



International EPI Cell Daily Evidence Digest – 27/04/2020

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, consensus statements and hospital resources (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Please note that we are including preprints (**highlighted in red**), which are preliminary reports of work that have NOT been peer-reviewed.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
25.04.2020	Two cases of COVID-19 with positive salivary and negative pharyngeal or respiratory swabs at hospital discharge: a rising concern	Oral Diseases / Short communication	<ul style="list-style-type: none">• The authors report two cases of COVID-19 showing negative respiratory swabs but positive salivary samples at the same time.

23.04.2020	Positive rectal swabs in young patients recovered from coronavirus disease 2019 (COVID-19)	The Journal of infection / Article	<ul style="list-style-type: none"> • Identified seven cases of COVID-19 who were readmitted to hospital because of positive RT-PCR after discharge, including three paediatric and four young adult patients. Six patients had positive rectal swabs but negative throat swabs, and one patient had positive throat swabs. All the patients continued to be asymptomatic and had unchanged chest computed tomography from previous images. The time from hospital discharge to positive RT-PCR after recovery was 7-11 days. Adding RT-PCR test of rectal swabs to the criteria for discharge or discontinuation of quarantine might be necessary.
24.04.2020	Persistent viral RNA positivity during recovery period of a patient with SARS-CoV-2 infection	Journal of Medical Virology / Short communication	<ul style="list-style-type: none"> • Describes a case of SARS-CoV-2 infection with clinical course more than two months. This patient had recovered from the pneumonia after treatment. The viral RNA of throat swabs became negative and the viral specific antibodies were produced during recovery period. • However, the viral RNA reappeared and additionally persisted in throat swabs for more than 40 days. In addition, the viral RNA was detected in multiple types of specimens with extremely high titres in the saliva. In conclusion, these findings indicate that SARS-CoV-2 can cause a long clinical course. The coexistence of viral RNA and viral specific antibodies may imply an immune evasion of SARS-CoV-2 from host's immune system.
24.04.2020	SARS-CoV-2 can be detected in urine, blood, anal swabs and oropharyngeal swabs specimens	Journal of Medical Virology / Short communication	<ul style="list-style-type: none"> • SARS-CoV-2 can infect multiple systems, including the urinary tract. • Testing different specimen types may be useful for monitoring disease changes and progression, and for establishing a prognosis.
30.03.2020	Analytical sensitivity and efficiency comparisons of SARS-COV-2 qRT-PCR primer-probe sets	medRxiv (not peer reviewed) / Article	<ul style="list-style-type: none"> • Evaluated the primer-probe sets used in four common diagnostic assays available on the World Health Organization (WHO) website. To facilitate this effort, they generated RNA transcripts to be used as assay standards and distributed them to other laboratories for internal validation. They then used (1) RNA transcript standards, (2) full-length SARS-CoV-2 RNA, (3) pre-COVID-19 nasopharyngeal swabs, and (4) clinical samples from

			<p>COVID-19 patients to determine analytical efficiency and sensitivity of the qRT-PCR primer-probe sets.</p> <ul style="list-style-type: none"> • They show that all primer-probe sets can be used to detect SARS-CoV-2 at 500 virus copies per reaction, except for the RdRp-SARSr (Charite) confirmatory primer-probe set which has low sensitivity.
22.04.2020	Comparison of Cepheid Xpert Xpress and Abbott ID Now to Roche cobas for the Rapid Detection of SARS-CoV-2	bioRxiv (not peer reviewed) / Article	<ul style="list-style-type: none"> • This study compared two recently-authorized rapid tests, Cepheid Xpert Xpress SARS-CoV-2 and Abbott ID Now SARS-CoV-2 to the Roche cobas SARS-CoV-2 assay. A total of 113 nasopharyngeal swabs were tested, including 88 positives spanning the full range of observed Ct values on the cobas assay. • Compared to cobas, the overall positive agreement was 73.9% with ID Now and 98.9% with Xpert. Negative agreement was 100% and 92.0% for ID Now and Xpert, respectively. Both ID Now and Xpert showed 100% positive agreement for medium and high viral concentrations (Ct value <30). However, for Ct values >30, positive agreement was 34.3% for ID Now and 97.1% for Xpert.
23.04.2020	Highly sensitive detection of SARS-CoV-2 RNA by multiplex rRT-PCR for molecular diagnosis of COVID-19 by clinical laboratories	Clinica chimica acta; international journal of clinical chemistry / Article	<ul style="list-style-type: none"> • Developed a multiplex rRT-PCR methodology for the detection of SARS-CoV-2 RNA. Three genes were used for multiplex rRT-PCR: the Sarbecovirus specific E gene, the SARS-CoV-2 specific N gene, and the human ABL1 gene as an internal control. • Good correlation of Cq values was observed between the simplex and multiplex rRT-PCR methodologies. Low copies (<25 copies/reaction) of SARS-CoV-2 RNA were detected by the novel multiplex rRT-PCR method.
25.04.2020	RT-LAMP for rapid diagnosis of coronavirus SARS-CoV-2	Microbial Biotechnology / Research article	<ul style="list-style-type: none"> • The authors designed four sets of LAMP primers (6 primers in each set), targeting the viral RNA of SARS-CoV-2 in the regions of orf1ab, S gene and N gene. • A colorimetric change was used to report the results, which enables the outcome of viral RNA amplification to be read by the naked eye without the need of expensive or dedicated instrument. • The testing results are consistent with the conventional RT-qPCR.

			<ul style="list-style-type: none"> • This rapid, simple and sensitive RT-LAMP method paves a way for a large screening at public domain and hospitals, particularly regional hospitals and medical centres in rural areas.
21.04.2020	Association between rRT-PCR test results upon admission and outcome in hospitalized chest CT-Positive COVID-19 patients; a provincial retrospective cohort with active follow-up	medRxiv (not peer reviewed) / Cohort study	<ul style="list-style-type: none"> • Hospitalized COVID-19 patients with mild symptoms despite positive chest CT changes and major comorbidities were more probable to have negative rRT-PCR test result, hence lower case fatality rate and a more favourable outcome.
22.04.2020	CT in relation to RT-PCR in diagnosing COVID-19 in the Netherlands: a prospective study	medRxiv (not peer reviewed) / Article	<ul style="list-style-type: none"> • Investigated the diagnostic accuracy of CT using RT-PCR for SARS-CoV-2 as reference standard and investigated reasons for discordant results between the two tests. • The accuracy of chest CT in symptomatic ED patients is high, but used as a single diagnostic test, CT can not safely diagnose or exclude COVID-19. However, CT can be used as a quick first screening tool.
20.04.2020	Clinical and Imaging Findings in COVID-19 Patients Complicated by Pulmonary Embolism	medRxiv (not peer reviewed) / Article	<ul style="list-style-type: none"> • The incidence of pulmonary embolism (PE) among suspected patients in COVID-19 was high. The study suggests PE may occur with increased frequency in the ARDS subgroup. The evolution of radiographic abnormalities showed a general pattern, but are also unique with more extensive lung injury and specific imaging features.
24.04.2020	Point-of-Care Lung Ultrasound Findings in Patients with Novel Coronavirus Disease (COVID-19) Pneumonia	American Journal of Tropical Medicine and Hygiene / Online first	<ul style="list-style-type: none"> • Evaluated lung ultrasound findings in 10 patients admitted to the internal medicine ward with COVID-19. • All of the patients had characteristic glass rockets with or without the Birolleau variant (white lung). Thick irregular pleural lines and confluent B lines were also present in all of the patients. Five of the 10 patients had small subpleural consolidations.
18.04.2020	A cohort study of 223 patients explores the clinical risk factors for the severity diagnosis of COVID-19	medRxiv (not peer reviewed) / Article	<ul style="list-style-type: none"> • The diagnosis markers CRP, D-dimer, LDH and PCT are associated with severity of COVID-19. Among these markers, D-dimer is sensitive for both severity and CFR of COVID-19. Treatment with heparin or other anticoagulants may be beneficial for COVID-19 patients.
20.04.2020	The Association of Lymphocyte count and levels of CRP, D-Dimer, and LDH with severe coronavirus disease 2019 (COVID-19): A Meta-Analysis	medRxiv (not peer reviewed) / Meta-analysis	<ul style="list-style-type: none"> • A total of 11 studies, with 2437 COVID-19 patients, which fulfilled the eligibility criteria were included in the meta-analysis. The analysis revealed that lymphocyte

