Websites:
http://www.sciencepub.net/academia
http://www.sciencepub.net

Emails:
aarena@gmail.com
editor@sciencepub.net

Academia Arena

MARSLAND PRESS
Multidisciplinary Academic Journal Publisher

# Coronavirus disease 2019 (COVID-19) Research Literatures

Mark Herbert

World Development Institute
39-06 Main Street, Flushing, Queens, New York 11354, USA, ma708090@gmail.com

**Abstract**: Coronavirus disease 2019 (COVID-19) is an infectious disease caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). The virus is mainly spread during close contact and via respiratory droplets that are produced when a person talks, coughs, or sneezes. Respiratory droplets may be produced during breathing, however, current research indicates that the virus is not considered airborne. People may also contract COVID-19 by touching a contaminated surface (Fomite) and then inadvertently transfer the pathogen to a mucous membrane (such as the eyes, nose, or mouth). It is most contagious when people are symptomatic, although spread may be possible before symptoms appear. The virus can live on surfaces up to 72 hours. Time from exposure to onset of symptoms is generally between two and fourteen days, with an average of five days. The standard method of diagnosis is by reverse transcription polymerase chain reaction (rRT-PCR) from a nasopharyngeal swab. The infection can also be diagnosed from a combination of symptoms, risk factors and a chest CT scan showing features of pneumonia. This article introduces recent research reports as references in the related studies.
[Mark Herbert. **Coronavirus disease 2019 (COVID-19) Research Literatures.** *Academ Arena* 2020;12(3):30-64]. ISSN 1553-992X (print); ISSN 2158-771X (online). http://www.sciencepub.net/academia. 4. doi:10.7537/marsaaj120320.04.

**Key words**: Coronavirus disease 2019 (COVID-19); life; research; literature

## Introduction

Coronavirus disease 2019 (COVID-19) is an infectious disease caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). The virus is mainly spread during close contact and via respiratory droplets that are produced when a person talks, coughs, or sneezes. Respiratory droplets may be produced during breathing, however, current research indicates that the virus is not considered airborne. People may also contract COVID-19 by touching a contaminated surface (Fomite) and then inadvertently transfer the pathogen to a mucous membrane (such as the eyes, nose, or mouth). It is most contagious when people are symptomatic, although spread may be possible before symptoms appear. The virus can live on surfaces up to 72 hours. Time from exposure to onset of symptoms is generally between two and fourteen days, with an average of five days. The standard method of diagnosis is by reverse transcription polymerase chain reaction (rRT-PCR) from a nasopharyngeal swab. The infection can also be diagnosed from a combination of symptoms, risk factors and a chest CT scan showing features of pneumonia. This article introduces recent research reports as references in the related studies.

The following introduces recent reports as references in the related studies.

Ahmed, S. F., et al. (2020). "Preliminary Identification of Potential Vaccine Targets for the COVID-19 Coronavirus (SARS-CoV-2) Based on SARS-CoV Immunological Studies." Viruses **12**(3).

The beginning of 2020 has seen the emergence of COVID-19 outbreak caused by a novel coronavirus, Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2). There is an imminent need to better understand this new virus and to develop ways to control its spread. In this study, we sought to gain insights for vaccine design against SARS-CoV-2 by considering the high genetic similarity between SARS-CoV-2 and SARS-CoV, which caused the outbreak in 2003, and leveraging existing immunological studies of SARS-CoV. By screening the experimentally-determined SARS-CoV-derived B cell and T cell epitopes in the immunogenic structural proteins of SARS-CoV, we identified 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. As no mutation has been observed in these identified epitopes among the 120 available SARS-CoV-2 sequences (as of 21 February 2020), immune targeting of these epitopes may potentially offer protection against this novel virus. For the T cell epitopes, we performed a population coverage analysis of the associated MHC alleles and proposed a set of epitopes that is estimated to provide broad coverage

globally, as well as in China. Our findings provide a screened set of epitopes that can help guide experimental efforts towards the development of vaccines against SARS-CoV-2.

Ai, T., et al. (2020). "Correlation of Chest CT and RT-PCR Testing in Coronavirus Disease 2019 (COVID-19) in China: A Report of 1014 Cases." Radiology: 200642.

Background Chest CT is used for diagnosis of 2019 novel coronavirus disease (COVID-19), as an important complement to the reverse-transcription polymerase chain reaction (RT-PCR) tests. Purpose To investigate the diagnostic value and consistency of chest CT as compared with comparison to RT-PCR assay in COVID-19. Methods From January 6 to February 6, 2020, 1014 patients in Wuhan, China who underwent both chest CT and RT-PCR tests were included. With RT-PCR as reference standard, the performance of chest CT in diagnosing COVID-19 was assessed. Besides, for patients with multiple RT-PCR assays, the dynamic conversion of RT-PCR results (negative to positive, positive to negative, respectively) was analyzed as compared with serial chest CT scans for those with time-interval of 4 days or more. Results Of 1014 patients, 59% (601/1014) had positive RT-PCR results, and 88% (888/1014) had positive chest CT scans. The sensitivity of chest CT in suggesting COVID-19 was 97% (95%CI, 95-98%, 580/601 patients) based on positive RT-PCR results. In patients with negative RT-PCR results, 75% (308/413) had positive chest CT findings; of 308, 48% were considered as highly likely cases, with 33% as probable cases. By analysis of serial RT-PCR assays and CT scans, the mean interval time between the initial negative to positive RT-PCR results was 5.1 +/- 1.5 days; the initial positive to subsequent negative RT-PCR result was 6.9 +/- 2.3 days). 60% to 93% of cases had initial positive CT consistent with COVID-19 prior (or parallel) to the initial positive RT-PCR results. 42% (24/57) cases showed improvement in follow-up chest CT scans before the RT-PCR results turning negative. Conclusion Chest CT has a high sensitivity for diagnosis of COVID-19. Chest CT may be considered as a primary tool for the current COVID-19 detection in epidemic areas.

Allam, Z. and D. S. Jones (2020). "On the Coronavirus (COVID-19) Outbreak and the Smart City Network: Universal Data Sharing Standards Coupled with Artificial Intelligence (AI) to Benefit Urban Health Monitoring and Management." Healthcare (Basel) **8**(1).

As the Coronavirus (COVID-19) expands its impact from China, expanding its catchment into surrounding regions and other countries, increased national and international measures are being taken to contain the outbreak. The placing of entire cities in 'lockdown' directly affects urban economies on a multi-lateral level, including from social and economic standpoints. This is being emphasised as the outbreak gains ground in other countries, leading towards a global health emergency, and as global collaboration is sought in numerous quarters. However, while effective protocols in regard to the sharing of health data is emphasised, urban data, on the other hand, specifically relating to urban health and safe city concepts, is still viewed from a nationalist perspective as solely benefiting a nation's economy and its economic and political influence. This perspective paper, written one month after detection and during the outbreak, surveys the virus outbreak from an urban standpoint and advances how smart city networks should work towards enhancing standardization protocols for increased data sharing in the event of outbreaks or disasters, leading to better global understanding and management of the same.

Al-Qaness, M. A. A., et al. (2020). "Optimization Method for Forecasting Confirmed Cases of COVID-19 in China." J Clin Med **9**(3).

In December 2019, a novel coronavirus, called COVID-19, was discovered in Wuhan, China, and has spread to different cities in China as well as to 24 other countries. The number of confirmed cases is increasing daily and reached 34,598 on 8 February 2020. In the current study, we present a new forecasting model to estimate and forecast the number of confirmed cases of COVID-19 in the upcoming ten days based on the previously confirmed cases recorded in China. The proposed model is an improved adaptive neuro-fuzzy inference system (ANFIS) using an enhanced flower pollination algorithm (FPA) by using the salp swarm algorithm (SSA). In general, SSA is employed to improve FPA to avoid its drawbacks (i.e., getting trapped at the local optima). The main idea of the proposed model, called FPASSA-ANFIS, is to improve the performance of ANFIS by determining the parameters of ANFIS using FPASSA. The FPASSA-ANFIS model is evaluated using the World Health Organization (WHO) official data of the outbreak of the COVID-19 to forecast the confirmed cases of the upcoming ten days. More so, the FPASSA-ANFIS model is compared to several existing models, and it showed better performance in terms of Mean Absolute Percentage Error (MAPE), Root Mean Squared Relative Error (RMSRE), Root Mean Squared Relative Error (RMSRE), coefficient of determination ( R 2 ), and computing time. Furthermore, we tested the proposed model using two different datasets of weekly influenza confirmed cases

in two countries, namely the USA and China. The outcomes also showed good performances.

Bernard Stoecklin, S., et al. (2020). "First cases of coronavirus disease 2019 (COVID-19) in France: surveillance, investigations and control measures, January 2020." Euro Surveill **25**(6).

A novel coronavirus (severe acute respiratory syndrome coronavirus 2, SARS-CoV-2) causing a cluster of respiratory infections (coronavirus disease 2019, COVID-19) in Wuhan, China, was identified on 7 January 2020. The epidemic quickly disseminated from Wuhan and as at 12 February 2020, 45,179 cases have been confirmed in 25 countries, including 1,116 deaths. Strengthened surveillance was implemented in France on 10 January 2020 in order to identify imported cases early and prevent secondary transmission. Three categories of risk exposure and follow-up procedure were defined for contacts. Three cases of COVID-19 were confirmed on 24 January, the first cases in Europe. Contact tracing was immediately initiated. Five contacts were evaluated as at low risk of exposure and 18 at moderate/high risk. As at 12 February 2020, two cases have been discharged and the third one remains symptomatic with a persistent cough, and no secondary transmission has been identified. Effective collaboration between all parties involved in the surveillance and response to emerging threats is required to detect imported cases early and to implement adequate control measures.

Bernheim, A., et al. (2020). "Chest CT Findings in Coronavirus Disease-19 (COVID-19): Relationship to Duration of Infection." Radiology: 200463.

In this retrospective study, chest CTs of 121 symptomatic patients infected with coronavirus disease-19 (COVID-19) from four centers in China from January 18, 2020 to February 2, 2020 were reviewed for common CT findings in relationship to the time between symptom onset and the initial CT scan (i.e. early, 0-2 days (36 patients), intermediate 3-5 days (33 patients), late 6-12 days (25 patients)). The hallmarks of COVID-19 infection on imaging were bilateral and peripheral ground-glass and consolidative pulmonary opacities. Notably, 20/36 (56%) of early patients had a normal CT. With a longer time after the onset of symptoms, CT findings were more frequent, including consolidation, bilateral and peripheral disease, greater total lung involvement, linear opacities, "crazy-paving" pattern and the "reverse halo" sign. Bilateral lung involvement was observed in 10/36 early patients (28%), 25/33 intermediate patients (76%), and 22/25 late patients (88%).

Calvo, C., et al. (2020). "[Recommendations on the clinical management of the COVID-19 infection by the <<new coronavirus>> SARS-CoV2. Spanish Paediatric Association working group]." An Pediatr (Barc).

