Public Health England

COVID-19 Literature Digest – 09/12/2020

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 The reports include both preprints, which should be treated with caution as they are NOT peer-reviewed and may be subject to change, and also research that has been subject to peer review and wider scrutiny.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Report for 09.12.2020 (please note that papers that have **NOT been peer-reviewed** are highlighted in red).

Sections:

Serology and immunology

Publication Date	Title / URL	Journal / Article type	Digest
08.12.2020	Dynamics and Correlation Among Viral Positivity, Seroconversion, and Disease Severity in COVID-19 : A Retrospective Study	Ann Intern Med / Original research	• Retrospective study of 3192 consecutive adults patients hospitalized with COVID-19. Rate of viral PCR positivity peaked (nearly 90%) in first 3 days, decreased to 69.9% in week 2, declined sharply to 27.4% in the fourth week. Seroconversion rates peaked within 4 to 5 weeks. • Being critically ill with COVID-19 was an independent risk factor for longer viral positivity, with adjustment for age, sex, and prognosis-related comorbid conditions (hazard ratio, 0.700 [CI, 0.595 to 0.824]; P < 0.001). • Dynamic laboratory index changes corresponded well to clinical signs, the recovery process, and disease severity. • Low IgM titres (<100 AU/mL) are an independent risk factor for persistent viral positivity.
07.12.2020	Defining the features and duration of antibody responses to SARS-CoV-2 infection associated with disease severity and outcome	Sci Immunol / Article	• Authors analysed 983 longitudinal plasma samples from 79 hospitalized COVID-19 patients and 175 SARS-CoV-2-infected outpatients / asymptomatic individuals in US. 25 patients died. • Higher ratios of IgG antibodies targeting S1 or RBD domains of spike compared to nucleocapsid antigen were seen in outpatients who had mild illness versus severely ill patients. • Plasma antibody increases correlated with decreases in viral RNAemia, but antibody responses in acute illness were insufficient to predict inpatient outcomes. • Pseudovirus neutralization assays and a scalable ELISA measuring antibodies blocking RBD-ACE2 interaction were well correlated with patient IgG titres to RBD. • Outpatient and asymptomatic individuals' SARS-CoV-2 antibodies, including IgG, progressively decreased during observation up to five months post-infection.

Vaccine development

Publication Date	Title / URL	Journal / Article type	Digest
08.12.2020	Safety and efficacy of the ChAdOx1 nCoV-19 vaccine (AZD1222) against SARS-CoV-2: an interim analysis of four randomised controlled trials in Brazil, South Africa, and the UK	Lancet / Article	• Evaluated the safety and efficacy of the ChAdOx1 nCoV-19 vaccine in a pooled interim analysis of four trials. This analysis includes data from four ongoing blinded, randomised, controlled trials done across the UK, Brazil, and South Africa. • Between April 23 and Nov 4, 2020, 23 848 participants were enrolled and 11 636 participants (7548 in the UK, 4088 in Brazil) were included in the interim primary efficacy analysis. • In participants who received two standard doses, vaccine efficacy was 62·1% (95% CI 41·0–75·7; 27 [0·6%] of 4440 in the ChAdOx1 nCoV-19 group vs71 [1·6%] of 4455 in the control group) and in participants who received a low dose followed by a standard dose, efficacy was 90·0% (67·4–97·0; three [0·2%] of 1367 vs 30 [2·2%] of 1374; pinteraction=0·010). • Overall vaccine efficacy across both groups was 70·4%. • Concluded that ChAdOx1 nCoV-19 has an acceptable safety profile and has been found to be efficacious against symptomatic COVID-19 in this interim analysis of ongoing clinical trials.

Diagnostics and genomics

Publication Date	Title / URL	Journal / Article type	Digest
05.12.2020	Real-life validation of the Panbio™ COVID-19 antigen rapid test (Abbott) in community-dwelling subjects with symptoms of potential SARS-CoV-2 infection	EClinicalMedicine / Article	• Antigen detection assays can generate results within 20 min and outside of laboratory settings. Study to determine their diagnostic test performance in real life settings. • In community-dwelling subjects with mild respiratory symptoms the Panbio™ COVID-19 Ag Rapid Test had 100% specificity, and a sensitivity above 95% for nasopharyngeal samples when using Ct-values <32 cycles as cut-off for RT-qPCR test positivity. • Due to lower sensitivity of Panbio™ COVID-19 Ag rapid test, RT-qPCR preferred diagnostic test for clinical purposes in a hospital setting. Within the community, this rapid antigen test reliably and rapidly identifies individuals with high potential of further transmission, and could therefore be an essential new tool in testing strategies to control transmission of SARS-CoV-2.

