COVID-19 Literature Digest – 13/01/2021

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 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 The reports include both preprints, which should be treated with caution as they are NOT peer-reviewed and may be subject to change, and also research that has been subject to peer review and wider scrutiny.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. 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,

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

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Report for 13.01.2021 (please note that papers that have **NOT been peer-reviewed** are highlighted in red).

Sections:
Serology and immunology
Diagnostics and genomics
Epidemiology and clinical – children / pregnancy
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
11.01.2021	[Circuits between infected macrophages and T cells in SARS-CoV-2 pneumonia](#)	Nature / Article	• Authors collected bronchoalveolar lavage fluid samples from 88 patients with SARS-CoV-2-induced respiratory failure and 211 patients with known or suspected pneumonia from other pathogens. • Results suggest SARS-CoV-2 causes a slowly unfolding, spatially limited alveolitis in which alveolar macrophages harbouring SARS-CoV-2 and T cells form a positive feedback loop that drives persistent alveolar inflammation.
04.01.2021	[Autoimmunity to the Lung Protective Phospholipid-Binding Protein Annexin A2 Predicts Mortality Among Hospitalized COVID-19 Patients](#)	medRxiv (non-peer reviewed) / Article	• Study to identify levels of IgG autoantibodies recognising Annexin A2 and A5 among 86 hospitalised COVID-19 patients and analyse association with mortality. • Determined that anti-Annexin A2 antibodies were elevated among hospitalized COVID-19 patients and these levels predicted mortality. • It is known that inhibition of Annexin A2 induces systemic thrombosis, cell death, and non-cardiogenic pulmonary edema. Autoimmunity to Annexin A2 is a potential mechanism that may explain the key clinical findings of severe COVID-19.

Diagnostics and genomics

Publication Date	Title / URL	Journal / Article type	Digest
12.01.2021	[First detection of SARS-CoV-2 spike protein N501 mutation in Italy in August, 2020](#)	Lancet Infectious Diseases / Correspondence	• Genetic characterisation of SARS-CoV-2 detected in sample collected in Nov (MB61-Nov) and in a previous sample collected in Aug (MB61-Aug) was done by metagenomic sequencing (from 59 yo male). • Bioinformatic analyses showed that the MB61-Aug SARS-CoV-2 isolate had accumulated ten amino acid changes compared with early Italian isolates, and three more had emerged along its evolution by the end of Nov. • The N501T substitution was detected in both MB61-Nov and MB61-Aug SARS-CoV-2 isolates, highlighting that a mutation at the critical amino acid residue 501 was already present in Italy in Aug, 2020. • Interestingly, differently from VOC-202012/01, the MB61 variants showed a second mutation within the RBD at the amino acid position Q493K that, together with N501T, might alter the binding affinity of the spike protein to the ACE2 receptor.
09.01.2021	[Detection of SARS-CoV-2 variants in Switzerland by genomic analysis of wastewater samples](#)	medRxiv (non-peer reviewed) / Article	• Reports a genomic analysis of SARS-CoV-2 in 48 raw wastewater samples collected from three wastewater treatment plants in Switzerland between 9 July

			and 21 Dec 2020.
			• Findings suggest presence of several mutations that define the B.1.1.7 and 501.V2 lineages in some of the samples, including co-occurrences of up to three B.1.1.7 signature mutations on the same amplicon in four samples from Lausanne and one sample from a Swiss ski resort dated 9-21 Dec 2020.
			• Suggests that the B.1.1.7 strain could be detected by mid Dec, two weeks before its first verification in a patient sample from Switzerland, and that sequencing SARS-CoV-2 in community wastewater samples may help detect and monitor circulation of diverse lineages.

