



## International EPI Cell Daily Evidence Digest – 06/04/2020

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Please note that we are including preprints, which are preliminary reports of work that have NOT been peer-reviewed.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
01.04.2020	<a href="#">Development of a Novel Reverse Transcription Loop-Mediated Isothermal Amplification Method for Rapid Detection of SARS-CoV-2</a>	Virol Sin / Letter	<ul style="list-style-type: none"><li>• Here, the authors present a novel visual reverse transcription loop-mediated isothermal amplification (RT-LAMP) assay for rapid and sensitive detection of SARS-CoV-2 using mismatch-tolerant technique.</li></ul>
06.03.2020	<a href="#">Pooling RT-PCR or NGS samples has the potential to cost-effectively generate estimates of COVID-19 prevalence in resource limited environments</a>	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"><li>• The pooling of RT-PCR samples is a cost-effective technique for providing much-needed course-grained data on the prevalence of COVID-19.</li></ul>

06.04.2020	<a href="#">Clinical meanings of rapid serological assay in patients tested for SARS-Co2 RT-PCR</a>	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> <li>• After 10 days of symptoms the predictive value of rapid serological test is higher than that of standard assay.</li> <li>• The rapid serological test analysed in the present study is candidate to provide information on immunoreaction of the subject to COVID-19 exposure.</li> </ul>
06.04.2020	<a href="#">A novel cohort analysis approach to determining the case fatality rate of COVID-19 and other infectious diseases</a>	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> <li>• This is a confirmed case of SARS-CoV-2 infection with common symptoms, and her diagnosis has undergone multiple false negatives ,suggesting that it is difficult to identify certain carriers of the virus and that such patients may also increase the spread of the SARS-CoV-2.</li> </ul>
04.04.2020	<a href="#">Detection of 2019 novel coronavirus in semen and testicular biopsy specimen of COVID-19 patients</a>	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> <li>• From January 31 to March 14, 2020, 12 patients in recovery and one patient died of COVID-19 were included in this descriptive study.</li> <li>• No positive RT-PCR result was found in the semen or testicular biopsy specimen.</li> <li>• The results from this study show no evidence of sexual transmission of 2019-nCov from males.</li> </ul>
05.04.2020	<a href="#">Clinical features and outcomes of 197 adult discharged patients with COVID-19 in Yichang, Hubei</a>	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> <li>• The retrospective study recruited 197 cases of COVID-19 discharged from Yichang Central People's Hospital and Yichang Third People's Hospital from Jan 17 to Feb 26, 2020.</li> <li>• The sensitivity of RT-PCR was limited. Chest CT scan was recommended for the suspected patients.</li> <li>• Lymphocytopenia and eosinophils declining without leukocytes increasing may be considered as a useful evidence for the diagnosis.</li> </ul>
04.04.2020	<a href="#">Computed Tomography Findings and Short-term follow-up with Novel Coronavirus Pneumonia</a>	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> <li>• In this retrospective, two-centre study, the authors reviewed the medical records of 57 patients with NCP in CT from Jan 21 to Feb 12, 2020.</li> <li>• The distribution of abnormality was subpleural lesions in 51 cases, with 96.5% ground-glass opacity (GGO) and 68.4% consolidation. Importantly, the group of men had more septal thickening and air trapping than the female group. Compared with the younger, the elderly had higher of subpleural lesion, interlobular septal thickening and pleural thickening.</li> </ul>
01.04.2020	<a href="#">Radiologic Chest CT Findings From COVID-19 in Orleans Parish, Louisiana</a>	Echocardiography / Article	<ul style="list-style-type: none"> <li>• The authors describe and illustrate Early and Advanced stage CT findings from patients with documented COVID-19 who have been admitted to University Medical Centre in New Orleans, Louisiana/</li> </ul>
02.04.2020	<a href="#">Diagnostic Value and Key Features of Computed Tomography in Coronavirus Disease 2019</a>	Emerging Microbes & Infections / Reviews	<ul style="list-style-type: none"> <li>• This review focuses on the imaging characteristics and changes throughout the disease course in patients with COVID-19 in order to provide some help for clinicians.</li> <li>• Typical CT findings included bilateral ground-glass opacity, pulmonary consolidation, and prominent distribution in the posterior and peripheral parts of the lungs.</li> <li>• This review also provides a comparison between COVID-19 and other diseases that have similar CT findings. Since most patients with COVID-19 infection share</li> </ul>

			typical imaging features, radiological examinations have an irreplaceable role in screening, diagnosis and monitoring treatment effects in clinical practice.
06.04.2020	<a href="#">Ultra-High-Resolution CT Follow-Up in Patients with Imported Early-Stage Coronavirus Disease 2019 (COVID-19) Related Pneumonia</a>	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> <li>• The abnormalities of ground-glass opacities (GGOs) with peripleural distribution, consolidated areas, septal thickening, pleural involvement and intralesional vasodilatation on UHR-CT indicate the diagnosis of COVID-19.</li> <li>• COVID-19 cases could manifest significantly progressed GGOs and consolidations with increased volume during the early-phase CT follow-up.</li> </ul>
03.04.2020	<a href="#">Neutrophil-to-Lymphocyte ratio and Lymphocyte-to-C-reactive protein ratio in patients with severe coronavirus disease 2019 (COVID-19): A meta-analysis</a>	J Med Virol	<ul style="list-style-type: none"> <li>• Neutrophil-to-Lymphocyte ratio (NLR) and Lymphocyte-to-C-reactive protein ratio (LCR) are established inflammation markers that reflect systemic inflammatory response, and both are available in almost all laboratories.</li> <li>• In this study, a meta-analysis was performed to investigate whether NLR and LCR values can help predict clinical severity in patients with COVID-19.</li> <li>• NLR values were found to increase significantly in COVID-19 patients with severe disease (SMD=2.404, 95% CI=0.98 to 3.82), while LCR values were decreased significantly (SMD= -0.912, 95% CI= -1.275 to -0.550).</li> </ul>
04.04.2020	<a href="#">Level of IL-6 predicts respiratory failure in hospitalized symptomatic COVID-19 patients</a>	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> <li>• This study shows that IL-6 is an effective marker that might be able to predict upcoming respiratory failure with high accuracy and help physicians correctly allocate patients at an early stage.</li> </ul>
06.04.2020	<a href="#">No indications for overt innate immune suppression in critically ill COVID-19 patients</a>	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> <li>• Despite a pronounced inflammatory response, mHLA-DR expression kinetics indicate no overt innate immune suppression in COVID-19 patients.</li> <li>• These data signify that innate immune suppression as a negative feedback mechanism following PAMP-induced inflammation appears not to be present in COVID-19.</li> </ul>
03.04.2020	<a href="#">Case Report on Early Diagnosis of COVID-19</a>	Disaster Medicine and Public Health Preparedness / Article	<ul style="list-style-type: none"> <li>• Based on the analysis of the cases of 4 patients, this article finds that early diagnosis requires a combination of epidemiology, clinical manifestations, imaging, and aetiology, with particular emphasis on epidemiology history and chest CT manifestations.</li> </ul>
05.04.2020	<a href="#">One-step RNA extraction for RT-qPCR detection of 2019-nCoV</a>	bioRxiv (not peer-reviewed) / New results	<ul style="list-style-type: none"> <li>• The authors show that direct lysis of respiratory samples can be used in place of RNA extraction kits to run the CDC 2019-nCoV Real-Time Diagnostic assay with the additional benefits of higher throughput, lower cost, faster turnaround and possibly higher sensitivity and improved safety.</li> </ul>
02.04.2020	<a href="#">Clinical laboratory and SARS-CoV-2 infection: where do we stand?</a>	Clinical Chemistry and Laboratory Medicine / Ahead of Publication	<ul style="list-style-type: none"> <li>• The frequency of raised Procalcitonin (PCT) levels in COVID-19 patients at admittance in a cohort of 1099 Chinese patients has been reported as 5.5%.</li> <li>• It appears safe and clinically relevant to indicate that PCT testing upon admission to the ICU should add useful information for early risk assessment and initial rule-out of a bacterial coinfection. PCT monitoring shall allow to identify infections that may occur later and, in case such an event occurs, to monitor progression to the more severe states (sepsis and septic shock).</li> </ul>