On 31 December 2019, the Wuhan Municipal Committee of Health and Healthcare (Hubei Province, China) reported that there were 27 cases of pneumonia of unknown origin with symptoms starting on the 8 December. There were 7 serious cases with common exposure in market with shellfish, fish, and live animals, in the city of Wuhan. On 7 January 2020, the Chinese authorities identified that the agent causing the outbreak was a new type of virus of the Coronaviridae family, temporarily called <<new coronavirus>>, 2019-nCoV. On January 30th, 2020, the World Health Organisation (WHO) declared the outbreak an International Emergency. On 11 February 2020 the WHO assigned it the name of SARS-CoV2 and COVID-19 (SARS-CoV2 and COVID-19). The Ministry of Health summoned the Specialties Societies to prepare a clinical protocol for the management of COVID-19. The Spanish Paediatric Association appointed a Working Group of the Societies of Paediatric Infectious Diseases and Paediatric Intensive Care to prepare the present recommendations with the evidence available at the time of preparing them.

Cao, B., et al. (2020). "A Trial of Lopinavir-Ritonavir in Adults Hospitalized with Severe Covid-19." N Engl J Med.

BACKGROUND: No therapeutics have yet been proven effective for the treatment of severe illness caused by SARS-CoV-2. METHODS: We conducted a randomized, controlled, open-label trial involving hospitalized adult patients with confirmed SARS-CoV-2 infection, which causes the respiratory illness Covid-19, and an oxygen saturation (Sao2) of 94% or less while they were breathing ambient air or a ratio of the partial pressure of oxygen (Pao2) to the fraction of inspired oxygen (Fio2) of less than 300 mm Hg. Patients were randomly assigned in a 1:1 ratio to receive either lopinavir-ritonavir (400 mg and 100 mg, respectively) twice a day for 14 days, in addition to standard care, or standard care alone. The primary end point was the time to clinical improvement, defined as the time from randomization to either an improvement of two points on a seven-category ordinal scale or discharge from the hospital, whichever came first. RESULTS: A total of 199 patients with laboratory-confirmed SARS-CoV-2 infection underwent randomization; 99 were assigned to the lopinavir-ritonavir group, and 100 to the standard-care group. Treatment with lopinavir-ritonavir was not associated with a difference from standard care in the time to clinical improvement (hazard ratio for clinical improvement, 1.24; 95% confidence interval [CI], 0.90 to 1.72). Mortality at 28 days was similar in the

lopinavir-ritonavir group and the standard-care group (19.2% vs. 25.0%; difference, -5.8 percentage points; 95% CI, -17.3 to 5.7). The percentages of patients with detectable viral RNA at various time points were similar. In a modified intention-to-treat analysis, lopinavir-ritonavir led to a median time to clinical improvement that was shorter by 1 day than that observed with standard care (hazard ratio, 1.39; 95% CI, 1.00 to 1.91). Gastrointestinal adverse events were more common in the lopinavir-ritonavir group, but serious adverse events were more common in the standard-care group. Lopinavir-ritonavir treatment was stopped early in 13 patients (13.8%) because of adverse events. CONCLUSIONS: In hospitalized adult patients with severe Covid-19, no benefit was observed with lopinavir-ritonavir treatment beyond standard care. Future trials in patients with severe illness may help to confirm or exclude the possibility of a treatment benefit. (Funded by Major Projects of National Science and Technology on New Drug Creation and Development and others; Chinese Clinical Trial Register number, ChiCTR2000029308.).

Cascella, M., et al. (2020). Features, Evaluation and Treatment Coronavirus (COVID-19). StatPearls. Treasure Island (FL).

According to the World Health Organization (WHO), viral diseases continue to emerge and represent a serious issue to public health. In the last twenty years, several viral epidemics such as the severe acute respiratory syndrome coronavirus (SARS-CoV) in 2002 to 2003, and H1N1 influenza in 2009, have been recorded. Most recently, the Middle East respiratory syndrome coronavirus (MERS-CoV) was first identified in Saudi Arabia in 2012. In a timeline that reaches the present day, an epidemic of cases with unexplained low respiratory infections detected in Wuhan, the largest metropolitan area in China's Hubei province, was first reported to the WHO Country Office in China, on December 31, 2019. Published literature can trace the beginning of symptomatic individuals back to the beginning of December 2019. As they were unable to identify the causative agent, these first cases were classified as "pneumonia of unknown etiology." The Chinese Center for Disease Control and Prevention (CDC) and local CDCs organized an intensive outbreak investigation program. The etiology of this illness is now attributed to a novel virus belonging to the coronavirus (CoV) family. On February 11, 2020, the WHO Director-General, Dr. Tedros Adhanom Ghebreyesus, announced that the disease caused by this new CoV was a "COVID-19," which is the acronym of "coronavirus disease 2019". In the past twenty years, two additional coronavirus epidemics have occurred. SARS-CoV provoked a large-scale epidemic beginning in China and involving two dozen countries with approximately 8000 cases and 800 deaths, and the MERS-CoV that began in Saudi Arabia and has approximately 2,500 cases and 800 deaths and still causes as sporadic cases. This new virus seems to be very contagious and has quickly spread globally. In a meeting on January 30, 2020, per the International Health Regulations (IHR, 2005), the outbreak was declared by the WHO a Public Health Emergency of International Concern (PHEIC) as it had spread to 18 countries with four countries reporting human-to-human transmission. An additional landmark occurred on February 26, 2020, as the first case of the disease, not imported from China, was recorded in the United States. Initially, the new virus was called 2019-nCoV. Subsequently, the task of experts of the International Committee on Taxonomy of Viruses (ICTV) termed it the SARS-CoV-2 virus as it is very similar to the one that caused the SARS outbreak (SARS-CoVs). The CoVs have become the major pathogens of emerging respiratory disease outbreaks. They are a large family of single-stranded RNA viruses (+ssRNA) that can be isolated in different animal species. [1] For reasons yet to be explained, these viruses can cross species barriers and can cause, in humans, illness ranging from the common cold to more severe diseases such as MERS and SARS. Interestingly, these latter viruses have probably originated from bats and then moving into other mammalian hosts - the Himalayan palm civet for SARS-CoV, and the dromedary camel for MERS-CoV - before jumping to humans. The dynamics of SARS-Cov-2 are currently unknown, but there is speculation that it also has an animal origin. The potential for these viruses to grow to become a pandemic worldwide seems to be a serious public health risk. Concerning COVID-19, the WHO raised the threat to the CoV epidemic to the "very high" level, on February 28, 2020. Probably, the effects of the epidemic caused by the new CoV has yet to emerge as the situation is quickly evolving. On March 11, as the number of COVID-19 cases outside China has increased 13 times and the number of countries involved has tripled with more than 118,000 cases in 114 countries and over 4,000 deaths, WHO declared the COVID-19 a pandemic. World governments are at work to establish countermeasures to stem possible devastating effects. Health organizations coordinate information flows and issues directives and guidelines to best mitigate the impact of the threat. At the same time, scientists around the world work tirelessly, and information about the transmission mechanisms, the clinical spectrum of disease, new diagnostics, and prevention and therapeutic strategies are rapidly developing. Many uncertainties remain with regard to both the virus-host interaction and the evolution of the epidemic, with specific reference to the times when the

epidemic will reach its peak. At the moment, the therapeutic strategies to deal with the infection are only supportive, and prevention aimed at reducing transmission in the community is our best weapon. Aggressive isolation measures in China have led to a progressive reduction of cases in the last few days. In Italy, in geographic regions of the north, initially, and subsequently throughout the peninsula, political and health authorities are making incredible efforts to contain a shock wave that is severely testing the health system. In the midst of the crisis, the authors have chosen to use the "Statpearls" platform because, within the PubMed scenario, it represents a unique tool that may allow them to make updates in real-time. The aim, therefore, is to collect information and scientific evidence and to provide an overview of the topic that will be continuously updated.

Chen, D., et al. (2020). "Expert consensus for managing pregnant women and neonates born to mothers with suspected or confirmed novel coronavirus (COVID-19) infection." Int J Gynaecol Obstet.

OBJECTIVE: To provide clinical management guidelines for novel coronavirus (COVID-19) in pregnancy. METHODS: On February 5, 2020, a multidisciplinary teleconference comprising Chinese physicians and researchers was held and medical management strategies of COVID-19 infection in pregnancy were discussed. RESULTS: Ten key recommendations were provided for the management of COVID-19 infections in pregnancy. CONCLUSION: Currently, there is no clear evidence regarding optimal delivery timing, the safety of vaginal delivery, or whether cesarean delivery prevents vertical transmission at the time of delivery; therefore, route of delivery and delivery timing should be individualized based on obstetrical indications and maternal-fetal status.

Chen, H., et al. (2020). "Clinical characteristics and intrauterine vertical transmission potential of COVID-19 infection in nine pregnant women: a retrospective review of medical records." Lancet **395**(10226): 809-815.

BACKGROUND: Previous studies on the pneumonia outbreak caused by the 2019 novel coronavirus disease (COVID-19) were based on information from the general population. Limited data are available for pregnant women with COVID-19 pneumonia. This study aimed to evaluate the clinical characteristics of COVID-19 in pregnancy and the intrauterine vertical transmission potential of COVID-19 infection. METHODS: Clinical records, laboratory results, and chest CT scans were retrospectively reviewed for nine pregnant women with laboratory-confirmed COVID-19 pneumonia (ie, with maternal throat swab samples that were positive for severe acute respiratory syndrome coronavirus 2 [SARS-CoV-2]) who were admitted to Zhongnan Hospital of Wuhan University, Wuhan, China, from Jan 20 to Jan 31, 2020. 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. Breastmilk samples were also collected and tested from patients after the first lactation. FINDINGS: All nine patients had a caesarean section in their third trimester. Seven patients presented with a fever. Other symptoms, including cough (in four of nine patients), myalgia (in three), sore throat (in two), and malaise (in two), were also observed. Fetal distress was monitored in two cases. Five of nine patients had lymphopenia (<1.0 x 10(9) cells per L). Three patients had increased aminotransferase concentrations. None of the patients developed severe COVID-19 pneumonia or died, as of Feb 4, 2020. Nine livebirths were recorded. No neonatal asphyxia was observed in newborn babies. All nine livebirths had a 1-min Apgar score of 8-9 and a 5-min Apgar score of 9-10. Amniotic fluid, cord blood, neonatal throat swab, and breastmilk samples from six patients were tested for SARS-CoV-2, and all samples tested negative for the virus. INTERPRETATION: The clinical characteristics of COVID-19 pneumonia in pregnant women were similar to those reported for non-pregnant adult patients who developed COVID-19 pneumonia. Findings from this small group of cases suggest that there is currently no evidence for intrauterine infection caused by vertical transmission in women who develop COVID-19 pneumonia in late pregnancy. FUNDING: Hubei Science and Technology Plan, Wuhan University Medical Development Plan.

Chen, R., et al. (2020). "Safety and efficacy of different anesthetic regimens for parturients with COVID-19 undergoing Cesarean delivery: a case series of 17 patients." Can J Anaesth.

