



International EPI Cell Daily Evidence Digest – 31/03/2020

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Please note that we are including preprints, which are preliminary reports of work that have NOT been peer-reviewed.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

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Diagnostics and genomics

Publication Date	Title/URL	Journal/ Article type	Digest
30.03.2020	Screening faecal microbiota transplant donors for SARS-CoV-2	The Lancet Gastroenterology &	•The authors believe that the molecular screening of stool from all donors for SARS-CoV-2 will be the safest way forward, because this approach would adequately address and mitigate

	by molecular testing of stool is the safest way forward	Hepatology / Correspondence	against the risk posed from asymptomatic carriage and might also provide a useful measure of asymptomatic prevalence in the wider community.
30.03.2020	Clinical and Paraclinical Characteristics of COVID-19 patients: A systematic review and meta-analysis	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> • As there are many cases without Computed Tomography Scan findings or clear clinical symptoms, it is recommended to use other confirming methods such RNA sequencing in order to identification of suspicious undiagnosed patients. • While there is no access to clinical and paraclinical facilities in public places such as airports and border crossings, it is recommended to consider factors such as fever, cough, sputum and fatigue.
30.03.2020	Virus shedding patterns in nasopharyngeal and fecal specimens of COVID-19 patients	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> • A total of 66 upper respiratory swabs, 51 faeces, 56 urine and 56 plasma samples were sequentially collected from 23 patients in a designated hospital. • The results indicated that beside respiratory samples, intestinal samples (e.g. faeces) should be recommended for diagnosis of COVID-19, especially before a patient discharge and for monitoring the relapse of discharged patients.
30.03.2020	Clinical characteristics of the recovered COVID-19 patients with re-detectable positive RNA test	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> • These results showed that young and mild COVID-19 patients seem to be re-detectable positive (RP) patients after discharge, who show no obviously clinical symptoms and disease progression upon re-admission.
30.03.2020	Clinical features and outcomes of 197 adult discharged patients with COVID-19 in Yichang, Hubei	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> • COVID-19 infection has become a life-threatening public health problem, and the sensitivity of RT-PCR was limited. • Chest CT scan was recommended for the suspected patients. • Moreover, lymphocytopenia and eosinophils declining without leucocytosis may be considered as a useful evidence for the diagnosis.
27.03.2020	Artificial Intelligence and Machine Learning to Fight COVID-19	Physiological Genomics / Editorial	<ul style="list-style-type: none"> • Editorial outlining the workflow and the limitations of the process of the application of machine learning and artificial intelligence to combat COVID-19. • Availability of COVID-19 related clinical data, which can be managed and processed into easily accessible databases is a key current barrier. Development of cyber-infrastructure to fuel world-wide collaborations is important.
30.03.2020	Improved deep learning model for differentiating novel coronavirus pneumonia and influenza pneumonia	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> • This study potentially provides an accurate early diagnosis tool on chest CT for novel coronavirus pneumonia (NCP) with high transferability, and shows high efficiency in differentiating NCP and influenza pneumonia (IP), helping to reduce misdiagnosis and contain the pandemic transmission.
30.03.2020	No SARS-CoV-2 in expressed prostatic secretion of patients with coronavirus disease 2019: a descriptive multicentre study in China	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> • No SARS-CoV-2 was expressed in expressed prostatic secretion (EPS) of patients with COVID-19.
30.03.2020	Persistent SARS-CoV-2 presence is accompanied with defects in	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> • Persistent SARS-CoV-2 presence in non-severe COVID-19 patients is associated with reduced numbers of adaptive immune cells.

	adaptive immune system in non-severe COVID-19 patients		<ul style="list-style-type: none"> Monitoring lymphocyte subpopulations could be clinically meaningful in identifying fully recovered COVID-19 patients.
30.03.2020	Evaluations of serological test in the diagnosis of 2019 novel coronavirus (SARS-CoV-2) infections during the COVID-19 outbreak	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> These studies provide a useful and valuable serological testing tool for the diagnosis of SARS-CoV-2 infections in the community.
30.03.2020	Diagnostic Indexes of a Rapid IgG/IgM Combined Antibody Test for SARS-CoV-2	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> The sensitivity and specificity of this ease-of-use IgG/IgM combined test kit were adequate, plus short turnaround time, no specific requirements for additional equipment or skilled technicians, all of these collectively contributed to its competence for mass testing. At the current stage, it cannot take the place of SARA-CoV-2 nucleic acid RT-PCR, but can be served as a complementary option for RT-PCR. The combination of RT-PCR and IgG-IgM combined test kit could provide further insight into SARS-CoV-2 infection diagnosis.
30.03.2020	A deep learning algorithm using CT images to screen for Corona Virus Disease (COVID-19)	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> These results demonstrate the proof-of-principle for using artificial intelligence to extract radiological features for timely and accurate COVID-19 diagnosis.
30.03.2020	Failed detection of the full-length genome of SARS-CoV-2 by ultra-deep sequencing from the recovered and discharged patients retested viral PCR positive	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> In this study, the authors found that detectable viral genome in discharged patients might only mean the presence of viral fragments, and could unlikely be an origin of infection due to its extremely low concentration.
30.03.2020	Evaluation the auxiliary diagnosis value of antibodies assays for detection of novel coronavirus (SARS-Cov-2) causing an outbreak of pneumonia (COVID-19)	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> The antibodies detected against SARS-CoV-2 offers vital clinical information for physicians, and could be used as an effective supplementary indicator for suspected cases of negative viral nucleic acid detection or in conjunction with nucleic acid detection in the diagnosis of suspected cases.
26.03.2020	Stability Issues of RT-PCR Testing of SARS-CoV-2 for Hospitalized Patients Clinically Diagnosed with COVID-19	J Med Virol / Short communication	<ul style="list-style-type: none"> Report a potentially high false negative rate of RT-PCR testing for SARS-CoV-2 in the 610 hospitalized patients clinically diagnosed with COVID-19 during the 2019 outbreak. They also found that the RT-PCR results from several tests at different points were variable from the same patients during the course of diagnosis and treatment of these patients. Results suggest the urgent needs for standard of procedures of sampling from different anatomic sites, sample transportation, optimization of RT-PCR, serology diagnosis/screening for SARS-CoV-2 infection, and distinct diagnosis from other respiratory diseases such as influenza infections as well.

