



International EPI Cell Daily Evidence Digest – 01/04/2020

This briefing is produced by the PHE COVID-19 Literature Digest Team. The papers are organised under the following themes:

- Diagnostics and genomics
- Epidemiology and clinical
- Infection control
- Treatment
- Social sciences
- Miscellaneous
- Modelling

Please note that we are including preprints, which are preliminary reports of work that have NOT been peer-reviewed.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 and genomics

Publication Date	Title/URL	Journal/ Article type	Digest
29.03.2020	A UK-wide British Society of Thoracic Imaging COVID-19 imaging repository and database: design, rationale and implications for education and research	Clin Radiol / Article	<ul style="list-style-type: none">• The British Society of Thoracic Imaging (BSTI), in conjunction with Cimar UK's Imaging Cloud Technology (cimar.co.uk), have developed a simple, free to use, anonymised, and encrypted online portal to upload and refer imaging of patients with either confirmed or suspected COVID-19• All imaging and supporting data are stored at UK Cloud (https://ukcloudhealth.com) with no identifiable metadata. Imaging can be uploaded at http://bit.ly/BSTICovid19_Database. The published teaching library and its content will be accessible without a login via the BSTI website (https://bit.ly/BSTICovid19_Teaching_Library)
28.03.2020	Detection of serum immunoglobulin M and immunoglobulin G antibodies in 2019-novel coronavirus infected cases from different stages	Chin Med J / Article	<ul style="list-style-type: none">• In this study, the serum immunoglobulin (Ig) M and IgG antibodies were detected in 2019-nCoV confirmed cases of different stages. Furthermore, three different immunological assays, chemiluminescent immunoassay (CLIA), gold immunochromatographic assay (GICA), and enzyme-linked immunosorbent assay (ELISA) were used for IgM and IgG detection.

			<ul style="list-style-type: none"> •At the early, middle and late stages of infection, the serum IgM antibody was detected in 6/10, 7/13, and 11/14 of cases, respectively (at least one immunoassay was positive). Meanwhile, at the early and middle stages of infection, 5/10 and 10/13 cases demonstrated positive serum IgG results, whereas the serum IgG was detected in all cases (14/14) when it came to the late stage of infection.
26.03.2020	Report from the American Society for Microbiology COVID-19 International Summit, 23 March 2020: Value of Diagnostic Testing for SARS-CoV-2/COVID-19	mBio / Guest editorial	<ul style="list-style-type: none"> •The authors explain the types of tests available for SARS-Cov-2. There are two broad categories of SARS–CoV-2 tests: those that detect the virus itself and those that detect the host’s response to the virus. Each are considered separately.
25.03.2020	Cigarette smoke triggers the expansion of a subpopulation of respiratory epithelial cells that express the SARS-CoV-2 receptor ACE2	bioRxiv (not peer reviewed) / Article	<ul style="list-style-type: none"> •Using single-cell sequencing data, the authors demonstrate that ACE2 is expressed in a subset of epithelial cells that line the respiratory tract, including goblet cells, club cells, and alveolar type 2 cells. •Chronic smoke exposure triggers a protective expansion of mucus-secreting goblet cells and a concomitant increase in ACE2 expression whereas quitting smoking causes a decrease in lung ACE2 levels - taken together, these results may partially explain why smokers are particularly likely to develop severe SARS-CoV-2 infections
30.03.2020	Biophysical characterization of the SARS-CoV2 spike protein binding with the ACE2 receptor explains increased COVID-19 pathogenesis	bioRxiv (not peer reviewed) / Article	<ul style="list-style-type: none"> •The authors contrasted the binding interactions between human ACE2 and coronavirus spike protein receptor binding domains (RBDs) from (i) SARS-CoV2, (ii) the related but less virulent OC43 (Singapore COVID-19 strain), and (iii) the 2002 epidemic-causing SARS CoV1 •The results offer a computational explanation for the increased pathogenicity of SARS CoV2 and allude to therapeutic modalities by identifying and rank-ordering the ACE2 residues involved in binding with the virus
30.03.2020	Computational Prediction of the Comprehensive SARS-CoV-2 vs. Human Interactome to Guide the Design of Therapeutics	bioRxiv (not peer reviewed) / Article	<ul style="list-style-type: none"> •The authors leverage two state-of-the-art, sequence-based PPI predictors capable of generating the comprehensive SARS-CoV-2 vs. human interactome, comprising approximately 285,000 pairwise predictions. •Of these, they identify the high-scoring subset of human proteins predicted to interact with each of the 14 SARS-CoV-2 proteins by both methods, comprising 279 high-confidence putative interactions involving 225 human proteins. •The Spike-ACE2 interaction was the highest ranked for both the PIPE4 and SPRINT predictors, corroborating existing evidence for this PPI.
30.03.2020	Inferring Timing of Infection Using Within-host SARS-CoV-2 Infection Dynamics Model: Are "Imported Cases" Truly Imported?	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> •Developed a method to estimate timing of infection establishment, which helps differentiate imported and autochthonous cases of SARS-CoV-2 infection. •The study found that an early phase of outbreak due to entrance or re-entrance of the virus to countries/communities, collecting viral load data over time from cases from symptom onset is highly recommended, because viral load data are valuable to infer the timing of infection and distinguish between imported cases and ongoing local transmission.

