



International EPI Cell Daily Evidence Digest – 12/05/2020

This Daily Evidence Digest is produced by the PHE COVID-19 Literature Digest Team as a resource for professionals working in public health. We do not accept responsibility for the availability, reliability or content of the items included in this resource and do not necessarily endorse the views expressed within them. The papers are organised under the following themes:

- Diagnostics
- Genomics
- Epidemiology and clinical - children and pregnancy
- Epidemiology and clinical - risk factors
- Epidemiology and clinical - other
- Infection control
- Treatment
- Social sciences
- Miscellaneous
- Modelling
- Guidance, consensus statements and hospital resources (no digest)
- Overviews, comments and editorials (no digest)

Please note that we are including preprints (**highlighted in red**), which are preliminary reports of work that have NOT been peer-reviewed. They should not be relied on to guide clinical practice or health-related behaviour and should NOT be reported in news media as established information.

Diagnostics

Publication Date	Title/URL	Journal/ Article type	Digest
11.04.2020	A rapid, low cost, and highly sensitive SARS-CoV-2 diagnostic based on whole genome sequencing	bioRxiv (not peer reviewed) / Article	<ul style="list-style-type: none">• Introduces low-cost, high-throughput method for diagnosis of SARS-CoV-2 infection, dubbed Pathogen-Oriented Low-Cost Assembly & Re-Sequencing (POLAR); enhances sensitivity by aiming to amplify the entire SARS-CoV-2 genome rather than targeting particular viral loci, as

			<p>in typical RT-PCR assays.</p> <ul style="list-style-type: none"> • POLAR diagnoses on 10 of 10 clinical nasopharyngeal swab samples (half positive, half negative) match those obtained in a CLIA-certified lab using CDC's 2019-Novel Coronavirus test. • Single person can process 192 samples over course of an 8-hour experiment, enabling a 24-hour turnaround with sequencing and data analysis time included.
08.05.2020	Drive-through testing for SARS-CoV-2 in symptomatic health and social care workers and household members: an observational cohort study in Tayside, Scotland	medRxiv (not peer reviewed) / Article	<ul style="list-style-type: none"> • Drive-through testing hub for health & social care workers (HSCW) self-isolating with mild symptoms and their symptomatic household contacts (SHCs) in a single UK region (Tayside, Scotland). • 17 March - 11 April data for 1727 tested: 4/155 (2.6%) child contacts, 73/374 (19.5%) adult contacts, 325/1173 (27.7%) HSCWs tested positive. 15 of 188 undetermined cases were positive (8.0%). • Estimate testing prevented up to 3634 lost work days from HSCW testing, 2795 from adult SHC testing and 1402 lost work days from child SHC testing. Testing programme has assisted infection prevention and control team in their investigation of transmission and supported adequate staffing in health and social care sectors.

Genomics

Publication Date	Title/URL	Journal/ Article type	Digest
05.05.2020	Emergence of genomic diversity and recurrent mutations in SARS-CoV-2	Infect Genet Evol / Article	<ul style="list-style-type: none"> • Curated a dataset of 7666 public genome assemblies and analysed the emergence of genomic diversity over time. • Results are in line with previous estimates and point to all sequences sharing a common ancestor towards the end of 2019, supporting this as the period when SARS-CoV-2 jumped into its human host. • The diversity of SARS-CoV-2 strains in many countries recapitulates its full global diversity, consistent with multiple introductions of the virus to regions throughout the world seeding local transmission events. • 198 sites in the SARS-CoV-2 genome appear to have already undergone recurrent, independent mutations based on a large-scale analysis of public genome assemblies.