30.03.2020	SARS-CoV-2 detection from nasopharyngeal swab samples without RNA extraction	bioRxiv (not peer-reviewed) / New results	<ul style="list-style-type: none"> • The authors investigated whether two commercial RT-qPCR kits were compatible with direct SARS-CoV-2 detection from nasopharyngeal swab samples. • They show that one of the tested kits is fully compatible with direct SARS-CoV-2 detection suggesting that omission of RNA extraction step should be considered in SARS-CoV-2 diagnosis.
30.03.2020	SARS-CoV-2–Positive Sputum and Feces After Conversion of Pharyngeal Samples in Patients With COVID-19	Annals of Internal Medicine / Letter	<ul style="list-style-type: none"> • This study assessed the results of RT-qPCR for SARS–CoV2 RNA of sputum and faecal samples from a group of patients after conversion of their pharyngeal samples from positive to negative. • They observed 22 patients who had positive RT-qPCR results for SARS–CoV-2 in the sputum or faeces after pharyngeal swabs became negative- these findings raise concern about whether patients with negative pharyngeal swabs are truly virus-free, or sampling of additional body sites is needed.
30.03.2020	The comparative superiority of IgM-IgG antibody test to real-time reverse transcriptase PCR detection for SARS-CoV-2 infection diagnosis	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> • The IgM-IgG antibodies-based test exhibited a comparative superiority to the NAT for COVID-19 diagnosis, which provides an effective complement to the false negative results from NAT for SARS-CoV-2 infection diagnosis.
31.03.2020	SARS-CoV-2 detection using digital PCR for COVID-19 diagnosis, treatment monitoring and criteria for discharge	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> • Digital PCR shows improved lower limit of detection, sensitivity and accuracy, enabling COVID-19 detection with less false negative and false positive results comparing with RT-PCR, especially for the tests with low viral load specimens.
30.03.2020	An alternative workflow for molecular detection of SARS-CoV-2 - escape from the NA extraction kit-shortage	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> • The authors describe a simple, fast, alternative workflow for molecular detection of SARS-CoV-2, where samples are simply heat-processed for 5 minutes at 98°C prior to the RT-qPCR reaction.
30.03.2020	Highly accurate and sensitive diagnostic detection of SARS-CoV-2 by digital PCR	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> • RT-dPCR could be a confirmatory method for suspected patients diagnosed by RT-qPCR. • It was more sensitive and suitable for low viral load specimens from the both patients under isolation and those under observation who may not be exhibiting clinical symptoms.
30.03.2020	Comparative Genomic Analysis of Rapidly Evolving SARS CoV-2 Viruses Reveal Mosaic Pattern of Phylogeographical Distribution	bioRxiv (not peer-reviewed) / New results	<ul style="list-style-type: none"> • The authors studied the complete genomes of 95 strains of SARS-CoV-2 reported from different geographical regions worldwide to uncover the pattern of spread of the novel SARS-CoV-2 across the globe. • They show that there is no direct transmission pattern of the virus among neighbouring countries suggesting that the outbreak is a result of travel of infected humans to different countries.
26.03.2020	In Silico assessment of the impact of 2019 novel coronavirus (2019-nCoV) genomic variation on published real-time quantitative polymerase chain reaction detection assays	Chin Med J / Comment	<ul style="list-style-type: none"> • The authors analysed 77 public full-length genome sequences of 2019-nCoV from the GISAID website. A total of 85 variant sites were found. They investigated the published 2019-nCoV RT-qPCR detection assays and found a total number of 13 RT-qPCR primer sets designed by eight institutions. • Concluded that using any of five RT-qPCR primer sets to detect 2019-nCoV may potentially cause false negative results. Among the five, two have mismatches and three contain some

			2019-nCoV genome variants which occurred during the outbreak. It is necessary to keep continuous surveillance on the genome variants and their effects on the RT-qPCR assays during the whole outbreak.
30.03.2020	In-host Modelling of COVID-19 Kinetics in Humans	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> • Based on the target cell model, COVID-19 infecting time between susceptible cells (mean of 30 days approximately) is much slower than those reported for Ebola (about 3 times slower) and influenza (60 times slower). • The within-host reproductive number for COVID-19 is consistent to the values of influenza infection (1.7-5.35).
31.03.2020	Crystal structure of the SARS-CoV-2 non-structural protein 9, Nsp9	bioRxiv (not peer-reviewed) / New results	<ul style="list-style-type: none"> • The authors have established a protocol for the production of SARS-CoV-2 Nsp9, determined its structure and identified a peptide-binding site that may warrant further study from the perspective of understanding Nsp9 function.
27.03.2020	Organ-protective Effect of Angiotensin-converting Enzyme 2 and its Effect on the Prognosis of COVID-19	Journal of Medical Virology / Review	<ul style="list-style-type: none"> • Review of the correlation between angiotensin-converting enzyme 2 (ACE2) and severe risk factors for COVID-19 and the possible mechanisms. • ACE2 antagonizes the activation of the classical RAS system and protects against organ damage, protecting against hypertension, diabetes, and cardiovascular disease. • Similar to SARS-CoV, SARS-CoV-2 also uses the ACE2 receptor to invade human alveolar epithelial cells. ARDS is a clinical high-mortality disease, and ACE2 has a protective effect on this type of acute lung injury. • Because of these protective effects, the development of spike protein-based vaccine and drugs enhancing ACE2 activity may become one of the most promising approaches for the treatment of COVID-19 in the future.
30.03.2020	SARS-CoV-2 receptor ACE2 and TMPRSS2 are predominantly expressed in a transient secretory cell type in subsegmental bronchial branches	bioRxiv (not peer-reviewed) / New results	<ul style="list-style-type: none"> • The authors investigate ACE2 and TMPRSS2 expression levels and their distribution across cell types in lung tissue (twelve donors, 39,778 cells) and in cells derived from subsegmental bronchial branches (four donors, 17,521 cells) by single nuclei and single cell RNA sequencing, respectively.
27.03.2020	Characterization of spike glycoprotein of SARS-CoV-2 on virus entry and its immune cross-reactivity with SARS-CoV	Nat Communications / Article	<ul style="list-style-type: none"> • Using SARS-CoV-2 S protein pseudovirus system, the authors confirm that human angiotensin converting enzyme 2 (hACE2) is the receptor for SARS-CoV-2, find that SARS-CoV-2 enters 293/hACE2 cells mainly through endocytosis, that PIKfyve, TPC2, and cathepsin L are critical for entry, and that SARS-CoV-2 S protein is less stable than SARS-CoV S. Polyclonal anti-SARS S1 antibodies T62 inhibit entry of SARS-CoV S but not SARS-CoV-2 S pseudovirions. • Further studies using recovered SARS and COVID-19 patients' sera show limited cross-neutralization, suggesting that recovery from one infection might not protect against the other.
26.03.2020	A Genomic Perspective on the Origin and Emergence of SARS-CoV-2	Cell / Commentary	<ul style="list-style-type: none"> • This describes what genomic data reveal about the emergence of SARS-CoV-2 and discusses the gaps in our understanding of its origins.