			<p>count was significantly lower in patients with the severe form of COVID-19 . Also, the analysis of SMD showed that patients with severe COVID-19 have a significantly higher serum levels of CRP , D-Dimer, and LDH. Low lymphocyte count and high levels of CRP, LDH, and D-Dimer are associated with severe COVID-19.</p> <ul style="list-style-type: none"> • These laboratory markers could be used as clinical indicators of worsening illness and poor prognosis of COVID-19.
24.04.2020	Self-reported olfactory loss associates with outpatient clinical course in Covid-19	International Forum of Allergy & Rhinology / Research article	<ul style="list-style-type: none"> • Olfactory and gustatory data were obtained for 128/169 (75.7%) subjects of which 26/128 (20.1%) required hospitalization. • Normosmia is an independent predictor of admission in Covid-19 cases. Smell loss in Covid-19 may be associated with a milder clinical course.
24.04.2020	Neutrophil extracellular traps in COVID-19	JCI insight / In press preview	<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.
22.04.2020	Gut microbiota may underlie the predisposition of healthy individuals to COVID-19	medRxiv (not peer reviewed) / Article	<ul style="list-style-type: none"> • Describes constructing a proteomic risk score based on 20 blood proteomic biomarkers which predict the progression to severe COVID-19. They demonstrate that in their own cohort of 990 individuals without infection, this proteomic risk score is positively associated with proinflammatory cytokines mainly among older, but not younger, individuals. • This study suggests that gut microbiota may underlie the predisposition of normal individuals to severe COVID-19.
19.04.2020	Immune defects and cardiovascular risk in X chromosome monosomy mosaicism mediated by loss of chromosome Y. A risk factor for SARS-CoV-2 vulnerability in elderly men?	medRxiv (not peer reviewed) / Article	<ul style="list-style-type: none"> • The data suggest that XCM mosaicism underlies at least part of the sex-biased severity and mortality of COVID-19 in aging patients. Given its potential relevance for modulating prognosis and therapeutic response, they propose that evaluation of LOY and XCM by currently established methods should be implemented as biomarkers in infected patients, including currently

			<p>ongoing clinical trials with different medications and vaccines for COVID-19.</p> <ul style="list-style-type: none"> • Testing for LOY/XCM at large scale among elderly people may also be helpful to identify still unexposed people who may be especially vulnerable to severe Covid-19 disease.
22.04.2020	Long period dynamics of viral load and antibodies for SARS-CoV-2 infection: an observational cohort study	medRxiv (not peer reviewed) / Article	<ul style="list-style-type: none"> • Investigated the dynamics of viral RNA, IgM, and IgG and their relationships in patients with SARS-CoV-2 pneumonia over an 8-week period • This study adds important new information about the features of viral load and antibody dynamics of SARS-CoV-2. It is clear from these results that the viral RNA persists in sputum and stool specimens for a relatively long time in many patients. Anti-RBD may also serve as a potential protective antibody against SARS-CoV-2 infection, as viral persistence appears to be related to anti-RBD levels. Earlier treatment intervention also appears to be a factor in viral persistence.
22.04.2020	Clinical evaluation of an immunochromatographic IgM/IgG antibody assay and chest computed tomography for the diagnosis of COVID-19	medRxiv (not peer reviewed) / Article	<ul style="list-style-type: none"> • Evaluated the clinical performance of an immunochromatographic (IC) IgM/IgG antibody assay for SARS-CoV2 and CT for the diagnosis of COVID-19. • IC assay had low sensitivity during the early phase of infection, and thus IC assay alone is not recommended for initial diagnostic testing for COVID-19. If RT-qPCR is not available, the combination of chest CT and IC assay may be useful for diagnosing COVID-19.
22.04.2020	Antibody tests in detecting SARS-CoV-2 infection: a meta-analysis	medRxiv (not peer reviewed) / Meta-analysis	<ul style="list-style-type: none"> • The analyses showed that tests using the S antigen are more sensitive than N antigen-based tests. IgG tests perform better compared to IgM ones, and show better sensitivity when the samples were taken longer after the onset of symptoms. Moreover, irrespective of the method, a combined IgG/IgM test seems to be a better choice in terms of sensitivity than measuring either antibody type alone. • All methods yielded high specificity with some of them (ELISA and LFIA) reaching levels around 99%. ELISA- and CLIA-based methods performed better in terms of sensitivity (90-94%) followed by LFIA and FIA with sensitivities ranging from 80% to 86%.

			<ul style="list-style-type: none"> • ELISA tests could be a safer choice at this stage of the pandemic. POC tests (LFIA), that are more attractive for large seroprevalence studies show high specificity but lower sensitivity and this should be taken into account when designing and performing seroprevalence studies.
24.04.2020	Characteristics of Patients with Coronavirus Disease (COVID-19) Confirmed using an IgM-IgG Antibody Test	Journal of Medical Virology / Research article	<ul style="list-style-type: none"> • A combination of nucleic acid and IgM-IgG testing is a more sensitive and accurate approach for diagnosis and early treatment of COVID-19.
24.04.2020	Diagnostic accuracy of an automated chemiluminescent immunoassay for anti-SARS-CoV-2 IgM and IgG antibodies: an Italian experience	Journal of Medical Virology / Short communication	<ul style="list-style-type: none"> • Sixty-one COVID-19 patients and 64 patients from a control group were tested by iFlash1800 CLIA analyser for anti-SARS CoV-2 antibodies IgM and IgG. • iFlash1800 CLIA analyser has shown highly accurate results for the anti-SARS-CoV-2 antibodies profile and can be considered an excellent tool for COVID-19 diagnostics.
20.04.2020	Detection of Nucleocapsid Antibody to SARS-CoV-2 is More Sensitive than Antibody to Spike Protein in COVID-19 Patients	medRxiv (not peer reviewed) / Article	<ul style="list-style-type: none"> • Antibody to the nucleocapsid protein of SARS-CoV-2 is more sensitive than spike protein antibody for detecting early infection. Analysing heat-inactivated samples by LIPS is a safe and sensitive method for detecting SARS-CoV-2 antibodies.
24.04.2020	Clinical Evaluation of Three Sample-To-Answer Platforms for the Detection of SARS-CoV-2	Journal of Clinical Microbiology / Research article	<ul style="list-style-type: none"> • The authors evaluate three sample-to-answer molecular diagnostic platforms (Cepheid Xpert(R) Xpress SARS-CoV-2 [Xpert Xpress], Abbott ID NOW COVID-19 [ID NOW], GenMark ePlex(R) SARS-CoV-2 Test [ePlex]) to determine analytical sensitivity, clinical performance, and workflow for the detection of SARS-CoV-2 in nasopharyngeal swabs from 108 symptomatic patients. • The ePlex had the longest time to results and showed a slight improvement in PPA over the ID NOW.
23.04.2020	Application of a portable instrument for rapid and reliable detection of SARS-CoV-2 infection in any environment	Immunological reviews / Invited review	<ul style="list-style-type: none"> • Describes an innovative multidisciplinary approach to develop an efficient, inexpensive, and easy-to-use portable instrument (bCUBE((R)) by Hyris Ltd) that can be employed as a surveillance system for the emergency caused by SARS-CoV-2. A solution for Coronavirus testing, compliant with CDC guidelines, is scheduled to be released in the next weeks.
22.04.2020	Detection of COVID-19 Infection from Routine Blood Exams with Machine Learning: a Feasibility Study	medRxiv (not peer reviewed) / Article	<ul style="list-style-type: none"> • Developed two machine learning classification models using hematochemical values from routine blood exams drawn from 279 patients who, after being admitted to the

			San Raffaele Hospital (Milan, Italy) emergency-room with COVID-19 symptoms, were screened with the rRT-PCR test performed on respiratory tract specimens. <ul style="list-style-type: none"> • This study demonstrated the feasibility and clinical soundness of using blood tests analysis and machine learning as an alternative to rRT-PCR for identifying COVID-19 positive patients. This is especially useful in those countries, like developing ones, suffering from shortages of rRT-PCR reagents and specialized laboratories. The authors made a Web-based tool available for clinical reference and evaluation. This tool is available at https://covid19-blood-ml.herokuapp.com.
24.04.2020	eCovSens-Ultrasensitive Novel In-House Built Printed Circuit Board Based Electrochemical Device for Rapid Detection of nCovid-19	bioRxiv (not peer reviewed) / Article	<ul style="list-style-type: none"> • Here, the authors report an in-house built biosensor device (eCovSens) and compare it with a commercial potentiostat machine for the detection of nCovid-19 spike protein antigen (nCovid-19 Ag) in spiked saliva samples. • It can successfully detect nCovid-19 Ag at 10 fM concentration in standard buffer that is in close agreement with FTO/AuNPs sensor where AuNPs were used for the amplification of the electrical signal. The limit of detection (LOD) was found to be 90 fM with eCovSens and 120 fM with potentiostat in case of spiked saliva samples.