PURPOSE: To assess the management and safety of epidural or general anesthesia for Cesarean delivery in parturients with coronavirus disease (COVID-19) and their newborns, and to evaluate the standardized procedures for protecting medical staff. METHODS: We retrospectively reviewed the cases of parturients diagnosed with severe acute respiratory syndrome coronavirus (SARS-CoV-2) infection disease (COVID-19). Their epidemiologic history, chest computed tomography scans, laboratory measurements, and SARS-CoV-2 nucleic acid positivity were evaluated. We also recorded the patients' demographic and clinical characteristics, anesthesia and surgery-related data, maternal and neonatal complications, as

well as the health status of the involved medical staff. RESULTS: The clinical characteristics of 17 pregnant women infected with SARS-CoV-2 were similar to those previously reported in non-pregnant adult patients. All of the 17 patients underwent Cesarean delivery with anesthesia performed according to standardized anesthesia/surgery procedures. Fourteen of the patients underwent continuous epidural anesthesia with 12 experiencing significant intraoperative hypotension. Three patients received general anesthesia with tracheal intubation because emergency surgery was needed. Three of the parturients are still recovering from their Cesarean delivery and are receiving in-hospital treatment for COVID-19. Three neonates were born prematurely. There were no deaths or serious neonatal asphyxia events. All neonatal SARS-CoV-2 nucleic acid tests were negative. No medical staff were infected throughout the patient care period. CONCLUSIONS: Both epidural and general anesthesia were safely used for Cesarean delivery in the parturients with COVID-19. Nevertheless, the incidence of hypotension during epidural anesthesia appeared excessive. Proper patient transfer, medical staff access procedures, and effective biosafety precautions are important to protect medical staff from COVID-19.

Chinazzi, M., et al. (2020). "The effect of travel restrictions on the spread of the 2019 novel coronavirus (COVID-19) outbreak." Science.

Motivated by the rapid spread of COVID-19 in Mainland China, we use a global metapopulation disease transmission model to project the impact of travel limitations on the national and international spread of the epidemic. The model is calibrated based on internationally reported cases, and shows that at the start of the travel ban from Wuhan on 23 January 2020, most Chinese cities had already received many infected travelers. The travel quarantine of Wuhan delayed the overall epidemic progression by only 3 to 5 days in Mainland China, but has a more marked effect at the international scale, where case importations were reduced by nearly 80% until mid February. Modeling results also indicate that 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.

Chinese Association of Rehabilitation, M., et al. (2020). "[Recommendations for respiratory rehabilitation of COVID-19 in adult]." Zhonghua Jie He He Hu Xi Za Zhi **43**(0): E029.

COVID-19 is a highly infectious respiratory infection disease, which leads to dysfunction of respiratory, physical, and psychological of the patients. pulmonary rehabilitation is an important intervention for clinical patients as well as cure patients. With the deeper cognition of COVID-19 and accumulation of clinical experience, we proposed the recommendations for pulmonary rehabilitation of COVID-19 in adults based on the opinions of front-line clinical experts involved in the management of this epidemic and a review of the relevant literature and evidences: 1. for the inpatients with COVID-19, pulmonary rehabilitation would relieve the symptoms of dyspnea, anxiety, and depression; eventually improve physical function and the quality of life; 2. For severe/critical inpatients, the early performance of pulmonary rehabilitation is not suggested. 3. For isolating patients, the pulmonary rehabilitation guidence should be conducted through education video, instruction manual or remote consultation. 4. Assessment and monitor should be performed throughout the entire pulmonary rehabilitation process.5. Taking proper grading protection following the guideline. These recommendations can serve as a clinical practice guidence and basis for pulmonary rehabilitation of COVID-19.

Gilbert, M., et al. (2020). "Preparedness and vulnerability of African countries against importations of COVID-19: a modelling study." Lancet **395**(10227): 871-877.

BACKGROUND: The novel coronavirus disease 2019 (COVID-19) epidemic has spread from China to 25 countries. Local cycles of transmission have already occurred in 12 countries after case importation. In Africa, Egypt has so far confirmed one case. The management and control of COVID-19 importations heavily rely on a country's health capacity. Here we evaluate the preparedness and vulnerability of African countries against their risk of importation of COVID-19. METHODS: We used data on the volume of air travel departing from airports in the infected provinces in China and directed to Africa to estimate the risk of importation per country. We determined the country's capacity to detect and respond to cases with two indicators: preparedness, using the WHO International Health Regulations Monitoring and Evaluation Framework; and vulnerability, using the Infectious Disease Vulnerability Index. Countries were clustered according to the Chinese regions contributing most to their risk. FINDINGS: Countries with the highest importation risk (ie, Egypt, Algeria, and South Africa) have moderate to high capacity to respond to outbreaks. Countries at moderate risk (ie, Nigeria, Ethiopia, Sudan, Angola, Tanzania, Ghana, and Kenya) have variable capacity and high vulnerability. We identified three clusters of countries that share the same exposure to the risk originating from the provinces of Guangdong, Fujian, and the city of

Beijing, respectively. INTERPRETATION: Many countries in Africa are stepping up their preparedness to detect and cope with COVID-19 importations. Resources, intensified surveillance, and capacity building should be urgently prioritised in countries with moderate risk that might be ill-prepared to detect imported cases and to limit onward transmission. FUNDING: EU Framework Programme for Research and Innovation Horizon 2020, Agence Nationale de la Recherche.

Giwa, A. and A. Desai (2020). "Novel coronavirus COVID-19: an overview for emergency clinicians." Emerg Med Pract **22**(2 Suppl 2): 1-21.

Prior to the global outbreak of SARS-CoV in 2003, HCoV-229E and HCoV-OC43 were the only coronaviruses known to infect humans. Following the SARS outbreak, 5 additional coronaviruses have been discovered in humans, most recently the novel coronavirus COVID-19, believed to have originated in Wuhan, Hubei Province, China. SARS-CoV and MERSCoV are particularly pathogenic in humans and are associated with high mortality. In this review, the epidemiology, pathophysiology, and management of the recently discovered COVID-19 are reviewed, with a focus on best practices and the public health implications.

Giwa, A. L., et al. (2020). "Novel 2019 coronavirus SARS-CoV-2 (COVID-19): An updated overview for emergency clinicians." Emerg Med Pract **22**(5): 1-28.

The novel coronavirus, COVID-19, has quickly become a worldwide threat to health, travel, and commerce. This overview analyzes the best information from the early research, including epidemiologic and demographic features from SARS-CoV-1 and MERS-CoV viruses; lessons learned from the experience of an emergency physician in Northern Italy, where the outbreak has devastated the healthcare system; evidence on transmission and prevention through safe use of PPE; evidence and advice on SARS-CoV-2 testing and co-infection; management options; airway management options; steps for rapid sequence intubation in the ED and managing disaster ventilation; and information on managing pediatric and pregnant patients.

Glauser, W. (2020). "Proposed protocol to keep COVID-19 out of hospitals." CMAJ **192**(10): E264-E265.

Goh, G. K., et al. (2020). "Rigidity of the Outer Shell Predicted by a Protein Intrinsic Disorder Model Sheds Light on the COVID-19 (Wuhan-2019-nCoV) Infectivity." Biomolecules **10**(2).

The world is currently witnessing an outbreak of a new coronavirus spreading quickly across China and affecting at least 24 other countries. With almost 65,000 infected, a worldwide death toll of at least 1370 (as of 14 February 2020), and with the potential to affect up to two-thirds of the world population, COVID-19 is considered by the World Health Organization (WHO) to be a global health emergency. The speed of spread and infectivity of COVID-19 (also known as Wuhan-2019-nCoV) are dramatically exceeding those of the Middle East respiratory syndrome coronavirus (MERS-CoV) and severe acute respiratory syndrome coronavirus (SARS-CoV). In fact, since September 2012, the WHO has been notified of 2494 laboratory-confirmed cases of infection with MERS-CoV, whereas the 2002-2003 epidemic of SARS affected 26 countries and resulted in more than 8000 cases. Therefore, although SARS, MERS, and COVID-19 are all the result of coronaviral infections, the causes of the coronaviruses differ dramatically in their transmissibility. It is likely that these differences in infectivity of coronaviruses can be attributed to the differences in the rigidity of their shells which can be evaluated using computational tools for predicting intrinsic disorder predisposition of the corresponding viral proteins.

Goh, K. J., et al. (2020). "Rapid Progression to Acute Respiratory Distress Syndrome: Review of Current Understanding of Critical Illness from COVID-19 Infection." Ann Acad Med Singapore **49**(1): 1-9.

The coronavirus disease 2019 (COVID-19) outbreak that started in Wuhan, Hubei province, China in December 2019 has now extended across the globe with >100,000 cases and 3,000 deaths reported in 93 countries as of 7 March 2020. We report a case of COVID-19 infection in a 64-year-old man who developed rapidly worsening respiratory failure and acute respiratory distress syndrome (ARDS) that required intubation. As the clinical spectrum of COVID-19 ranges widely from mild illness to ARDS with a high risk of mortality, there is a need for more research to identify early markers of disease severity. Current evidence suggests that patients with advanced age, pre-existing comorbidities or dyspnoea should be closely monitored, especially at 1-2 weeks after symptom onset. It remains to be seen if laboratory findings such as lymphopenia or elevated lactate dehydrogenase may serve as early surrogates for critical illness or markers of disease recovery. Management of ARDS in COVID-19 remains supportive while we await results of drug trials. More studies are needed to understand the incidence and outcomes of ARDS and critical illness from COVID-

19, which will be important for critical care management and resource planning.

Gong, F., et al. (2020). "China's local governments are combating COVID-19 with unprecedented responses - from a Wenzhou governance perspective." Front Med.

The COVID-19 caused by a novel strain of Coronavirus has been spreading rapidly since its onset in Wuhan, the capital city of central China's Hubei Province, in December 2019. It is highly communicable through human-to-human transmission. China has been making unprecedented efforts in treating the confirmed cases, identifying and isolating their close contacts and suspected cases to control the source of infection and cut the route of transmission. China's devotion in handling this epidemic has effectively and efficiently curbed communication domestically and across the border. Representative measures adopted by Wenzhou, the worst hit city out of Hubei Province, are examined to elucidate those massive undertakings with the aim of enhancing international understanding and building global rapport in fighting this evolving epidemic situation.

Gostic, K., et al. (2020). "Estimated effectiveness of symptom and risk screening to prevent the spread of COVID-19." Elife **9**.

Traveller screening is being used to limit further spread of COVID-19 following its recent emergence, and symptom screening has become a ubiquitous tool in the global response. Previously, we developed a mathematical model to understand factors governing the effectiveness of traveller screening to prevent spread of emerging pathogens (Gostic et al., 2015). Here, we estimate the impact of different screening programs given current knowledge of key COVID-19 life history and epidemiological parameters. Even under best-case assumptions, we estimate that screening will miss more than half of infected people. Breaking down the factors leading to screening successes and failures, we find that most cases missed by screening are fundamentally undetectable, because they have not yet developed symptoms and are unaware they were exposed. Our work underscores the need for measures to limit transmission by individuals who become ill after being missed by a screening program. These findings can support evidence-based policy to combat the spread of COVID-19, and prospective planning to mitigate future emerging pathogens.

