



## COVID-19 Literature Digest – 19/10/2020

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, contains new data / insights or emerging trends. The Digest team generate a report three times per week (Mon, Wed, Fri), which includes both preliminary reports of work (preprints) that have NOT been peer-reviewed and research that has been subject to peer review and wider scrutiny.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*

---

**Report for 19.10.2020** (please note that papers that have **NOT been peer-reviewed** are highlighted in red).

Sections:

[Serology and immunology](#)

[Genomics](#)

[Epidemiology and clinical – children / pregnancy](#)

[Epidemiology and clinical – risk factors](#)

[Epidemiology and clinical – long term complications / sequelae](#)

[Epidemiology and clinical – other](#)

[Infection control / non-pharmaceutical interventions](#)

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

## Serology and immunology

Publication Date	Title / URL	Journal / Article type	Digest
09.10.2020	<a href="#">Differences in Performance Characteristics Among Four High-Throughput Assays for the Detection of Antibodies Against SARS-CoV-2 Using a Common Set of Patient Samples</a>	Am J Clin Pathol / Article	<ul style="list-style-type: none"> <li>• Serum samples were analysed using assays from four different manufacturers: DiaSorin anti-SARS-CoV-2 S1/S2 IgG, EUROIMMUN anti-SARS-CoV-2 IgG ELISA, Roche Elecsys anti-SARS-CoV-2, and Siemens SARS-CoV-2 Total antibody assays.</li> <li>• For patients with latest sample 14 or more days after symptom onset, sensitivities reached 93.1% to 96.6%, 98.3%, and 96.6% for EUROIMMUN, Roche, and Siemens assays, respectively, which were superior to the DiaSorin assay at 87.7%.</li> <li>• The specificity of Roche and Siemens assays was 100% and superior to DiaSorin and EUROIMMUN assays, which ranged from 96.1% to 97.0% and 86.3% to 96.4%.</li> </ul>
10.10.2020	<a href="#">From more testing to smart testing: data-guided SARS-CoV-2 testing choices</a>	medRxiv (non-peer reviewed) / Article	<ul style="list-style-type: none"> <li>• Presents an in-depth analysis of data from drive through testing stations using rapid antigen detection tests (RDTs), RT-PCR and virus culture, to assess the ability of RDTs to detect infectious cases.</li> <li>• Show that the detection limits of five commercially available RDTs differ considerably, impacting the translation into the detection of infectious cases.</li> <li>• Recommends careful fit-for-purpose testing before implementation of antigen RDTs in routine testing algorithms as part of the COVID-19 response.</li> </ul>
10.10.2020	<a href="#">Recovery of monocyte exhaustion is associated with resolution of lung injury in COVID-19 convalescence</a>	medRxiv (non-peer reviewed) / Article	<ul style="list-style-type: none"> <li>• Demonstrates that blood monocytes in convalescent patients at their 12 week follow up have a greater propensity to produce pro-inflammatory cytokines TNF<math>\alpha</math> and IL-6, which was consistently higher in patients with resolution of lung injury as indicated by a normal chest X-ray and no shortness of breath.</li> <li>• Monocytes from convalescent patients also displayed enhanced levels of molecules involved in leucocyte migration, including chemokine receptor CXCR6, adhesion molecule CD31/PECAM and integrins VLA-4 and LFA-1.</li> <li>• Suggests persistent changes in innate immune function following recovery from COVID-19, and that immune modulating therapies targeting monocytes and leucocyte migration may be useful.</li> </ul>

## Genomics

Publication Date	Title / URL	Journal / Article type	Digest
15.10.2020	<a href="#">Comparative host-coronavirus protein interaction networks reveal pan-viral disease mechanisms</a>	Science / Article	<ul style="list-style-type: none"> <li>• Carried out comparative viral-human protein-protein interaction and viral protein localization analysis for all SARS-CoV-2, SARS-CoV-1 and MERS.</li> <li>• Subsequent functional genetic screening identified host factors that functionally impinge on coronavirus proliferation, including Tom70, a mitochondrial chaperone protein that interacts with both SARS-CoV-1 and SARS-CoV-2 Orf9b, an interaction they structurally characterized using cryo-EM.</li> <li>• Combining genetically-validated host factors with both COVID-19 patient genetic data and medical billing records identified important molecular mechanisms and potential drug treatments that merit further molecular and clinical study.</li> </ul>

