



COVID-19 Literature Digest – 02/12/2020

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 The reports include both preprints, which should be treated with caution as they are NOT peer-reviewed and may be subject to change, and also research that has been subject to peer review and wider scrutiny.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Report for 02.12.2020 (please note that papers that have **NOT been peer-reviewed** are highlighted in red).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 | IgG Seroconversion and Pathophysiology in Severe Acute Respiratory Syndrome Coronavirus 2 Infection | Emerg Infect Dis / Article | <ul style="list-style-type: none"> • Investigation of seroconversion dynamics in severe SARS-CoV-2: serum samples and clinical data from 177 infected persons in London collected during Mar 29–May 22, 2020. • IgG measured against SARS-CoV-2 and antibody levels compared with patient outcomes, demographic information, and laboratory characteristics. • 2.0%–8.5% of persons did not seroconvert 3–6 weeks after infection. Persons who seroconverted were older, more likely to have concurrent conditions, had higher levels of inflammatory markers. • Non-White persons had higher antibody concentrations than those who identified as White; these concentrations did not decline during follow-up. • Serologic assay results correlated with disease outcome, race, and other risk factors for severe SARS-CoV-2 infection. • Serologic assays can be used in surveillance to clarify the duration and protective nature of humoral responses to SARS-CoV-2 infection. |
| 30.11.2020 | Serologic testing of U.S. blood donations to identify SARS-CoV-2-reactive antibodies: December 2019-January 2020 | Clin Infect Dis / Article | <ul style="list-style-type: none"> • To determine if SARS-CoV-2 reactive antibodies were present in sera prior to first identified U.S case on Jan 19, 2020, residual archived samples from 7,389 routine blood donations collected by the American Red Cross Dec 13, 2019 to Jan 17, 2020, from donors resident in nine states were tested at CDC for anti-SARS-CoV-2 antibodies. • 106 (of 7,389) were reactive by pan Ig. 90 of those 106 available for further testing: 84 had neutralizing activity, 1 had S1 binding activity, and 1 had receptor binding domain / Ace2 blocking activity >50%, suggesting the presence of anti-SARS-CoV-2-reactive antibodies. • Donations with reactivity occurred in all nine states. These findings suggest that SARS-CoV-2 may have been introduced into U.S prior to Jan 19, 2020. |
| 01.12.2020 | D614G Spike Variant Does Not Alter IgG, IgM, or IgA Spike Seroassay Performance | J Infect Dis / Accepted manuscript | <ul style="list-style-type: none"> • With emergence of new spike protein variant (D614G) with increased infectivity, concern that individuals exposed to one variant of a virus won't have cross-reactive memory to the second. • Authors analysed serologic reactivity of both variants; antibodies from 88 donors from a high-incidence population reacted toward both the original spike and the D614 spike variant. |

- Data suggest patients who are exposed to either variant have cross-responsive humoral immunity.

Vaccine development

| Publication Date | Title / URL | Journal / Article type | Digest |
|------------------|---|-------------------------|--|
| 30.11.2020 | Moderna Announces Primary Efficacy Analysis in Phase 3 COVE Study for Its COVID-19 Vaccine Candidate and Filing Today with U.S. FDA for Emergency Use Authorization | Moderna / Press release | <ul style="list-style-type: none"> • Primary efficacy analysis of the Phase 3 COVE study of mRNA-1273 involving 30,000 participants included 196 cases of COVID-19, of which 30 cases were severe. • Vaccine efficacy against COVID-19 was 94.1%; vaccine efficacy against severe COVID-19 was 100%. • mRNA-1273 continues to be generally well tolerated; no serious safety concerns identified to date. • Phase 3 COVE Study has exceeded 2 months of median follow-up post vaccination as required by the U.S. FDA for Emergency Use Authorization (EUA). |

Diagnostics and genomics

| Publication Date | Title / URL | Journal / Article type | Digest |
|------------------|---|--------------------------------|--|
| 01.12.2020 | Rapid evaluation of OptiGene RT-LAMP assay (direct and RNA formats) | Gov.uk / Research and analysis | <ul style="list-style-type: none"> • The OptiGene RT-LAMP assay was assessed on saliva and swab samples, both directly (native samples) and after RNA extraction. • On oropharyngeal and nasopharyngeal swabs, with RNA extraction, it had a sensitivity of 95% (CI 0.91-0.97) and specificity of 99% (CI 0.99-1.00) across all samples tested. • On saliva, without RNA extraction, it had a sensitivity of 79% (CI 0.73-0.84) and specificity of 100% (CI 0.99-1.00) across all samples tested, increasing to a sensitivity of 94% (CI 0.87-0.98) for those samples with a higher viral load. • Nucleic acid amplification tests using LAMP technology on saliva samples demonstrates viral detection with sufficient sensitivity and specificity for an effective regular interval-based testing system, as indicated by the hospital and community programmes. |