31.03.2020	Re-insights into origin and adaptation of SARS-CoV-2	bioRxiv (not peer reviewed) / Article	<ul style="list-style-type: none"> •In order to understand the molecular features that make SARS-CoV-2 a highly infectious virus, following the recent report of a furin-like cleavage site¹, unique to SARS-CoV-2, they characterized several additional residues positioned within the crown of the S glycoprotein under positive/diversifying selection along the ancestral lineage of current pandemic strains. •Several recombination hotspots were detected throughout the genome with the exception of the S glycoprotein, which exhibits a coldspot in the N terminal region, likely the result of negative selection against further changes that may reduce its optimal fitness.
24.03.2020	Lectin-like Intestinal Defensin Inhibits 2019-nCoV Spike binding to ACE2	bioRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> •The authors investigated the interactions between ACE2 and human defensins (HDs) specifically secreted by intestinal Paneth cells. •Their findings unmasked the innate defence function of lectin-like intestinal defensin against 2019-nCoV, which may provide new insights into the prevention and treatment of 2019-nCoV infection.
24.03.2020	Fully human single-domain antibodies against SARS-CoV-2	bioRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> •The authors describe the development of a phage-displayed single-domain antibody library by grafting naive CDRs into framework regions of an identified human germline IGHV allele. •The panning using SARS-CoV-2 RBD and S1 as antigens resulted in the identification of antibodies targeting five types of neutralizing or non-neutralizing epitopes on SARS-CoV-2 RBD. •These fully human single-domain antibodies bound specifically to SARS-CoV-2 RBD with subnanomolar to low nanomolar affinities - some of them were found to potently neutralize pseudotyped and live virus, and therefore may represent promising candidates for prophylaxis and therapy of COVID-19.
26.03.2020	COVID-19 Vaccine Candidates: Prediction and Validation of 174 SARS-CoV-2 Epitopes	bioRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> •In this investigation of potential SARS-CoV-2 epitopes the authors found that current prediction tools vary in performance when assessing binding stability, and they are highly dependent on the MHC allotype in question. •Designing a COVID-19 vaccine where only a few epitope targets are included is therefore a very challenging task. •The authors present 174 SARS-CoV-2 epitopes with high prediction binding scores, validated to bind stably to 11 HLA allotypes - the findings may contribute to the design of an efficacious vaccine against COVID-19.
31.03.2020	Epitope-based chimeric peptide vaccine design against S, M and E proteins of SARS-CoV-2 etiologic agent of global pandemic COVID-19: an in silico approach	bioRxiv (not peer reviewed) / Article	<ul style="list-style-type: none"> •An immuno-informatics approach along with comparative genomics was applied to design a multi-epitope-based peptide vaccine against SARS-CoV-2 combining the antigenic epitopes of the S, M and E proteins. •Overall, the constructed recombinant chimeric vaccine candidate demonstrated significant potential and can be considered for clinical validation to fight against this global threat, COVID-19.

28.03.2020	Atlas of ACE2 gene expression in mammals reveals novel insights in transmission of SARS-CoV-2	bioRxiv (not peer reviewed) / Article	<ul style="list-style-type: none"> • The authors analysed gene conservation of ACE2 across mammals and collected more than 140 transcriptome datasets from human and common mammalian species, including presumed hosts of SARS-CoV-2 and other animals in close contact with humans • There was a high conservation of ACE2 genes among common mammals at both DNA and peptide levels, suggesting that a broad range of mammalian species can potentially be the hosts of SARS-CoV-2 - high level of ACE2 expression in certain human tissues is consistent with clinical symptoms of COVID-19 patients
31.03.2020	Potent neutralizing antibodies in the sera of convalescent COVID-19 patients are directed against conserved linear epitopes on the SARS-CoV-2 spike protein	bioRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> • In this report, using pools of overlapping linear peptides and functional assays, the authors present two immunodominant regions on the spike glycoprotein that were highly recognized by neutralizing antibodies in the sera of COVID-19 convalescent patients. • One is highly specific to SARS-CoV-2, and the other is a potential pan-coronavirus target.
29.03.2020	Genomic characterisation and phylogenetic analysis of SARS-COV-2 in Italy / Article	J Med Virol / Article	<ul style="list-style-type: none"> • Article describes the isolation, molecular characterisation and phylogenetic analysis of the first three complete genomes of SARS-CoV-2 isolated from three patients involved in the first outbreak of COVID-19 in Lombardy, Italy.
29.03.2020	Phylogenetic analysis of the first four SARS-CoV-2 cases in Chile	J Med Virol / Article	<ul style="list-style-type: none"> • Authors studied the complete genome of the first four cases of the new coronavirus disease in Chile, from patients who travelled to Europe and Southeast Asia. • Their findings reveal at least two different viral variants entries to Chilean territory, coming from Europe and Asia. • They also sub-classified the isolates into variants according to punctual mutations in the genome.
26.03.2020	Sequence variation among SARS-CoV-2 isolates in Taiwan	bioRxiv (not peer reviewed) / Article	<ul style="list-style-type: none"> • Twelve full viral genomes were determined in this study by Illumina sequencing either from Covid-19 virus isolates or directly from specimens, among which 5 originated from clustered infections. • Phylogenetic tree analysis revealed that these sequences were in different clades, indicating that no major strain has been circulating in Taiwan. • A deletion in open reading frame 8 was found in one isolate, and only a 4-nucleotide difference was observed among the 5 genomes from clustered infections.
28.03.2020	Susceptibility of ferrets, cats, dogs, and different domestic animals to SARS-coronavirus-2	bioRxiv (not peer reviewed) / Article	<ul style="list-style-type: none"> • The authors investigated the susceptibility of ferrets and animals in close contact with humans to SARS-CoV-2. • SARS-CoV-2 replicates poorly in dogs, pigs, chickens, and ducks, but efficiently in ferrets and cats. • This study provides important insights into the animal reservoirs of SARS-CoV-2 and animal management for COVID-19 control.
30.03.2020	Computational Design of Peptides to Block Binding of the SARS-CoV-2 Spike Protein to Human ACE2	bioRxiv (not peer reviewed) / Article	<ul style="list-style-type: none"> • Molecules that can block SARS-CoV-2 from binding to hACE2 may potentially prevent the virus from entering human cells and serve as an effective antiviral drug. • The authors have designed a series of peptides that can strongly bind to SARS-CoV-2 RBD in computational experiments.

