



COVID-19 Literature Digest – 30/11/2020

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 The reports include both preprints, which should be treated with caution as they are NOT peer-reviewed and may be subject to change, and also research that has been subject to peer review and wider scrutiny.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

Report for 30.11.2020 (please note that papers that have **NOT been peer-reviewed** are highlighted in red).

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Serology and immunology

Publication Date	Title / URL	Journal / Article type	Digest
30.11.2020	REACT-1: real-time assessment of community transmission of coronavirus (COVID-19) in November 2020	Gov.uk / Official statistics	<ul style="list-style-type: none">• This report is the latest from the REACT-1 studies. REACT-1 is the largest population surveillance study being undertaken in England that examines the prevalence of the virus causing COVID-19 in the general population. It uses test results and feedback from over 150,000 participants each month.• During the period 13 Nov to 24 Nov, SARS-CoV-2 virus was circulating with significantly lower prevalence than between 26 Oct to 2 Nov and infections had decreased substantially with 96 in 10,000 infected.
28.11.2020	Nationwide seroprevalence of SARS-CoV-2 and identification of risk factors in the general population of the Netherlands during the first epidemic wave	J Epidemiol Community Health / Original research	<ul style="list-style-type: none">• Authors aimed to detect SARS-CoV-2 serum antibodies in Netherlands general population (n=3207, aged 2–90 years), identify risk factors for seropositivity amidst first COVID-19 epidemic wave.• Overall seroprevalence 2.8% (95% CI 2.1 to 3.7), 30 times higher than reported. No differences between sexes or ethnic background, and regionally ranging between 1.3 and 4.0%.• Estimates highest among 18–39 year-olds (4.9%), and lowest in children 2–17 years (1.7%). Persons taking immunosuppressants and those from the Orthodox-Reformed Protestant community had over four times higher odds of being seropositive compared to others.• Anosmia/ageusia was the most discriminative symptom between seropositive (53%) and seronegative persons (4%, p<0.0001). Antibody concentrations in seropositive persons were significantly higher in those with fever or dyspnoea in contrast to those without (p=0.01 and p=0.04, respectively).• Study identified independent groups with increased odds for seropositivity that may require specific surveillance measures to guide future protective interventions internationally, including vaccination once available.

Diagnostics and genomics

Publication Date	Title / URL	Journal / Article type	Digest
26.11.2020	The impact of false positive COVID-19 results in an area of low prevalence	Clin Med (Lond) / Article	<ul style="list-style-type: none">• False positive results have the potential to cause harm in both high- and low-prevalence settings, including potential exposure of a non-infected person to the virus in a cohorted area.• Authors evaluated COVID-19 results in one area during a period of low prevalence. Consequences of these results are discussed, and implications in both high and low prevalence settings.
26.11.2020	SARS-CoV-2 spike-protein D614G mutation increases virion spike density and infectivity	Nat Commun / Article	<ul style="list-style-type: none">• The authors compare the properties of the mutated SARS-CoV-2 S protein which now predominates globally (S(G614)) with the original (S(D614)).• Reports that pseudoviruses carrying S(G614) enter ACE2-expressing cells more efficiently than those with S(D614), correlating with less S1-domain shedding and higher S-protein incorporation into the virion.• Similar results are obtained with virus-like particles produced with SARS-CoV-2 M, N, E, and S proteins.• However, D614G does not alter S-protein binding to ACE2 or neutralization sensitivity of pseudoviruses, suggesting D614G may increase infectivity by assembling more functional S protein into the virion.

Epidemiology and clinical – children / pregnancy

Publication Date	Title / URL	Journal / Article type	Digest
26.11.2020	Severe manifestations of SARS-CoV-2 in children and adolescents: from COVID-19 pneumonia to multisystem inflammatory syndrome: a multicentre study in pediatric intensive care units in Spain	Crit Care / Article	<ul style="list-style-type: none">• Review multisystem inflammatory syndrome temporally associated with COVID-19 (MIS-C) as a novel and often severe presentation of SARS-CoV-2 infection in children. 74 children recruited; 61% met MIS-C definition.• MIS-C patients are older and usually healthy. They show a higher prevalence of gastrointestinal symptoms and shock and are more likely to receive vasoactive drugs and immunomodulators and less likely to need mechanical ventilation than non-MIS-C patients.

