



## COVID-19 Literature Digest – 15/01/2021

Dear all,

Since February 2020 we have produced this COVID-19 specific Literature Digest to ensure PHE response staff are aware of the latest scientific evidence on COVID-19. Early on it was decided to share this resource widely to assist other colleagues work on this unprecedented pandemic. The uptake has been considerable, from a distribution of ten people to >650, with more people signing-up each day.

As you will recognise, production of the Digest in its current form takes significant resource; it is likely that this product will be modified in the future to make its delivery more sustainable.

**We are therefore seeking your feedback to gain an understanding of what the most valuable/least valuable aspects of this Digest are.**

**To this end, we ask you kindly to give five minutes of your time to complete the survey below. The survey will close Friday 22<sup>nd</sup> January 2021. (Please be patient as the survey may take a minute to load initially)**

[Our survey can be accessed here.](#)

**This week's guest editor is Rachel Clark – Head of Evidence and Evaluation in the Research, Translation and Innovation Division and Head of the COVID-19 Rapid Evidence Service in the Public Health Advice, Guidance and Expertise Function.**

**If you only read three papers this week...**

*With COVID-19 vaccines rolling out, the [first paper](#) I've selected (a preprint) examines the predictors of vaccine hesitancy in UK households. Robertson et al. reported on a survey of 12,035 people (62% response rate) which examined the extent to which people are hesitant over receiving a vaccine, which sub-groups of the population might be particularly hesitant and why. The survey drew on participants of the UK Household Longitudinal Study, which uses a nationally representative sample. Data was collected over a one-week period at the end of November 2020. Overall intention to be vaccinated was high, with more than 80% of participants stating their intention to receive a vaccination as likely or very likely. Hesitancy to be vaccinated was higher in certain groups (female, younger ages, lower levels of education), but was particularly*

high in some Black and minority ethnic groups. The main reason for hesitancy was apprehension about future unknown effects of a vaccine, whereas the main reasons for being willing was the desire to avoid catching COVID-19. This understanding of hesitancy will be important for those rolling out the vaccine to encourage uptake.

My [second paper](#), published in the New England Journal of Medicine, examines the relationship between presence of antibodies to SARS-CoV-2 and risk of later reinfection using a prospective, longitudinal approach. The study included 12,541 healthcare workers from four teaching hospitals in Oxfordshire, UK. Data was gathered between April and November 2020. At baseline, 11,364 workers (90.6%) tested negative for antibodies and 1,265 (9.4%) tested positive. Positive antibody results at baseline were associated with lower rates of COVID-19 measured using PCR tests. Overall, 223 of healthcare workers with a negative antibody test went on to develop COVID-19 (1.09 per 10,000 days at risk), compared to two health care workers with a positive baseline antibody test (0.13 per 10,000 days at risk); both of whom were asymptomatic. The study concludes that the presence of antibodies is associated with a substantially reduced risk of reinfection during a 6-month period.

The [third study](#) I've chosen examines transmission of SARS-CoV-2 from COVID-19 cases among children in Norwegian primary schools, between August and November 2020. This was a prospective study, based in two counties with the highest 14-day incidence of COVID-19, with the number of cases (including in children) increasing during the observation period. Child and adult contacts of 13 child index cases were identified and tested at the beginning and end of their 10-day quarantine / isolation using self-administered saliva samples. Index cases had attended school with either mild or no symptoms, and 11 of the 13 were confirmed as having COVID-19 via saliva samples. Two of 234 child contacts (0.9%) tested positive for COVID-19 and one of 58 adults (1.7%), both from the first test. No contacts tested positive at the second test. The study suggests low levels of transmission from primary school children within school settings. National guidelines were in place for implementation of infection prevention and control measures in schools at the time of the study, including good hygiene, social distancing and encouraging those with symptoms to stay at home.

Rachel

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

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 three times per week (Mon, Wed, 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](mailto:COVID.LitDigest@phe.gov.uk). If you are interested in papers relating to behaviour and social science please contact [COVID19.behaviouralscience@phe.gov.uk](mailto:COVID19.behaviouralscience@phe.gov.uk) to sign up to receive the PHE Behavioural Sciences Weekly Report.