28.03.2020	Evolutionary origins of the SARS-CoV-2 sarbecovirus lineage responsible for the COVID-19 pandemic	bioRxiv (not peer reviewed) / Article	<ul style="list-style-type: none"> •Despite intensified characterization of sarbecoviruses since SARS, the lineage giving rise to SARS-CoV-2 has been circulating unnoticed for decades in bats and been transmitted to other hosts such as pangolins. •The occurrence of a third significant coronavirus emergence in 17 years together with the high prevalence and virus diversity in bats implies that these viruses are likely to cross species boundaries again.
30.03.2020	Structural analysis of SARS-CoV-2 and prediction of the human interactome	bioRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> •The authors calculated the structural properties of 2500 coronaviruses and computed 100000 human protein interactions with severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). •Using the CROSS method, they found that the SARS-CoV-2 region encompassing nucleotides 23000 and 24000 is highly conserved at the structural level, while the region 1000 nucleotides up-stream varies significantly. •Using the catRAPID method, they computed 3500 protein interactions with the 5 prime end and identified Cyclin T1 CCNT1, ATP-dependent RNA helicase DDX1, Zinc Finger Protein ZNF175 and other 20 high-confidence candidate partners

Epidemiology and clinical

Publication Date	Title/URL	Journal/ Article type	Digest
29.03.2020	Detectable SARS-CoV-2 Viral RNA in Feces of Three Children during Recovery Period of COVID-19 Pneumonia	J Med Virol / Article	<ul style="list-style-type: none"> •Authors report 3 cases of SARS-CoV-2 infected children diagnosed from February 3 to February 17, 2020 in Tianjin, China. •Mild illness and recovered soon after treatment, with the nucleic acid of throat swab turning negative within 14, 11, 7 days after diagnosis respectively. •All tested SARS-CoV-2 positive in stool samples within 10 days, in spite of their remained negative nucleic acid in throat swab specimens. •Necessary to be aware of the possibility of faecal-oral transmission of SARS-CoV-2 infection, especially for children cases.
29.03.2020	Neonatal Early-Onset Infection With SARS-CoV-2 in 33 Neonates Born to Mothers With COVID-19 in Wuhan, China	JAMA Pediatr / Research letter	<ul style="list-style-type: none"> •In this cohort study, all neonates born to mothers with COVID-19 were recruited from Wuhan Children's Hospital, in Wuhan, Hubei Province, China. Thirty-three neonates born to mothers with COVID-19, including 3 neonates with COVID-19, were identified. •The most common symptom was shortness of breath (4 of 33 neonates). Radiographic findings were nonspecific. No deaths were reported.
28.03.2020	Prevalence and impact of diabetes among people infected with SARS-CoV-2	J Endocrinol Invest / Letter	<ul style="list-style-type: none"> •The authors conclude that diabetes may not increase the risk of SARS-CoV-2 infection but can worsen the outcome of this new coronavirus disease. This finding is consistent with the association between diabetes and excess mortality from any acute and chronic condition, including infections.

26.03.2020	A Case of Novel Coronavirus Disease 19 in a Chronic Hemodialysis Patient Presenting with Gastroenteritis and Developing Severe Pulmonary Disease	Am J Nephrol / Article	<ul style="list-style-type: none"> • First US case of a 56-year-old nondiabetic male with ESRD secondary to IgA nephropathy undergoing thrice-weekly maintenance haemodialysis for 3 years, who developed COVID-19 infection • Atypical initial presentation and highlights the importance of early testing
26.03.2020	COVID-19 Infection in a Patient with End-Stage Kidney Disease	Nephron / Article	<ul style="list-style-type: none"> • Report on a 75-year-old man infected with 2019 novel coronavirus who has end-stage kidney disease (ESKD). COVID-19 patients with ESKD need isolation dialysis, but most of them cannot be handled in time due to limited continuous renal replacement therapy (CRRT) machines • CRRT provided benefits by removing potentially damaging toxins and stabilizing his metabolic and hemodynamic status. With the control of uraemia and fluid status, this patient ended up with an uneventful post-CRRT course, absence of clinical symptoms, and negative PCR tests
28.03.2020	[Epidemiological analysis on 1 052 cases of COVID-19 in epidemic clusters]	Zhonghua Liu Xing Bing Xue Za Zhi. / Chinese article	<ul style="list-style-type: none"> • The data of cases of COVID-19 epidemic clusters from 19 January, 2020 to 25 February, 2020 were collected from the official platforms of 36 cities in 6 provinces in China. • Concluded that epidemic clusters of COVID-19 were common in many cities outside Wuhan and Hubei. Close contact in family was one of the main causes for the spread of household transmission of the virus. After 4 February, the epidemic clusters were mainly caused by the first generation or second generation cases in local areas, and the time for diagnosis became shorter.
23.03.2020	Self-reported olfactory and taste disorders in SARS-CoV-2 patients: a cross-sectional study	Clin Infect Dis / Article	<ul style="list-style-type: none"> • After some patients admitted for SARS-Cov2 disease at the Infectious Disease Department of L. Sacco Hospital in Milan, Italy, complained of olfactory and taste disorders (OTDs), the authors performed a cross-sectional survey of the prevalence of these alterations in the context of SARS-CoV-2 infection. • Of 88 hospitalized patients, 59 were able to be interviewed. Of them, 20 (33.9%) reported at least one taste or olfactory disorder and 11 (18.6%) both. Twelve patients (20.3%) presented the symptoms before the hospital admission, whereas 8 (13.5%) experienced the symptoms during the hospital stay. Taste alterations were more frequently (91%) before hospitalization, whereas after hospitalization taste and olfactory alteration appeared with equal frequency.
28.03.2020	Characteristics of Ocular Findings of Patients With Coronavirus Disease 2019 (COVID-19) in Hubei Province, China	JAMA Ophthalmology / Article	<ul style="list-style-type: none"> • This article asks: what are the ocular manifestations and conjunctival viral prevalence in patients from Hubei province, China, with COVID-19? Patients with COVID-19 treated from February 9 to 15, 2020 were retrospectively reviewed for ocular manifestations. • In this case series including 38 patients with COVID-19, 12 patients had ocular manifestations, such as epiphora, conjunctival congestion, or chemosis, and these commonly occurred in patients with more severe systemic manifestations. Reverse transcriptase–polymerase chain reaction results were positive for severe acute respiratory syndrome coronavirus 2 in 28 nasopharyngeal swabs and 2 conjunctival swabs, and more

