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The Lancet 8APR2020	**First-wave COVID-19 transmissibility and severity in China outside Hubei after control measures, and second-wave scenario planning: a modelling impact assessment**	Leung et al., China https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(20)30746-7/fulltext?utm_campaign=tlcoronavirus20&utm_source=twitter&utm_medium=social	Public Health/Epidemio	-> The first wave of COVID-19 outside of Hubei has abated because of **aggressive non-pharmaceutical interventions.** -> the R_t decreased substantially since Jan 23, when control measures were implemented, and have since remained below 1. -> **Relaxing the interventions (resulting in R_t >1)** when the epidemic size was still small would increase the cumulative case count **exponentially as a function of relaxation duration**, even if aggressive interventions could subsequently push disease prevalence back to the baseline level. Given the substantial risk of viral reintroduction, particularly from overseas importation, close monitoring of R_t and cCFR is needed to inform strategies against a potential second wave to achieve an optimal balance between health and economic protection.
J Mol Diag PRE-PROOF 7MAR2020	**Development of Reverse Transcription Loop-mediated Isothermal Amplification (RT-LAMP) Assays Targeting SARS-CoV-2**	Park et al., Republic of korea https://www.biorxiv.org/content/10.1101/2020.03.09.983064v1	Diagnostic	-> Development of **highly specific RT-LAMP assays** for detection of SARS-CoV-2. -> Results of these RT-LAMP assays can be detected within 30 minutes after amplification reaction begin. -> Optimization of reaction conditions where LCV colorimetric detection method is applied that can be used for point-of-care tests.
JAMA 6 April 2020	**Baseline Characteristics and Outcomes of 1591 Patients Infected With SARS-CoV-2 Admitted to ICUs of the Lombardy Region, Italy**	Grasselli G et al, Italy https://doi.org/10.1001/jama.2020.5394	Clinic	Retrospective - 1591 patients COVID-19 – multicentric Demographic: - **82% male** - median age: 63 years - 68% had at least 1 comorbidity (HTA+++) Clinical data - 1150 patients required mechanical ventilation (higher than reported for other ICU patients) - **Median PEEP: 14 cmH_2O** - Median P_{aO2}/F_{IO2} = 166 (IQR:114-220), higher in young patients (< 63 years) - **Mortality: 26%,** higher in older patients (15% vs 36%, p<0,001) - Median length of stay: 9 days in ICU Limitation: - Short follow up → mortality rate could change? - Missing data for some patients
Clin Chem 4APR2020	**Potential false-negative nucleic acid testing results for Severe Acute Respiratory Syndrome Coronavirus 2 from thermal inactivation of samples with low viral loads**	Pan et al., China https://academic.oup.com/clinchem/advance-article/doi/10.1093/clinchem/hvaa091/5815979	Diagnostic	-> Ct values are increased (**higher treshold for detection**) in specimens from diagnosed COVID-19 patients in RT-PCR tests **after thermal incubation**. -> About half of the weak-positive samples (7 of 15 samples, 46.7%) were RT-PCR negative after heat inactivation in at least one parallel testing Thermal inactivation adversely affected the efficiency of RT-PCR for SARS-CoV-2 detection. Given the limited applicability associated with chemical inactivators, other approaches to ensure the overall protection of laboratory personnel need consideration.
Inter J Of Infect Dis 3APR2020	**A first Case of Meningitis/Encephalitis associated with SARS-Coronavirus-2**	Moriguchi, Takeshi et al, Japan https://doi.org/10.1016/j.ijid.2020.03.062	Clinic	**Case report : 23-year old male, with seizure accompanied by unconsciousness.** The specific **SARS-CoV-2 RNA** was not detected in the nasopharyngeal swab but **was detected in a CSF** **brain MRI** : hyperintensity along the wall of right lateral ventricle and hyperintense signal changes in the right mesial temporal lobe and hippocampus, **suggesting the possibility of SARS-CoV-2 meningitis** Chest CT **small ground glass opacities** At D15 : still ventilated and with impaired consciousness **This case warns the physicians of patients who have CNS symptoms**.

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CELL preproof	**Inhibition of SARS-CoV-2 infections in engineered human tissues using clinical-grade soluble human ACE2**	Monteil, Kwon et al,	Therapeutic	ACE2 has now also been identified as a key receptor for SARS-CoV-2 infections and it has been proposed that inhibiting this interaction might be used in treating patients with COVID-19. Clinical grade human recombinant soluble ACE2 (**hrsACE2) reduced SARS-CoV-2 recovery from Vero cells by a factor of 1,000-5,000**. An equivalent mouse rsACE2 had no effect. SARS-CoV-2 can also directly infect engineered human blood vessel organoids and human kidney organoids, which can be inhibited by hrsACE2. **These data demonstrate that hrsACE2 can significantly block early stages of SARS-CoV-2 infections**.
Nature Medicine 3APR2020	**Respiratory virus shedding in exhaled breath and efficacy of face masks**	Leung, Nancy H. L. et al., https://doi.org/10.1038/s41591-020-0843-2 China - USA	Virology	Detection of **virus RNA shedding in exhaled breat**h and **coughs** of children and adults with acute respiratory illness (influenza (n=23-28 infected individuals), coronavirus (n=10-11) and rhinoviruses (n=36-32)). 5 µm particle size fractionation. **Without face mask:** - Viral RNA identified in 30%, 26% and 28% of respiratory droplets and 40%, 35% and 56% of aerosols collected while not wearing a face mask (coronavirus, influenza virus and rhinovirus-infected participants, respectively) Surgical face masks significantly reduced detection of viral RNA for: - Influenza virus in respiratory droplets, but not in aerosol. - Coronavirus in aerosols (≤5 µm particles), and non-significant reduction in respiratory droplets. Limitation: infectivity of detected virus not tested. **--> Surgical face masks could prevent transmission of human coronaviruses and influenza viruses from symptomatic individuals**
Antiviral Research 3APR2020	**Remdesivir, lopinavir, emetine, and homoharringtonine inhibit SARS-CoV-2 replication in vitro**	Choy, Yin-Lam Wong et al, Hong Kong https://doi.org/10.1016/j.antiviral.2020.104786	Therapeutic	Evaluation of the in vitro antiviral effect of compounds that were previously reported to inhibit coronavirus replication and compounds that are currently under evaluation in clinical trials for SARS-CoV-2 patients. => **Antiviral effect of remdesivir, lopinavir, homorringtonine, and emetine against SARS-CoV-2 virus in Vero E6 cells** with the estimated 50% effective concentration at **23.15 µM, 26.63 µM, 2.55 µM and 0.46 µM**, respectively. => **Ribavirin or favipiravir that are currently evaluated under clinical trials showed no inhibition at 100 µM**. => **Synergy between remdesivir and emetine** was observed, and remdesivir at 6.25 µM in combination with emetine at 0.195 µM may achieve 64.9% inhibition in viral yield. **Combinational therapy may help to reduce the effective concentration of compounds below the therapeutic plasma concentrations and provide better clinical benefits.**
International Journal of Antimicrobial Agents 3APR2020	**Structural and molecular modeling studies reveal a new mechanism of action of chloroquine and hydroxychloroquine against SARS-CoV-2 infection**	Fantini, Di Scala et al, France https://doi.org/10.1016/j.ijantimicag.2020.105960	Therapeutic	Identification of a **new mechanism of action of CLQ and CLQ-OH** supporting the use of these repositioned drugs to cure SARS-CoV-2 infected patients. Using a combination of structural and molecular modeling approaches : => **chloroquine (CLQ) binds sialic acids and gangliosides with high affinity**. => New type of **ganglioside-binding domain at the tip of the N-terminal domain of the SARS-CoV-2 spike (S) protein identified**. This domain (aa 111-158), which is fully conserved among clinical isolates worldwide, may **improve the attachment of the virus to lipid rafts and facilitate the contact with the ACE-2 receptor**. => In presence of CLQ (or of the more active derivative hydroxychloroquine, CLQ-OH), the **viral spike is no longer able to bind gangliosides**.

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Journal of Thrombosis and Thrombolysis 3APR2020	**Difference of coagulation features between severe pneumonia induced by SARS-CoV2 and non-SARS-CoV2**	Shiyu Y et al, China https://doi.org/10.1007/s11239-020-02105-8	Clinic	Retrospective – 2 groups 449 patients COVID-19 and 104 severe pneumonia non-COVID 28 days mortality→ higher in COVID group (29,8% vs 15,4%, p<0,005) Heparin treatment: 22% in COVID and 21% non-COVID Platelet count: higher in COVID group significantly Elevated D-Dimer (sixfold of upper limit of normal) was associated with poor prognosis only in COVID group **Anticoagulant therapy may benefit to selected COVID patients (elevated D-Dimer)?** Limits: - Retrospective - Influence of others therapies?
Circulation 3APR2020	**The Variety of Cardiovascular Presentations of COVID-19**	Fried J et al, USA https://doi.org/10.1161/CIRCULATIONAHA.120.047164	Clinic	**4 cases reports** - SARS-CoV2 infection should be in the differential of typical cardiac syndrome during pandemic event without infection signs - Myocarditis like presentations with COVID-19 → **further study** - Direct cardiac injury = result of viral invasion OR cytokine storm induced by SARS-CoV2→ toxic effect on myocardium - COVID-19 can cause decompensation of heart failure → mixed shock
JAMA 3APR2020	**Personal Risk and Societal Obligation Amidst COVID-19**	Tsai et al., USA https://doi.org/10.1001/jama.2020.5450	HSS/Politic	Health workers with **pre-existing medical conditions**/in **older age groups** are at **greater risk** of severe illness and death if exposed to COVOD-19. => Telemedicine Issue : **guilt** – putting other colleagues at risk; what risk acceptable as a necessary part of a path in medicine? Assessment takes an inherently individual path: no single rule can guide a physician's involvement in high-risk scenarios **Comforted by :** 1) High need for virtual-based care 2) Sense of purpose in the community How much risk in the career of medicine should be acceptable to physicians? → **Need for medical profession to balance the obligations and duties of this profession with physicians' fundamentally human limitations and fears**
Physical and Engineering Sciences in Medicine, 3APR2020	**Covid-19: automatic detection from X-ray images utilizing transfer learning with convolutional neural networks**	Apostolopoulos et al., Greece https://link.springer.com/article/10.1007/s13246-020-00865-4	Diagnostic	Technology evaluated is called **Transfer Learning** Two sets of X-Ray images from patients were used as follow: - 1st set: a collection of 1427 X-ray images including 224 images with confirmed Covid-19 disease, 700 images with confirmed common bacterial pneumonia, and 504 images of normal conditions. - 2nd set : 224 images with confirmed Covid-19 disease, 714 images with confirmed bacterial and viral pneumonia, and 504 images of normal conditions. Deep Learning with X-ray imaging would extract significant biomarkers related to the Covid-19 disease, while the best accuracy, sensitivity, and specificity obtained is 96.78%, 98.66%, and 96.46% respectively. Further research are needed to confirm the efficiency of this type of technlogy for automatic detection of Covid-19 cases; moreover, it is necessary to develop models capable of distinguishing Covid-19 cases from other similar viral cases, but also from a greater variety of common pneumonia or even physiological X-rays
Antiviral Research, 3APR2020	**The FDA-approved Drug Ivermectin inhibits the replication of SARS-CoV-2 in vitro**	Caly, Leon et al, Australia https://doi.org/10.1016/j.antiviral.2020.104787	Therapeutic	**Ivermectin is an inhibitor of the COVID-19 causative virus (SARS-CoV-2)** on Vero/hSLAM cells. A single treatment able to effect ~5000-fold reduction in virus at 48h in cell culture compared to control sample. **Ivermectin is FDA-approved for parasitic infections, Ivermectin is widely available, due to its inclusion on the WHO model list of essential medicines**

