responses than healthier peers despite immune dysfunction and immunosuppressive treatment • Autoimmune rheumatic diseases and their treatment were associated with a favourable ratio of spike to nucleoprotein antibodies.
17.02.2021	Innate cell profiles during the acute and convalescent phase of SARS-CoV-2 infection in children	Nat Commun / Article	<ul style="list-style-type: none"> • Reports acute and convalescent innate immune responses in 48 children and 70 adults infected with, or exposed to, SARS-CoV-2. • Clinically mild SARS-CoV-2 infection in children is characterised by reduced circulating subsets of monocytes (classical, intermediate, non-classical), dendritic cells and natural killer cells during the acute phase. • Infected adults show reduced proportions of non-classical monocytes only. • Increased proportions of CD63+ activated neutrophils were observed during the acute phase in infected children.

Vaccines

Publication Date	Title/URL	Journal / Article type	Digest
18.02.2021	Early rate reductions of SARS-CoV-2 infection and COVID-19 in BNT162b2 vaccine recipients	Lancet / Correspondence	<ul style="list-style-type: none"> • Retrospective cohort study of 9109 vaccine-eligible healthcare workers (HCWs), with 7214 (79%) receiving a first dose of BNT162b2 (Pfizer) vaccine, and 6037 (66%) receiving the second dose • In vaccinated HCWs, SARS-CoV-2 infections were reduced by 30% and 75% for days 1–14 and days 15–28 after the first dose, respectively. • In vaccinated HCWs, symptomatic COVID-19 disease was reduced by 47% and 85% for days 1–14 and days 15–28 after the first dose, respectively.
12.02.2021	Safety and efficacy of the ChAdOx1 nCoV-19 (AZD1222) Covid-19 vaccine against the B.1.351 variant in South Africa	medRxiv (non-peer reviewed) / Article	<ul style="list-style-type: none"> • In a randomised controlled trial with 2,026 HIV-uninfected adults in South Africa, a two-dose regimen of vaccine ChAdOx1-nCoV19 provided minimal protection against mild-moderate Covid-19 due to B.1.351 variant, but vaccine efficacy against severe Covid-19 was undetermined.
13.02.2021	Association of demographic and occupational factors with SARS-CoV-2 vaccine uptake in a multi-ethnic UK healthcare workforce: a rapid real-world analysis	medRxiv (non-peer reviewed) / Article	<ul style="list-style-type: none"> • Among 19,044 healthcare workers (HCWs) at a large UK hospital, 64.5% (n=12,278) received SARS-CoV-2 vaccination. • Vaccination uptake differed by ethnic group; White HCWs 70.9% vaccinated; South Asian 58.5%; Black 36.8%. • Younger age, female sex, increasing deprivation, and belonging to Black or South Asian ethnic groups negatively associated with vaccine uptake.
18.02.2021	FDA-authorized COVID-19 vaccines are effective per real-world evidence synthesized across a multi-state health system	medRxiv (non-peer reviewed) / Article	<ul style="list-style-type: none"> • Preliminary assessment of real-world vaccination efficacy compared 31,069 individuals in the US receiving at least one dose of either mRNA-1273 (Moderna) or BNT162b2 (Pfizer/BioNTech) vaccine, and 31,069 propensity-matched unvaccinated individuals. • Administration of two COVID-19 vaccine doses was 88.7% effective in preventing SARS-CoV-2 infection, with onset at least 36 days after the first dose. • Vaccinated patients subsequently diagnosed with COVID-19 had significantly lower 14-day hospital admission rates than unvaccinated COVID-19 patients (3.7% vs. 9.2%; p=0.007).

12.02.2021	Challenges in ensuring global access to COVID-19 vaccines: production, affordability, allocation, and deployment	Lancet / Health policy	<ul style="list-style-type: none"> • For global access: licensed vaccines, produced at scale, priced affordably, allocated global, widely deployed in local communities. Potential challenges / policy implications discussed. • Key characteristics dashboard for 26 leading vaccine candidates, including efficacy levels, storage requirements, prices, 2021 production capacities, stocks reserved for LMICs.
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Diagnostics and genomics

