



COVID-19 Literature Digest – 12/02/2021

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

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.

Nicola Pearce-Smith – Senior Information Scientist within Knowledge and Library Services (KLS) at PHE. Since April 2020 she has been seconded to the PHE COVID-19 Rapid Evidence service to assist with the production of rapid reviews and evidence summaries.

Rapid reviews use similar explicit methods to systematic reviews but involve methodological shortcuts to allow production in a shorter timeframe. [The streamlined methods](#) should still include a focused question, comprehensive searching, inclusion criteria, risk of bias assessment and synthesis of results. The effectiveness of wearing face masks in the community remains a topic of interest and our [COVID-19 evidence team](#) recently carried out a rapid review on this topic: [Face coverings and COVID-19](#). In this review (search 22 Sept) we included 31 studies: 17 observational examining the effectiveness of face coverings in the community, and 14 laboratory examining efficacy of different materials. Our review found consistent evidence from observational studies in Asia, US and Europe, showing that use of face coverings in communities may help to reduce the transmission of COVID-19. There may be some residual confounding and risk of bias in these studies, and evidence from the UK was absent. The different face covering materials tested offered some protection compared with no covering, but these laboratory studies only simulated the SARS-CoV-2 virus. Many more studies on face coverings have been published since our search, and we continue to monitor the evidence.

One challenge with producing a systematic review, even with rapid methods, is their currency. A method increasingly used during this pandemic is to conduct a [living systematic review](#), one that aims to update and incorporate new evidence when available. [Characterising long-term covid-19: a rapid living systematic review](#) (search 28 Sept) aimed to understand the frequency, type and duration of [Long COVID-19 symptoms](#) (preprint, [AMSTAR2](#) rating HIGH). This review extracted data from 28 studies (16 cohort, 10 cross-sectional, and 2 large case series), which reported outcomes 21 days after COVID-19 symptoms, in hospitalised and non-hospitalised people. Results

showed that the most frequent symptoms were breathlessness, loss of smell and taste, fatigue, psychological symptoms, reduced quality of life and musculoskeletal symptoms, but symptom prevalence varied across the studies, and available evidence was limited and susceptible to bias. There is a nice infographic showing the frequency of long-term symptoms and a risk of bias visualisation. We await a further update incorporating any new evidence.

Assessing how ready people are to accept a COVID-19 vaccine is addressed in: [Confidence and Receptivity for COVID-19 Vaccines: A Rapid Systematic Review](#). This rapid review (search 20 Oct, AMSTAR2 rating MEDIUM) aimed to discover how confidence and receptiveness for COVID-19 vaccines has changed and whether survey design can affect responses. It included 126 surveys, all in English and mainly US-based. Results demonstrated that potential COVID-19 vaccine acceptance declined from March to October and vaccine hesitancy is common across countries and subgroups – reasons for this included vaccine safety, infection risk, outbreak severity, trust in government and influenza vaccination history. Question presentation, word choices and framing used within the surveys also affected responses. Some limitations of this review include currency of data, difficulty predicting future vaccine behaviour and opinions changing after introduction of new vaccines or treatments.

Nicola

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 12.02.2021 (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 – 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
27.01.2021	COVID-19 immune signatures reveal stable antiviral T cell function despite declining humoral responses	Immunity / Article	<ul style="list-style-type: none">• SARS-CoV-2-specific T cell immunity, its relationship to antibodies, and pre-existing immunity against endemic coronaviruses (huCoV) investigated in 82 healthy donors (HDs), 204 recovered (RCs), and 92 active COVID-19 patients (ACs).• Immune responses toward huCoV in RCs with mild disease and strong cellular SARS-CoV-2 T cell reactivity imply a protective role of pre-existing immunity against huCoV.
12.02.2021	Vaccine-induced immunity provides more robust heterotypic immunity than natural infection to emerging SARS-CoV-2 variants of concern.	Research Square (non-peer reviewed) / Article	<ul style="list-style-type: none">• Study of an uninfected UK cohort recently vaccinated with BNT162b2 (Pfizer-BioNTech), alongside a cohort naturally infected in the first wave of the COVID-19 pandemic.• Data suggests variants of concern (B1.1.7 and B1.351) may evade protective neutralising responses induced by prior infection, and to a lesser degree by immunisation, particularly after a single dose.• Impact of the variants on T cell responses appeared less marked.
05.02.2021	SARS-CoV-2 evolution during treatment of chronic infection	Nature / Article	<ul style="list-style-type: none">• Reports a case of chronic SARS-CoV-2 with reduced sensitivity to neutralising antibodies in an immune suppressed individual treated with convalescent plasma.• Following convalescent plasma therapy, large, dynamic virus population shifts observed with emergence of a dominant viral strain bearing D796H in S2 and ΔH69/ΔV70 in the S1 N-terminal domain NTD of the Spike protein.

