



International EPI Cell Daily Evidence Digest – 15/04/2020

This Daily Evidence Digest is produced by the PHE COVID-19 Literature Digest Team as a resource for professionals working in public health. We do not accept responsibility for the availability, reliability or content of the items included in this resource and do not necessarily endorse the views expressed within them. The papers are organised under the following themes:

- Diagnostics
- Genomics
- Epidemiology and clinical - children and pregnancy
- Epidemiology and clinical - risk factors
- Epidemiology and clinical - other
- Infection control
- Treatment
- Social sciences
- Miscellaneous
- Modelling
- Guidance and consensus statements (no digest)
- Overviews, comments and editorials (no digest)

Please note that we are including preprints (**highlighted in red**), which are preliminary reports of work that have NOT been peer-reviewed. They should not be relied on to guide clinical practice or health-related behaviour and should NOT be reported in news media as established information.

Diagnostics

Publication Date	Title/URL	Journal/ Article type	Digest
10.04.2020	Point-of-care lung ultrasound in patients with COVID-19 - a narrative review	Anaesthesia / Review article	<ul style="list-style-type: none">• This narrative review provides a summary of evidence and clinical guidance for the use and interpretation of lung ultrasound for patients with moderate, severe and critical COVID-19 associated lung injury.• Mechanisms by which the potential lung ultrasound workforce can be deployed are

			explored, including a pragmatic approach to training, governance, imaging, interpretation of images and implementation of lung ultrasound into routine clinical practice.
14.04.2020	CT Is Not a Screening Tool for Coronavirus Disease (COVID-19) Pneumonia	American journal of roentgenology / Letters	<ul style="list-style-type: none"> The author believes the conclusion in the article (by Zhao W, Zhong Z, Xie X, Yu Q, Liu J. Relation between chest CT findings and clinical conditions of COVID-19 pneumonia: a multicentre study. AJR 2020 Mar 3) is confusing in its current form and may lead to overuse of CT and unnecessary irradiation of healthy people. The author believes that CT may be helpful in diagnosing but not screening highly suspected cases.
14.04.2020	Computed Tomography Imaging of an HIV-infected Patient with Coronavirus Disease 2019 (COVID-19)	Journal of medical virology / Case report	<ul style="list-style-type: none"> Chest CT results from a HIV infected patient showed different abnormalities from those of conventional COVID-19, and the faster absorption of pulmonary lesions also highlights the importance of antiretroviral therapy in this patient.
15.04.2020	COVID-19 pneumonia manifestations at the admission on chest ultrasound, radiographs, and CT: single-center study and comprehensive radiologic literature review	Eur J Radiol Open / Literature review	<ul style="list-style-type: none"> The spectrum of chest imaging manifestations of COVID-19 pneumonia upon admission includes B-lines and consolidations on US, consolidations and hazy increased opacities on CXR, and multifocal GGO with consolidations on CT.
08.04.2020	Ultrarapid diagnosis, microscope imaging, genome sequencing, and culture isolation of SARS-CoV-2	European journal of clinical microbiology & infectious diseases / Article	<ul style="list-style-type: none"> The authors show it was possible to have PCR results in 3 h, to have the genome in 11 h, and to recover using culture in 72 h the viral strain whose availability makes it possible to study drugs with recognised activity including those (hydroxychloroquine and chloroquine) with reported clinical activity, as communicated by Chinese teams.
09.04.2020	Preliminary study to identify severe from moderate cases of COVID-19 using NLR&RDW-SD combination parameter	medRxiv (not peer reviewed) / Article	<ul style="list-style-type: none"> The combined parameter NLR&RDW-SD is the best haematology index and can help clinicians to predict the severity of COVID-19 patients - it can be used as a useful indicator to help prevent and control the epidemic.
09.04.2020	Neutrophil extracellular traps (NETs) as markers of disease severity in COVID-19	medRxiv (not peer reviewed) / Article	<ul style="list-style-type: none"> These data reveal high levels of neutrophil extracellular traps (NETs) in many patients with COVID-19, where they may contribute to cytokine release and respiratory failure. Future studies should investigate the predictive power of circulating NETs in longitudinal cohorts, and determine the extent to which NETs may be novel therapeutic targets in severe COVID-19
14.04.2020	Significance of Serology Testing to Assist Timely Diagnosis of SARS-CoV-2 infections: Implication from a Family Cluster	Emerging microbes & infections / Letters	<ul style="list-style-type: none"> These results emphasized the significance of serology testing to assist timely diagnosis of SARS-CoV-2 infections, especially for COVID-19 close contacts screening.
08.04.2020	Comparative Performance of SARS-CoV-2 Detection Assays using Seven	Journal of clinical microbiology / Article	<ul style="list-style-type: none"> A virology lab evaluated assays using seven different primer/probe sets and one assay kit. The most sensitive assays were those that used the E-gene primer/probe set. All assays

	Different Primer/Probe Sets and One Assay Kit		tested were found to be highly specific for SARS-CoV-2, with no cross-reactivity with other respiratory viruses.
14.04.2020	Detection of SARS-CoV-2 by RT-PCR in anal from patients who have recovered from coronavirus disease 2019	Journal of medical virology / Letter to the editor	<ul style="list-style-type: none"> • Results have confirmed the presence of the live virus in stool samples from patients with COVID- 19.
10.04.2020	Immunological assays for SARS-CoV-2: an analysis of available commercial tests to measure antigen and antibodies	medRxiv (not peer reviewed) / Article	<ul style="list-style-type: none"> • The objective of this study was to carry out a review of the different serological tests offered to detect antigen or antibodies against SARS-CoV-2. • Based on web pages that listed serological assays, they found 226 coming from 20 countries, the majority are indirect tests for specific antibodies detection (n 180) and use immunochromatography methods (n 110) with samples coming from blood-derived products (n 105). • The overall average sensitivity was 91.8% and specificity was 97%.
10.04.2020	A novel high specificity COVID-19 screening method based on simple blood exams and artificial intelligence	medRxiv (not peer reviewed) / Article	<ul style="list-style-type: none"> • In this case-control quantitative study, the authors developed a strategy backed by artificial intelligence to perform an initial screening of suspect COVID-19 cases. • They identified that the framework achieved an average specificity of 92.16% and negative predictive value (NPV) of 95.29%. • Considering the achieved specificity, they would reduce by at least 90% the number of SARS-CoV-2 tests performed at emergency rooms, with the chance of getting a false negative at around 5%., and patients predicted as positive could be immediately separated from the other patients while waiting for the results of confirmatory tests.
11.04.2020	Clinical evaluation of a SARS-CoV-2 RT-PCR assay on a fully automated system for rapid on-demand testing in the hospital setting	medRxiv (not peer reviewed) / Article	<ul style="list-style-type: none"> • In this study the authors evaluated a SARS-CoV-2 LDT for the NeuMoDx 96 system, a fully automated (sample to result) RT-PCR platform offering random-access capabilities and good clinical performance for SARS-CoV-2 testing.
11.04.2020	Estimates of the Undetected Rate among the SARS-CoV-2 Infected using Testing Data from Iceland	medRxiv (not peer reviewed) / Article	<ul style="list-style-type: none"> • The authors use results from Iceland's two testing programs to estimate the share of infections that are undetected under standard (NUHI) testing guidelines.