06.04.2020	<a href="#">Urinalysis, but not blood biochemistry, detects the early renal impairment in patients with COVID-19</a>	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> <li>The results of this study revealed that urinalysis is better in unveiling potential kidney impairment of COVID-19 patients than blood chemistry test and urinalysis could be used to reflect and predict the disease severity.</li> </ul>
06.04.2020	<a href="#">Rapid and accurate identification of COVID-19 infection through machine learning based on clinical available blood test results</a>	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> <li>In this study, 11 key blood indices were extracted through random forest algorithm to build the final assistant discrimination tool from 49 clinical available blood test data which were derived by commercial blood test equipment.</li> <li>The proposed tool is well-suited to carry out preliminary assessment of suspected patients and help them to get timely treatment and quarantine suggestion. The assistant tool is now available online at <a href="http://lishuyan.lzu.edu.cn/COVID2019_2/">http://lishuyan.lzu.edu.cn/COVID2019_2/</a>.</li> </ul>
02.04.2020	<a href="#">Laboratory diagnostics within a modular hospital at the time of Coronavirus disease 2019 (COVID-19) in Wuhan</a>	Clinical Chemistry and Laboratory Medicine / Ahead of Print Article	<ul style="list-style-type: none"> <li>This article discusses good practice around constructing a clinical laboratory in a modular hospital. Overall, 14 modular hospitals with more than 10,000 beds have been built in Wuhan so far.</li> <li>Areas covered are: choosing the location, establishing on-field modular clinical laboratory, other related clinical laboratories, transporting samples, and constructing an information system.</li> </ul>
03.04.2020	<a href="#">The protein expression profile of ACE2 in human tissues</a>	bioRxiv (not peer-reviewed) / New results	<ul style="list-style-type: none"> <li>This analysis suggests that the expression of ACE2 in the human respiratory system appears to be limited, and the expression of the receptor in lung or respiratory epithelia on the protein level is yet to be confirmed.</li> <li>This raises questions regarding the role of ACE2 for infection of human lungs and highlights the need to further explore the route of transmission during SARS-CoV-2 infection.</li> </ul>
03.04.2020	<a href="#">When Darkness Becomes a Ray of Light in the Dark Times: Understanding the COVID-19 via the Comparative Analysis of the Dark Proteomes of SARS-CoV-2, Human SARS and Bat SARS-Like Coronaviruses</a>	bioRxiv (not peer-reviewed) / New results	<ul style="list-style-type: none"> <li>In this study, the authors have exploited a set of complementary computational approaches to examine the dark proteomes of SARS-CoV-2, bat SARS-like, and human SARS CoVs by analysing the prevalence of intrinsic disorder in their proteins.</li> <li>According to their findings, SARS-CoV-2 proteome contains very significant levels of structural order. Except for Nucleocapsid, Nsp8, and ORF6, the vast majority of SARS-CoV-2 proteins are mostly ordered proteins containing less intrinsically disordered protein regions (IDPRs).</li> <li>IDPRs found in SARS-CoV-2 proteins are functionally important.</li> </ul>
04.04.2020	<a href="#">Insights into The Codon Usage Bias of 13 Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) Isolates from Different Geo-locations</a>	bioRxiv (not peer-reviewed) / New results	<ul style="list-style-type: none"> <li>The authors analysed genome-wide codon usage patterns in 13 SARS-CoV-2 isolates from different geo-locations (countries) by utilizing different CUB measurements.</li> <li>By using the most expressed genes in human lung tissues as a reference set, some viral genes such as Nucleocapsid phosphoprotein, ORF7a protein, and surface glycoprotein had high CAI values which may indicate for selection force acting on their codon usage, as they play important roles in viral assembly and may help viruses avoid the host immune system.</li> </ul>

06.04.2020	<a href="#">ACE2 variants underlie interindividual variability and susceptibility to COVID-19 in Italian population</a>	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> <li>The findings of this study suggest that a predisposing genetic background may contribute to the observed inter-individual clinical variability associated with COVID-19. They allow an evidence-based risk assessment opening up the way to personalized preventive measures and therapeutic options.</li> </ul>
04.04.2020	<a href="#">In-silico analysis of SARS-CoV-2 genomes: Insights from SARS encoded non-coding RNAs</a>	bioRxiv (not peer-reviewed) / New results	<ul style="list-style-type: none"> <li>The authors successfully identified human and virus encoded miRNAs that might regulate pathogenesis of both these coronaviruses and the fact that a number of host miRNAs could target SARS-CoV-2 genomes possibly reveal why this virus follows mild pathogenesis in healthy individuals.</li> </ul>
05.04.2020	<a href="#">In-silico analysis of SARS-CoV-2 genomes: Insights from SARS encoded non-coding RNAs</a>	bioRxiv (not peer-reviewed) / New results	<ul style="list-style-type: none"> <li>The authors identified non-coding sequences in SARS-CoV-2 genomes that were earlier reported to contribute towards SARS pathology.</li> <li>The study provides insights into the overlapping sequences among these viruses for their effective inhibition as well as identifying new drug targets that could be used for development of new antivirals.</li> </ul>
05.04.2020	<a href="#">A snapshot of SARS-CoV-2 genome availability up to 30th March, 2020 and its implications</a>	bioRxiv (not peer-reviewed) / New results	<ul style="list-style-type: none"> <li>The authors examined full genome sequences currently available to assess the presence of sufficient information for reliable phylogenetic and phylogeographic studies in countries with the highest toll of confirmed cases.</li> </ul>

## Epidemiology and clinical

Publication Date	Title/URL	Journal/ Article type	Digest
03.04.2020	<a href="#">Clinical Manifestations of Children with COVID-19: a Systematic Review</a>	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> <li>The authors examined the clinical manifestations of COVID-19 in children. A total of 34 studies (1,118 cases) were included.</li> <li>The most prevalent symptom was fever (16.3%), followed by cough (14.4%), nasal symptoms (3.6%), diarrhoea (2.7%) and nausea/vomiting (2.5%).</li> <li>One hundred forty-five (12.9%) children were diagnosed with pneumonia and 43 (3.8%) upper airway infections were reported.</li> <li>Clinical manifestations of children with COVID-19 differ widely from adult cases. Fever and respiratory symptoms should not be considered a hallmark of COVID-19 in children.</li> </ul>
04.04.2020	<a href="#">A Mini Review on Current Clinical and Research Findings for Children Suffering from COVID-19</a>	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> <li>The numbers of children with COVID-19 pneumonia infection are small, and most of them come from family aggregation.</li> <li>Symptoms are mainly mild or even asymptomatic, which allow children to be a risk factor for transmission.</li> <li>Early chest CT examination combined with pathogenic detection is a</li> </ul>