Epidemiology and clinical

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30.03.2020	Likelihood of survival of coronavirus disease 2019	The Lancet Infectious Diseases / Comment	<ul style="list-style-type: none"> • A case fatality ratio of an infectious disease measures the proportion of all individuals diagnosed with a disease who will die from that disease - this ratio is thus a very important indicator not only of disease severity but also of its significance as a public health problem. • Even though the fatality rate is low for younger people, it is very clear that any suggestion of COVID-19 being just like influenza is false: even for those aged 20–29 years, once infected with SARS-CoV-2, the mortality rate is 33 times higher than that from seasonal influenza. • For people aged 60 years and older, the chance of survival following SARS-CoV-2 infection is approximately 95% in the absence of comorbid conditions - the chance of survival will be considerably decreased if the patient has underlying health conditions, and continues to decrease with age beyond 60 years.
27.03.2020	Severe Outcomes Among Patients with Coronavirus Disease 2019 (COVID-19) - United States, February 12-March 16, 2020	morbidity and Mortality Weekly Report / Report	<ul style="list-style-type: none"> • Update of an 18.03.2020 early release report. • This first preliminary description of outcomes among patients with COVID-19 in the United States indicates that fatality was highest in persons aged ≥85, ranging from 10% to 27%, followed by 3% to 11% among persons aged 65–84 years, 1% to 3% among persons aged 55-64 years, <1% among persons aged 20–54 years, and no fatalities among persons aged ≤19 years.
30.03.2020	Covid-19 in Critically Ill Patients in the Seattle Region — Case Series	New England Journal of Medicine / Case series	<ul style="list-style-type: none"> • During the first 3 weeks of the Covid-19 outbreak in the Seattle area, the most common reasons for admission to the ICU were hypoxemic respiratory failure leading to mechanical ventilation, hypotension requiring vasopressor treatment, or both.
30.03.2020	Older Clinicians and the Surge in Novel Coronavirus Disease 2019 (COVID-19)	JAMA / Comment	<ul style="list-style-type: none"> • Recent estimates from the CDC indicate that the rates of hospitalizations, intensive care unit admissions, and mortality among reported COVID-19 cases in the United States are substantially higher among patients older than 45 years compared with younger patients, with case-fatality rates exceeding 1.4% among patients aged 55 to 64 years and exceeding 2.7% among those aged 65 to 74 years.
26.03.2020	Clinical characteristics of 113 deceased patients with coronavirus disease 2019: retrospective study	BMJ / Research	<ul style="list-style-type: none"> • Among a cohort of 799 patients, 113 who died and 161 who recovered with a diagnosis of covid-19 were analysed. Data were collected until 28 Feb 2020. Clinical characteristics and laboratory findings were obtained from electronic medical records with data collection forms. • Concluded that SARS-CoV-2 infection can cause both pulmonary and systemic inflammation, leading to multi-organ dysfunction in patients at high risk. Acute respiratory distress syndrome and respiratory failure, sepsis, acute cardiac injury, and heart failure were the most common critical complications during exacerbation of covid-19.
31.03.2020	Clinical Characteristics of Hospitalized Patients with SARS-CoV-2 and Hepatitis B virus Co-infection	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> • SARS-CoV-2 infection may cause liver function damage in COVID-19 cases and the patients with HBV infection are likely to have more severe disease outcome.

30.03.2020	A Multi-hospital Study in Wuhan, China : Protective Effects of Non-menopause and Female Hormones on SARS-CoV-2 infection	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> • A cross-sectional study of COVID-19 patients who were hospitalized at Tongji and Mobile Cabin Hospitals from Jan 28, 2020 to March 8, 2020. • Menopause is an independent risk factor for COVID-19. E2 and AMH are negatively correlated with COVID-19 severity probably due to their regulation of cytokines related to immunity and inflammation.
30.03.2020	Early Spread of SARS-Cov-2 in the Icelandic Population	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> • SARS-CoV-2 has spread widely in the Icelandic population outside of the high-risk groups targeted for testing by the healthcare system. • Several different strains of the virus cause these infections and the composition of known infections in Iceland changed rapidly.
27.03.2020	Cardiovascular Implications of Fatal Outcomes of Patients With Coronavirus Disease 2019 (COVID-19)	JAMA Cardiology / Retrospective case series	<ul style="list-style-type: none"> • Among 187 patients with confirmed COVID-19, 144 patients (77%) were discharged and 43 patients (23%) died. The mean (SD) age was 58.50 (14.66) years. Overall, 66 (35.3%) had underlying CVD including hypertension, coronary heart disease, and cardiomyopathy, and 52 (27.8%) exhibited myocardial injury as indicated by elevated TnT levels. • Myocardial injury is significantly associated with fatal outcome of COVID-19, while the prognosis of patients with underlying CVD but without myocardial injury is relatively favourable.
27.03.2020	Cardiac Involvement in a Patient With Coronavirus Disease 2019 (COVID-19)	JAMA Cardiology / Case report	<ul style="list-style-type: none"> • Describes an otherwise healthy 53-year-old woman who tested positive for COVID-19 and was admitted to the cardiac care unit in March 2020 for acute myopericarditis with systolic dysfunction, confirmed on cardiac magnetic resonance imaging, the week after onset of fever and dry cough due to COVID-19. The patient did not show any respiratory involvement during the clinical course. • Clinical findings were all consistent with acute myopericarditis. She was treated with dobutamine, antiviral drugs (lopinavir/ritonavir), steroids, chloroquine, and medical treatment for heart failure, with progressive clinical and instrumental stabilization.
27.03.2020	Potential Effects of Coronaviruses on the Cardiovascular System: A Review	JAMA Cardiology / Review	<ul style="list-style-type: none"> • Coronavirus disease 2019 is associated with a high inflammatory burden that can induce vascular inflammation, myocarditis, and cardiac arrhythmias. Extensive efforts are underway to find specific vaccines and antivirals against SARS-CoV-2. • Meanwhile, cardiovascular risk factors and conditions should be judiciously controlled per evidence-based guidelines.
26.03.2020	Metabolic disturbances and inflammatory dysfunction predict severity of coronavirus disease 2019 (COVID-19): a retrospective study	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> • The authors included 97 hospitalized patients with laboratory-confirmed COVID-19. Epidemiological, clinical, and laboratory indices; radiological features; and treatment were analysed. The differences in the clinical and laboratory parameters between mild and severe COVID-19 patients and the role of these indicators in severity prediction of COVID-19 were investigated. • They concluded that Hypoproteinaemia, hypoalbuminemia, low high-density lipoproteinemia, and decreased ApoA1, CD3+T%, and CD8+T% could predict severity of COVID-19. Lymphocyte count, total serum protein, and HDL-C may be potentially useful for the evaluation of COVID-19.