He, F., et al. (2020). "Coronavirus Disease 2019 (COVID-19): What we know?" J Med Virol.

In late December 2019, a cluster of unexplained pneumonia cases has been reported in Wuhan, China. A few days later, the causative agent of this mysterious pneumonia was identified as a novel coronavirus. This causative virus has been temporarily named as severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and the relevant infected disease has been named as coronavirus disease 2019 (COVID-19) by the World Health Organization respectively. The COVID-19 epidemic is spreading in China and all over the world now. The purpose of this review is primarily to review the pathogen, clinical features, diagnosis, and treatment of COVID-19, but also to comment briefly on the epidemiology and pathology based on the current evidences. This article is protected by copyright. All rights reserved.

He, X. W., et al. (2020). "[Impact of complicated myocardial injury on the clinical outcome of severe or critically ill COVID-19 patients]." Zhonghua Xin Xue Guan Bing Za Zhi **48**(0): E011.

Objective: To analyze the clinical characteristics of the severe or critically ill patients with novel coronavirus pneumonia (COVID-19), and evaluate the impact of complicated myocardial injury on the prognosis of these patients. Methods: A retrospective study was conducted in 54 patients who admitted to Tongji hospital from February 3, 2020 to February 24, 2020 and met the criteria of severe or critical conditions of COVID-19. The clinical characteristics and hospital mortality rate were analyzed and compared between the patients with or without myocardial injury, which was defined with 3 times higher serum cardiac troponin value. Results: The median age of the 54 patients was 68 (59.8, 74.3) years. Among all the patients, 24 (44.4%) patients were complicated with hypertension, 13 (24.1%) with diabetes, 8 (14.8%) with coronary heart disease, and 3 (5.6%) with previous cerebral infarction. During hospitalization, 24 (44.4%) of the patients were complicated with myocardial injury and 26 (48.1%) patients died in hospital. In-hospital mortality was significantly higher in patients with myocardial injury than in patients without myocardial injury (14 (60.9%) vs. 8 (25.8%), P=0.013). Moreover, the levels of C-reactive protein (153.6 (80.3, 240.7) ng/L vs. 49.8 (15.9, 101.9) ng/L) and N-terminal pro-B-type natriuretic peptide (852.0 (400.0, 2 315.3) ng/L vs. 197.0 (115.3, 631.0) ng/L) were significantly higher than patients without myocardial injury (all P<0.01). Conclusions: Prevalence of myocardial injury is high among severe or critically ill COVID-19 patients. Severe or critically ill COVID-19 patients with myocardial injury face a significantly higher risk of in-hospital mortality. The study suggests that it is important to monitor and manage the myocardial injury during hospitalization for severe or critically ill COVID-19 patients.

Hu, Z., et al. (2020). "Clinical characteristics of 24 asymptomatic infections with COVID-19 screened among close contacts in Nanjing, China." Sci China Life Sci.

Previous studies have showed clinical characteristics of patients with the 2019 novel coronavirus disease (COVID-19) and the evidence of person-to-person transmission. Limited data are available for asymptomatic infections. This study aims to present the clinical characteristics of 24 cases with asymptomatic infection screened from close contacts and to show the transmission potential of asymptomatic COVID-19 virus carriers. Epidemiological investigations were conducted among all close contacts of COVID-19 patients (or suspected patients) in Nanjing, Jiangsu Province, China, from Jan 28 to Feb 9, 2020, both in clinic and in community. Asymptomatic carriers were laboratory-confirmed positive for the COVID-19 virus by testing the nucleic acid of the pharyngeal swab samples. Their clinical records, laboratory assessments, and chest CT scans were reviewed. As a result, none of the 24 asymptomatic cases presented any obvious symptoms while nucleic acid screening. Five cases (20.8%) developed symptoms (fever, cough, fatigue, etc.) during hospitalization. Twelve (50.0%) cases showed typical CT images of ground-glass chest and 5 (20.8%) presented stripe shadowing in the lungs. The remaining 7 (29.2%) cases showed normal CT image and had no symptoms during hospitalization. These 7 cases were younger (median age: 14.0 years; P=0.012) than the rest. None of the 24 cases developed severe COVID-19 pneumonia or died. The median communicable period, defined as the interval from the first day of positive nucleic acid tests to the first day of continuous negative tests, was 9.5 days (up to 21 days among the 24 asymptomatic cases). Through epidemiological investigation, we observed a typical asymptomatic transmission to the cohabiting family members, which even caused severe COVID-19 pneumonia. Overall, the asymptomatic carriers identified from close contacts were prone to be mildly ill during hospitalization. However, the communicable period could be up to three weeks and the communicated patients could develop severe illness. These results highlighted the importance of close contact tracing and longitudinally surveillance via virus nucleic acid tests. Further isolation recommendation and continuous nucleic acid tests may also be recommended to the patients discharged.

Hu, Z. B. and C. Ci (2020). "[Screening and management of asymptomatic infection of corona virus disease 2019 (COVID-19)]." Zhonghua Yu Fang Yi Xue Za Zhi **54**(0): E025.

To date, the controlling of outbreak of corona virus disease 2019 (COVID-19) has entered into a critical period in China. Recently, work resumption and public place is planning to open outside of Hubei, suggesting an uncertain and complex development of the epidemic in the next stage. Few days ago, we conducted a study on the epidemiological and clinical characteristics of asymptomatic infections of COVID-19, and found them might be the infection source. We believe that the findings are critical for developing public health intervention strategies for controlling COVID-19 infection in the future. Screening among the high-risk population and improving the sensitivity of measurement may contribute to the detection and management of asymptomatic infection.

Huang, J. Z., et al. (2020). "[Mental health survey of 230 medical staff in a tertiary infectious disease hospital for COVID-19]." Zhonghua Lao Dong Wei Sheng Zhi Ye Bing Za Zhi **38**(0): E001.

Objective: To investigate the mental health of clinical first-line medical staff in COVID-19 epidemic and provide theoretical basis for psychological intervention. Method: The mental health status of the first-line medical staff was investigated by Self-rating Anxiety Acale (SAS) and Post-Traumatic Stress Disorder Self-rating Scale (PTSD-SS). From February 7 to 14, 2020, 246 medical staff were investigated who participated in the treatment of COVID-19 using cluster sampling, and received 230 responses, with a recovery rate of 93.5%. Results: The incidence of anxiety in medical staff was 23.04% (53/230), and the score of SAS was (42.91 +/- 10.89). Among them, the incidence of severe anxiety, moderate anxiety and mild anxiety were 2.17% (5/230), 4.78% (11/230) and 16.09% (37/230), respectively. The incidence of anxiety in female medical staff was higher than that in male [25.67% (48/187) vs 11.63% (5/43), Z=-2.008, P=0.045], the score of SAS in female medical staff was higher than that in male [ (43.78+/-11.12) vs (39.14 +/- 9.01), t =-2.548, P=0.012]. The incidence of anxiety in nurses was higher than that in doctors [26.88% (43/160) vs 14.29% (10/70), Z=-2.066, P=0.039], and the score of SAS in nurses was higher than that in doctors [ (44.84+/-10.42) vs (38.50+/-10.72), t =-4.207, P<0.001]. The incidence of stress disorder in medical staff was 27.39% (63/230), and the score of PTSD-SS was (42.92 +/- 17.88). The score of PTSD-SS in female medical staff was higher than that of male [ (44.30+/-18.42) vs (36.91 +/- 13.95), t=-2.472, P=0.014]. Conclusions: In COVID-19 epidemic, the incidence of anxiety and stress disorder is high among medical staff. Medical institutions should strengthen the training of psychological skills of medical staff. Special attention should be paid to the mental health of female nurses.

Huang, L. L., et al. (2020). "[Dynamic basic reproduction number based evaluation for current prevention and control of COVID-19 outbreak in China]." Zhonghua Liu Xing Bing Xue Za Zhi **41**(4): 466-469.

Objective: To evaluate the current status of the prevention and control of coronavirus disease (COVID-19) outbreak in China, establish a predictive model to evaluate the effects of the current prevention and control strategies, and provide scientific information for decision- making departments. Methods: Based on the epidemic data of COVID-19 openly accessed from national health authorities, we estimated the dynamic basic reproduction number R (0) (t) to evaluate the effects of the current COVID-19 prevention and control strategies in all the provinces (municipalities and autonomous regions) as well as in Wuhan and the changes in infectivity of COVID-19 over time. Results: For the stability of the results, 24 provinces (municipality) with more than 100 confirmed COVID-19 cases were included in the analysis. At the beginning of the outbreak, the R (0) (t) showed unstable trend with big variances. As the strengthening of the prevention and control strategies, R (0) (t) began to show a downward trend in late January, and became stable in February. By the time of data analysis, 18 provinces (municipality) (75%) had the R (0) (t)s less than 1. The results could be used for the decision making to free population floating conditionally. Conclusions: Dynamic R (0) (t) is useful in the evaluation of the change in infectivity of COVID-19, the prevention and control strategies for the COVID-19 outbreak have shown preliminary effects, if continues, it is expected to control the COVID-19 outbreak in China in near future.

Ji, L. N., et al. (2020). "Clinical features of pediatric patients with COVID-19: a report of two family cluster cases." World J Pediatr.

BACKGROUND: Coronovirus disease 2019 (COVID-19) has spread rapidly across the globe. People of all ages are susceptible to COVID-19. However, literature reports on pediatric patients are limited. METHODS: To improve the recognition of COVID-19 infection in children, we retrospectively reviewed two confirmed pediatric cases from two family clusters. Both clinical features and laboratory examination results of the children and their family members were described. RESULTS: The two confirmed children only presented with mild respiratory or gastrointestinal symptoms. Both of them had normal chest CT images. After general and symptomatic treatments, both children recovered quickly. Both families had travel histories to Hubei Province. CONCLUSIONS: Pediatric patients with COVID-19 are mostly owing to family cluster or with a close contact history. Infected children have relatively milder clinical symptoms than infected adults. We should attach importance to early recognition, early diagnosis, and early treatment of infected children.

Kamel Boulos, M. N. and E. M. Geraghty (2020). "Geographical tracking and mapping of coronavirus disease COVID-19/severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) epidemic and associated events around the world: how 21st century GIS technologies are supporting the global fight against outbreaks and epidemics." Int J Health Geogr **19**(1): 8.

In December 2019, a new virus (initially called 'Novel Coronavirus 2019-nCoV' and later renamed to SARS-CoV-2) causing severe acute respiratory syndrome (coronavirus disease COVID-19) emerged in Wuhan, Hubei Province, China, and rapidly spread to other parts of China and other countries around the world, despite China's massive efforts to contain the disease within Hubei. As with the original SARS-CoV epidemic of 2002/2003 and with seasonal influenza, geographic information systems and methods, including, among other application possibilities, online real-or near-real-time mapping of disease cases and of social media reactions to disease spread, predictive risk mapping using population travel data, and tracing and mapping super-spreader trajectories and contacts across space and time, are proving indispensable for timely and effective epidemic monitoring and response. This paper offers pointers to, and describes, a range of practical online/mobile GIS and mapping dashboards and applications for tracking the 2019/2020 coronavirus epidemic and associated events as they unfold around the world. Some of these dashboards and applications are receiving data updates in near-real-time (at the time of writing), and one of them is meant for individual users (in China) to check if the app user has had any close contact with a person confirmed or suspected to have been infected with SARS-CoV-2 in the recent past. We also discuss additional ways GIS can support the fight against infectious disease outbreaks and epidemics.