			<p>recommended clinical diagnosis scheme in children.</p> <ul style="list-style-type: none"> <li>• Effective isolation measures and appropriate psychological comfort need to be provided timely.</li> </ul>
02.04.2020	<a href="#">Will children reveal their secret? The coronavirus dilemma</a>	European Respiratory Journal / Article	<ul style="list-style-type: none"> <li>• Among 44.672 confirmed cases, Chinese CDC report showed 416 paediatric confirmed cases in 0–9 years age group (0.9%) with no fatalities and 549 cases in 10–19 years age group (1.2%) with 1 fatality (0.2%).</li> <li>• Latest Italian reports showed similar results with 318 (0.5%) confirmed cases in 0–9 years age group and 386 (0.7%) confirmed cases in 10–19 years age group. No children were recovered in the intensive care unit and no deaths were reported.</li> <li>• The authors speculate that high ACE2 receptor concentrations, trained immunity and a constitutional high lymphocyte count in children may partially explain the mild disease observed in this group of patients.</li> </ul>
03.04.2020	<a href="#">Coronavirus Disease 2019 and Children: What Pediatric Health Care Clinicians Need to Know</a>	JAMA Pediatrics / Viewpoint	<ul style="list-style-type: none"> <li>• Children are typically more susceptible to influenza complications, yet so far, they have experienced lower-than-expected rates of COVID-19 disease, and deaths in children appear to be rare.</li> <li>• Thus far, no convincing evidence of intrauterine transmission has been identified, but only a small number of pregnancies have been described.</li> <li>• Surveillance of COVID-19 in the paediatric population, including seroprevalence studies, is needed to better understand its influence on US children.</li> </ul>
03.04.2020	<a href="#">COVID-19 infection during pregnancy: a systematic review to summarize possible symptoms, treatments, and pregnancy outcomes</a>	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> <li>• A total of eight studies were included, that comprises 100 infected pregnant women.</li> <li>• The COVID-19 infected pregnant women often reported common symptoms of infection: fever, cough, and fatigue with numerous additional symptoms, including myalgia, and sore throat.</li> <li>• The proposed treatments for infected pregnant women are different from what usually recommended for the general infected people.</li> </ul>
02.04.2020	<a href="#">Gastrointestinal symptoms of 95 cases with SARS-CoV-2 infection</a>	Gut	<ul style="list-style-type: none"> <li>• The author studied the GI symptoms in SARS-CoV-2 infected patients. They analysed epidemiological, demographic, clinical and laboratory data of 95 cases with SARS-CoV-2. RT-PCR was used to detect the presence of SARS-CoV-2 in faeces and GI tissues.</li> <li>• Among the 95 patients, 58 cases exhibited GI symptoms of which 11 (11.6%) occurred on admission and 47 (49.5%) developed during hospitalisation. Diarrhoea (24.2%), anorexia (17.9%) and nausea (17.9%) were the main symptoms with five (5.3%), five (5.3%) and three (3.2%) cases occurring on the illness onset, respectively. A substantial proportion of patients developed diarrhoea during hospitalisation, potentially aggravated by various drugs including antibiotics. Faecal samples of 65 hospitalised patients were tested for the presence of SARS-CoV-2, including 42 with and 23 without GI symptoms, of which 22 (52.4%) and 9 (39.1%)</li> </ul>



			<p>were positive, respectively.</p> <ul style="list-style-type: none"> <li>• Conclusions: GI tract may be a potential transmission route and target organ of SARS-CoV-2.</li> </ul>
03.04.2020	<a href="#">Imaging and Clinical Features of Patients With 2019 Novel Coronavirus SARS-CoV-2: A systematic review and meta-analysis</a>	Journal of Medical Virology / Systematic review	<ul style="list-style-type: none"> <li>• The authors explored reliable evidence for the diagnosis and treatment of the COVID-19 by analysing all the published studies by Chinese scholars on the clinical and imaging features in novel coronavirus pneumonia (NCP) caused by SARS-CoV-2.</li> <li>• Overall, 31 articles and 46959 patients were included, including 10 English articles, 21 Chinese articles. The results of meta-analysis showed that the most common clinical manifestations were fever (87.3%), cough (58.1%), dyspnoea (38.3%), muscle soreness or fatigue (35.5%), chest distress (31.2%). The main imaging findings were bilateral pneumonia (75.7%), and ground glass opacification 69.9%. Among the patients, the incidence of required ICU was 29.3%, the incidence of ARDS was 28.8%, the multiple organ dysfunction syndrome was 8.5%, and the case fatality rate of patients with COVID-19 was 6.8%.</li> </ul>
03.04.2020	<a href="#">Clinical features, Diagnosis, and Treatment of COVID-19: A systematic review of case reports and case series</a>	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> <li>• Thirty-four articles were included with a total of 99 patients (mean age of 46.2 yo).</li> <li>• The most common presenting symptom in patients who tested positive for COVID-19 was fever, reported in up to 83% of patients from 76.4% of the analysed studies. Other symptoms including rhinorrhoea, dizziness, and chills were less frequently reported.</li> <li>• In studies which reported C-reactive protein (CRP) measurements (44%), a large majority of patients displayed an elevated CRP (73%).</li> <li>• Development of acute ARDS may play a role in estimating disease progression and mortality risk.</li> </ul>
03.04.2020	<a href="#">Clinics in Diagnostic Imaging: COVID-19 atypical pneumonia</a>	Singapore Medical Journal / Case report	<ul style="list-style-type: none"> <li>• A 53-year-old man presented with high fever and a non-productive cough but had no recent travel history. He deteriorated clinically very rapidly and was intubated. The endotracheal tube microbiological culture isolated <i>Klebsiella pneumoniae</i>.</li> <li>• On chest computed tomography, the presence of mixed ground-glass airspace opacities, patchy consolidation and a 'crazy paving' appearance was atypical for <i>Klebsiella</i> infection.</li> <li>• As there was also a lack of cavitating nodules, lymphadenopathy and pleural effusion, atypical pneumonia due to COVID-19 was diagnosed.</li> <li>• The patient tested positive for COVID-19.</li> </ul>
03.04.2020	<a href="#">Clinical Features of 85 Fatal Cases of COVID-19 from Wuhan: A Retrospective Observational Study</a>	American Journal of Respiratory and Critical Care Medicine / Research article	<ul style="list-style-type: none"> <li>• In this depictive study of 85 fatal cases of COVID-19, most cases were male aged over 50 years old with noncommunicable chronic diseases. The majority of the patients died of multiple organ failure. Early onset of shortness of breath may be used as an observational symptom for COVID-19 exacerbations. Eosinophilopenia</li> </ul>

			may indicate a poor prognosis. The combination of anti-microbial drugs did not offer considerable benefit to the outcome of this group of patients.
02.04.2020	<a href="#">COVID-19 in a patient with systemic sclerosis treated with tocilizumab for SSc-ILD</a>	Annals of the rheumatic diseases / Letter	<ul style="list-style-type: none"> <li>• The authors report the case of a 57-year-old woman with systemic sclerosis (SSc) who developed COVID-19. Comorbidities were insulin-dependent type 2 diabetes mellitus and WHO grade I obesity.</li> <li>• The patient presented to their hospital's emergency department with cough, headache and general malaise since about 1 week. She reported contact with a patient with COVID-19 2 weeks earlier.</li> <li>• The symptoms remained mild, and 10 days later she reported to be free of symptoms. A follow-up nasopharyngeal swab for SARS-Cov2 turned out negative.</li> </ul>
01.04.2020	<a href="#">Epidemiological Features of 135 Patients with Coronavirus Disease (COVID-19) in Tianjin, China</a>	Disaster Med Public Health Prep / Article	<ul style="list-style-type: none"> <li>• As of Feb 24, 2020, there have been 135 confirmed cases, 3 deaths, and 87 recoveries in Tianjin, China. The incidence of COVID-19 was 8.65/1,000,000 with a 2.22% CFR. Regarding geographic distribution, the incidence was 8.82 per 1,000,000 in urban areas and 8.00 per 1,000,000 in suburbs. During the early stage of the epidemic, most cases came from urban areas and in patients with a history of sojourning in Hubei Province.</li> <li>• The majority of patients were 31-70 years old (75.97%). A familial cluster was the most important characteristic of COVID-19 (accounting for 74.81%).</li> </ul>
03.04.2020	<a href="#">Familial hypercholesterolemia and COVID-19: triggering of increased sustained cardiovascular risk</a>	Journal of Internal Medicine / Letter	<ul style="list-style-type: none"> <li>• The authors present early epidemiologic data from Wuhan, and propose that a predisposition to acute cardiac complications related to underlying atherosclerotic cardiovascular disease (ASCVD) may significantly increase the severity of COVID-19 in susceptible individuals.</li> </ul>
06.04.2020	<a href="#">Clinical Course and Outcomes of Patients with Severe Acute Respiratory Syndrome Coronavirus 2 Infection: a Preliminary Report of the First 28 Patients from the Korean Cohort Study on COVID-19</a>	Journal of Korean Medical Science / Research article	<ul style="list-style-type: none"> <li>• A retrospective multicentre study that investigated the clinical course and outcomes of COVID-19 from early cases in Republic of Korea.</li> <li>• Concluded that the prodromal symptoms of COVID-19 were mild and most patients did not have limitations of daily activity. Viral shedding from URT was high from the prodromal phase. Radiological pneumonia was common from the early days of illness, but it was frequently not evident in simple CXR. These findings could be plausible explanations for the easy and rapid spread of SARS-CoV-2 in the community.</li> </ul>
06.04.2020	<a href="#">Virologic and clinical characteristics for prognosis of severe COVID-19: a retrospective observational study in Wuhan, China</a>	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> <li>• A total of 50 patients with severe COVID-19 were divided into good and poor recovery groups.</li> <li>• Patients with severe COVID-19 have prolonged SARS-CoV-2 infection and delayed intermittent viral shedding.</li> <li>• Older age, hyperlipemia, hypoproteinaemia, corticosteroid usage, and prolonged SARS-CoV-2 IgM positive might be utilized as predicative factors for the patients with poor recovery.</li> </ul>