08.05.2020	Immune cell profiling of COVID-19 patients in the recovery stage by single-cell sequencing	Cell Discov / Article	<ul style="list-style-type: none"> • Study seeking to comprehensively characterize the transcriptional changes in peripheral blood mononuclear cells during the recovery stage of COVID-19 by single-cell RNA sequencing technique. • Results provide the first evidence of an inflammatory immune signature in the ERS, suggesting COVID-19 patients are still vulnerable after hospital discharge.
09.04.2020	De novo design of high-affinity antibody variable regions (Fv) against the SARS-CoV-2 spike protein	bioRxiv (not peer reviewed) / Confirmatory Results	<ul style="list-style-type: none"> • Earlier paper reported on specific residue interactions underpinning this event. Here report on de novo computational design of high affinity antibody variable regions through recombination of VDJ genes targeting most solvent-exposed hACE2-binding residues of the SARS-CoV-2 spike protein using the software tool OptMAVEN-2.0. • Generated 106 different designs and report in detail on the top five that trade-off the greatest affinity for the spike RBD epitope (quantified using the Rosetta binding energies) with low H-scores. By grafting the designed Heavy (VH) and Light (VL) chain variable regions onto a human framework (Fc), high-affinity and potentially neutralizing full-length monoclonal antibodies (mAb) can be constructed. • Having a potent antibody that can recognize the viral spike protein with high affinity would be enabling for both the design of sensitive SARS-CoV-2 detection devices and for their deployment as therapeutic antibodies.

Epidemiology and clinical - children and pregnancy

Publication Date	Title/URL	Journal/ Article type	Digest
11.05.2020	Characteristics and outcomes of pregnant women hospitalised with confirmed SARS-CoV-2 infection in the UK: a national cohort study using the UK Obstetric Surveillance System (UKOSS)	National Perinatal Epidemiology Unit, Nuffield Dept of Population Health, University of Oxford / Cohort study	<ul style="list-style-type: none"> • Prospective national population-based cohort study describing a national cohort of pregnant women hospitalised with SARS-CoV-2 infection in the UK, to identify factors associated with infection and describe outcomes for mother and infant. • Estimated incidence of hospitalisation with confirmed SARS-CoV-2 in pregnancy 4.9 per 1000 maternities. The median gestation at symptom onset was 34 weeks(IQR 29-38). Black or other minority ethnicity, older maternal age, overweight and obesity and pre-existing comorbidities were associated with admission with SARS-CoV-2 during pregnancy. • 247 women (58%) gave birth or had a pregnancy loss; 180 (73%) gave birth at term. 40 (9%) hospitalised women required respiratory

			support. Twelve infants (5%) tested positive for SARS-CoV-2 RNA, six of these infants within the first 12 hours after birth.
09.05.2020	Pregnant and postpartum women with SARS-CoV-2 infection in intensive care in Sweden	Acta Obstetrica et Gynecologica Scandinavica / Brief report	<ul style="list-style-type: none"> • Fifty-three women aged 20-45 years with SARS-CoV-2 were reported in Swedish Intensive Care Registry (SIR), and thirteen (n=13) of these women were either pregnant or postpartum (<1 week). • The results indicate that the risk of being admitted to ICU may be higher in pregnant and postpartum women with laboratory-confirmed SARS-CoV-2 in Sweden, compared to non-pregnant women of similar age.
08.05.2020	Clinical course of severe and critical COVID-19 in hospitalized pregnancies: a US cohort study	Am J Obstet Gynecol MFM / Article	<ul style="list-style-type: none"> • Of 64 pregnant women hospitalized with COVID-19, 44 (69%) had severe and 20 (31%) critical disease. The following pre-existing comorbidities were observed: 25% had a pulmonary condition, 17% had cardiac disease and the mean BMI was 34 kg/m(2). • In hospitalized pregnant women with severe or critical COVID-19 infection, admission typically occurred about 7 days after symptom onset, and the duration of hospitalization was 6 days (6 severe versus 12 critical). Critically ill women had a high rate of ARDS, and there was one case of cardiac arrest, but there were no cases of cardiomyopathy, or maternal mortality. Hospitalization for severe or critical COVID-19 infection resulted in delivery during the course of infection in 50% of this cohort, usually in the third trimester. There were no stillbirths or neonatal deaths, or cases of vertical transmission.
08.05.2020	Detection of SARS-COV-2 in Placental and Fetal Membrane Samples	Am J Obstet Gynecol MFM / Article	<ul style="list-style-type: none"> • The authors report their experience with placental/membrane SARS-CoV2 RNA PCR swab results after delivery to a series of symptomatic mothers with confirmed COVID-19 infection in pregnancy. • Of 11 placental or membrane swabs sent following delivery, 3 swabs were positive for SARS-CoV-2, all in women with moderate to severe COVID-19 illness at time of delivery. This is the first study to demonstrate the presence of SARS-CoV-2 RNA in placental or membrane samples. While there were no clinical signs of vertical transmission, the findings raise the possibility of intrapartum viral exposure.
11.05.2020	Characteristics and Outcomes of Children With Coronavirus Disease 2019 (COVID-19) Infection Admitted to US and Canadian Pediatric Intensive Care Units	JAMA Pediatrics / Original Investigation	<ul style="list-style-type: none"> • This early report describes the burden of COVID-19 infection in North American PICUs and confirms that severe illness in children is significant but far less frequent than in adults. • Prehospital comorbidities appear to be an important factor in children. These preliminary observations provide an important