Kandel, N., et al. (2020). "Health security capacities in the context of COVID-19 outbreak: an analysis of International Health Regulations annual report data from 182 countries." Lancet.

BACKGROUND: Public health measures to prevent, detect, and respond to events are essential to control public health risks, including infectious disease outbreaks, as highlighted in the International Health Regulations (IHR). In light of the outbreak of 2019 novel coronavirus disease (COVID-19), we aimed to

review existing health security capacities against public health risks and events. METHODS: We used 18 indicators from the IHR State Party Annual Reporting (SPAR) tool and associated data from national SPAR reports to develop five indices: (1) prevent, (2) detect, (3) respond, (4) enabling function, and (5) operational readiness. We used SPAR 2018 data for all of the indicators and categorised countries into five levels across the indices, in which level 1 indicated the lowest level of national capacity and level 5 the highest. We also analysed data at the regional level (using the six geographical WHO regions). FINDINGS: Of 182 countries, 52 (28%) had prevent capacities at levels 1 or 2, and 60 (33%) had response capacities at levels 1 or 2. 81 (45%) countries had prevent capacities and 78 (43%) had response capacities at levels 4 or 5, indicating that these countries were operationally ready. 138 (76%) countries scored more highly in the detect index than in the other indices. 44 (24%) countries did not have an effective enabling function for public health risks and events, including infectious disease outbreaks (7 [4%] at level 1 and 37 [20%] at level 2). 102 (56%) countries had level 4 or level 5 enabling function capacities in place. 32 (18%) countries had low readiness (2 [1%] at level 1 and 30 [17%] at level 2), and 104 (57%) countries were operationally ready to prevent, detect, and control an outbreak of a novel infectious disease (66 [36%] at level 4 and 38 [21%] at level 5). INTERPRETATION: Countries vary widely in terms of their capacity to prevent, detect, and respond to outbreaks. Half of all countries analysed have strong operational readiness capacities in place, which suggests that an effective response to potential health emergencies could be enabled, including to COVID-19. Findings from local risk assessments are needed to fully understand national readiness capacities in relation to COVID-19. Capacity building and collaboration between countries are needed to strengthen global readiness for outbreak control. FUNDING: None.

Kannan, S., et al. (2020). "COVID-19 (Novel Coronavirus 2019) - recent trends." Eur Rev Med Pharmacol Sci **24**(4): 2006-2011.

The World Health Organization (WHO) has issued a warning that, although the 2019 novel coronavirus (COVID-19) from Wuhan City (China), is not pandemic, it should be contained to prevent the global spread. The COVID-19 virus was known earlier as 2019-nCoV. As of 12 February 2020, WHO reported 45,171 cases and 1115 deaths related to COVID-19. COVID-19 is similar to Severe Acute Respiratory Syndrome coronavirus (SARS-CoV) virus in its pathogenicity, clinical spectrum, and epidemiology. Comparison of the genome sequences of COVID-19, SARS-CoV, and Middle East Respiratory Syndrome coronavirus (MERS-CoV) showed that COVID-19 has a better sequence identity with SARS-CoV compared to MERS CoV. However, the amino acid sequence of COVID-19 differs from other coronaviruses specifically in the regions of 1ab polyprotein and surface glycoprotein or S-protein. Although several animals have been speculated to be a reservoir for COVID-19, no animal reservoir has been already confirmed. COVID-19 causes COVID-19 disease that has similar symptoms as SARS-CoV. Studies suggest that the human receptor for COVID-19 may be angiotensin-converting enzyme 2 (ACE2) receptor similar to that of SARS-CoV. The nucleocapsid (N) protein of COVID-19 has nearly 90% amino acid sequence identity with SARS-CoV. The N protein antibodies of SARS-CoV may cross react with COVID-19 but may not provide cross-immunity. In a similar fashion to SARS-CoV, the N protein of COVID-19 may play an important role in suppressing the RNA interference (RNAi) to overcome the host defense. This mini-review aims at investigating the most recent trend of COVID-19.

Kobayashi, T., et al. (2020). "Communicating the Risk of Death from Novel Coronavirus Disease (COVID-19)." J Clin Med **9**(2).

To understand the severity of infection for a given disease, it is common epidemiological practice to estimate the case fatality risk, defined as the risk of death among cases. However, there are three technical obstacles that should be addressed to appropriately measure this risk. First, division of the cumulative number of deaths by that of cases tends to underestimate the actual risk because deaths that will occur have not yet observed, and so the delay in time from illness onset to death must be addressed. Second, the observed dataset of reported cases represents only a proportion of all infected individuals and there can be a substantial number of asymptomatic and mildly infected individuals who are never diagnosed. Third, ascertainment bias and risk of death among all those infected would be smaller when estimated using shorter virus detection windows and less sensitive diagnostic laboratory tests. In the ongoing COVID-19 epidemic, health authorities must cope with the uncertainty in the risk of death from COVID-19, and high-risk individuals should be identified using approaches that can address the abovementioned three problems. Although COVID-19 involves mostly mild infections among the majority of the general population, the risk of death among young adults is higher than that of seasonal influenza, and elderly with underlying comorbidities require additional care.

Kwon, K. T., et al. (2020). "Drive-Through Screening Center for COVID-19: a Safe and Efficient Screening System against Massive Community Outbreak." J Korean Med Sci **35**(11): e123.

As the coronavirus disease 2019 (COVID-19) outbreak is ongoing, the number of individuals to be tested for COVID-19 is rapidly increasing. For safe and efficient screening for COVID-19, drive-through (DT) screening centers have been designed and implemented in Korea. Herein, we present the overall concept, advantages, and limitations of the COVID-19 DT screening centers. The steps of the DT centers include registration, examination, specimen collection, and instructions. The entire service takes about 10 minutes for one testee without leaving his or her cars. Increased testing capacity over 100 tests per day and prevention of cross-infection between testees in the waiting space are the major advantages, while protection of staff from the outdoor atmosphere is challenging. It could be implemented in other countries to cope with the global COVID-19 outbreak and transformed according to their own situations.

Lai, C. C., et al. (2020). "Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and coronavirus disease-2019 (COVID-19): The epidemic and the challenges." Int J Antimicrob Agents **55**(3): 105924.

The emergence of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2; previously provisionally named 2019 novel coronavirus or 2019-nCoV) disease (COVID-19) in China at the end of 2019 has caused a large global outbreak and is a major public health issue. As of 11 February 2020, data from the World Health Organization (WHO) have shown that more than 43 000 confirmed cases have been identified in 28 countries/regions, with >99% of cases being detected in China. On 30 January 2020, the WHO declared COVID-19 as the sixth public health emergency of international concern. SARS-CoV-2 is closely related to two bat-derived severe acute respiratory syndrome-like coronaviruses, bat-SL-CoVZC45 and bat-SL-CoVZXC21. It is spread by human-to-human transmission via droplets or direct contact, and infection has been estimated to have mean incubation period of 6.4 days and a basic reproduction number of 2.24-3.58. Among patients with pneumonia caused by SARS-CoV-2 (novel coronavirus pneumonia or Wuhan pneumonia), fever was the most common symptom, followed by cough. Bilateral lung involvement with ground-glass opacity was the most common finding from computed tomography images of the chest. The one case of SARS-CoV-2 pneumonia in the USA is responding well to remdesivir, which is now undergoing a clinical trial in China. Currently, controlling infection to prevent the spread of SARS-CoV-2 is the primary intervention being used. However, public health authorities should keep monitoring the situation closely, as the more we can learn about this novel virus and its associated outbreak, the better we can respond.

Lake, M. A. (2020). "What we know so far: COVID-19 current clinical knowledge and research." Clin Med (Lond) **20**(2): 124-127.

In December 2019, health authorities in Wuhan, China, identified a cluster of pneumonia cases of unknown aetiology linked to the city's South China Seafood Market. Subsequent investigations revealed a novel coronavirus, SARS-CoV-2, as the causative agent now at the heart of a major outbreak. The rising case numbers have been accompanied by unprecedented public health action, including the wholesale isolation of Wuhan. Alongside this has been a robust scientific response, including early publication of the pathogen genome, and rapid development of highly specific diagnostics. This article will review the new knowledge of SARS-CoV-2 COVID-19 acute respiratory disease, and summarise its clinical features.

Lau, H., et al. (2020). "Internationally lost COVID-19 cases." J Microbiol Immunol Infect.

BACKGROUND: With its epicenter in Wuhan, China, the COVID-19 outbreak was declared a pandemic by the World Health Organization (WHO). While many countries have implemented flight restrictions to China, an increasing number of cases with or without travel background to China are confirmed daily. These developments support concerns on possible unidentified and unreported international COVID-19 cases, which could lead to new local disease epicenters. METHODS: We have analyzed all available data on the development of international COVID-19 cases from January 20th, 2020 until February 18th, 2020. COVID-19 cases with and without travel history to China were divided into cohorts according to the Healthcare Access and Quality Index (HAQ-Index) of each country. Chi-square and Post-hoc testing were performed. RESULTS: While COVID-19 cases with travel history to China seem to peak for each HAQ-cohort, the number of non-travel related COVID-19 cases seem to continuously increase in the HAQ-cohort of countries with higher medical standards. Further analyses demonstrate a significantly lower proportion of reported COVID-19 cases without travel history to China in countries with lower HAQ (HAQ I vs. HAQ II, posthoc $p < 0.01$). CONCLUSIONS: Our data indicate that countries with lower HAQ-index may either underreport COVID-19 cases or are unable to adequately detect them. Although our data may be

incomplete and must be interpreted with caution, inconsistencies in reporting COVID-19 cases is a serious problem which might sabotage efforts to contain the virus.

Lau, H., et al. (2020). "The positive impact of lockdown in Wuhan on containing the COVID-19 outbreak in China." J Travel Med.

BACKGROUND: With its epicenter in Wuhan, China, the COVID-19 outbreak was declared a public health emergency of international concern (PHEIC) by the World Health Organization (WHO). Consequently, many countries have implemented flight restrictions to China. China itself has imposed a lockdown of the population of Wuhan as well as the entire Hubei province. However, whether these two enormous measures have led to significant changes in the spread of COVID-19 cases remains unclear. METHODS: We analyzed available data on the development of confirmed domestic and international COVID-19 cases before and after lockdown measures. We evaluated the correlation of domestic air traffic to the number of confirmed COVID-19 cases and determined the growth curves of COVID-19 cases within China before and after lockdown as well as after changes in COVID-19 diagnostic criteria. RESULTS: Our findings indicate a significant increase in doubling time from 2 days (95% Confidence Interval, CI): 1.9-2.6), to 4 days (95% CI: 3.5-4.3), after imposing lockdown. A further increase is detected after changing diagnostic and testing methodology to 19.3 (95% CI: 15.1-26.3), respectively. Moreover, the correlation between domestic air traffic and COVID-19 spread became weaker following lockdown (before lockdown: $r = 0.98$, $p < 0.05$ vs. after lockdown: $r = 0.91$, $p$ = NS). CONCLUSIONS: A significantly decreased growth rate and increased doubling time of cases was observed, which is most likely due to Chinese lockdown measures. A more stringent confinement of people in high risk areas seem to have a potential to slow down the spread of COVID-19.