Epidemiology and clinical – children / pregnancy

Publication Date	Title / URL	Journal / Article type	Digest
07.12.2020	Stillbirths During the COVID-19 Pandemic in England, April-June 2020	Jama / Research letter	• No evidence of increase in stillbirths regionally or nationally during pandemic in England when compared with same months in previous year / despite variable community incidence rates in different regions.
07.12.2020	Changes in Preterm Birth Phenotypes and Stillbirth at 2 Philadelphia Hospitals During the SARS-CoV-2 Pandemic, March-June 2020	Jama / Research letter	• 2992 deliveries during pandemic period (March-June 2020), including 283 preterm births (135 spontaneous/148 medically indicated), 15 stillbirths. Compared with same months in 2018 and 2019. • No significant changes in preterm or stillbirth rates detected during the pandemic in a racially diverse urban cohort from 2 Philadelphia hospitals. Although these data allow for disaggregation of spontaneous and medically indicated preterm births, no differences in overall rates of these phenotypes were detected.

Epidemiology and clinical – risk factors

Publication Date	Title / URL	Journal / Article type	Digest
07.12.2020	Prevalence and predictors of death and severe disease in patients hospitalized due to COVID-19: A comprehensive systematic review and meta-analysis of 77 studies and 38,000 patients	PLoS One / Article	• Systematic review of COVID-19 progression to severe disease and death: 77 studies comprising 38,906 hospitalized patients included (21,468 from US-Europe / 9,740 from China). • Overall prevalence of death [% (95% CI)] from COVID-19 was 20% (18–23%); 23% (19–27%) in the US and Europe and 11% (7–16%) for China. • Case fatality risk [%(95% CI)]: 52% (46–60) for heart disease, 51% (43–59) COPD, 48% (37–63) chronic kidney disease (CKD), 39% chronic liver disease (CLD), 28% (23–36%) hypertension, 24% (17–33%) for diabetes. • Summary relative risk (sRR) of death higher: age≥60 years [sRR = 3.6; 95% CI: 3.0–4.4], males [1.3; 1.2–1.4], smoking history [1.3; 1.1–1.6], COPD [1.7; 1.4–2.0], hypertension [1.8; 1.6–2.0], diabetes [1.5; 1.4–1.7], heart disease [2.1; 1.8–2.4], CKD [2.5; 2.1–3.0].

Epidemiology and clinical – long-term complications / sequelae

Publication Date	Title / URL	Journal / Article type	Digest
08.12.2020	COVID-19 Symptoms: Longitudinal Evolution and Persistence in Outpatient Settings	Ann Intern Med / Letters	• Authors study COVID-19 symptom evolution and persistence of 669 individuals in an outpatient setting in Geneva, Switzerland, from day 1

			through day 30 to 45 after diagnosis. • Persistence of symptoms in a third of ambulatory patients 30 to 45 days after diagnosis even if those lost to follow-up were all asymptomatic. • Fatigue, dyspnea, and loss of taste or smell were the main persistent symptoms.

Epidemiology and clinical – other

Publication Date	Title / URL	Journal / Article type	Digest
08.12.2020	Simultaneous COVID-19 in Homozygous Twins	Ann Intern Med / Letters	• Case study: 60 year old male twins, considered homozygous because of appearances and other personal characteristics. Similar COVID-19 presentations and early treatment, but different clinical courses. One discharged without complications, second in ICU. • Genetic factors unlikely to explain differences in how COVID-19 affected twins, same environmental factors (job/home) and risk factors (e.g. age, chronic diseases of lung), likely acquired same virus.
06.12.2020	Course of symptoms for loss of sense of smell and taste over time in one thousand forty-one healthcare workers during the Covid-19 pandemic: Our experience	Clin Otolaryngol / Correspondence	• 1041 healthcare workers (HCW) completed questionnaires between 27 Mar - 9 June, distributed at six NHS trusts; nearly two-thirds reported recent sudden loss of sense of smell and/or taste. • Loss of sense of smell and/or taste was significantly associated with a positive Covid-19 test. In 16.6% of the cohort, this was the only symptom. • 385/793 (48.5%) had continued to work as normal - increased awareness and recognition of these symptoms is crucial, especially among HCW. • Where loss of smell/taste occurred at least four weeks prior to survey, only half participants had fully recovered; long-term management of sequelae of Covid-19 infection needs more research.

Infection control / non-pharmaceutical interventions

Publication Date	Title / URL	Journal / Article type	Digest
07.12.2020	Implementing Mitigation Strategies in Early Care and Education Settings for Prevention of SARS-CoV-2 Transmission — Eight States, September–October 2020	MMWR / Report	• Head Start and Early Head Start programs successfully implemented CDC-recommended guidance and other ancillary measures for child care programs that remained open, allowing them to continue offering in-person learning. These approaches were documented to guide implementation of mitigation strategies in child care settings.