30.03.2020	A Machine Learning Model Reveals Older Age and Delayed Hospitalization as Predictors of Mortality in Patients with COVID-19	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> • Patients aged beyond 62 years are at higher risk of fatality whereas hospitalization within 2 days of the onset of symptoms could reduce mortality in COVID-19 patients.
30.03.2020	Household transmissions of SARS-CoV-2 in the time of unprecedented travel lockdown in China	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> • This report is the first large-scale analysis of the household and social transmission events in the COVID-19 pandemic.
26.03.2020	Clinical and CT features of early-stage patients with COVID-19: a retrospective analysis of imported cases in Shanghai, China	Eur Respir J / Letter to the editor	<ul style="list-style-type: none"> • From January 20 to 30, 2020, 44 COVID-19 patients (male: female, 25:19; median age, 48.5 years; age range, 20–76 years) in an institution who met the entry criteria (patients' interval time between onset symptom and CT scan was less than 4 days [7]), were enrolled in this study. • Concluded that fever is the main onset symptom of COVID-19. Decreased lymphocyte count is an important indicator for diagnosis. The features of early-stage COVID-19 include GGOs-based lesions with rare small size consolidation mainly distributed in the peripheral and posterior part of the lung. Some patients' pulmonary lesions are small and focal, which should capture physicians' attention. The level of decreased CD4+T cell, elevated CRP and LDH may prompt the severity of CT imaging.
26.03.2020	COVID-19 infection induces readily detectable morphological and inflammation-related phenotypic changes in peripheral blood monocytes, the severity of which correlate with patient outcome	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> • Performed detailed flow cytometric analysis of peripheral blood samples from 28 COVID-19 patients in early 2020 in an attempt to identify factors that could help predict severity of disease and patient outcome. • While they did not detect significant differences in the number of monocytes between patients with COVID-19 and normal healthy individuals, they did identify significant morphological and functional differences, which are more pronounced in patients requiring prolonged hospitalization and ICU admission.
26.03.2020	A Multicentre Study of 2019 Novel Coronavirus Disease Outcomes of Cancer Patients in Wuhan, China	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> • Studied the clinical characteristics and outcomes of cancer patients (n=67) infected with COVID-19. • This study showed COVID-19 patients with cancer seem to have a higher proportion of severe cases and poorer prognosis. The tendency of poor prognosis was more obvious in patients at anticancer treatment phase. We should pay more intensive attentions to cancer patients infected with COVID-19.
30.03.2020	Clinical characteristics and durations of hospitalized patients with COVID-19 in Beijing: a retrospective cohort study	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> • COVID-19 has significantly shorter duration of disease and hospital length of stay than SARS. Bilateral pneumonia on CT scan, shorter period of illness onset to admission, lymphopenia, the severity of disease are the risk factors for longer hospitalization duration of COVID-19.

26.03.2020	Comorbidity and its impact on 1590 patients with Covid-19 in China: A Nationwide Analysis	Eur Respir J / Article	<ul style="list-style-type: none"> • Evaluated the risk of serious adverse outcomes in patients with Covid-19 by stratifying the comorbidity status. analysed the data from 1590 laboratory-confirmed hospitalised patients 575 hospitals in 31 province/autonomous regions/provincial municipalities across mainland China between December 11th, 2019 and January 31st, 2020. • The mean age was 48.9 years. 686 patients (42.7%) were females. Severe cases accounted for 16.0% of the study population. 131 (8.2%) patients reached to the composite endpoints. 399 (25.1%) reported having at least one comorbidity. • Concluded that among laboratory-confirmed cases of Covid-19, patients with any comorbidity yielded poorer clinical outcomes than those without. A greater number of comorbidities also correlated with poorer clinical outcomes.
27.03.2020	Critical Care for Patients with Severe Covid-2019 in Sichuan Province, China: Provincial Cohort Study	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> • The authors describe the clinical course and critical care implemented for a patient population at the provincial level in Sichuan, China. • Out of 539 confirmed Covid-19 patients, 81 severe cases (15.0%) were identified. The median (IQR) age was 50 (39-65) years, 37% were female, and 53.1% had chronic comorbidities. • They concluded that early identification, hospitalization, and provision of critical care to severe Covid-19 patients may improve prognosis. Sufficient conventional oxygen equipment should be prioritized and implemented without delay.
26.03.2020	[Analysis on cluster cases of COVID-19 in Tianjin]	Zhonghua Liu Xing Bing Xue Za Zhi. / Chinese article	<ul style="list-style-type: none"> • The data of all the cluster cases of COVID-19 in Tianjin reported as 22 February 2020 were collected to analyse the characteristics of different types of the clusters. • A total of 115 COVID-19 cases were reported in in 33 clusters in Tianjin. Clusters can be classified as following: 28 familial clusters (71 cases), 1 work place cluster (10 cases), 3 transport vehicle clusters (8 cases) and 1 public place cluster (26 cases). • Concluded that special attention should be paid to cases from same family, same work place, or other places where clustering are prone to occur, and the epidemiological investigation should be carried out timely to confirm the cluster. To prevent the transmission of COVID-19, the close contacts of the patients should be transferred to an assigned observation place in time for single room isolation.
26.03.2020	Analysis of clinical characteristics and laboratory findings of 95 cases of 2019 novel coronavirus pneumonia in Wuhan, China: a retrospective analysis	Respir Res. / Article	<ul style="list-style-type: none"> • The authors analysed the clinical characteristics and laboratory findings of some cases with 2019 novel coronavirus pneumonia . They extracted the data on 95 patients with laboratory-confirmed 2019 novel coronavirus pneumonia in Wuhan Xinzhou District People's Hospital from January 16th to February 25th, 2020. • Higher temperature, blood leukocyte count, neutrophil count, neutrophil percentage, C-reactive protein level, D-dimer level, alanine aminotransferase activity, aspartate aminotransferase activity, α - hydroxybutyrate dehydrogenase activity, lactate dehydrogenase activity and creatine kinase activity were related to severe COVID-19 and composite endpoint, and so were lower lymphocyte count, lymphocyte percentage and total protein level.
30.03.2020	Risk assessment of progression to severe conditions for patients	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> • The authors retrospectively enrolled 338 adult patients admitted to one hospital between Jan 11, 2020 to Feb 29, 2020.