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The Lancet Microbe 2APR2020	**Stability of SARS-CoV-2 in different environmental conditions**	Chin, Alex W. H. et al., China https://doi.org/10.1016/S2666-5247(20)30003-3	Virology	Infectious SARS-CoV-2 Stability at different temperatures (in virus transport medium) : - highly stable at 4°C (only ~ 0·7 log-unit reduction of infectious titre on day 14) - at 70°C, virus inactivation reduced to 5 mins - On a surgical mask, infectious virus detectable on day 7 (~0·1% of the original inoculum). - Except from hand soap, no infectious virus detected after 5-min incubation at RT (22°C) with virucidal disinfectants (Household bleach (1:49), Ethanol (70%), Povidone-iodine (7.5%), ...). **--> SARS-CoV-2 can be highly stable in a favourable environment, but also susceptible to standard disinfection methods.**
Liver Int 2 April 2020	**Clinical characteristics of Non-ICU hospitalized patients with coronavirus disease 2019 and liver injury : A Retrospective study**	Xie et al., Chine, https://doi.org/10.1111/liv.14449	Clinic	**Retrospective study of 79 patients**, median age 60 years and 55.7% male. **29 had liver injury** (elevated ALT, AST and/or bilirubin) Multivariate analysis suggested that **CT scores was an independent predictor for liver injury**. Patients with liver injury stayed longer in the hospital.
American journal of nephrology 2APR2020	**Coronavirus Disease 19 Infection Does Not Result in Acute Kidney Injury: An Analysis of 116 Hospitalized Patients from Wuhan, China**	Wang Lu et al, China https://doi.org/10.1159/000507471	Clinic	**116 patients** – Retrospective study Median age: 54y and 58% male 40% severe pneumonia and 9% were ARDS 4,3% had CKD with long-term hemodialysis **None patient meet criteria for AKI** during or after treatment 12 patients without CKD showed mild increase of BUN or serum creatinine (≠ criteria of AKI). Temporary abnormal renal function → injury due to hypoxemia? SARS-CoV2 RNA in urine sediment was positive in 4 patients Mortality: 6% **Results are similar with study on SARS-CoV infection in 2003** **Be careful because ACE2 expression is high in kidney.**
Liver Int 2APR2020	**Liver impairment in COVID-19 patients: a retrospective analysis of 115 cases from a single center in Wuhan city, China**	Zhang Y et al, China https://doi.org/10.1111/liv.14455	Clinic	**2 groups: 115 COVID-19 and 114 controls (community acquired pneumonia)** Controls significantly older – no other difference **No difference between group in the level of ALT or AST** Majority of COVID19 had mild abnormalities COVID-19 had reduction of albumin Liver is not the main target organ Relationship with the disease progression: - Higher level of ALT or AST in severe cases than mild cases, - Higher total bilirubin in severe cases, - Lower level of albumin in severe cases, **Liver function did not show an independent association with severe COVID19**
CDC 1APR2020	**Presymptomatic Transmission of SARS-CoV-2 — Singapore, January 23–March 16, 2020**	Wei et al., China https://www.cdc.gov/mmwr/volumes/69/wr/mm6914e1.htm?s_cid=mm6914e1_w#contribAff	Public Health/Epidemio	-> Identification of **7 clusters** of COVID-19 in Singapore in which **presymptomatic transmission** likely occurred and which may explain the occurrence of secondary cases

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The Lancet Neurology 1APR2020	**Guillain-Barré syndrome associated with SARS-CoV-2 infection: causality or coincidence?**	Zhao, Hua; et al. China https://www.thelancet.com/journals/laneur/article/PIIS1474-4422(20)30109-5/fulltext	Clinic	Patient was diagnosed with Guillain-Barré syndrome (autoimmune disorder damaging the peripheral nervous system resulting in aggravating muscle weakness) with lymphocytopenia and thrombocytopenia upon hospitalization. Patient then developed symptoms of SARS-CoV-2 on day 8 and tested +ve by RT-PCR. Given the temporal overlap, authors speculate that SARS-CoV-2 infection might have been responsible for the development of Guillain-Barré syndrome with a possible parainfectious profile. Limitations: patient was not tested for SARS-CoV-2 upon admission, so causality is not clear. **->This is the first, and single case report. It only suggests a possible association and more cases are necessary to support a causal relationship.**
Nature 1APR2020	**Virological assessment of hospitalized patients with COVID-2019**	Wolfel et al. Germany https://www.nature.com/articles/s41586-020-2196-x	Virology	A detailed virological analysis of 9 cases, providing proof of active virus replication in upper respiratory tract tissues. -> Pharyngeal virus shedding: very high during 1st week of symptoms. -> Infectious virus was readily isolated from throat- and lung-derived samples, but not from stool samples (in spite of high virus RNA concentration). -> Blood and urine never yielded virus. Active replication in the throat is confirmed by viral replicative RNA intermediates in throat samples. Sequence-distinct virus populations were consistently detected in throat and lung samples from the same patient, proving independent replication. Shedding of viral RNA from sputum outlasted the end of symptoms. Seroconversion occurred after 7 days in 50% of patients (14 days in all), but was not followed by a rapid decline in viral load. COVID-19 can present as a mild upper respiratory tract illness. **Active virus replication in the upper respiratory tract puts the prospects of COVID-19 containment in perspective.**
NEJM 01APR2020	**Ten Weeks to Crush the Curve**	Fineberg, Harvey v.et al. USA https://doi.org/10.1056/NEJMe2007263	HSS/Politic	**1.** Appoint a commander who reports to the President with powers and authority of the President to mobilize all civil and military means (same at the level of the state) + redeploy limited national supplies where most needed. **2.** Perform millions of diagnostic tests over the next 2 weeks Organize dedicated clinical trial sites, physically separate from other health centers. **3.** Provide all health workers with personal protective equipment. **4.** Act on the basis of symptoms, examinations, viral RNA detection tests and exposures to differentiate the population into 5 groups to be treated accordingly : 1 / infected; 2 / presumed infected; 3 / exposed; 4 / unknown exposure/infection; 5 / recovered & sufficiently immune. Hospitalize severely affected or high-risk individuals+ create quarantine centers. Identify the fifth group by tests to enable economy to restart quickly and safely. **5.** Mobilize the entire population. With PPE for all health workers, deliver surgical masks and hand sanitizer to every American household. If everyone is wearing a mask, no stigma. **6.** Learn through real-time, fundamental research. Over the long-term: Reinvigorate the public health infrastructure for future threats.

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The Lancet) 01 APRIL 2020	**Racism and discrimination in COVID-19 responses**	Devakumar, D. et al., UK https://doi.org/10.1016/S0140-6736(20)30792-	HSS/Politic	**COVID 19 engenders fear => social, political racism and xenophobia with racialised/ discriminatory responses to fear + disproportionately affecting marginalised groups** Social dimension : COVID could have been an equalizer but disproportionately affects people of color + migrants 1) Microaggression/Violence towards different ethnic groups (i.e.: Chinese) 2) lower socio-economic groups (limited access to healthcare + precarious jobs) 3) Ethnic minority groups at greater risk (comorbidities) 4) Migrants avoid hospitals for fear of identification/reporting Political dimension : Misappropriation of Covid-19 crisis for political purpose (racial discrimination, conflating public health restrictions and border policies + trade policies). Health protection relies on a well functioning health system with universal coverage, + social inclusion, justice, and solidarity
Virol Sin 31MAR	**Inefficiency of Sera from Mice Treated with Pseudotyped SARS-CoV to Neutralize 2019-nCoV Infection**	Zezhong Liu et al., China https://doi.org/10.1007/s12250-020-00214-5	Therapeutic	**S proteins:** - 76% homology SARS CoV / SARS CoV-2 - 29% homology SARS CoV / MERSCoV. **RBS:** - Significantly different, even if the bind to the same receptor (ACE2). **Cross-reaction of sera ?** SARS-CoV and MERCoV pseudovirus expression S protein: produced and injected into BALBc mice. -> Sera tested on ACE2 expressing 293T cells. -> Effective neutralization for SARS-PsV-treated mice but not MERS-PsV treated mice. When SARS-PsV-treated mice was exposed to a SARS-CoV-2 pseudovirus -> no neutralization effect was evidenced. **It may not be practical to treat SARS-CoV-2 patients.**
Emerging microbes & infections 31Mar2020	**Renin-angiotensin system inhibitors improve the clinical outcomes of COVID-19 patients with hypertension**	Meng, Juan et al, Chine, https://doi.org/10.1080/22221751.2020.1746200	Therapeutic	Retrospective study of **42 patients with treated hypertension** admitted in hospitalization for COVID 19. Before hospitalization, **17 were on angiotensin-converting enzyme inhibitors** (ACEIs) or angiotensin II type 1 receptor blockers (ARBs), 25 were on other drugs. **Results** : in patients from the ACEI/ARB group : - **Less severe cases** - **trend toward lower IL-6 levels** - **increased CD3 and CD8 T cell counts** - **peak viral load during hospitalization significantly lower** ACEI/ARB therapy may attenuate the inflammatory response, potentially through the inhibition of IL-6 levels **Point of attention** : retrospective study, small sample.
Annals of internal medicine 30MAR2020	**A Rush to Judgment? Rapid Reporting and Dissemination of Results and Its Consequences Regarding the Use of Hydroxychloroquine for COVID-19**	Kim, Alfred H.J et al., USA https://doi.org/10.7326/M20-1223	HSS/Politic	**Urgency: certain limits of this study are acceptable (small sample size, use of an unvalidated surrogate end point, lack of randomization or blinding, …). But methodological flaws that may affect the validity of the results :** **Conclusion:** -> Sufficient justification to continue investigation of the efficacy and safety of HCQ in patients hospitalized with COVID-19. -> No data currently to recommend the use of HCQ as a prophylaxis for COVID-19. ->No recommendation of its use outside of marketing authorization until it is justified and offer is reinforced. -> Risk of penury to patients with rheumatic diseases who depend on HCQ for their survival. -> HCQ shortage will limit availability to patients with COVID-19 if efficacy truly established.

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Medicine in Drug Discovery – **pre-Proof** 22MAR2020	**Novel decoy cellular vaccine strategy utilizing transgenic antigen-expressing cells as immune presenter and adjuvant in vaccine prototype against SARS-CoV-2 virus**	Henry Ji et al., China https://doi.org/10.1016/j.medidd.2020.100026	Vaccine	S1 SARS-CoV-2 protein is expressed on the surface of K562 human myelogenous leukemia cells (HLA negative - highly sensitive to NK mediating kills): -> Provides a means of targeting and activating an innate driver of the host adaptive immune response. -> Stable clones are selected and irradiated to be formulated as vaccine product and administered via intramuscular or subcutaneous injection. This kind of cell vaccine can drive the host cellular immune response toward Th1, generating both potent cytotoxic T cell immunity against the major determinant of SARS-CoV-2 cellular entry and pathogenesis. **This approach has already being used for cancer vaccine treatments inducing robust cellular and humoral anti-tumor immune responses.**
Journal of infectious Disease 31MAR2020	**Characteristics of peripheral lymphocyte subset alteration in COVID-19 pneumonia**	Fan W et al, China https://doi.org/10.1093/infdis/jiaa150	Immunology	**60 patients – monocentric – total lymphocytes in COVID-19 were compared to healthy controls (HC)** Median age 60 y 32% were serious illness Compared to HCs, COVID-19 had a decrease in: - Total lymphocytes - CD4 + - CD8+ - NK cells and B cells Serious compared to mild patient: - Decrease total lymphocytes, CD4+, CD8+ and B cells in serious patients Post-treatment: - Total lymphocytes, CD8+ and B cells increased significantly in responders - No significant change in non responder's **CD8+ cells potential predictor for disease severity and poor clinical efficacy**
The Lancet ID 30MAR2020	**Estimates of the severity of coronavirus disease 2019: a model-based analysis**	Verity et al., UK https://www.thelancet.com/journals/laninf/article/PIIS1473-3099(20)30243-7/fulltext#	Public Health/Epidemio	**Using data on 24 deaths that occurred in mainland China and 165 recoveries outside of China:** - Mean duration from onset of symptoms to death : 17,8 days - Mean durantion from onset to hospital discharge: 24,7 days - Crude case fatality ratio: 3,67% After further adjusting for demography and under-ascertainment: - Case fatality ratio: 1,38% / <60 y : 0,32% / >60y: 6,4% / >80y: 13,4% Estimates of case fatality ratio from international cases stratified by age were consistent with those from China (see paper for data) Estimated overall infection fatality ratio for China: 0·66%, with an increasing profile with age. Estimates of the proportion of infected individuals likely to be hospitalised increased with age up to a maximum of 18·4% in those aged 80 years or older.
Journal of Gastroenterology and Hepatology 27MAR2020	**Covid-19 and the Digestive System**	Wong S et al, China https://doi.org/10.1111/jgh.15047	Clinic	**Diarrhoea** (2 to 10%) and **nausea/vomiting** (1 to 10%) are the most frequent gastrointestinal symptoms. Early in the disease course: earlier than pyrexia **Liver injury**: abnormal level of ALAT and ASAT in 15 to 53 % of patients – **mild and transient** → microvesicular steatosis and mild lobular activity → direct viral infection of hepatocytes (ACE2 receptor) or drug toxicity or immune-related injury **Possible tropism of SARS-CoV-2 for gastrointestinal tract**: ACE2 receptor **Faecal source: viral transmission ?**

