Public Health England

International EPI Cell Daily Evidence Digest – 01/06/2020

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:

- Serology and immunology
- Diagnostics
- Genomics
- Epidemiology and clinical - children and pregnancy
- Epidemiology and clinical - risk factors
- Epidemiology and clinical - other
- Infection control
- Treatment
- Social sciences
- 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Please note that we are including preprints (highlighted in red), which are preliminary reports of work that have NOT been peer-reviewed.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.

Serology and immunology

Publication Date	Title/URL	Journal/ Article type	Digest
27.05.2020	Proteomic and Metabolomic Characterization of COVID-19 Patient Sera	Cell / Article	• Performed proteomic and metabolomic profiling of sera from 46 COVID-19 and 53 control individuals. • Then trained a machine learning model using proteomic and metabolomic measurements from a training cohort of 18 non-severe and 13 severe patients. • This study revealed characteristic protein and metabolite changes in the sera

			of severe COVID-19 patients, which might be used in selection of potential blood biomarkers for severity evaluation.
30.05.2020	Performance of SARS-CoV-2 antibody assays in different stages of the infection: Comparison of commercial ELISA and rapid tests	J Infect Dis / Research article	• The authors comparatively assessed sensitivities and specificities of four commercial ELISAs and two rapid tests in 77 patients with PCR confirmed SARS-CoV-2 infection, grouped by intervals since symptom onset. • While test sensitivities were low (<40%) within the first 5 days post disease onset, IgM-, IgA- and total antibody-ELISAs increased in sensitivity to >80% between the 6th and 10th day post symptom onset. The evaluated tests (including IgG and rapid tests) provided positive results in all patients at or after the 11th day post onset of disease. • Specificities of the ELISAs were 83% (IgA), 98% (IgG) and 97% (IgM and total antibodies).
25.05.2020	Cumulative incidence and diagnosis of SARS-CoV-2 infection in New York	medRxiv (non-peer reviewed) / Article	• State-wide cross-sectional seroprevalence study to estimate the cumulative incidence of SARS-CoV-2 infection and percent of infections diagnosed in New York State, overall and by region, age, sex, and race and ethnicity. • Among 15,101 adults with suitable dry-blood spot (DBS) specimens, 1,887 (12.5%) were reactive using a validated SARS-CoV-2 IgG microsphere immunoassay (sensitivity 87.9%, specificity 99.75%). • Over 2 million adults were infected through late March 2020, with substantial variations by subpopulations. As this remains below herd immunity thresholds, monitoring, testing, and contact tracing remain essential public health strategies.
29.05.2020	SARS-CoV-2 SEROPREVALENCE AMONG ALL WORKERS IN A TEACHING HOSPITAL IN SPAIN: UNMASKING THE RISK	medRxiv (non-peer reviewed) / Article	• Cross-sectional study (Apr 14th-27th, 2020) of all HCW at Hospital Universitario Fundacion Alcorcon, a second level teaching hospital in Madrid, Spain. SARS-CoV-2 IgG was measured by ELISA. • Among 2919 HCW, 2590 (90.5%) were evaluated. • Mean age was 43.8 years (SD 11.1) and 73.9% were females. 818 (31.6%) workers were IgG positive, with no differences for age, sex or previous diseases. Among them, 48.5% did not report previous symptoms. • Seroprevalence uncovered a high rate of infection previously unnoticed among HCW. Patients not suspected of having COVID-19 as well as asymptomatic HCW may be a relevant source for nosocomial SARS-CoV-2 transmission.
28.05.2020	Targeted Immunosuppression Distinguishes COVID-19 from Influenza in Moderate and Severe Disease	medRxiv (non-peer reviewed) / Article	• Prospective observational cohort study of COVID-19 and influenza subjects with varying degrees of disease severity to assess the quality and magnitude of their immune responses at the cellular and protein level. • When considered across the spectrum of innate and adaptive immune profiles, the immune pathologies underlying severe influenza and COVID-19

| | | | are substantially distinct. The majority of COVID-19 patients with acute respiratory failure do not have a cytokine storm phenotype but instead exhibit profound type I and type II IFN immunosuppression when compared to patients with acute influenza.
• Upregulation of a small number of inflammatory mediators, including IL-6, predicts acute respiratory failure in both COVID-19 and influenza patients. |