Genomics

Publication Date	Title/URL	Journal/ Article type	Digest
14.04.2020	Human antibodies can neutralize SARS-CoV-2	Nature reviews. Immunology / In brief	<ul style="list-style-type: none"> • The authors demonstrate the existence of virus-specific memory B cells recognizing the receptor-binding domain (RBD) of the SARS-CoV-2 spike protein in patients infected with SARS-CoV-2.

			<ul style="list-style-type: none"> • These results indicate that the humoral response is virus specific and diverse and can produce potent neutralizing antibodies.
11.04.2020	Cell-Type-Specific Expression of Renin-Angiotensin-System Components in the Human Body and Its Relevance to SARS-CoV-2 Infection	bioRxiv (not peer-reviewed) / New results	<ul style="list-style-type: none"> • The authors have analysed the cell-type-specific expression of the renin-angiotensin system (RAS) components across 141 cell types or subtypes as defined by single-cell RNA-seq (scRNA-seq) analysis. • ACE2, one of the components of RAS, also facilitates SARS-CoV-2 entry into cells in cooperation with its associated protease TMPRSS2. • This analysis also contributes to the understanding of SARS-CoV-2 infection, spreading of the virus throughout the body, and potential viral interference with RAS in COVID-19 patients.
14.04.2020	Inhibitors of the renin-angiotensin system: The potential role in the pathogenesis of COVID-19	Cardiology journal / Review ahead of print	<ul style="list-style-type: none"> • The clinical effect of ACEIs/ARBs on patients with COVID-19 is still uncertain. This paper describes their potential role in the pathogenesis of COVID-19, which may provide useful in the advice of cardiologists and physicians.
10.04.2020	CoV Genome Tracker: tracing genomic footprints of Covid-19 pandemic / Article	medRxiv (not peer reviewed) / Article	<ul style="list-style-type: none"> • At a broader evolutionary time scale, a companion browser provides gene-by-gene and codon-by-codon evolutionary rates to facilitate the search for molecular targets of clinical interventions.
12.04.2020	Single Nucleus Multiomic Profiling Reveals Age-Dynamic Regulation of Host Genes Associated with SARS-CoV-2 Infection	medRxiv (not peer reviewed) / Article	<ul style="list-style-type: none"> • The authors present a large-scale snATAC-seq dataset (90,980 nuclei) of the human lung, generated in parallel with snRNA-seq (46,500 nuclei), from healthy donors of ~30 weeks, ~3 years and ~30 years of age. • Focusing on genes implicated in SARS-CoV-2 cell entry, they observed an increase in the proportion of alveolar epithelial cells expressing ACE2 and TMPRSS2 in adult compared to young lungs. • The findings reveal a plausible contributor to why children are more resistant to COVID-19 and provide an epigenomic basis for transferring this resistance to older populations.
15.04.2020	COVID-19 and emerging viral infections: The case for interferon lambda	J Exp Med / Viewpoint	<ul style="list-style-type: none"> • The authors present their opinion on the benefits and potential limitations of using IFN-λ to prevent, limit, and treat these dangerous viral infections.
14.04.2020	Extreme genomic CpG deficiency in SARS-CoV-2 and evasion of host antiviral defense	Molecular biology and evolution / Accepted manuscript	<ul style="list-style-type: none"> • A survey of CpG deficiency in viral genomes identified a virulent canine coronavirus (Alphacoronavirus) as possessing the most extreme CpG deficiency, comparable to that observed in SARS-CoV-2. • This suggests that the canine tissue infected by the canine coronavirus may provide a cellular environment strongly selecting against CpG.
12.04.2020	The origin and underlying driving forces of the SARS-CoV-2 outbreak	bioRxiv (not peer reviewed) / Article	<ul style="list-style-type: none"> • SARS-CoV-2 might have cryptically circulated within humans for years before being recently noticed. Data from the early outbreak and hospital archives are needed to trace its evolutionary path. • Genetic diversity of SARS-CoV-2 collected from China was two times higher than those derived from the rest of the world

- Haplotypes collected from Wuhan city were at interior and have more mutational connections, both of which are consistent with the observation that the outbreak of cov-19 originated from China

Epidemiology and clinical - children and pregnancy

Publication Date	Title/URL	Journal/ Article type	Digest
15.04.2020	Characteristics of pediatric SARS-CoV-2 infection and potential evidence for persistent fecal viral shedding	Nat Med / Case reports	<ul style="list-style-type: none"> • Eight children persistently tested positive on rectal swabs even after nasopharyngeal testing was negative, raising the possibility of faecal-oral transmission.
08.04.2020	Clinical characteristics of a case series of children with coronavirus disease 2019	Pediatric pulmonology / Article	<ul style="list-style-type: none"> • Report of clinical characteristics of 10 patients aged 1-18 years. Results indicate that children present less severe symptoms and have better outcomes.
10.04.2020	Vaginal Delivery Report of a Healthy Neonate Born to a Convalescent Mother with COVID-19	Journal of Medical Virology / Short communication	<ul style="list-style-type: none"> • Report of a case of a convalescing pregnant woman diagnosed as COVID-19 infection 37 days before delivery in the third trimester. A live birth without SARS-CoV-2 infection was delivered successfully via the vagina.

Epidemiology and clinical - risk factors

Publication Date	Title/URL	Journal/ Article type	Digest
15.04.2020	Estimating clinical severity of COVID-19 from the transmission dynamics in Wuhan, China	Nat Med / Article	<ul style="list-style-type: none"> • In China, compared to those aged 30-59 years, those aged below 30 and above 59 years were 0.6 (0.3-1.1) and 5.1 (4.2-6.1) times more likely to die after developing symptoms. • The risk of symptomatic infection increased with age (for example, at ~4% per year among adults aged 30-60 years).
08.04.2020	Predictors of Mortality for Patients with COVID-19 Pneumonia Caused by SARS-CoV-2: A Prospective Cohort Study	The European respiratory journal / Article	<ul style="list-style-type: none"> • Four risk factors were identified in this prospective cohort study: age ≥ 65 years, pre-existing concurrent cardiovascular or cerebrovascular diseases, CD3(+)CD8(+) T cells ≤ 75 cell.μL(-1), and cardiac troponin I ≥ 0.05 ng.mL(-1), especially the latter two factors, were predictors for mortality of COVID-19 pneumonia patients.
09.04.2020	Covid-19 Testing, Hospital Admission, and Intensive Care Among 2,026,227 United States Veterans Aged 54-75 Years	medRxiv (not peer reviewed) / Article	<ul style="list-style-type: none"> • Retrospective cohort study on 2,026,227 Veterans aged 54-75 years tested for Covid-19 in United States between February 8 and March 30, 2020. • Black race was strongly associated with Covid-19+, but not with hospitalization or intensive care. • Among Covid-19+, risk of hospitalization and intensive care may be better characterized