			<p>significant changes in blood test values appeared in patients with ocular abnormalities.</p> <ul style="list-style-type: none"> • One-third of patients with COVID-19 had ocular abnormalities, which frequently occurred in patients with more severe COVID-19. Although there is a low prevalence of SARS-CoV-2 in tears, it is possible to transmit via the eyes.
29.03.2020	A Territory-wide study of COVID-19 cases and clusters with unknown source in Hong Kong community: A clinical, epidemiological and phylogenomic investigation	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> •The authors provided a territory-wide overview of COVID-19 in Hong Kong, which has borders connecting to Mainland China. •Transmission in closed settings especially during family and religious gatherings is a hallmark of the recently reported cases. •The reproduction number value indicated an ongoing outbreak in the community.
31.03.2020	A pregnant woman with COVID-19 in Central America	Travel Med Infect Dis / Letter	<ul style="list-style-type: none"> •In this case, a 41 year-old pregnant asymptomatic female's clinical presentation showed no significant alterations related to COVID-19 except for the preterm delivery (week 32). •The new born baby tested negative. Previous reports have suggested COVID-19 could be associated with poor pregnancy outcomes, but there is limited evidence.
30.03.2020	Possible Transmission of Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) in a Public Bath Center in Huai'an, Jiangsu Province, China	JAMA Network Open / Research Letter	<ul style="list-style-type: none"> • In this case series, the authors report a cluster-spreading event in Huaian in Jiangsu Province, China, in which a patient with SARS-CoV-2 may have transmitted the virus to 8 other healthy individuals via bathing in a public bath centre. • A total of 9 patients who had been to the same bath centre were hospitalized and enrolled from January 25, 2020, to February 10, 2020. Throat swab samples were collected, and SARS-CoV-2 was detected using a quantitative reverse transcription–polymerase chain reaction assay. • The median age of the patients was 35. 8 patients reported fever, 7 patients a reported cough. No patients required respiratory support by the end of the study.
30.03.2020	Global, Regional and National Incidence and Case-fatality rates of Novel Coronavirus (COVID-19) across 154 countries and territories: A systematic assessment of cases reported from January to March 16, 2020	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> •The authors assessed the cumulative change in the incidence and case-fatality rates of COVID-19 at the global, regional, and national levels from January to March 16, 2020, in 154 affected countries and territories globally •Overall, all the COVID-19-affected countries showed an upward trend in incidence, with little change in the incidence rate of -0.20% from January to Mid-March. •The case-fatality rate was found to be 3.92%, and the recovery rate was observed to be less than half (43%) among COVID-19 patients.
26.03.2020	The Novel Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) Directly Decimates Human Spleens and Lymph Nodes	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> •Through careful inspection of the spleens and lymph nodes (LNs) from six cases with post-mortem examinations, the authors observed that SARS-CoV-2 could directly infect secondary lymphoid organs to induce cell death. •SARS-CoV-2 can directly neutralize human spleens and LNs through infecting tissue-resident CD169+ macrophages.
29.03.2020	Importing coronavirus disease 2019 (COVID-19) into China after international air travel	Travel Med Infect Dis / Correspondence	<ul style="list-style-type: none"> •Case report of two case clusters of Chinese citizens who were identified through inbound screening when returning from international travels. •Results suggested that SARS-CoV-2 transmission during air travel is possible, although the risk of spreading among passengers or crew is low during short flights.