Epidemiology and clinical – risk factors

| Publication Date | Title / URL | Journal / Article type | Digest |
|------------------|--|----------------------------|--|
| 01.12.2020 | Racial and Ethnic Disparities in COVID-19-Related Infections, Hospitalizations, and Deaths : A Systematic Review | Ann Intern Med / Reviews | <ul style="list-style-type: none"> • Review to evaluate racial/ethnic disparities in SARS-CoV-2 infection rates and COVID-19 outcomes: 37 cohort / cross-sectional studies, 15 ecological studies, data from CDC and APM Research Lab. • African American/Black and Hispanic populations experience disproportionately higher rates of infection, hospitalization, and COVID-19–related mortality compared with non-Hispanic White populations, but not higher case-fatality rates (mostly reported as in-hospital mortality) (moderate- to high-strength evidence). • Asian populations experience similar outcomes to non-Hispanic White populations (low-strength evidence). Outcomes for other racial/ethnic groups have been insufficiently studied. • Health care access and exposure factors may underlie the observed disparities more than susceptibility due to comorbid conditions (low-strength evidence). |
| 01.12.2020 | Thromboembolism risk of COVID-19 is high and associated with a higher risk of mortality: A systematic review and meta-analysis | EClinicalMedicine / Review | <ul style="list-style-type: none"> • First systematic review and meta-analysis to provide pooled estimates of both venous and arterial thromboembolism (TE) rates of COVID-19 and associated mortality risk. 42 studies (8271 patients) included. • Overall venous TE rate 21% (95% CI:17–26%): ICU, 31% (95% CI: 23–39%). Overall deep vein thrombosis rate 20% (95% CI: 13–28%): ICU, 28% (95% CI: 16–41%); post-mortem, 35% (95% CI:15–57%). • Overall arterial TE rate 2% (95% CI: 1–4%): ICU, 5% (95%CI: 3–7%). Pooled mortality rate among patients with TE was 23% (95%CI:14–32%) and 13% (95% CI:6–22%) among patients without TE. • Pooled odds of mortality were 74% higher among patients who developed TE compared to those who did not (OR, 1.74; 95%CI, 1.01–2.98; P = 0.04). |

Epidemiology and clinical – long-term complications / sequelae

| Publication Date | Title / URL | Journal / Article type | Digest |
|------------------|--|---------------------------|---|
| 30.11.2020 | Long COVID in the Faroe Islands - a longitudinal study among non-hospitalized patients | Clin Infect Dis / Article | <ul style="list-style-type: none"> • Longitudinal study, presenting symptoms registered during the acute phase as well as long COVID, in 180 participants (96.3% of the 187 eligible COVID-19 patients) from the Faroe Islands. • 53.1% reported persistence of at least one symptom after a mean of 125 days after symptoms onset, 33.3% reported one or two symptoms and 19.4% three or more symptoms. • At last follow-up, 46.7% were asymptomatic compared with 4.4 % during the acute |

phase. Most prevalent persistent symptoms were fatigue, loss of smell and taste, and arthralgias.

- Results show that it might take months for symptoms to resolve, even among non-hospitalized persons with mild illness course in the acute phase.

Epidemiology and clinical – other

| Publication Date | Title / URL | Journal / Article type | Digest |
|------------------|---|---|--|
| 30.11.2020 | REACT-1 round 7 interim report: fall in prevalence of swab-positivity in England during national lockdown | Imperial College / Article | <ul style="list-style-type: none"> • The main findings from the seventh REACT study show that between 13 and 24 Nov: <ul style="list-style-type: none"> - 96 people per 10,000 infected, down from 132 per 10,000 between 26 Oct and 2 Nov. - The national R rate was estimated to be 0.88.- People of Asian ethnicity had increased odds of testing positive compared with white people. - People living in the most deprived neighbourhoods had higher odds of testing positive than those living in less deprived neighbourhoods. - There is an increase in prevalence among people living in the largest households. |
| 30.11.2020 | Olfactory transmucosal SARS-CoV-2 invasion as a port of central nervous system entry in individuals with COVID-19 | Nat Neurosci / Article | <ul style="list-style-type: none"> • Authors assessed olfactory mucosa, its nervous projections and several defined CNS regions in 33 individuals who died in context of COVID-19: demonstrate presence of SARS-CoV-2 RNA and protein in anatomically distinct regions of the nasopharynx and brain, describe morphological changes associated with infection, and present evidence of SARS-CoV-2 neurotropism. • SARS-CoV-2 can enter nervous system by crossing the neural–mucosal interface in olfactory mucosa, exploiting close vicinity of olfactory mucosal, endothelial and nervous tissue, including delicate olfactory and sensory nerve endings. • Subsequently it appears to follow neuroanatomical structures, penetrating defined neuroanatomical areas including primary respiratory and cardiovascular control centre in medulla oblongata. |
| 01.12.2020 | Successful double-lung transplantation from a donor previously infected with SARS-CoV-2 | Lancet Respiratory Medicine / Case report | <ul style="list-style-type: none"> • Report a successful double-lung transplantation from a donor exposed to SARS-CoV-2 who had mild COVID-19-like symptoms 3 months earlier. • Before donation, repeated nasopharyngeal swab was negative for SARS-CoV-2 and chest CT showed no residual signs of lung injury. • The lungs were successfully transplanted without viral transmission to the recipient, as shown by repetitive bronchoalveolar lavage and serology after transplantation. • Initial recovery up to day 90 after lung transplantation has been excellent, but long-term results are awaited. |