Epidemiology and clinical – risk factors

Publication Date	Title / URL	Journal / Article type	Digest
27.11.2020	NERVTAG: Risk assessment of SARS-CoV-2 variants that have been selected in mink, 12 November 2020	Gov.uk / Research and analysis	<ul style="list-style-type: none"> • Concluded that <ul style="list-style-type: none"> - Mink adapted viruses can infect humans (high confidence). - There is no evidence to date that the disease caused by mink adapted viruses in humans is more severe (moderate confidence). - Single mutations that confer mink adaptation do not increase transmission of virus in humans, but viruses with combinations of mutations that have arisen during replication in mink have sustained community transmission in Denmark (moderate confidence). - Some mink adaptations in Spike result in decreased antibody neutralization (low confidence). - For all the spike variants where decreased neutralization is observed, there is a possibility that the mutations might restore the ability of the virus to replicate and spread in people who have antibodies following a first infection or vaccination. This could eventually lead to a requirement for vaccine update, as seen for influenza viruses (low confidence).
24.11.2020	Characteristics, outcomes, and mortality amongst 133,589 patients with prevalent autoimmune diseases diagnosed with, and 48,418 hospitalised for COVID-19: a multinational distributed network cohort analysis	medRxiv (non-peer reviewed) / Article	<ul style="list-style-type: none"> • Studied health records data of patients with prevalent autoimmune diseases who were diagnosed (n=133,589) and hospitalised (n=48,418) with COVID-19 in the US, Spain and South Korea. • Most participants were female (60.5% to 65.9%) and aged ≥50 years. • The most prevalent autoimmune conditions were psoriasis (3.5 to 32.5%), rheumatoid arthritis (3.9 to 18.9%), and vasculitis (3.3 to 17.6%). • Amongst hospitalised patients, Type 1 diabetes was the most common autoimmune condition (4.8% to 7.5%) in US databases, rheumatoid arthritis in South Korea (18.9%), and psoriasis in Spain (26.4%). • Compared to 70,660 hospitalised with influenza, those admitted with COVID-19 had more respiratory complications including pneumonia and acute respiratory distress syndrome, and higher 30-day mortality (2.2% to 4.3% versus 6.3% to 24.6%).

Epidemiology and clinical – long-term complications / sequelae

Publication Date	Title / URL	Journal / Article type	Digest
26.11.2020	Autonomic dysfunction in 'long COVID': rationale, physiology and management strategies	Clin Med (Lond) / Article	<ul style="list-style-type: none"> • 'Post-acute COVID' emerging as a prevalent syndrome. Authors describe a series of individuals with 'long COVID' symptoms; posit that condition may be related to a virus- or immune-mediated disruption of the autonomic nervous system resulting in orthostatic intolerance syndromes.

- Rationale presented for an underlying impaired autonomic physiology post-COVID-19 and means of management suggested.

Infection control / non-pharmaceutical interventions

Publication Date	Title / URL	Journal / Article type	Digest
26.11.2020	The impact of COVID-19 preventative measures on airborne/droplet-transmitted infectious diseases in Taiwan	J Infect / Letter to the editor	<ul style="list-style-type: none"> • Researchers in Taiwan describe the first study to comprehensively investigate the impact of COVID-19 on the occurrence of airborne/droplet-transmitted notifiable infectious diseases (ADT-NIDs). • Eleven of the 14 ADT-NIDs for which data was available had a lower case number in 2020 than in 2019. • The reduction of these ADT-NIDs remained unchanged for only locally transmitted cases, possibly due to implementation of COVID-19 preventative measures. • Although the number of cases of three NIDs — legionellosis, invasive H. influenzae type b infection, and hantavirus syndrome — was higher in 2020, the number of increase was limited. • Imported cases of 12 ADT-NIDs decreased from 2019 to 2020 or even remained zero in 2020, possibly due to implementation of border control since the early outbreak of COVID-19.
24.11.2020	SARS-CoV-2 (COVID-19) Superspreader Events	J Infect / Review	<ul style="list-style-type: none"> • Following review, authors categorise super spreader events (SSEs) into 'societal' - all members can potentially transmit virus to outside communities, and 'isolated' - few members can potentially transmit virus. Environmental factors have a substantial role in SSEs. • 'Societal' SSEs pose a significant threat as members of the event are free to mingle and can infect individuals in the outside community. • 'Isolated' SSEs can be effectively quarantined as only a few individuals can transmit the virus from the isolated community to the outside community, therefore lowering further societal infection.