26.03.2020	Community Prevalence of SARS-CoV-2 Among Patients With Influenza-like Illnesses Presenting to a Los Angeles Medical Center in March 2020	JAMA / Research letter	<ul style="list-style-type: none"> • The authors suggest that identifying cases of community transmission is critically important. • A rapid sentinel surveillance study was conducted to determine what proportion of mild, outpatient influenza like illnesses were caused by COVID-19. • 131 tests were obtained and 7 were positive (5.3%; 95% CI, 2.2%-10.7%). 6 of 7 patients presented with fever, 5 with myalgias, and only 1 with cough.
25.03.2020	Estimating case fatality rates of COVID-19	The Lancet Infectious Diseases / Correspondence	<p>In response to https://doi.org/10.1016/S1473-3099(20)30195-X</p> <ul style="list-style-type: none"> • The authors suggest using the case fatality rather than the mortality rate to describe cases to ensure that there is no overestimation of the fatality of COVID-19.
25.03.2020	Estimating case fatality rates of COVID-19	The Lancet Infectious Diseases / Correspondence	<p>In response to https://doi.org/10.1016/S1473-3099(20)30195-X</p> <ul style="list-style-type: none"> • This response highlights biases in the methods used by Baud and colleagues and suggests that different methods can produce either falsely low or falsely high estimates when estimating case fatality rate..
27.03.2020	Review article: Gastrointestinal features in COVID-19 and the possibility of faecal transmission	Aliment Pharmacol Ther / Review Article	<ul style="list-style-type: none"> • The authors have reviewed gastrointestinal features of, and faecal test results in, COVID-19 from case reports and retrospective clinical studies relating to the digestive system published since the outbreak. • Adult and children patients can present with digestive symptoms in the absence of respiratory symptoms. The incidence of digestive manifestations was higher in the later than in the early stage of the epidemic, but no differences in digestive symptoms among different regions were found. • CONCLUSIONS: Gastrointestinal symptoms are common in patients with COVID-19, and had an increased prevalence in the later stage of the recent epidemic. SARS-CoV-2 enters gastrointestinal epithelial cells, and the faeces of COVID-19 patients were infectious.
26.03.2020	CT morphology of COVID-19: Case report and review of literature	Rofo / Article	<ul style="list-style-type: none"> • This paper presents a case with COVID-19 pneumonia and provides an overview of the existing radiological literature on COVID-19.
23.03.2020	Experience of Clinical Management for Pregnant Women and Newborns with Novel Coronavirus Pneumonia in Tongji Hospital, China	Curr Med Sci / Article	<ul style="list-style-type: none"> • This article focused on the issues of greatest concern of pregnant women including SARS-CoV-2 infection diagnostic criteria, inspection precautions, drug treatment options, indications and methods of termination of pregnancy, postpartum fever, breastfeeding considerations, mode of mother-to-child transmission, neonatal isolation and advice on neonatal nursing, to provide valuable experience for better management of SARS-CoV-2 infection in pregnant women and new-borns.
30.03.2020	Neuraxial procedures in COVID-19 positive parturients: a review of current reports	Anesth Analg / Letter	<ul style="list-style-type: none"> • Because anaesthesiologists must take into account the risk of meningitis or encephalitis associated with neuraxial procedures in the setting of untreated viremia, the authors reviewed publications reporting outcomes in COVID-19 positive pregnant women in the current pandemic in an attempt to address this concern.
30.03.2020	Maternal health care management during the outbreak of coronavirus disease 2019 (COVID-19)	J Med Virol / Review	<ul style="list-style-type: none"> • The authors present the managing processes of three pregnant women that had a fever during hospitalization at gynaecology or obstetrics department, then further summarize and demonstrate their maternal health care management strategies including antenatal

			care planning, patient triage based on risk level, admission control, and measures counteracting emergencies and newly discovered high risk cases at in-patient department.
30.03.2020	Surviving Sepsis Campaign: guidelines on the management of critically ill adults with Coronavirus Disease 2019 (COVID-19)	Intensive Care Med / Article	<ul style="list-style-type: none"> • Surviving Sepsis Campaign COVID-19 Panel of 36 experts from 12 countries proposed 53 questions relevant to management of COVID-19 in the ICU. • Relevant and recent systematic reviews identified and evidence assessed, then generated recommendations. • Panel issued 54 statements: 4 best practice statements, 9 strong recommendations, 35 weak recommendations. • Topics: (1) infection control, (2) laboratory diagnosis and specimens, (3) hemodynamic support, (4) ventilatory support, and (5) COVID-19 therapy.
26.03.2020	Are patients with inflammatory bowel disease at increased risk for Covid-19 infection?	J Crohns Colitis / Article	<ul style="list-style-type: none"> • The primary objectives of this Viewpoint are to provide a focused overview of the factors and mechanisms by which SARS-CoV-2 infects the cells and to illustrate the link between such determinants and the intestinal inflammation. The authors also provide clues about the reasons why the overall inflammatory bowel disease (IBD) population might have no increased risk to be infected with SARS-CoV-2 and highlight the potential of cytokine blockers, used to treat IBD patients, to prevent Covid-driven pneumonia.
31.03.2020	Neurosurgery during the COVID-19 pandemic: update from Lombardy, northern Italy	Acta Neurochir (Wien) / Article	<ul style="list-style-type: none"> • Article summarizing the reorganization of Lombard Neurosurgical network. • 4 neurosurgical “hub” hospitals where neurosurgical activities that could not be postponed take place, with priority criteria.
29.03.2020	Surgical Considerations for Tracheostomy During the COVID-19 Pandemic: Lessons Learned From the Severe Acute Respiratory Syndrome Outbreak	JAMA Otolaryngology– Head & Neck Surgery / Viewpoint	<ul style="list-style-type: none"> • Despite the lower mortality rate in COVID-19 compared with SARS (2.3% vs 11%), a notable fraction of infected people (9.8%-15.2%) require invasive mechanical ventilation or extracorporeal membrane oxygenation. Open tracheostomy was the most common surgical procedure performed on infected patients during the SARS outbreak. • Adequate PPE (an N95 mask, surgical cap, goggles, surgical gown, and gloves) is essential during surgeries, and enhanced PPE measures such as face shields and powered air-purifying respirators showed effectiveness in ensuring that the surgical teams remained healthy. • Negative-pressure ICU rooms with adjacent anterooms are ideal for performing tracheostomies. • Other effective precautions include: minimising time of exposure to aerosolized secretions and disposing of waste and decontaminating equipment quickly and effectively.
29.03.2020	Is There an Association Between COVID-19 Mortality and the Renin-Angiotensin System-a Call for Epidemiologic Investigations	Clin Infect Dis / Article	<ul style="list-style-type: none"> • The authors propose key clinical research priorities necessary to clarify the role of Renin-Angiotensin System inhibition in COVID-19 mortality that could be rapidly addressed by the international research community.
31.03.2020	[Guidelines for surgical management of gynaecological cancer during pandemic COVID-19 period -	Gynecol Obstet Fertil Senol / French Article	<ul style="list-style-type: none"> • Recommendations for the management of patients with gynaecological cancer during the COVID-19 pandemic period.