			by laboratory measures and vital signs than by comorbid conditions or prior medication exposure.
15.04.2020	Care of patients with liver disease during the COVID-19 pandemic: EASL-ESCMID position paper	JHEP Rep / Position paper	<ul style="list-style-type: none"> • It remains unclear at this point to what extent chronic liver diseases should be considered as risk factors, due to a shortage of appropriate studies. • Patients with advanced liver disease and those after liver transplantation represent vulnerable patient cohorts with an increased risk of infection and/or a severe course of COVID-19.
11.04.2020	Prediction of the clinical outcome of COVID-19 patients using T lymphocyte subsets with 340 cases from Wuhan, China: a retrospective cohort study and a web visualization tool	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> • In this retrospective cohort study, the authors studied 340 confirmed COVID-19 patients from Wuhan Pulmonary Hospital, including 310 discharged cases and 30 death cases. • While age and underlying diseases are known risk factors for poor prognosis, patients with a less damaged immune system at the time of hospitalization had higher chance of recovery. • Close monitoring of the T lymphocyte subsets might provide valuable information of the patient's condition change during the treatment process.
11.04.2020	Risk factors for mortality of adult inpatients with Coronavirus disease 2019 (COVID-19): a systematic review and meta-analysis of retrospective studies	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> • Older age, hypertension, diabetes, COPD and CVDs were associated with greater risk of death from COVID-19 infection. These findings could help clinicians to identify patients with poor prognosis at an early stage.
14.04.2020	Is glucose-6-phosphate dehydrogenase enzyme deficiency a factor in Coronavirus-19 (COVID-19) infections and deaths?	Pathogens and global health / Commentaries	<ul style="list-style-type: none"> • The relationship between G6PD deficiency and COVID-19 infection is unknown. • Although mortality risk is higher for older adults and individuals with chronic health conditions, G6PD enzyme deficiency should be taken into consideration in the risk assessment for COVID-19 pandemic.
10.04.2020	Clinical features and management of severe COVID-19: A retrospective study in Wuxi, Jiangsu Province, China	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> • This study suggested that patients with severe COVID-19 may be more likely to have an older age, present with lymphopenia and bilateral lung infiltration, receive multiple treatments and stay longer in hospital
15.04.2020	Clinical Characteristics of COVID-19 Patients With Digestive Symptoms in Hubei, China: A Descriptive, Cross-Sectional, Multicenter Study	The American journal of gastroenterology / Article	<ul style="list-style-type: none"> • 204 patients with COVID-19 and full laboratory, imaging, and historical data were analysed. • The authors found that digestive symptoms are common in patients with COVID-19. • These patients have a longer time from onset to admission, evidence of longer coagulation, and higher liver enzyme levels. • Clinicians should recognize that digestive symptoms, such as diarrhoea, are commonly among the presenting features of COVID-19 and that the index of suspicion may need to be raised earlier in at-risk patients presenting with digestive symptoms.
14.04.2020	Letter: Covid-19 and vitamin D- authors' reply	Alimentary pharmacology & therapeutics / Letter	<ul style="list-style-type: none"> • Vitamin D deficiency may well be associated with an increased risk of severity in COVID-19.

Epidemiology and clinical – other

Publication Date	Title/URL	Journal/ Article type	Digest
14.04.2020	Spread of SARS-CoV-2 in the Icelandic Population	New England Journal of Medicine / Article	<ul style="list-style-type: none"> • Population-based study in Iceland to address limited data on how SARS-CoV-2 enters and spreads in a population: target tested people at high risk for infection; plus population screening using two strategies: issuing an open invitation to 10,797 persons and sending random invitations to 2283 persons. In total, 6% of the population was screened. • Children under 10 years of age and females had a lower incidence of SARS-CoV-2 infection than adolescents or adults and males. • The haplotypes of the sequenced SARS-CoV-2 viruses were diverse and changed over time. The percentage of infected participants that was determined through population screening remained stable for the 20-day duration of screening.
09.04.2020	Complex immune dysregulation in COVID-19 patients with severe respiratory failure	Cell Host & Microbe / Journal pre-proof	<ul style="list-style-type: none"> • Sudden clinical deterioration 7-8 days after initial symptom onset suggests that severe respiratory failure (SRF) in COVID-19 is driven by a unique pattern of immune dysfunction. • Authors studied immune responses of 54 COVID-19 patients, 28 of whom had SRF. • The unique pattern of immune dysregulation in severe COVID-19 is characterized by IL-6-mediated low HLA-DR expression and lymphopenia, associated with sustained cytokine production and hyper-inflammation.
10.04.2020	Neurologic Manifestations of Hospitalized Patients With Coronavirus Disease 2019 in Wuhan, China	JAMA neurology / Article	<ul style="list-style-type: none"> • Retrospective, observational case series of neurologic manifestations. Of 214 patients with COVID-19, 36.4% had some nervous system–related clinical finding - from fairly specific symptoms (e.g., loss of sense of smell or taste, myopathy, and stroke) to more nonspecific symptoms (e.g., headache, depressed level of consciousness, dizziness, or seizure). • Patients with some of the more common specific symptoms, including smell or taste impairment and myopathy, tended to have these symptoms early in their clinical course. • Neurologic symptoms were more common in patients with more severe disease (30.2% in non-severe patients and 45.5% in severe patients).
11.04.2020	Epidemiological characteristics of COVID-19 cases in Italy and estimates of the reproductive numbers one month into the epidemic	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> • Of the 62,843 cases of COVID-19 analysed, 71.6% were reported from three Regions (Lombardia, Veneto and Emilia-Romagna). All cases reported after Feb 20th were locally acquired. • Overall Rt in Italian regions is currently decreasing albeit with large diversities across the country, supporting the importance of combined non-pharmacological control measures.
11.04.2020	Anosmia and dysgeusia in patients with mild SARS-CoV-2 infection	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> • In this cohort of 42 patients from Israel with mild COVID19 the authors describe the unique clinical feature of acute anosmia and dysgeusia in more than third of patients. • Median onset of these features was 3.3 days after onset of illness (range 0-7) with rapid recovery in most patients

09.04.2020	Excess cases of influenza suggest an earlier start to the coronavirus epidemic in Spain than official figures tell us: an analysis of primary care electronic medical records from over 6 million people from Catalonia	medRxiv (not peer reviewed) / Article	<ul style="list-style-type: none"> • COVID-19 cases may have been present in the Catalan population when the first imported case was reported on 25 February 2020. • COVID-19 carriers may have been misclassified as influenza diagnoses in primary care, boosting community transmission before public health measures were taken.
15.04.2020	Demand Analysis and Management Suggestion: Sharing Epidemiological Data Among Medical Institutions in Megacities for Epidemic Prevention and Control	J Shanghai Jiaotong Univ Sci / Article	<ul style="list-style-type: none"> • Shanghai has established a multi-department platform named "one-net management" on dynamic information monitoring. • By sharing epidemiological data with medical institutions under a safe environment, the authors believe that the ability to prevent and control epidemics among medical institutions will be effectively and comprehensively improved.
14.04.2020	Otolaryngology Providers Must Be Alert for Patients with Mild and Asymptomatic COVID-19	Official journal of American Academy of Otolaryngology-Head and Neck Surgery / Article	<ul style="list-style-type: none"> • Otolaryngology providers should maintain high clinical suspicion for mild and asymptomatic COVID-19 patients. • Protective strategies should be implemented including pre-appointment screening, triaging, restriction of nonurgent visits and surgeries, telemedicine, and appropriate personal protective equipment use.
14.04.2020	Challenges and responses: a tertiary hospital in 2019-nCoV epidemic	Disaster medicine and public health preparedness / Article	<ul style="list-style-type: none"> • This paper describes the urgent response strategy of a tertiary hospital, including human resources and medical resources preparation and re-allocation, immediate fever screening, strict patient-visiting flow management, and reasonable information communication.