Transmission

Publication Date	Title / URL	Journal / Article type	Digest
27.11.2020	Transmission risk in the hospitality sector	Gov.uk / Policy paper	<ul style="list-style-type: none"> • There are four types of evidence currently available to understand where transmission is occurring; each has limitations, but they are consistent in supporting the view that hospitality venues are a significant risk for transmission. • This brief overview is intended as an introduction to the relevant SAGE papers.

27.11.2020	EMG/SPI-B: Mitigating risks of SARS-CoV-2 transmission associated with household social interactions, 26 November 2020	Gov.uk / Research and analysis	<ul style="list-style-type: none"> • This paper summarises current evidence on actions to mitigate risks of transmission of SARS-CoV-2 associated with social interactions with people from outside a household, with a particular focus on activities in the home. • This may be relevant to a wide variety of contexts, ranging from hosting a small number of visitors through to larger family celebrations, and including national celebrations such as Christmas, Diwali, Eid, Hannukah, etc.
27.11.2020	Report 38 - SARS-CoV-2 setting-specific transmission rates: a systematic review and meta-analysis	Imperial College / Report	<ul style="list-style-type: none"> • Conducted a systematic review to estimate the secondary attack rate (SAR) and observed reproduction number (Robs) in different settings and to explore differences by age, symptom status, duration of exposure and household size. • Households showed the highest transmission rates, with pooled SAR and Robs estimates of 21.1% (95% CI: 17.4%-24.8%) and 0.96 (95% CI: 0.67-1.32), respectively. • Household SAR estimates were significantly higher where the duration of household exposure exceeded 5 days compared with exposure of 5 days or less. • Found moderate evidence for less transmission both from and to individuals under 20 years of age in the household context, but this difference is less evident when examining all settings. • There was limited data to allow exploration of transmission patterns in workplaces, schools, and care-homes, highlighting the need for further research in such settings.
29.11.2020	Outdoor Transmission of SARS-CoV-2 and Other Respiratory Viruses, a Systematic Review	J Infect Dis / Accepted manuscript	<ul style="list-style-type: none"> • A systematic review of papers describing cases of human transmission of SARS-CoV-2 was used to investigate risk of outdoor transmission. Reports of other respiratory virus transmission were included for reference. • Five identified studies found a low proportion of reported global SARS-CoV-2 infections have occurred outdoors (<10%) and the odds of indoor transmission was very high compared to outdoors (18.7 times; 95% CI 6.0, 57.9). • High heterogeneity in study quality and individual definitions of outdoor settings limited ability to draw conclusions. • Factors associated with outdoor reports of infection included duration and frequency of personal contact, lack of personal protective equipment, and occasional indoor gathering during a largely outdoor experience.

Modelling

Publication Date	Title / URL	Journal / Article type	Digest
24.11.2020	A COVID-19 Model for Local Authorities of the United Kingdom	medRxiv (non-peer reviewed) / Article	<ul style="list-style-type: none"> • Authors propose a new framework to model the COVID-19 epidemic of the United Kingdom at the level of local authorities. • The framework models the proportion of infections that result in reported deaths and cases as random variables, in contrast to standard frameworks that model latent

infection as a deterministic function of time varying reproduction number.

- Designed to be updated daily based on publicly available data, it is currently being used by the Scottish government in their decisions on interventions within Scotland.
- The model fits are available on a public website:
<https://imperialcollegelondon.github.io/covid19local>

Guidance and consensus statements

Publication Date	Title / URL	Journal / Article type
27.11.2020	Coronavirus (COVID-19): Test to Release for international travel	Gov.uk / Guidance
27.11.2020	COVID-19 vaccination programme	Gov.uk / Collection

Overviews, comments and editorials

Publication Date	Title / URL	Journal / Article type
23.11.2020	Hydroxychloroquine for COVID-19: Balancing contrasting claims	Eur J Intern Med / Commentary
26.11.2020	Deciphering the ins and outs of SARS-CoV-2-specific T cells	Nat Immunol / News and views
27.11.2020	SARS-CoV-2 and the risk of Parkinson's disease: facts and fantasy	Lancet Neurology / In context

Produced by the PHE COVID-19 Literature Digest Team

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