Genomics

Publication Date	Title/URL	Journal/ Article type	Digest
24.04.2020	Neutralization of SARS-CoV-2 spike pseudotyped virus by recombinant ACE2-Ig	Nature Communications / Article	<ul style="list-style-type: none"> • In this report, the authors generate a recombinant protein by connecting the extracellular domain of human ACE2 to the Fc region of the human immunoglobulin IgG1.
23.04.2020	SARS-CoV-2 entry factors are highly expressed in nasal epithelial cells together with innate immune genes	Nature medicine / Brief communication	<ul style="list-style-type: none"> • Investigated SARS-CoV-2 potential tropism by surveying expression of viral entry-associated genes in single-cell RNA-sequencing data from multiple tissues from healthy human donors. • They co-detected these transcripts in specific respiratory, corneal and intestinal epithelial cells,

			<p>potentially explaining the high efficiency of SARS-CoV-2 transmission. These genes are co-expressed in nasal epithelial cells with genes involved in innate immunity, highlighting the cells' potential role in initial viral infection, spread and clearance.</p> <ul style="list-style-type: none"> • The study offers a useful resource for further lines of inquiry with valuable clinical samples from COVID-19 patients and the authors provide their data in a comprehensive, open and user-friendly fashion at www.covid19cellatlas.org.
23.04.2020	ACE2 polymorphisms and individual susceptibility to SARS-CoV-2 infection: insights from an in silico study	bioRxiv (not peer reviewed) / Article	<ul style="list-style-type: none"> • Here they have used in silico tools to analyse the possible impact of ACE2 single-nucleotide polymorphisms (SNPs) on the interaction with SARS-CoV-2 spike glycoprotein. They found that S19P (common in African people) and K26R (common in European people) were, among the most diffused SNPs worldwide, the only two SNPs that were able to potentially affect the interaction of ACE2 with SARS-CoV-2 spike. • FireDock simulations demonstrated that while S19P may decrease, K26R might increase the ACE2 affinity for SARS-CoV-2 Spike. This finding suggests that the S19P may genetically protect, and K26R may predispose to more severe SARS-CoV-2 disease.
23.04.2020	Genetic analysis of the novel SARS-CoV-2 host receptor TMPRSS2 in different populations	bioRxiv (not peer reviewed) / Article	<ul style="list-style-type: none"> • Systematically analysed coding-region variants in TMPRSS2 and the eQTL variants, which may affect the gene expression, to compare the genomic characteristics of TMPRSS2 among different populations. • The findings suggest that the lung-specific eQTL variants may confer different susceptibility or response to SARS-CoV-2 infection from different populations under the similar conditions.
24.04.2020	ACE2 Homo-dimerization, Human Genomic variants and Interaction of Host Proteins Explain High Population Specific Differences in Outcomes of COVID19	bioRxiv (not peer reviewed) / Article	<ul style="list-style-type: none"> • Based on the findings, the authors conclude that higher expression of ACE2 facilitated by natural variations, acting as Expression quantitative trait loci (eQTLs) and with different frequencies in different populations, results in ACE2 homo-dimerization which is disadvantageous for TMPRSS2 mediated cleavage of ACE2 and becomes more difficult in presence of broad neutral amino acid

			transporter, BOAT1 (coded by SLC6A19), that usually does not express in Lungs.
28.03.2020	Cigarette smoke exposure and inflammatory signaling increase the expression of the SARS-CoV-2 receptor ACE2 in the respiratory tract	bioRxiv (not peer reviewed) / Article	<ul style="list-style-type: none"> Here, the authors show that cigarette smoke causes a dose-dependent upregulation of Angiotensin Converting Enzyme 2 (ACE2), the SARS-CoV-2 receptor, in rodent and human lungs. Using single-cell sequencing data, they demonstrate that ACE2 is expressed in a subset of secretory cells in the respiratory tract. Chronic smoke exposure triggers the expansion of this cell population and a concomitant increase in ACE2 expression.
24.04.2020	Critical role of type III interferon in controlling SARS-CoV-2 infection, replication and spread in primary human intestinal epithelial cells	bioRxiv (not peer reviewed) / Article	<ul style="list-style-type: none"> Here, using both colon-derived cell lines and primary non-transformed colon organoids, the authors engage in the first comprehensive analysis of SARS-CoV-2 lifecycle in human intestinal epithelial cells. The results demonstrate that human intestinal epithelial cells fully support SARS-CoV-2 infection, replication and production of infectious de-novo virus particles. Importantly, they identified intestinal epithelial cells as the best culture model to propagate SARS-CoV-2.
25.04.2020	Expression of SARS-CoV-2 Entry Molecules ACE2 and TMPRSS2 in the Gut of Patients With IBD	Inflammatory Bowel Diseases / Article	<ul style="list-style-type: none"> The viral entry molecules ACE2 and TMPRSS2 are expressed in the ileum and colon. Patients with inflammatory bowel disease (IBD) do not have higher expression during inflammation; medical therapy is associated with lower levels of ACE2.
22.04.2020	Lack of association between genetic variants at ACE2 and TMPRSS2 genes involved in SARS-CoV-2 infection and human quantitative phenotypes	medRxiv (not peer reviewed) / Article	<ul style="list-style-type: none"> The SARS-CoV-2 virus responsible for the infection uses the human receptor angiotensin converting enzyme 2 (ACE2) for cell invasion, and the serine protease TMPRSS2 for S protein priming. Genetic variation in these two genes may thus modulate an individual's genetic predisposition to infection and virus clearance. While genetic data on COVID-19 patients is being gathered, the authors carried out a phenome-wide association scan (PheWAS) to investigate the role of these genes in other human phenotypes in the general population.
26.04.2020	DPP4 inhibition: preventing SARS-CoV-2 infection and/or progression of COVID-19?	Diabetes/Metabolism Research and Reviews / Commentary	<ul style="list-style-type: none"> Although a direct involvement of DPP4 in SARS-CoV-2 infection needs to be clarified, there is also evidence suggesting that DPP4i modulate inflammation and exert anti-fibrotic activity.

			<ul style="list-style-type: none"> • These properties may be of potential use for halting progression to the hyperinflammatory state associated with severe COVID-19.
24.04.2020	Andrographolide As a Potential Inhibitor of SARS-CoV-2 Main Protease: An In Silico Approach	Journal of biomolecular structure & dynamics / Article	<ul style="list-style-type: none"> • This paper evaluates the compound Andrographolide from Andrographis paniculata as a potential inhibitor of the main protease of SARS-COV-2 (Mpro) through in silico studies such as molecular docking, target analysis, toxicity prediction and ADME prediction.
24.04.2020	Discovery of Potential Multi-Target-Directed Ligands by Targeting Host-specific SARS-CoV-2 Structurally Conserved Main Protease(\$)	Journal of Biomolecular Structure & Dynamics / Article	<ul style="list-style-type: none"> • The authors performed screening of approximately 7100 molecules including active ingredients present in the Ayurvedic anti-tussive medicines, anti-viral phytochemicals and synthetic anti-virals against SARS-CoV-2 M(Pro) as the primary target. • They identified several natural molecules like delta-viniferin, myricitrin, taiwanhomoflavone A, lactucopicrin 15-oxalate, nympholide A, afzelin, biorobin, hesperidin and phyllaemblicin B that strongly binds to SARS-CoV-2 M(Pro).