			platform for larger and more extensive studies of children with COVID-19 infection.
05.05.2020	Symptomatic Infection is Associated with Prolonged Duration of Viral Shedding in Mild Coronavirus Disease 2019: A Retrospective Study of 110 Children in Wuhan	Pediatr Infect Dis J / Retrospective study	<ul style="list-style-type: none"> • Retrospective analysis of the clinical and laboratory characteristics associated with viral shedding in 110 children with mild COVID-19. • The median age was 6 years old. The median period of viral shedding of COVID-19 was 15 days as measured from illness onset to discharge. This period was shorter in asymptomatic patients (26.4%) compared with symptomatic patients (73.6%) (11 days vs. 17 days). • Multivariable regression analysis showed increased odds of symptomatic infection was associated with age <6 years, hypersensitive C-reactive protein >3.0 mg/L and presenting pneumonia in chest radiologic findings. • Kaplan-Meier analysis displayed symptomatic infection (P < 0.001), fever (P = 0.006), pneumonia (P = 0.003) and lymphocyte counts <2.0 × 10/L (P = 0.008) in children with COVID-19 were associated with prolonged duration of viral shedding in children with COVID-19.
05.05.2020	A CASE OF CHILDHOOD COVID-19 INFECTION WITH PLEURAL EFFUSION COMPLICATED BY POSSIBLE SECONDARY MYCOPLASMA PNEUMONIAE INFECTION	Pediatr Infect Dis J /Case report	<ul style="list-style-type: none"> • Case report of childhood COVID-19 infection with pleural effusion complicated by possible secondary Mycoplasma pneumoniae infection. • Fever and pulmonary lesions on computed tomography were the early clinical manifestations, and the patient developed non-productive cough later. • The hydrothorax in this case was exudative, showing predominantly mature lymphocytes.

Epidemiology and clinical - risk factors

Publication Date	Title/URL	Journal/ Article type	Digest
10.05.2020	Circulating plasma concentrations of angiotensin-converting enzyme 2 in men and women with heart failure and effects of renin-angiotensin-aldosterone inhibitors	Eur Heart J / Article	<ul style="list-style-type: none"> • Measured ACE2 concentrations in 1485 men and 537 women with heart failure (index cohort). Results were validated in 1123 men and 575 women (validation cohort). • Concluded that in two independent cohorts of patients with heart failure, plasma concentrations of ACE2 were higher in men than in women, but use of neither an ACE inhibitor nor an ARB was associated with higher plasma ACE2 concentrations. These data might explain the higher incidence and fatality rate of COVID-19 in men, but do not support previous reports suggesting that ACE inhibitors or ARBs