## Epidemiology and clinical – children / pregnancy

Publication Date	Title / URL	Journal / Article type	Digest
16.10.2020	<a href="#">Systematic review of reviews of symptoms and signs of COVID-19 in children and adolescents</a>	medRxiv (non-peer reviewed) / Systematic review	<ul style="list-style-type: none"> <li>• Systematic review of the prevalence of symptoms and signs of COVID-19 in those aged under 20 years. A total of 18 reviews were included, all focussing on hospitalised children.</li> <li>• The proportion who were asymptomatic ranged from 14.6 to 42%.</li> <li>• Fever (46 to 64.2%) and cough (32 to 55.9%) were the most common symptoms.</li> <li>• All other symptoms including rhinorrhoea, sore throat, headache, fatigue/myalgia and gastrointestinal symptoms including diarrhoea and vomiting are infrequent, occurring in less than 10-20%.</li> </ul>

## Epidemiology and clinical – risk factors

Publication Date	Title / URL	Journal / Article type	Digest
16.10.2020	<a href="#">Explaining ethnic background contrasts in deaths involving Coronavirus (COVID-19): England, 2 March to 28 July 2020</a>	Gov.uk / Official statistics	<ul style="list-style-type: none"> <li>• Considering deaths up to 28 July 2020, males and females of Black and South Asian ethnic background were shown to have increased risks of death involving COVID-19 compared with those</li> </ul>

			<p>of White ethnic background; this is similar to their previous findings for deaths up to 15 May 2020.</p> <ul style="list-style-type: none"> <li>• In England and Wales, males of Black African ethnic background had the highest rate of death involving COVID-19, 2.7 times higher than males of White ethnic background; females of Black Caribbean ethnic background had the highest rate, 2.0 times higher than females of White ethnic background.</li> <li>• Findings show that ethnic differences in mortality involving COVID-19 are most strongly associated with demographic and socio-economic factors, such as place of residence and occupational exposures, and cannot be explained by pre-existing health conditions using hospital data or self-reported health status.</li> </ul>
16.10.2020	<a href="#">Race, Ethnicity, and Age Trends in Persons Who Died from COVID-19 — United States, May–August 2020</a>	MMWR Morb Mortal Wkly Rep / Report	<ul style="list-style-type: none"> <li>• Analysis of 114,411 COVID-19–associated deaths reported to US National Vital Statistics System during May–Aug 2020, found that 51.3% of decedents were non-Hispanic White, 24.2% were Hispanic or Latino (Hispanic), and 18.7% were non-Hispanic Black. The percentage of Hispanic decedents increased from 16.3% in May to 26.4% in Aug.</li> </ul>
14.10.2020	<a href="#">Reduced prevalence of SARS-CoV-2 infection in ABO blood group O</a>	Blood Advances / Article	<ul style="list-style-type: none"> <li>• Performed a retrospective cohort analysis of all Danish individuals tested for SARS-CoV-2 between 27 Feb 2020 and 30 July 2020, with a known ABO and RhD blood group, to determine the influence of common blood groups on virus susceptibility.</li> <li>• Participants (29% of whom were male) included 473 654 individuals tested for SARS-CoV-2 using real-time PCR (7422 positive and 466 232 negative) and 2 204 742 non-tested individuals, accounting for ~38% of the total Danish population.</li> <li>• This study identifies ABO blood group as a risk factor for SARS-CoV-2 infection but not for hospitalization or death from COVID-19.</li> </ul>
14.10.2020	<a href="#">The association of ABO blood group with indices of disease severity and multiorgan dysfunction in COVID-19</a>	Blood Advances / Article	<ul style="list-style-type: none"> <li>• Conducted a multicentre retrospective analysis and nested prospective observational sub study of critically ill patients with COVID-19. Collected data pertaining to age, sex, comorbidities, dates of symptom onset, hospital admission, intensive care unit (ICU) admission, mechanical ventilation, continuous renal replacement therapy (CRRT), standard laboratory parameters, and serum inflammatory cytokines.</li> <li>• Collectively, the data indicate that critically ill COVID-19 patients with blood group A or AB are at increased risk for requiring mechanical ventilation, CRRT, and prolonged ICU admission</li> </ul>

compared with patients with blood group O or B. Further work is needed to understand the underlying mechanisms.