Epidemiology and clinical - children and pregnancy

Publication Date	Title/URL	Journal/ Article type	Digest
24.04.2020	Successful Treatment of Preterm Labor in Association with Acute COVID-19 Infection	American Journal of Perinatology / Short communication	<ul style="list-style-type: none"> • Acute COVID-19 infection is associated with a high rate of preterm delivery. • Standard treatment for preterm labour such as intravenous magnesium sulfate, antepartum steroid therapy and antibiotic prophylaxis for group B streptococcus infection were effective in this patient. • In the absence of maternal or foetal compromise, acute COVID-19 infection is not an indication for early elective delivery.
24.04.2020	A systematic scoping review of COVID-19 during pregnancy and childbirth	International Journal of Gynaecology and Obstetrics / Review	<ul style="list-style-type: none"> • The authors identified 33 studies reporting 385 pregnant women with COVID-19 infection: 368 (95.6%) mild; 14 (3.6%) severe; and 3 (0.8%) critical. • Seventeen women were admitted to intensive care, including six who were mechanically ventilated and one

			maternal mortality. <ul style="list-style-type: none"> • A total of 252 women gave birth, comprising 175 (69.4%) caesarean and 77 (30.6%) vaginal births. Outcomes for 256 new-borns included four RT-PCR positive neonates, two stillbirths, and one neonatal death.
24.04.2020	Asymptomatic COVID-19 infection in late pregnancy indicated no vertical transmission	Journal of Medical Virology / Short communication	<ul style="list-style-type: none"> • The authors reported an asymptomatic COVID-19 pregnant woman with detailed clinical information and the result indicated that for late pregnant women with asymptomatic COVID-19 infection, there might be no intrauterine infection caused by vertical transmission.

Epidemiology and clinical - risk factors

Publication Date	Title/URL	Journal/ Article type	Digest
24.04.2020	Covid-19 and Kidney Transplantation	New England Journal of Medicine / Correspondence	<ul style="list-style-type: none"> • Kidney-transplant recipients appear to be at particularly high risk for critical Covid-19 illness due to chronic immunosuppression and coexisting conditions.
24.04.2020	Determining risk factors for mortality in liver transplant patients with COVID-19	The Lancet Gastroenterology & Hepatology / Correspondence	<ul style="list-style-type: none"> • Early data suggest that the effects of COVID-19 on the liver might be modest and reflect infection severity among patients without pre-existing liver disease, the effects of COVID-19 on those with liver transplants or established liver disease remain unclear.
24.04.2020	Co-infections: potentially lethal and unexplored in COVID-19	The Lancet Microbe / Correspondence	<ul style="list-style-type: none"> • Rapid characterisation of co-infection is essential in the management and treatment of the most severe COVID-19 cases, could help to save lives, and will improve antimicrobial stewardship throughout the course of the pandemic.
24.04.2020	COVID-19 in Solid Organ Transplant Recipients: Initial Report from the US Epicenter	American Journal of Transplantation / Original article	<ul style="list-style-type: none"> • Solid organ transplant recipients may be at a high risk for SARS-CoV2 infection and poor associated outcomes. • 90 patients were analysed with a median age of 57 years. 46 were kidney recipients, 17 lung, 13 liver, 9 heart and 5 dual-organ transplants. • Among the 68 hospitalized patients, 12% required non-rebreather and 35% required intubation. 91% received hydroxychloroquine, 66% azithromycin, 3% remdesivir, 21% tocilizumab and 24% bolus steroids. Sixteen patients

			died (18% overall, 24% of hospitalized, 52% of ICU) and 37 (54%) were discharged.
23.04.2020	SARSCoV-2 infection and the upper limbs deep vein thrombosis risk	Annals of vascular surgery / Article	<ul style="list-style-type: none"> • Describes the increased risk of upper limb deep vein thrombosis in 3 patients with SARS-CoV-2 who require continuous positive airway pressure with hood and the need for early adequate antithrombotic prophylaxis.
24.04.2020	COVID-19 Coagulopathy in Caucasian patients	British Journal of Haematology / Short report	<ul style="list-style-type: none"> • Findings confirm that severe COVID-19 infection is associated with a significant coagulopathy that correlates with disease severity. • Given that thrombotic risk is significantly impacted by race, coupled with the accumulating evidence that coagulopathy is important in COVID-19 pathogenesis, these findings raise the possibility that pulmonary vasculopathy may contribute to the unexplained differences that are beginning to emerge highlighting racial susceptibility to COVID-19 mortality.
25.04.2020	Racial Variations in COVID-19 Deaths May Be Due to Androgen Receptor Genetic Variants Associated with Prostate Cancer and Androgenetic Alopecia. Are Anti-Androgens a Potential Treatment for COVID-19?	Journal of Cosmetic Dermatology / Letter to the editor	<ul style="list-style-type: none"> • Genetic factors in different ethnic groups often contribute to disease severity and treatment response. In particular, the frequency of genetic variations in the androgen receptor differs by ethnicity and gender. • The increased prevalence of prostate cancer and androgenetic alopecia among African Americans correlates with the frequency of these variants. • The authors propose that androgens may be implicated in COVID-19 disease severity, and therefore special attention may need to be given to African Americans infected by the SARS-CoV-2 virus.
25.04.2020	Managing People with Diabetes Fasting for Ramadan During the COVID-19 Pandemic: A South Asian Health Foundation Update	Diabetic Medicine : a journal of the British Diabetic Association / Review	<ul style="list-style-type: none"> • Reports show that diabetes appears to be a risk factor for more severe disease with COVID-19. • The UK experience has shown diabetes and COVID-19 is associated with dehydration, starvation ketosis, diabetic ketoacidosis and hyperglycaemic hyperosmolar state. • The authors discuss the implications of fasting in Ramadan during the COVID-19 pandemic and make recommendations for those with diabetes who wish to fast.

25.04.2020	Headache medication and the COVID-19 pandemic	Journal of Headache and Pain / Commentary	<ul style="list-style-type: none"> • There is no convincing evidence that either Renin-Angiotensin System (RAS) blockers or ibuprofen facilitate or worsen SARS-CoV-2 infection in any type of patient, including headache patients.
25.04.2020	Incidence and clinical course of COVID-19 in patients with connective tissue diseases: a descriptive observational analysis	Journal of Rheumatology / Letter	<ul style="list-style-type: none"> • Subjects affected by connective tissue diseases (CTD) are known to have an increased infectious risk compared to the healthy population due to a general impairment of the immune system intrinsic to the autoimmune disease itself, the iatrogenic effect linked to the use of immunosuppressive drugs, and the high number of comorbidities that often complicate the clinical picture.
22.04.2020	Eosinopenia Phenotype in Patients with Coronavirus Disease 2019: A Multi-center Retrospective Study from Anhui, China	medRxiv (not peer reviewed) / Article	<ul style="list-style-type: none"> • Eosinopenia is very common in COVID-19 patients, particularly in severe patients. Symptoms including fever, cough, sputum, and fatigue are frequent in eosinopenia patients. Eosinopenia may represent a novel phenotype in COVID-19, which needs further investigation.
20.04.2020	Clinical features of coronavirus disease 2019 (COVID-19) in a cohort of patients with disability due to spinal cord injury	medRxiv (not peer reviewed) / Article	<ul style="list-style-type: none"> • Described the clinical and analytical features of a Covid-19 infected cohort with spinal cord injury (SCI). • Patients with SCI and Covid-19 infection exhibited fewer symptoms than the general population. Furthermore, they presented similar or greater clinical severity. The clinical evolution was not as pronounced as had been expected. This study recommends close supervision of the SCI population to detect early compatible signs and symptoms of Covid-19 infection.
21.04.2020	The role of comorbidities and clinical predictors of severe disease in COVID-19: a systematic review and meta-analysis	medRxiv (not peer reviewed) / Systematic review	<ul style="list-style-type: none"> • Seventeen articles out of 3009 citations were included. These contained 3189 patients, of whom 732 were severely affected (severe group) and 3189 were in non-severe group. • Using the random-effects model, the meta-analyses showed that the odds of comorbidities, including COPD, DM, HTN, CVD, CKD, and symptoms, including dyspnoea, dizziness, anorexia, and cough, were significantly higher among the severe group compared with the non-severe group. There were no significant changes in odds of CVA, liver disease, immunodeficiency/immunosuppression, fever, fatigue, myalgia, headache, diarrhoea, sore throat, nasal congestion, sputum, nausea, vomiting, chest pain