			increase the vulnerability for COVID-19 through increased plasma ACE2 concentrations.
12.05.2020	Prevalence, Severity and Mortality associated with COPD and Smoking in patients with COVID-19: A Rapid Systematic Review and Meta-Analysis	PLoS One / Article	<ul style="list-style-type: none"> • No studies have yet summarized the potential severity and mortality risks caused by COVID-19 in patients with chronic obstructive pulmonary disease (COPD), and the authors update information in smokers. • A total of 15 studies met the inclusion criteria, which included a total of 2473 confirmed COVID-19 patients. The crude case fatality rate of COVID-19 was 7.4%. The pooled prevalence rates of COPD patients and smokers in COVID-19 cases were 2% and 9% respectively. • Although COPD prevalence in COVID-19 cases was low in current reports, COVID-19 infection was associated with substantial severity and mortality rates in COPD. Compared to former and never smokers, current smokers were at greater risk of severe complications and higher mortality rate. Effective preventive measures are required to reduce COVID-19 risk in COPD patients and current smokers.
02.05.2020	Smoking and the risk of COVID-19 infection in the UK Biobank Prospective Study	medRxiv (not peer reviewed) / Article	<ul style="list-style-type: none"> • Authors conducted logistic regression analyses of UK Biobank prospective study of 0.5 million adults followed for an average of 11 years. • Current smokers slightly more likely than never smokers to test positive for COVID-19 - not statistically significant: men's OR=1.12; 0.75-1.68; women's OR=1.38; 0.89-2.15. Former smoking was similarly associated with a positive test. • Further examination of smoking as a risk factor for COVID-19 required; taking into account reverse causality, where smokers quit to avoid disease as well as prior diseases.
11.05.2020	Characteristics and clinical significance of myocardial injury in patients with severe coronavirus disease 2019	Eur Heart J / Article	<ul style="list-style-type: none"> • Investigated the characteristics and clinical significance of myocardial injury in patients with severe COVID-19. • Enrolled 671 eligible hospitalized patients with severe COVID-19 from 1 Jan to 23 Feb 2020, with a median age of 63 years. Clinical, laboratory, and treatment data were collected and compared between patients who died and survivors. Risk factors of death and myocardial injury were analysed using multivariable regression models. • A total of 62 patients (9.2%) died, who more often had myocardial injury (75.8% vs. 9.7%; $P < 0.001$) than survivors. The risk of in-hospital death among patients with severe COVID-19 can be predicted by markers of myocardial injury, and was significantly associated with senior age, inflammatory response, and cardiovascular comorbidities.

07.05.2020	Gastrointestinal and Hepatic Manifestations of 2019 Novel Coronavirus Disease in a Large Cohort of Infected Patients From New York: Clinical Implications	Gastroenterology / Article	<ul style="list-style-type: none"> • 1059 patients diagnosed with COVID-19 with a mean age of 61(SD 18) years (58% male) were included in the study. • In summary, they found that COVID-19 patients commonly exhibit GI manifestations. Liver injury was also commonly seen on initial presentation, and was independently associated with poor clinical outcomes. These results provide clarification of the diagnosis of patients with COVID-19, and can be considered in risk stratification.
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Epidemiology and clinical – other