05.02.2021	Integrated immune dynamics define correlates of COVID-19 severity and antibody responses	Cell Rep Med / Article	<ul style="list-style-type: none"> • Authors analysed 85 SARS-CoV-2-infected individuals at acute and/or convalescent timepoints, up to 102 days post-symptom onset, quantifying 184 immunological parameters. • Activated CXCR3+cTFH1 cells in acute COVID-19 significantly correlate with and predict antibody levels and their avidity at convalescence as well as acute neutralisation activity • ICU patients with severe COVID-19 display higher levels of soluble IL-6, IL-6R, IL-18, and hyperactivation of innate, adaptive and myeloid compartments than patients with moderate disease.
07.02.2021	Neutralization of viruses with European, South African, and United States SARS-CoV-2 variant spike proteins by convalescent sera and BNT162b2 mRNA vaccine-elicited antibodies	bioRxiv (non-peer reviewed) / Article	<ul style="list-style-type: none"> • Analysis suggests antibodies elicited by primary infection and by BNT162b2 mRNA vaccine are likely to maintain efficacy against B.1.1.7 and most other variants. • Partial resistance of virus with the B.1.351 spike protein could render some individuals less well protected.
08.02.2021	Neutralization of SARS-CoV-2 spike 69/70 deletion, E484K and N501Y variants by BNT162b2 vaccine-elicited sera	Nat Med / brief communication	<ul style="list-style-type: none"> • A study using three engineered SARS-CoV-2 viruses indicates emerging variants in the UK and South Africa have small effects on neutralisation by sera elicited by two BNT162b2 (Pfizer/BioNTech) doses.
05.02.2021	Age-related heterogeneity in Neutralising antibody responses to SARS-CoV-2 following BNT162b2 vaccination	medRxiv (non-peer reviewed) / Article	<ul style="list-style-type: none"> • In a study of 26 participants aged over 80 years, a significant proportion appear to require a second dose of mRNA-based vaccine BNT162b2 to achieve virus neutralisation.

Vaccines

Publication Date	Title/URL	Journal / Article type	Digest
10.02.2021	mRNA vaccine-elicited antibodies to SARS-CoV-2 and circulating variants	Nature / Article	<ul style="list-style-type: none"> • Authors report antibody and memory B cell responses in a cohort of 20 volunteers who received either the Moderna (mRNA-1273) or Pfizer-BioNTech (BNT162b2) vaccines • Eight weeks after second vaccine injection, high levels of IgM, and IgG anti-SARS-CoV-2 spike protein (S) and receptor binding domain (RBD) binding titers • Activity against variants encoding E484K or N501Y or the K417N:E484K:N501Y combination reduced by small but significant margin: monoclonal antibodies need to be tested against variants
05.02.2021	COVID-19 vaccine hesitancy in a representative working-age population in France: a survey experiment based on vaccine characteristics	Lancet Public Health / Article	<ul style="list-style-type: none"> • Survey responses from 1942 working-age adults: 560 (28.8%) opted for no vaccination in all eight tasks (outright vaccine refusal)

			<ul style="list-style-type: none"> • Refusal / hesitancy associated: female, age, lower educational level, poor compliance with recommended vaccinations, no report of specified chronic conditions • Associated commentary: https://www.thelancet.com/journals/lanpub/article/PIIS2468-2667(21)00029-3/fulltext
12.02.2021	COVID-19 Vaccination Intent, Perceptions, and Reasons for Not Vaccinating Among Groups Prioritized for Early Vaccination - United States, September and December 2020	MMWR Morb Mortal Wkly Rep / Article	<ul style="list-style-type: none"> • National polling in the US suggests an increase in intent to receive COVID-19 vaccination across all priority groups from September to December 2020, and a decrease in non-intent. • However, non-intention to receive vaccination is still highest in young adults, women, non-Hispanic Black adults, adults living in non-metropolitan areas, adults with less education and income, and adults without health insurance.