Transmission

Publication Date	Title / URL	Journal / Article type	Digest
08.12.2020	SARS-CoV-2 infection and transmission in educational settings: a prospective, cross-sectional analysis of infection clusters and outbreaks in England	Lancet Infectious Diseases / Article	• *This paper was previously included in the Digest as a preprint.* • In this prospective, cross-sectional analysis, Public Health England initiated enhanced national surveillance in educational settings in England that had reopened after the first national lockdown, from June 1 to July 17, 2020. • Concluded that SARS-CoV-2 infections and outbreaks were uncommon in educational settings during the summer half-term in England. The strong association with regional COVID-19 incidence emphasises the importance of controlling community transmission to protect educational settings. Interventions should focus on reducing transmission in and among staff.
06.12.2020	A meta-analysis on the role of children in SARS-CoV-2 in household transmission clusters	Clin Infect Dis / Article	• Meta-analysis of published literature on household SARS-CoV-2 transmission clusters (n=213 from 12 countries). Only 8 (3.8%) transmission clusters identified as having a paediatric index case. • Asymptomatic index cases associated with a lower secondary attack in contacts than symptomatic index cases (estimate risk ratio [RR], 0.17; 95% confidence interval [CI], 0.09-0.29). • Secondary attack rate in paediatric household contacts was lower than in adult household contacts (RR, 0.62; 95% CI, 0.42-0.91). • These data have important implications for the ongoing management of the COVID-19 pandemic, including potential vaccine prioritization strategies.

Treatment

Publication Date	Title / URL	Journal / Article type	Digest
08.12.2020	Hydroxychloroquine as Postexposure Prophylaxis to Prevent Severe Acute Respiratory Syndrome Coronavirus 2 Infection : A Randomized Trial	Ann Intern Med / Original research	• US household-randomized controlled trial of close contacts recently exposed (<96 hours) to persons with diagnosed SARS-CoV-2 infection, to test hydroxychloroquine as postexposure prophylaxis. • 671 households randomly assigned: 337 (407 participants) to hydroxychloroquine group / 334 (422 participants) to control group. • Among 689 (89%) participants SARS-CoV-2 negative at baseline, no difference between hydroxychloroquine and control groups in SARS-CoV-2 acquisition by day 14 (53 versus 45 events; adjusted hazard ratio, 1.10 [95% CI, 0.73 to 1.66]; P > 0.20). • Results excluded a clinically meaningful effect of hydroxychloroquine as postexposure prophylaxis to prevent SARS-CoV-2 infection.

Modelling

Publication Date	Title / URL	Journal / Article type	Digest
07.12.2020	Effect of internationally imported cases on internal spread of COVID-19: a mathematical modelling study	Lancet Public Health / Article	• Study that aimed to investigate the extent to which imported cases contribute to local transmission under different epidemic conditions. • Calculated the ratio of expected COVID-19 cases from international travel (assuming no travel restrictions) to expected cases arising from internal spread, expressed as a proportion, on an average day in May and Sept, 2020, in each country. • Countries can expect travellers infected with SARS-CoV-2 to arrive in the absence of travel restrictions. Although such restrictions probably contribute to epidemic control in many countries, in others, imported cases are likely to contribute little to local COVID-19 epidemics. • Stringent travel restrictions might have little impact on epidemic dynamics except in countries with low COVID-19 incidence and large numbers of arrivals from other countries, or where epidemics are close to tipping points for exponential growth. Countries should consider local COVID-19 incidence, local epidemic growth, and travel volumes before implementing such restrictions.

Guidance and consensus statements

Publication Date	Title / URL	Journal / Article type
07.12.2020	COVID-19 vaccination: what to expect after vaccination	Gov.uk / Guidance
07.12.2020	COVID-19 vaccination: a guide for social care staff	Gov.uk / Guidance
07.12.2020	COVID-19 vaccination: guide for healthcare workers	Gov.uk / Guidance
07.12.2020	COVID-19 vaccination: guide for older adults	Gov.uk / Guidance

Overviews, comments and editorials

Publication Date	Title / URL	Journal / Article type
08.12.2020	FDA Briefing Document Pfizer-BioNTech COVID-19 Vaccine	fda.gov / Briefing document
07.12.2020	Development and dissemination of infectious disease dynamic transmission models during the COVID-19 pandemic: what can we learn from other pathogens and how can we move forward?	Lancet Digital Health / Review
08.12.2020	The role of schools and school-aged children in SARS-CoV-2 transmission	Lancet Infectious Diseases / Comment

07.12.2020	Towards an accurate and systematic characterisation of persistently asymptomatic infection with SARS-CoV-2	Lancet Infectious Diseases / Personal view
04.12.2020	Is NHS Test and Trace exacerbating COVID-19 inequalities?	Lancet / Correspondence
04.12.2020	Joining European Scientific Forces to Face Pandemics	Trends Microbiol / Article

Produced by the PHE COVID-19 Literature Digest Team

To sign-up, email COVID.LitDigest@phe.gov.uk
A selection of previous digests can be found here

www.gov.uk/phe Follow us on Twitter @PHE_uk
Protecting and improving the nation's health