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The Lancet ID 27MAR2020	**Clinical and virological data of the first cases of COVID-19 in Europe: a case series**	Lescure et al., France https://doi.org/10.1016/S1473-3099(20)30200-0	Clinic	**5 Patients:** 3 men: aged 31 years, 48 years, and 80 years – 2 women: aged 30 years and 46 years 3 different clinical evolutions: - 2 paucisymptomatic women diagnosed within a day of exhibiting symptoms, with high nasopharyngeal titres of SARS-CoV-2 within the first 24 h of the illness onset and viral RNA detection in stools - A two-step disease progression in 2 young men, with a secondary worsening around 10 days after disease onset despite a decreasing viral load in nasopharyngeal samples - an 80-year-old man with a rapid evolution towards multiple organ failure and a persistent high viral load in lower and upper respiratory tract with systemic virus dissemination and virus detection in plasma. The 80-year-old patient died on day 14 of illness. All other patients had recovered and been discharged by Feb 19, 2020.
Clinical Infectious Disease 27MAR2020	**Clinical characteristics of refractory COVID-19 pneumonia in Wuhan, China**	Mo P et al, China https://doi.org/10.1093/cid/ciaa270	Clinic	**155 patients** with median age of 54 years – **85 refractory COVID-19:** - Older and more male (p< 0,05) - More comorbidities: diabetes, cardiovascular disease, cerebrovascular disease (p<0,05) - Higher incidence of breath shortness and anorexia (p<0,05) - Bilateral pneumonia - Higher CRP, LDH, ASAT and neutrophile Risk factors: - **Male (OR: 2,3 [1,0-4,8]) and anorexia admission (OR:3,9 [1,1-13,4])** Received more oxygen (OR: 3,0), corticosteroid (OR:2,32) **Protective factor**: fever on admission (OR: 0,33 [0,1 – 0,9])
JAMA 27MAR2020	**Treatment of 5 critically ill patients with COVID-19 with convalescent plasma**	Shen C et al, China https://jamanetwork-com.proxy.insermbiblio.inist.fr/journals/jama/fullarticle/2763983	Therapeutic	**5 patients**: severe pneumonia + P_{AO2}/F_{IO2}<300mmHg + currently or has been supported by mechanical ventilation All received antiviral agents and steroids **Administered between 10 and 22 days after admission** After transfusion: - Ct value and viral load declined - Value of inflammatory biomarkers decreased - Clinical improvement: improved P_{AO2}/F_{IO2} , reduced body temperature, improved chest imaging - No longer required respiratory support by 9 days after transfusion **Limitations**: - No control group and small cases - Improved without transfusion? / Improvement related to transfusion or other therapies? - Late administration of transfusion: different timing would be associated with different outcomes?
The Lancet 27MAR2020	**Historical linkages: epidemic threat, economic risk, and xenophobia**	White, A. et al,. USA https://doi.org/10.1016/S0140-6736(20)30737-6	HSS/Politic	Global management of pandemic disease threats and global commerce historically linked: - History of international infectious disease control shaped by a distinctly European/US perspective prioritizing epidemic threats from colonial/post-colonial sites potentially affecting trade (=> aggressive control in sites of epidemic outbreak and aggressive scrutiny of those deemed responsible. - Importance of colonial trade from Asia led to bias against people of Asian descent. “Chinese virus” connected to a long legacy of associating epidemic disease threat and trade with movement of Asian peoples. **Aggressive racist and xenophobic responses in the name of health controls**. - Concern for trading relationships central to US economic growth pivotal for US Congress to endorse creation of WHO. - Nations have recently aligned infectious disease control policy alongside concerns for national security.

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J. Med. Virol. 26MAR2020	**Stability Issues of RT-PCR Testing of SARS-CoV-2 for Hospitalized Patients Clinically Diagnosed with COVID-19**	Li et al., China https://doi.org/10.1002/jmv.25786	Diagnostic	610 hospitalized patients from Wuhan -> High false negtive rate of RT-PCR testing -> RT-PCR results from several tests at different points were variable from the same patients during the course of diagnosis and treatment of these patients **Clinical indicators such as CT images should also be used not only for diagnosis and treatment but also for isolation, recovery/discharge and transferring for hospitalized patients clinically diagnosed with COVID-19 during the current epidemic.**
JAMA 26MAR2020	**Antibodies in Infants Born to Mothers With COVID-19 Pneumonia**	Zeng et al., China https://jamanetwork.com/journals/jama/fullarticle/2763854	Clinic	A novel study on 6 pregnant women and their infants confirm no maternal-infant transmission of SARS-CoV-2 based on reverse transcriptase–polymerase chain reaction (RT-PCR) and reveals the presence of antibodies in all newsborns : · 6 mothers had mild clinical manifestations and had cesarean deliveries in their third trimester · Neonatal throat swabs and blood samples are negative by RT-PCR test · All 6 infants had IgG and IgM virus-specific antibodies in their serum and their mothers also had elevated levels of IgG and IgM · Inflammatory cytokine IL-6 was significantly increased in all infants. **Point of care/conclusion** The detection of high level of IgM In 2 infants, is not usually. Whether the placentas of women were damaged and abnormal or whether IgM could have been produced by the infant if the virus crossed the placenta need to be confirm in a larger cohort.
BMJ 26MARS2020	**The world's largest refugee camp prepares for covid-19**	Gaia Vince, UK https://doi.org/10.1136/bmj.m1205	HSS/Politic	**Biggest camp in Cox's Bazar (Bengladesh):** - Nearly 1 million people live in overcrowded conditions. - Particularly vulnerable (physical distanciation impossible). United Nations Refugee Agency coordinate efforts to increase hand washing, using community leaders to inform (imams and women group leaders). Other initiative for preparedness : creaion of isolation unit in the camp. Aid workers are credible after experience of managing other crisis (malaria, dengue, cholera...) in the camp since 2 years and a half.
The Lancet Public Health 25MAR2020	**The Italian health system and the COVID-19 challenge**	Armocida et al., Italy https://doi.org/10.1016/S2468-2667(20)30074-8	HSS/Politic	In Italy, National Healthcare Service is regionally based, with **local authorities responsible for the organisation** and delivery of health services. Due to progressive privatisation and finance cuts, system close to collapse. 4 lessons to be learned : - **Decentralisation and fragmentation of health services seems to have restricted timely interventions and effectiveness** - Health-care systems capacity and financing need to be more flexible in case of emergencies - Solid partnerships between the private and public sector should be institutionalised - Recruitment of HR must be planned and financed with a long-term vision

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Lancet 25MAR2020	**Clinical features and obstetric and neonatal outcomes of pregnant patients with COVID-19 in Wuhan, China: a retrospective, single-centre, descriptive study**	Yu N. et al, China https://www.thelancet.com/pdfs/journals/laninf/PIIS1473-3099(20)30176-6.pdf	Clinic	**Pregnant patients with COVID 19 – no ICU :** Mean age gestational: 39 + 1 - All caesarean section Fever (6) - Cough (1) - Shortness of breath (1) - Diarrhea (1) Laboratory tests: - Elevated CRP (7) - Lymphopenia (5) – thrombopenia (2) - Elevated IL-6 (4) **Chest CT:** all pneumonia → bilateral (6), unilateral (1) Treatment: oxygen + antiviral + antibiotic (single or combination) + traditional medicine. Methylprednisolone for 5 after caesarean section. **Neonatal**: 3 stays in observation and 1 was positive for SARS-CoV2 with mild shortness of breath. At 28 days after birth: all child was healthy **No arguments for vertical transmission**
SCIENCE 25MAR2020	**The effect of human mobility and control measures on the COVID-19 epidemic in China**	Kraemer et al., UK https://science.sciencemag.org/content/early/2020/03/25/science.abb4218	Public Health/Epidemio	**Use of real-time mobility data from Wuhan and detailed case data including travel history** -> Early: spatial distribution of COVID-19 cases in China was explained well by human mobility data -> After implementation of control measures: this correlation dropped and growth rates became negative in most locations **Travel restrictions are particularly useful in the early stage of an outbreak when it is confined to a certain area that acts as a major source. However, travel restrictions may be less effective once the outbreak is more widespread.**
Inter J of Infectious Diseases 25MAR2020	**Epidemiological, clinical characteristics of cases of SARS-CoV-2 infection with abnormal imaging findings**	Zhang X et al, China https://www.ijidonline.com/article/S1201-9712(20)30172-7/fulltext	Clinic	**645 patients with 72 no-pneumonia and 573 pneumonia** Bilateral lung disease: 432 (67%) Group with pneumonia: - Older: *46,6 vs 34,9 years* - One coexisting underlying: *28,8% vs 16%* - Less exposure to Wuhan or confirmed patient - Time from onset to COVID-19 was longer: *5 days vs 2 days* - Symptoms: fever and cough - Lower lymphocyte, albumin and NaCl - Higher LDH and CRP Predictive factor of severe pneumonia: - Lymphopenia and higher creatinine - Shortness of breath
Disaster medicine and public health preparedness 24MAR2020	**Chronology of COVID-19 cases on the Diamond Princess cruise ship and ethical considerations: a report from Japan**	Nakazawa, et al. Japan http://www.ncbi.nlm.nih.gov/pubmed/32207674	HSS/Politic	**Ship = virus incubator + "international miniature company"** -> Difficulty in testing such a large number of people of various origins and faiths **Recommendations of the article:** **Politically:** -> Alert political decision-makers to the impact of multiple, contradictory, false or unconfirmed information on the health of confined passengers -> Mobilize collective intelligence / academic consensus by involving a large number of experts **In terms of ethics and public health:** -> When is the principle of confinement at sea justified: human rights dilemma (ensuring minimum well-being for passengers and crew) / health security (preventing the spread of the virus on land) -> Two criteria for authorizing a ship to dock or not = "1) the nation's geopolitical status '+ 2) the nation's ability to provide adequate health care ». -> Optimizing the material and psychological conditions of confinement on a ship: access to medication; psychological support ; means of communication with the outside world ; transparency and consistency of media information + take into account cultural differences **Legally:** -> Design and implement international regulations because an epidemic on board a ship should not be dealt with solely with regard to local policies (territory in which the ship is at anchor) -> Strengthen international cooperation.