Infection control

Publication Date	Title/URL	Journal/ Article type	Digest
14.04.2020	How can pandemic spreads be contained in care homes?	Oxford COVID-19 Evidence Service / Briefing	<ul style="list-style-type: none"> • Rapid review evaluates available measures to minimise risk of infection spread among residents and staff. Most significant: i. hand hygiene facilities plus four or more of the WHO multi-modal strategy (https://www.who.int/gpsc/news/simple_guideline/en/); ii. Environmental decontamination; iii. Reducing staff rotation (studies found staff were a key source of outbreaks and transmission); iv. Restricting visitation (no evidence found); v. Testing, so rapid response to contain and prevent further spread.
10.04.2020	Aerosol and Surface Distribution of Severe Acute Respiratory Syndrome Coronavirus 2 in Hospital Wards, Wuhan, China, 2020	Emerging infectious diseases / Dispatch	<ul style="list-style-type: none"> • Air and surface samples were tested in a hospital. Contamination was greater in intensive care units than general wards. Virus was widely distributed on floors, computer mice, trash cans, and sickbed handrails and was detected in air ≈4 m from patients.

13.04.2020	Staying Ahead of the Wave	New England Journal of Medicine / Correspondence	<ul style="list-style-type: none"> • Report from a hard-hit hospital on Long Island, New York, explains how the local coronavirus epidemic led to rapid innovation. The ED set up a forward-triage and treatment unit and a split-flow process to expedite care. Ways were found to produce face shields and hand sanitizer and to sterilize used N95 respirators.
09.04.2020	COVID-19 Global Pandemic Planning: Decontamination and Reuse Processes for N95 Respirators	medRxiv (not peer reviewed) / Article	<ul style="list-style-type: none"> • The authors describe the development of a process that began in late February 2020 for selecting and implementing the use of hydrogen peroxide vapor (HPV) as viable method to reprocess N95 respirators. • Details are provided about the prioritization and implementation of processes for collection and storage, pre-processing, HPV decontamination, and post-processing of filtering facepiece respirators (FFRs). • Important lessons learned from this experience include, developing an adequate reserve of PPE for effective reprocessing and distribution, and identifying a suitable location with optimal environmental controls (i.e., operating room).
10.04.2020	Seasonal Influenza Activity During the SARS-CoV-2 Outbreak in Japan	JAMA / Research letter	<ul style="list-style-type: none"> • Measures for avoiding SARS-CoV-2 disease transmission may also reduce the spread of other infectious diseases, such as seasonal influenza. • Analysed National Institute of Infectious Diseases Japan data from 2014 to 2020 for number of cases of seasonal influenza weekly; estimated change in influenza activity after SARS-CoV-2 outbreak using a “difference-in-difference” regression model. • Seasonal influenza activity was lower in 2020 than in previous years in Japan. Authors discuss possible reasons and limitations of study.
11.04.2020	SARS-CoV-2 infection in Health Care Workers in a large public hospital in Madrid, Spain, during March 2020	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> • In a hospital in Madrid, from a total of 6800 employees, 2085 (30,6 %) were tested during the period 1-29 March 2020, some of them repeatedly (2286 total samples). A total of 791 health care workers and personnel were confirmed to be infected by March 29th, representing 38% of those tested and 11,6 % of all the hospital workers. • There appears to be a close connection between HCW infection and the driving forces of transmission in the community. • Since a significant proportion of COVID-19 cases can be asymptomatic and not all the hospital employees were actually tested, it is highly likely that this 11,6 % is a minimum estimation of the impact of SARS-CoV-2 circulation in Madrid during the first 4 weeks of the epidemics.
11.04.2020	There are asymptomatic and pre-symptomatic patients infected with COVID-19. So what? Pandemic response implications	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> • This review presents the available evidence that asymptomatic and pre-symptomatic people can infect others with COVID-19. • The author outlines the implications for risk management and preparedness, healthcare workers protection and health systems response, infection modelling and planning, testing approaches, immigration restrictions, and social connectedness (physical distance and clusters).
11.04.2020	Nitric oxide gas inhalation to prevent COVID-2019 in healthcare providers	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> • The authors will randomize 470 healthcare providers scheduled to work with COVID 19 patients to receive nitric oxide gas administration (NO group, n=235) or no gas

			<p>administration (control group, n=235).</p> <ul style="list-style-type: none"> • The primary endpoint of this study is the incidence of subjects with COVID-19 disease at 14 days from enrolment. • Secondary endpoints are the proportion of healthcare providers who present a positive real time RT-PCR test for SARS-CoV-2 14 days after enrolment, the proportion of healthcare providers requiring quarantine, and the total number of quarantine days in the two groups.
09.04.2020	Implementation of a Novel Remote Physician SBRT Coverage Process during the Coronavirus Pandemic	medRxiv (not peer reviewed) / Article	<ul style="list-style-type: none"> • A novel method of remote radiation oncologists (RO) SBRT coverage permits reduced personnel and patient interactions surrounding RT procedures. • This may help to reduce transmission of COVID-19 in their department and provides a means for SBRT coverage if ROs are reallocated to other areas of the hospital for COVID-19 support.
09.04.2020	Stability of the COVID-19 virus under wet, dry and acidic conditions	medRxiv (not peer reviewed) / Article	<ul style="list-style-type: none"> • The authors investigated the stability of the COVID-19 virus in wet, dry and acidic (pH2.2) environments at room temperature. • Results showed that the COVID-19 virus could survive for three days in wet and dry environments, but the dry condition is less favourable for the survival of the virus. • The study also demonstrated that the COVID-19 virus at a relative high titer (1.2 x 10³ PFU) exhibits a certain degree of tolerance to acidic environment at least for 60 minutes.
14.04.2020	A Commentary on Safety Precautions for Otologic Surgery during the COVID-19 Pandemic	Official journal of American Academy of Otolaryngology-Head and Neck Surgery / Letter to the editor	<ul style="list-style-type: none"> • Given the proclivity for respiratory pathogens to involve the middle ear and the significant aerosolization associated with many otologic procedures, safety precautions should follow current recommendations for procedures involving the upper airway. • Necessary otologic procedures on positive, suspected, or unknown COVID-19 status patients should be performed using enhanced personal protective equipment, including an N95 respirator and eye protection or powered air-purifying respirator (PAPR, preferred), disposable cap, disposable gown, and gloves. • Powered instrumentation should be avoided unless absolutely necessary, and if performed, PAPR or sealed eye protection is recommended.
15.04.2020	A comprehensive Chinese experience against SARS-CoV-2 in ophthalmology	Eye Vis (Lond) / Article	<ul style="list-style-type: none"> • Based on 33 articles published by Chinese scholars, guidelines and clinical practice experience in domestic hospitals, the authors have summarized the Chinese experience through the lens of ophthalmology, hoping to make a contribution to protecting ophthalmologists and patients around the world. • Several investigations have been conducted to identify whether COVID-19 can be transmitted through the ocular route.
14.04.2020	Emergency Colorectal Surgery in a COVID-19 Pandemic Epicenter	Surgical technology international / Article	<ul style="list-style-type: none"> • Transmission of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is a considerable risk during emergency colorectal surgery in a pandemic epicentre.