Lauer, S. A., et al. (2020). "The Incubation Period of Coronavirus Disease 2019 (COVID-19) From Publicly Reported Confirmed Cases: Estimation and Application." Ann Intern Med.

Background: A novel human coronavirus, severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), was identified in China in December 2019. There is limited support for many of its key epidemiologic features, including the incubation period for clinical disease (coronavirus disease 2019 [COVID-19]), which has important implications for surveillance and control activities. Objective: To estimate the length of the incubation period of COVID-19 and describe its public health implications. Design: Pooled analysis of confirmed COVID-19 cases reported between 4 January 2020 and 24 February 2020. Setting: News reports and press releases from 50 provinces, regions, and countries outside Wuhan, Hubei province, China. Participants: Persons with confirmed SARS-CoV-2 infection outside Hubei province, China. Measurements: Patient demographic characteristics and dates and times of possible exposure, symptom onset, fever onset, and hospitalization. Results: There were 181 confirmed cases with identifiable exposure and symptom onset windows to estimate the incubation period of COVID-19. The median incubation period was estimated to be 5.1 days (95% CI, 4.5 to 5.8 days), and 97.5% of those who develop symptoms will do so within 11.5 days (CI, 8.2 to 15.6 days) of infection. These estimates imply that, under conservative assumptions, 101 out of every 10 000 cases (99th percentile, 482) will develop symptoms after 14 days of active monitoring or quarantine. Limitation: Publicly reported cases may overrepresent severe cases, the incubation period for which may differ from that of mild cases. Conclusion: This work provides additional evidence for a median incubation period for COVID-19 of approximately 5 days, similar to SARS. Our results support current proposals for the length of quarantine or active monitoring of persons potentially exposed to SARS-CoV-2, although longer monitoring periods might be justified in extreme cases. Primary Funding Source: U.S. Centers for Disease Control and Prevention, National Institute of Allergy and Infectious Diseases, National Institute of General Medical Sciences, and Alexander von Humboldt Foundation.

Li, M., et al. (2020). "Coronavirus Disease (COVID-19): Spectrum of CT Findings and Temporal Progression of the Disease." Acad Radiol.

Coronavirus disease is an emerging infection caused by a novel coronavirus that is moving rapidly. High resolution computed tomography (CT) allows objective evaluation of the lung lesions, thus enabling us to better understand the pathogenesis of the disease. With serial CT examinations, the occurrence, development, and prognosis of the disease can be better understood. The imaging can be sorted into four phases: early phase, progressive phase, severe phase, and dissipative phase. The CT appearance of each phase and temporal progression of the imaging findings are demonstrated.

Li, P., et al. (2020). "Transmission of COVID-19 in the terminal stage of incubation period: a familial cluster." Int J Infect Dis.

We report a familial cluster of 2019 novel coronavirus disease (COVID-19) to evidence that a potential transmission of the COVID-19 during the

incubation period. The first patient in this familial cluster was identified in presymptomatic period, as a close contact of a confirmed patient. Five family members had close contact with the first patient during his incubation period, four of them were confirmed to the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection in the subsequent sampling test.

Li, X. Q., et al. (2020). "[Comparison of epidemic characteristics between SARS in2003 and COVID-19 in 2020 in Guangzhou]." Zhonghua Liu Xing Bing Xue Za Zhi **41**(5): 634-637.

Objective: By analyzing the epidemic characteristics and related indicators of SARS (2003) and COVID-19(2020), to explore the reasons for the similarities and differences of the two epidemics, so as to provide reference for epidemic prevention and control. Methods: The general situation, clinical classification, activity history, contact history, family members' contact and incidence of the two infectious diseases in Guangzhou were collected and used to analyze the time characteristics, occupational characteristics, age characteristics and other key indicators of the two diseases, including the number of cases, composition ratio (%), mean, median, crude mortality, etc. Results: A total of 1 072 cases of SARS (2003) were included in the study. 353 of which were severe cases with the incidence of 30.13%. 43 cases of death were reported with a mortality rate of 4.01%. The average age was 46 years old, and 26.31% of the cases were medical staff. The interval time between first report to continuous zero reports was 129 days. As to COVID-19 (2020), a total of 346 cases were included. 58 of which were severe cases with the incidence of 16.67%. One case of death was reported with a mortality rate of 0.29%. The average age was 38 years old, and no hospital infection among medical staff was reported. The interval time between first report to continuous zero reports was 35 days. Conclusions: The prevention and control strategies for COVID-19 (2010) are more effective compared to that of SARS (2003), and the emergency response procedures are worth to be evaluated and summarized.

Li, Y., et al. (2020). "[Surgical treatment for esophageal cancer during the outbreak of COVID-19]." Zhonghua Zhong Liu Za Zhi **42**(0): E003.

Since December 2019, unexplained pneumonia has appeared in Wuhan City, Hubei Province, and a new type of coronavirus infection was confirmed as COVID-19. COVID-19 spread rapidly nationwide and abroad. The COVID-19 has brought huge impacts to all the people and walks of life, especially to the medical and health systems. It has also brought great challenges to the treatment of patients with cancer. Esophageal cancer is a common malignant tumor in China and most of the patients are in the middle and advanced stage when diagnosed, with immunosuppressive and poor prognosis. The selection of surgical procedures and perioperative managements of esophageal cancer require all thoracic surgeons work together to figure out a reasonable system of surgical treatment and emergency response.

Li, Y. and L. Xia (2020). "Coronavirus Disease 2019 (COVID-19): Role of Chest CT in Diagnosis and Management." AJR Am J Roentgenol: 1-7.

OBJECTIVE. The objective of our study was to determine the misdiagnosis rate of radiologists for coronavirus disease 2019 (COVID-19) and evaluate the performance of chest CT in the diagnosis and management of COVID-19. The CT features of COVID-19 are reported and compared with the CT features of other viruses to familiarize radiologists with possible CT patterns. MATERIALS AND METHODS. This study included the first 51 patients with a diagnosis of COVID-19 infection confirmed by nucleic acid testing (23 women and 28 men; age range, 26-83 years) and two patients with adenovirus (one woman and one man; ages, 58 and 66 years). We reviewed the clinical information, CT images, and corresponding image reports of these 53 patients. The CT images included images from 99 chest CT examinations, including initial and follow-up CT studies. We compared the image reports of the initial CT study with the laboratory test results and identified CT patterns suggestive of viral infection. RESULTS. COVID-19 was misdiagnosed as a common infection at the initial CT study in two inpatients with underlying disease and COVID-19. Viral pneumonia was correctly diagnosed at the initial CT study in the remaining 49 patients with COVID-19 and two patients with adenovirus. These patients were isolated and obtained treatment. Ground-glass opacities (GGOs) and consolidation with or without vascular enlargement, interlobular septal thickening, and air bronchogram sign are common CT features of COVID-19. The The "reversed halo" sign and pulmonary nodules with a halo sign are uncommon CT features. The CT findings of COVID-19 overlap with the CT findings of adenovirus infection. There are differences as well as similarities in the CT features of COVID-19 compared with those of the severe acute respiratory syndrome. CONCLUSION. We found that chest CT had a low rate of missed diagnosis of COVID-19 (3.9%, 2/51) and may be useful as a standard method for the rapid diagnosis of COVID-19 to optimize the management of patients. However, CT is still limited for identifying specific viruses and distinguishing between viruses.

Li, Y. C., et al. (2020). "The neuroinvasive potential of SARS-CoV2 may play a role in the respiratory failure of COVID-19 patients." J Med Virol.

Following the severe acute respiratory syndrome coronavirus (SARS-CoV) and Middle East respiratory syndrome coronavirus (MERS-CoV), another highly pathogenic coronavirus named SARS-CoV-2 (previously known as 2019-nCoV) emerged in December 2019 in Wuhan, China, and rapidly spreads around the world. This virus shares highly homological sequence with SARS-CoV, and causes acute, highly lethal pneumonia coronavirus disease 2019 (COVID-19) with clinical symptoms similar to those reported for SARS-CoV and MERS-CoV. The most characteristic symptom of patients with COVID-19 is respiratory distress, and most of the patients admitted to the intensive care could not breathe spontaneously. Additionally, some patients with COVID-19 also showed neurologic signs, such as headache, nausea, and vomiting. Increasing evidence shows that coronaviruses are not always confined to the respiratory tract and that they may also invade the central nervous system inducing neurological diseases. The infection of SARS-CoV has been reported in the brains from both patients and experimental animals, where the brainstem was heavily infected. Furthermore, some coronaviruses have been demonstrated able to spread via a synapse-connected route to the medullary cardiorespiratory center from the mechanoreceptors and chemoreceptors in the lung and lower respiratory airways. Considering the high similarity between SARS-CoV and SARS-CoV2, it remains to make clear whether the potential invasion of SARS-CoV2 is partially responsible for the acute respiratory failure of patients with COVID-19. Awareness of this may have a guiding significance for the prevention and treatment of the SARS-CoV-2-induced respiratory failure.

Li, Y. X., et al. (2020). "[Characteristics of peripheral blood leukocyte differential counts in patients with COVID-19]." Zhonghua Nei Ke Za Zhi **59**(0): E003.

To investigate the early changes of peripheral blood leukocyte differential counts in patients with COVID-19. Ten patients with COVID-19 and 30 patients with other viral pneumonia (non-COVID-19) admitted to Shanghai Jiao Tong University Affiliated Sixth People's Hospital and Jinshan Branch Hospital from January 22 to February 17, 2020 were enrolled in this study. The differential counts of white blood cells were analyzed. Patients in COVID-19 group showed relatively lower absolute white blood cell (WBC) count 4.95(3.90,6.03)x10(9)/L, lymphocyte absolute count 1.20(0.98,1.50)x10(9)/L and eosinophil absolute count 0.01(0.01,0.01)x10(9)/L. Leukopenia developed in two patients (2/10), lymphocytopenia also in two patients (2/10). Seven over ten patients presented with eosinophil cytopenia. In non-COVID-19 group, absolute WBC count was 8.20 (6.78,9.03) x10(9)/L (P<0.001), lymphocyte absolute count 1.75(1.20,2.53)x10(9)/L (P=0.036), eosinophil absolute count 0.02(0.01,0.03)x10(9)/L (P=0.05). Lymphocytopenia occurred in (16.7%) patients, eosinophil cytopenia in 16.7% patients too. In conclusion, leukopenia, lymphocytopenia and eosinophil cytopenia are more common in COVID-19 patients than those in non- COVID-19 patients.