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The Lancet Global Health 24MAR2020	**Early in the epidemic: impact of preprints on global discourse about COVID-19 transmissibility COMMENT**	Maimuna et al., USA https://doi.org/10.1016/S2214-109X(20)30113-3	HSS/Politic	**Novelty of SARS-CoV-2, so scientists rushed to fill epidemiological, virological, and clinical knowledge gap** -> 50 new studies about the virus between January 10 and January 30 alone. Use of a simple method to plot the ten R0 estimations posted as preprints before publication of the first peer-reviewed study on Jan 29. Result of the peer review R0 estimations are very similar to those in the peer-reviewed studies published on and after Jan 29. **Conclusions :** - Powerful role preprints can have during public health crises because of the timeliness with which they can disseminate new information. - Use of preprint does not jeopardise future peer-reviewed publication (first step : preprint and then peer reviewed) - Impact of preprints on discourse and decision making to the ongoing COVID-19 outbreak (even if in some cases the preprints have conveyed erroneous ideas)
Emerging microbes and Infections 24MAR2020	**Establishment and validation of a pseudovirus neutralization assay for SARS-CoV-2**	Jianhui Nie et al, China http://www.ncbi.nlm.nih.gov/pubmed/32207377	Therapeutic	Necessity of **handling SARS-CoV-2 in BSL-3 facilities** and **accessibility to virus strains** -> **barriers to develop candidate vaccines and therapeutics**. -> Hence, development of a SARS-CoV-2 pseudovirus based in neutralization assays using S viral genes cloned into pcDAN3.1 plasmids. -> Expressed in a VSV pseudoviral platform. -> Huh7 cells platted at 5x104/well were identified as the best cell system for SARS-CoV2 pseudovirus infection (inocula of 650 TCID50/well). **When tested against the SARS-CoV-2 pseudovirus, SARS-CoV-2 convalescent patient sera showed high neutralizing potency, which underscore its potential as therapeutics.**
The Lancet Child & Adolescent Health 24MAR2020	**Mental health considerations for children quarantined because of COVID-19**	Liu, Jia Jia; Bao, Yanping et al,. China https://doi.org/10.1016/S2352-4642(20)30096-1	HSS/Politic	**• at home = stress can be eased** **• in local hospitals/ collective medical observation centers = separated from caregivers (children infected/suspected of being infected or caregivers infected/dead)** **Potential consequences: 1) grief and fear + 2) potential mood disorders and psychosis/death by suicide in adulthood** **30% = post-traumatic stress disorder** **Chinese gov. strategies to prevent risks :** **1. nurses 24 h per day** **2. guidance by nutritionists for children's diets** **3. communication with parents any time** **4. citizens volunteering as temporary mothers** **5. 24 h free psychological counselling hotlines** **Guidelines issued: more communication time with parents; access to disease information via comic books and videos; regular activity schedule ; night lights and gifts for children; referrals for psychiatrists** **Need for :** **1. formal training for paediatric health-care workers** **2. evidence-based guidelines** **3. national collaborative networks (psychiatrists, psychotherapists, researchers, community volunteers)** **4. post-pandemic surveillance of children**

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The Lancet 23MAR2020	**Temporal profiles of viral load in posterior oropharyngeal saliva samples and serum antibody responses during infection by SARS-CoV-2: an observational cohort study**	Kai-Wang et al., China https://www.thelancet.com/journals/laninf/article/PIIS1473-3099(20)30196-1/fulltext	Virology	**23 persons were included** - Median viral load in posterior oropharyngeal saliva or other respiratory specimens at presentation was 5·2 log_{10} copies per mL - Salivary viral load: **highest during the first week after symptom onse**t and subsequently declined with time **-** In one patient, viral RNA was detected **25 days after symptom onset.** - **Older age** was correlated with **higher viral load** - For 16 patients with serum samples available 14 days or longer after symptom onset, **rates of seropositivity** were 94% for **anti-NP IgG**, 88% for **anti-NP IgM**, 100% for **anti-RBD IgG**, and 94% for **anti-RBD IgM**. - **Anti-SARS-CoV-2-NP** or **anti-SARS-CoV-2-RBD IgG levels** correlated with **virus neutralisation titre**.
JAMA 23MAR2020	**Ethics Committee Reviews of Applications for Research Studies at 1 Hospital in China During the 2019 Novel Coronavirus Epidemic**	Zhang H et al.- China https://doi.org/10.1001/jama.2020.4362	HSS/Politic	- **Henan hospital**: designated to provide care to COVID-19 patients. - Hospital ethics committee organized **4 emergency video conference in 35 days**. - Projects evaluated **within 2,13 days after submission**: **more quickly** that other previous boards organized in an outbreak context. - 41 applications were reviewed; 6 were approved; 4 rejected; and 31 referred for modification because of lack statistical basis for sample size calculation, deficiencies in inclusion/exclusion criteria or issues related to consent form. **Although the rush, review standards were not lowered during the outbreak.**
Open Forum Infect Dis 21MAR2020	**High-dose intravenous immunoglobulin as a therapeutic option for deteriorating patients with Coronavirus Disease 2019**	Wei Cao and al, Chine https://doi.org/10.1093/ofid/ofaa102	Therapeutic	**3 adults (56, 34 and 35 y)** **-** treated by **25 grams per day for five days** of **immunoglobulins** at the time of respiratory distress initiation **+ antibiotic** **- temperature back to normal in one to two days, and breathing difficulties alleviating in 3-5 days** Point of attention: other treatments were given, antiviral for 2/3 patients, corticoid for 1. The **first few days of deterioration** may present a **critical point** when **potent suppression of inflammatory cascade could save the patients** from fatal immune-mediated injuries
International journal of antimicrobial agents 20MAR2020	**Hydroxychloroquine and azithromycin as a treatment of COVID-19: results of an open-label non-randomized clinical trial**	Gautret, and al, France https://www.sciencedirect.com/science/article/pii/S0924857920300996	Therapeutic	**Hospitalized patients : i) age >12 years and ii) PCR documented SARS-CoV-2 carriage in nasopharyngeal sample at admission** - Treatment: **oral hydroxychloroquine sulfate** 200 mg, 3/day during 10 days. - 26 treated among them, six patients received additional azithromycin. - Control group : 16 patients from another centre or refusal to participate - 6 patients treated were excluded from the analysis **Primary endpoint : virological clearance at day-6 post-inclusion** **70% of hydroxychloroquine-treated patients (N=20) were virologicaly cured comparing with 12.5% in the control group** (N=16) (p= 0.001)

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Journal Travel Medecine and Infectious Disease 20MAR2020	**COVID-19: Active measures to support community-dwelling older adults**	K, Kuwahara et al., Japan http://www.ncbi.nlm.nih.gov/pubmed/32205272	HSS/Politic	-> With no proven drug and vaccine treatments, non-pharmaceutical measures, especially social distancing, are an essential to slow the spread of the epidemic. -> Given the higher risk associated with older adults, practical information should be provided to community-dwelling adults to help maintain appropriate community activity levels. -> Issue of social isolation: efforts are needed to mitigate the negative psychological impact. recent technological advances may help detect and provide care for groups at high risk of social isolation. plans and measures to maintain social ties should be prepared at the individual level (family, friends, neighborhood, etc.), organizational or community levels, and societal level.
Travel Med Infect Dis 20MAR2020	**Rapid viral diagnosis and ambulatory management of suspected COVID-19 cases presenting at the infectious diseases referral hospital in Marseille, France, - January 31st to March 1st, 2020: A respiratory virus snapshot**	Amrane et al, France http://www.ncbi.nlm.nih.gov/pubmed/32205269	Public Health/Epidemio	Rapid viral detection performed on sputum and nasopharyngeal samples from the first 280 patients suspected to have COVID-19. No SARS-CoV-2 was detected. Other viral infections were identified in 49% of the patients, with most common pathogens being influenza A and B viruses, rhinovirus, metapneumovirus and common coronaviruses, notably HKU1 and NL63.
Cell Mol Immunol 19MAR2020	**Characterization of the receptor-binding domain (RBD) of 2019 novel coronavirus: implication for development of RBD protein as a viral attachment inhibitor and vaccine**	Wanbo Tai et al., China https://www-nature-com.proxy.insermbiblio.inist.fr/articles/s41423-020-0400-4	Vaccine	-> SARS-CoV-2 **receptor-binding domain (RBD)** protein could be used **as a therapeutic agent** against SARS-CoV-2 and SARS-CoV infection (from results *invitro*) -> RBD in SARS-CoV-2 S protein was identified -> RBD protein bound strongly to human and bat angiotensin-converting enzyme 2 (ACE2) receptors. - SARS-CoV RBD-specific antibodies could crossreact with SARS-CoV-2 RBD protein - SARS-CoV RBD-induced antisera could cross-neutralize SARS-CoV-2 -> **potential to develop SARS-CoV RBD-based vaccines for prevention of SARS-CoV-2 and SARS-CoV infection**.
NEJM 19MAR2020	**A trial of liponavir-ritonavir in adults hospitalized with severe Covid-19**	Cao B et al, China https://www.nejm.org/doi/pdf/10.1056/NEJMoa2001282?articleTools=true	Therapeutic	Randomized, controlled trial, open-label trial **199 patients included**: 99 received lopinavir-ritonavir and 100 standard care alone: · **Lopinavir-ritonavir was not associated with clinical improvement or mortality:** median time to clinical improvement 16 days vs 16 days, HR = 1.31 [0.95 – 1.85] Others outcomes: · 28-days mortality lower in the lopinavir-ritonavir group: 19.2% vs 25%, difference -5.8 % [-17.3 – 5.7] · Detectable viral RNA for SARS-CoV2 was similar between two groups: 40.7 % of the patients of lopinavir-ritonavir group at the end of trial (28d) · Serious adverse events: 19 in the lopinavir-ritonavir group (4 serious gastrointestinal adverse events related to the trial medication) and 32 in the standard care alone. · No difference on duration of oxygen therapy and duration hospitalization. · Post hoc finding that early initiation of lopinavir-ritonavir might accelerate clinical recovery and reduced mortality Overall mortality at 22.1% **No beneficit was observed with lopinavir-ritonavir treatment**

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NEJM 19MAR2020	**SARS-CoV2 Infection in children**	Lu X. et al, China https://www.nejm.org/doi/pdf/10.1056/NEJMc2005073?articleTools=true	Clinic	On the 1391 children tested at Wuhan Children's Hospital, **171 (12.3%) were positive for SARS-CoV2 infection.** Median age: **6.7 years** - Male: 60.8 % Fever: **41.5 %** - Cough: 48.5 % Pneumonia: 64.9 % **3 patients** (with coexisting conditions) **require intensive care and 1 death** **Most children appear to be mild symptomatic.**
World Journal of Pediatrics 19MAR2020	**Clinical features of severe pediatric patients with coronavirus disease 2019 in Wuhan: a single center's observational study**	Sun D et al, China *https://link-springer-com.proxy.insermbiblio.inist.fr/content/pdf/10.1007/s12519-020-00354-4.pdf*	Clinic	**8 children included**: 5 severely ill and 3 critically ill 2 months to 15 years **Symptoms**: - Polypnea 100% - Fever (6/8) - Cough (6/8) - Expectoration (4/8) **Abnormalities in chest scanning 100% patients**: - multiple patch-like shadows - ground glass opacity **Biological**: - increase CRP, PCT and LDH - elevated ALAT - increase IL6 (2/8), IL10 (5/8), IFN-γ (2/8) Level of IL6 and IL10 were significantly increase in 2 critically ill patient who remained in ICU for 20 days. **Specific laboratory abnormalities and excessive immune responses may lead to long-term lund damage and severe health complication**
Cell and Mol Biol 17MAR2020	**Elevated exhaustion levels and reduced functional diversity of T cells in peripheral blood may predict severe progression in COVID-19 patients**	Zheng et al., https://www.nature.com/articles/s41423-020-0401-3	Immunology	Immunological characteristics of peripheral blood leukocytes from 16 patients: **Compared to healthy group (n=6):** - Frequency of multi-functional CD4+ T cells (positive for at least two cytokines) decreased significantly in the severe group - The proportion of non-functional (IFN-γ−TNF-α−IL-2−) subsets increased significantly. - No increase in neutrophils or decrease in lymphocytes. - No statistical differences in interleukin-6 (IL-6) and tumor necrosis factor-α (TNF-α) plasma concentrations were found among the three groups - Levels of interferon-γ (IFN-γ) and TNF-α in CD4+ T cells were lower in the severe group than in the mild group, whereas the levels of granzyme B and perforin in CD8+ T cells were higher in the severe group than in the mild group. - Frequency of multi-functional CD4+ T cells decreased significantly in the severe group and proportion of non-functional subsets increased significantly **-> Identifcation of potential immunological risk factors for COVID-19 pneumonia and provided clues for its clinical treatment.**
The NEJM 17MAR2020	**Aerosol and Surface Stability of SARS-CoV-2 as Compared with SARS-CoV-1**	Doremalen et al., USA https://www.nejm.org/doi/pdf/10.1056/NEJMc2004973?articleTools=true	Virology	-> Stability of **SARS-CoV-2** was similar to that of **SARS-CoV-1** under the experimental circumstances tested. -> Detectable in **aerosols** for up to **three hours**, up to **four hours** on **copper**, up to **24 hours** on **cardboard** and up to **two to three days** on **plastic and stainless steel**. **Aerosol and fomite transmission of SARS-CoV-2 is plausible**