Treatment

Publication Date	Title/URL	Journal/ Article type	Digest
14.04.2020	N-acetylcysteine: A rapid review of the evidence for effectiveness in treating COVID-19	Oxford COVID-19 Evidence Service / Briefing	<ul style="list-style-type: none"> • N-acetylcysteine (NAC) has been proposed for use in the therapy and/or prevention of several respiratory diseases and of diseases involving an oxidative stress including COVID-19. • No COVID-specific evidence for NAC was found; authors used evidence in other acute respiratory disorders. • Clinical trial evidence for the use of NAC as an antioxidant in influenza and other acute viral respiratory tract infections is very limited and therefore difficult to draw any concrete conclusions without further trial evidence.
14.04.2020	Cardiac drugs and outcome in COVID - 19	QJM : monthly journal of the Association of Physicians / Letter to editor	<ul style="list-style-type: none"> • At present there is not enough evidence of any potential benefit or harm of most prescribed medications including the ARBs, ACEi, Statins, Antiviral agents they strongly agree that meticulous and detailed reporting of medications of COVID -19 affected patients is crucial in order to further understand the multifaceted interaction of the virus, medications, and clinical outcome.
14.04.2020	A Rational Use of Clozapine Based on Adverse Drug Reactions, Pharmacokinetics, and Clinical Pharmacopsychology	Psychotherapy and psychosomatics	<ul style="list-style-type: none"> • Psychiatrists should call their clozapine patients and families and explain to them that if the patient develops fever or flu-like symptoms, the psychiatrist should be called and should consider halving the clozapine dose. • If the patient is hospitalized with pneumonia, the treating physician needs to assess for symptoms of clozapine intoxication since halving the dose may not be enough for all patients; consider decreasing it to one-third or even stopping it. • Once the signs of inflammation and fever have disappeared, the clozapine dose can be slowly increased to the prior dosage level.
15.04.2020	Cardiac drugs and outcome in COVID-19: Reply	QJM : monthly journal of the Association of Physicians / Reply	<ul style="list-style-type: none"> • The authors disagree with Mishra and colleagues (Mishra AK, Sahu KK, Sargent J. Cardiac drugs and outcome in COVID-19. QJM 2020.), and do not advocate the discontinuation of RAAS-blocker therapy while waiting for further studies, as that might lead to harm by increasing blood pressure or congestive heart failure in some patients.
14.04.2020	Extracorporeal membrane oxygenation in COVID-19	Cardiology journal / Letters to the editors	<ul style="list-style-type: none"> • Extracorporeal oxygenation membrane (ECMO) remains an option for the treatment of patients with severe respiratory failure in patients in selected age groups with minor co-morbidities. • ECMO will not replace mechanical ventilation or equipment shortages of ventilator availability, and requires supervision by very experienced and well-trained specialist medical personnel.
10.04.2020	Successful treatment of COVID-19 using extracorporeal membrane oxygenation, a case report	European review for medical and pharmacological sciences / Article	<ul style="list-style-type: none"> • This study reported a successful example of a severe COVID-19 patient with extracorporeal membrane oxygenation (ECMO) technology in a hospital. This experience revealed that the early application of ECMO can dramatically promote the recovery of severe COVID-19 patients.

14.04.2020	Hydroxychloroquine for COVID-19: What do the clinical trials tell us?	Oxford COVID-19 Evidence Service / Briefing	<ul style="list-style-type: none"> • From rapid review, current data do not support the use of hydroxychloroquine for prophylaxis or treatment of COVID-19. There are no published trials of prophylaxis. Two preliminary trial reports and 3 negative studies examined. • Currently 142 registered clinical trials involving the use of chloroquine or hydroxychloroquine or both in some capacity, either as interventions being tested or as comparators for other drugs.
14.04.2020	Improved Prognosis in Cystic Fibrosis: Consideration for Intensive Care During the COVID-19 Pandemic	American journal of respiratory and critical care medicine / Article	<ul style="list-style-type: none"> • Healthcare teams may face tremendously difficult decisions related to rationing ventilators and offering intensive care. • As states and institutions consider revising existing triage plans or formulating new ones, decisionmakers should be careful to avoid language that excludes patients from receiving care because of an underlying condition without careful attention to the prognosis for those individuals.
10.04.2020	No evidence of clinical efficacy of hydroxychloroquine in patients hospitalized for COVID-19 infection with oxygen requirement: results of a study using routinely collected data to emulate a target trial	medRxiv (not peer reviewed) / Article	<ul style="list-style-type: none"> • This study included 181 patients with SARS-CoV-2 pneumonia; 84 received hydroxychloroquine (HCQ) within 48 hours of admission (HCQ group) and 97 did not (no-HCQ group). • The results do not support the use of HCQ in patients hospitalised for documented SARS-CoV-2-positive hypoxic pneumonia.
10.04.2020	Hydroxychloroquine in patients with COVID-19: an open-label, randomized, controlled trial	medRxiv (not peer reviewed) / RCT	<ul style="list-style-type: none"> • The administration of HCQ did not result in a higher negative conversion rate but more alleviation of clinical symptoms than standard-of-care alone in patients hospitalized with COVID-19 without receiving antiviral treatment, possibly through anti-inflammatory effects.
14.04.2020	Optimizing hydroxychloroquine dosing for patients with COVID-19: An integrative modeling approach for effective drug repurposing	Clinical pharmacology and therapeutics / Article	<ul style="list-style-type: none"> • Due to COVID-19's variable natural history, lower dose Hydroxychloroquine (HCQ) regimens may be indistinguishable from controls. • Evaluation of higher HCQ doses is needed to ensure adequate safety and efficacy.
09.04.2020	Associations of clinical characteristics and antiviral drugs with viral RNA clearance in patients with COVID-19 in Guangzhou, China: a retrospective cohort study	medRxiv (not peer reviewed) / Article	<ul style="list-style-type: none"> • Viral RNA was cleared in 89% of the COVID-19 patients within 21 days after illness onset. The use of antiviral drugs (chloroquine, oseltamivir, arbidol, and lopinavir/ritonavir) did not shorten viral RNA clearance, especially in non-serious cases.
11.04.2020	Chloroquine diphosphate in two different dosages as adjunctive therapy of hospitalized patients with severe respiratory syndrome in the context of coronavirus (SARS-CoV-2) infection: Preliminary safety results of a randomized, double-blinded,	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> • Preliminary findings suggest that the higher chloroquine (CQ) dosage (10-day regimen) should not be recommended for COVID-19 treatment because of its potential safety hazards. • The authors performed a parallel, double-blinded, randomized, phase IIb clinical trial, aiming to assess safety and efficacy of two different CQ dosages as adjunctive therapy of hospitalized patients with SARS in Manaus, Brazilian Amazon. • Eligible participants were allocated to receive orally or via nasogastric tube high dose CQ