Best wishes,

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

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**Report for 15.01.2021** (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
14.01.2021	<a href="#">Past COVID-19 infection provides some immunity but people may still carry and transmit virus</a>	Gov.uk / Press release	<ul style="list-style-type: none"> <li>• PHE led study (SIREN).</li> <li>• Between 18 June and 24 Nov they detected 44 potential reinfections (2 'probable' and 42 'possible' reinfections) out of 6,614 participants who had tested positive for antibodies.</li> <li>• Concluded naturally acquired immunity as a result of past infections provide 83% protection against reinfection, compared to people who have not had the disease before. This appears to last at least for 5 months from first becoming sick.</li> <li>• Although those with antibodies have some protection from becoming ill with COVID-19 themselves, early evidence from the next stage of the study suggests that some of these individuals carry high levels of virus and could continue to transmit the virus to others.</li> </ul>
15.01.2021	<a href="#">Investigation of novel SARS-CoV-2 variant: 202012/01. Technical briefing 4</a>	Gov.uk / Guidance	<ul style="list-style-type: none"> <li>• This briefing provides an update on the briefing of 8 Jan 2021.</li> <li>• There is consistent evidence of cross-neutralising activity in convalescent sera (sera from individuals who have been infected with B.1.1.7 shows neutralising activity against virus from other lineages, and the converse is also true).</li> </ul>
19.11.2020	<a href="#">Seroprevalence of SARS-CoV-2 antibodies in children of United Kingdom healthcare workers: a prospective multicentre cohort study protocol</a>	BMJ Open / Protocol	<ul style="list-style-type: none"> <li>• Longitudinal UK study will measure seroprevalence of SARS-CoV-2 IgM and/or IgG antibodies in 1000 healthy children of healthcare workers.</li> <li>• The children will be recruited from five UK sites (Belfast, Cardiff, Glasgow, London and Manchester), and will undergo phlebotomy at baseline, 2 months and 6 months.</li> <li>• A sample size of 675 patients is required to detect a 5% change in</li> </ul>

			<p>seroprevalence at each time point assuming an alpha of 0.05 and a beta of 0.2.</p> <ul style="list-style-type: none"> <li>Adjusted probabilities for the presence of IgG and/or IgM antibodies and of SARS-CoV-2 infection will be reported using logistic regression models where appropriate.</li> </ul>
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### Vaccines

Publication Date	Title / URL	Journal / Article type	Digest
13.01.2021	<a href="#">Interim Results of a Phase 1–2a Trial of Ad26.COV2.S Covid-19 Vaccine</a>	N Engl J Med / Article	<ul style="list-style-type: none"> <li>A candidate vaccine, Ad26.COV2.S, is a recombinant, replication-incompetent adenovirus serotype 26 (Ad26) vector encoding a full-length and stabilized SARS-CoV-2 spike protein.</li> <li>In this multicenter, placebo-controlled, phase 1–2a trial, they randomly assigned healthy adults (805 participants) between the ages of 18 and 55 years (cohort 1) and those 65 years of age or older (cohort 3) to receive the Ad26.COV2.S vaccine at a dose of 5×10<sup>10</sup> viral particles (low dose) or 1×10<sup>11</sup> viral particles (high dose) per milliliter or placebo in a single-dose or two-dose schedule.</li> <li>The safety and immunogenicity profiles of Ad26.COV2.S support further development of this vaccine candidate.</li> </ul>

### Diagnostics and genomics

Publication Date	Title / URL	Journal / Article type	Digest
12.01.2021	<a href="#">Genomic characterisation of an emergent SARS-CoV-2 lineage in Manaus: preliminary findings</a>	Virological.org (non-peer reviewed) / Article	<ul style="list-style-type: none"> <li>Reports detection of a new SARS-CoV-2 variant circulating in Dec in Manaus, Amazonas state, north Brazil, where very high attack rates have been estimated previously.</li> <li>The new lineage, named P.1 (descendent of B.1.1.28), contains a unique constellation of lineage defining mutations, including E484K, K417T, and N501Y.</li> <li>P.1 lineage was identified in 42% (13 out of 31) RT-PCR positive samples collected between 15 to 23 Dec, but was absent in 26 publicly available genome surveillance samples collected in Manaus from Mar to Nov 2020.</li> <li>The higher diversity and the earlier sampling dates of P.1. in Manaus corroborates travel information of recently detected cases in Japan, suggesting the direction of travel was Manaus to Japan.</li> </ul>