### Epidemiology and clinical – long term complications / sequelae

Publication Date	Title / URL	Journal / Article type	Digest
14.10.2020	<a href="#">Multi-organ impairment in low-risk individuals with long COVID</a>	medRxiv (non-peer reviewed) / Article	<ul style="list-style-type: none"> <li>• Observational study of 201 people (70% female, 87% white, 31% healthcare workers) who were symptomatic after recovery from acute SARS-CoV-2 infection.</li> <li>• The cohort was relatively young (mean age 44 (SD 11.0) years) with low prevalence of pre-existing conditions.</li> <li>• Fatigue (98%), muscle aches (88%), breathlessness (87%), and headaches (83%) were the most frequently reported symptoms.</li> <li>• Ongoing cardiorespiratory (92%) and gastrointestinal (73%) symptoms were common, and 42% of individuals had ten or more symptoms.</li> <li>• There was evidence of mild organ impairment in heart (32%), lungs (33%), kidneys (12%), liver (10%), pancreas (17%), and spleen (6%).</li> <li>• Single (66%) and multi-organ (25%) impairment was observed, and was significantly associated with risk of prior COVID-19 hospitalisation (p&lt;0.05).</li> </ul>
15.10.2020	<a href="#">Medium-term effects of SARS-CoV-2 infection on multiple vital organs, exercise capacity, cognition, quality of life and mental health, post-hospital discharge</a>	medRxiv (non-peer reviewed) / Article	<ul style="list-style-type: none"> <li>• Study of 58 COVID-19 patients post-hospital discharge, and 30 comorbidity-matched controls.</li> <li>• At 2-3 months from disease-onset, 64% of COVID-19 patients experienced persistent breathlessness and 55% complained of significant fatigue.</li> <li>• On MRI, tissue signal abnormalities were seen in the lungs (60%), heart (26%), liver (10%) and kidneys (29%) of COVID-19 patients.</li> <li>• COVID-19 patients exhibited tissue changes in the thalamus, posterior thalamic radiations and sagittal stratum on brain MRI, and demonstrated impaired cognitive performance, specifically in the executive and visuospatial domain.</li> <li>• Exercise tolerance and six-minute walk distance (p&lt;0.0001) were significantly reduced in COVID-19 patients.</li> </ul>