01.04.2020	<a href="#">[Epidemiological characteristics of COVID-19 in Gansu province]</a>	Zhonghua Liu Xing Bing Xue Za Zhi / Chinese article	<ul style="list-style-type: none"> <li>• As of 25 Feb 2020, a total of 91 confirmed COVID-19 cases had been reported in Gansu. A total of 63 cases were clustered cases (69.23%), 3 cases were medical staff infected with non-occupational exposure. The initial symptoms included fever (54.95%, 50/91), cough (52.75%, 48/91), or fatigue (28.57%, 26/91).</li> <li>• The cases with critical severe symptoms accounted for 42.85% (6/14), 23.73% (14/59) and 16.67% (3/18).</li> <li>• With the progression of COVID-19 epidemic in Gansu, the change in initial symptom and incubation period suggests that early screening cannot only depend on body temperature monitoring.</li> </ul>
02.04.2020	<a href="#">Covid-19: four fifths of cases are asymptomatic, China figures indicate</a>	BMJ / Letter	<ul style="list-style-type: none"> <li>• New evidence has emerged from China indicating that the large majority of coronavirus infections do not result in symptoms.</li> <li>• Many experts believe that unnoticed, asymptomatic cases of coronavirus infection could be an important source of contagion.</li> <li>• A total of 130 of 166 new infections (78%) identified in the 24 hours to the afternoon of Wednesday 1 April were asymptomatic, said China's National Health Commission. And most of the 36 cases in which patients showed symptoms involved arrivals from overseas, down from 48 the previous day, the commission said.</li> </ul>
06.04.2020	<a href="#">Rapid implementation of mobile technology for real-time epidemiology of COVID-19</a>	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> <li>• The COronavirus Pandemic Epidemiology (COPE) consortium brings together scientists with expertise in big data research and epidemiology to develop a COVID-19 Symptom Tracker mobile application.</li> <li>• The application was launched in the UK on March 24, 2020 and the US on March 29, 2020 garnering more than 2.25 million users to date.</li> <li>• This mobile application offers data on risk factors, herald symptoms, clinical outcomes, and geographical hot spots.</li> <li>• This initiative offers critical proof-of-concept for the repurposing of existing approaches to enable rapidly scalable epidemiologic data collection and analysis which is critical for a data-driven response to this public health challenge.</li> </ul>
03.04.2020	<a href="#">Breastfeeding and Coronavirus Disease-2019. Ad interim indications of the Italian Society of Neonatology endorsed by the Union of European Neonatal &amp; Perinatal Societies</a>	Maternal & Child Nutrition / Review article	<ul style="list-style-type: none"> <li>• The Italian Society on Neonatology (SIN) after reviewing the limited scientific knowledge on the compatibility of breastfeeding in the COVID-19 mother and the available statements from Health Care Organizations, has issued indications that have been endorsed by the Union of European Neonatal &amp; Perinatal Societies (UENPS).</li> </ul>
01.04.2020	<a href="#">Imaging clinic operations in the times of COVID-19: Strategies, Precautions and Experiences</a>	J Nucl Med / Article	<ul style="list-style-type: none"> <li>• Strategies to contain the spread of COVID-19 are essential. Outpatient hospital-based or free-standing imaging clinics are also exposed to asymptomatic carriers and patients with flulike symptoms. There are different ways to tackle this challenge, and this short article aims to provide you with an overview of different approaches supporting decision making.</li> </ul>

			<ul style="list-style-type: none"> <li>• The authors briefly summarize strategies, precautions, and experiences from clinics in Europe, Australia, Asia, Africa, and the United States, as implemented by local leadership.</li> </ul>
02.04.2020	<a href="#">The COVID-19 Global Rheumatology Alliance: collecting data in a pandemic</a>	Nature Reviews Rheumatology / Comment	<ul style="list-style-type: none"> <li>• The rheumatology COVID-19 registry will enable the rapid collection of case information from physicians who treat those with rheumatic diseases and is designed to answer two questions: what are the COVID-19 outcomes among patients with rheumatic diseases, particularly those treated with immunosuppressive therapies; and can we make any inferences regarding the potential harms or benefits of particular immunosuppressive and immunomodulatory therapies in COVID-19 infection?</li> <li>• The alliance aims to harness the breadth of expertise and knowledge in the rheumatology physician and patient communities to advance knowledge about COVID-19 for the benefit of all patients with rheumatic diseases.</li> </ul>

### Infection control

Publication Date	Title/URL	Journal/ Article type	Digest
03.04.2020	<a href="#">Barrier Enclosure during Endotracheal Intubation</a>	New England Journal of Medicine / Correspondence	<ul style="list-style-type: none"> <li>• Clinicians with inadequate access to standard personal protective equipment (PPE) have been compelled to improvise protective barrier enclosures for use during endotracheal intubation. The authors describe one such barrier that is easily fabricated and may help protect clinicians during this procedure.</li> <li>• The barrier studied was an “aerosol box,” which consists of a transparent plastic cube designed to cover a patient’s head and that incorporates two circular ports through which the clinician’s hands are passed to perform the airway procedure.</li> <li>• Video included with the article.</li> </ul>
06.04.2020	<a href="#">Rapid evidence summary on SARS-CoV-2 survivorship and disinfection, and a reusable PPE protocol using a double-hit process</a>	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> <li>• The authors propose a two-step disinfection process for PPE, which is conservative in the absence of robust evidence on SARS-CoV-2.</li> <li>• This disinfection protocol is based on an initial storage of PPE for <math>\geq 4</math> days, followed by ultraviolet light (UVC), dry heat treatment, or chemical disinfection.</li> <li>• Each of the two steps is based on independent disinfection mechanisms, so that the proposed protocol is a multiplicative system, maximising the efficacy of our disinfection process.</li> <li>• This method could be rapidly implemented in other healthcare settings, while testing of each method is undertaken, increasing the frontline supply of PPE, and avoiding many of the upstream issues of supply chain disruption currently being faced.</li> </ul>