Publication Date	Title/URL	Journal/ Article type	Digest
11.05.2020	Preliminary Estimate of Excess Mortality During the COVID-19 Outbreak — New York City, March 11–May 2, 2020	MMWR Morb Mortal Wkly Rep / Report	<ul style="list-style-type: none"> • During March 11–May 2, 2020, a total of 32,107 deaths were reported to DOHMH; of these deaths, 24,172 were found to be in excess of the seasonal expected baseline. Included in the 24,172 deaths were 13,831 (57%) laboratory-confirmed COVID-19–associated deaths and 5,048 (21%) probable COVID-19–associated deaths, leaving 5,293 (22%) excess deaths that were not identified as either laboratory-confirmed or probable COVID-19–associated deaths. • The 5,293 excess deaths not identified as confirmed or probable COVID-19–associated deaths might have been directly or indirectly attributable to the pandemic. The percentages of these excess deaths that occurred in persons infected with SARS-CoV-2 or resulted from indirect impacts of the pandemic are unknown and require further investigation.
11.05.2020	SARS-CoV-2 Transmission from Presymptomatic Meeting Attendee, Germany	Emerg Infect Dis / Research Letter	<ul style="list-style-type: none"> • During a meeting in Munich, Germany, a pre-symptomatic attendee with severe acute respiratory syndrome coronavirus 2 infected at least 11 of 13 other participants. Although 5 participants had no or mild symptoms, 6 had typical coronavirus disease, without dyspnoea. The findings suggest hand shaking and face-to-face contact as possible modes of transmission.
07.05.2020	Racial and Ethnic Disparities in Population Level Covid-19 Mortality	medRxiv (not peer reviewed) / Article	<ul style="list-style-type: none"> • Cross-sectional study using publicly-reported Covid-19 mortality data to assess quality of race and ethnicity data (Black, Latinx, white), and estimated age-adjusted disparities. • Only 28 states, and NYC, reported race and ethnicity-stratified Covid-19 mortality; large variations in missing data by state. Aggregated relative risk of death estimates for Black 3.57 (95% CI:

			<p>2.84-4.48), Latinx population 1.88 (95% CI: 1.61-2.19) times higher risk than white patients.</p> <ul style="list-style-type: none"> • Need to adjust for age differences across population groups to prevent underestimating disparities in younger population groups.
07.05.2020	Low albumin levels are associated with poorer outcomes in a case series of COVID-19 patients in Spain: a retrospective cohort study	medRxiv (not peer reviewed) / Article	<ul style="list-style-type: none"> • Retrospective observational study of 52 hospitalized patients, 48 with complete demographic information COVID-19. Lower albumin levels were associated with poor prognosis measured as longer hospital length ($r = -0.472$, $p < .001$) and mortality ($r = -0.424$, $p = .003$). • Critically ill COVID-19 patients present lymphopenia, hypoalbuminemia and high levels of inflammation. Lower levels of albumin were associated with poorer outcomes. Albumin might be of importance because of its association with disease severity for COVID-19 patients.
07.05.2020	Characteristics of 1,573 healthcare workers who underwent nasopharyngeal swab for SARS-CoV-2 in Milano, Lombardy, Italy	medRxiv (not peer reviewed) / Article	<ul style="list-style-type: none"> • Italian HCW group exposed to confirmed cases of COVID-19. 138 tested positive from 1,573 HCWs (8.8%), with a marked difference between symptomatic (20.2%) and asymptomatic (3.7%) subjects ($p < 0.001$). • Physicians had highest frequency of positive tests (10.6%); clerical workers and technicians lowest (2.9%). • Presence of symptoms, especially taste and smell alterations and fever associated with COVID-19 infection. Median time to clear the virus from nasopharynx was 23 days.
07.05.2020	Relationship between odor intensity estimates and COVID-19 population prediction in a Swedish sample	medRxiv (not peer reviewed) / Article	<ul style="list-style-type: none"> • Online survey of 2440 Swedes: how intense common household odours are perceived and symptoms of COVID-19; average odour intensity ratings then compared to predicted COVID-19 population prevalence over time in Swedish population and were found to closely track each other ($r = -0.83$). • Large difference in rated intensity between individuals with and without COVID-19 symptoms and number of symptoms was related to odour intensity ratings. Individuals progressing from reporting no symptoms to subsequently reporting COVID-19 symptoms demonstrated a large drop in olfactory performance. • Data suggest that measures of odour intensity, from large and representative sample, can be used as an indicator of COVID-19 disease in general population. Includes importance as a fast early response before wide-spread testing can be facilitated.
05.05.2020	Screening of SARS-CoV-2 among homeless people, asylum seekers and	medRxiv (not peer reviewed) / Article	<ul style="list-style-type: none"> • March-April survey: SARS-CoV-2 carriage assessed for 411 homeless, 77 asylum-seekers, 58 people living in precarious conditions, 152