	with COVID-19 pneumonia: a single-center retrospective study		<ul style="list-style-type: none"> Multiple predisposition factors can be utilized to assess the risk of progression to severe conditions at an early stage.
30.03.2020	Effects of hypertension, diabetes and coronary heart disease on COVID-19 diseases severity: a systematic review and meta-analysis	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> Hypertension, diabetes, and coronary heart disease can affect the severity of COVID-19. It may be related to the imbalance of angiotensin-converting enzyme 2 (ACE2) and the cytokine storm induced by Glucolipid metabolic disorders (GLMD).
30.03.2020	Laboratory findings, signs and symptoms, clinical outcomes of Patients with COVID-19 Infection: an updated systematic review and meta-analysis	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> The result of the current study showed that in the early stage of COVID-19 infection, there are not significant laboratory findings, but with disease progression, one or more signs include increasing AST, ALT, LDH, CK, CRP, ESR, WBC, neutrophil, and decreasing haemoglobin, lymphocyte count, eosinophil count can be seen. Elevating D-dimer and FDP are associated with ARDS development and can be used as prognostic factors.
30.03.2020	Prognostic factors for COVID-19 pneumonia progression to severe symptom based on the earlier clinical features: a retrospective analysis	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> General clinical characteristics and laboratory tests, such as combinations consisting of elevated lactate dehydrogenase (LDH) and fast respiratory rate, and detectable viral RNA in serum post-admission could provide high confident prognostic value for identifying potential severe COVID-19 pneumonia patients.
30.03.2020	Children are unlikely to have been the primary source of household SARS-CoV-2 infections	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> Whilst SARS-CoV-2 can cause mild disease in children, the data available to date suggests that children have not played a substantive role in the intra-household transmission of SARS-CoV-2.
26.03.2020	Covid-19: risk factors for severe disease and death	BMJ / Editorial	<ul style="list-style-type: none"> Overview of risk factors for severe disease and death in COVID-19 patients.
27.03.2020	Translating COVID-19 Pandemic Surge Theory to Practice in the Emergency Department: How to Expand Structure	Disaster Medicine and Public Health Preparedness / Review	<ul style="list-style-type: none"> This study reviewed the available surge science literature specifically to guide an Emergency Department's surge structural response. A checklist was created to guide the Emergency Department team's COVID-19 surge structural response.
26.03.2020	End-of-life care in the Emergency Department for the patient imminently dying of a highly transmissible acute respiratory infection (such as COVID-19)	CJEM / Article	<ul style="list-style-type: none"> The authors provide a framework for health care providers caring for Emergency Department (ED) patients with confirmed or suspected COVID-19 who are nearing end of life.
27.03.2020	The Italian coronavirus disease 2019 outbreak: recommendations from clinical practice	Anaesthesia / Article	<ul style="list-style-type: none"> The authors report the impact of the COVID-19 outbreak on regional and national healthcare infrastructure in Italy. They also report on recommendations based on clinical experiences of managing patients throughout Italy, describing key elements of clinical management, including: safe oxygen therapy; airway management; personal protective equipment; and non-technical aspects of caring for patients diagnosed with coronavirus disease 2019.

26.03.2020	Advice regarding COVID-19 and use of immunomodulators, in patients with severe dermatological diseases	Australas J Dermatol / Correspondence	<ul style="list-style-type: none"> • There is very limited evidence base to formulate specific advice for dermatology patients on immunomodulators with regards to COVID-19. • The following is based on expert opinion, taking into account known risks of influenza (a negative sense single-stranded RNA virus) and other, positive-sense single-stranded, RNA virus infections (such as SARS, MERS, and the common cold). An Australia/New Zealand consensus document is in development.
26.03.2020	COVID-19 and the otolaryngologist - preliminary evidence-based review	Laryngoscope / Contemporary Review	<ul style="list-style-type: none"> • Otolaryngologists are at unique risk due to the close contact with mucus membranes of the upper respiratory tract and have been among the most affected healthcare workers in Wuhan, China. • The authors present information on COVID-19 management relevant to otolaryngologists on the frontlines of this pandemic and provide preliminary guidance based on practices implemented in China and other countries and practical strategies deployed at Stanford University.
27.03.2020	The Role of the Global Health Development/Eastern Mediterranean Public Health Network and the Eastern Mediterranean Field Epidemiology Training Programs in Preparedness for COVID-19	JMIR Public Health and Surveillance / Opinion	<ul style="list-style-type: none"> • Viewpoint article aims to highlight the contribution of the Global Health Development (GHD)/Eastern Mediterranean Public Health Network (EMPHNET) and the EMR's Field Epidemiology Training Program (FETPs) to prepare for and respond to the current COVID-19 threat.

Infection control

Publication Date	Title/URL	Journal/ Article type	Digest
30.03.2020	Effects of temperature on COVID-19 transmission	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> • Heat at 56 degree Celsius kills the SARS coronavirus at around 10000 units per 15 minutes. • The virus can remain viable for up to three days on plastic and stainless steel or in aerosols for up to 3 hours and is relatively more stable than the known human coronaviruses. • It is stable in faeces at room temperature for at least 1-2 days and can be stable in infected patients for up to 4 days.
30.03.2020	A Genomic Survey of SARS-CoV-2 Reveals Multiple Introductions into Northern California without a Predominant Lineage	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> • Rapid testing and contact tracing, social distancing, and travel restrictions are measures that will help to slow SARS-CoV-2 spread in California and other regions of the USA.
31.03.2020	Quantifying SARS-CoV-2 transmission suggests epidemic	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> • A contact-tracing App which builds a memory of proximity contacts and immediately notifies contacts of positive cases can achieve epidemic control if used by enough people.