06.04.2020	<a href="#">Facemasks and similar barriers to prevent respiratory illness such as COVID-19: A rapid systematic review</a>	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> <li>• The evidence is not sufficiently strong to support widespread use of facemasks as a protective measure against COVID-19.</li> <li>• However, there is enough evidence to support the use of facemasks for short periods of time by particularly vulnerable individuals when in transient higher risk situations.</li> </ul>
01.04.2020	<a href="#">Safeguarding the Maintenance Hemodialysis Patient Population during the Coronavirus Disease 19 Pandemic</a>	Blood Purif / Article	<ul style="list-style-type: none"> <li>• The authors provide recommendations for isolation and preventive measures for COVID-19 in haemodialysis patients, and directions to manage logistics and personnel are reported.</li> </ul>
03.04.2020	<a href="#">COVID-19 pandemic and cardiac imaging: EACVI recommendations on precautions, indications, prioritization, and protection for patients and healthcare personnel</a>	Eur Heart J Cardiovasc Imaging / Guidance	<ul style="list-style-type: none"> <li>• Common challenges faced by all cardiac imaging modalities during the pandemic include limited expert staff availability and the risk of peri-procedural transmission of SARS-CoV-2 between patients and staff.</li> <li>• The scope of these EACVI recommendations is to summarize how these challenges may be addressed during the pandemic. In particular, the authors focus upon bold prioritization and provide specific indications and recommendations on how to perform an echocardiogram during the pandemic whilst safeguarding both patient and staff.</li> </ul>
03.04.2020	<a href="#">Intervention Serology and Interaction Substitution: Modeling the Role of 'Shield Immunity' in Reducing COVID-19 Epidemic Spread</a>	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> <li>• The authors developed and analysed an epidemiological intervention model that leverages serological tests to identify and deploy recovered individuals as focal points for sustaining safer interactions via interaction substitution, i.e., to develop what they term 'shield immunity' at the population scale.</li> <li>• The objective of a shield immunity strategy is to help sustain the interactions necessary for the functioning of essential goods and services while decreasing the probability of transmission during such essential interactions.</li> <li>• They show that a shield immunity approach may significantly reduce the length and reduce the overall burden of an outbreak, and can work synergistically with social distancing</li> </ul>
03.04.2020	<a href="#">Chapter of Gastroenterologists professional guidance on risk mitigation for gastrointestinal endoscopy during COVID-19 pandemic in Singapore</a>	Singapore Med J / Guidance	<ul style="list-style-type: none"> <li>• Guidance to practising gastrointestinal (GI) endoscopists for the safe conduct of GI endoscopy procedures during the current COVID-19 pandemic and future outbreaks of similar severe respiratory tract infections in Singapore.</li> <li>• It draws on the lessons learnt during the severe acute respiratory syndrome (SARS) epidemic and available published data concerning the COVID-19 pandemic.</li> <li>• It addresses measures before, during and after endoscopy that must be considered for both non- infected and infected patients, and provides recommendations for practical implementation.</li> </ul>

## Treatment

Publication Date	Title/URL	Journal/ Article type	Digest
02.04.2020	<a href="#">Hydroxychloroquine: a potential ethical dilemma for rheumatologists during the COVID-19 pandemic</a>	The Journal of Rheumatology / Research Article	<ul style="list-style-type: none"> <li>• Two antimalarial agents, chloroquine (CQ) and hydroxychloroquine (HCQ) which have been trusted treatments for a range of rheumatic diseases have attracted intense media attention as potential treatment of COVID-19.</li> <li>• Although in vitro studies of antimalarials and SARS-CoV2 are promising and have a mechanistic explanation, the clinical evidence at this time is lacking and must be seen as anecdotal.</li> <li>• It is paramount that continued clinical care of patients with chronic diseases such as SLE and inflammatory arthritis who require HCQ maintenance treatment must proceed.</li> </ul>
05.04.2020	<a href="#">In vitro screening of a FDA approved chemical library reveals potential inhibitors of SARS-CoV-2 replication</a>	bioRxiv (not peer-reviewed) / New results	<ul style="list-style-type: none"> <li>• Repurposing of approved drugs is a strategy that can bypass the time consuming stages of drug development.</li> <li>• The authors screened the Prestwick Chemical Library composed of 1,520 approved drugs in an infected cell-based assay. 90 compounds were identified.</li> <li>• Several drugs, such as Azithromycine, Opipramol, Quinidine or Omeprazol present antiviral potency with <math>2 &lt; EC_{50} &lt; 20</math> micromolar.</li> </ul>
06.04.2020	<a href="#">Association of BCG vaccination policy with prevalence and mortality of COVID-19</a>	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> <li>• This modelling study suggests an association between COVID-19 cases and mortality and BCG administration in countries.</li> <li>• While this study potentially suffers from a number of unknown confounding factors, consideration of further detailed epidemiological studies, large-scale clinical trials on the efficacy of this vaccine on COVID-19, and/or re-introduction of BCG vaccination practice in the countries which are currently devoid of the practice.</li> </ul>
06.04.2020	<a href="#">Differential COVID-19-attributable mortality and BCG vaccine use in countries</a>	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> <li>• COVID-19-attributable mortality among BCG-using countries was 5.8 times lower [95% CI 1.8-19.0] than in non BCG-using countries.</li> </ul>
05.04.2020	<a href="#">SARS-CoV-2 and SARS-CoV differ in their cell tropism and drug sensitivity profiles</a>	bioRxiv (not peer-reviewed) / New results	<ul style="list-style-type: none"> <li>• Therapeutic concentrations of the approved protease inhibitor aprotinin displayed anti-SARS-CoV-2 activity.</li> <li>• The efficacy of aprotinin and of remdesivir (currently under clinical investigation against SARS-CoV-2) were further enhanced by therapeutic concentrations of the proton pump inhibitor omeprazole (aprotinin 2.7-fold, remdesivir 10-fold).</li> </ul>
05.04.2020	<a href="#">Topological Analysis of SARS CoV-2 Main Protease</a>	bioRxiv (not peer-reviewed) / New results	<ul style="list-style-type: none"> <li>• The main protease (Mpro) in SARS-CoV-2, represents an attractive pharmacological target.</li> <li>• The authors report that CoV-2 Mpro is however 300% more sensitive than CoV-1 Mpro in transmitting tiny structural changes across the whole protein through long-range interactions.</li> </ul>

05.04.2020	<a href="#">Atazanavir inhibits SARS-CoV-2 replication and pro-inflammatory cytokine production</a>	bioRxiv (not peer-reviewed) / New results	<ul style="list-style-type: none"> <li>• Atazanavir (ATV) has documented bioavailability into the respiratory tract, motivating further evaluation on its ability to impair SARS-CoV-2 replication.</li> <li>• These drugs performed better than chloroquine, recognized for its antiviral and anti-inflammatory activities, to reduce virus-induced IL-6 and TNF-<math>\alpha</math> levels.</li> <li>• The data highlights that ATV and ATV/RTV could be considered among the repurposed drugs undergoing clinical trials against COVID-19.</li> </ul>
05.04.2020	<a href="#">Prediction and Evolution of B Cell Epitopes of Surface Protein in SARS-CoV-2</a>	bioRxiv (not peer-reviewed) / New results	<ul style="list-style-type: none"> <li>• The discovery of epitopes is helpful to the development of SARS-CoV-2 vaccine.</li> <li>• All of the 6 dominated epitopes were conservative in nearly 1000 SARS-CoV-2 genomes.</li> </ul>
03.04.2020	<a href="#">In silico approach for designing of a multi-epitope based vaccine against novel Coronavirus (SARS-COV-2)</a>	bioRxiv (not peer-reviewed) / New results	<ul style="list-style-type: none"> <li>• In this study, the authors have designed a novel vaccine construct using computational strategies.</li> <li>• Detailed investigation of S protein with various immunoinformatics tools enabled them to identify 5 MHC I and 5 MHC II B-cell derived T-cell epitopes with VaxiJen score &gt; 1 and IC50 value &lt; 100nM. These epitopes were joined with a suitable adjuvant and appropriate linkers to form a multi-epitope based vaccine construct.</li> <li>• The designed multi-epitope vaccine showed potential to elicit specific immune responses against the SARS-COV-2.</li> </ul>
03.04.2020	<a href="#">Deducing the N- and O- glycosylation profile of the spike protein of novel coronavirus SARS-CoV-2</a>	bioRxiv (not peer-reviewed) / New results	<ul style="list-style-type: none"> <li>• This is the first report of experimental data for both the site of O-glycosylation and identity of the O-glycans attached on the subunit S1.</li> <li>• The data on the N- and O- glycosylation is strengthened by extensive manual interpretation of each glycopeptide spectra in addition to using bioinformatics tools to confirm the complexity of glycosylation in the spike protein.</li> <li>• The elucidation of the glycan repertoire on the spike protein provides insights into the viral binding studies and more importantly, propels research towards the development of a suitable vaccine candidate.</li> </ul>
03.04.2020	<a href="#">Structural basis to design multi-epitope vaccines against Novel Coronavirus 19 (COVID19) infection, the ongoing pandemic emergency: an in silico approach</a>	bioRxiv (not peer-reviewed) / New results	<ul style="list-style-type: none"> <li>• The authors screened 38 CTL, 42 HTL and 12 B cell epitopes by utilizing different in silico tools.</li> <li>• The screened epitopes were further utilized to design novel two multi epitope vaccines (MEVs) composed of CTL, HTL and B cell epitopes overlaps with potential to elicit humoral as well as cellular immune response against SARS CoV-2.</li> <li>• The present study proposes in silico validated design of two MEVs against SARS CoV-2 to elicit humoral as well as cellular immune response.</li> </ul>
05.04.2020	<a href="#">LY6E Restricts the Entry of Human Coronaviruses, including the currently pandemic SARS-CoV-2</a>	bioRxiv (not peer-reviewed) / New results	<ul style="list-style-type: none"> <li>• The work reported herein thus demonstrates that LY6E is a critical antiviral immune effector that controls CoV infection and pathogenesis via a distinct mechanism.</li> <li>• C3A is a sub-clone of human hepatoblastoma HepG2 cell line with the strong contact inhibition of growth.</li> <li>• The authors found that C3A was more susceptible to human coronavirus HCoV-</li> </ul>