Epidemiology and clinical – other

Publication Date	Title / URL	Journal / Article type	Digest
08.10.2020	<a href="#">What do we know about SARS-CoV-2 transmission? A systematic review and meta-analysis of the secondary attack rate and associated risk factors</a>	PLoS One / Systematic review	<ul style="list-style-type: none"> <li>• Conducted a systematic review and meta-analyses of the secondary attack rate (SAR) in household and healthcare settings. Also examined whether household transmission differed by symptom status of index case, adult and children, and relationship to index case.</li> <li>• 43 studies met the inclusion criteria for household SAR, 18 for healthcare SAR, and 17 for other settings.</li> <li>• The pooled household SAR was 18.1% (95% CI: 15.7%, 20.6%), with significant heterogeneity across studies ranging from 3.9% to 54.9%. SAR of symptomatic index cases was higher than asymptomatic cases (RR: 3.23; 95% CI: 1.46, 7.14).</li> <li>• Adults showed higher susceptibility to infection than children (RR: 1.71; 95% CI: 1.35, 2.17). Spouses of index cases were more likely to be infected compared to other household contacts (RR: 2.39; 95% CI: 1.79, 3.19). In healthcare settings, SAR was estimated at 0.7% (95% CI: 0.4%, 1.0%).</li> </ul>
16.10.2020	<a href="#">Cytokine elevation in severe and critical COVID-19: a rapid systematic review, meta-analysis, and comparison with other inflammatory syndromes</a>	Lancet Respiratory Medicine / Rapid review	<ul style="list-style-type: none"> <li>• Report the results of a systematic review and meta-analysis of COVID-19 studies published or posted as preprints between Nov 1, 2019, and April 14, 2020, in which interleukin-6 concentrations in patients with severe or critical disease were recorded. 25 COVID-19 studies (n=1245 patients) were included.</li> <li>• In patients with severe or critical COVID-19, the pooled mean serum interleukin-6 concentration was 36.7 pg/mL (95% CI 21.6–62.3 pg/mL; I<sup>2</sup>=57.7%). Mean interleukin-6 concentrations were nearly 100 times higher in patients with cytokine release syndrome (3110.5 pg/mL, 632.3–15 302.9 pg/mL; p&lt;0.0001), 27 times higher in patients with sepsis (983.6 pg/mL, 550.1–1758.4 pg/mL; p&lt;0.0001), and 12 times higher in patients with acute respiratory distress syndrome unrelated to COVID-19 (460 pg/mL, 216.3–978.7 pg/mL; p&lt;0.0001).</li> </ul>
09.10.2020	<a href="#">Heterogeneity in testing, diagnosis and outcome in SARS-CoV-2 infection across outbreak settings in the Greater Toronto Area, Canada: an observational study</a>	CMAJ Open / Article	<ul style="list-style-type: none"> <li>• Compare testing for, diagnosis of and death after SARS-CoV-2 infection across 3 settings (residents of long-term care homes, people living in shelters and the rest of the population).</li> <li>• Long-term care homes and shelters had disproportionate diagnosed cases per capita, and residents of long-term care</li> </ul>

			homes diagnosed with COVID-19 had higher case fatality than the rest of the population. Heterogeneity across micro-epidemics among specific populations and settings may reflect underlying heterogeneity in transmission risks, necessitating setting-specific COVID-19 prevention and mitigation strategies.
06.10.2020	<a href="#">Seroprevalence of SARS-CoV-2 immunoglobulin antibodies in Wuhan, China: part of the city-wide massive testing campaign</a>	Clin Microbiol Infect / Article	<ul style="list-style-type: none"> <li>• In mid-May 2020, Wuhan launched a population-scale city-wide SARS-CoV-2 testing campaign, which aimed to perform nucleic acid and viral antibody testing for citizens in Wuhan.</li> <li>• A total of 1470/61,437 (2.39%, 95% CI: 2.27-2.52) individuals were positive for at least one antiviral antibody.</li> <li>• Among the positive individuals, 324 (0.53%, 95% CI: 0.47-0.59) and 1200 (1.95%, 95% CI: 1.85-2.07) were positive for immunoglobulin IgM and IgG, respectively, and 54 (0.08%, 95% CI: 0.07-0.12) were positive for both antibodies.</li> <li>• The positive rate of female carriers of antibodies were higher than those of male counterparts (male-to-female ratio of 0.75), especially in elderly citizens, indicating a sexual discrepancy in seroprevalence.</li> </ul>
13.10.2020	<a href="#">Estimating epidemiologic dynamics from single cross-sectional viral load distributions</a>	medRxiv (non-peer reviewed) / Article	<ul style="list-style-type: none"> <li>• Show that the distribution of viral loads, in the form of Cycle thresholds (Ct), from positive surveillance samples at a single point in time can provide accurate estimation of an epidemic's trajectory, subverting the need for repeated case count measurements which are frequently obscured by changes in testing capacity.</li> <li>• Findings suggest that instead of discarding individual Ct values from positive specimens, incorporation of viral loads into public health data streams offers a new approach for real-time resource allocation and assessment of outbreak mitigation strategies, even where repeat incidence data is not available. Ct values or similar viral load data should be regularly reported to public health officials by testing centres and incorporated into monitoring programs.</li> </ul>