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The Lancet 17MAR2020	**Prevention of SARS-CoV-2 infection in patients with decompensated cirrhosis**	Xiao et al., China https://www.thelancet.com/journals/langas/article/PIIS2468-1253(20)30080-7/fulltext	Clinic	**Previously known:** Patients with decompensated cirrhosis have a higher risk of, and mortality from, infection. -> 111 patients with decompensated cirrhosis (were included) -> **New precautionary procedures** were implemented **(see paper)** -> Incidence of COVID19 was lower than in other groups. The simple approach (**see paper**) could be an effective means of preventing COVID-19 in patients with decompensated cirrhosis.
International journal of infectious diseases 17MAR2020	**Transmission potential and severity of COVID-19 in South Korea**	Shim et al., Rep of Korea https://www.ijidonline.com/article/S1201-9712(20)30150-8/fulltext	Public Health/Epidemio	- COVID-19 caused 6,284 cases and 42 deaths in South Korea as of March 8, 2020. - The mean reproduction number Rt of COVID-19 in Korea was estimated at 1.5 (95% CI: 1.4-1.6) - The intrinsic growth rate was estimated at 0.6 (95% CI: 0.6, 0.7) and the scaling of growth parameter was estimated at 0.8 (95% CI: 0.7, 0.8), indicating sub-exponential growth dynamics of COVID-19 - The crude case fatality rate is higher among males (1.1%) compared to females (0.4%) and increases with older age, from 0.1% among those 30-39 yrs to 6% among those > = 80 yrs as of March 6, 2020. - Results indicate early sustained transmission of COVID-19 in South Korea and support the implementation of social distancing measures to rapidly control the outbreak.
J Inf Dis 17MAR2020	**Clinical outcome of 55 asymptomatic cases at the time of hospital admission infected with SARS-Coronavirus-2 in Shenzhen, China.**	Wang et al., China https://academic.oup.com/jid/advance-article/doi/10.1093/infdis/jiaa119/5807958	Asymptomatic carriers: who are they ?	**55 asymptomatic carriers** Conclusions: -> Asymptomatic carriers occurred **more often in middle aged** people who had **close contact** with infected family members -> Majority of the cases **developed to be mild and ordinary COVID-19** during hospital
Am J Transplant. 17MAR2020	**Successful recovery of COVID-19 pneumonia in a renal transplant recipient with long-term immunosuppression.**	Zhu et al., China https://onlinelibrary.wiley.com/doi/abs/10.1111/ajt.15869	Could transplant recipient be at higher risk ?	**52-year-old** man who received **kidney transplantation 12 years ago** -> Clinical characteristics (symptoms, laboratory examinations, and chest CT) were **similar to those of non-transplanted** COVID-19 patients -> Following a treatment regimen: reduced immunosuppressant use and low dose methylprednisolone-based therapy **Effectively treated case has reference value for the future treatment of other transplant patients with COVID-19 pneumonia. Analysis of additional cases is necessary to determine if this remains true.**
J Med Virol 17MAR2020	**Platelet-to-lymphocyte ratio is associated with prognosis in patients with Corona Virus Disease-19.**	Qu et al., China https://onlinelibrary.wiley.com/doi/abs/10.1002/jmv.25767	PLR and prognosis ?	-Retrospective analysis of **30 hospitalized patients** -> Patients with platelet peaks during treatment: longer hospitalization. -> Patients with platelet peaks were **older** -> **Higher PLT** (platelet to lymphocyte ratio): **longer hospitalisation**. It may be related to **cytokine storm**.

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The Lancet 17MAR2020	**Prisons and custodial settings are part of a comprehensive response to COVID-19**	Kinnet et al., Australia https://www.thelancet.com/journals/lanpub/article/PIIS2468-2667(20)30058-X/fulltext	Public Health/Epidemio	**Prisons are epicentres for infectious diseases:** - higher background prevalence of infection - higher levels of risk factors for infection - unavoidable close contact in often overcrowded, poorly ventilated, and unsanitary facilities, - poor access to health-care services relative to that in community settings **->** The public health importance of prison responses to influenza outbreaks has been recognised in the USA, where the Centers for Disease Control and Prevention have developed a checklist for pandemic influenza preparedness in correctional settings. WHO has also issued prison-specific guidance for responding to COVID-19.
Arch Pathol Lab Med. 17MAR2020	**An Analysis of 38 Pregnant Women with COVID-19, Their Newborn Infants, and Maternal-Fetal Transmission of SARS-CoV-2: Maternal Coronavirus Infections and Pregnancy Outcomes**	Schwartz et al., USA https://www.archivesofpathology.org/doi/pdf/10.5858/arpa.2020-0901-SA	Clinic	Analyzing literature describing 38 pregnant women with COVID-19 and their newborns in China -> Unlike coronavirus infections of pregnant women caused by SARS and MERS, COVID-19 did not lead to maternal deaths -> Similar to pregnancies with SARS and MERS: no confirmed cases of intrauterine transmission of SARS-CoV-2 **There is no evidence that SARS-CoV-2 undergoes intrauterine or transplacental transmission from infected pregnant women to their fetuses.**
Gynecologie, obstetrique, fertilite & senologie 16 MAR2020	**Infection with SARS-CoV-2 in pregnancy. Information and proposed care. CNGOF**	Peyronnet et al, France https://www.sciencedirect.com/science/article/pii/S2468718920301100?via%3Dihub	Clinic	Few pregnant women have been described Same symptoms as rest of adult's patients Some cases of ARDS or pneumonia **2 pregnant women with invasive ventilation have been described** Risk: cesarian and prematurity No miscarriage described **Neonatal**: - no case of vertical transmission - milder symptomatic - symptoms probably due to maternal hypoxemia
Nat Med 16MAR2020	**Breadth of concomitant immune responses prior to patient recovery: a case report of non-severe COVID-19**	Thevarajan et al., Australia https://www.nature.com/articles/s41591-020-0819-2	Immunology	-> Kinetics of immune responses in relation to clinical and virological features of a patient with mild-to-moderate coronavirus disease 2019 (COVID-19) that required hospitalization. **The emergence and rapid increase in activated CD38+HLA-DR+ T cells, especially CD8+ T cells, at days 7–9 preceded the resolution of symptoms:** -> ASCs appeared in the blood at the time of viral clearance (day 7; 1.48%) and peaked on day 8 (6.91%). -> Emergence of cTFH cells in blood at day 7 (1.98%), increasing on day 8 (3.25%) and day 9 (4.46%) -> The frequency of co-expression of CD38 and HLA-DR on CD8+ T cells increased in this patient from day 7 (3.57%) to day 8 (5.32%) and day 9 (11.8%) as well as the frequency of co-expression of CD38 and HLA-DR on CD4+ T cells between day 7 (0.55%) and day 9 (3.33%) although at lower levels than that of CD8+ T cells. -> CD38+HLA-DR+ CD8+ T cells, produced larger amounts of granzymes A and B and perforin (~34–54% higher) than did their parent cells (CD8+or CD4+ populations). -> Interestingly, minimal pro-inflammatory cytokines and chemokines were found in this patient with COVID-19, even at days 7–9.

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SCIENCE 16MAR2020	**Substantial undocumented infection facilitates the rapid dissemination of novel coronavirus(SARS-CoV2).**	Li et al, UK https://science.sciencemag.org/content/early/2020/03/13/science.abb3221.long	Public Health/Epidemio	From observations of reported infection within China + mobility data + a networked dynamic metapopulation model and Bayesian inference **-> 86%** of all infections were undocumented (95% CI: [82%–90%]) prior to 23 January 2020 travel restrictions. -> **Undocumented infections** were the infection **source for 79%** of documented cases **It explain the rapid geographic spread of SARS-CoV2 and indicate containment of this virus will be particularly challenging**
The Lancet 16MAR2020	**Preparedness is essential for malaria-endemic regions during the COVID-19 pandemic**	Wang et al., China https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(20)30561-4/fulltext	Public Health/Epidemio	-> Relevant lessons from the 2014–16 outbreak of Ebola virus disease in west Africa -> Much like Ebola, the early symptoms of COVID-19, including fever, myalgia, and fatigue, might be confused with malaria and lead to challenges in early clinical diagnosis
The Lancet 16MAR2020	**Screening of faecal microbiota transplant donors during the COVID-19 outbreak: suggestions for urgent updates from an international expert panel**	Ianiro et al., Italy https://www.thelancet.com/journals/langas/article/PIIS2468-1253(20)30082-0/fulltext	Public Health/Epidemio	-> Before each donation, physicians should screen for two main items: the presence of typical COVID-19 symptoms -> In endemic countries, the RT-PCR assay should be considered in all donors ->Stool banks should retrospectively check the health status of the donor before using frozen faeces, according to local epidemiology, to avoid further potential spreading of SARS-CoV-2
JAMA 13MAR2020	**Risk Factors Associated With Acute Respiratory Distress Syndrome and Death in Patients With Coronavirus Disease 2019 Pneumonia in Wuhan, China**	Wu et al., China https://jamanetwork.com/journals/jamainternalmedicine/fullarticle/2763184?resultClick=1	Clinic	-> **201 patients** included in the study **Risk factors to develop ARDS**: • Older age, neutrophilia, and organ and coagulation dysfunction (eg, higher LDH and D-dimer) • Associated with ARDS but not death: Comorbidities, lymphocyte counts, CD3 and CD4 T-cell counts, AST, prealbumin, creatinine, glucose, low-density lipoprotein, serum ferritin, PT • Although **high fever** was **positively associated** with development of **ARDS**, it was **negatively related to death** • **Higher CD3 and CD4 T-cell counts** might **protect** patients from developing ARDS • **Persistent and gradual increases in lymphocyte responses** might be required for effective immunity against SARS-CoV-2 infection.
Euro Surv 12MAR2020	**Retrospective analysis of the possibility of predicting the COVID-19 outbreak from Internet searches and social media data, China, 2020**	Li et al., China https://www.eurosurveillance.org/content/10.2807/1560-7917.ES.2020.25.10.2000199	Public Health/Epidemio	**To predict the development of this outbreak as early and as reliably as possible** -> Data obtained from Google Trends, Baidu Index and Sina Weibo Index on searches for the keywords 'coronavirus' and 'pneumonia' correlated with the published NHC data on daily incidence of laboratory-confirmed and suspected cases of COVID-19, with the maximum r > 0.89. -> Peak interest for these keywords in Internet search engines and social media data was **10–14 days earlier than the incidence peak of COVID-19 published by the NHC**. -> The lag correlation showed a maximum correlation at 8–12 days for laboratory-confirmed cases and 6–8 days for suspected cases
The Lancet 12MAR2020	**SARS-CoV-2 RNA more readily detected in induced sputum than in throat swabs of convalescent COVID-19 patients**	Han et al., China https://www.thelancet.com/journals/laninf/article/PIIS1473-3099(20)30174-2/fulltext	Diagnostic	-> 2 cases in **convalescence** -> Both **negative** with throat swab and anal swabs -> **Positive** in **induced sputum** To reduce the risk of disease spread, **viral RNA tests of induced sputum**, **not throat swabs**, should be assessed as a criterion for releasing COVID-19 patients.