			<p>between the two groups.</p> <ul style="list-style-type: none"> • Early recognition and intervention can be critical in management, and might stop progression to severe disease. Predictive symptoms and comorbidities can be used as a predictor in patients who are at risk of severe disease.
24.04.2020	Retrospective study of risk factors for severe SARS-Cov-2 infections in hospitalized adult patients	Polish Archives of Internal Medicine / Original article	<ul style="list-style-type: none"> • A total of 108 patients with COVID-19 were retrospectively analysed. Twenty-five patients (23.1%, 25/108) developed severe disease, and of those 12 (48%, 12/25) patients died. Advanced age, co-morbidities with hypertension, higher blood leukocyte count, neutrophil count, higher sensitive C-reactive protein level, D-dimer level, Acute Physiology and Chronic Health Evaluation (APECHE) score and Sequential Organ Failure Assessment (SOFA) score were associated with greater risk of development of severe COVID-19, and so were lower lymphocyte count and albumin level. • Lymphocytopenia and the higher SOFA score on admission could help clinicians to identify patients with high risk for developing severe COVID-19.
23.04.2020	Risk factors of critical & mortal COVID-19 cases: A systematic literature review and meta-analysis	The Journal of infection / Review	<ul style="list-style-type: none"> • Aimed to find risk factors for the progression of COVID-19 to help reduce the risk of critical illness and death. Male, aged over 65, smoking patients might face a greater risk of developing into critical or mortal condition and comorbidities such as hypertension, diabetes, cardiovascular disease, and respiratory diseases could also greatly affect the prognosis of the COVID-19. Clinical manifestation such as fever, shortness of breath or dyspnoea and laboratory examination such as WBC, AST, Cr, PCT, LDH, hs-cTnI and D-dimer could imply the progression of COVID-19.
19.04.2020	Current Understanding of COVID-19 Clinical Course and Investigational Treatments	medRxiv (not peer reviewed) / Evidence review	<ul style="list-style-type: none"> • This review of the literature revealed the need for individualized treatment protocols due to the variability of patient clinical presentation and survivability. A number of factors appear to influence mortality: the stage at which the patient first presented for care, pre-existing health conditions, age, and the viral load the patient carried.

24.04.2020	Lymphopenia that may develop in patients treated with temozolomide and immune control check-point inhibitor may be a high risk for mortality during the COVID-19 outbreak	Medical Oncology / Letter to the Editor	<ul style="list-style-type: none"> • Based on results of Chinese National Data, patients with COVID-19 confirmed a disproportionately higher prevalence of cancer (especially lung cancer) compared to the general population. • This article is written hypothetically to emphasize that cancer patients with risk of developing lymphopenia associated with anti-cancer drugs should be followed more carefully in terms of the risk and mortality of COVID-19 infection.
24.04.2020	COVID-19 in persons with haematological cancers	Leukemia / Article	<ul style="list-style-type: none"> • Hospitalised persons with haematological cancers have a similar case rate of COVID-19 compared with normal health care providers but have more severe disease and a higher case fatality rate.

Epidemiology and clinical – other

Publication Date	Title/URL	Journal/ Article type	Digest
24.04.2020	Mild or Moderate Covid-19	New England Journal of Medicine / Clinical practice	<ul style="list-style-type: none"> • This Journal feature begins with a case vignette highlighting a common clinical problem. Evidence supporting various strategies is then presented, followed by a review of formal guidelines, when they exist. The article ends with the authors' clinical recommendations.
23.04.2020	Clinical and virologic characteristics of the first 12 patients with coronavirus disease 2019 (COVID-19) in the United States	Nature medicine / Letter	<ul style="list-style-type: none"> • Describes the first 12 US patients confirmed to have COVID-19 from 20 Jan to 5 Feb 2020, including 4 patients described previously.
25.04.2020	COVID-19 with spontaneous pneumothorax, pneumomediastinum and subcutaneous emphysema	Journal of Travel Medicine / Case report	<ul style="list-style-type: none"> • The authors present a case of COVID-19 pneumonia associated with spontaneous pneumothorax, pneumomediastinum and subcutaneous emphysema.
23.04.2020	Case Report: One Case of Coronavirus Disease 2019(COVID-19) in Patient Co-Infected by HIV With a Low CD4+ T Cell Count	International Journal of Infectious Diseases / Case report	<ul style="list-style-type: none"> • Reports a case infected by SARS-Cov-2 and HIV simultaneously, which showed a longer course of disease and slower generation of specific antibody.
26.04.2020	Evaluation of ocular symptoms and tropism of SARS-CoV-2 in patients confirmed with COVID-19	Acta Ophthalmologica / Original article	<ul style="list-style-type: none"> • Of the 56 subjects, thirteen patients (23%) were infected in Wuhan, 32 patients (57%) were community-infected, 10 patients (18%) were unknown origin, 1 (2%) was a physician likely infected by a confirmed patient. • Fifteen (27%) had aggravated ocular symptoms, of which

			<p>6 (11%) had prodromal ocular symptoms before disease onset.</p> <ul style="list-style-type: none"> • Ocular symptoms are relatively common in COVID-19 disease and may appear just before the onset of respiratory symptoms.
24.04.2020	Earliest cases of coronavirus disease 2019 (COVID-19) identified in solid organ transplant recipients in the United States	American journal of transplantation / Case report	<ul style="list-style-type: none"> • The authors report four cases of COVID-19 in solid organ transplant recipients including recipients of kidney, liver, lung, and heart transplants. • These reports demonstrate a range of symptoms, clinical severity, and disease course in solid organ transplant recipients with COVID-19, including two hospitalized patients and two patients managed entirely in the outpatient setting.
23.04.2020	Cardiac Tamponade Secondary to COVID-19	JACC. Case reports	<ul style="list-style-type: none"> • A 67-year-old female presented with upper respiratory symptoms and was diagnosed with COVID-19. • She was found to have a large haemorrhagic pericardial effusion with echocardiographic signs of tamponade and mild left ventricular impairment. Clinical course was complicated by development of Takotsubo cardiomyopathy. She was treated with pericardiocentesis, colchicine, corticosteroids and hydroxychloroquine with improvement in symptoms.
24.04.2020	Conjunctivitis and COVID-19: a meta-analysis	Journal of Medical Virology / Meta-analysis (letter to the editor)	<ul style="list-style-type: none"> • Three studies, including 1167 patients, reported the incidence of conjunctivitis at admission to the hospital. • The overall rate of conjunctivitis was 1.1%; it was 3% and 0.7% in severe and non-severe COVID-19 patients, respectively. • Conjunctivitis is more frequent in severe COVID and may be a warning sign of poor outcomes.
24.04.2020	Acral cutaneous lesions in the Time of COVID-19	Journal of the European Academy of Dermatology and Venereology / Letter to editor	<ul style="list-style-type: none"> • The authors report here on peculiar (perniosis-like) skin lesions, unreported in the previous years, observed in young outpatients visited in their Dermatologic Unit in the last 4 weeks of COVID-19 pandemic (March-April 2020).
23.04.2020	How is immunosuppressive status affecting children and adults in SARS-CoV-2 infection? A systematic review	The Journal of infection / Review	<ul style="list-style-type: none"> • Aimed to systematically review the current knowledge on SARS-CoV-2 cases in children and adults with immunosuppression, to evaluate outcomes in this special population.