	FRANCOGYN group for the CNGOF.] / Article		<ul style="list-style-type: none"> •In the case of a COVID-19 positive patient, surgical management should be postponed for at least 15 days.
28.03.2020	On the Frontline of the COVID-19 Outbreak: Keeping Patients on Long-Term Dialysis Safe	Clin J Am Soc Nephrol / Opinion	<ul style="list-style-type: none"> •February 28 first reported U.S death from COVID-19; patient last received haemodialysis in outpatient setting on February 21 •Authors share policies and procedures to provide dialysis in the safest and most effective way.

Infection control

Publication Date	Title/URL	Journal/ Article type	Digest
28.03.2020	Safety of Extended Use and Reuse of N95 Respirators	Clinical Evidence Assessment / Evidence summary	<ul style="list-style-type: none"> •Published clinical studies are not available to assess the safety of N95 reuse and extended use during critical shortages, so the authors examined 21 laboratory studies because they may provide at least some rational basis for actions during a crisis. •Limited evidence from laboratory studies supports prioritizing extended use over reuse because N95s may readily spread infection by touch if donned and doffed and are prone to mechanical failure upon reuse. •Studies testing more than 30 respirator N95 models found that covering respirators with surgical masks had no clinically significant effect on breathing effort and gas exchange. •Decontamination of N95 respirators by steam, disinfectants (e.g., bleach, hydrogen peroxide vapor), or ultraviolet germicidal irradiation (UVGI) may be safe and effective in some settings, but each method needs to be tested on each model because model materials vary.
27.03.2020	Safety Recommendations for Evaluation and Surgery of the Head and Neck During the COVID-19 Pandemic	JAMA Otolaryngology–Head & Neck Surgery / Special Communication	<ul style="list-style-type: none"> •Healthcare workers who come in close contact with the upper aerodigestive tract during diagnostic and therapeutic procedures, such as otolaryngologists–head and neck surgeons, are particularly at risk. •A set of safety recommendations was created based on a review of the literature and communications with physicians with first-hand knowledge of safety procedures during the COVID-19 pandemic. •Specific safety recommendations were made for performing tracheostomy in patients with COVID-19.
26.03.2020	Evaluation of the awareness level of Healthcare workers toward NCOVID-2019 in Pakistan	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> •A questionnaire was generated according to WHO information that was circulated among the healthcare workers of different hospitals and medical institutes of Pakistan - sample size was 650. •The study found that healthcare workers have insufficient knowledge of preventive measures and infection control; the authorities must take initiatives on urgent basis to

			increase the awareness among the healthcare workers and general public also so that the drastic circumstances can be avoided in the developing country like Pakistan
26.03.2020	Impacts of COVID-19 on vulnerable children in temporary accommodation in the UK	The Lancet Public Health / Comment	<ul style="list-style-type: none"> •Homeless children aged 5 years and younger are at high risk of exposure and transmission due to overcrowding in substandard housing, and also of immediate and long-term effects on growth, optimal health, and brain development. •Many families live with shared kitchen and toilet facilities, making self-isolation and good hygiene difficult. •Access to many basic essentials is currently reduced, such as contact with health outreach services, online access for shopping, and charity shops. •Vulnerable children need to be protected from the potential negative effects of this outbreak.
20.03.2020	Initial rapid and proactive response for the COVID-19 outbreak - Taiwan's experience	J Formos Med Assoc / Perspectives	<ul style="list-style-type: none"> •This article presents lessons learned from Taiwan during the outbreak. •Policies included border control, home quarantine requirement for travellers, export ban on surgical masks and N95 respirators, and risk communication with the public through daily press and social media. •Next steps are mitigation with continued containment efforts, and aims to find ways to mitigate the impact on human health, healthcare system, and the economy.
28.03.2020	Perspectives on Coronavirus Disease 2019 Control Measures for Ophthalmology Clinics Based on a Singapore Center Experience	JAMA Ophthalmology / Viewpoint	<ul style="list-style-type: none"> •A high-volume ophthalmology centre in Singapore, provides an example of infection control measures implemented in the setting of COVID-19 infections that may be of value as other ophthalmology clinics begin to experience and plan for potential increases of COVID-19 risks.
28.03.2020	Preventing the Spread of COVID-19 to Nursing Homes: Experience from a Singapore Geriatric Centre	J Am Geriatr Soc / Letter	<ul style="list-style-type: none"> •Discusses measures on preventing the Spread of COVID-19 to Nursing Homes: Experience from a Singapore Geriatric Centre
18.03.2020	Preliminary Recommendations for Surgical Practice of Neurosurgery Department in the Central Epidemic Area of 2019 Coronavirus Infection	Curr Med Sci / Article	<ul style="list-style-type: none"> •The authors focus on prevention and control of virus transmission in the surgical practice in Neurosurgery Department, Tongji Hospital, Wuhan, and provide several recommendations based on the latest relevant guidelines and their experience. These recommendations have helped them until now to achieve 'zero infection' of doctors and nurses in their department, and they would like to share them with other medical staff of neurosurgery to fight 2019-nCoV infection.
30.03.2020	Perioperative COVID-19 Defense: An Evidence-Based Approach for Optimization of Infection Control and Operating Room Management	Anesth Analg / Article	<ul style="list-style-type: none"> •The authors describe an evidence-based approach for optimization of infection control and operating room management during the COVID-19 pandemic.
12.03.2020	Italian Society of Interventional Cardiology (GISE) Position Paper for Cath lab-specific Preparedness Recommendations for Healthcare	Catheter Cardiovasc Interv / Article	<ul style="list-style-type: none"> •The aim of this position paper is to provide standards to healthcare facilities and healthcare providers on infection prevention and control measures during the management of suspected and confirmed cases of 2019-nCoV infection accessing in cath-lab. •The document represents the view of the Italian Society of Interventional Cardiology

providers in case of suspected, probable or confirmed cases of COVID-19	(GISE), and it is based on recommendations from the main World and European Health Organizations (WHO, and ECDC) as well as from the Italian Society of Anaesthesia, Analgesia, Resuscitation and Intensive Care (SIAARTI).
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Treatment

