Public Health England

International EPI Cell Daily Evidence Digest – 19/05/2020

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
- Serology and immunology
- Genomics
- Epidemiology and clinical - children and pregnancy
- Epidemiology and clinical - risk factors
- Epidemiology and clinical - other
- Infection control
- Treatment
- Social sciences
- Miscellaneous
- Modelling
- 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Please note that we are including preprints (highlighted in red), which are preliminary reports of work that have NOT been peer-reviewed.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
16.05.2020	Recurrence of COVID-19 after recovery: a case report from Italy	Infection / Correspondence	• Case study of 48-year-old man; nasopharyngeal swab collected on Mar 18 positive. • Two nasopharyngeal swabs on Mar 30 and 31 both negative. Molecular test also negative at follow-up visit on Apr 15. Two

			serological assays revealed the presence of IgM and IgG anti-SARS-CoV-2. • On April 30, patient returned with new symptoms, SARS-CoV-2 molecular test was positive. Moreover, serological assay revealed the presence of only IgG anti-SARS-CoV-2. • Case described points to a real reactivation of the infection since the molecular test became positive again following three previous negative tests in one month.
17.05.2020	Factors associated with duration of viral shedding in adults with COVID-19 outside of Wuhan, China: A retrospective cohort study	International Journal of Infectious Diseases / Article	• Study with relatively large sample size that mainly focused on the duration of viral shedding and relevant factors in patients with COVID-19 outside of Wuhan, China. Potential risk factors were identified and should be taken into consideration for the strategy of quarantine of infected patients.
15.05.2020	The Presence of COVID-19 in Urine: A Systematic Review and Meta-analysis of the Literature	medRxiv (not peer reviewed) / Article	• Review of 33 studies which investigated urinary viral shedding of COVID-19 in infected patients: 19 case reports, 13 case series, one cohort. Urinary samples from 430 patients. • Ten studies reported urinary COVID-19 in samples from 16 patients. Rate of COVID-19 presence in urinary samples was 3.7%. Urinary viral load was low in most reports. • Presence of virus in urine was not related to the disease course of the illness. • Highlights low frequency of COVID-19 presence in urine of infected individuals and potential of isolated virus for cytopathic effects.
18.05.2020	Viral loads in throat and anal swabs in children infected with SARS-CoV-2	Emerg Microbes Infect / Article	• Findings revealed that RT-PCR-testing on throat and anal swabs showed significant difference for monitoring SARS-CoV-2 infection and correlated with different immune state in paediatric patients.
18.05.2020	A Composite Reference Standard for COVID-19 Diagnostic Accuracy Studies: a roadmap	Oxford COVID-19 Evidence Service / Roadmap	• Developed a composite reference standard for COVID-19 diagnosis to support a standardised approach across research groups to decrease the high false negative rate of rRT-PCR that could penalise the evaluation of diagnostic accuracy of new tests if rRT-PCR is used as a stand-alone reference standard.