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The Lancet 12MAR2020	**Real estimates of mortality following COVID-19 infection**	Baud et al., Switzerland https://www.thelancet.com/action/showPdf?pii=S1473-3099%2820%2930195-X	Public Health/Epidemio	Mortality rate estimates are based on the number of deaths relative to number of confirmed cases of infection -> **not representative of actual death rate.** **Real rates:** - 5·6% for China - 15·2% outside China **Current figures might underestimate the potential threat of COVID-19 in symptomatic patients**
The Lancet 11MAR2020	**Are patients with hypertension and diabetes mellitus at increased risk for COVID-19 infection?**	Fang et al., Switzerland https://www.thelancet.com/journals/lanres/article/PIIS2213-2600(20)30116-8/fulltext	Clinic	Patients with **cardiac diseases**, **hypertension**, or **diabetes**, who are treated with **ACE2-increasing drugs**, may be at **higher risk** for severe COVID-19 infection -> They **should be monitored for ACE2-modulating medications**, such as ACE inhibitors or ARBs. -> No evidence to suggest that **antihypertensive calcium channel blockers increased ACE2 expression** or **activity**: these could be a **suitable alternative treatment** in these patients.
The Lancet 11MAR2020	**Clinical course and risk factors for mortality of adult inpatients with COVID-19 in Wuhan, China: a retrospective cohort study.**	Zhou et al., China https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(20)30566-3/fulltext	Clinic	-> 191 patients: 137 discharged and 54 died 1- Comorbidity: 48%, with hypertension (30%), diabetes (19%), coronary heart disease (8%). 2- Death associated with older age, higher SOFA score, d-dimer greater than 1 µg/mL on admission. 3- Viral shedding: median 20 days in survivors, otherwise until death. Longest viral shedding: 37 days
The Lancet 11MAR2020	**Early dynamics of transmission and control of COVID-19: a mathematical modelling study**	Kucharski et al., UK https://www.thelancet.com/journals/laninf/article/PIIS1473-3099(20)30144-4/fulltext	Public Health/Epidemio	Calculation the **probability that newly introduced cases might generate outbreaks in other areas.** **->** Estimations: The median daily reproduction number (R_t) in Wuhan **declined from 2·35** (95% CI 1·15–4·77) 1 week before travel restrictions were introduced on Jan 23, 2020, **to 1·05** (0·41–2·39) 1 week after. -> In locations with similar transmission potential to Wuhan in early January, **once there are at least four independently introduced cases**, there is a **more than 50% chance the infection will establish within that population**.
JAMA 11MAR2020	**Detection of SARS-CoV-2 in Different Types of Clinical Specimens**	Wang et al., China https://jamanetwork.com/journals/jama/fullarticle/2762997	Diagnostic	**-> 1070 specimens collected from 205 patients** **POSITIVITY** by RT-PCR: Bronchoalveolar lavage fluid (**93%**) Sputum (**72%**) Nasal Swabs (**63%**) Fibrobronchoscope brush biopsy (**46%**) Pharyngeal swabs (**32%**) Feces (**29%**) Blood (**1%**) Urine (**0%**)
Sci Rep 11MAR2020	**A high ATP concentration enhances the cooperative translocation of the SARS coronavirus helicase nsP13 in the unwinding of duplex RNA**	Jang et al., Republic of Korea https://www.nature.com/articles/s41598-020-61432-1	Fundamental Research	To know: RNA Helicase **nsP13 is essential** for the viral RNA replication of the **SARS coronavirus** Here: ->RNA helicase nsP13 would have higher binding affinity to RNA than to DNA, at same ATP concentrations. -> The open state of nsP13 binding with a higher affinity to RNA than to DNA, is a considerably energy-consuming reaction ->Unwinding of duplex RNA by nsP13 is a considerably energy-consuming reaction **SARS coronavirus nsP13 may require more ATPs to promote stable helicase translocation necessary for delicate RNA replication.**

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Emerge Inf Dis 09MAR2020	**Detection of Novel Coronavirus by RT-PCR in Stool Specimen from Asymptomatic Child, China**	Tang et al., China https://wwwnc.cdc.gov/eid/article/26/6/20-0301_article	Public Health/Epidemio	**-> Asymptomatic** child **positive** for COVID-19 by RT-PCR **in stool, 17 days after the last virus exposure** -> Still positive 9 days after that (in stool) -> **Never positive** in **respiratory tracts specimens** -> no data on urine and blood -> The child might have transmitted the virus to numerous persons. **Stool from COVID-19 patients might serve as another vehicle for virus transmission**
Clin Inf Dis 09MAR2020	**In Vitro Antiviral Activity and Projection of Optimized Dosing Design of Hydroxychloroquine for the Treatment of Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2)**	Yao et al., China https://academic.oup.com/cid/advance-article/doi/10.1093/cid/ciaa237/5801998	Therapeutic	-> Vero cells were treated by **Choloroquine and Hydroxychloroquine** before (prophylaxy) and after (anti-viral) infection by SARS-CoV-2. -> **EC50** are calculated ->**Hydroxychloroquine has superior antiviral and prophylactic activity than chloroquine** -> Physiologically-based pharmacokinetic (PBPK) -> to **predict** (in silico) **drug concentrations** in lung, plasma and blood. -PBPK model has acceptable prediction accuracy. -Kinetics were simulated with different scenari of dose regimens -Dose regiment was optimized (**recommendations**).
Science 06MAR2020	**The effect of travel restrictions on the spread of the 2019 novel coronavirus (COVID-19) outbreak.**	Chinazzi et al., USA https://science.sciencemag.org/content/early/2020/03/05/science.aba9757.long	Public Health/Epidemio	-> **Global metapopulation disease transmission model** to project the impact of travel limitations on the national and international spread of the epidemic. ->**Travel quarantine of Wuhan** delayed the overall epidemic progression by **only 3 to 5 days** in Mainland China -> More marked effect at the international scale, where case importations were **reduced by nearly 80%** until mid February -> Sustained 90% travel restrictions to and from Mainland China **only modestly affect** the epidemic trajectory **unless combined with a 50% or higher reduction of transmission in the community** **->** Potential uses for the **definition of optimized containment** schemes and **mitigation policies** that includes **the local and international dimension** of the COVID-19 epidemic
EuroSurveillance 05MAR2020	Evaluation of a quantitative RT-PCR assay for the detection of the emerging coronavirus SARS-CoV-2 using a high throughput system	Pfefferle et al. Germany https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7068162	Diagnostic	Assessment of a molecular assay for the detection of SARS-CoV-2 on a high-throughput platform, the cobas 6800, using the 'open channel' for integration of a laboratory-developed assay. Evaluated samples are swab samples. Good analytical performance in clinical specimens. The fully automated workflow enables high-throughput testing with minimal hands-on time, while offering fast and reliable results. Special notes : by its nature as a screening test targeting only a single viral gene, positive results should always be confirmed with an independent PCR as recommended]. Importance of closely coordinating with local reference centres and public health authorities for determining clinical indications for testing
Cell 04MAR2020	**SARS-CoV-2 Cell Entry Depends on ACE2 and TMPRSS2 and Is Blocked by a Clinically Proven Protease Inhibitor**	Hoffman et al., Germany https://www.cell.com/cell/fulltext/S0092-8674(20)30229-4?_returnURL=https%3A%2F%2Flinkinghub.elsevier.com%2Fretrieve%2Fpii%2FS0092867420302294%3Fshowall%3Dtrue	Therapeutic	-> **Priming of S proteins** by host **cell proteases (TMPRSS2)** is **essential for viral entry** into cells. -> **ACE 2 can be blocked** by a clinically proven **inhibitor** of **TMPRSS2** -> **The study suggests that antibody responses raised against SARS-CoV could at least partially protect against SARS- CoV-2 infection**

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Science 04MAR2020	**Structural basis for the recognition of the SARS-CoV-2 by full-length human ACE2**	Yan et al., China https://science.sciencemag.org/content/early/2020/03/03/science.abb2762/tab-pdf	Fundamental Research	-> **Cryo-EM structures of human ACE2**, in the presence of a neutral amino acid transporter B0AT1, with or without the receptor binding domain (RBD) of the surface spike glycoprotein (S protein) of SARS-CoV-2 -> **ACE2 may be a homodimer even in the absence of B0AT1** -> **A dimeric ACE2 can accommodate two S protein trimers**, each through a monomer of ACE2 -> Structure-based rational **design of binders with enhanced affinities to either ACE2 or the S protein of the coronaviruses** may facilitate development of **decoy ligands** or **neutralizing antibodies** for suppression of viral infection.
J Clin Microbiol 04MAR2020	**Multicenter Evaluation of the QIAstat-Dx Respiratory Panel for the Detection of Viruses and Bacteria in Nasopharyngeal Swab Specimens**	Leber et al., USA https://jcm.asm.org/content/early/2020/02/28/JCM.00155-20.long	Diagnostic	**-> Multiplex** *in vitro* **diagnostic test** for the **qualitative** detection of **20 pathogens** directly from **nasopharyngeal swab specimens.** -> Results available in approximately **69 minutes** **-> Pathogens identified:** adenovirus, coronavirus 229E, coronavirus HKU1, coronavirus NL63, coronavirus OC43, human metapneumovirus A+B, influenza A, influenza A H1, influenza A H3, influenza A H1N1/2009, influenza B, parainfluenza virus 1, parainfluenza virus 2, parainfluenza virus 3, parainfluenza virus 4, rhinovirus/enterovirus, respiratory syncytial virus A+B, Bordetella pertussis, Chlamydophila pneumoniae and Mycoplasma pneumoniae -> Compared to the BioFire FilmArray Respiratory Panel version 1.7: **percent agreement: 99,5%** . **negative percent agreement of ≥ 97.9%** **Robust and accurate assay for rapid, comprehensive testing for respiratory pathogens.**
Sci. China Life Sci. 04MAR2020	**Clinical characteristics of 24 asymptomatic infections with COVID-19 screened among close contacts in Nanjing, China**	https://link.springer.com/article/10.1007%2Fs11427-020-1661-4	Clinic	**->** Laboratory-confirmed positive for the COVID-19 (pharyngeal swab) -> No obvious symptoms **at time of screening** (all of them) -> **20.8%** developed symptoms (fever, cough, fatigue, etc.) -> 50.0% cases showed typical CT images of ground-glass chest ->20.8% presented stripe shadowing in the lungs -> 29.2% cases showed normal CT image and had no symptoms during hospitalization (**these cases were younger**) -> **Epidemiological investigation revealed asymptomatic transmission**
JAMA 04MAR2020	**Air, Surface Environmental, and Personal Protective Equipment Contamination by Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) From a Symptomatic Patient**	Ong et al., Singapore https://jamanetwork.com/journals/jama/fullarticle/2762692?resultClick=1	Public Health/Epidemio	Extensive **environmental contamination** by 1 SARS-CoV-2 patient with mild upper respiratory tract involvement -> Toilet bowl and sink samples were positive -> Swabs taken from the air exhaust outlets tested positive -> Air samples were negative -> Risk of transmission from contaminated footwear is likely low: negative results in the anteroom and clean corridor **Limit of the study:** viral culture was not done to demonstrate viability
Nat Sci Rev 03MAR2020	**On the origin and continuing evolution of SARS-CoV-2**	Tang et al., China https://academic.oup.com/nsr/advance-article/doi/10.1093/nsr/nwaa036/5775463?searchresult=1	Genomic	-> Assessment of the **molecular phylogeny** and the divergence between **SARS-CoV-2** and **related coronaviruses**. ->Population genetic analyses of 103 genomes of SARS-CoV-2 incate that there are **two major types of viruses** (designated **L and S**) currently circulating between humans. -> The **L type is predominant (70%** against 30% for S type). -> **This article suggests that the L type is more aggressive.**