	control with digital contact tracing		<ul style="list-style-type: none"> • By targeting recommendations to only those at risk, epidemics could be contained without need for mass quarantines ('lock-downs') that are harmful to society.
30.03.2020	Evaluating the effectiveness of social distancing interventions against COVID-19	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> • These models suggest that social distancing interventions will buy crucial time but need to occur in conjunction with testing and contact tracing of all suspected cases to mitigate transmission of SARS-CoV-2.
30.03.2020	Which Measures are Effective in Containing COVID-19? Empirical Research Based on Prevention and Control Cases in China	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> • The authors found that both traffic control and social distancing measures have played a very good role in controlling the development of the epidemic. • Nationally, social distancing measures are better than traffic control measures; the two measures are complementary and their combined action will play a better epidemic prevention effect. • Traffic control and social distancing do not work everywhere.
30.03.2020	Research on the Influence of Effective Distance Between Cities on the Cross-regional Transmission of COVID-19	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> • It is concluded that the higher the intensity of inter-city connection, the larger scale the cross-regional spread of the epidemic.
30.03.2020	Clear plastic drapes may be effective at limiting aerosolization and droplet spray during extubation: implications for COVID-19	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> • The inexpensive and simple method of using clear drapes during extubation (and possibly intubation) of COVID-19 patients may be considered by frontline health care professionals and infection control specialists as an additional precaution.
30.03.2020	Presence of SARS-Coronavirus-2 in sewage	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> • This is the first report of detection of SARS-CoV-2 in sewage. • The detection of the virus in sewage, even when the COVID-19 incidence is low, indicates that sewage surveillance could be a sensitive tool to monitor the circulation of the virus in the population.
30.03.2020	Estimating the number of undetected COVID-19 cases exported internationally from all of China	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> • These findings highlight the importance of setting accurate travel history requirements for case definition guidelines in the initial phase of an epidemic, and actively updating these guidelines as the epidemic advances.
27.03.2020	Public Health Responses to COVID-19 Outbreaks on Cruise Ships - Worldwide, February-March 2020	Morbidity and Mortality Weekly Report / Report	<ul style="list-style-type: none"> • More than 800 cases of laboratory-confirmed COVID-19 cases occurred during outbreaks on three cruise ship voyages, and cases linked to several additional cruises have been reported across the United States. Transmission occurred across multiple voyages from ship to ship by crew members; both crew members and passengers were affected; 10 deaths associated with cruise ships have been reported to date. • Outbreaks of COVID-19 on cruise ships pose a risk for rapid spread of disease beyond the voyage. Aggressive efforts are required to contain spread. All persons should defer all cruise travel worldwide during the COVID-19 pandemic.

26.03.2020	Absence of contamination of personal protective equipment (PPE) by Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2)	Infect Control Hosp Epidemiol / Research brief	<ul style="list-style-type: none"> • To evaluate the safety of extended PPE use, the authors conducted a one-day PPE sampling study on HCWs caring for confirmed SARS-CoV-2 infected patients to ascertain the per contact episode risk of PPE contamination with SARS-CoV-2. • PPE samples were collected by five trained personnel using a standardized technique with Puritan® EnviroMax Plus pre-moistened sterile swabs from the entire front of goggles, front surface of N95 respirator, and front surface of shoes from 30 HCWs exiting patient rooms. Gloves and gowns were not swabbed as these are disposed after each use. • All 90 samples from 30 HCWs were negative. Median time spent in the patient's room was 6 minutes. Activities ranged from casual contact (e.g. administering medications, cleaning) to closer contact (e.g. physical examination, collection of respiratory samples). • Limitation: Surface swabbing may be insufficient for detection of entrapped viral particles.
25.03.2020	Addressing COVID-19 Face Mask Shortages. Can face masks be safely disinfected and reused?	Stanford Medicine / Briefing	<ul style="list-style-type: none"> • It is unknown how wearing the same mask multiple times effects the fit of N95 masks [NIOSH] • NIOSH states “there is no way of determining the maximum possible number of safe reuses for an N95 respirator as a generic number to be applied in all cases” and advise to “discard N95 respirators following use during aerosol generating procedures.” • Some methods of N95 mask disinfection can maintain filtration efficiency over multiple disinfection cycles - their effect on mask fit is unknown, and these methods are not approved by NIOSH.
30.03.2020	Physical interventions to interrupt or reduce the spread of respiratory viruses. Part 1 - Face masks, eye protection and person distancing: systematic review and meta-analysis	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> • Despite shortcomings in design and reporting of most trials, the authors would still recommend healthcare workers use facial masks. • They found no evidence of a difference between surgical masks and N95 respirators. The latter are associated with harms such as dehydration, performance impairment and compliance. • There is only limited evidence to support effectiveness of quarantine. Based on observational evidence from the previous SARS epidemic, large trials comparing full facial protection with surgical masks need to be carried out.

Treatment

Publication Date	Title/URL	Journal/ Article type	Digest
30.03.2020	Efficacy of hydroxychloroquine in patients with COVID-19: results of a randomized clinical trial	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> • Among patients with COVID-19, the use of hydroxychloroquine (HCQ) could significantly shorten Time to clinical recovery (TTCR) and promote the absorption of pneumonia.
30.03.2020	Role of Chloroquine and Hydroxychloroquine in the	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> • There is theoretical, experimental, preclinical and clinical evidence of the effectiveness of chloroquine in patients affected with COVID-19.

	Treatment of COVID-19 Infection- A Systematic Literature Review		<ul style="list-style-type: none"> • There is adequate evidence of drug safety from the long-time clinical use of chloroquine and hydroxychloroquine in other indications. • More data from ongoing and future trials will add more insight into the role of chloroquine and hydroxychloroquine in COVID-19 infection.
30.03.2020	A Rush to Judgment? Rapid Reporting and Dissemination of Results and Its Consequences Regarding the Use of Hydroxychloroquine for COVID-19	Annals of Internal Medicine / Opinion	<ul style="list-style-type: none"> • There is enough rationale to justify the continued investigation of the efficacy and safety of HCQ in hospitalized patients with COVID-19. • There currently are no data to recommend the use of hydroxychloroquine as prophylaxis for COVID-19, although we eagerly await data from trials under way - thus, the authors discourage its off-label use until justified and supply is bolstered.
30.03.2020	Genetic Profiles in Pharmacogenes Indicate Personalized Drug Therapy for COVID-19	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> • At least 17 drugs for COVID-19 therapy with predictable pharmacogenes should be carefully utilized in risk races which are consisted of more risk allele carriers. • At least 29 drugs with potential of drug-drug interactions (DDIs) are reported to be affected by other DDIs, they should be replaced by similar drugs without interaction if it is possible. • Drugs which specifically targeted to infected cells with ACE2 such as chloroquine are preferred in COVID-19 therapy.
30.03.2020	Medical treatment of 55 patients with COVID-19 from seven cities in northeast China who fully recovered: a single-center, retrospective, observational study	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> • Given the 100% recovery rate, early administration of antiviral drugs can be considered. • Umifenovir may benefit patients with mild symptoms, while lopinavir/ritonavir may benefit those with severe symptoms. • Prophylactic administration of common antibiotics may reduce the risk of co-infection. • The use of glucocorticoids is usually not necessary.
3.2020	Expanded Umbilical Cord Mesenchymal Stem Cells (UC-MSCs) as a Therapeutic Strategy in Managing Critically Ill COVID-19 Patients: The Case for Compassionate Use	Pain Physician / Article	<ul style="list-style-type: none"> • The limited but emerging evidence regarding Umbilical Cord Mesenchymal Stem Cells (UC-MSCs) in managing COVID-19 suggests that it might be considered for compassionate use in critically ill patients to reduce morbidity and mortality in the United States.
30.03.2020	Risk Factors Associated with Clinical Outcomes in 323 COVID-19 Patients in Wuhan, China	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> • Hypnotics could be an effective ancillary treatment for COVID-19. • A retrospective chart review of 323 hospitalized patients with COVID-19 in Wuhan was conducted. • Patients were classified into three disease severity groups (non-severe, severe, and critical), based on their initial clinical presentation.
27.03.2020	A survey of 434 clinical trials about coronavirus disease 2019 in China	Journal of Medical Virology / Letter	<ul style="list-style-type: none"> • Brief summary of 434 registered clinical trials about COVID-19 registered on the Chinese Clinical Trial Registry database, covering cell therapy (19 records), biological therapy (34 records), western medicine (71 records), Chinese medicine (99 records), and others (211 records).