			OC43 infection than HepG2, which was attributed to the increased efficiency of virus entry into C3A cells.
02.04.2020	<a href="#">Drugs and the renin-angiotensin system in covid-19</a>	BMJ / Editorial	<ul style="list-style-type: none"> <li>• The role of angiotensin converting enzyme (ACE) inhibitors and angiotensin receptor blockers (ARBs) are discussed.</li> <li>• No trial evidence is available yet, though people already taking these drugs are advised to continue.</li> <li>• ACE inhibitors and ARBs should not be used to treat covid-19 without convincing evidence of clinical efficacy from randomized clinical trials or data mining studies.</li> </ul>
31.03.2020	<a href="#">EMA advice on the use of NSAIDs for Covid-19</a>	Drug Ther Bull / Guidance	<ul style="list-style-type: none"> <li>• The European Medicines Agency (EMA) has responded to reports questioning whether use of ibuprofen or other NSAIDs could worsen COVID-19.</li> <li>• No scientific evidence has established a link between ibuprofen and worsening of COVID-19.</li> <li>• The EMA has advised that there is no reason for patients who are taking NSAIDs for chronic diseases to stop taking them.</li> <li>• Many national treatment guidelines recommend using paracetamol as the first-line option for fever or pain.</li> </ul>
03.04.2020	<a href="#">The Dilemma of Coronavirus Disease 2019, Aging, and Cardiovascular Disease: Insights From Cardiovascular Aging Science</a>	JAMA Cardiology / Viewpoint	<ul style="list-style-type: none"> <li>• Viewpoint on the approach to management of patients with CVD and diabetes in response to evidence of increased COVID-19 disease and mortality.</li> <li>• It is proposed that upregulation of angiotensin-converting enzyme 2 (ACE2) by angiotensin-converting enzyme inhibitors (ACEIs) and angiotensin receptor blockers (ARBs), may be increasing COVID-19 severity in this population.</li> <li>• This has created controversy regarding the approach to patients taking ACEIs/ARBs, with some advocating for discontinuing these medications while expert opinions recommended against discontinuation, given the lack of strong evidence.</li> </ul>
07.04.2020	<a href="#">Coronavirus Disease 2019 (COVID-19) and Cardiovascular Disease: A Viewpoint on the Potential Influence of Angiotensin-Converting Enzyme Inhibitors/Angiotensin Receptor Blockers on Onset and Severity of Severe Acute Respiratory Syndrome Coronavirus 2 Infection</a>	Journal of the American Heart Association / Viewpoint	<ul style="list-style-type: none"> <li>• Opinion piece summarising the dilemma for the cardiologists in terms of recommending whether to discontinue ACEIs/ARBs or not.</li> <li>• On the basis of the current literature, a viewpoint on the potential influence of ACEIs/ARBs on the onset and severity of SARS-CoV-2 infection is proposed in this article.</li> </ul>
04.04.2020	<a href="#">Angiotensin II Receptor Blockers and Angiotensin-Converting Enzyme Inhibitors Usage is Associated with Improved Inflammatory Status and</a>	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> <li>• 126 COVID-19 patients with pre-existing hypertension at Hubei Provincial Hospital of Traditional Chinese Medicine (HPHTCM) in Wuhan from January 5 to February 22, 2020 were retrospectively allocated to angiotensin II receptor blockers or angiotensin-converting enzyme inhibitors (ARBs/ACEIs) group (n=43) and non-ARBs/ACEIs group (n=83) according to their antihypertensive medication.</li> </ul>



	<a href="#">Clinical Outcomes in COVID-19 Patients With Hypertension</a>		<ul style="list-style-type: none"> <li>• These findings support the use of ARBs/ACEIs in COVID-19 patients with pre-existing hypertension.</li> </ul>
03.04.2020	<a href="#">A consensus statement on the use of angiotensin receptor blockers and angiotensin converting enzyme inhibitors in relation to COVID-19 (corona virus disease 2019)</a>	New Zealand medical Journal / Viewpoint	<ul style="list-style-type: none"> <li>• Following review of evidence, the authors disagree with the hypothesis that diabetes and hypertension treatment with ACE2-stimulating drugs increases the risk of developing severe and fatal COVID-19.</li> <li>• The authors DO NOT advise patients on ACEi or ARB to change therapy.</li> <li>• The current evidence on COVID-19 and hypertension, and ACEi or ARB medication is inadequately adjusted and prone to bias, and therefore remains inconclusive.</li> </ul>
03.04.2020	<a href="#">Coronavirus Disease 2019 (COVID-19) Infection and Renin Angiotensin System Blockers</a>	JAMA Cardiology / Viewpoint	<ul style="list-style-type: none"> <li>• The authors summarise the current state of knowledge on renin angiotensin system blockers and include a table summarising current guidance from 7 professional societies.</li> <li>• They describe emerging studies finding that patients taking ACEIs/ARBs showed better survival compared with controls, and hypothesise the biological plausibility of salutary effects of ACEIs/ARBs in those with COVID-19.</li> </ul>
06.04.2020	<a href="#">Out-of-Hospital Cohort Treatment of Coronavirus Disease 2019 Patients with Mild Symptoms in Korea: an Experience from a Single Community Treatment Center</a>	Journal of Korean Medical Science / Article	<ul style="list-style-type: none"> <li>• This paper reports results of the initial management of patients at one of the largest Community Treatment Centres (CTC) in Korea.</li> <li>• The authors describe the advantages and disadvantages of use of CTCs and suggest that may be a very cost-effective and resource-saving strategy in managing massive cases of COVID-19 or other emerging infectious diseases.</li> </ul>
03.04.2020	<a href="#">Interleukin-6 in COVID-19: A Systematic Review and Meta-Analysis</a>	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> <li>• In patients with COVID-19, IL-6 levels are significantly elevated and associated with adverse clinical outcomes.</li> <li>• While inhibition of IL-6 with tocilizumab appears to be efficacious and safe in preliminary investigation, the results of several ongoing clinical trials should be awaited to better define the role of tocilizumab in COVID-19 prior to routine clinical application.</li> </ul>
06.04.2020	<a href="#">Neutralizing antibody responses to SARS-CoV-2 in a COVID-19 recovered patient cohort and their implications</a>	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> <li>• Plasma collected from 175 COVID-19 recovered patients with mild symptoms were screened using a safe and sensitive pseudotyped-lentiviral-vector-based neutralization assay.</li> <li>• The correlation of NAb titers with age, lymphocyte counts, and blood CRP levels suggested that the interplay between virus and host immune response in coronavirus infections should be further explored for the development of effective vaccine against SARS-CoV-2 virus.</li> <li>• Furthermore, titration of NAb is helpful prior to the use of convalescent plasma for prevention or treatment.</li> </ul>
03.04.2020	<a href="#">Use of siltuximab in patients with COVID-19 pneumonia requiring ventilatory support</a>	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> <li>• The authors report preliminary data from 21 patients with COVID-19 who developed pneumonia/acute respiratory distress syndrome (ARDS) and participated in a compassionate-use program at Papa Giovanni XXIII hospital in Bergamo, Italy.</li> </ul>