Publication Date	Title/URL	Journal / Article type	Digest
12.02.2021	INSIGHT: A population-scale COVID-19 testing strategy combining point-of-care diagnosis with centralized high-throughput sequencing	Sci Adv / Research article	<ul style="list-style-type: none"> • Presents INSIGHT: a two-stage COVID-19 testing strategy using a barcoded isothermal NASBA reaction. It combines point-of-care diagnosis with next-generation sequencing, aiming to achieve population-scale testing. • The 95% limit of detection is <50 copies of viral RNA per reaction.
13.02.2021	Investigation of SARS-CoV-2 variants of concern in England	Public Health England / Report	<ul style="list-style-type: none"> • This briefing provides an update on 4 variants of concern, updating previous briefings up to 1 February 2021
14.02.2021	Emergence in late 2020 of multiple lineages of SARS-CoV-2 Spike protein variants affecting amino acid position 677	medRxiv (non-peer reviewed) / Article	<ul style="list-style-type: none"> • Phylogenetic analyses suggest the independent evolution and spread of at least six distinct Q677H sub-lineages in the USA, with first collection dates ranging from mid-August to late November 2020.
12.02.2021	Screening for SARS-CoV-2 by RT-PCR: saliva or nasopharyngeal swab? Systematic review and meta-analysis	medRxiv (non-peer reviewed) / Article	<ul style="list-style-type: none"> • Meta-analysis of 49 studies found pooled sensitivities of 86.7% and 92.2% from saliva and nasopharyngeal/oropharyngeal swabs respectively, and high concordance (92.6%) across studies, validating the use of saliva samples for mass screening during the COVID-19 pandemic.
13.02.2021	S-variant SARS-CoV-2 lineage B.1.1.7 is associated with significantly higher viral loads in samples tested by ThermoFisher TaqPath RT-qPCR	J Infect Dis / Accepted manuscript	<ul style="list-style-type: none"> • SARS-CoV-2 variant B.1.1.7 containing mutation $\Delta 69/70$ shows an identifiable profile in ThermoFisher TaqPath RTqPCR (S-gene target failure; SGTF). • In recent analysis, linked Ct values for respiratory samples showed that a low Ct for ORF1ab and N were clearly associated with SGTF. • Significantly more SGTF samples had higher inferred viral loads between 1×10^7 and 1×10^8.

			<ul style="list-style-type: none"> • Findings suggest patients whose samples exhibit the SGTF profile are more likely to have high viral loads, which may explain higher infectivity. • Previously included as a preprint
15.02.2021	Risk assessment: SARS-CoV-2 - increased circulation of variants of concern and vaccine rollout in the EU/EEA, 14th update	ECDC / Risk assessment	<ul style="list-style-type: none"> • This risk assessment provides an overall update on the COVID-19 situation in the EU/EEA, including latest data on the situation with SARS-CoV-2 variants of concern covered by previous targeted risk assessments.

Epidemiology and clinical - children and pregnancy

Publication Date	Title/URL	Journal / Article type	Digest
10.02.2021	Effect of the new SARS-CoV-2 variant B.1.1.7 on children and young people	Lancet Child Adolesc Health / Correspondence	<ul style="list-style-type: none"> • Data from a London hospital found no evidence of more severe COVID-19 disease in children and young people during the second wave of pandemic (01 November 2020 to 19 January 2021). • Findings suggest that infection with the B.1.1.7 variant, highly prevalent in London during the study period, does not produce a significantly different clinical course to the original strain.

Epidemiology and clinical – risk factors

Publication Date	Title/URL	Journal / Article type	Digest
09.02.2021	COVID-19 and dementia: Analyses of risk, disparity, and outcomes from electronic health records in the US	Alzheimers Dement / Research article	<ul style="list-style-type: none"> • Retrospective case-control analysis of patient EHRs for 61.9 million U.S adult and senior patients (age ≥ 18 years) up to Aug 21, 2020. • Patients with dementia at increased COVID-19 risk (adjusted odds ratio [AOR]: 2.00, P < .001); highest odds vascular dementia (AOR: 3.17, P < .001). Also increased risk of hospitalisation and death. • Black individuals with dementia had higher risk of COVID-19 than Whites (AOR: 2.86, P < .001).