Diagnostics

Publication Date	Title/URL	Journal/ Article type	Digest
28.05.2020	Methodology for estimating point prevalence of SARS-CoV-2 infection by pooled RT-PCR testing	European Centre for Disease Control and Prevention / Technical Report	• The scope of this document is to provide EU/EEA Member States and the UK with technical guidance for estimating the prevalence of SARS-CoV-2 infected cases, through a cross sectional study design based on pooled sampling for RT-PCR testing on a random population sample. • The proposed methodology is for surveillance purposes and does not address pooled testing for clinical (i.e. diagnostic) or public health (e.g. contact tracing, infection prevention and control, screening) management of individuals. • The goal is to provide a tool to monitor the activity of the disease with high efficiency in terms of laboratory resources.
29.05.2020	Absence of Skin of Colour Images in Publications of COVID-19 Skin Manifestations	Br J Dermatol / Research letter	• Systematic literature review of all articles describing cases of cutaneous manifestations associated with COVID-19. • Analysis demonstrates that articles describing the cutaneous manifestations of COVID-19 almost exclusively show clinical images from patients with lighter skin. Based on this analysis, there are no published photos of the cutaneous manifestations in dark skin (Fitzpatrick type V or VI). • This is a problem because skin disease often presents differently in skin of colour. This can lead to cognitive biases that can also impact differential diagnoses and physician-patient relationships.

Genomics

Publication Date	Title/URL	Journal/ Article type	Digest

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26.05.2020	Early Phylogenetic Diversification of SARS-CoV-2: Determination of Variants and the Effect on Epidemiology, Immunology, and Diagnostics	J Clin Med / Article	• Phylogenetic clustering of 95 SARS-CoV-2 sequences from the first 3 months of the pandemic reveals insights into the early evolution of the virus and gives first indications of how the variants are globally distributed.
28.05.2020	Analysis of Rapidly Emerging Variants in Structured Regions of the SARS-CoV-2 Genome	bioRxiv (non-peer reviewed) / Article	• Evaluated two cohorts of SARS-CoV-2 genomic sequences to identify rapidly emerging variants within structured cis-regulatory elements of the SARS-CoV-2 genome. • This analysis has implications for the development therapeutics that target viral cis-regulatory RNA structures or sequences, as rapidly emerging variations in these regions could lead to drug resistance.

Epidemiology and clinical – children and pregnancy

Publication Date	Title/URL	Journal/ Article type	Digest
23.05.2020	Features of COVID-19 post-infectious cytokine release syndrome in children presenting to the emergency department	Am J Emerg Med / Case series	• Case series describing four previously healthy children with COVID-19 infection presenting with prolonged fever (5 or more days) and abrupt onset of hemodynamic instability with elevated serologic inflammatory markers and cytokine levels (IL-6, IL-8 and TNF-α).
26.05.2020	Severe SARS-CoV-2 Infection in Children With Suspected Acute Abdomen: A Case Series From a Tertiary Hospital in Spain	Pediatr Infect Dis J / Case series	• Case series describing 5 children with severe SARS-CoV-2 infection, hemodynamic instability and suspected acute abdomen. • Four of the cases were confirmed SARS-CoV-2 infection and 1 probable. All of them were previously healthy and needed a paediatric critical care unit admission. The respiratory symptoms were not dominant or were absent. Also, fever was observed. • Laboratory testing revealed lymphopenia and high levels of C-reactive protein and procalcitonin with D-dimer, ferritin and interleukin-6 usually elevated. Respiratory support and inotropic support were almost always necessary. In all of them, deterioration occurred on the day of admission.
27.05.2020	Laboratory Abnormalities in Children with Mild and Severe Coronavirus Disease 2019 (COVID-19): a pooled analysis and review	Clin Biochem / Research article	• Study pooling the currently available literature data on the laboratory findings seen in children with mild and severe COVID-19. • The data show an inconsistent pattern of change in the leukocyte index of mild and severe cases of COVID-19 in children. Specifically, changes in leukocyte counts were only observed in 32% of the mild paediatric cases (PPE: 13% increase, 19% decrease). In mild disease, creatine kinase-MB (CK-MB) was frequently elevated, with a PPE of 33%. • In severe disease, c-reactive protein (CRP), procalcitonin (PCT), and lactate