			<ul style="list-style-type: none"> <li>• This analysis presents the potential role of siltuximab in treating patients with ARDS secondary to SARS-CoV-2 infection.</li> </ul>
04.04.2020	<a href="#">Single-cell RNA Analysis on ACE2 Expression Provides Insight into SARS-CoV-2 Blood Entry and Heart Injury</a>	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> <li>• This work provides new insights into SARS-CoV-2 blood entry and heart injury and might propose therapeutic strategies against severe complications.</li> <li>• Cell-type specific expression of ACE2 was performed in the lungs and heart to investigate how SARS-CoV-2 spreads to organs.</li> <li>• Findings indicate that patients with pulmonary fibrosis and heart failure have a higher risk and are more susceptible to SARS-CoV-2 infection. SARS-CoV-2 might attack other organs by getting into the bloodstream.</li> </ul>
05.04.2020	<a href="#">Critical Care for Severe COVID-19: A Population-based Study from a Province with Low Case-fatality Rate in China</a>	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> <li>• The multi-strategy management for severe COVID-19 patients included early identification and timely critical care, including appropriate respiratory support in particular.</li> <li>• Preparation of sufficient conventional oxygen equipment should be prioritized.</li> </ul>
04.04.2020	<a href="#">Epigenetic dysregulation of ACE2 and interferon-regulated genes might suggest increased COVID-19 susceptibility and severity in lupus patients</a>	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> <li>• Maintaining disease remission in lupus patients is critical to prevent a vicious cycle of demethylation and increased oxidative stress, which will exacerbate susceptibility to SARS-CoV-2 infection during the current pandemic.</li> <li>• Epigenetic control of the ACE2 gene might be a target for prevention and therapy in COVID-19.</li> </ul>
02.04.2020	<a href="#">Cancer, COVID-19 and the precautionary principle: prioritizing treatment during a global pandemic</a>	Nature Reviews Clinical Oncology / Comment	<ul style="list-style-type: none"> <li>• Discusses safety considerations for patients with cancer requiring treatment in SARS-CoV-2 endemic areas.</li> <li>• Provides a general framework for prioritizing cancer care, emphasizing the precautionary principle in decision making.</li> </ul>
06.04.2020	<a href="#">International Guidelines on Radiation Therapy for Breast Cancer During the COVID-19 Pandemic</a>	Clinical Oncology / Guidance	<ul style="list-style-type: none"> <li>• Emergency guidance for breast radiation therapy (RT) during the COVID-19 pandemic, setting out how to minimise exposure of patients to COVID-19 without compromising oncological outcome.</li> </ul>
02.04.2020	<a href="#">Treating multiple sclerosis and neuromyelitis optica spectrum disorder during the COVID-19 pandemic</a>	Neurology / Special Editorial	<ul style="list-style-type: none"> <li>• Discusses risk of respiratory infections, general health advice, patient management, and therapies for managing patients with multiple sclerosis (MS) and related neuroinflammatory disorders, such as neuromyelitis spectrum disorder (NMOSD).</li> <li>• Most patients with MS are expected to experience mild symptoms.</li> <li>• Some immunotherapies may increase the risk of more severe infection and individualised risk assessment is required, taking into account the immunosuppressive effects of the treatment, as well as other patient factors (e.g. age, physical disability, comorbidities) and the healthcare setting.</li> </ul>
02.04.2020	<a href="#">Clinical course of COVID-19 in a series of patients with chronic arthritis treated with immunosuppressive targeted therapies</a>	Annals of the Rheumatic Diseases / Letter	<ul style="list-style-type: none"> <li>• Letter describing results of a survey of patients with chronic arthritis treated with biological disease-modifying antirheumatic drugs (bDMARDs) or targeted synthetic disease-modifying antirheumatic drugs (tsDMARDs).</li> <li>• Of 320 patients four were confirmed cases of COVID-19 with mild disease and</li> </ul>

			<p>another four patients reported symptoms of COVID-19.</p> <ul style="list-style-type: none"> <li>• The authors suggest that patients with chronic arthritis treated with bDMARDs or tsDMARDs may not be at increased risk of complications from SARS-CoV-2.</li> </ul>
07.04.2020	<a href="#">Coronavirus Disease 2019 (COVID-19): Do Angiotensin-Converting Enzyme Inhibitors/Angiotensin Receptor Blockers Have a Biphasic Effect?</a>	Journal of the American Heart Association / Article	<ul style="list-style-type: none"> <li>• Summarises the current state of knowledge around angiotensin-converting enzyme inhibitor (ACEI) or angiotensin II receptor blocker (ARB) therapy and their role in COVID-19 in cardiovascular patients.</li> <li>• Provides an overview of current studies with adjusted covid-19 outcome analysis for cardiovascular risk factors.</li> <li>• Confirms that the American Heart Association currently supports the position statement of the European and American Societies of Cardiology, who express that ACEIs and ARBs are safe and should be continued and prescribed according to established guidelines.</li> </ul>
05.04.2020	<a href="#">Energetics based epitope screening in SARS CoV-2 (COVID 19) spike glycoprotein by Immuno-informatic analysis aiming to a suitable vaccine development</a>	bioRxiv (not peer-reviewed) / New results	<ul style="list-style-type: none"> <li>• The authors screened here few pairs of spike protein epitopic regions and selected their energetic, IC50, MHC II reactivity and found some of those to be very good target for vaccination.</li> <li>• A possible role of glycosylation on epitopic region showed profound effects on epitopic recognition.</li> </ul>
03.04.2020	<a href="#">Letter: The Coronavirus Disease 2019 Global Pandemic: A Neurosurgical Treatment Algorithm</a>	Neurosurgery / Letter	<ul style="list-style-type: none"> <li>• The authors aim to synthesize the various treatment recommendations published by international, federal, state, and local governing bodies into an institutional policy that fits the unique demands of neurosurgical practice.</li> </ul>

## Social sciences

Publication Date	Title/URL	Journal/ Article type	Digest
04.04.2020	<a href="#">COVID-19 will not leave behind refugees and migrants</a>	The Lancet / Editorial	<ul style="list-style-type: none"> <li>• WHO leaders appeal for more attention for refugees and migrants, including in humanitarian settings, which are facing disruption of essential supplies of food, medicines, and aid workers.</li> </ul>
03.04.2020	<a href="#">Report 14: Online Community Involvement in COVID-19 Research &amp; Outbreak Response: Early Insights from a UK Perspective</a>	Imperial College / Report	<ul style="list-style-type: none"> <li>• The PERC at Imperial College London launched an online community involvement initiative via online feedback form to gain early insight of views and behaviours from the public.</li> <li>• 420 responses were received and were summarised into three main areas: priority areas for research, unmet needs of communities, and recommendations for involving a diverse range of communities in the outbreak response, including who should be reached and engaged.</li> </ul>