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|------------|---|-------------------------------|---|
| 30.11.2020 | Lung transplantation for patients with severe COVID-19 | Sci Transl Med / Report | <ul style="list-style-type: none"> • Authors report on lung transplantation in three patients with non-resolving COVID-19-associated respiratory failure, post-mortem lung biopsies from two patients dying from COVID-19-associated pneumonia. • Lungs from these five patients with prolonged COVID-19 disease were free of SARS-CoV-2 but pathology showed extensive evidence of injury and fibrosis resembling end-stage pulmonary fibrosis. • Findings suggest that some patients with severe COVID-19 develop fibrotic lung disease for which lung transplantation is their only option for survival. |
| 01.12.2020 | Shedding of Viable SARS-CoV-2 after Immunosuppressive Therapy for Cancer | N Engl J Med / Correspondence | <ul style="list-style-type: none"> • Authors used cell cultures to detect viable virus in serially collected respiratory samples obtained from 20 immunocompromised patients who had Covid-19. • 3 patients with viable virus for more than 20 days had received allogeneic hematopoietic stem-cell transplants (2 patients) or CAR T-cell therapy (1 patient) within previous 6 months and remained seronegative for antibodies to viral nucleoprotein; 2 of the 3 had severe Covid-19 and received investigational treatments. • Patients with profound immunosuppression after undergoing hematopoietic stem-cell transplantation or receiving cellular therapies may shed viable SARS-CoV-2 for at least 2 months. • The current guidelines for Covid-19 isolation precautions may need to be revised for immunocompromised patients. |
| 27.11.2020 | The effect of clinical decision making for initiation of systemic anticancer treatments in response to the COVID-19 pandemic in England: a retrospective analysis | Lancet Oncology / Article | <ul style="list-style-type: none"> • After the onset of the COVID-19 pandemic, there was a reduction in systemic anticancer treatment initiation in England. • However, following introduction of treatment options to reduce patient risk, registrations began to increase in May, 2020, and reached higher numbers than the pre-pandemic mean in June, 2020, when other clinical and societal risk mitigation factors (such as telephone consultations, facemasks and physical distancing) are likely to have contributed. • However, outcomes of providing less treatment or delaying treatment initiation, particularly for advanced cancers and neoadjuvant therapies, require continued assessment. |

Transmission

| Publication Date | Title / URL | Journal / Article type | Digest |
|------------------|--|----------------------------|--|
| 30.11.2020 | Childcare Exposure to Severe Acute Respiratory Syndrome Coronavirus 2 for 4-Year-Old Presymptomatic Child, South Korea | Emerg Infect Dis / Article | <ul style="list-style-type: none"> • Authors investigated SARS-CoV-2 exposure at a childcare centre in South Korea: 4-year-old child attended the centre during the pre-symptomatic period (Feb 19–21, 2020). |

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|------------|--|----------------------------|--|
| | | | <ul style="list-style-type: none"> • 190 persons (154 children and 36 adults) identified as contacts at centre; 44 (23.2%) defined as close contacts (37 children and 7 adults). All 190 were negative on days 8–9 after the last exposure. • Two close contacts (1 child and 1 adult) showed development of symptoms on the last day of quarantine. However, subsequent test results were negative. • Investigation adds indirect evidence of low potential infectivity in a childcare setting with exposure to a pre-symptomatic child. |
| 30.11.2020 | Evidence of Long-Distance Droplet Transmission of SARS-CoV-2 by Direct Air Flow in a Restaurant in Korea | J Korean Med Sci / Article | <ul style="list-style-type: none"> • Review of COVID-19 outbreak in Korea associated with long distance droplet transmission. Investigation based on personal interviews and data collection on closed-circuit television images, and cell phone location data. At the restaurant considered the site of exposure, air flow direction and velocity, distances between cases, and movement of visitors were investigated. • 3 cases identified in this outbreak; maximum air flow velocity of 1.2 m/s was measured between infector and infectee in a restaurant equipped with ceiling-type air conditioners. The index case was infected at a 6.5 m away from the infector and 5 minutes exposure without any direct or indirect contact. • Authors concluded that droplet transmission can occur at a distance greater than 2 m if there is direct air flow from an infected person. |

Overviews, comments and editorials

| Publication Date | Title / URL | Journal / Article type |
|------------------|---|---|
| 01.12.2020 | Antibiotic prescribing in general practice during COVID-19 | Lancet Infectious Diseases / Correspondence |
| 01.12.2020 | Fragmented health systems in COVID-19: rectifying the misalignment between global health security and universal health coverage | Lancet / Health policy |
| 01.12.2020 | Solutions to COVID-19 data sharing | Lancet Digital Health / Correspondence |

Produced by the PHE COVID-19 Literature Digest Team

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