Serology and immunology

Publication Date	Title/URL	Journal/ Article type	Digest

18.05.2020	Seroprevalence of SARS-CoV-2–Specific Antibodies Among Adults in Los Angeles County, California, on April 10-11, 2020	JAMA / Research letter	• Conducted serologic tests in a community sample to estimate cumulative incidence of SARS-CoV-2 infection, as serologic tests identify both active and past infections. • Tested for SARS-CoV-2–specific antibodies using a lateral flow immunoassay test (Premier Biotech). Residents of Los Angeles County, California, within a 15-mile radius of the testing site were eligible for participation. • The prevalence of antibodies to SARS-CoV-2 was 4.65%. The estimate implies that approximately 367 000 adults had SARS-CoV-2 antibodies, which is substantially greater than the 8430 cumulative number of confirmed infections in the county on April 10.
18.05.2020	Detection of IgM and IgG antibodies against SARS-CoV-2 in patients with autoimmune diseases	The Lancet Rheumatology / Correspondence	• The serological test that was assessed showed no cross-reactivity with autoantibodies present in patients with autoimmune disease. • Asymptomatic carriers could spread SARS-CoV-2,5 and this type of test could make large scale screening of asymptomatic SARS-CoV-2 carriers possible. • They propose that serological testing of IgM and IgG antibodies, along with RT-PCR, in clinical practice should help provide an accurate COVID-19 diagnosis, including in patients with autoimmune disease.
12.05.2020	Perceived versus proven SARS-CoV-2 specific immune responses in health care workers	medRxiv (not peer reviewed) / Article	• Baseline results of CVOID-19 Contact (CoCo) Study: follows 217 frontline healthcare workers at a university hospital, performs weekly SARS-CoV-2 specific serology (IgA/IgG). • Participants estimated their personal likelihood of having had a SARS-CoV-2 infection with a mean of 20.9% (range 0 to 90%). In contrast, anti-SARS-CoV-2-IgG prevalence was in the range of 1-2% among health care workers. • Low rates of SARS-CoV-2 specific IgG in healthcare workers in Northern Germany are in sharp contrast to the high personal risk perception.
11.05.2020	Distinct systems serology features in children, elderly and COVID patients	medRxiv (not peer reviewed) / Article	• Cross-reactivity of coronavirus antibody responses of healthy children (n=89), adults (n=98), elderly (n=57), and COVID-19 patients (n=19) analysed by systems serology. • Vastly different serological signatures between healthy children - with elevated SARS-CoV-2 IgM, including receptor binding domain-specific IgM with higher avidity - and elderly, with markedly higher cross-reactive SARS-CoV-2 IgA and IgG. • Results suggest less-experienced humoral immunity associated with higher IgM, as observed in children, has potential to induce more potent antibodies upon SARS-CoV-2 infection.
15.05.2020	Symptomatic SARS-CoV-2 infections display specific IgG Fc structures	medRxiv (not peer reviewed) / Article	• Sera obtained between Mar 30th, 2020 to Apr 19th, 2020 from adult COVID-19 patients (n=225) and from children (n=802) without a COVID-19 diagnosis were assayed

			• COVID-19 adults produce IgG antibodies with a specific Fc domain repertoire characterized by reduced fucosylation; a modification that enhances interactions with activating FcγR, FcγRIIIa. Fc fucosylation was reduced when compared with SARS-CoV-2-seropositive children and relative to adults with symptomatic influenza virus infections. • Results demonstrate an antibody correlate of symptomatic SARS-CoV-2 infections in adults and have implications for novel therapeutic strategies targeting FcγRIIIa pathways.
18.05.2020	Cross-neutralization of SARS-CoV-2 by a human monoclonal SARS-CoV antibody	Nature / Article	• Describe multiple monoclonal antibodies targeting SARS-CoV-2 S identified from memory B cells of an individual who was infected with SARS-CoV in 2003. • One antibody, named S309, potently neutralizes SARS-CoV-2 and SARS-CoV pseudoviruses as well as authentic SARS-CoV-2 by engaging the S receptor-binding domain.
17.05.2020	Potent neutralizing antibodies against SARS-CoV-2 identified by high-throughput single-cell sequencing of convalescent patients' B cells	Cell / Article	• Report the rapid identification of SARS-CoV-2 neutralizing antibodies by high-throughput single-cell RNA and VDJ sequencing of antigen-enriched B cells from 60 convalescent patients. • From 8,558 antigen-binding IgG1+ clonotypes, 14 potent neutralizing antibodies were identified with the most potent one, BD-368-2, exhibiting an IC50 of 1.2 ng/mL and 15 ng/mL against pseudotyped and authentic SARS-CoV-2, respectively.
14.05.2020	Modulation of immune crosstalk in COVID-19	Nat Rev Immunol / In brief	• A cluster of highly proliferative T cells and NK cells was enriched, with immune checkpoint as well as interferon-stimulated genes uniquely upregulated in NK cells. • Collectively, these results indicate that dysregulation of immune crosstalk is associated with severity of COVID-19.
14.05.2020	SARS-CoV-2 likes it cool	Nat Rev Immunol / In brief	• Transcriptional analysis of SARS-CoV-2-infected human airway epithelial cells suggested that stronger and earlier induction of an innate immune programme at 37 °C could explain the enhanced SARS-CoV-2 replication at 33 °C. • The evaluation of how temperature impacts interferon responses in a larger number of donors will be essential to understand its effect on SARS-CoV-2 transmissibility and may open new avenues for therapy.