Diagnostics and genomics

Publication Date	Title/URL	Journal / Article type	Digest
10.02.2021	Symptom reporting in over 1 million people: community detection of COVID-19	Imperial College London (non-peer reviewed) / Article	<ul style="list-style-type: none"> • Data from the REACT-1 study suggests from June to December 2020 the following symptoms were jointly and positively predictive of COVID-19 PCR positivity together with the classic four symptoms: chills (all ages), headache (5–17 years), appetite loss (18–54 and 55+ years) and muscle aches (18–54 years). • Between November 2020 and January 2021, when new variant B.1.1.7 predominated, only loss or change of sense of smell and new persistent cough differed between cases. • Related commentary: https://www.bmj.com/content/372/bmj.n408

Epidemiology and clinical - children and pregnancy

Publication Date	Title/URL	Journal / Article type	Digest
04.02.2021	Nasopharyngeal SARS-CoV-2 viral loads in young children do not differ significantly from those in older children and adults	Sci Rep / Article	<ul style="list-style-type: none"> • An investigation of 5,544 confirmed COVID-19 cases in California, USA found no discernible difference in the amount of viral nucleic acid among young children and adults.
11.02.2021	The role of children in the spread of COVID-19: Using household data from Bnei Brak, Israel, to estimate the relative susceptibility and infectivity of children	PLoS Comput Biol / Research article	<ul style="list-style-type: none"> • Study of 637 households in Bnei Brak, Israel found the estimated susceptibility of children (under 20 years old) was 43% of the susceptibility of adults, and infectivity of children was 63% relative to that of adults.

05.02.2021	Haemostatic and thrombo-embolic complications in pregnant women with COVID-19: a systematic review and critical analysis	BMC Pregnancy Childbirth / Research article	<ul style="list-style-type: none"> Data from a study of pregnant women with a diagnosis of COVID-19 (n=1063) suggests that coagulopathy and thromboembolism are both increased in pregnancies affected by the infection.
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Epidemiology and clinical – risk factors

Publication Date	Title/URL	Journal / Article type	Digest
08.02.2021	Is area deprivation associated with greater impacts of COVID-19 in care homes across England? A preliminary analysis of COVID-19 outbreaks and deaths	J Epidemiol Community Health / Short report	<ul style="list-style-type: none"> COVID-19 outbreaks in English care homes did not vary by area deprivation. However, COVID-19-related deaths were more common in the most deprived quartiles of the Income Deprivation Affecting Older People Index (IDAOP) (incidence rate ratio (IRR): 1.23) and the Index of Multiple Deprivation (IMD) extent (IRR: 1.16), compared with the least deprived quartiles.
04.02.2021	How does vulnerability to COVID-19 vary between communities in England? Developing a Small Area Vulnerability Index (SAVI)	J Epidemiol Community Health / Original research	<ul style="list-style-type: none"> Cross-sectional analysis found vulnerability to COVID-19 in England was noticeably higher in the North West, West Midlands and North East regions. Age-adjusted COVID-19 mortality rate was increased for persons: 1) living in care homes (28% increase); 2) hospitalised in the past 5 years for a long-term health condition (19%); 3) from an ethnic minority background (8%), and; 4) living in overcrowded housing (11%).
06.02.2021	Risk factors for outbreaks of COVID-19 in care homes following hospital discharge: A national cohort analysis	Influenza Other Respir Viruses / Article	<ul style="list-style-type: none"> Analysis of data from a national cohort of adult care homes in Wales (n=1068) suggests that large homes were at considerably greater risk of COVID-19 outbreaks throughout the pandemic, and that a discharge from hospital was not associated with a significant increase in risk after adjusting for care home size.
05.02.2021	Ethnic differences in COVID-19 mortality during the first two waves of the Coronavirus Pandemic: a nationwide cohort study of 29 million adults in England	medRxiv (non-peer reviewed) / Article	<ul style="list-style-type: none"> In the second COVID-19 wave in England risk of COVID-19 death remained elevated for people from Pakistani and Bangladeshi background but not for people from Black ethnic background, according to analysis of national statistics. This was not explained by geographical factors.
08.02.2021	Risk of hospitalisation with COVID-19 among teachers compared to healthcare workers and other working-age adults. A nationwide case-control study	medRxiv (non-peer reviewed) / Article	<ul style="list-style-type: none"> Population-based study in Scotland found that teachers and their household members were not at increased risk of hospitalisation with COVID-19 compared to similar working-age adults, and were at lower risk of severe COVID-19.
05.02.2021	Seroprevalence and risk factors of exposure to COVID-19 in homeless people in Paris, France: a cross-sectional study	Lancet Public Health / Article	<ul style="list-style-type: none"> Cross-sectional seroprevalence study of 818 homeless persons in Paris, France found that 56% (n=426) tested positive for COVID-19. More than two thirds of COVID-19 seropositive individuals (68%; n=291) did not report any symptoms. Seropositivity was strongly associated with overcrowding.