27.03.2020	Anticoagulant treatment is associated with decreased mortality in severe coronavirus disease 2019 patients with coagulopathy	Journal of Thrombosis & Haemostasis / Research article	<ul style="list-style-type: none"> • The application of heparin in COVID-19 has been recommended by some expert consensus due to the risk of disseminated intravascular coagulation and venous thromboembolism. • Of 449 patients with severe COVID-19 enrolled into the study, 99 received heparin (mainly with low molecular weight heparin, LMWH) for 7 days or longer. The D-dimer, prothrombin time and age were positively, and platelet count was negatively, correlated with 28-day mortality in multivariate analysis. No difference on 28-day mortality was found between heparin users and nonusers. • Anticoagulant therapy mainly with LMWH appears to be associated with better prognosis in severe COVID-19 patients meeting SIC criteria or with markedly elevated D-dimer.
30.03.2020	A prospect on the use of antiviral drugs to control local outbreaks of COVID-19	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> • For an infectious disease in which pre-symptomatic infections are plausible, an intervention measure based on contact tracing performs better when realized together with testing instead of monitoring, provided that the test is able to detect infections during the incubation period. • In all tested scenarios, the model highlights the benefits of the administration of an antiviral drug in addition to quarantine, isolation and contact tracing.
30.03.2020	Renin–Angiotensin–Aldosterone System Inhibitors in Patients with Covid-19	New England Journal of Medicine / Article	<ul style="list-style-type: none"> • The interaction between the SARS viruses and ACE2 has been proposed as a potential factor in their infectivity, and there are concerns about the use of RAAS inhibitors that may alter ACE2 and whether variation in ACE2 expression may be in part responsible for disease virulence in the ongoing Covid-19 pandemic. • Here, the authors highlight that the data in humans are too limited to support or refute these hypotheses and concerns.
30.03.2020	Highly pathogenic coronavirus N protein aggravates lung injury by MASP-2-mediated complement over-activation	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> • Complement suppression may represent a common therapeutic approach for pneumonia induced by these highly pathogenic coronaviruses.
27.03.2020	Elevated plasmin(ogen) as a common risk factor for COVID-19 susceptibility	Physiological Reviews / Review	<ul style="list-style-type: none"> • Summary of the evidence for the existence of elevated plasmin(ogen) in COVID-19 patients with hypertension, diabetes, coronary heart disease, cerebrovascular illness, COPD, and kidney dysfunction. • Plasmin, and other proteases, may cleave a newly inserted furin site in the S protein of SARS-CoV-2, extracellularly, which increases its infectivity and virulence. Hyper-fibrinolysis associated with plasmin leads to elevated D-dimer in severe patients. • The plasmin(ogen) system may prove a promising therapeutic target for combating COVID-19.

Social sciences

Publication Date	Title/URL	Journal/ Article type	Digest
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30.03.2020	Feeding Low-Income Children during the Covid-19 Pandemic	New England Journal of Medicine / Perspective	<ul style="list-style-type: none"> • The Covid-19 pandemic highlights the need for policy-based solutions that ensure food security for millions of American children • We should examine in real time the strategies being used, acknowledge the broader political landscape in which they're being implemented, and improve our ability to adapt how, when, and where we provide nutritional support to children.
30.03.2020	Will financial innovation transform pandemic response?	The Lancet Infectious Diseases / Comment	<ul style="list-style-type: none"> • The indignation of the public health sector is unlikely to quash new forms of aid, but health partisans can provide safeguards. • They can engage with and interrogate the language and priorities of finance, they can require that the bonds' triggers be publicly negotiated and open access, they can push for disbursement criteria that place the needs of the sick before the demands of investors, they can fight for consultation with communities where pandemics occur. • But public health influence on these financial instruments will require involvement in global health and humanitarian politics that has heretofore been considered incidental rather than first-order health prevention.
27.03.2020	[Dealing with psychological distress by healthcare professionals during the COVID-19 pandemic]	Nervenarzt / German article	<ul style="list-style-type: none"> • This article presents guidelines for health professionals and team leaders in healthcare that help to maintain mental health during the COVID-19 pandemic.
27.03.2020	Trust in humanitarian aid from the earthquake 2017 to COVID-19 in Iran: A policy analysis	Disaster Medicine and Public Health Preparedness / Article	<ul style="list-style-type: none"> • The earthquake of November 2017, the great flood of April 2019, and the COVID-19 outbreak in 2020 are three major emergencies in Iran during the last three years. A common issue in all these crises seems to be the issue of "trust". • Official authorities including Iranian President, ministers, and the Judiciary system tried to gain people's trust by either changing policies or developing new ones. • It seems that new policies are still needed to overcome mistrust in Iran at the times of emergency.
30.03.2020	The psychological distress and coping styles in the early stages of the 2019 coronavirus disease (COVID-19) epidemic in the general mainland Chinese population: a web-based survey	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> • In the early stages of COVID-19, general population with epidemic contact characteristics, excessive concern with media reports, and perceived more severe impacts have higher levels of psychological distress. • Psychological distress was significantly negatively correlated with the coping style. • Interventions should be implemented early, especially for those population with a high level of psychological distress and/or with a negative coping style.
27.03.2020	Mitigating the impact of conference and travel cancellations on researchers' futures	Elife / Opinion	<ul style="list-style-type: none"> • Conference cancellations on an unprecedented scale during the current COVID-19 pandemic may disproportionately affect early-career researchers and scientists from countries with limited research funding. • The authors provide seven recommendations for how to mitigate this.
27.03.2020	A Framework for Rationing Ventilators and Critical Care Beds During the COVID-19 Pandemic	Jama / Opinion	<ul style="list-style-type: none"> • Existing recommendations for how to allocate scarce critical care resources during a pandemic or disaster contain ethically problematic provisions, such as categorically excluding large populations of patients from access to scarce intensive care unit (ICU) resources.