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JAMA 03MAR2020	**Epidemiologic Features and Clinical Course of Patients Infected With SARS-CoV-2 in Singapore**	Young et al., Singapore https://jamanetwork.com/journals/jama/fullarticle/2762688	Clinic	**-> 18patients** diagnosed with SARS-CoV-2 infection in Singapore between January 23 and February 3, 2020 -> Respiratory tract infection with **prolonged viral shedding from the nasopharynx** of **7 days or longer** in 15 patients (83%) -> Supplemental oxygen was required in 6 patients (33%), **5 of whom** were treated with **lopinavir-ritonavir**, with **variable clinical outcomes** following treatment.
Int J Infect Dis 02MAR2020	**Recurrence of positive SARS-CoV-2 RNA in COVID-19: A case report**	Chen et al., China https://www.ijidonline.com/article/S1201-9712(20)30122-3/pdf	Virology	- 46-year-old woman with multiple patchy ground glass opacities in bilateral subpleural areas by CT - **Oropharyngeal swab test was positive by RT-PCR.** -> Received **symptomatic treatment** and **antimicrobial therapy** including oseltamivir, arbidol, Lopinavir/ritonavir and moxifloxacin -> 6 testing from 28 Jan to 17FEB, all negative **but one the 2FEB** Discharged on 9FEB and testing remained negative during follow-up. **SARS-CoV-2 RNA of respiratory tract specimen may be persistent or recurrent positive during the course.**
Jour of Infect 29FEB2020	**Identification of the hyper-variable genomic hotspot for the novel coronavirus SARS-CoV-2**	Wen et al., China https://www.journalofinfection.com/article/S0163-4453(20)30108-0/pdf	Genomic	-> Confirmation of the relationship of SARS-CoV-2 with other beta coronaviruses on the amino acid level. -> Hyper-variable genomic hotspot established in SARS-CoV-2 **population at the nucleotide but not the amino acid level** -> means **no beneficial mutations**. -> **Mutations in nsp1, nsp3, nsp15, and gene S would be associated with the SARS-CoV-2 epidemic (compared with RaTG13) / required for human adaptation?**
J Med Virol 28FEV2020	**Development of Epitope-Based Peptide Vaccine Against Novel Coronavirus 2019 (SARS-COV-2): Immunoinformatics Approach**	Bhattacharya et al., India https://onlinelibrary.wiley.com/doi/abs/10.1002/jmv.25736	Vaccine	1-> Characterization of the **spike glycoprotein** to obtain immunogenic epitopes 2-> Immunoinformatic analysis of 13 MHC I and 3 MHC II epitopes which **have antigenic properties** 3-> These identified epitopes are candidate to formulate a **multi-epitopic peptide vaccine.** **Need for *in vitro* and *in vivo* validations**
The NEJM 28FEB2020	**Clinical Characteristics of Coronavirus Disease 2019 in China**	Ni et al., China https://www.nejm.org/doi/pdf/10.1056/NEJMoa2002032?articleTools=true&downloadfile=showPdf&articleTools=true&doi=10.1056/NEJMoa2002032	Clinic	Median age : **47 years** / Female: 41.9% **Primary composite end point** (admission in ICU, use of mechanical ventilation and death) in **6.1%,** with **5.0% in ICU**, **2.3% with invasive mechanical ventilation**, and **1.4% who died**. History of direct contact with **wildlife**: **1.9%** Among nonresidents of Wuhan, **72.3% had contact with residents of Wuhan**, including 31.3% who had visited the city. Most common symptoms: fever (43.8% on admission and 88.7% during hospitalization) and cough (67.8%). Diarrhea was uncommon (3.8%). Median **incubation period**: **4 days** (interquartile range, 2 to 7). **CT:** ground-glass opacity was the most common radiologic: 56.4%. **No radiographic or CT abnormality:** 17.9% with nonsevere disease and 2.9% with severe disease. **Lymphocytopenia: 83.2%**

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EuroSurv 27FEB2020	**Early transmission patterns of coronavirus disease 2019 (COVID-19) in travellers from Wuhan to Thailand, January 2020**	Okada et al., Thailand https://www.eurosurveillance.org/content/10.2807/1560-7917.ES.2020.25.8.2000097	Public Health/Epidemio	-> 2 woman arriving in Thailand at different times (8 and 13 January) -> The **two viral genomes are identical** to four sequences from Wuhan, while no direct link to the Huanan Seafood Market. -> **Identical genomes of up to 30 kb are rare and a strong sign of recent transmission linkage** -> Data suggest that **transmission within Wuhan beyond the Huanan Seafood Market is likely to have occurred in the first week of January or earlier.**
J Clin Med 27FEB2020	**Epidemiological Identification of A Novel Pathogen in Real Time: Analysis of the Atypical Pneumonia Outbreak in Wuhan, China, 2019—2020**	Jung et al., Japan https://www.mdpi.com/2077-0383/9/3/637	Public Health/Epidemio	->**Non-virological descriptive characteristics** could have determined that the outbreak is caused by a novel pathogen **in advance of virological testing**. -> Characteristics of the outbreak **were collected in real time and compared with characteristics of eleven pathogens** that have previously caused cases of atypical pneumonia. -> The **probability that a new virus was driving** the outbreak was assessed as **over 29%** on 31 December 2019, **one week before virus identification.**
The Lancet 27FEB2020	**Secondary attack rate and superspreading events for SARS-CoV-2**	Liu et al., UK https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(20)30462-1/fulltext	Public Health/Epidemio	**The Ro value** only captures the average dynamics of transmission. **The secondary attack rate (SAR)** is the probability that an infection occurs among susceptible people **within a specific group**. **SAR** among **close contacts would be of 35%** (95% CI 27–44). -> An infection with a high household SAR but a modest R0 suggests transmission is driven by a relatively small number of high-risk contacts. -> A large household SAR further suggests that between-household transmission risk is lower; otherwise the observed R0 would be larger. **More data are needed.**
The Lancet 27FEB2020	**COVID-19: combining antiviral and anti-inflammatory treatments** **COMMENT**	Stebbing et al., UK https://www.thelancet.com/journals/laninf/article/PIIS1473-3099(20)30132-8/fulltext	Therapeutic	-> COVID-19 characterised by an overexuberant inflammatory response SARS -> viral load is not correlated with the worsening of symptoms -> Inhibition of **numb- associated kinase (NAK**) family would reduce viral infection in vitro (inhibit clathrin-mediated endocytosis and thereby inhibit viral infection of cells) -> **JAK–STAT** signalling inhibitors, could be effective against the consequences of the elevated levels of cytokines (including interferon) typically observed in people with COVID-19 -> Baricitinib is a NAK inhibitor (**anti-viral**) -> Baricitinib, fedratinib, and ruxolitinib are JAK inhibitors (**anti-inflammatory**) **-> Baricitinib is the best of the group**
The Lancet 27FEB2020	**Positive RT-PCR Test Results in Patients Recovered From COVID-19**	Lan et al, China https://jamanetwork.com/journals/jama/fullarticle/2762452	Public Health/Epidemio	**Little attention** has been paid to the **follow-up of recovered** patients so far. **4 patients** with COVID-19 who met criteria for hospital discharge or discontinuation of quarantine in China (absence of clinical symptoms and radiological abnormalities and 2 negative RT-PCR test results) had **positive RT-PCR test results 5 to 13 days later**, while they were still **asymptomatic.**

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The Lancet 27FEB2020	**Convalescent plasma as a potential therapy for COVID-19** **COMMENT**	Chen et al., China https://www.thelancet.com/pdfs/journals/laninf/PIIS1473-3099(20)30141-9.pdf	Therapeutic	-> In 2014, the use of convalescent plasma collected from patients who had recovered from **Ebola virus disease** was **recommended by WHO** as an empirical treatment during outbreaks. -> A protocol for the use of convalescent plasma in the treatment of MERS coronavirus was established in 2015. -> **H1N1:** significant reduction of relative risk of mortality / no **adverse event**. -> and other studies **Antibodies from convalescent plasma might suppress viraemia**
Emerg Microb Infects 26FEB2020	**Detectable 2019-nCoV viral RNA in blood is a strong indicator for the further clinical severity**	Chen et al., China https://www.tandfonline.com/doi/full/10.1080/22221751.2020.1732837	Clinic	-> All patients (n=6 / 57) with **detectable viral RNA in the blood** progressed to severe symptom stage, indicating a strong **correlation of serum viral RNA with the disease severity** (p-value = 0.0001). -> 8 of the 11 patients with **annal swab virus-positive** was in **severe clinical stage.** **->** Concentration of viral RNA in the **anal swab was higher than in the blood**: **virus might replicate in the digestive tract**
The Lancet, 26FEB2020	**The psychological impact of quarantine and how to reduce it: rapid review of the evidence**	Brooks et al., UK https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(20)30460-8/fulltext	HSS/Politic	-> Information is key; people who are quarantined need to understand the situation -> The quarantine period should be short and the duration **should not be changed** unless in extreme circumstances ->Most of the adverse effects come from the imposition of a restriction of liberty; voluntary quarantine is associated with less distress and fewer long-term complications ->**Public health officials should emphasise the altruistic choice of self-isolating**
Viruses 25FEB2020	**Preliminary Identification of Potential Vaccine Targets for the COVID-19 Coronavirus (SARS-CoV-2) Based on SARS-CoV Immunological Studies**	Ahmed et al., China https://www.mdpi.com/1999-4915/12/3/254	Vaccine	**-> High genetic similarity** between **SARS-CoV-2 and SARS-Co**. **->** Identification of a set of **B cell and T cell epitopes** derived from the spike (S) and nucleocapsid (N) proteins that **map identically** to SARS-CoV-2 proteins. -> **No mutation** has been observed in these epitopes (as of 21 February 2020). **-> Immune targeting of these epitopes** may offer protection against this novel virus
EuroSurv 25FEV2020	**Differential diagnosis of illness in patients under investigation for the novel coronavirus (SARS-CoV-2), Italy, February 2020.**	Bordi et al., Italy https://www.eurosurveillance.org/content/10.2807/1560-7917.ES.2020.25.8.2000170	Public Health/Epidemio	-> **Similarity of symptoms** shared with more common respiratory infections. -> **Broad screening** requested. -> **Influenza virus** infections: **28.5% of all suspected cases** of SARS-CoV-2 infection. -> **Alternative diagnoses may clarify an individual patient's risk and may allow adjusting public health containment measures.**
The Lancet 25FEB2020	**Potential association between COVID-19 mortality and health-care resource availability**	Ji et al., China https://www.thelancet.com/journals/langlo/article/PIIS2214-109X(20)30068-1/fulltext	Public Health/Epidemio	Plotting mortality against the incidence of COVID-19 (cumulative number of confirmed cases since the start of the outbreak, per 10 000 population) showed a significant positive correlation, suggesting that **mortality is correlated with health-care burden**
The Lancet 24FEB2020	**COVID-19 control in China during mass population movements at New Year**	Chen et al., China https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(20)30421-9/fulltext	Public Health/Epidemio	Several lessons that can be drawn from China's extension of the Lunar New Year holiday: 1-> Countries should consider **periods of recommended or mandatory closure of non-essential workplaces and public institutions**— to slow the rate of transmission. 2-> To tailor the design of these actions according to specific epidemic characteristics (incubation period and transmission routes). 3-> This is to prevent people with asymptomatic infections from spreading the disease. As such, **governments should use the closure period for information and education campaigns**, **community screening**, **active contact tracing**, and i**solation** and **quarantine** to maximise impact.

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J Clin Med 24FEB2020	**Assessing the Impact of Reduced Travel on Exportation Dynamics of Novel Coronavirus Infection (COVID-19)**	Anzai et al., Japan https://www.mdpi.com/2077-0383/9/2/601	Public Health/Epidemio	**->** From **28 January to 7 February 2020**, around 226 exported cases were prevented (=70.4% reduction in incidence) -> Reduced probability of a major epidemic in Japan: from 7% to 20% (=median time delay: of 2 days) **->** Depending on the scenario, the estimated delay may be less than one day. As the **delay is small**, the decision to control travel volume through restrictions on freedom of movement should be **balanced** between the **resulting estimated epidemiological impact** and **predicted economic fallout**.
Cell Discov 24FEB2020	**Comparative genetic analysis of the novel coronavirus (2019-nCoV/SARS-CoV-2) receptor ACE2 in different populations**	Cao et al., China https://jcm.asm.org/content/early/2020/02/28/JCM.00155-20.long	Fondamental Research	-> Previous studies demonstrated the **positive correlation of ACE2 expression and the infection of SARS-CoV in vitro** -> **Here:** Systematic analysis of coding-region variants in *ACE2* and the eQTL variants (may affect the expression of ACE2) among different populations (GTEx database)/ -> The **East Asian** populations have **much higher AFs** in the **eQTL variants** associated **with higher ACE2 expression** in tissues which may suggest **different susceptibility or response** to 2019-nCoV/SARS-CoV-2 **from different populations** under the similar conditions. -> No direct evidence supporting the existence **of coronavirus S-protein binding-resistant *ACE2* mutants** in different populations.
The Lancet 24FEB2020	**Clinical course and outcomes of critically ill patients with SARS-CoV-2 pneumonia in Wuhan, China: a single-centered, retrospective, observational study**	Xiaobo Yang et al., China https://www.thelancet.com/journals/lanres/article/PIIS2213-2600(20)30079-5/fulltext	Clinic	**- Mortality is high**. The survival term of the non-survivors is likely to be within 1–2 weeks after ICU admission. - Older patients (>65 years) with comorbidities and ARDS are at increased risk of death.
The Lancet 24FEB2020	**Viral load of SARS-CoV-2 in clinical samples**	Pan et al., China https://www.thelancet.com/journals/laninf/article/PIIS1473-3099(20)30113-4/fulltext	Virology	- The **viral loads** in throat swab and sputum samples peaked at around **5–6 days after symptom onset**, ranging from around 104 to 107 copies per mL during this time - **Sputum samples** generally showed higher viral loads than throat swab samples.
The Lancet 24FEB2020	**COVID-19 pneumonia: what has CT taught us?**	Lee et al., China https://www.thelancet.com/journals/laninf/article/PIIS1473-3099(20)30134-1/fulltext	Diagnostic	- The predominant CT findings included **ground-glass opacification, consolidation, bilateral involvement, and peripheral and diffuse distribution**. - More research is needed to correlate of CT findings with clinical severity and progression, the predictive value of baseline CT or temporal changes for disease outcome, and the sequelae of acute lung injury induced by COVID-19.
J Med Virol 21FEB2020	**COVID-2019: the role of the nsp2 and nsp3 in its pathogenesis.**	Angeletti et al., Rome, Italy https://onlinelibrary.wiley.com/doi/abs/10.1002/jmv.25719	Fondamental Research	The Open Reading Frame 1ab (ORF1ab) of COVID-2019 has been analyzed to evidence the **presence of mutation caused by selective pressure** on the virus. Which are the probably most common sites undergoing to an aminoacidic change ? -> Insight of some important proteins of the COVID-2019 that are involved in the mechanism of viral entry and viral replication Results: Both nsp2 and nsp3 are under selective pressure. **nsp2**-> could explain why this virus is more contagious than SARS **nsp 3**-> could suggest a potential mechanism differentiating COVID-2019 from SARS