			<ul style="list-style-type: none"> • Sixteen relevant articles were identified with 110 immunosuppressed patients, mostly presenting cancer, along with transplantation and immunodeficiency. Cancer was more often associated with a more severe course, but not necessarily with a bad prognosis. Our data show that both children and adults with immunosuppression seem to have a favourable disease course, as compared to the general population.
25.04.2020	An Interactive Online Dashboard for Tracking COVID-19 in U.S. Counties, Cities, and States in Real Time	Journal of the American Medical Informatics Association / Accepted Manuscript	<ul style="list-style-type: none"> • The web resource, called the COVID-19 Watcher, can be accessed at https://covid19watcher.research.cchmc.org/. • It displays COVID-19 data from every county and 188 metropolitan areas in the U.S. • Features include rankings of the worst affected areas and auto-generating plots that depict temporal changes in testing capacity, cases, and deaths.
20.04.2020	Prevalence of SARS-CoV-2 infection in previously undiagnosed health care workers at the onset of the U.S. COVID-19 epidemic	medRxiv (not peer reviewed) / Article	<ul style="list-style-type: none"> • In a prospective cohort conducted in the early phases of community transmission, healthcare workers had a higher prevalence of SARS-CoV-2 infection than non-healthcare workers, attesting to the occupational hazards of caring for patients in this crisis. Baseline data reported here will enable us to monitor the spread of infection and examine risk factors for transmission among healthcare workers.
22.04.2020	An international characterisation of patients hospitalised with COVID-19 and a comparison with those previously hospitalised with influenza	medRxiv (not peer reviewed) / Article	<ul style="list-style-type: none"> • Rates of comorbidities and medication use are high among individuals hospitalised with COVID-19. However, COVID-19 patients are more likely to be male and appear to be younger and, in the US, generally healthier than those typically admitted with influenza.
20.04.2020	Climatic factors influence COVID-19 outbreak as revealed by worldwide mortality	medRxiv (not peer reviewed) / Article	<ul style="list-style-type: none"> • Here, using data recorded in 208 territories from 88 countries, they show that mortality rate is negatively influenced by warmer air temperature and positively affected by higher relative humidity. Each additional Celsius degree decreases mortality rate by ~4%, while a 1% increase in relative humidity raises mortality rate by ~2%. Temperature is positively correlated with UV-index, for which one unit of increase results in a ~15% decrease in the mortality rate. • They also show that other factors contribute to the dynamics of the COVID-19 outbreak, such as the

			proportion of vulnerable age classes in the population, access to a non-overwhelmed health system, as well as governmental travel restrictions for controlling the spread of the disease.
21.04.2020	Deaths from Covid-19: Who are the forgotten victims?	medRxiv (not peer reviewed) / Article	<ul style="list-style-type: none"> • Examined recent reported population-based mortality rates, compared with expected rates, and compared any excess in deaths with the number of deaths attributed to Covid-19. • A substantial proportion of excess deaths observed during the current COVID-19 pandemic are not attributed to COVID-19 and may represent an excess of deaths due to other causes.

Infection control

Publication Date	Title/URL	Journal/ Article type	Digest
24.04.2020	Presymptomatic SARS-CoV-2 Infections and Transmission in a Skilled Nursing Facility	New England Journal of Medicine / Research article	<ul style="list-style-type: none"> • Rapid and widespread transmission of SARS-CoV-2 was demonstrated in this skilled nursing facility. • More than half of residents with positive test results were asymptomatic at the time of testing and most likely contributed to transmission. • Infection-control strategies focused solely on symptomatic residents were not sufficient to prevent transmission after SARS-CoV-2 introduction into this facility.
24.04.2020	Aerosol Filtration Efficiency of Common Fabrics Used in Respiratory Cloth Masks	ACS Nano / Article	<ul style="list-style-type: none"> • Cotton, the most widely used material for cloth masks performs better at higher weave densities (i.e., thread count) and can make a significant difference in filtration efficiencies. • Studies also imply that gaps (as caused by an improper fit of the mask) can result in over a 60% decrease in the filtration efficiency. • Combinations of various commonly available fabrics used in cloth masks can potentially provide significant protection against the transmission of aerosol particles.

24.04.2020	Reusable and Recyclable Graphene Masks with Outstanding Superhydrophobic and Photothermal Performances	ACS Nano / Article	<ul style="list-style-type: none"> • The authors reported a unique method for functionalizing commercially available surgical masks with outstanding self-cleaning and photothermal properties. • This graphene-coated mask can be recycled directly for use in solar-driven desalination with outstanding salt-rejection performance for long-term use.
22.04.2020	Microwave-Generated Steam Decontamination of N95 Respirators Utilizing Universally Accessible Materials	medRxiv (not peer reviewed) / Article	<ul style="list-style-type: none"> • In this work they describe a microwave-generated steam decontamination protocol for N95 respirators for use in healthcare systems of all sizes, geographies, and means. • This method provides a valuable means of effective decontamination and reuse of N95 respirators by frontline providers facing urgent need.
26.04.2020	The impact of respiratory protective equipment on difficult airway management: a randomised, crossover, simulation study	Anaesthesia / Original Article	<ul style="list-style-type: none"> • Twenty-five anaesthetists carried out four different standardised difficult intubation drills, either unprotected (control), or wearing a standard, or a powered respirator. • Treatment times and wearer comfort were determined and compared. • Videolaryngoscopy achieved the shortest intubation times regardless of the respiratory protective device used. • The authors conclude that standard and powered respirators do not significantly prolong simulated advanced intubation procedures.
25.04.2020	Topical preparations to reduce SARS-CoV-2 aerosolization in head and neck mucosal surgery	Head & Neck / Special issue	<ul style="list-style-type: none"> • Povidone-iodine (PVP-I) solutions ranging from 0.23% to 7% have been found to demonstrate highly effective viricidal activity against a broad range of viruses including several coronaviruses responsible for recent epidemics including SARS-CoV-1 and MERS-CoV. • They are relatively safe to use in the upper airway and may reduce risk of SARS-CoV-2 aerosolization during upper airway mucosal surgery.
23.04.2020	Potential Fecal Transmission of SARS-CoV-2: Current Evidence and Implications for Public Health	International journal of infectious diseases / Review	<ul style="list-style-type: none"> • Here, current knowledge on the potential for faecal transmission is briefly reviewed and the possible implications are discussed from a public health perspective.
24.04.2020	Understanding epidemic data and statistics: A case study of COVID-19	Journal of Medical Virology / Research article	<ul style="list-style-type: none"> • Some effective policies that yielded significant changes in the trend of cases were the lockdown policy in China, Italy, and Spain (the effect observed after some days), the shutdown of all nonessential companies in Hubei (the

			effect observed after 5 days), combined policy in South Korea, and reducing working hours in Iran.
22.04.2020	Contact Tracing: a game of big numbers in the time of COVID-19	medRxiv (not peer reviewed) / Article	<ul style="list-style-type: none"> • In this work, the authors study the characteristics of automated contact tracing and its effectiveness for mapping the spread of a pandemic due to the spread of SARS-CoV-2. They highlight the infrastructure and social structures required for automated contact tracing to work for the current pandemic. • They conclude that a strong reliance on contact tracing to contain the spread of the SARS-CoV-2 pandemic can lead to the potential danger of allowing the pandemic to spread unchecked. A carefully thought out strategy for controlling the spread of the pandemic along with automated contact tracing can lead to an optimal solution.
20.04.2020	Evidence-based, cost-effective interventions to suppress the COVID-19 pandemic: a rapid systematic review	medRxiv (not peer reviewed) / Systematic review	<ul style="list-style-type: none"> • A cautious interpretation of this body of evidence suggests that for COVID-19: (1) social distancing is effective but costly, especially when adopted late and (2) adopting as early as possible a combination of interventions that includes hand washing, face masks, swift contact tracing and case isolation, and protective equipment for healthcare workers is likely to be the most cost-effective strategy.
25.04.2020	Isolation protocol for a COVID-2019 patient requiring emergent surgical intervention: case presentation	Patient Safety in Surgery / Case report	<ul style="list-style-type: none"> • The authors hereby provide our algorithm for emergent surgical procedures in critically-ill patients with presumptive or confirmed infection with COVID-2019. • The insights from this case report can potentially be templated to other facilities in order to uphold high standards of infection prevention and patient safety in surgery during the current COVID-19 pandemic.