Epidemiology and clinical – other

Publication Date	Title/URL	Journal / Article type	Digest
18.02.2021	REACT-1 study of coronavirus transmission: February 2021 interim results	Gov.uk / Official statistics	<ul style="list-style-type: none"> • Over 85,400 volunteers tested in England between 4 and 13 February 2021. • Initial findings from Imperial College London and Ipsos MORI show infections fell more than two-thirds since the last REACT report, with 1 in 196 people infected. • Infection levels remain high, highlighting the importance of the public continuing to follow guidelines. • Related press release: https://www.gov.uk/government/news/february-interim-findings-from-covid-19-react-1-study-published
12.02.2021	The contribution of nosocomial infections to the first wave - 28 January 2021	Gov.uk / Research and analysis	<ul style="list-style-type: none"> • Estimated nosocomial infections in the first wave represent approximately just over 1% of total infection numbers at a population level. • An estimated 20-25% of all COVID-19 infections in hospital patients may have been nosocomial across the first wave, including those acquiring infection on a previous admission. • Nosocomial infections, and onward community cases due to them, may lead to a substantial number of subsequent COVID-19 admissions, representing ~20% of admissions in the tail of the first wave.

Infection control / non-pharmaceutical interventions

Publication Date	Title/URL	Journal / Article type	Digest
17.02.2021	Reducing contacts to stop SARS-CoV-2 transmission during the second pandemic wave in Brussels, Belgium, August to November 2020	Eurosurveillance / Rapid communication	<ul style="list-style-type: none"> • The second pandemic wave in Brussels, Belgium was a result of increased social mixing across all ages. • Stringent physical distancing measures, including closure of bars and restaurants, resulted in a rapid decrease in reported contacts of cases within three weeks. This was sufficient to control SARS-CoV-2 transmission (lowering R_t to < 1). • Findings confirmed transmission among and from teenagers, however their relative role was limited.

11.02.2021	The effects of school closures on SARS-CoV-2 among parents and teachers	Proc Natl Acad Sci USA / Article	<ul style="list-style-type: none"> • Findings suggest that keeping lower-secondary schools open had a minor impact on the overall spread of SARS-CoV-2 in Sweden. • However, the infection rate doubled among teachers and infections spilled over to their partners, highlighting the need for protection measures.
15.02.2021	Impact of High Solar UV Radiant Exposures in Spring 2020 on SARS-CoV-2 Viral Inactivation in the UK	Photochem Photobiol / Research article	<ul style="list-style-type: none"> • Assesses potential for SARS-CoV-2 viral inactivation by solar UV radiation in outdoor spaces in the UK. • Higher radiant exposures may have increased potential for SARS-CoV-2 viral inactivation outdoors in April and May 2020. • Assessment of the period 2015-2020 found solar UV is unlikely to have a significant (at least 90% inactivation) impact on viral inactivation outdoors for most of October to March. • Minimum times to reach 90% and 99% inactivation in the UK are in the order of tens of minutes and hours, respectively. These times are best case scenarios and should be treated with caution.
16.02.2021	Characteristics of SARS-CoV-2 Transmission among Meat Processing Workers in Nebraska, USA, and Effectiveness of Risk Mitigation Measures	Emerg Infect Dis / Article	<ul style="list-style-type: none"> • Between April 1 – July 31 2020, COVID-19 was diagnosed in 5,002 Nebraska meat processing workers (attack rate 19%). • After initiating universal masking and physical barrier interventions at 13 meat processing facilities, 8/13 showed a statistically significant reduction in COVID-19 incidence in <10 days.

Transmission

Publication Date	Title/URL	Journal / Article type	Digest
17.02.2021	Intranasal fusion inhibitory lipopeptide prevents direct-contact SARS-CoV-2 transmission in ferrets	Science	<ul style="list-style-type: none"> • Describes lipopeptide fusion inhibitors which block membrane fusion between SARS-CoV-2 viral and host cell membranes. • Daily intranasal administration to ferrets completely prevented SARS-CoV-2 direct-contact transmission during 24-hour co-housing with infected animals, while 100% of untreated animals were infected.

			<ul style="list-style-type: none"> • These lipopeptides are highly stable and may translate into safe and effective intranasal prophylaxis to reduce SARS-CoV-2 transmission.
02.03.2020	Quantifying asymptomatic infection and transmission of COVID-19 in New York City using observed cases, serology, and testing capacity	Proc Natl Acad Sci U S A / Research article	<ul style="list-style-type: none"> • Model incorporates daily testing information fit to case and serology data from New York City: proportion of symptomatic cases is low, 13 - 18%; reproductive number may be larger than often assumed. • If asymptomatic infections transmit at similar rates as symptomatic ones, overall R. number across all classes is larger than often assumed, with estimates ranging from 3.2 to 4.4. If they transmit poorly, then symptomatic cases have a larger reproductive number ranging from 3.9 to 8.1.