Genomics

Publication Date	Title/URL	Journal/ Article type	Digest
18.05.2020	Does the human placenta express the canonical cell entry mediators for SARS-CoV-2?	bioRxiv (non-peer reviewed) / article	• Builds on earlier study (Pique-Regi, 2019) and new placenta single-cell/nuclei RNA-sequencing data. Investigate expression of ACE2 and TMPRSS2 throughout pregnancy and in third-trimester chorioamniotic membranes. • Co-transcription of ACE2 and TMPRSS2 is negligible, so unlikely path of SARS-CoV-2 vertical transmission at any stage of pregnancy. In contrast, receptors for Zika virus and cytomegalovirus which cause congenital infections are highly expressed by placental cell types. • Data suggest that SARS-CoV-2 is unlikely to infect the human placenta through the canonical cell entry mediators.
25.05.2020	Non-neuronal expression of SARS-CoV-2 entry genes in the olfactory system suggests mechanisms underlying COVID-19-associated anosmia	bioRxiv (non-peer reviewed) / article	• Authors identify cell types in olfactory epithelium and olfactory bulb that express SARS-CoV-2 cell entry molecules. Bulk sequencing revealed that mouse, non-human primate and human olfactory mucosa expresses two key genes involved in CoV-2 entry, ACE2 and TMPRSS2. • Single cell sequencing and immunostaining demonstrated ACE2 expression in support cells, stem cells, and perivascular cells; in contrast, neurons in both the olfactory epithelium and bulb did not express ACE2 message or protein. • Findings suggest that CoV-2 infection of non-neuronal cell types leads to anosmia and related disturbances in odour perception in COVID-19 patients.
12.05.2020	COVID-19 genomic susceptibility: Definition of ACE2 variants relevant to human infection with SARS-CoV-2 in the context of ACMG/AMP Guidance	medRxiv (not peer reviewed) / Article	• Genomic structure and variants in 213,158 exomes/genomes were integrated for ACE2 encoding the SARS-CoV-2 receptor. ACMG/AMP-based pathogenicity criteria were applied. • Across 19 ACE2 exons on X chromosome, 9 of 3596 (0.25%) nucleotides were homozygous variant in females compared to 262/3596 (7.3%) hemizygous variant in males ($p < 0.0001$). 90% of variants were very rare, although K26R affecting a SARS-CoV-2-interacting amino acid is present in ~1/239 people. • Males more likely to exhibit consequences from a single variant ACE2 allele. Differential allele frequencies in COVID-19 susceptible and resistant individuals are likely to emerge before variants meet ACMG/AMP criteria for actionable results in patients.

Epidemiology and clinical – children and pregnancy

Publication Date	Title/URL	Journal/ Article type	Digest
18.05.2020	First Covid-19 maternal mortality in the UK associated with thrombotic complications	Br J Haematol / Letter	• Reports the first maternal death of a 29-year woman of Pakistani origin at Birmingham Heartlands Hospital, UK on the 8 April 2020. She had a body mass index (BMI) of 35, type 2 diabetes mellitus on metformin and insulin, renal tubular acidosis, asthma and vitamin D deficiency. • In her first pregnancy, she had a stillborn baby. At her first antenatal (booking) visit, her glycated haemoglobin was 9.7%. She also had a high albumin creatinine ratio but with normal kidney function.

Epidemiology and clinical - risk factors

Publication Date	Title/URL	Journal/ Article type	Digest
13.05.2020	Cardiac troponins predict mortality in patients with COVID-19: A meta-analysis of adjusted risk estimates	J Infect / Meta-analysis	• Concluded that troponin positivity is common in hospitalised COVID-19 patients, and may serve as an additional risk stratification tool in everyday clinical setting. • These results are of prognostic importance, since patients with elevated troponins have higher risk of in-hospital mortality, are more prone to deterioration during hospital stay and so deserve more focused clinical attention.
18.05.2020	The association between severe COVID-19 and low platelet count: evidence from 31 observational studies involving 7613 participants	Br J Haematol / Meta-analysis	• Conducted a meta-analysis to clarify whether platelet count might be a potential indicator to evaluate and predict the severity of COVID-19. • Concluded that when compared to the non-severe COVID-19 patients, the patients with severe COVID-19 had a lower platelet count. The non-survivors had a much lower platelet count than the survivors. Thrombocytopenia might be a risk factor for COVID-19 progressing into a more severe state.
14.05.2020	Impacts of immunosuppression and immunodeficiency on COVID-19: a systematic review and meta-analysis	J Infect / Systematic review	• Conducted a systematic review and meta-analysis to quantitatively assess whether immunosuppression and immunodeficiency are associated with increased risk of severe disease and death in patients with COVID-19. • Concluded that immunosuppression and immunodeficiency were associated with increased risk of severe COVID-19 disease, although the statistical differences were not significant.