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Radiology 20 FEB 2020	**Chest CT Findings in Coronavirus Disease-19 (COVID-19): Relationship to Duration of Infection.**	Bernheim et al., https://pubs.rsna.org/doi/10.1148/radiol.2020200463	Diagnostic	Frequency of CT findings is related to infection time course.
The Lancet, 20 FEB 2020	**Preparedness and vulnerability of African countries against importations of COVID-19: a modelling study.**	Gilbert et al., Vittoria's team https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(20)30411-6/fulltext	Public Health/Epidemio	- Highest importation risk: Egypt, Algeria, and South Africa -> moderate to high capacity to respond to outbreaks - Moderate risk: Nigeria, Ethiopia, Sudan, Angola, Tanzania, Ghana, and Kenya -> variable capacity and high vulnerability
The Lancet 19FEB2020	**Asymptomatic cases in a family cluster with SARS-CoV-2 infection**	Pan et al., China https://www.thelancet.com/journals/laninf/article/PIIS1473-3099(20)30114-6/fulltext	Public Health/Epidemio	- In this family cluster, although **all individuals tested positive** for SARS-CoV-2 infection on qRT-PCR, only patient 1 showed clinical symptoms, decreased lymphocyte count, and abnormal chest CT images. - However, **any of the three individuals could have been the first one to become infected** and thus transmitted the virus to the other two family members.
The Lancet 19FEB2020	**Enteric involvement of coronaviruses: is faecal–oral transmission of SARS-CoV-2 possible?**	Yeo et al., Singapore https://www.thelancet.com/journals/langas/article/PIIS2468-1253(20)30048-0/fulltext	Virology	- Considering the evidence of faecal excretion for both SARS-CoV and MERS-CoV, and their ability to remain viable in conditions that could facilitate faecal–oral transmission, it is possible that SARS-CoV-2 could also be transmitted via this route. ->When **SARS-CoV** was seeded into sewage water obtained from the hospitals in a separate experiment, the virus was found to remain infectious for 14 days at 4°C, but for only 2 days at 20°C. SARS-CoV can survive for up to 2 weeks after drying, remaining viable for up to 5 days at temperatures of 22–25°C and 40–50% relative humidity, with a gradual decline in virus infectivity thereafter. Viability of the SARS-CoV virus decreased after 24 h at 38°C and 80–90% relative humidity. -> **MERS-CoV** is viable in low temperature, low humidity conditions. The virus was viable on different surfaces for 48 h at 20°C and 40% relative humidity, although viability decreased to 8 h at 30°C and 80% relative humidity conditions.
THE NEJM, 19FEB2020	**SARS-CoV-2 Viral Load in Upper Respiratory Specimens of Infected Patients**	Zou et al, Chinq https://www.nejm.org/doi/full/10.1056/NEJMc2001737	Virology	**- The higher viral loads were** detected **soon after symptom onset**. - **Higher** viral loads detected **in the nose** than in the throat. - Our analysis **suggests** that the viral nucleic acid shedding pattern of patients infected with SARS-CoV-2 resembles that of patients with influenza and appears different from that seen in patients infected with SARS-CoV. - The viral load that was detected in the **asymptomatic patient** was **similar** to that in the **symptomatic patients**, which **suggests** the **transmission potential of asymptomatic or minimally symptomatic patients.**
Biosci Trends, 19FEB2020	**Breakthrough: Chloroquine phosphate has shown apparent efficacy in treatment of COVID-19 associated pneumonia in clinical studies.**	Gao et al., https://www.ncbi.nlm.nih.gov/pubmed/32074550	Therapeutic	**Chloroquine phosphate,** an old drug for treatment of malaria, is shown to have apparent efficacy and acceptable safety against COVID-19 associated pneumonia in multicenter clinical trials conducted in China. (**DATA NOT SHOWN !**). The drug is recommended to be included in the next version of the Guidelines for the Prevention, Diagnosis, and Treatment of Pneumonia Caused by COVID-19 issued by the National Health Commission of the People's Republic of China for treatment of COVID-19 infection in larger populations in the future.

REACTing research & action targeting emerging infectious diseases

Literature review of accepted relevant papers

09-04-2020

Journal and date	Title	Authors and link	Field of expertise	Key facts
J Infect Dis. 18FEB2020	**A familial cluster of infection associated with the 2019 novel coronavirus indicating potential person-to-person transmission during the incubation period.**	Yu et al., China https://academic.oup.com/jid/advance-article/doi/10.1093/infdis/jiaa077/5739751	Public Health/Epidemio	Familial cluster of four patients in Shanghai. One was 88 years old man with moving difficulties and was only exposed to his asymptomatic family members who **developed symptoms later**. The epidemiological evidence has shown a potential transmission of the 2019-nCoV during the incubation period.
The Lancet 18FEB2020	**Tracking online heroisation and blame in epidemics** **COMMENT**	Atlani Duault et al., France https://www.thelancet.com/action/showPdf?pii=S2468-2667%2820%2930033-5	HSS/Politic	-> Gathering online **data on local perceptions** has the potential to help public authorities mount more robust responses and better targeted health communications -> It is important to track the evolving dynamics of blame in **real time**, both **to correct inaccurate** information and **to respond to online scapegoating**. -> **Trust is a crucial** support to public health systems. **Public health authorities need to be aware of « complex geographies of hope and blame » while planning responses to the epidemic.**
Biochem Biophy Res Comm 17 FEB 2020	**Structure analysis of the receptor binding of 2019-nCoV**	Chen et al., China and USA https://www.sciencedirect.com/science/article/pii/S0006291X20303399	Fondamental Research	Structural analysis of the receptor binding domain (RBD) -> 72% identity with SARS CoV / Higher affinity with ACE 2. ACE2 is widely expressed with conserved primary structures throughout the animal kingdom (**possible hosts ?)** Since ACE2 is predominantly expressed in intestines, testis, and kidney, **fecal-oral** and **other routes** of transmission are also **possible**. Finally, antibodies and small molecular inhibitors that can block the interaction of ACE2 with RBD should be developed to combat the virus.
J Clin Med 17 FEB 2020	**Incubation Period and Other Epidemiological Characteristics of 2019 Novel Coronavirus Infections with Right Truncation: A Statistical Analysis of Publicly Available Case Data.**	Linton et al., Japan https://www.mdpi.com/2077-0383/9/2/538	Public Health/Epidemio	Incubation period falls within the range of 2–14 days with 95% confidence and has a mean of around 5 days. The mean time from illness onset to hospital admission (for treatment and/or isolation) was estimated at 3–4 days without truncation and at 5–9 days.
PNAS, 13FEB2020	**Prophylactic and therapeutic remdesivir (GS-5734) treatment in the rhesus macaque model of MERS-CoV infection**	De Wit et al., USA https://www.pnas.org/content/early/2020/02/12/1922083117	Therapeutic	- 24 h prior to inoculation -> **completely prevented MERS-CoV-induced clinical disease**, strongly inhibited MERS-CoV replication in respiratory tissues, and prevented the formation of lung lesions. - 12 h postinoculation -> **clear clinical benefit**, with a reduction in clinical signs, reduced virus replication in the lungs, and decreased presence and severity of lung lesions. **- Remdesivir may be considered for SARS-CoV -2**
The Lancet 12 FEB 2020	**What are the risks of COVID-19 infection in pregnant women?**	Qiao et al., China https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(20)30365-2/fulltext	Clinic	The clinical characteristics reported in pregnant women with confirmed COVID-19 infection are **similar to those reported for non-pregnant** adults with confirmed COVID-19 infection in the general population and are indicative of a relatively optimistic clinical course and outcomes for COVID-19 infection compared with SARS-CoV-1 infection.
The Lancet 12FEB2020	**Clinical characteristics and intrauterine vertical transmission potential of COVID-19 infection in nine pregnant women: a retrospective review of medical records**	Chen et al., China https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(20)30360-3/fulltext	Clinic	Evidence of intrauterine vertical transmission was assessed by testing for the presence of SARS-CoV-2 in amniotic fluid, cord blood, and neonatal throat swab samples. **All samples tested negative** **None of the 9 patients developed severe COVID-19 pneumonia or died.**
Cell Res 4FEB2020	**Remdesivir and chloroquine effectively inhibit the recently emerged novel coronavirus (2019-nCoV) in vitro**	Wang et al., China https://www.nature.com/articles/s41422-020-0282-0	Therapeutic	Remdesivir and chloroquine **are highly effective** in the control of 2019-nCoV infection **in vitro**. These compounds have been used in human patients with a safety track record and shown to be effective against various ailments. They should be assessed in human patients suffering from the **novel coronavirus disease**.

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Euro Surveill 6FEB2020	**Effectiveness of airport screening at detecting travellers infected with novel coronavirus (2019-nCoV).**	Quilty et al., UK https://www.eurosurveillance.org/content/10.2807/1560-7917.ES.2020.25.5.2000080	Public Health/Epidemio	Estimation: **46%** of infected travellers would **not be detected**, depending on incubation period, sensitivity of exit and entry screening, and proportion of asymptomatic cases. -> Airport screening is unlikely to detect a sufficient proportion of 2019-nCoV infected travellers to avoid entry of infected travellers.
The Lancet 03FEB2020	**Baricitinib as potential treatment for 2019-nCoV acute respiratory disease**	Richardson et al., UK https://www.thelancet.com/pdfs/journals/lancet/PIIS0140-6736(20)30304-4.pdf	Therapeutic	The receptor that 2019-nCoV uses to infect lung cells might be ACE2, a cell-surface protein on cells in the kidney, blood vessels, heart, and, importantly, lung AT2 alveolar epithelial cells. One of the known regulators of endocytosis is the AP2-associated protein kinase 1 (AAK1). The plasma concentration of Baricitinib on therapeutic dosing (either as 2 mg or 4 mg once daily) is sufficient to inhibit AAK1, we suggest it could be trialled.
Emerge Microbes Infect 03FEB2020	**Potent binding of 2019 novel coronavirus spike protein by a SARS coronavirus-specific human monoclonal antibody.**	Tian et al., China https://www.biorxiv.org/content/10.1101/2020.01.28.923011v1	Fondamental Research	A SARS-CoV-specific human monoclonal antibody, CR3022, could bind potently with 2019-nCoV RBD. ->Potential to be developed as candidate therapeutics ? Some of the most potent SARS-CoV-specific neutralizing antibodies that target the ACE2 binding site of SARS-CoV failed to bind 2019-nCoV spike protein. -> It is still **necessary to develop novel monoclonal antibodies** that could bind specifically to 2019-nCoV RBD.