Li, Z., et al. (2020). "Vicarious traumatization in the general public, members, and non-members of medical teams aiding in COVID-19 control." Brain Behav Immun.

Since December 2019, more than 79,000 people have been diagnosed with infection of the Corona Virus Disease 2019 (COVID-19). A large number of medical staff was sent to Wuhan city and Hubei province to aid COVID-19 control. Psychological stress, especially vicarious traumatization caused by the COVID-19 pandemic, should not be ignored. To address this concern, the study employed a total of 214 general public and 526 nurses (i.e., 234 front-line nurses and 292 non-front-line nurses) to evaluate vicarious traumatization scores via a mobile app-based questionnaire. Front-line nurses are engaged in the process of providing care for patients with COVID-19. The results showed that the vicarious traumatization scores for front-line nurses including scores for physiological and psychological responses, were significantly lower than those of non-front-line nurses ($P < 0.001$). Interestingly, the vicarious traumatization scores of the general public were significantly higher than those of the front-line nurses ($P < 0.001$); however, no statistical difference was observed compared to the scores of non-front-line nurses ($P > 0.05$). Therefore, increased attention should be paid to the psychological problems of the medical staff, especially non-front-line nurses, and general public under the situation of the spread and control of COVID-19. Early strategies that aim to prevent and treat vicarious traumatization in medical staff and general public are extremely necessary.

Lippi, G. and M. Plebani (2020). "The critical role of laboratory medicine during coronavirus disease 2019 (COVID-19) and other viral outbreaks." Clin Chem Lab Med.

Coronavirus disease 2019, abbreviated to COVID-19 and sustained by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), is the latest biological hazard to assume the relevance of insidious worldwide threat. One obvious question that

is now engaging the minds of many scientists and healthcare professionals is whether and eventually how laboratory medicine could efficiently contribute to counteract this and other (future) viral outbreaks. Despite there being evidence that laboratory tests are vital throughout many clinical pathways, there are at least three major areas where in vitro diagnostics can also provide essential contributions to diagnostic reasoning and managed care of patients with suspected or confirmed SARS-CoV-2 infection. These include etiological diagnosis, patient monitoring, as well as epidemiologic surveillance. Nonetheless, some structural and practical aspects may generate substantial hurdles in providing timely and efficient response to this infectious emergency, which basically include inadequate (insufficient) environment and shortage of technical and human resources for facing enhanced volume of tests on many infected patients, some of whom are with severe disease. Some proactive and reactive strategies may hence be identified to confront this serious healthcare challenge, which entail major investments on conventional laboratory resources, reinforcement of regional networks of clinical laboratories, installation of mobile laboratories, as well as being proactive in establishing laboratory emergency plans.

Lippi, G., et al. (2020). "Thrombocytopenia is associated with severe coronavirus disease 2019 (COVID-19) infections: A meta-analysis." Clin Chim Acta.

BACKGROUND: Coronavirus disease 2019 (COVID-19) is a novel infectious disease with lack of established laboratory markers available to evaluate illness severity. In this study, we investigate whether platelet count could differentiate between COVID-19 patients with or without severe disease. Additionally, we evaluate if thrombocytopenia is associated with severe COVID-19. METHODS: An electronic search in Medline, Scopus and Web of Science was performed to identify studies reporting data on platelet count in COVID-19 patients. A meta-analysis was performed, with calculation of weighted mean difference (WMD) of platelet number in COVID-19 patients with or without severe disease and odds ratio (OR) of thrombocytopenia for severe form of COVID-19. RESULTS: Nine studies with 1779 COVID-19 patients, 399 (22.4%) with severe disease, were included in the meta-analysis. The pooled analysis revealed that platelet count was significantly lower in patients with more severe COVID-19 (WMD -31x10(9)/L; 95% CI, from -35 to -29x10(9)/L). A subgroup analysis comparing patients by survival, found an even lower platelet count was observed with mortality (WMD, -48x10(9)/L; 95% CI, -57 to -39x10(9)/L. In the four studies (n=1427) which reported data on rate of thrombocytopenia, a low platelet count was associated with over fivefold enhanced risk of severe COVID-19 (OR, 5.1; 95% CI, 1.8-14.6). CONCLUSIONS: Low platelet count is associated with increased risk of severe disease and mortality in patients with COVID-19, and thus should serve as clinical indicator of worsening illness during hospitalization.

Lippi, G., et al. (2020). "Potential preanalytical and analytical vulnerabilities in the laboratory diagnosis of coronavirus disease 2019 (COVID-19)." Clin Chem Lab Med.

A novel zoonotic coronavirus outbreak is spreading all over the world. This pandemic disease has now been defined as novel coronavirus disease 2019 (COVID-19), and is sustained by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). As the current gold standard for the etiological diagnosis of SARS-CoV-2 infection is (real time) reverse transcription polymerase chain reaction (rRT-PCR) on respiratory tract specimens, the diagnostic accuracy of this technique shall be considered a foremost prerequisite. Overall, potential RT-PCR vulnerabilities include general preanalytical issues such as identification problems, inadequate procedures for collection, handling, transport and storage of the swabs, collection of inappropriate or inadequate material (for quality or volume), presence of interfering substances, manual errors, as well as specific aspects such as sample contamination and testing patients receiving antiretroviral therapy. Some analytical problems may also contribute to jeopardize the diagnostic accuracy, including testing outside the diagnostic window, active viral recombination, use of inadequately validated assays, insufficient harmonization, instrument malfunctioning, along with other specific technical issues. Some practical indications can hence be identified for minimizing the risk of diagnostic errors, encompassing the improvement of diagnostic accuracy by combining clinical evidence with results of chest computed tomography (CT) and RT-PCR, interpretation of RT-PCR results according to epidemiologic, clinical and radiological factors, recollection and testing of upper (or lower) respiratory specimens in patients with negative RT-PCR test results and high suspicion or probability of infection, dissemination of clear instructions for specimen (especially swab) collection, management and storage, together with refinement of molecular target (s) and thorough compliance with analytical procedures, including quality assurance.

Liu, D., et al. (2020). "Pregnancy and Perinatal Outcomes of Women With Coronavirus Disease

(COVID-19) Pneumonia: A Preliminary Analysis." AJR Am J Roentgenol: 1-6.

OBJECTIVE. The purpose of this study was to describe the clinical manifestations and CT features of coronavirus disease (COVID-19) pneumonia in 15 pregnant women and to provide some initial evidence that can be used for guiding treatment of pregnant women with COVID-19 pneumonia. MATERIALS AND METHODS. We reviewed the clinical data and CT examinations of 15 consecutive pregnant women with COVID-19 pneumonia in our hospital from January 20, 2020, to February 10, 2020. A semiquantitative CT scoring system was used to estimate pulmonary involvement and the time course of changes on chest CT. Symptoms and laboratory results were analyzed, treatment experiences were summarized, and clinical outcomes were tracked. RESULTS. Eleven patients had successful delivery (10 cesarean deliveries and one vaginal delivery) during the study period, and four patients were still pregnant (three in the second trimester and one in the third trimester) at the end of the study period. No cases of neonatal asphyxia, neonatal death, stillbirth, or abortion were reported. The most common early finding on chest CT was ground-glass opacity (GGO). With disease progression, crazy paving pattern and consolidations were seen on CT. The abnormalities showed absorptive changes at the end of the study period for all patients. The most common onset symptoms of COVID-19 pneumonia in pregnant women were fever (13/15 patients) and cough (9/15 patients). The most common abnormal laboratory finding was lymphocytopenia (12/15 patients). CT images obtained before and after delivery showed no signs of pneumonia aggravation after delivery. The four patients who were still pregnant at the end of the study period were not treated with antiviral drugs but had achieved good recovery. CONCLUSION. Pregnancy and childbirth did not aggravate the course of symptoms or CT features of COVID-19 pneumonia. All the cases of COVID-19 pneumonia in the pregnant women in our study were the mild type. All the women in this study-some of whom did not receive antiviral drugs-achieved good recovery from COVID-19 pneumonia.

Liu, F., et al. (2020). "Patients of COVID-19 may benefit from sustained lopinavir-combined regimen and the increase of eosinophil may predict the outcome of COVID-19 progression." Int J Infect Dis.

OBJECTIVES: To explore the epidemiological information, clinical characteristics, therapeutic outcomes and temporal progression of laboratory findings in 2019-coronavirus disease (COVID-19) patients exposed to lopinavir. METHODS: We collected data from ten COVID-19 patients admitted between January 22, 2020 and February 11, 2020 at Xixi hospital in Hangzhou, China. RESULTS: Of ten patients, secondary, tertiary and quartus patients emerged, the incubation period was 3-7 days. Mainly initial symptoms were cough and low fever (37.3-38.0 ). An asymptomatic case presented normal radiography, the others existed ground glass opacities. All cases (three transferred, seven discharged) exposed to lopinavir on initial hospitalization. Three patients stopped lopinavir using because of adverse effect, two of them deteriorated, one hospitalized longer than others who with sustained lopinavir using. Levels of potassium, albumin, lymphocyte were low, but increased persistently after treatment. Eosinophil values were low on initial hospitalization, then all returned to normal before discharge. Viral load of SARS-CoV-2, radiography and eosinophil improved continuously in 3-14, 6-8 and 7-9 days, respectively. CONCLUSIONS: Increasing eosinophils may be an indicator of COVID-19 improvement. The COVID-19 patients may benefit from sustained lopinavir using. More researches on a larger scale are needed to verify these points.

Liu, H., et al. (2020). "Clinical and CT imaging features of the COVID-19 pneumonia: Focus on pregnant women and children." J Infect.

BACKGROUND: The ongoing outbreak of COVID-19 pneumonia is globally concerning. We aimed to investigate the clinical and CT features in the pregnant women and children with this disease, which have not been well reported. METHODS: Clinical and CT data of 59 patients with COVID-19 from January 27 to February 14, 2020 were retrospectively reviewed, including 14 laboratory-confirmed non-pregnant adults, 16 laboratory-confirmed and 25 clinically-diagnosed pregnant women, and 4 laboratory-confirmed children. The clinical and CT features were analyzed and compared. FINDINGS: Compared with the non-pregnant adults group (n=14), initial normal body temperature (9 [56%] and 16 [64%]), leukocytosis (8 [50%] and 9 [36%]) and elevated neutrophil ratio (14 [88%] and 20 [80%]), and lymphopenia (9 [56%] and 16 [64%]) were more common in the laboratory-confirmed (n=16) and clinically-diagnosed (n=25) pregnant groups. Totally 614 lesions were detected with predominantly peripheral and bilateral distributions in 54 (98%) and 37 (67%) patients, respectively. Pure ground-glass opacity (GGO) was the predominant presence in 94/131 (72%) lesions for the non-pregnant adults. Mixed consolidation and complete consolidation were more common in the laboratory-confirmed (70/161 [43%]) and clinically-diagnosed (153/322 [48%]) pregnant groups than 37/131 (28%) in the non-pregnant adults (P=0.007, P<0.001). GGO with reticulation was less common in

9/161 (6%) and 16/322 (5%) lesions for the two pregnant groups than 24/131 (18%) for the non-pregnant adults (P=0.001, P<0.001). The pulmonary involvement in children with COVID-19 was mild with a focal GGO or consolidation. Twenty-three patients underwent follow-up CT, revealing progression in 9/13 (69%) at 3 days whereas improvement in 8/10 (80%) at 6-9 days after initial CT scans. INTERPRETATION: Atypical clinical findings of pregnant women with COVID-19 could increase the difficulty in initial identification. Consolidation was more common in the pregnant groups. The clinically-diagnosed cases were vulnerable to more pulmonary involvement. CT was the modality of choice for early detection, severity assessment, and timely therapeutic effects evaluation for the cases with epidemic and clinical features of COVID-19 with or without laboratory confirmation. The exposure history and clinical symptoms were more helpful for screening in children versus chest CT.