Treatment

Publication Date	Title/URL	Journal/ Article type	Digest
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24.04.2020	A real-time dashboard of clinical trials for COVID-19	The Lancet Digital Health / Correspondence	<ul style="list-style-type: none"> • The authors have developed a COVID-19 clinical trials registry to collate all trials. Data are pulled from the International Clinical Trials Registry Platform, including those from the Chinese Clinical Trial Registry, ClinicalTrials.gov, Clinical Research Information Service - Republic of Korea, EU Clinical Trials Register, ISRCTN, Iranian Registry of Clinical Trials, Japan Primary Registries Network, and German Clinical Trials Register. • Both automated and manual searches are done to ensure minimisation of duplicated entries and for appropriateness to the research questions. Identified studies are then manually reviewed by two separate reviewers before being entered into the registry.
24.04.2020	Probiotics and COVID-19: one size does not fit all	The Lancet Gastroenterology & Hepatology / Correspondence	<ul style="list-style-type: none"> • Blind use of conventional probiotics for COVID-19 is not recommended until we have further understanding of the pathogenesis of SARS-CoV-2 and its effect on gut microbiota.
25.04.2020	The role of extracorporeal life support for patients with COVID-19: Preliminary results from a statewide experience	Journal of Cardiac Surgery / Original article	<ul style="list-style-type: none"> • Of the first 10 patients that required extracorporeal membrane oxygenation (ECMO) for COVID-19, the age ranged from 31 to 62 years with the majority (70%) being men. Seven (70%) had comorbidities. The majority (80%) of patients had known sick contact and exposure to COVID-19 positive patients or travelled to pandemic areas inside the United States within the 2 weeks before symptom onset. • The most common symptoms leading to the presentation were high fever ≥ 103 degrees F (90%), cough (80%) and dyspnea (70%), followed by fatigue and gastrointestinal symptoms (both 30%), myalgia, loss of taste, pleuritic chest pain, and confusion (all 10%).
24.04.2020	Current pharmacological treatments for COVID-19: what's next?	British Journal of Pharmacology / Review article	<ul style="list-style-type: none"> • In this paper, the authors aim to describe the main pharmacological properties, including data on mechanism of action, safety concerns and drug-drug interactions, of drugs currently administered in patients with COVID-19, focusing on antivirals and drugs with immune-modulatory and/or anti-inflammatory properties. • For many of these drugs, including lopinavir/ritonavir, remdesivir, favipiravir and tocilizumab, preliminary clinical

			trials seem to support their benefit in improving patients' clinical conditions.
23.04.2020	Unexpected Blood Pressure Sensitivity to Angiotensin II in a COVID-19 Patient with ARDS and Septic Shock	Chest / Article	<ul style="list-style-type: none"> • Reports the case of an 88-year-old man with COVID-19 who presented with ARDS and septic shock. The patient had good blood pressure sensitivity to low-dose angiotensin II (Ang-2), allowing for rapid liberation from high-dose vasopressors. The case is suggestive of a potential role for synthetic Ang-2 for patients with COVID-19 and septic shock. Further studies are needed.
25.04.2020	COVID-19: lambda interferon against viral load and hyperinflammation	EMBO Molecular Medicine / Commentary invitation	<ul style="list-style-type: none"> • The authors conclude that IFNlambda constitutes a promising therapeutic agent for reducing viral presence and hyperinflammation in a single shot to prevent the devastating consequences of COVID-19 such as pneumonia and acute respiratory distress syndrome (ARDS).
24.04.2020	Effect and enlightenment of rehabilitation medicine in COVID-19 management	European Journal of Physical and Rehabilitation Medicine / Article	<ul style="list-style-type: none"> • Some of the COVID-19 patients may have long-term impairment and dysfunctions, including pulmonary fibrosis, heart, liver, kidney, nerve and immune system. • Rehabilitation has certain beneficial effect in the acute stage, and especially in the recovery stage, including improving respiratory function, exercise endurance, self-care in daily living activities, as well as psychological support, etc.
24.04.2020	Effect of High vs Low Doses of Chloroquine Diphosphate as Adjunctive Therapy for Patients Hospitalized With Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) Infection: A Randomized Clinical Trial	JAMA Network Open / Original investigation	<ul style="list-style-type: none"> • This parallel, double-masked, randomized, phase IIb clinical trial with 81 adult patients who were hospitalized with SARS-CoV-2 infection was conducted from March 23 to April 5, 2020, at a tertiary care facility in Manaus, Brazilian Amazon. • Patients were allocated to receive high-dosage CQ (ie, 600 mg CQ twice daily for 10 days) or low-dosage CQ (i.e., 450 mg twice daily on day 1 and once daily for 4 days). • The preliminary findings of this study suggest that the higher chloroquine diphosphate (CQ) dosage should not be recommended for critically ill patients with COVID-19 because of its potential safety hazards, especially when taken concurrently with azithromycin and oseltamivir. These findings cannot be extrapolated to patients with non-severe COVID-19.

23.04.2020	Fibrinolytic abnormalities in acute respiratory distress syndrome (ARDS) and versatility of thrombolytic drugs to treat COVID-19	Journal of thrombosis and haemostasis : JTH / Review	<ul style="list-style-type: none"> In this review, they discuss the repurposing of fibrinolytic drugs, namely tissue-type plasminogen activator (tPA), to treat COVID-19 associated ARDS. tPA is an approved intravenous thrombolytic treatment, and the nebulizer form has been shown to be effective in plastic bronchitis and is currently in Phase II clinical trial. Nebulizer plasminogen activators may provide a targeted approach in COVID-19 patients to degrade fibrin and improving oxygenation in critically ill patients.
01.06.2020	Improving the efficacy of Chloroquine and Hydroxychloroquine against SARS-CoV-2 may require Zinc additives - A better synergy for future COVID-19 clinical trials	Le Infezioni in Medicina / Review	<ul style="list-style-type: none"> The authors seek to draw the attention of the scientific community to the possibility of drastically reducing the effects of the virus on the affected patients and improving clinical trials outcome through the synergistic action of zinc and chloroquine in patients suffering from the coronavirus disease.
21.04.2020	No Clear Benefit to the Use of Corticosteroid as Treatment in Adult Patients with Coronavirus Disease 2019 : A Retrospective Cohort Study	medRxiv (not peer reviewed) / Cohort study	<ul style="list-style-type: none"> No evidence suggests that adult patients with COVID-19 will benefit from corticosteroids, and they might be more likely to be harmed with such treatment.
23.04.2020	A systematic review of Anakinra, Tocilizumab, Sarilumab and Siltuximab for coronavirus-related infections	medRxiv (not peer reviewed) / Systematic review	<ul style="list-style-type: none"> Five retrospective studies (tocilizumab, two case series and two case reports; siltuximab, one case series) were shortlisted for inclusion, totalling 59 patients. The case fatality ratio (CFR) of patients with severe Covid-19 included in this review was 6.8%, a figure substantially lower than that estimated in non-interventional case series. Of the studies measuring IL-6, all reported elevated baseline levels. Twenty-five ongoing registered clinical trials exploring immunomodulatory agents in Covid-19 were identified, although inconsistency in participants and endpoints are noted. Inhibition of IL-6 with tocilizumab and siltuximab requires further evaluation in managing the assumed hyperinflammatory response associated with severe Covid-19. These early data are considered hypothesis generating and justify the need for well-designed randomised clinical studies.
21.04.2020	Risk of drug-induced Long QT Syndrome associated with the use of repurposed COVID-19 drugs: a systematic review	medRxiv (not peer reviewed) / Systematic review	<ul style="list-style-type: none"> Estimators of LQTS risk levels indicated a very-high or high risk for all COVID-19 repurposed drugs except for azithromycin, although cases of TdP have been reported

			<p>following the administration of this drug. There was an excellent agreement among the various indices used to assess risk of drug-induced LQTS for the six repurposed drugs and the 23 torsadogenic compounds.</p> <ul style="list-style-type: none"> • The risk-benefit assessment for the use of repurposed drugs to treat COVID-19 is complicated since benefits are currently anticipated, not proven.
24.04.2020	<p>The anti-HIV Drug Nelfinavir Mesylate (Viracept) is a Potent Inhibitor of Cell Fusion Caused by the SARS-CoV-2 Spike (S) Glycoprotein Warranting further Evaluation as an Antiviral against COVID-19 infections</p>	<p>bioRxiv (not peer reviewed) / Article</p>	<ul style="list-style-type: none"> • The authors present results suggesting that SARS-CoV-2 is able to spread from cell-to-cell much more efficiently than SARS effectively avoiding extracellular spaces and neutralizing antibodies. • A systematic screening of several drugs for ability to inhibit S-n and S-o cell fusion revealed that the FDA approved HIV-protease inhibitor, nelfinavir mesylate (Viracept) drastically inhibited S-n and S-o-mediated cell fusion in a dose-dependent manner. Complete inhibition of cell fusion was observed at a 10 micromolar concentration. • These results warrant further investigations of the potential of nelfinavir mesylate as an antiviral drug, especially at early times after SARS-CoV-2 symptoms appear.