	phase IIb clinical trial (CloroCovid-19 Study)		(600mg CQ twice daily for 10 days or total dose 12g); or low dose CQ (450mg for 5 days, twice daily only on the first day, or total dose 2.7g). In addition, all patients received ceftriaxone and azithromycin.
14.04.2020	COVID-19, Arrhythmic Risk and Inflammation: Mind the Gap!	Circulation / Article	<ul style="list-style-type: none"> The administration of anti-IL-6 targeted therapies (tocilizumab, sarilumab) to COVID-19 patients, particularly those severely ill, might represent a very useful “two birds with one stone” approach not only promoting the recovery from multi-organ dysfunction, but also mitigating the associated high arrhythmic risk.
10.04.2020	Clinical efficacy of lopinavir/ritonavir in the treatment of Coronavirus disease 2019	European review for medical and pharmacological sciences / Article	<ul style="list-style-type: none"> Compared with the treatment of pneumonia-associated adjuvant drugs alone, the combination treatment with LPV/r and adjuvant drugs has a more evident therapeutic effect in lowering the body temperature and restoring normal physiological mechanisms with no evident toxic and side effects.
11.04.2020	Key to successful treatment of COVID-19: accurate identification of severe risks and early intervention of disease progression	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> The authors analysed and summarized clinical data of 97 confirmed COVID-19 adult patients (including 26 severe cases) admitted to the Fifth Affiliated Hospital of Sun Yat-sen University from Jan 17, 2020 to Mar 10, 2020, included laboratory examination results, imaging findings, treatment effect, prognosis, etc, in order to put forward prediction index of severe COVID-19 patients, principles of early intervention and methylprednisolone usages in COVID-19 patients. Accurate and timely identification of clinical features in severe risks, and early and appropriate intervention can block disease progression. Appropriate dose of methylprednisolone can effectively avoid invasive mechanical ventilation and reduce case fatality rate in critical COVID-19 patients.
11.04.2020	Adjuvant corticosteroid therapy for critically ill patients with COVID-19	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> The authors retrospectively evaluated the effects of adjuvant corticosteroid treatment on the outcome of 244 critically ill patients with COVID-19, using a risk stratification model that adjusts for potential differences between the steroid group (n=151) and the non-steroid group (n=93). These findings indicated that limited effect of corticosteroid therapy could pose to overall survival and prudent dose within effective limits may be recommended for critically ill patients under certain circumstances.
03.04.2020	Virtual screening and repurposing of FDA approved drugs against COVID-19 main protease	Life Sciences / Article	<ul style="list-style-type: none"> The present study provided a comprehensive targeting of the first resolved COVID+19 structure of Mpro and found a suitable save drugs for repurposing against the viral Mpro. Ribavirin, telbivudine, vitamin B12 and nicotinamide can be combined and used for COVID treatment. This initiative relocates already marketed and approved safe drugs for potential use in COVID-treatment.
10.04.2020	Molecular mechanism of action of repurposed drugs and traditional Chinese medicine used for the treatment of patients infected with COVID-19: A systematic review	medrxiv (not peer reviewed) / Review	<ul style="list-style-type: none"> This systematic review provides an overview of the molecular mechanism of action of repurposed drugs or alternative treatment medicines used to attenuate COVID-19 disease. A total of 160 articles that fulfilled the inclusion criteria was analysed and information about 6 drugs (ritonavir, lopinavir, oseltamivir, remdesivir, favipiravir, and chloroquine) and 3 traditional Chinese medicines were extracted.

			<ul style="list-style-type: none"> All of the drug treatment options depend on the ability of the drug to inhibit the proliferation of the SARS-CoV-2 virus by binding to enzyme active sites, viral chain termination, or triggering of the molecular pathway, whereas traditional Chinese medicine has a pivotal role in triggering the inflammation pathway, such as the neuraminidase blocker, to fight the SARS-CoV-2 virus
11.04.2020	Prognostic factors for severity and mortality in patients infected with COVID-19: A living systematic review protocol	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> This is the protocol of a living systematic review. The authors will conduct searches in PubMed/Medline, Embase, Cochrane Central Register of Controlled Trials (CENTRAL), grey literature and in a centralised repository in L-OVE (Living Overview of Evidence). L-OVE is a platform that maps PICO questions to evidence from Epistemonikos database. A living, web-based version of this review will be openly available during the COVID-19 pandemic. The authors will resubmit it if the conclusions change or there are substantial updates.
15.04.2020	Novel decoy cellular vaccine strategy utilizing transgenic antigen-expressing cells as immune presenter and adjuvant in vaccine prototype against SARS-CoV-2 virus	Med Drug Discov / Article	<ul style="list-style-type: none"> A novel decoy cellular vaccination approach being developed to fight against COVID-19 disease. Utilizing this innovative strategy, viral antigen-displaying decoy cells will be developed as a vaccine to protect against COVID-19 disease.
07.04.2020	Type 1 interferons as a potential treatment against COVID-19	Antiviral research / Short communication	<ul style="list-style-type: none"> Type 1 interferons have a broad antiviral activity in vitro and are currently evaluated in a clinical trial to treat MERS-CoV. In this review, the authors discuss preliminary data concerning the potential activity of type 1 interferons on SARS-CoV-2, and the relevance of evaluating these molecules in clinical trials for the treatment of COVID-19.
07.04.2020	Pulmonary radiological change of COVID-19 patients with 99mTc-MDP treatment	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> In this randomized pilot study, 99mTc-MDP had an effective inhibitory effect on the inflammatory disease progression for the therapy of COVID-19, and it can accelerate the absorption of pulmonary inflammation in a short period of time during the process of treatment.
08.04.2020	Calcium channel blocker amlodipine besylate is associated with reduced case fatality rate of COVID-19 patients with hypertension	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> The authors report that calcium channel blockers (CCBs), a type of anti-hypertension drugs that are widely used in the clinics, can significantly inhibit the post-entry replication events of SARS-CoV-2 in vitro. Results from this study suggest that CCB administration for COVID-19 patients with hypertension as the comorbidity might improve the disease outcome.
11.04.2020	Convalescent Plasma to Treat COVID-19: Chinese Strategy and Experiences	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> In this paper, the authors first described the therapeutic schedule, antibody detection method, indications, contraindications of the convalescent plasmas, and reported the operability of the treatment by case study.
11.04.2020	Human monoclonal antibodies block the binding of SARS-CoV-2 spike protein to angiotensin converting enzyme 2 receptor	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> The authors report two monoclonal antibodies (mAbs) cloned from memory B cells of patients recently recovered from COVID-19, and both mAbs specifically bind to the spike (S) protein of SARS-CoV-2, block the binding of receptor binding domain (RBD) of SARS-CoV-2 to human angiotensin converting enzyme 2 (hACE2), and effectively neutralize S protein-pseudotyped virus infection.

- These human mAbs hold promise for the prevention and treatment of the ongoing pandemic of COVID-19.