			dehydrogenase (LDH) were frequently elevated. Based on data obtained from early COVID-19 studies, leukocyte indices in children appear inconsistent, differing from those reported in adults that highlight specific leukocyte trends. • This brings into question the utility and reliability of such parameters in monitoring disease severity in the paediatric population.
30.05.2020	[SARS-CoV-2 and human milk: What is the evidence?](#)	Matern Child Nutr / Review	• Review of published literature related to vertical transmission of any human coronaviruses (including SARS-CoV-2) via human milk and/or breastfeeding. Results revealed a single study providing some evidence of vertical transmission of human coronavirus 229E; a single study evaluating presence of SARS-CoV in human milk (it was negative); and no published data on MERS-CoV and human milk. • 13 studies reported human milk tested for SARS-CoV-2; one study (a non-peer-reviewed preprint) detected the virus in one milk sample, and another study detected SARS-CoV-2 specific IgG in milk. Importantly, none of the studies on coronaviruses and human milk report validation of their collection and analytical methods for use in human milk. • These reports are evaluated here, and their implications related to the possibility of vertical transmission of coronaviruses (in particular, SARS-CoV-2) during breastfeeding are discussed.

Epidemiology and clinical - risk factors

Publication Date	Title/URL	Journal/ Article type	Digest
29.05.2020	[Ethnic and socioeconomic differences in SARS-CoV-2 infection: prospective cohort study using UK Biobank](#)	BMC Med / research article	• UK Biobank study to further understanding of the role of ethnicity and socioeconomic position in the risk of developing SARS-CoV-2 infection. • Amongst 392,116 participants in England, 2658 had been tested for SARS-CoV-2 and 948 tested positive (726 in hospital). Black and south Asian groups were more likely to test positive (RR 3.35 (95% CI 2.48-4.53) and RR 2.42 (95% CI 1.75-3.36) respectively), with Pakistani ethnicity at highest risk within the south Asian group (RR 3.24 (95% CI 1.73-6.07)). These ethnic groups were more likely to be hospital cases compared to the white British. • Socioeconomic deprivation and having no qualifications were consistently associated with a higher risk of confirmed infection (RR 2.19 for most deprived quartile vs least (95% CI 1.80-2.66) and RR 2.00 for no qualifications vs degree (95% CI 1.66-2.42)).

Date	Title	Source / Type	Summary
29.05.2020	[Clinical characteristics, outcomes, and risk factors for mortality in patients with cancer and COVID-19 in Hubei, China: a multicentre, retrospective, cohort study](#)	The Lancet Oncology / Article	• Describe clinical characteristics and outcomes of patients with cancer and COVID-19 (n=205), and examined risk factors for mortality in this population. • Patients with cancer and COVID-19 who were admitted to hospital had a high case-fatality rate. • Unfavourable prognostic factors, including receiving chemotherapy within 4 weeks before symptom onset and male sex, might help clinicians to identify patients at high risk of fatal outcomes.
29.05.2020	[A systematic review and meta-analysis of cancer patients affected by a novel coronavirus](#)	medRxiv (non-peer reviewed) / Systematic review	• Systematic review of 31 studies and meta-analysis of 181,323 patients from 26 studies involving 23,736 cancer patients is the largest meta-analysis to the best of authors knowledge assessing outcomes in cancer patients affected by COVID-19. • Among cancer subtypes, the mortality was highest in haematological malignancies (OR 2.43) followed by lung cancer (OR 1.8). There was no association between receipt of a particular type of oncologic therapy and mortality. • Cancer patients with COVID-19 disease are at increased risk of mortality and morbidity. A more nuanced understanding of the interaction between cancer-directed therapies and COVID-19-directed therapies is needed.
30.05.2020	[Acute Liver Injury in COVID-19: Prevalence and Association with Clinical Outcomes in a Large US Cohort](#)	Hepatology / Rapid communication	• Retrospective cohort study to identify the prevalence of and risk factors for development of COVID-19 associated acute liver injury in a large cohort in the US. • Of 3381 patients, 2273 tested positive and had higher initial and peak ALT than those who tested negative. • Among patients who tested positive, 45% had mild, 21% moderate, and 6.4% severe liver injury. In multivariable analysis, severe acute liver injury was significantly associated with elevated inflammatory markers including ferritin (OR 2.40, p<0.001) and IL-6 (OR 1.45, p=0.009). • Patients with severe liver injury had a more severe clinical course, including higher rates of ICU admission (69%), intubation (65%), renal replacement therapy (33%), and mortality (42%).
29.05.2020	[Characteristics associated with hospitalisation for COVID-19 in people with rheumatic disease: data from the COVID-19 Global Rheumatology Alliance physician-reported registry](#)	Ann Rheum Dis / Research article	• Case series to examine demographic and clinical factors associated with COVID-19 hospitalisation status in people with rheumatic disease. • A total of 600 cases from 40 countries were included. Nearly half of the cases were hospitalised (277, 46%) and 55 (9%) died. • Results showed that glucocorticoid exposure of ≥10 mg/day is associated with a higher odds of hospitalisation and anti-TNF with a decreased odds of hospitalisation in patients with rheumatic disease. Neither exposure to DMARDs nor NSAIDs were associated with increased odds of hospitalisation.