	other people living in precarious conditions in Marseille, France, March April 2020		<p>employees in these accommodation centres.</p> <ul style="list-style-type: none"> • 49 (7.0%) people positive for SARS-CoV-2, including 37 homeless individuals (9.0%), 12 employees (7.9%). • For homeless, being young (18-34 years) (OR: 3.83 [1.47-10.0], p=0.006) and housed in one specific shelter (OR: 9.13 [4.09-20.37], p<0.0001) were independent factors associated with SARS-CoV-2 positivity rates (11.4% and 20.6%, respectively). Survey reveals the role of collective housing in relation to viral transmission within centres.
08.05.2020	Clinical and histological characterization of vesicular COVID-19 rashes: A prospective study in a tertiary care hospital	Clin Exp Dermatol / Research study	<ul style="list-style-type: none"> • Prospective observational study of 24 patients diagnosed with COVID-19 and vesicular lesions. • A disseminated pattern was found in 18 patients (75%), and a localized pattern was found in 6 patients (25%). The median duration of the skin rash was of 10 days. Out of all, 19 patients (79.2%) presented the skin rash after the onset of COVID-19 symptoms. • Histologic examination in two patients was consistent with viral infection, SARS-CoV-2 was not detected in four patients. <p><i>There have been multiple case reports on dermatological symptoms among COVID-19 patients.</i></p>
03.05.2020	Temperature and relative humidity are not major contributing factor on the occurrence of COVID-19 pandemic: An observational study in 57 countries	medRxiv (not peer reviewed) / Article	<ul style="list-style-type: none"> • To determine the effect of daily average temperature and average relative humidity on log-transformed total daily cases of COVID-19, polynomial regression as a quadratic term and linear regression were done. Linear regression analysis was also carried out to explore the same effect on selected countries. • The study observed no correlation between the climatic conditions (the daily average temperature and relative humidity) and the number of cases of COVID-19. Similar result was found in relation between daily average temperature and average number of cases per day in country-wise analysis. However, about 93.5% cases of COVID-19 occurred between 1C to 16C and the average number of cases per day was lower in high temperature country than low temperature country with exceptions.

Treatment

Publication Date	Title/URL	Journal/ Article type	Digest
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11.05.2020	Association of Treatment With Hydroxychloroquine or Azithromycin With In-Hospital Mortality in Patients With COVID-19 in New York State	Jama / Original Investigation	<ul style="list-style-type: none"> • Among 1438 hospitalized patients with a diagnosis of COVID-19 (858 [59.7%] male, median age, 63 years), those receiving hydroxychloroquine, azithromycin, or both were more likely than those not receiving either drug to have diabetes, respiratory rate >22/min, abnormal chest imaging findings, O2 saturation lower than 90%, and aspartate aminotransferase greater than 40 U/L. • Concluded that among patients hospitalized in metropolitan New York with COVID-19, treatment with hydroxychloroquine, azithromycin, or both, compared with neither treatment, was not significantly associated with differences in in-hospital mortality. However, the interpretation of these findings may be limited by the observational design.
03.05.2020	Tocilizumab for the treatment of severe COVID-19 pneumonia with hyperinflammatory syndrome and acute respiratory failure: A single center study of 100 patients in Brescia, Italy	Autoimmun Rev / Case series	<ul style="list-style-type: none"> • Prospective series of 100 consecutive patients with confirmed COVID-19 pneumonia and ARDS requiring ventilatory support, to determine whether intravenous administration of tocilizumab (TCZ), a monoclonal antibody that targets the interleukin 6 receptor, was associated with improved outcome. • Overall at 10 days, the respiratory condition was improved or stabilized in 77 (77%) patients, of whom 61 showed a significant clearing of diffuse bilateral opacities on chest x-ray and 15 were discharged from the hospital. Respiratory condition worsened in 23 (23%) patients, of whom 20 (20%) died. • During the 10-day follow-up, three cases of severe adverse events were recorded: two patients developed septic shock and died, one had gastrointestinal perforation requiring urgent surgery and was alive at day 10.
05.05.2020	Early treatment of COVID-19 patients with hydroxychloroquine and azithromycin: A retrospective analysis of 1061 cases in Marseille, France	Travel Med Infect Dis / Article	<ul style="list-style-type: none"> • Retrospectively report on 1061 SARS-CoV-2 positive tested patients treated with HCQ (200 mg three times daily for ten days) + AZ (500 mg on day 1 followed by 250 mg daily for the next four days) for at least three days. • Concluded that administration of the HCQ+AZ combination before COVID-19 complications occur is safe and associated with very low fatality rate in patients.
08.05.2020	Hydroxychloroquine and azithromycin plus zinc vs hydroxychloroquine and azithromycin alone: outcomes in hospitalized COVID-19 patients	medRxiv (not peer reviewed) / Article	<ul style="list-style-type: none"> • Retrospective observational study to compare hospital outcomes among patients who received hydroxychloroquine and azithromycin plus zinc versus hydroxychloroquine and azithromycin alone. • The addition of zinc sulfate did not impact the length of hospitalization, duration of ventilation, or ICU duration. In univariate