15.05.2020	Risk of severe illness from COVID-19 in patients with metabolic dysfunction-associated fatty liver disease and increased fibrosis scores	Gut / Letter	• In cohort of 310 confirmed cases of COVID-19, 94 (30.3%) patients had metabolic dysfunction-associated fatty liver disease (MAFLD). • Data demonstrate that patients with MAFLD with increased FIB-4 or NFS are at higher likelihood of having severe COVID-19 illness, irrespective of metabolic comorbidities. • Presence of MAFLD with significant/advanced fibrosis might exacerbate virus-induced cytokine 'storm', possibly through hepatic release of multiple proinflammatory cytokines, thereby contributing mechanistically to severe COVID-19.
12.05.2020	Covid-19 by Race and Ethnicity: A National Cohort Study of 6 Million United States Veterans	medRxiv (not peer reviewed) / Article	• Retrospective cohort study: 5,834,543 individuals in care, of whom 62,098 tested and 5,630 tested positive for Covid-19. Self-reported race/ethnicity. • Black and Hispanic individuals more likely to be tested for Covid-19 (tests per 1000: white=9.0, [95% CI 8.9 to 9.1]; black=16.4, [16.2 to 16.7]; and Hispanic=12.2, [11.9 to 12.5]). • Individuals from minority backgrounds more likely to test positive (black vs white: OR 1.96, 95% CI 1.81 to 2.12; Hispanic vs white: OR 1.73, 95% CI 1.53 to 1.96), but 30-day mortality did not differ by race/ethnicity (black vs white: OR 0.93, 95% CI 0.64 to 1.33; Hispanic vs white: OR 1.07, 95% CI 0.61 to 1.87).
14.05.2020	Assessing Differential Impacts of COVID-19 on Black Communities	Ann Epidemiol / Article	• Nearly twenty-two percent of US counties are disproportionately black and they accounted for 52% of COVID-19 diagnoses and 58% of COVID-19 deaths nationally. • County-level comparisons can both inform COVID-19 responses and identify epidemic hot spots. Social conditions, structural racism, and other factors elevate risk for COVID-19 diagnoses and deaths in black communities.
15.05.2020	Extremely High Incidence of Lower Extremity Deep Venous Thrombosis in 48 Patients with Severe COVID-19 in Wuhan	Circulation / Article	• Found an extremely high incidence of lower extremity DVT developed in critically ill COVID-19 patients. • More attention should be paid to the prevention and clinical management of PE and DVT. Timely evaluation of DVT and preventive measures against PE are necessary for the treatment of patients with severe COVID-19.
14.05.2020	Dyspnea rather than fever is a risk factor for predicting mortality in patients with COVID-19	J Infect / Article	• Showed that fever was not significantly associated with the risk of mortality in COVID-19 patients. In addition, the study suggested that dyspnoea was positively associated with the risk of mortality in COVID-19 patients. • Taken together, dyspnoea, rather than fever, is recommended as an indicator of poor outcome in COVID-19 patients, further well-designed studies with larger sample sizes are needed to validate the findings of the current study.
11.05.2020	Systematic Review and Meta-Analysis of Sex-Specific COVID-19 Clinical Outcomes	medRxiv (not peer reviewed) / Article	• Results of meta-analysis of 31 research articles indicated that males constituted a significantly higher proportion of those who had adverse clinical outcomes and died from COVID-19.

			• As coronavirus spread from East to West, male sex remained a consistent risk factor. Results support establishment of male sex as an important risk factor for COVID-19.