Date	Title	Journal / Type	Summary
29.05.2020	[Newly diagnosed diabetes is associated with a higher risk of mortality than known diabetes in hospitalized patients with COVID-19](#)	Diabetes Obes Metab / Research article	• Retrospective study to evaluate the association between different degrees of hyperglycaemia and the risk of all-cause mortality among 453 hospitalized patients with COVID-19. • Patients with newly diagnosed diabetes had the highest percentage to be admitted to the ICU (11.7%) and required invasive mechanical ventilation (11.7%), followed by patients with known diabetes (4.1%; 9.2%) and patients with hyperglycaemia (6.2%; 4.7%), compared with patients with normal glucose (1.5%; 2.3%), respectively. • The multivariable-adjusted hazard ratios of mortality among COVID-19 patients with normal glucose, hyperglycaemia, newly diagnosed diabetes, and known diabetes were 1.00, 3.29 (95% confidence interval [CI] 0.65-16.6), 9.42 (95% CI 2.18-40.7), and 4.63 (95% CI 1.02-21.0), respectively.
29.05.2020	[Phenotypic characteristics and prognosis of inpatients with COVID-19 and diabetes: the CORONADO study](#)	Diabetologia / Research study	• Nationwide multicentre observational study in people with diabetes hospitalised for COVID-19 in 53 French centres to describe the phenotypic characteristics of diabetes in 1317 COVID-19 patients. • In people with diabetes hospitalised for COVID-19, BMI, but not long-term glucose control, was positively and independently associated with tracheal intubation and/or death within 7 days.
28.05.2020	[Macrothrombosis and stroke in patients with mild Covid-19 infection](#)	J Thromb Haemost / Case report	• Describe three cases of patients in New York City (previously healthy 33-yo woman, 77-yo woman with hypertension, hyperlipidaemia, and bilateral thromboses, 55-year-old man with diabetes) presenting with stroke secondary to large vessel thrombosis without occlusion, incidentally found to have COVID-19 with only mild respiratory symptoms. • This is in contrast to the venous thrombosis and microangiopathy that has been reported in patients with severe COVID-19. Cases suggest that even in the absence of severe disease, patients with COVID-19 may be at increased risk of thrombus formation leading to stroke, perhaps due to viral involvement of the endothelium.
29.05.2020	[Obesity is associated with worse outcomes in COVID-19: Analysis of Early Data From New York City](#)	Obesity (Silver Spring) / Article	• Retrospective review of adult patients admitted with confirmed SARS-CoV-2. Demographics, clinical characteristics, laboratory data, and clinical outcomes were abstracted. BMI (kg/m2) was analysed with regard to a composite outcome of ICU admission or death, and intubation rate. • 770 patients were included (61% male, mean age 63.5 yrs). Obese patients were more likely to present with fever, cough and shortness of breath. Obesity was also associated with a significantly higher rate of ICU admission or death (RR = 1.58, p = 0.002) even after adjusting for age, race and troponin level. • Obese patients had an increased risk of critical illness leading to ICU admission or death compared to normal weight individuals.

Publication Date	Title/URL	Journal/ Article type	Digest
29.05.2020	Links between air pollution and COVID-19 in England	medRxiv (non-peer reviewed) / Article	• Explored potential links between major air pollutants related to fossil fuels and SARS-CoV-2 mortality in England. • Compared current SARS-CoV-2 cases and deaths recorded in public databases to both regional and sub regional air pollution data monitored at multiple sites across England. • The levels of some air pollutants are linked to COVID-19 cases and adverse outcomes. This study provides a useful framework to guide health policies in countries affected by this pandemic.