Treatment

Publication Date	Title/URL	Journal / Article type	Digest
12.02.2021	Chloroquine or hydroxychloroquine for prevention and treatment of COVID-19	Cochrane Database of Systematic Reviews / Review - Intervention	<ul style="list-style-type: none"> • Review findings suggest hydroxychloroquine (HCQ) for people infected with COVID-19 has little or no effect on the risk of death, and probably no effect on progression to mechanical ventilation. • Adverse events are tripled compared to placebo, but very few serious adverse events were found. • Concludes no further trials of hydroxychloroquine or chloroquine for treatment should be carried out. • HCQ is less likely to be effective in protecting people from infection, although it is sensible to complete trials examining prevention of infection.
11.02.2021	Early initiation of prophylactic anticoagulation for prevention of coronavirus disease 2019 mortality in patients admitted to hospital in the United States: cohort study	BMJ / Research	<ul style="list-style-type: none"> • Study of 4297 hospitalised COVID-19 patients found early initiation of prophylactic anticoagulation, compared with no anticoagulation, was associated with decreased risk of 30 day mortality and no increased risk of serious bleeding events. • Earlier included as a preprint
17.02.2021	Effect of a Single High Dose of Vitamin D3 on Hospital Length of Stay in Patients With Moderate to Severe COVID-19: A Randomized Clinical Trial	JAMA / Original Investigation	<ul style="list-style-type: none"> • 240 hospitalized COVID-19 patients in Brazil randomised 1:1: single high dose of vitamin D3, compared with placebo, did not significantly reduce hospital length of stay. Findings don't support vit D3 for treatment of moderate to severe COVID-19.

• Related editorial, with limitations:
<https://jamanetwork.com/journals/jama/fullarticle/2776736>

Modelling

Publication Date	Title/URL	Journal / Article type	Digest
15.02.2021	Detecting behavioural changes in human movement to inform the spatial scale of interventions against COVID-19	medRxiv (non-peer reviewed) / Article	<ul style="list-style-type: none"> Proposes that communities detected using Facebook or other mobility data be used to assess the impact of spatially-targeted restrictions and may inform policymakers about the spatial extent of human movement patterns in the UK.

Guidance and consensus statements

Publication Date	Title/URL	Journal / Article type
12.02.2021	SARS-CoV-2 lateral flow antigen tests: evaluation of VOC1 (Kent, UK) and VOC2 (South Africa)	Public Health England / Guidance
16.02.2021	COVID-19 and the Use of Masks by Children. Statement From the Association of Schools of Public Health in the European Region and the European Academy of Paediatrics	Front Pediatr / Perspective article

Overviews, comments and editorials

Publication Date	Title/URL	Journal / Article type
17.02.2021	Safety and Efficacy of the BNT162b2 mRNA Covid-19 Vaccine	NEJM / Correspondence
12.02.2021	Reports of Anaphylaxis After Receipt of mRNA COVID-19 Vaccines in the US-December 14, 2020-January 18, 2021	JAMA / Insights
15.02.2021	Diagnostics for SARS-CoV-2 infections	Nat Mater / Review article
12.02.2021	NERVTAG: Update note on variant B.1.1.7, 27 January 2021	Gov.uk / Research and analysis
11.02.2021	SARS-CoV-2 variants and ending the COVID-19 pandemic	Lancet / Comment
29.01.2021	Public health actions to control new SARS-CoV-2 variants	Cell / Commentary
13.02.2021	Groundbreaking COVID-19 treatments to be fast-tracked through clinical trials	Gov.uk / Press release
11.02.2021	Recent falls in age-specific estimates of the case fatality ratio in England	CEBM / Overview

16.02.2021	The coronavirus is here to stay - here's what that means	Nature / News feature
16.02.2021	New technology to help identify those at high risk from COVID-19	Gov.uk / Press release
17.02.2021	World's first coronavirus Human Challenge study receives ethics approval in the UK	Gov.uk / Press release
15.02.2021	Time to evaluate COVID-19 contact-tracing apps	Nat Med / Correspondence
10.02.2021	Persistent viral RNA shedding in COVID-19: Caution, not fear	EBioMedicine / Commentary

Produced by the PHE COVID-19 Literature Digest Team

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Protecting and improving the nation's health