### Epidemiology and clinical – risk factors

Publication Date	Title / URL	Journal / Article type	Digest
18.12.2020	<a href="#">Neurologic Syndromes Predict Higher In-Hospital Mortality in COVID-19</a>	Neurology / Article	<ul style="list-style-type: none"> <li>• Among a cohort of 4711 COVID-19 patients admitted to one medical system in New York City during a 6-week period, 581 (12%) had neurological issues of sufficient concern to warrant neuro-imaging.</li> <li>• These 581 patients were compared to 1743 non-neurological COVID-19 patients matched for age and disease-severity admitted during the same period.</li> <li>• Patients with altered mentation (n=258, p =0.04, OR 1.39) or radiologically confirmed stroke (n=55, p = 0.001, OR 3.1) had a higher risk of mortality than age and severity-matched controls.</li> <li>• Suggests incidence of altered mentation or stroke on admission predicts a modest but significantly higher risk of in-hospital mortality independent of disease severity.</li> </ul>
11.01.2021	<a href="#">Gut microbiota composition reflects disease severity and dysfunctional immune responses in patients with COVID-19</a>	Gut / Original research	<ul style="list-style-type: none"> <li>• Authors obtained blood, stool and patient records from 100 patients with SARS-CoV-2; serial stool samples collected from 27 of the patients up to 30 days after clearance.</li> <li>• Gut microbiome composition was significantly altered compared with non-COVID-19 individuals irrespective of whether patients had received medication (p&lt;0.01).</li> <li>• Associations between gut microbiota composition, levels of cytokines and inflammatory markers suggest the gut microbiome is involved in magnitude of COVID-19 severity, possibly via modulating host immune responses.</li> <li>• The dysbiotic gut microbiota that persists after disease resolution could be a factor in developing persistent symptoms and/or multisystem inflammation syndromes that occur in some patients.</li> </ul>

### Epidemiology and clinical – other

Publication Date	Title / URL	Journal / Article type	Digest
14.01.2021	<a href="#">Real-time monitoring shows substantial excess all-cause mortality during second wave of COVID-19 in Europe, October to December 2020</a>	Eurosurveillance / Rapid communication	<ul style="list-style-type: none"> <li>• The European monitoring of excess mortality for public health action (EuroMOMO) network monitors weekly excess all-cause mortality in 27 European countries or subnational areas.</li> <li>• During the first wave of the COVID-19 pandemic in Europe in spring 2020, several countries experienced extraordinarily high levels of excess mortality.</li> <li>• Europe is currently seeing another upsurge in COVID-19 cases, and</li> </ul>

			EuroMOMO is again witnessing a substantial excess all-cause mortality attributable to COVID-19.
15.01.2021	<a href="#">Impact of the COVID-19 pandemic on the detection and management of colorectal cancer in England: a population-based study</a>	Lancet Gastroenterology & Hepatology / Comment	<ul style="list-style-type: none"> <li>• This study aims to investigate the impact of the COVID-19 pandemic on the detection and management of colorectal cancer in England.</li> <li>• The COVID-19 pandemic has led to a sustained reduction in the number of people referred, diagnosed, and treated for colorectal cancer.</li> <li>• By Oct, 2020, achievement of care pathway targets had returned to 2019 levels, albeit with smaller volumes of patients and with modifications to usual practice.</li> <li>• As pressure grows in the NHS due to the second wave of COVID-19, urgent action is needed to address the growing burden of undetected and untreated colorectal cancer in England.</li> </ul>
13.01.2021	<a href="#">COVID-19 Trends Among Persons Aged 0–24 Years – United States, March 1–December 12, 2020</a>	MMWR / Report	<ul style="list-style-type: none"> <li>• In the US, COVID-19 cases in children, adolescents, and young adults have increased since summer 2020, with weekly incidence higher in each successively increasing age group.</li> <li>• Trends among children and adolescents aged 0–17 years paralleled those among adults.</li> </ul>
08.01.2021	<a href="#">Utilization of Whole Genome Sequencing to Understand SARS-CoV-2 Transmission Dynamics in Long-Term Care Facilities, Correctional Facilities and Meat Processing Plants in Minnesota, March – June 2020</a>	medRxiv (non-peer reviewed) / Article	<ul style="list-style-type: none"> <li>• Whole genome sequencing was performed on samples obtained from eight selected outbreaks in Minnesota, USA from Mar – June 2020, to further understand SARS-CoV-2 transmission in congregate settings and high-density workplaces.</li> <li>• Three long-term care facilities (LTCFs) and both correctional facilities had spread associated with a single genetic sequence.</li> <li>• A fourth LTCF had outbreak cases associated with two distinct sequences.</li> <li>• In contrast, cases associated with outbreaks in the two meat processing plants represented multiple SARS-CoV-2 sequences.</li> <li>• Suggests a single introduction of SARS-CoV-2 into a facility can result in a widespread outbreak, and that early identification, cohorting of cases, and infection control measures are imperative.</li> </ul>
14.01.2021	<a href="#">Lung Pathology of Mutually Exclusive Co-infection with SARS-CoV-2 and Streptococcus pneumoniae</a>	Emerg Infect Dis / Article	<ul style="list-style-type: none"> <li>• Postmortem lung pathology of a patient in Japan with severe SARS-CoV-2 showed diffuse alveolar damage as well as bronchopneumonia caused by <i>Streptococcus pneumoniae</i> infection.</li> <li>• The distribution of each pathogen and the accompanying histopathology suggested the infections progressed in a mutually exclusive manner within the lung, resulting in fatal respiratory failure.</li> </ul>