Epidemiology and clinical – other

Publication Date	Title/URL	Journal/ Article type	Digest
29.05.2020	Mortality and pulmonary complications in patients undergoing surgery with perioperative SARS-CoV-2 infection: an international cohort study	The Lancet / Article	• This study reports 30-day mortality and pulmonary complication rates in patients with perioperative SARS-CoV-2 infection (n=1128). • Postoperative pulmonary complications occur in half of patients with perioperative SARS-CoV-2 infection and are associated with high mortality. • Thresholds for surgery during the COVID-19 pandemic should be higher than during normal practice, particularly in men aged 70 years and older. • Consideration should be given for postponing non-urgent procedures and promoting non-operative treatment to delay or avoid the need for surgery.
27.05.2020	Pulmonary and cardiac pathology in African American patients with COVID-19: an autopsy series from New Orleans	Lancet Respir Med / Autopsy series	• Report on the relevant cardiopulmonary findings in an autopsy series of ten African American decedents, with the cause of death attributed to COVID-19. • Important findings include the presence of thrombosis and microangiopathy in the small vessels and capillaries of the lungs, with associated haemorrhage, that significantly contributed to death. Features of diffuse alveolar damage, including hyaline membranes, were present, even in patients who had not been ventilated. • Cardiac findings included individual cell necrosis without lymphocytic myocarditis. There was no evidence of secondary pulmonary infection by microorganisms.
28.05.2020	Symptom burden and clinical profile of COVID-19 deaths: a rapid systematic review and evidence summary	BMJ Support Palliat Care / Systematic review	• Systematic review of published evidence for symptoms in patients with COVID-19 (with a specific emphasis on symptoms at end of life) and on modes of death. • 12 papers met the inclusion criteria and gave details of symptom burden: four of these specifically in the dying and two detailed the cause or mode of death. Cough, breathlessness, fatigue and myalgia are significant symptoms in

			people hospitalised with COVID-19. Dyspnoea is the most significant symptom in the dying. The mode of death was described in two papers and is predominantly through respiratory or heart failure.
30.05.2020	Taste and smell as chemosensory dysfunctions in COVID-19 infection	Am J Dent / Systematic review	• Systematic review on the presence of loss of taste (ageusia) and loss of smell (anosmia) in patients presenting COVID-19 infection. • Of the 19 studies analysed, five were included to evaluate the presence of ageusia and/or anosmia as symptoms in patients who were tested and resulted positive for the SARS-CoV-2 virus. In a total of 10,818 patients, 8,823 presented ageusia (81.6%; range 5.6%-88%) and 8,088 presented anosmia (74.8%; range 5.1-85.6%). Only one study recorded both symptoms with a percentage of 18.6%.
29.05.2020	Neuropathogenesis and Neurologic Manifestations of the Coronaviruses in the Age of Coronavirus Disease 2019: A Review	JAMA Neurol / Review	• This review summarizes available information regarding coronaviruses in the nervous system, identifies the potential tissue targets and routes of entry of SARS-CoV-2 into the central nervous system, and describes the range of clinical neurological complications that have been reported thus far in COVID-19 and their potential pathogenesis.
29.05.2020	Time courses of COVID-19 infection and local variation in socioeconomic and health disparities in England	medRxiv (non-peer reviewed) / Article	• To identify factors associated with local variation in the time course of COVID-19 case burden in England, laboratory-confirmed COVID-19 case data for 150 upper tier local authorities were analysed to identify clusters of local authorities with distinct trajectories of daily cases, after adjusting for population size. • Two clusters of local authorities were identified: a higher case trajectory that rose faster over time to reach higher peak infection levels, and a lower case trajectory cluster that emerged more slowly, and had a lower peak. • Areas belonging to the trajectory with significantly higher COVID-19 case burden were more deprived, and had higher proportions of ethnic minority residents. A higher proportion of Black residents in regions belonging to the high trajectory cluster was not fully explained by differences in population density, deprivation, and other overall health disparities between the clusters.
29.05.2020	Estimation of the basic reproduction number, average incubation time, asymptomatic infection rate, and case fatality rate for COVID-19: Meta-analysis and sensitivity analysis	J Med Virol / Article	• A meta-analysis and a sensitivity study that estimate the basic reproduction number to be 3.15 with the 95% interval (2.41,3.90), the average incubation time to be 5.08 days with the 95% confidence interval (4.77, 5.39) (in day), the asymptomatic infection rate to be 46% with the 95% confidence interval (18.48%, 73.60%), and the CFR to be 2.72% with 95% confidence interval (1.29%, 4.16%) where asymptomatic infections are accounted for.
29.05.2020	Correlation of population mortality of COVID-19 and testing coverage: a	medRxiv (non-peer reviewed) / Article	• This study compared the sensitivity of two testing metrics--population testing number and testing coverage--to population mortality outcomes to identify a benchmark for testing adequacy with respect to population mortality and