		<p>analyses, zinc sulfate increased the frequency of patients being discharged home, and decreased the need for ventilation, admission to the ICU, and mortality or transfer to hospice for patients who were never admitted to the ICU.</p> <ul style="list-style-type: none"> • After adjusting for the time at which zinc sulfate was added to our protocol, an increased frequency of being discharged home reduction in mortality or transfer to hospice remained significant. This study provides the first in vivo evidence that zinc sulfate in combination with hydroxychloroquine may play a role in therapeutic management for COVID-19.
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Social sciences

Publication Date	Title/URL	Journal/ Article type	Digest
07.05.2020	Clinical and behavioural characteristics of self-isolating healthcare workers during the COVID-19 pandemic: a single-centre observational study	medRxiv (not peer reviewed) / Article	<ul style="list-style-type: none"> • UK cross-sectional, single-centre study describing a cohort of 236 self-isolating healthcare workers (HCWs) with presumed COVID-19. • There was a significant increase in staff reporting illness compatible with possible COVID-19 during March 2020. Conclusions cannot be drawn about exact numbers of confirmed cases due to lack of diagnostic swabbing. There were significant numbers of respondents reporting anosmia; as well as early non-specific illness prior to onset of cough and fever. This may represent pre-symptomatic HCWs who are likely to be infectious and thus criteria for isolation and swabbing should be broadened. • The study also revealed concerning lack of healthcare seeking in respondents with significant red flag symptoms (severe breathlessness, hypoxia). This should be addressed urgently to reduce risk of severe disease being detected late. Finally, this study should inform trusts that HCWs may require longer than 7 days off work to recover from illness.

Miscellaneous

Publication Date	Title/URL	Journal/ Article type	Digest
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11.05.2020	Original research: How accurate are digital symptom assessment apps for suggesting conditions and urgency advice?: a clinical vignettes comparison to GPs	medRxiv (not peer reviewed) / Article	<ul style="list-style-type: none"> • Compares breadth of condition coverage, accuracy of suggested conditions, appropriateness of urgency advice between 8 popular symptom assessment apps and 7 GPs. • Performance of apps in relation to these measures reported. For safe urgency advice, tested GPs had an average of 97.0±2.5%. For the vignettes with advice provided, only three apps had safety performance within 1 S.D. of the GPs (mean) - Ada: 97.0%; Babylon: 95.1%; Symptomate: 97.8%. • While no digital tool outperformed GPs, some came close, and the nature of iterative improvements to software offers scalable improvements to care.
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Modelling