Epidemiology and clinical – other

Publication Date	Title/URL	Journal/ Article type	Digest
19.05.2020	Surveillance of COVID-19 at long-term care facilities in the EU/EEA	European Centre for Disease Control and Prevention / Technical report	• The high COVID-19 morbidity and mortality observed among residents in long-term care facilities (LTCF) in EU/EEA countries poses a major challenge for disease prevention and control in such settings. • It is of paramount importance to be able to rapidly identify, assess and control COVID-19 outbreaks in LTCFs in order to protect this particularly fragile population. This document provides guidance for EU/EEA Member States planning to implement monitoring systems at LTCFs and describes the surveillance objectives.
15.05.2020	Severe Covid-19	N Engl J Med / Clinical practice	• Evaluation and Management of Severe Covid-19.
15.05.2020	Cutaneous Manifestations of COVID-19: A Preliminary Review	J Am Acad Dermatol / Review	• Systematically reviewed published and preprint articles describing cutaneous symptoms associated with COVID-19 presentation. • 46 articles met inclusion criteria, with a pooled total of 997 unique patients from 9 countries with skin manifestations related to COVID-19. • The most commonly reported skin finding was chilblain-like lesions (400, 40.1%), followed by maculopapular lesions (230, 23.1%), vesicular lesions (101, 10.1%), urticarial lesions (87, 21.8%), livedoid/necrotic lesions (23, 2.3%), and other/non-descript rashes/skin lesions (197, 19.8%).
12.05.2020	Factors affecting COVID-19 outcomes in cancer patients – A first report from Guys Cancer Centre in London	medRxiv (not peer reviewed) / Article	• Data from large UK Cancer Centre to assess demographic/clinical characteristics of 106 cancer patients: 87(82%) with mild/moderate COVID-19; 19 (18%) with severe disease. • Age, sex, ethnicity, SES, and current cancer treatment were not associated with COVID-19 severity. • Initial diagnosis of cancer >24m before COVID-19 (OR:3.01 (95%CI: 1.02-8.58)), presenting with fever, dyspnoea, gastro-intestinal symptoms, or higher levels of CRP and ferritin were linked with greater COVID-19 severity. During median follow-up of 17.5d, 14 patients had died of COVID-19(13%). • Low SES, hypertension and non-malignant lung disease common. As with

			general population, advanced age and comorbidities associated with increased risk of COVID-19 death.
03.05.2020	A systematic review and meta-analysis of published research data on COVID-19 infection-fatality rates	medRxiv (not peer reviewed) / Article	• Infection-fatality rate (IFR) differs from case-fatality rate (CFR) as estimate of number of deaths as proportion of total cases, including those who are mild and asymptomatic. • 13 estimates of IFR from wide range of countries, published Feb - April 2020. Meta-analysis demonstrated a point-estimate of IFR of 0.75% (0.49-1.01%) with significant heterogeneity ($p<0.001$). • Due to very high heterogeneity in the meta-analysis, it is difficult to know if this represents the "true" point estimate.
17.05.2020	Spontaneous Bleedings in COVID-19 Patients: An Emerging Complication	Cardiovasc Intervent Radiol / Letter	• Over the past 4 days, four consecutive COVID-19 patients with spontaneous bleeding underwent endovascular embolization in the authors centre. • All cases were successfully managed by coil embolization. • Should take into account also a possible risk of coagulopathy and spontaneous bleeding, which would require active involvement of IRs in an emergency setting.
18.05.2020	Ocular manifestations and clinical characteristics of 535 cases of COVID-19 in Wuhan, China: a cross-sectional study	Acta Ophthalmol / Article	• Of 535 patients, 27 patients (5.0%) presented with conjunctival congestion and 4 patients had conjunctival congestion as the initial symptom. • Conjunctival congestion is one of the COVID-19-related ocular symptoms, which could occur as the initial symptoms. Frequent hand-eye contact may be the risk factor for conjunctival congestion in COVID-19 patients.
13.05.2020	Making sense of publicly available data on COVID-19 in Ireland	medRxiv (not peer reviewed) / Article	• Authors evaluate government policies enacted using evidence obtained from a number of novel sources, including census and real-time traffic data. • Evidence suggests COVID-19 mostly been confined to Dublin and its commuter belt. Also clusters associated with nursing homes and workplaces remained open during delay phase. • This evidence is used to hypothesise on the likely impact of the pandemic on high density and poor neighbourhoods in Dublin.
13.05.2020	Air pollution reduction and mortality benefit during the COVID-19 outbreak in China	Lancet Planet Health / Comment	• Examined the change in air pollution and the potentially avoided cause-specific mortality during this large-scale quarantine. • Estimates suggest that interventions to contain the COVID-19 outbreak led to improvements in air quality that brought health benefits in non-COVID-19 deaths, which could potentially have outnumbered the confirmed deaths attributable to COVID-19 in China (4633 deaths as of May 4, 2020).