	comparison among 36 OECD countries and Taiwan		capture of potential disease burden. • Testing coverage was better than population testing number in explaining country performance and can be used as an early and sensitive indicator of testing adequacy and disease burden. This may be particularly useful as countries consider re-opening their economies.

Infection control

Publication Date	Title/URL	Journal/ Article type	Digest
29.05.2020	Detection of air and surface contamination by SARS-CoV-2 in hospital rooms of infected patients	Nat Commun / Article	• Screened surface and air samples from hospital rooms of COVID-19 patients for SARS-CoV-2 RNA. Environmental sampling was conducted in three airborne infection isolation rooms (AIIRs) in the ICU and 27 AIIRs in the general ward. 245 surface samples were collected. • 56.7% of rooms had at least one environmental surface contaminated. High touch surface contamination was shown in ten (66.7%) out of 15 patients in the first week of illness, and three (20%) beyond the first week of illness (p = 0.01, $\chi(2)$ test). Air sampling was performed in three of the 27 AIIRs in the general ward, and detects SARS-CoV-2 PCR-positive particles of sizes >4 μm and 1-4 μm in two rooms, despite these rooms having 12 air changes per hour. • Airborne transmission potential of SARS-CoV-2 warrants further study.

Treatment

Publication Date	Title/URL	Journal/ Article type	Digest
29.05.2020	Anakinra for severe forms of COVID-19: a cohort study	The Lancet Rheumatology / Article	• Coronaviruses can induce the production of interleukin (IL)-1β, IL-6, tumour necrosis factor, and other cytokines implicated in autoinflammatory disorders. • It has been postulated that anakinra, a recombinant IL-1 receptor antagonist, might help to neutralise the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2)-related hyperinflammatory state, which is considered to be one cause of acute respiratory distress among patients with COVID-19. • Anakinra reduced both need for invasive mechanical ventilation in the ICU and mortality among patients with severe forms of COVID-19, without serious side-effects. Confirmation of efficacy will require controlled trials.

Date	Title	Source / Type	Summary
27.05.2020	Treatment of COVID-19 Patients with Convalescent Plasma	Am J Pathol / Article	• Patients (n = 25) with severe and/or life-threatening COVID-19 disease were enrolled at the Houston Methodist hospitals from Mar 28 – Apr 14, 2020. Patients were transfused with convalescent plasma obtained from donors with confirmed SARS-CoV-2 infection and had recovered. • At day 7 post-transfusion with convalescent plasma, nine patients had at least a 1-point improvement in clinical scale, and seven of those were discharged. • By day 14 post-transfusion, 19 (76%) patients had at least a 1-point improvement in clinical status and 11 were discharged. • The data indicate that administration of convalescent plasma is a safe treatment option for those with severe COVID-19 disease.
26.05.2020	Ruxolitinib in treatment of severe coronavirus disease 2019 (COVID-19): A multicenter, single-blind, randomized controlled trial	J Allergy Clin Immunol / RCT	• Prospective, multicentre, single-blind, randomized controlled phase II trial to evaluate the efficacy and safety of ruxolitinib, a Janus-associated kinase (JAK1/2) inhibitor, for COVID-19. 20 patients in intervention group and 21 patients in control group were included in the study. • Treatment with ruxolitinib plus SoC was not associated with significantly accelerated clinical improvement in severe patients with COVID-19, although ruxolitinib recipients had a numerically faster clinical improvement. • Eighteen (90%) patients from the ruxolitinib group showed CT improvement at D(14) compared with 13 (61.9%) patients from the control group (P = 0.0495). Three patients in the control group died of respiratory failure, with 14.3% overall mortality at D(28); no patients died in the ruxolitinib group. • Ruxolitinib was well tolerated with low toxicities and no new safety signals. Levels of 7 cytokines were significantly decreased in the ruxolitinib group in comparison to the control group.
29.05.2020	The association between treatment with heparin and survival in patients with Covid-19	medRxiv (non-peer reviewed) / Article	• This study investigated the association between the treatment with heparin and mortality in patients admitted with Covid-19. • Routinely recorded, clinical data, up to the 24th of April 2020, from the 2075 patients with Covid-19, admitted in 17 hospitals in Spain between the 1st of Mar and the 20th of Apr 2020 were used. • Heparin had been used in 1734 patients. Heparin was associated with lower mortality when the model was adjusted for age and gender.
28.05.2020	Remdesivir in Treatment of COVID-19: A Systematic Benefit-Risk Assessment	Drug Saf / Research article	• Systematic benefit-risk assessment to examine the benefit-risk profile of remdesivir in COVID-19 patients compared with standard of care, placebo or other treatments. • Using the Benefit-Risk Action Team (BRAT) method, several key benefits and risks for use of remdesivir in COVID-19 compared with placebo have been identified.