Publication Date	Title/URL	Journal/ Article type	Digest
01.05.2020	Advice on Standardized Diagnosis and Treatment for Spinal Diseases during the Coronavirus Disease 2019 Pandemic	Asian Spine J / Article	<ul style="list-style-type: none"> •New procedures for spinal outpatient and emergency department at China's The First Affiliated Hospital of Soochow University during the COVID-19 pandemic are shared, with evidence-based medical evidence to explore a standardized process of diagnosis and treatment for spinal diseases.
31.03.2020	Neuroinfection may potentially contribute to pathophysiology and clinical manifestations of COVID-19	Acta Physiol (Oxf) / Editorial	<ul style="list-style-type: none"> •Coronaviruses are neurotropic, and SARS-CoV-2 most likely is not an exception •The neurological and psychiatric aspects of the viral attack must therefore be considered in designing the therapeutic strategies and for rehabilitation paradigms aimed at SARS-CoV-2 patients.
31.03.2020	European Task Force on Atopic Dermatitis (ETFAD) statement on severe acute respiratory syndrome coronavirus 2 (SARS-Cov-2)-infection and atopic dermatitis	J Eur Acad Dermatol Venereol / Correspondence	<ul style="list-style-type: none"> •European Task Force on Atopic Dermatitis (ETFAD) statement on recommendations for: AD patients treated with immune-modulating therapy at times of SARS-Cov-2 pandemic; comorbidities of AD and pausing of systemic therapy in SARS-CoV-2 infected patients; predicted interactions of AD, its complications, immunosuppressive and immunomodulating therapies with COVID-19.
29.03.2020	Use of Hydroxychloroquine and Chloroquine During the COVID-19 Pandemic: What Every Clinician Should Know	Annals of Internal medicine / Ideas and Opinions	<ul style="list-style-type: none"> • The antimalarials hydroxychloroquine (HCQ) and chloroquine (CQ) have demonstrated antiviral activity against severe acute respiratory syndrome–coronavirus 2 (SARS–CoV-2) in vitro and in small, poorly controlled or uncontrolled clinical studies. • Prescription and availability of antimalarials should be prioritised for those with rheumatic diseases to prevent lapse in therapy.
29.03.2020	Potential interventions for novel coronavirus in China: A systematic review	Journal of Medical Virology / Review	<ul style="list-style-type: none"> •The authors conducted an online search for all treatment options related to coronavirus infections as well as some RNA-virus infection and found that general treatments, coronavirus-specific treatments, and antiviral treatments should be useful in fighting COVID-19. [note: this is not a systematic review as there are no detailed methods or appraisal of literature, perhaps a literature review]. •In addition, convalescent plasma should be given to COVID-19 patients if it is available.
25.03.2020	The use of anti-inflammatory drugs in the treatment of people with severe coronavirus disease 2019 (COVID-19): The experience of clinical immunologists from China	Clin Immunol / Article	<ul style="list-style-type: none"> • Summarize the current evidence and own experience in anti-inflammation treatment, including glucocorticoids, IL-6 antagonist, JAK inhibitors and chloroquine/hydrochloroquine, of patients with severe COVID-19 that may have an impaired immune system.

Social sciences

Publication Date	Title/URL	Journal/ Article type	Digest
28.03.2020	Protecting the psychological health of children through effective communication about COVID-19	The Lancet Child & Adolescent Health / Comment	<ul style="list-style-type: none"> • Children are exposed to large amounts of information and high levels of stress and anxiety from the adults around them, while experiencing substantial changes to their daily routine. • Children need honest information, communication, and to be listened to. Adults can set an example by sharing their own feelings, ensuring emotion-focused discussion rather than purely factual. • Authenticity is key in normalising emotional reactions and will help contain anxiety and provide a shared focus for families.
26.03.2020	Responding to COVID-19: How to Navigate a Public Health Emergency Legally and Ethically	Hastings Cent Rep / Correspondence	<ul style="list-style-type: none"> • When the health system becomes stretched beyond capacity, how can we ethically allocate scarce health goods and services? How can we ensure that marginalized populations can access the care they need? What ethical duties do we owe to vulnerable people separated from their families and communities? And how do we ethically and legally balance public health with civil liberties? This paper discusses.
26.03.2020	Digital Mental Health and COVID-19: Using Technology Today to Accelerate the Curve on Access and Quality Tomorrow	JMIR Ment Health / Editorial	<ul style="list-style-type: none"> • Exploring the success of telehealth during the present crisis and how technologies like apps can soon play a larger role. The authors discuss the need for workforce training, high-quality evidence, and digital equity among other factors critical for bending the curve further.