Publication Date	Title/URL	Journal/ Article type	Digest
08.05.2020	Report 21 - Estimating COVID-19 cases and reproduction number in Brazil	Imperial College / Report	<ul style="list-style-type: none"> • This report describes the Brazilian epidemic using three epidemiological measures: the number of infections, the number of deaths and the reproduction number.
08.05.2020	Age-stratified model of the COVID-19 epidemic to analyze the impact of relaxing lockdown measures: nowcasting and forecasting for Switzerland	medRxiv (not peer reviewed) / Article	<ul style="list-style-type: none"> • The authors propose an age-stratified discrete compartment model as an alternative to differential equation based S-I-R type of models. The model captures the highly age-dependent progression of COVID-19 and is able to describe the day-by-day advancement of an infected individual in a modern health care system.
07.05.2020	Social Distancing is Effective at Mitigating COVID-19 Transmission in the United States	medRxiv (not peer reviewed) / Article	<ul style="list-style-type: none"> • Decentralized government, complex dynamics of human mobility, variable intensity of local outbreaks makes assessing effect of large-scale social distancing a challenge. • Authors generate a novel metric to represent social distancing behaviour derived from mobile phone data, and examine its relationship with county level COVID-19 case reports. • Analysis reveals social distancing strongly correlated with decreased COVID-19 case growth rates for 25 most affected U.S. counties, with lag period consistent with incubation time.
07.05.2020	Mobility trends provide a leading indicator of changes in SARS-CoV-2 transmission	medRxiv (not peer reviewed) / Article	<ul style="list-style-type: none"> • Incorporating Apple Maps mobility data into an epidemiological model of daily deaths and hospitalizations allowed authors to estimate an explicit relationship between human mobility and transmission in U.S. • Reduced mobility explains large decrease in effective reproductive

number attained by April 1st, and further identify state-to-state variation in inferred transmission-mobility relationship.

- Simply relaxing stay-at-home orders can rapidly lead to outbreaks exceeding scale of transmission to date. Findings provide quantitative guidance on the impact policies must achieve against transmission to safely relax social distancing measures.

Guidance, consensus statements and hospital resources

Publication Date	Title/URL	Journal/ Article type
06.05.2020	NG175: COVID-19 rapid guideline: acute kidney injury in hospital	NICE / Rapid guideline

Reviews, comments and editorials

Publication Date	Title/URL	Journal/ Article type
11.05.2020	SARS-CoV-2 (COVID-19): What do we know about children? A systematic review	Clin Infect Dis / Review
11.05.2020	COVID-19 and Health Equity-A New Kind of "Herd Immunity"	Jama / Editorial
11.05.2020	COVID-19 and Racial/Ethnic Disparities	Jama / Viewpoint
11.05.2020	COVID-19 and Postinfection Immunity: Limited Evidence, Many Remaining Questions	JAMA / Viewpoint
11.05.2020	Coagulation abnormalities and thrombosis in patients with COVID-19	The Lancet Haematology / Comment
11.05.2020	Preventing non-COVID-19 hospital admissions during a pandemic: a rapid overview of the evidence for high-value medications	Oxford COVID-19 Evidence Service / Rapid overview
12.05.2020	Use of Corticosteroids in Coronavirus Disease 2019 Pneumonia: A Systematic Review of the Literature	Front Med / Article
11.05.2020	COVID-19 Clinical Trials Report Card: Remdesivir	Oxford COVID-19 Evidence Service / Report Card
11.05.2020	COVID-19 Clinical Trials Report Card: Chloroquine and Hydroxychloroquine	Oxford COVID-19 Evidence Service / Report Card
07.05.2020	Chloroquine and hydroxychloroquine effectiveness in human subjects during coronavirus: a systematic review	medRxiv (not peer reviewed) / Article

Produced by the PHE COVID-19 Literature Digest Team

Bláthnaid Mahon, Caroline De Brún, Nicola Pearce-Smith, Ruth Muscat, Rachel Gledhill, Emma Farrow, Cath Hayes