			• Preliminary clinical trial results suggest that there may be a favourable benefit-risk profile for remdesivir compared with placebo in severe COVID-19 infection and further data on benefits would strengthen this evaluation. There is limited safety data for remdesivir, which should be obtained in further studies.
28.05.2020	An Updated Systematic Review of the Therapeutic Role of Hydroxychloroquine in Coronavirus Disease-19 (COVID-19)	Clin Drug Investig / Systematic review	• Updated systematic review of the therapeutic role of HCQ in COVID-19. • A total of 663 articles were screened and 12 clinical studies (seven peer-reviewed and published studies and five non-peer-reviewed studies from pre-print servers) with a total sample size of 3543 patients were included. • Some of the clinical studies demonstrated good virological and clinical outcomes with HCQ alone or in combination with azithromycin in COVID-19 patients, although the studies had major methodological limitations. • Some of the other studies showed negative results with HCQ therapy along with the risk of adverse reactions.
30.05.2020	More about chloroquine and hydroxychloroquine	Oxford COVID-19 Evidence Service / Treatments for COVID	• Many trials of the 4-aminoquinolines are currently being conducted globally. • Many of them are unmasked, and many of them involve the use of high doses. • It is therefore important to establish the benefit to harm balance in high-quality trials. This is presumably the justification for continuing the RECOVERY trial. • Patients who are given either chloroquine or hydroxychloroquine should not also be given any other medicines that prolong the QT interval. • If such combinations are unavoidable, the electrocardiogram should be carefully monitored for evidence of QT interval prolongation.
31.05.2020	Safety of hydroxychloroquine, alone and in combination with azithromycin, in light of rapid wide-spread use for COVID-19: a multinational, network cohort and self-controlled case series study	medRxiv (non-peer reviewed) / Article	• To study the safety of hydroxychloroquine, alone and in combination with azithromycin, new user cohort studies were conducted including 16 severe adverse events (SAEs). • Rheumatoid arthritis patients aged 18+ and initiating hydroxychloroquine were compared to those initiating sulfasalazine and followed up over 30 days. Self-controlled case series (SCCS) were conducted to further establish safety in wider populations. Separately, SAEs associated with hydroxychloroquine-azithromycin (compared to hydroxychloroquine-amoxicillin) were studied. • Overall, 956,374 and 310,350 users of hydroxychloroquine and sulfasalazine, and 323,122 and 351,956 users of hydroxychloroquine-azithromycin and hydroxychloroquine-amoxicillin were included. • Short-term hydroxychloroquine treatment is safe, but addition of azithromycin may induce heart failure and cardiovascular mortality, potentially due to synergistic effects on QT length.