			<ul style="list-style-type: none"> • See also associated comment: https://www.thelancet.com/journals/lanpub/article/PIIS2468-2667(21)00022-0/fulltext
10.02.2021	Associations of DMT therapies with COVID-19 severity in multiple sclerosis	medRxiv (non-peer reviewed) / Article	<ul style="list-style-type: none"> • An international cohort study of people with multiple sclerosis who contracted COVID-19 (657 suspected, 1,683 confirmed). • Rituximab was associated with increased risk of hospitalisation, ICU admission, and need for artificial ventilation. • Ocrelizumab was associated with hospitalisation and ICU admission.

Epidemiology and clinical – other

Publication Date	Title/URL	Journal / Article type	Digest
10.02.2021	SARS-CoV-2 antibody prevalence in England following the first peak of the pandemic	Nat Commun / Article	<ul style="list-style-type: none"> • Analysis of data from the REACT-2 national study in England suggests overall antibody prevalence is 6.0%. • Prevalence is higher among health and care workers compared with non-essential workers, and in people of Black or South Asian ethnicity compared with white ethnicity.
10.02.2021	Severe reinfection with South African SARS-CoV-2 variant 501Y.V2: A case report	Clin Infect Dis / Accepted manuscript	<ul style="list-style-type: none"> • Authors report a case of severe SARS-CoV-2 reinfection with South African variant 501Y.V2, four months after recovering from a first episode of COVID-19.

Infection control / non-pharmaceutical interventions

Publication Date	Title/URL	Journal / Article type	Digest
10.02.2021	Maximizing Fit for Cloth and Medical Procedure Masks to Improve Performance and Reduce SARS-CoV-2 Transmission and Exposure, 2021	MMWR Morb Mortal Wkly Rep / Article	<ul style="list-style-type: none"> • Two methods of improving the fit of medical procedure masks were both found to substantially reduce exposure from infected wearers and wearer exposure: 1) wearing a cloth mask over a medical procedure mask, and 2) knotting the ear loops of a medical procedure mask, and tucking in and flattening the extra material close to the face.
09.02.2021	Understanding patterns of adherence to COVID-19 mitigation measures: a qualitative interview study	J Public Health (Oxf) / Article	<ul style="list-style-type: none"> • Semi-structured interviews with 20 participants from BAME and low-income White backgrounds, exploring adherence to social distancing and self-isolation • More nuanced understanding of adherence to lockdown measures needed; practical and financial support could reduce numbers who have to engage in necessity-driven partial-adherence.