Miscellaneous

Publication Date	Title/URL	Journal/ Article type	Digest
25.03.2020	Europe's migrant containment policies threaten the response to covid-19	BMJ / Editorial	<ul style="list-style-type: none"> • One after another, governments, healthcare systems, and individuals are adopting increasingly restrictive measures, with “social distancing” now the norm in most countries. Yet for many people, and especially migrants who have been displaced from their homes, this is not possible. This paper discusses this.
31.03.2020	Refugee and migrant health in the COVID-19 response	The Lancet / Comment	<ul style="list-style-type: none"> • Preparedness plans should consider refugees and migrants and their needs. Evidence shows that this vulnerable population has a low risk of transmitting communicable diseases to host populations in general. • States of emergency and lockdowns to deal with the pandemic have affected refugee and migrant volunteer community service provision; an inclusive approach to health that leaves no one behind should guide our response.

26.03.2020	COVID-19: lessons from the Italian reproductive medical experience	Fertil Steril / Article	<ul style="list-style-type: none"> • Authors describe how Italy was consumed by the COVID-19 pandemic and how their reproductive medical system was adapted to its challenges. It's a moving target, so processes will continue to adjust. • At Fertility and Sterility, they've created a virtual real-time conversation in their Dialog where doctors and scientists can share what they're learning about COVID-19 and reproductive medicine. Please contribute your thoughts and observations at https://www.fertstertdialog.com/rooms/871-covid-19
28.03.2020	Providing pharmacy services during the coronavirus pandemic	Int J Clin Pharm / Commentary	<ul style="list-style-type: none"> • Countries should establish or strengthen pharmacy support services in combating the coronavirus pandemic. • Pharmacists should identify and serve the unique needs of pharmacy services in a pandemic. • Focused actions such as establishing remote pharmacy services to prevent the transmission of the coronavirus should be considered. • National emergency drug formularies should be created and pharmacists should monitor and resolve potential drug shortages associated with a pandemic.

Modelling

Publication Date	Title/URL	Journal/ Article type	Digest
26.03.2020	A model to forecast regional demand for COVID-19 related hospital beds	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> •The authors created an interactive, quantitative model that forecasts demand for COVID-19 related hospitalization based on county-level population characteristics, data from the literature on COVID-19, and data from online repositories. •The online model is designed to be intuitive and interactive so that local leaders with limited technical or epidemiological expertise may make decisions based on a variety of scenarios. •The model is actively being used by several academic medical centres and policy makers, and we believe that broader access will continue to aid community and hospital leaders in their response to COVID-19
25.03.2020	Health Communication Through News Media During the Early Stage of the COVID-19 Outbreak in China: A Digital Topic Modeling Approach	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> •The authors adopted the Huike database to extract news articles about coronavirus from major press media, between January 1st, 2020, to February 20th, 2020. •The top three popular themes were prevention and control procedures, medical treatment and research, global/local social/economic influences, accounting for 32.6%, 16.6%, 11.8% of the collected reports respectively. •The Chinese mass media news reports lag behind the COVID-19 outbreak development and tended to focus on the larger society than on individuals.

25.03.2020	Targeted adaptive isolation strategy for Covid-19 pandemic	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> •The authors investigate the effects of social distancing in controlling the impact of the Covid-19 epidemic using a simple SIR epidemic model. •They show that an alternative or complementary approach based on targeted isolation of the vulnerable subpopulation may provide a more efficient and robust strategy at a lower economic and social cost within a shorter timeframe
26.03.2020	A Computational Model for Estimating the Progression of COVID-19 Cases in the US West and East Coasts	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> •In this paper, The authors construct a stochastic variant of the SEIR model to make a quasi-worst-case scenario prediction of the COVID-19 outbreak in the US West and East Coasts. •Their computation results predict that the number of new cases would peak around mid-April and begin to abate by July, and that the number of cases of COVID-19 might be significantly mitigated by having greater numbers of functional testing kits available for screening.
29.03.2020	Investigating the Impact of Asymptomatic Carriers on COVID-19 Transmission	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> •In this manuscript, the authors present a mathematical model taking into account asymptomatic carriers of Covid-19. •Their results indicate that an initial value of the effective reproduction number could range from 5.5 to 25.4, with a point estimate of 15.4, assuming mean parameters. •The first three weeks of the model exhibit exponential growth, which is in agreement with average case data collected from thirteen countries with universal health care and robust communicable disease surveillance systems; the average rate of growth in the number of reported cases is 23.3% per day during this period
27.03.2020	Spread of SARS-CoV-2 Coronavirus likely to be constrained by climate	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> •Using data on local transmissions until the 23rd of March 2020, the authors developed an ensemble of 200 ecological niche models to project monthly variation in climate suitability for spread of SARS-CoV-2 throughout a typical climatological year. •According to the models, temperate warm and cold climates are more favourable to spread of the virus, whereas arid and tropical climates are less favourable - however, model uncertainties are still high across much of sub-Saharan Africa, Latin America and South East Asia.
26.03.2020	Climate affects global patterns of COVID-19 early outbreak dynamics	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> •The authors assessed the effects of temperature and humidity on the global patterns of COVID-19 early outbreak dynamics during January-March 2020. •Growth rates peaked in temperate regions of the Northern Hemisphere with mean temperature of ~5 degrees, and humidity of approx 0.6-1 kPa during the outbreak month, while they decreased in warmer and colder regions. •The strong relationship between local climate and COVID-19 growth rates suggests the possibility of seasonal variation in the spatial pattern of outbreaks, with temperate regions of the Southern Hemisphere becoming at particular risk of severe outbreaks during the next month
29.03.2020	No Evidence for Temperature-Dependence of the COVID-19 Epidemic	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> •The authors find no evidence that spread rates decline with temperatures above 20C, suggesting that the COVID-19 disease is unlikely to behave as a seasonal respiratory virus.

		<ul style="list-style-type: none">• These results suggest that poorer nations with weak health systems in tropical regions, such as Africa, are at great risk.
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Produced by the PHE COVID-19 Literature Digest Team

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