## Infection control / non-pharmaceutical interventions

Publication Date	Title / URL	Journal / Article type	Digest
19.10.2020	<a href="#">COVID-19 infection prevention and control measures for primary care, including general practitioner practices, dental clinics and pharmacy settings: first update</a>	European Centre for Disease Prevention and Control / Technical report	<ul style="list-style-type: none"> <li>• This document provides guidance on infection prevention and control measures to healthcare providers in the European Union/European Economic Area and the United Kingdom in order to prevent COVID-19 infection.</li> </ul>
15.10.2020	<a href="#">Effectiveness of face masks worn in community settings at reducing the transmission of SARS-CoV-2: A rapid review [version 1; peer review: awaiting peer review]</a>	HRB Open Res / Rapid review	<ul style="list-style-type: none"> <li>• The aim of this review was to synthesise direct evidence on the effectiveness of wearing face masks at reducing the transmission of SARS-CoV-2 in community settings.</li> <li>• Seven observational studies were identified, including one study set in households and six in community settings, that reported on the effectiveness of wearing face masks compared with not wearing face masks at reducing the transmission of SARS-CoV-2.</li> <li>• Results suggested that face masks reduce the risk of SARS-CoV-2 infection; however, all studies were at high risk of bias and the quality of the evidence was low.</li> </ul>
08.10.2020	<a href="#">The impact of mask-wearing and shelter-in-place on COVID-19 outbreaks in the United States</a>	Int J Infect Dis / Article	<ul style="list-style-type: none"> <li>• Found that non-medical mask-wearing by 75% of the population reduced infections, hospitalizations, and deaths by 37.7% (IQR: 36.1% - 39.4%), 44.2% (IQR: 42.9% - 45.8%), and 47.2% (IQR: 45.5% - 48.7%), respectively, in the absence of a shelter-in-place strategy.</li> <li>• Sheltering individuals aged 50 to 64 was the most efficient strategy, decreasing attack rate, hospitalizations, and deaths by over 82% when combined with mask-wearing.</li> <li>• Under simulated scenarios, outbreak control can be achieved, bringing the attack rate to below 1%, if at least 33% of silent pre-symptomatic and</li> </ul>

			asymptomatic infections are identified and isolated.
16.10.2020	<a href="#">The effect of temperature and humidity on the stability of SARS-CoV-2 and other enveloped viruses</a>	bioRxiv (non-peer reviewed) / Article	<ul style="list-style-type: none"> <li>• Characterises the stability of SARS-CoV-2 on an inert surface at a variety of temperature and humidity conditions, and introduces a mechanistic model to enable prediction of virus stability in unobserved conditions.</li> <li>• Findings suggest that SARS-CoV-2 survives better at low temperatures and extreme relative humidities (RH); median estimated virus half-life was more than 24 hours at 10 °C and 40 % RH, but less than an hour and a half at 27 °C and 65 % RH.</li> </ul>

#### Overviews, comments and editorials

Publication Date	Title / URL	Journal / Article type
19.10.2020	<a href="#">Producing and using timely comparative evidence on drugs: lessons from clinical trials for covid-19</a>	BMJ / Analysis
16.10.2020	<a href="#">Answering Key Questions About COVID-19 Vaccines</a>	JAMA / Viewpoint
16.10.2020	<a href="#">Postapproval Vaccine Safety Surveillance for COVID-19 Vaccines in the US</a>	JAMA / Viewpoint
16.10.2020	<a href="#">Postlicensure Evaluation of COVID-19 Vaccines</a>	JAMA / Viewpoint
16.10.2020	<a href="#">The scientific and ethical feasibility of immunity passports</a>	Lancet Infectious Diseases / Personal view
16.10.2020	<a href="#">Emergency Use Authorization of Covid Vaccines — Safety and Efficacy Follow-up Considerations</a>	N Engl J Med / Perspective
16.10.2020	<a href="#">Trustworthiness before Trust — Covid-19 Vaccine Trials and the Black Community</a>	N Engl J Med / Perspective

#### Produced by the PHE COVID-19 Literature Digest Team

To sign-up, email [COVID.LitDigest@phe.gov.uk](mailto:COVID.LitDigest@phe.gov.uk)

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

[www.gov.uk/phe](http://www.gov.uk/phe) Follow us on Twitter @PHE\_uk

**Protecting and improving the nation's health**