Infection control

Publication Date	Title/URL	Journal/ Article type	Digest
18.05.2020	Detection of Severe Acute Respiratory Syndrome Coronavirus 2 RNA on Surfaces in Quarantine Rooms	Emerg Infect Dis / Dispatch	• Investigated SARS-CoV-2 environmental contamination in 2 rooms of a quarantine hotel after 2 pre-symptomatic persons who stayed there were laboratory-confirmed as having coronavirus disease. • Detected SARS-CoV-2 RNA on 8 (36%) of 22 surfaces, as well as on the pillow cover, sheet, and duvet cover.
14.05.2020	A Novel Cohorting and Isolation Strategy for Suspected COVID-19 Cases during a Pandemic	medRxiv (not peer reviewed) / Article	• Triage tool to minimise hospital acquired COVID-19. 93 patients allocated to triage categories by likelihood of COVID-19 and risk of a poor outcome: Category A (low-likelihood; high-risk), B (high-likelihood; high-risk), C (high-likelihood; low-risk) and D (low-likelihood; low-risk). Determined priority for isolation in single-occupancy rooms; Category A highest. • No symptomatic hospital acquired infections were detected in the cohorted patients. • Application of a clinical triage tool to guide isolation and cohorting decisions may reduce risk of hospital acquired COVID-19 transmission, especially for high risk individuals.
11.05.2020	Accessibility and allocation of public parks and gardens during COVID-19 social distancing in England and Wales	medRxiv (not peer reviewed) / Article	• ONS and Ordnance Survey data used to quantified (i) number of parks within 500 and 1,000 metres of urban postcodes (i.e., availability), (ii) distance of postcodes to nearest park (i.e., accessibility), (iii) per-capita space in each park for people living within 1,000m. Variability by city and share of flats. • Around 25.4 million people can access public parks or gardens within ten-minute walk; 3.8 million live farther away; of these 21% are children and 13% are elderly. • English and Welsh cities can provide access to green space during social distancing; might require measures such as dedicated park times for different age groups or entry allocation systems that, combined with smartphone apps or drones, can monitor and manage the total number of people using the park.
15.05.2020	The differential impact of physical distancing strategies on social contacts relevant for the spread of COVID-19	medRxiv (not peer reviewed) / Article	• First comparative contact survey (N=53,708) across eight countries (Belgium, France, Germany, Italy, Netherlands, Spain, UK, US) for period March 13 - April 13, 2020. • Social contact numbers decreased by 48% - 85% across countries; mainly after governments issued physical distancing guidelines rather than after national lockdown measures. • Except Italy, reductions smaller than in Wuhan but sufficed to bring R0 below

			one in almost every context. Contact numbers decreased more rapidly among older people.

Treatment

Publication Date	Title/URL	Journal/ Article type	Digest
15.05.2020	ACEI/ARB Use and Risk of Infection or Severity or Mortality of COVID-19: A Systematic Review and Meta-analysis	Pharmacol Res / Systematic Review	• Systematically assessed the effects of angiotensin-converting enzyme inhibitors (ACEIs) and angiotensin receptor blockers (ARBs) on the risk of COVID-19 infection and the progression of this disease. • Fourteen articles involving more than 19000 COVID-19 cases were included. • The present study supports current professional society guidelines to not discontinue ACEIs or ARBs in the setting of the COVID-19 pandemic or COVID-19 patients.