03.04.2020	<a href="#">Quantifying the impact of physical distance measures on the transmission of COVID-19 in the UK</a>	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> <li>• The physical distancing measures adopted by the UK public have substantially reduced contact levels and will likely lead to a substantial impact and a decline in cases in the coming weeks.</li> <li>• However, this projected decline in incidence will not occur immediately as there are significant delays between infection, the onset of symptomatic disease and hospitalisation, as well as further delays to these events being reported.</li> <li>• Tracking behavioural change can give a more rapid assessment of the impact of physical distancing measures than routine epidemiological surveillance.</li> </ul>
06.04.2020	<a href="#">Public perspectives on social distancing and other protective measures in Europe: a cross-sectional survey study during the COVID-19 pandemic</a>	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> <li>• This study aimed to evaluate the public belief in the effectiveness of protective measures, the reported implementation of these measures in daily life, and to identify communication channels used to acquire relevant information on COVID-19 in European countries.</li> <li>• In European countries, the degree of public belief in the effectiveness of protective measures was high and residents reported to be sufficiently informed by various communication channels.</li> <li>• In March 2020, implementation of enacted and self-initiated measures differed between countries and were highest among Italian respondents, who were subjected to the most elaborate measures of social lockdown and greatest COVID-19 burden in Europe.</li> </ul>
03.04.2020	<a href="#">Perceptions and behavioural responses of the general public during the COVID-19 pandemic: A cross-sectional survey of UK Adults</a>	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> <li>• 2,108 adults living in the UK aged 18 years and over, participated in this study.</li> <li>• Adoption of social-distancing measures was higher in those aged over 70 compared to younger adults aged 18 to 34 years.</li> <li>• Those with the lowest household income were six times less likely to be able to work from home and three times less likely to be able to self-isolate.</li> <li>• Ability to self-isolate was also lower in black and minority ethnic groups.</li> <li>• Willingness to self-isolate was high across all respondents.</li> </ul>
01.04.2020	<a href="#">The consequences of the COVID-19 pandemic on mental health and implications for clinical practice</a>	Eur Psychiatry / Article	<p>The authors consider that the mental health and psychosocial consequences of the COVID-19 pandemic may be particularly serious for:</p> <ul style="list-style-type: none"> <li>• Those who have been directly or indirectly in contact with the virus;</li> <li>• Those who are already vulnerable to biological or psychosocial stressors (including people affected by mental health problems);</li> <li>• Health professionals (because of higher level of exposure);</li> <li>• People who are following the news through numerous media channels.</li> </ul>
04.04.2020	<a href="#">Countrywide quarantine only mildly increased anxiety level during COVID-19 outbreak in China</a>	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> <li>• The authors performed an online survey to evaluate the psychological effects of quarantine in China using Zung Self-rating Anxiety Scale in February 2020 when the outbreak was nearly peaked in China.</li> <li>• Of 992 respondents, clinical significance of anxiety symptoms was observed in 9.58%.</li> </ul>

			<ul style="list-style-type: none"> <li>• Different forms of quarantine showed different anxiety levels while duration of quarantine did not affect anxiety level.</li> <li>• These results suggest a rather mild negative psychological influence caused by the countrywide quarantine in China and provided reference for other countries and regions.</li> </ul>
06.04.2020	<a href="#">Impact of viral epidemic outbreaks on mental health of healthcare workers: a rapid systematic review</a>	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> <li>• Systematic review and meta-analysis of the impact of epidemics on healthcare worker mental health.</li> <li>• The prevalence of anxiety, depression, acute and post-traumatic stress disorder, and burnout, was high both during and after the outbreaks.</li> <li>• Governments and healthcare authorities should take urgent actions to protect the mental health of HCWs.</li> <li>• Risk factors are highlighted in this paper.</li> </ul>
06.04.2020	<a href="#">COVID-19 and maternal mental health: Are we getting the balance right?</a>	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> <li>• The clinical evidence to date suggests that pregnant and childbearing women, and their babies are not at increased risk of infection, severe symptoms or consequences.</li> <li>• There is no evidence on the short- and longer-term psychological impacts of restrictive practices for childbearing women during COVID-19 or infection pandemics in general.</li> <li>• The potential for adverse mental health consequences should be recognised as a critical public health concern, together with appropriate care and support to prevent and ameliorate any negative impacts.</li> </ul>
03.04.2020	<a href="#">Narrative synthesis of psychological and coping responses towards emerging infectious disease outbreaks in the general population: practical considerations for the COVID-19 pandemic</a>	Singapore Med J / Narrative review	<ul style="list-style-type: none"> <li>• Synthesis of psychological responses and coping methods used by the general population in previous disease outbreaks.</li> <li>• Included were public response to SARS, Ebola and H1N1.</li> <li>• Common responses included negative effects on mental health, grief, anger and stigmatisation. Some also showed improved empowerment and compassion towards others.</li> <li>• Coping strategies adopted included problem-focused coping, seeking social support, avoidance, and positive appraisal of the situation.</li> </ul>

### Miscellaneous

Publication Date	Title/URL	Journal/ Article type	Digest
03.04.2020	<a href="#">A flexible load sharing system and implementation to anticipate and organise transfers based on ICU</a>	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> <li>• The authors have developed and implemented an algorithm to provide optimal re-routing strategies to transfer patients requiring Intensive Care Units (ICU) between hospitals within NHS trusts, constrained by feasibility of transfer.</li> </ul>

	<a href="#">demand in the context of COVID-19 pandemic</a>	<ul style="list-style-type: none"> <li>• The framework is flexible allowing for additional criteria, different cost functions, and this methodology is general enough that it can easily be extended to optimise other resources beyond ICU units or ventilators.</li> <li>• Assuming a uniform ICU demand across trusts, the authors show that using their method it is possible to enable access to ICU treatment to up to 1000 cases nationally in a single step of the algorithm, leading to potentially saving a large percentage of these lives that would otherwise not have access to ICU if no load sharing was implemented.</li> </ul>
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## Modelling

Publication Date	Title/URL	Journal/ Article type	Digest
05.04.2020	<a href="#">Systematic review and critical appraisal of prediction models for diagnosis and prognosis of COVID-19 infection</a>	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> <li>• COVID-19 related prediction models are quickly entering the academic literature, to support medical decision making at a time where this is urgently needed.</li> <li>• This review indicates proposed models are poorly reported and at high risk of bias. Thus, their reported performance is likely optimistic and using them to support medical decision making is not advised.</li> </ul>
05.04.2020	<a href="#">Rapid community-driven development of a SARS-CoV-2 tissue simulator</a>	bioRxiv (not peer-reviewed) / New results	<ul style="list-style-type: none"> <li>• The authors introduce a prototype of a multiscale model of SARS-CoV-2 dynamics in lung and intestinal tissue that will be iteratively refined.</li> <li>• The first prototype model was built and shared internationally as open source code and interactive, cloud-hosted executables in under 12 hours.</li> </ul>
06.04.2020	<a href="#">Widespread use of face masks in public may slow the spread of SARS CoV-2: an ecological study</a>	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> <li>• At a country level, linear regression was used to assess the association between COVID-19 diagnoses per inhabitant and the national promotion of face masks in public, controlling for the age of the COVID-19 epidemic and testing intensity.</li> <li>• Whilst these results are susceptible to residual confounding, they do provide ecological level support to the individual level studies that found face mask usage to reduce the transmission and acquisition of respiratory viral infections.</li> </ul>
04.04.2020	<a href="#">Feasibility Study of Mitigation and Suppression Intervention Strategies for Controlling COVID-19 Outbreaks in London and Wuhan</a>	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> <li>• The authors conducted a feasibility study by defining a mathematical model named SEMCR that access the effectiveness of mitigation, suppression and hybrid interventions for controlling COVID-19 outbreaks in London and Wuhan.</li> <li>• Both in Wuhan and London cases, one important issue of fitting practical data is that there are a large portion of self-recovered population who are asymptomatic or mild symptomatic.</li> <li>• These people might think they have been healthy at home because they did not go to hospital for COVID-19 tests.</li> </ul>



			<ul style="list-style-type: none"> <li>• Early release of intervention intensity might increase a risk of the second breakout.</li> </ul>
06.04.2020	<a href="#">Development and Validation of a Diagnostic Nomogram to Predict COVID-19 Pneumonia</a>	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> <li>• The authors used the LASSO regression and multivariable logistic regression methods to explore the predictive factors associated with COVID-19 pneumonia, and established the diagnostic nomogram for COVID-19 pneumonia using multivariable regression.</li> <li>• The predictive factors including the epidemiological history, wedge-shaped or fan-shaped lesion parallel to or near the pleura, bilateral lower lobes, ground glass opacities, crazy paving pattern and white blood cell (WBC) count were contained in the nomogram.</li> <li>• The nomogram can be used to predict COVID-19 pneumonia accurately and favourably.</li> </ul>

**Produced by the PHE COVID-19 Literature Digest Team**

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