Social sciences

Publication Date	Title/URL	Journal/ Article type	Digest
14.04.2020	Mental health effects of school closures during COVID-19	The Lancet Child & Adolescent Health / Comment	<ul style="list-style-type: none"> • UK mental health charity Young Minds survey of 2111 participants up to age 25 years with a mental illness history: 83% said pandemic had made their conditions worse. 26% unable to access mental health support. https://youngminds.org.uk/about-us/reports/coronavirus-impact-on-young-people-with-mental-health-needs/
14.04.2020	Coronavirus Disease 2019 (COVID-19) and Mental Health for Children and Adolescents	JAMA pediatrics / Viewpoint	<ul style="list-style-type: none"> • The COVID-19 pandemic may worsen existing mental health problems and lead to more cases among children and adolescents because of the unique combination of the public health crisis, social isolation, and economic recession. • Economic downturns are associated with increased mental health problems for youth that may be affected by the ways that economic downturns affect adult unemployment, adult mental health, and child maltreatment. • Timely action can help lessen the effects and improve long-term capacities for mental health services.
15.04.2020	Knowledge and attitudes of medical staff in Chinese psychiatric hospitals regarding COVID-19	Brain Behav Immun Health / Article	<ul style="list-style-type: none"> • 141 psychiatrists and 170 psychiatric nurses were included in this study. • 89.51% of the medical staff of the psychiatric hospitals studied had extensive knowledge of COVID-19, and 64.63% of them received the relevant training in hospitals. • This study suggests that increased attention should be paid to the knowledge and attitudes of medical staff at psychiatric hospitals during the COVID-19 outbreak.
27.03.2020	The Fear of COVID-19 Scale: Development and Initial Validation	Int J Ment Health Addict / Article	<ul style="list-style-type: none"> • This study developed the Fear of COVID-19 Scale (FCV-19S) to complement the clinical efforts in preventing the spread and treating of COVID-19 cases. It is a seven-item scale with robust psychometric properties.
09.04.2020	Acceptance and preference for COVID-19 vaccination in health-care workers (HCWs)	medRxiv (not peer reviewed) / Article	<ul style="list-style-type: none"> • The objective of the present study is to reveal the acceptance and preference for the COVID-19 vaccination in health-care workers (HCWs). • 76.4% of HCWs (vs. 72.5% in the general) showed their willingness to receive vaccination. • For the general population, vaccine safety and social contacts decisions were the most important predictors.

Miscellaneous

Publication Date	Title/URL	Journal/ Article type	Digest
03.04.2020	Utilization of a mobile platform for the dissemination of validated institutional measurements during CoVid-19 Outbreak: A practical example in the Children's Hospital	JMIR Public Health Surveill / Article	<ul style="list-style-type: none"> This paper describes the use of a mobile health platform (app) to disseminate information concerning screening, local containment procedures, and frequently asked questions/answers. The app was well used by medical staff and information was reported as easy to find. Using an mHealth solution was shown to be an effective time-saving communication channel within a hospital.
15.04.2020	Predicting the impacts of epidemic outbreaks on global supply chains: A simulation-based analysis on the coronavirus outbreak (COVID-19/SARS-CoV-2) case	Transp Res E Logist Transp Rev / Article	<ul style="list-style-type: none"> The outcomes of this research can be used by decision-makers to predict the operative and long-term impacts of epidemic outbreaks on the supply chains (SCs) and develop pandemic SC plans. This approach can also help to identify the successful and wrong elements of risk mitigation/preparedness and recovery policies in case of epidemic outbreaks.
15.04.2020	Will the COVID-19 pandemic make us reconsider the relevance of short food supply chains and local productions?	Trends Food Sci Technol / Letter to the editor	<ul style="list-style-type: none"> This paper discusses the importance of shorter food supply chains and local businesses during disease outbreaks.
04.04.2020	Can atmospheric pollution be considered a co-factor in extremely high level of SARS-CoV-2 lethality in Northern Italy?	Environmental pollution / Article	<ul style="list-style-type: none"> This paper analyses the possible link between pollution and the development of acute respiratory distress syndrome and eventually death. People living in an area with high levels of pollutant are more prone to develop chronic respiratory conditions and suitable to any infective agent. Prolonged exposure to air pollution leads to a chronic inflammatory stimulus, even in young and healthy subjects. Concludes that the high level of pollution in Northern Italy should be considered an additional co-factor of the high level of lethality recorded in that area
09.04.2020	An effect assessment of Airborne particulate matter pollution on COVID-19: A multi-city Study in China	medRxiv (not peer reviewed) / Article	<ul style="list-style-type: none"> In this study, the authors obtained confirmed cases of COVID-19, the data of airborne ambient PM with aerodynamic diameter $\leq 2.5 \mu\text{m}$ (PM_{2.5}) and $\leq 10 \mu\text{m}$ (PM₁₀), ambient temperature (AT), absolute humidity (AH) and migration scale index (MSI) in 72 cities of China (excluded Wuhan city) on a daily basis. The study suggests that airborne PM pollution likely increases the risk of getting COVID-19 in China.
10.04.2020	COVID-19 lockdowns cause global air pollution declines with implications for public health risk	medRxiv (not peer reviewed) / Article	<ul style="list-style-type: none"> Assuming that the lockdown-induced deviations in pollutant concentrations are maintained for the duration of 2020, we estimate 0.78 (0.09 to 1.5) million premature deaths and 1.6 (0.8 to 2) million paediatric asthma cases could be avoided globally.

Modelling

Publication Date	Title/URL	Journal/ Article type	Digest
15.04.2020	Caution Warranted: Using the Institute for Health Metrics and Evaluation Model for Predicting the Course of the COVID-19 Pandemic	Annals of internal medicine / Ideas and opinions	<ul style="list-style-type: none"> Local data are less likely to be subject to undercounting or reporting errors, helping hospitals better prepare for the immediate future. It is also unlikely that a “one-size” model will fit all regions at all times.
15.04.2020	Why is it difficult to accurately predict the COVID-19 epidemic?	Infect Dis Model / Article	<ul style="list-style-type: none"> The authors report their results of modelling the impacts of the strict quarantine measures undertaken in Wuhan after Feb 7 on the time course of the epidemic, and modelling the potential of a second outbreak after the return-to-work in the city.
09.04.2020	Comparison of different exit scenarios from the lock-down for COVID-19 epidemic in the UK and assessing uncertainty of the predictions	medRxiv (not peer reviewed) / Article	<ul style="list-style-type: none"> The authors model further development of the COVID-19 epidemic in the UK given the current data and assuming different scenarios of handling the epidemic. The models used are flexible, comprehensive, fast to run and allow the incorporation of the following: - time-dependent strategies of handling the epidemic; - spatial heterogeneity of the population and heterogeneity of development of epidemic in different areas; - special characteristics of particular groups of people, especially people with specific medical pre-histories and elderly.
31.03.2020	A flexible load sharing system optimising ICU demand in the context of COVID-19 pandemic	medRxiv (not peer reviewed) / Article	<ul style="list-style-type: none"> The authors develop and implement an algorithm to provide optimal re-routing strategies to either transfer patients requiring Intensive Care Units (ICU) or ventilators, constrained by feasibility of transfer. They validate the approach with realistic data extracted from UK and Spain. It is possible to enable access to ICU treatment to up to 1000 cases in the UK in a single step of the algorithm, and with more realistic demand the algorithm is able to balance about 600 beds per step in the Spanish system, leading to potentially saving a large percentage of these lives that would otherwise not have access to ICU if no load sharing was implemented
11.04.2020	Outbreak dynamics of COVID-19 in China and the United States	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> In this study, the authors integrate a global network model with a local epidemic SEIR model to quantify the outbreak dynamics of COVID-19 in China and the United States. With no additional mitigation strategies, this epidemic network model predicts a basic reproduction number of 5.3+/-0.95 and a nationwide peak of the outbreak on May 10, 2020 with 3 million infections across the United States. The authors anticipate that their model will become a valuable tool to estimate the potential of vaccination and quantify the effect of relaxing political measures including total lock down, shelter in place, and travel restrictions for low-risk subgroups of the population or for the population as a whole.
15.04.2020	Rapid surveillance of COVID-19 in the United States using a prospective space-time scan statistic: Detecting and evaluating emerging clusters	Appl Geogr / Article	<ul style="list-style-type: none"> These results can inform public health officials and decision makers about where to improve the allocation of resources, testing sites; also, where to implement stricter quarantines and travel bans.