Social science

Publication Date	Title/URL	Journal/ Article type	Digest
15.05.2020	Why People Failed to Adhere to COVID-19 Preventive Behaviors? Perspectives from an Integrated Behavior Change Model	Infect Control Hosp Epidemiol / Letter	• Used the integrated model of self-determination theory and the theory of planned behaviour to explain why some individuals fail to adhere to the preventive behaviours of COVID-19.
12.05.2020	Behavioural change towards reduced intensity physical activity is disproportionately prevalent among adults with serious health issues or self-perception of high risk during the UK COVID-19 lockdown	medRxiv (not peer reviewed) / Article	• UK-wide survey of adults aged over 20. Most (60%) participants achieved same level of intensity of physical activity during lockdown as before. • Less intensive physical activity associated with obesity, hypertension, lung disease, depression and disability. Also higher odds of being female, living alone or having no garden, and expressed sentiments about personal or household risks. • Groups reducing physical activity intensity included disproportionate numbers with heightened objective clinical risks or greater tendency to express subjective perceptions of risk. • Exercise for health policy during lockdowns should include strategies to facilitate physical activity in vulnerable groups, including those with both objective and subjective risks.
15.05.2020	Mental health in the UK during the COVID-19 pandemic: early observations	medRxiv (not peer reviewed) / Article	• Increased psychological morbidity was evident in this UK cohort, with younger people and women at particular risk. Interventions targeting

			perceptions of: loneliness, risk of COVID-19, worry about COVID-19, and positive mood may be effective.
14.05.2020	Public attitudes towards COVID-19 contact tracing apps: A UK-based focus group study	medRxiv (not peer reviewed) / Article	• Explore public attitudes to proposed UK COVID-19 contact tracing app, via 5 online focus groups. 22 participants: UK residents, aged 18 and above, ethnic diversity.*9/568+ • Roughly equal split: will use app; will not use app; undecided. Five themes: 1. Lack of information and misconceptions re. COVID-19 contact tracing apps; 2. concerns over privacy; 3. concerns over stigma; 4. concerns over uptake; 5. contact tracing as the 'greater good'. • Four recommendations: communicate via range of methods including social media ads, postal information, text messaging. Emphasise app users cannot identify which contact has reported symptoms; emphasise collective responsibility ('the greater good'); slogan to maximise clarity of message, e.g. 'Download the app, protect the NHS, save lives'.

Modelling

Publication Date	Title/URL	Journal/ Article type	Digest
12.05.2020	The impact of testing and infection prevention and control strategies on within-hospital transmission dynamics of COVID-19 in English hospitals	medRxiv (not peer reviewed) / Article	• Using a within-hospital SEIR transition model of COVID-19 in typical UK hospital, authors predict approximately 20% of inpatient infections, 89% of HCWs infections due to nosocomial transmission. • Placing suspected COVID-19 patients in single rooms or bays potentially reduces patients' hospital-acquired infections by up to 80%. • Periodic testing of HCWs has smaller effect on patients, but reduce infection in HCWs by as much as 64%; results in small proportion of staff absences (approximately 1% per day). This is considerably fewer than currently observed due to suspected COVID-19 and self-isolation.
15.05.2015	Impact of relaxing Covid-19 social distancing measures on rural North Wales: a simulation analysis	medRxiv (not peer reviewed) / Article	• Authors forecast impact of relaxed social distancing rules on rural North Wales. Peak daily death rates in Wales and UK estimated for 14 and 15 April respectively. For North Wales, this occurred on the 07/05/2020, corresponding to the date of analysis. • Policies governing movement of people in gradual release from lockdown likely to impact significantly on areas −principally rural in nature− where cases of Covid-19, deaths and immunity are likely to be much lower than in populated areas. Particularly difficult to manage across jurisdictions (England and Wales), and in popular holiday destinations.

Overviews, comments and editorials

Publication Date	Title/URL	Journal/ Article type
15.05.2020	Thromboembolic Findings in COVID-19 Autopsies: Pulmonary Thrombosis or Embolism?	Ann Intern Med / Editorial
15.05.2020	Covid-19: Cases of inflammatory syndrome in children surge after urgent alert	Bmj
18.05.2020	Silent COVID-19: what your skin can reveal	The Lancet Infectious Diseases / Correspondence

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, Paul Rudd