## Transmission

Publication Date	Title / URL	Journal / Article type	Digest
19.12.2020	<a href="#">What is the evidence for transmission of COVID-19 by children in schools? A living systematic review</a>	J Glob Health / Review	<ul style="list-style-type: none"><li>• <i>This paper was previously included in the Digest as a preprint</i></li><li>• Authors conducted a systematic review and meta-analysis to investigate the extent of SARS-CoV-2 transmission in schools. 11 studies were included.</li><li>• Findings included: five cohort studies reported a combined 22 student and 21 staff index cases that exposed 3345 contacts with 18 transmissions (overall infection attack rate (IAR): 0.08%, 95% confidence interval (CI) = 0.00%-0.86%).</li><li>• There is limited high-quality evidence available to quantify the extent of SARS-CoV-2 transmission in schools or to compare it to community transmission. Emerging evidence suggests lower IAR and SARS-CoV-2 positivity rate in students compared to school staff. Future prospective and adequately controlled cohort studies are necessary to confirm this finding.</li></ul>

## Treatment

Publication Date	Title / URL	Journal / Article type	Digest
13.01.2021	<a href="#">Convalescent Plasma Antibody Levels and the Risk of Death from Covid-19</a>	N Engl J Med / Article	<ul style="list-style-type: none"><li>• In a retrospective study based on a U.S. national registry, authors determined the anti-SARS-CoV-2 IgG antibody levels in convalescent plasma used to treat hospitalized adults with Covid-19.</li><li>• Of the 3082 patients included in this analysis, death within 30 days after plasma transfusion occurred in 115 of 515 patients (22.3%) in the high-titer group, 549 of 2006 patients (27.4%) in the medium-titer group, and 166 of 561 patients (29.6%) in the low-titer group.</li><li>• Among patients hospitalized with Covid-19 who were not receiving mechanical ventilation, transfusion of plasma with higher anti-SARS-CoV-2 IgG antibody levels was associated with a lower risk of death than transfusion of plasma with lower antibody levels.</li></ul>

## Modelling

Publication Date	Title / URL	Journal / Article type	Digest
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13.01.2021	<a href="#">The 2020 SARS-CoV-2 epidemic in England: key epidemiological drivers and impact of interventions</a>	medRxiv (non-peer reviewed) / Article	<ul style="list-style-type: none"> <li>• Authors fit a model of SARS-CoV-2 transmission in care homes and the community to regional surveillance data for England.</li> <li>• Data suggests that among control measures implemented, only national lockdown brought R below 1 consistently, and that introduction one week earlier may have reduced first wave deaths from 36,700 to 15,700.</li> <li>• Improved clinical care reduced the infection fatality ratio from 1.25% to 0.77%.</li> <li>• Infection fatality ratio was higher in the elderly residing in care homes (35.9%) than those residing in the community (10.4%).</li> <li>• England is still far from herd immunity, with regional cumulative infection incidence to 1st Dec 2020 between 4.8% and 15.4% of the population.</li> </ul>
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### Overviews, comments and editorials

Publication Date	Title / URL	Journal / Article type
14.01.2021	<a href="#">Effect of COVID-19 on colorectal cancer care in England</a>	Lancet Gastroenterology & Hepatology / Comment
13.01.2021	<a href="#">NICE guideline on long COVID</a>	Lancet Respiratory Medicine / Comment
12.01.2021	<a href="#">Immunological characteristics govern the transition of COVID-19 to endemicity</a>	Science / Report

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

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