Social sciences

Publication Date	Title/URL	Journal/ Article type	Digest
29.05.2020	Loneliness during lockdown: trajectories and predictors during the COVID-19 pandemic in 35,712 adults in the UK	medRxiv (non-peer reviewed) / Article	• Profiles of loneliness during the pandemic and risk factors remain unclear. • Data from 35,712 UK adults in the UCL COVID -19 Social Study (a panel study collecting data weekly during the pandemic) were analysed from 21/03/2020-03/05/2020. • Perceived levels of loneliness in the first few weeks of lockdown during COVID-19 were relatively stable in the UK, but for many people these levels were high with no signs of improvement. • Results suggest that more efforts are needed to address loneliness, especially amongst young people.
27.05.2020	Factors affecting healthcare workers' compliance with social and behavioural infection control measures during emerging infectious disease outbreaks: Rapid evidence review	medRxiv (non-peer reviewed) / Rapid review	• 56 papers were reviewed, finding that staff working in emergency or intensive care settings appeared more likely to comply with recommendations than those in other settings, and there was some evidence that contact with confirmed cases could improve compliance. • There was some evidence that staff with higher levels of anxiety and higher concern about the risk of infection were more likely to comply with recommended behaviour, and that monitoring from superiors could improve compliance. • Negatives: Observed non-compliance of colleagues could hinder compliance. Staff identified many barriers to compliance related to personal protective equipment, including availability; perceived difficulty and effectiveness; inconvenience; discomfort; and a negative impact on patient care. There appeared to be many issues regarding the communication and ease of understanding of infection control guidance.
29.05.2020	Americans' COVID-19 Stress, Coping, and Adherence to CDC Guidelines	J Gen Intern Med / Research article	• Study aiming to provide the first snapshot of immediate impact of COVID-19 on Americans' stress, coping, and guideline adherence. • The sample was 53.9% women (n = 547), with an average age of 38.9 years. • Younger age, female gender, and caregiver status increased risk for stressor exposure and greater degree of stressfulness. The most frequently reported strategies to manage stress were distraction, active coping, and seeking emotional social support. • CDC guideline adherence was generally high, but several key social distancing and hygiene behaviours showed suboptimal adherence, particularly for men and younger adults.

Modelling

Publication Date	Title/URL	Journal/ Article type	Digest
30.05.2020	Assessing the impact of non-pharmaceutical interventions on SARS-CoV-2 transmission in Switzerland	Swiss Med Wkly / Research article	• Modelling study to assess the impact of NPIs on disease transmission by estimating changes in the basic reproduction number (R0) at national and cantonal levels in relation to the timing of these NPIs. • The national R0 was estimated to be 2.8 at the beginning of the epidemic. Starting from around 7 Mar, they found a strong reduction in time-varying R0 with a 86% median decrease to a value of 0.40 in the period of 29 Mar to 5 Apr. At the cantonal level, R0 decreased over the course of the epidemic between 53% and 92%. • Reductions in time-varying R0 were synchronous with changes in mobility patterns as estimated through smartphone activity, which started before the official implementation of NPIs. • The authors infer that most of the reduction of transmission is attributable to behavioural changes as opposed to natural immunity, the latter accounting for only about 4% of the total reduction in effective transmission.
28.05.2020	The effectiveness and perceived burden of nonpharmaceutical interventions against COVID-19 transmission: a modelling study with 41 countries	medRxiv (non-peer reviewed) / Article	• Large data-driven study of NPI effectiveness using chronological data on 9 NPIs in 41 countries with extensive fact-checking to ensure high data quality. • NPI effectiveness is inferred with a novel semi-mechanistic Bayesian hierarchical model, modelling both confirmed cases and deaths to increase the signal from which NPI effects can be inferred. • Results suggest a surprisingly large role for schools in COVID-19 transmission, a contribution to the ongoing debate about the relevance of asymptomatic carriers in disease spreading. They identify additional interventions with good effectiveness-burden trade-offs, namely symptomatic testing, closing high-risk businesses, and limiting gathering size. • Closing most nonessential businesses and issuing stay-at-home orders impose a high burden while having a limited additional effect.
29.05.2020	How Efficacious Must a COVID-19 Coronavirus Vaccine be to Prevent or Stop an Epidemic by Itself	medRxiv (non-peer reviewed) / Article	• A computational model of the U.S. simulating the spread of COVID-19 coronavirus and vaccination revealed that when vaccine efficacy exceeded 70%, coverage exceeded 60%, and vaccination occurred on day 1, the attack rate dropped to 22% with daily cases not exceeding 3.2 million (reproductive rate, R0, 2.5). • This study found that to either prevent or largely extinguish an epidemic

			without any other measures (e.g., social distancing), the vaccine has to have an efficacy of at least 70%.

Overviews, comments and editorials

Publication Date	Title/URL	Journal/ Article type
28.05.2020	Can the UK emulate the South Korean approach to covid-19?	British Medical Journal / Editorial
29.05.2020	Mitigating the risks of surgery during the COVID-19 pandemic	The Lancet / Comment
29.05.2020	Testing for COVID-19	The Lancet Respiratory Medicine / News
29.05.2020	Coronavirus is the trigger, but the immune response is deadly	The Lancet Rheumatology / Comment

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