Social sciences

Publication Date	Title/URL	Journal/ Article type	Digest
24.04.2020	<p>Mental Health Status Among Children in Home Confinement During the Coronavirus Disease 2019 Outbreak in Hubei Province, China</p>	JAMA Pediatrics / Research letter	<ul style="list-style-type: none"> • This study investigated depressive and anxiety symptoms among students in Hubei province, China, which can help optimize interventions on the mental health of children for stakeholders in all countries affected by COVID-19.
26.04.2020	<p>Comparison of Prevalence and Associated Factors of Anxiety and Depression Among People Affected by versus People Unaffected by Quarantine During the COVID-19 Epidemic in Southwestern China</p>	Medical Science Monitor / Article	<ul style="list-style-type: none"> • Data were collected using the self-rating anxiety scale (SAS) and the self-rating depression scale (SDS) administered to 1593 respondents aged 18 years and above. • The prevalence of anxiety and depression of the affected

			group are higher than in the unaffected group during the COVID-19 outbreak in southwestern China in early Feb. 2020.
25.04.2020	Social and behavioral health responses to COVID-19: lessons learned from four decades of an HIV pandemic	Journal of Behavioral Medicine / Special commentary	<ul style="list-style-type: none"> • Public health approaches to addressing COVID-19 are heavily dependent on social and behavioural change strategies to halt transmissions. • The authors outline broad, scoping lessons learned from the HIV literature tailored to the nature of what is currently known about COVID-19. • They focus on multiple levels of intervention including intrapersonal, interpersonal, community, and social factors, each of which provide a reference point for understanding and elaborating on social/behavioural lessons learned from HIV prevention and treatment research.

Modelling

Publication Date	Title/URL	Journal/ Article type	Digest
24.04.2020	Optimization of group size in pool testing strategy for SARS-CoV-2: A simple mathematical model	Journal of Medical Virology / Research article	<ul style="list-style-type: none"> • The aim of this study is to propose a simple mathematical model to estimate the optimum number of pooled samples according to the relative prevalence of positive tests in a particular healthcare context, assuming that if a group tests negative, no further testing is done whereas if a group tests positive, all the subjects of the group are retested individually.
24.04.2020	Strong policies control the spread of COVID-19 in China	Journal of Medical Virology / Research article	<ul style="list-style-type: none"> • Based on the results of the model, strong interventional policies were found to be vital components of epidemic control. • Applying such policies is likely to shorten the duration of the epidemic and reduce the number of new cases.
24.04.2020	Estimating the Effects of Asymptomatic and Imported Patients on COVID-19 Epidemic Using Mathematical Modeling	Journal of Medical Virology / Research article	<ul style="list-style-type: none"> • The authors developed an adjusted model with two novel features: the asymptomatic population and threshold behaviour in recovery. • They predicted that asymptomatic patients serve as a more severe factor with faster outbreaks and larger

			<p>outbreak sizes compared with imported patients.</p> <ul style="list-style-type: none"> • They argue that the currently strict interventions should be continuously implemented and unravelling the asymptomatic pool is critically important before preventive strategy such as vaccines.
23.04.2020	Spread and dynamics of the COVID-19 epidemic in Italy: Effects of emergency containment measures	Proceedings of the National Academy of Sciences of the United States of America / Article	<ul style="list-style-type: none"> • Estimate parameters of a metacommunity Susceptible-Exposed-Infected-Recovered (SEIR)-like transmission model that includes a network of 107 provinces connected by mobility at high resolution, and the critical contribution of pre-symptomatic and asymptomatic transmission.
20.04.2020	The impact of changes in diagnostic testing practices on estimates of COVID-19 transmission in the United States	medRxiv (not peer reviewed) / Article	<ul style="list-style-type: none"> • Explore the impact of secular changes in diagnostic testing and reporting on estimates of R0 and Rt using simulated data. They then compare these patterns to data on reported cases of COVID-19 and testing practices from different United States (US) states. • They found that changes in testing practices and delays in reporting can result in biased estimates of R0 and Rt. Examination of changes in the daily number of tests conducted and the percent of patients testing positive may be helpful for identifying the potential direction of bias.

Guidance, consensus statements and hospital resources

Publication Date	Title/URL	Journal/ Article type
24.04.2020	Ventilator Triage Policies During the COVID-19 Pandemic at U.S. Hospitals Associated With Members of the Association of Bioethics Program Directors	Annals of Internal Medicine / Original research
24.04.2020	Clinical Pathway for Early Diagnosis of COVID-19: Updates from Experience to Evidence-Based Practice	Clinical Reviews in Allergy & Immunology / Clinical pathway
24.04.2020	Neonatal Resuscitation Where the Mother Has a Suspected or Confirmed Novel Coronavirus (SARS-CoV-2) Infection: Suggestion for a Pragmatic Action Plan	Neonatology / Review
24.04.2020	Handling of allergen immunotherapy in the COVID-19 pandemic: An ARIA-EAACI statement	Allergy / Position paper
24.04.2020	Consensus recommendations for the care of children receiving chronic dialysis in association with the COVID-19 epidemic	Pediatric Nephrology / Consensus recommendations
24.04.2020	Updated diagnosis, treatment and prevention of COVID-19 in children: experts' consensus statement (condensed version of the second edition)	World Journal of Pediatrics / Review article

24.04.2020	Rapid Deployment of a Drive-Through Prenatal Care Model in Response to the Coronavirus Disease 2019 (COVID-19) Pandemic	Obstetrics and Gynecology / Current commentary
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Overviews, comments and editorials

Publication Date	Title/URL	Journal/ Article type
24.04.2020	Transforming ORs into ICUs	New England Journal of Medicine / Correspondence
25.04.2020	Offline: Why President Trump is wrong about WHO	The Lancet / Comment
25.04.2020	India under COVID-19 lockdown	The Lancet / Editorial
25.04.2020	COVID-19 fault lines	The Lancet / Perspective
25.04.2020	Modelling can only tell us so much: politics explains the rest	The Lancet / Perspective
24.04.2020	Diagnosing malaria and other febrile illnesses during the COVID-19 pandemic	The Lancet Global Health / Comment
24.04.2020	Effect of the COVID-19 pandemic on cancer treatment and research	The Lancet Haematology / Comment
24.04.2020	When pandemics collide	The Lancet HIV / Editorial
24.04.2020	COVID-19 deaths in Lombardy, Italy: data in context	The Lancet Public Health / Correspondence
24.04.2020	Caution Needed on the Use of Chloroquine and Hydroxychloroquine for Coronavirus Disease 2019	JAMA Network Open / Editorial
24.04.2020	The Coronavirus Disease 2019 Crisis as Catalyst for Telemedicine for Chronic Neurological Disorders	JAMA Neurology / Viewpoint
24.04.2020	Did Whatsapp((R)) reveal a new cutaneous COVID-19 manifestation?	Journal of the European Academy of Dermatology and Venereology / Letter to editor
24.04.2020	COVID-19 Lung Injury and High Altitude Pulmonary Edema: A False Equation with Dangerous Implications	Annals of the American Thoracic Society / Article
25.04.2020	When Past Isn't a Prologue: Adapting Informatics Practice During a Pandemic	Journal of the American Medical Informatics Association / Accepted Manuscript

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