10.04.2020	Estimating required lockdown cycles before immunity to SARS-CoV-2: Model-based analyses of susceptible population sizes, S₀, in seven European countries including the UK and Ireland	medRxiv (not peer reviewed) / Article	<ul style="list-style-type: none"> • This study sought to determine the current size of the effective (i.e. susceptible) population for seven European countries, to estimate immunity levels following this first wave • The results indicate that after the current wave, a large proportion of the total population will remain without immunity. • This suggests that in the absence of strong seasonal effects, new medications or more comprehensive contact tracing, a further set of epidemic waves in different geographic centres are likely.
01.04.2020	Using ILI surveillance to estimate state-specific case detection rates and forecast SARS-CoV-2 spread in the United States	medRxiv (not peer reviewed) / Article	<ul style="list-style-type: none"> • The authors show how publicly available CDC influenza-like illness (ILI) outpatient surveillance data can be repurposed to estimate the detection rate of symptomatic SARS-CoV-2 infections. • They find a surge of non-influenza ILI above the seasonal average and show that this surge is correlated with COVID case counts across states. • Results suggest a conceptual model for the COVID epidemic in the US in which rapid spread across the US are combined with a large population of infected patients with presumably mild-to-moderate clinical symptoms.
10.04.2020	Potency and timing of antiviral therapy as determinants of duration of SARS CoV-2 shedding and intensity of inflammatory response	medRxiv (not peer reviewed) / Article	<ul style="list-style-type: none"> • The authors developed a mathematical model which allows projection of all possible therapeutic approaches. • The results support an early test and treat approach for COVID-19, but also demonstrate the need to identify early viral shedding kinetic features that are the most predictive surrogates of clinical severity and transmission risk.
11.04.2020	Multi-route respiratory infection: when a transmission route may dominate	medRxiv (not peer reviewed) / Article	<ul style="list-style-type: none"> • This multi-route transmission model provides a comprehensive but straightforward method to evaluate the transmission efficiency of different transmission routes of respiratory diseases and provides a basis for predicting the impact of individual level intervention methods such as increasing close-contact distance and wearing protective masks.
09.04.2020	Comparative Analysis of COVID-19 Transmission Patterns in Three Chinese Regions vs. South Korea, Italy and Iran	medRxiv (not peer reviewed) / Article	<ul style="list-style-type: none"> • The present study proposed a modified susceptible-exposed-infected-removed model (SEIR) to perform a comparative analysis of the temporal progress of disease spread in six regions worldwide. • The implemented measures in China (including early identification of all infection sources and eliminating transmission pathways) were very effective for controlling the spread of COVID-19. • The proposed model can account for these prevention and control measures by properly adjusting its parameters.
09.04.2020	Next weeks of SARS-CoV-2: Projection model to predict time evolution scenarios of accumulated cases in Spain	medRxiv (not peer reviewed) / Article	<ul style="list-style-type: none"> • This work presents a new model of SARS-CoV-2 to predict different scenarios of accumulated cases in Spain. • For the worst-case scenario, it takes 118, 126 or 142 days to reach the maximum number of cases (n = 15,000) to reach 90, 95 and 99% of the asymptote (maximum number of

			cases), respectively. This means translated in a time scale that in the worst case the virus will not stop its progress, in Spain, until summer 2020
11.04.2020	Effectiveness of quarantine measure on transmission dynamics of COVID-19 in Hong Kong	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> The authors developed a susceptible-exposed-infectious-quarantined-recovered (SEIQR) meta-population model that can stratify the infections into imported and subsequent local infections, and therefore to obtain the control effects on transmissibility in a region with many imported cases. The results suggest that the early quarantine for a suspected case before the symptom onset is a key factor to suppress COVID-19.
11.04.2020	A study of SARS-CoV-2 evolution in Italy: from early days to secondary effects after social distancing	medRxiv (not peer-reviewed) / Article	<ul style="list-style-type: none"> The contact rate must obviously kept as low as possible, but it is also clear that, in a modern developed country, it cannot fall under certain minimum levels and for long time. The complementary parameter tuned is the transition rate of the symptomatic infected individuals to the quarantined class, a parameter δ_I connected with the time $t_I=1/\delta_I$ needed to perform diagnostic tests. Within the conditions of the outbreak in Italy this time must fall under 12-8 hours in order to make the reproduction number less than 1 to minimize the case numbers.

Guidance and consensus statements

Publication Date	Title/URL	Journal/ Article type
14.04.2020	Expert Working Group concludes there is currently insufficient evidence to establish a link between use of ibuprofen and susceptibility to contracting COVID-19 or the worsening of its symptoms.	Gov.uk / Advice
30.03.2020	Chinese Society of Anesthesiology Expert Consensus on Anesthetic Management of Cardiac Surgical Patients With Suspected or Confirmed Coronavirus Disease 2019	Journal of cardiothoracic and vascular anesthesia / Special article
04.04.2020	COVID-19 Guidance for Triage of Operations for Thoracic Malignancies: A Consensus Statement from Thoracic Surgery Outcomes Research Network	The Annals of thoracic surgery / Journal pre-proof

Overviews, comments and editorials

Publication Date	Title/URL	Journal/ Article type
11.04.2020	Centring sexual and reproductive health and justice in the global COVID-19 response	The Lancet / Comment
13.04.2020	Three lessons for the COVID-19 response from pandemic HIV	The Lancet HIV / Comment
14.04.2020	COVID-19: health literacy is an underestimated problem	The Lancet Public Health / Comment
15.04.2020	On the responsible use of digital data to tackle the COVID-19 pandemic	Nat Med / Comment

10.04.2020	The Spectrum of Neurologic Disease in the Severe Acute Respiratory Syndrome Coronavirus 2 Pandemic Infection: Neurologists Move to the Frontlines	JAMA neurology / Editorial
10.04.2020	Joint International Collaboration to Combat Mental Health Challenges During the Coronavirus Disease 2019 Pandemic	JAMA Psychiatry / Commentary
06.04.2020	COVID-19 pandemic and economic cost; impact on forcibly displaced people	Travel medicine and infectious disease / Letter
14.04.2020	COVID-19 Pandemic: What Every Otolaryngologist-Head and Neck Surgeon Needs to Know for Safe Airway Management	Official journal of American Academy of Otolaryngology-Head and Neck Surgery / Commentary
15.04.2020	The proximal origin of SARS-CoV-2	Nat Med / Correspondence
09.04.2020	Operating Room Guide for Confirmed or Suspected COVID-19 Pregnant Patients Requiring Cesarean Delivery	American journal of perinatology / Clinical opinion
06.04.2020	Obstetric Anesthesia During the COVID-19 Pandemic	Anesthesia and analgesia / Article
15.04.2020	Novel 2019 coronavirus SARS-CoV-2 (COVID-19): an overview for emergency clinicians	Pediatr Emerg Med Pract / Overview
14.04.2020	Cancer Center Recommendations to Mitigate COVID-19 Impact in Patients With Cancer: Low-Resource Settings Version	JCO global oncology / Letter to the editor

Produced by the PHE COVID-19 Literature Digest Team

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