Epidemiology and clinical – children / pregnancy

Publication Date	Title / URL	Journal / Article type	Digest
11.01.2021	Trends in Pediatric Hospitalizations for Coronavirus Disease 2019	JAMA Pediatr / Research letter	• Study of paediatric COVID-19 hospitalization trends in 22 US states for indications of both severity and spread of the virus. May 15th - Nov 15th; 5364 paediatric patients included. • At start, average cumulative hospitalization rate per 100 000 children was 2.0, increasing to 17.2 by end of study. There were large variations across states and over the course of the pandemic. • When ordering the 20 states observed at end of study period, most ranked similarly for adult and paediatric hospitalization rates, with some notable exceptions

Epidemiology and clinical – other

Publication Date	Title / URL	Journal / Article type	Digest
11.01.2021	Development and validation of the ISARIC 4C Deterioration model for adults hospitalised with COVID-19: a prospective cohort study	Lancet Respiratory Medicine / Article	• Developed and validated a multivariable logistic regression model for in-hospital clinical deterioration among consecutively hospitalised adults with highly suspected or confirmed COVID-19 who were prospectively recruited to the ISARIC4C study across 260 hospitals in England, Scotland, and Wales. • The 4C Deterioration model has strong potential for clinical utility and generalisability to predict clinical deterioration and inform decision making among adults hospitalised with COVID-19.
11.01.2021	Analysis of geographic concentrations of COVID-19 mortality over time, England	Gov.uk / Official statistics	• An analysis of geographic clusters of raised COVID-19 mortality suggests that the known risk factors of age, population density, ethnicity and socioeconomic deprivation only partly explain the distribution of deaths

			across England and Wales. • Persistently high mortality in some regions such as the North of England and West Midlands may have been driven by a "core" of relatively small areas with the highest mortality, which may have seen the most intense disease transmission. • A few areas saw COVID-19 mortality more than seven times the expected level compared with the rest of the country. • Raised COVID-19 mortality was seen in more deprived areas of South East Wales, but consistently high mortality was also seen in some rural areas after accounting for known risk factors.
and Wales: deaths occurring between 22 February and 28 August 2020			
01.03.2021 (early release)	COVID-19 Outbreak in a Large Penitentiary Complex, April–June 2020, Brazil	Emerg Infect Dis / Dispatch	• An outbreak of coronavirus disease began in a large penitentiary complex in Brazil on April 1, 2020. • By June 12, there were 1,057 confirmed cases among inmates and staff. Nine patients were hospitalized, and 3 died. • Mean serial interval was ≈2.5 days; reproduction number range was 1.0–2.3.

Infection control / non-pharmaceutical interventions

Publication Date	Title / URL	Journal / Article type	Digest
12.01.2021	Mitigation Policies and COVID-19–Associated Mortality — 37 European Countries, January 23–June 30, 2020	MMWR / Report	• Using data from 37 European countries, the impact of the timing of mitigation policies on mortality from COVID-19 was evaluated. • European countries that implemented more stringent mitigation policies earlier in their outbreak response tended to report fewer COVID-19 deaths through the end of June 2020. • These countries might have saved several thousand lives relative to countries that implemented similar policies, but later.
12.01.2021	Attendance at London workplaces after symptom onset: a retrospective cohort study of staff members with confirmed COVID-19	J Public Health (Oxf) / Article	• Out of 130 symptomatic COVID-19 cases, 42 (32.3%) attended the workplace after their reported date of symptom onset, including 16 (12.3%) with recorded COVID-19 symptoms. Five staff members attended after COVID-19 testing. • Males were 66% less likely to attend the workplace after onset of symptoms compared to females (odds ratio 0.34, P = 0.05). Age and occupation were not predictive for workplace attendance. • A minority of symptomatic cases attended the workplace after the onset of COVID-19 symptoms, with a smaller proportion attending after testing. This study highlights the need for ongoing COVID-19 secure workplace practices and prompt self-isolation after COVID-19 symptom onset or testing.

Overviews, comments and editorials

Publication Date	Title / URL	Journal / Article type
11.01.2021	Improving clinical management of COVID-19: the role of prediction models	Lancet Respiratory Medicine / Comment
12.01.2021	Allocating scarce intensive care resources during the COVID-19 pandemic: practical challenges to theoretical frameworks	Lancet Respiratory Medicine / Viewpoint
11.01.2021	Immune readouts from the Oxford COVID-19 vaccine	Nat Rev Immunol / Research highlight

Produced by the PHE COVID-19 Literature Digest Team

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