04.02.2021	Impact of domestic travel restrictions on transmission of COVID-19 infection using public transportation network approach	Sci Rep / Article	<ul style="list-style-type: none"> • Modelling suggests that domestic travel restrictions were effective to prevent the spread of COVID-19 on public transportation network in Japan, although data was limited to the early stage of the pandemic (June 2020). Milder travel restrictions may have similar impact to lockdown on controlling domestic transmission of COVID-19.
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Transmission

Publication Date	Title/URL	Journal / Article type	Digest
02.02.2021	Transmission of COVID-19 in 282 clusters in Catalonia, Spain: a cohort study	Lancet Infect Dis / Article	<ul style="list-style-type: none"> • Cohort study of 314 patients with COVID-19 found viral load of index cases was a leading driver of SARS-CoV-2 transmission. • Risk of symptomatic COVID-19 was strongly associated with the viral load of contacts at baseline and shortened the incubation period in a dose-dependent manner.
08.02.2021	The effect of respiratory activity, ventilatory therapy and facemasks on total aerosol emissions	medRxiv (non-peer reviewed) / Article	<ul style="list-style-type: none"> • Laboratory study found that talking, exertional breathing and coughing generate substantially more aerosols than two aerosol generating procedures (high flow nasal oxygen, and non-invasive positive pressure ventilation).
08.02.2021	SARS-CoV-2 Transmission Risk from sports Equipment (STRIKE)	medRxiv (non-peer reviewed) / Article	<ul style="list-style-type: none"> • Laboratory study found that recoverable SARS-CoV-2 viral load on a range of sporting equipment reduced exponentially after 1 minute. • Less virus was transferred from equipment made from porous materials such as leather and woven nylon (for example tennis balls, cricket balls and cricket gloves).

Treatment

Publication Date	Title/URL	Journal / Article type	Digest
11.02.2021	Tocilizumab in patients admitted to hospital with COVID-19 (RECOVERY): preliminary results of a randomised, controlled, open-label, platform trial	medRxiv (non-peer reviewed) / Article	<ul style="list-style-type: none"> • Randomised trial of 4116 hospitalised adult COVID-19 patients with hypoxia and systemic inflammation • Tocilizumab improved survival and other clinical outcomes regardless of the level of respiratory support received or the use of corticosteroids.
08.02.2021	Inhaled budesonide in the treatment of early COVID-19 illness: a randomised controlled trial	medRxiv (non-peer reviewed) / Article	<ul style="list-style-type: none"> • In a randomised trial of 146 patients with mild early COVID-19 infection, early administration of inhaled budesonide reduced the likelihood of needing urgent medical care and reduced the recovery time.

Modelling

Publication Date	Title/URL	Journal / Article type	Digest
08.02.2021	Tracking COVID-19 using online search	NPJ Digit Med / Article	<ul style="list-style-type: none">• Provides evidence that online search data can be used to develop complementary public health surveillance methods with more established approaches to inform COVID-19 response.

Guidance and consensus statements

Publication Date	Title/URL	Journal / Article type
10.02.2021	Interim recommendations for use of the AZD1222 (ChAdOx1-S [recombinant]) vaccine against COVID-19 developed by Oxford University and AstraZeneca	WHO / Interim guidance

Overviews, comments and editorials

Publication Date	Title/URL	Journal / Article type
03.02.2021	Inactivated COVID-19 vaccines to make a global impact	Lancet Infect Dis / Comment
08.02.2021	Covid-19: First UK vaccine safety data are "reassuring," says regulator	BMJ / News
08.02.2021	South Africa pauses use of Oxford vaccine after study casts doubt on efficacy against variant	BMJ / News
02.02.2021	Variants, Vaccines and What They Mean For COVID-19 Testing	Johns Hopkins University / Article
11.02.2021	Rapid coronavirus tests: a guide for the perplexed	Nature / News feature
04.02.2021	Covid-19: How the UK is using lateral flow tests in the pandemic	BMJ / Briefing
05.02.2021	Covid-19: The E484K mutation and the risks it poses	Bmj / News Analysis
03.02.2021	Introduction of Brazilian SARS-CoV-2 484K.V2 related variants into the UK	J Infect / Letter
06.02.2021	Understanding variants of SARS-CoV-2	Lancet / Article
08.02.2021	Pregnancy, Postpartum Care, and COVID-19 Vaccination in 2021	JAMA / JAMA Insights
10.02.2021	Researchers Investigate What COVID-19 Does to the Heart	JAMA / Medical News & Perspectives

26.01.2021	NIH launches database to track neurological symptoms associated with COVID-19	Nih.gov / News
02.02.2021	Coronavirus is in the air - there's too much focus on surfaces	BMJ / News

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](#)

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