			<ul style="list-style-type: none"> • This viewpoint addresses these ethical concerns and provides a framework for making allocation decisions that incorporates multiple ethically relevant considerations, while allowing all patients in need to be eligible for access to critical care.
30.03.2020	Unprecedented disruptions of lives and work: Health, distress and life satisfaction of working adults in China one month into the COVID-19 outbreak	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> • These results highlight that physically active people might be more susceptible to wellbeing issues during the lockdown. • Policymakers who are considering introducing restrictive measures to contain COVID-19 may benefit from understanding such health and wellbeing implications.

Miscellaneous

Publication Date	Title/URL	Journal/ Article type	Digest
27.03.2020	Assessment of health information about the prevention of COVID-19 on the Internet	JMIR Public Health and Surveillance / Article	<ul style="list-style-type: none"> • 80 weblinks were reviewed. Most of them were produced in the USA and Spain (72.5%), by digital media and official public health organizations (75.1%). • The most mentioned WHO preventive measure was "wash your hands frequently" (81.3%). Less frequent recommendation was related to "stay home if you feel unwell" (32.5%). The analysis by type of author (official public health organizations versus digital media) revealed significant differences regarding the recommendation to wear a mask if you are healthy only if caring for a person with suspected COVID-19 (OR = 4.39). • According to country of publication (Spain versus the USA) significant differences were detected regarding some recommendations, such as "wash your hands frequently" (OR = 9.82), "cover your mouth and nose with your bent elbow or tissue when you cough or sneeze" (OR = 4.59), or "stay home if you feel unwell" (OR = 0.31).
30.03.2020	Analysis of the scientific literature in the first 30 Days of the novel coronavirus outbreak	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> • Diagnosis and effective preventive and therapeutic measures were the fields in which more research is still needed. • The vast majority of scientific literature in the first 30-days of an epidemic outbreak is based on reported data rather than primary data. Nevertheless, the scientific statements and public health decisions rely on these data.
30.03.2020	Developing Covid-19 Vaccines at Pandemic Speed	New England Journal of Medicine / Perspective	<ul style="list-style-type: none"> • Over the past decade, the scientific community and the vaccine industry have been asked to respond urgently to epidemics of H1N1 influenza, Ebola, Zika, and now SARS-CoV-2. • If the pandemic appears to abruptly end before vaccines are ready, we should continue developing the most promising candidates to a point at which they can be stockpiled and ready for trials and emergency authorization should an outbreak recur. • A global financing system that supports end-to-end development and large-scale manufacturing and deployment, ensures fair allocation, and protects private-sector partners from significant financial losses will be a critical component of future pandemic preparedness.

Modelling

Publication Date	Title/URL	Journal/ Article type	Digest
30.03.2020	Estimates of the severity of coronavirus disease 2019: a model-based analysis	The Lancet Infectious Diseases / Article	<ul style="list-style-type: none"> • In the face of rapidly changing data, a range of case fatality ratio estimates for coronavirus disease 2019 (COVID-19) have been produced that differ substantially in magnitude. • The authors aimed to provide robust estimates, which show a strong age gradient in risk of death.
30.03.2020	Estimating the number of infections and the impact of nonpharmaceutical interventions on COVID-19 in 11 European countries	Imperial College / Report	<ul style="list-style-type: none"> • Many European countries have implemented unprecedented non-pharmaceutical interventions including case isolation, the closure of schools and universities, banning of mass gatherings and/or public events, and most recently, widescale social distancing including local and national lockdowns - we use a semi-mechanistic Bayesian hierarchical model to attempt to infer the impact of these interventions across 11 European countries • Overall, the authors estimate that countries have managed to reduce their reproduction number - but given the lag of 2-3 weeks between when transmission changes occur and when their impact can be observed in trends in mortality, for most of the countries considered here it remains too early to be certain that recent interventions have been effective
30.03.2020	Mitigation and herd immunity strategy for COVID-19 is likely to fail	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> • On the basis of a semi-realistic SIR microsimulation for Germany and Poland, the authors show that the R0 parameter interval for which the COVID-19 epidemic stays overcritical but below the capacity limit of the health care system to reach herd immunity is so narrow that a successful implementation of this strategy is likely to fail.
30.03.2020	Building a COVID-19 Vulnerability Index	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> • While information specific to COVID-19 is limited, a model using complications due to other upper respiratory infections can be used as a proxy to help identify those individuals who are at the greatest risk.
30.03.2020	Modeling the Epidemic Dynamics of COVID-19 Outbreak in Iran	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> • In an optimistic estimation, the number of unidentified cases can be 3 to 6 times more than the reported numbers. • Social distancing alone cannot be an effective policy at this stage of pandemic unless at least 80 percent of the population confine themselves for an extended period of time. • An alternative policy is to increase testing extensively and isolate identified cases actively combined with effective social distancing.
30.03.2020	A model to estimate regional demand for COVID-19 related hospitalizations	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> • The model, available online, 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 further access will continue to aid community and hospital leaders in their response to COVID-19.

30.03.2020	Climate effect on COVID-19 spread rate: an online surveillance tool	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> • This analysis suggests a plausible negative correlation between warmer climate and COVID-19 spread rate as defined by RR and RoS worldwide. • This initial correlation should be interpreted cautiously and be further validated over time, the pandemic is at different stages in various countries as well as in regions within these countries. • The authors provide an online surveillance dashboard (https://covid19.net.technion.ac.il/) to further assess the association between climate parameters and outbreak dynamics worldwide as time goes by.
30.03.2020	COVID-19 transmission in Mainland China is associated with temperature and humidity: a time-series analysis	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> • Every 1°C increase in the air temperature (AT) led to a decrease in the daily confirmed cases by 36% to 57% when relative humidity (ARH) was in the range from 67% to 85.5%. • Every 1% increase in ARH led to a decrease in the daily confirmed cases by 11% to 22% when AT was in the range from 5.04°C to 8.2°C. • These associations were not consistent throughout Mainland China.
30.03.2020	From a single host to global spread. The global mobility based modelling of the COVID-19 pandemic implies higher infection and lower detection rates than current estimates	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> • The higher the testing rate per country, the lower the discrepancy between data (diagnosed cases) and model. • The actual mortality rate is putatively lower than estimated.
30.03.2020	Development and external validation of a prognostic multivariable model on admission for hospitalized patients with COVID-19	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> • This study provides a new prediction model to identify patients with lethal COVID-19. • Its practical reliance on commonly available parameters should improve usage of limited healthcare resources and patient survival rate.
30.03.2020	General Model for COVID-19 Spreading with Consideration of Intercity Migration, Insufficient Testing and Active Intervention: Application to Study of Pandemic Progression in Japan and USA	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> • With a highly vigilant public maintaining personal hygiene and exercising strict protective measures, the percentage of population infected can be further reduced to 0.23% in Japan and 2.7% in the USA.

Produced by the PHE COVID-19 Literature Digest Team

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