Liu, K., et al. (2020). "Clinical feature of COVID-19 in elderly patients: a comparison with young and middle-aged patients." J Infect.

BACKGROUND: Due to the general susceptibility of new coronaviruses, the clinical characteristics and outcomes of elderly and young patients may be different. OBJECTIVE: To analyze the clinical characteristics of elderly patients with new-type coronavirus pneumonia (COVID-19). METHODS: This is a retrospective study of patients with new coronavirus pneumonia (COVID-19) who were hospitalized in Hainan Provincial People's Hospital from January 15, 2020 to February 18, 2020. Compare the clinical characteristics of elderly with Young and Middle-aged patients. RESULTS: A total of 56 patients were evaluated, 18 elderly patients (32.14%), and 38 young and middle-aged patients (67.86%). The most common symptoms in both groups were fever, followed by cough and sputum. Four patients in the elderly group received negative pressure ICU for mechanical ventilation, and five patients in the young and middle-aged group. One patient died in the elderly group (5.56%), and two patients died in the young and middle-aged group (5.26%). The PSI score of the elderly group was higher than that of the young and middle-aged group (P<0.001). The proportion of patients with PSI grades IV and V was significantly higher in the elderly group than in the young and middle-aged group (P<0.05). The proportion of multiple lobe involvement in the elderly group was higher than that in the young and middle-aged group (P<0.001), and there was no difference in single lobe lesions between the two groups. The proportion of lymphocytes in the elderly group was significantly lower than that in the young and middle-aged group (P<0.001), and the C-reactive protein was significantly higher in the young group (P<0.001). The Lopinavir and Ritonavir Tablets, Chinese medicine, oxygen therapy, and mechanical ventilation were statistically different in the elderly group and the young and middle-aged group, and the P values were all <0.05.

Liu, M., et al. (2020). "[Analysis on epidemic situation and spatiotemporal changes of COVID-19 in Anhui]." Zhonghua Yu Fang Yi Xue Za Zhi **54**(0): E019.

We used the epidemic data of COVID-19 published on the official website of the municipal health commission in Anhui province. We mapped the spatiotemporal changes of confirmed cases, fitted the epidemic situation by the population growth curve at different stages and took statistical description and analysis of the epidemic situation in Anhui province. It was found that the cumulative incidence of COVID-19 was 156/100 000 by February 18, 2020 and the trend of COVID-19 epidemic declined after February 7, changing from J curve to S curve. The actual number of new cases began to decrease from February 2 to February 4 due to the time of case report and actual onset delayed by 3 to 5 days.

Lu, Q. and Y. Shi (2020). "Coronavirus disease (COVID-19) and neonate: What neonatologist need to know." J Med Virol.

Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) cause china epidemics with high morbidity and mortality, the infection has been transmitted to other countries. About three neonates and more than 230 children cases are reported. The disease condition of the main children was mild. There is currently no evidence that SARS-CoV-2 can be transmitted transplacentally from mother to the newborn. The treatment strategy for children with Coronavirus disease (COVID-19) is based on adult experience. Thus far, no deaths have been reported in the pediatric age group. This review describes the current understanding of COVID-19 infection in newborns and children.

Lu, S., et al. (2020). "Alert for non-respiratory symptoms of Coronavirus Disease 2019 (COVID-19) patients in epidemic period: A case report of familial cluster with three asymptomatic COVID-19 patients." J Med Virol.

At present, Coronavirus Disease 2019 (COVID-19) is rampaging around the world. However, asymptomatic carriers intensified the difficulty of prevention and management. Here we reported the screening, clinical feathers, and treatment process of a family cluster involving three COVID-19 patients. The

discovery of the first asymptomatic carrier in this family cluster depends on the repeated and comprehensive epidemiological investigation by disease control experts. In addition, the combination of multiple detection methods can help clinicians find asymptomatic carriers as early as possible. In conclusion, the prevention and control experience of this family cluster showed that comprehensive rigorous epidemiological investigation and combination of multiple detection methods were of great value for the detection of hidden asymptomatic carriers. This article is protected by copyright. All rights reserved.

Lu, T. and H. Pu (2020). "Computed Tomography Manifestations of 5 Cases of the Novel Coronavirus Disease 2019 (COVID-19) Pneumonia From Patients Outside Wuhan." J Thorac Imaging.

Clinical, laboratory, and computed tomography (CT) findings of 5 cases of the novel Coronavirus Disease 2019 (COVID-19) pneumonia from patients outside of Wuhan were reviewed. The human-to-human transmission of the virus may explain the infection of the disease outside of Wuhan. CT examination is important in the early detection and follow-up of the disease. With a history of exposure or travelling, symptoms of fever and cough, and the typical CT manifestation such as ground-glass opacity with a peripheral distribution, we should also think of the possibility of the COVID-19 pneumonia in patients outside of Wuhan.

Ludvigsson, J. F. (2020). "Systematic review of COVID-19 in children show milder cases and a better prognosis than adults." Acta Paediatr.

AIM: The coronavirus disease 2019 (COVID-19) pandemic has affected hundreds of thousands of people. Data on symptoms and prognoses in children are rare. METHODS: A systematic literature review was carried out to identify papers on COVID-19, which is caused by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), using the Medline and EMBASE databases between 1 January and 18 March 2020. RESULTS: The search identified 45 relevant scientific papers and letters. The review showed that children have so far accounted for 1-5% of diagnosed COVID-19 cases, they often have milder disease than adults and deaths have been extremely rare. Diagnostic findings have been similar to adults, with fever and respiratory symptoms being prevalent, but fewer children seem to have developed severe pneumonia. Elevated inflammatory markers were less common in children and lymphocytopenia seemed rare. Newborn infants have developed symptomatic COVID-19, but evidence of vertical intrauterine transmission was scarce. Suggested treatment included providing oxygen, inhalations, nutritional support and maintaining fluids and electrolyte balances. CONCLUSIONS: COVID-19 has occurred in children, but they seemed to have a milder disease course and better prognoses than adults. Deaths were extremely rare.

Pagano, M. B., et al. (2020). "Prepare to adapt: Blood supply and transfusion support during the first 2 weeks of the 2019 Novel Coronavirus (COVID-19) pandemic affecting Washington State." Transfusion.

BACKGROUND: The first coronavirus (COVID-19) case was reported in United States (US), in the state of Washington, approximately three months after the outbreak in Wuhan, China. Three weeks later, the US federal government declared the pandemic a national emergency. The number of confirmed COVID-19 positive cases increased rather rapidly and changed routine daily activities of the community. STUDY DESIGN AND METHODS: This brief report describes the response from the hospital, the regional blood center, and the hospital-based transfusion services to the events that took place in the community during the initial phases of the pandemic. RESULTS: In Washington State, the first week of March started with 4 confirmed cases and ended with 150; by the end of the second week of March there were more than 700 cases of confirmed COVID-19. During the first week, blood donations dropped significantly. Blood units provided from blood centers of non-affected areas of the country helped keep inventory stable and allow for routine hospital operations. The hospital-based transfusion service began prospective triaging of blood orders to monitor and prioritize blood utilization. In the second week, blood donations recovered, and the hospital postponed elective procedures to ensure staff and personal protective equipment were appropriate for the care of critical patients. CONCLUSION: As community activities are disrupted and hospital activities switch from routine operations to pandemic-focused and urgent care-oriented, the blood supply and utilization requires a number of transformations.

Palacios Cruz, M., et al. (2020). "COVID-19, a worldwide public health emergency." Rev Clin Esp.

A new coronavirus outbreak emerged on the 31(st) of December 2019 in Wuhan, China, causing commotion among the medical community and the rest of the world. This new species of coronavirus has been termed 2019-nCoV and has caused a considerable number of cases of infection and deaths in China and, to a growing degree, beyond China, becoming a worldwide public health emergency. 2019-nCoV has high homology to other pathogenic coronaviruses, such as those originating from bat-related zoonosis

(SARS-CoV), which caused approximately 646 deaths in China at the start of the decade. The mortality rate for 2019-nCoV is not as high (approximately 2-3%), but its rapid propagation has resulted in the activation of protocols to stop its spread. This pathogen has the potential to become a pandemic. It is therefore vital to follow the personal care recommendations issued by the World Health Organisation.

Pan, F., et al. (2020). "Time Course of Lung Changes On Chest CT During Recovery From 2019 Novel Coronavirus (COVID-19) Pneumonia." Radiology: 200370.

Background Chest CT is used to assess the severity of lung involvement in COVID-19 pneumonia. Purpose To determine the change in chest CT findings associated with COVID-19 pneumonia from initial diagnosis until patient recovery. Materials and Methods This retrospective review included patients with RT-PCR confirmed COVID-19 infection presenting between 12 January 2020 to 6 February 2020. Patients with severe respiratory distress and/ or oxygen requirement at any time during the disease course were excluded. Repeat Chest CT was obtained at approximately 4 day intervals. The total CT score was the sum of lung involvement (5 lobes, score 1-5 for each lobe, range, 0 none, 25 maximum) was determined. Results Twenty one patients (6 males and 15 females, age 25-63 years) with confirmed COVID-19 pneumonia were evaluated. These patients under went a total of 82 pulmonary CT scans with a mean interval of 4+/-1 days (range: 1-8 days). All patients were discharged after a mean hospitalized period of 17+/-4 days (range: 11-26 days). Maximum lung involved peaked at approximately 10 days (with the calculated total CT score of 6) from the onset of initial symptoms (R2=0.25), p<0.001). Based on quartiles of patients from day 0 to day 26 involvement, 4 stages of lung CT were defined: Stage 1 (0-4 days): ground glass opacities (GGO) in 18/24 (75%) patients with the total CT score of 2+/-2; (2)Stage-2 (5-8d days): increased crazy-paving pattern 9/17 patients (53%) with a increase in total CT score (6+/-4, p=0.002); (3) Stage-3 (9-13days): consolidation 19/21 (91%) patients with the peak of total CT score (7+/-4); (4) Stage-4 (>/=14 days): gradual resolution of consolidation 15/20 (75%) patients with a decreased total CT score (6+/-4) without crazy-paving pattern. Conclusion In patients recovering from COVID-19 pneumonia (without severe respiratory distress during the disease course), lung abnormalities on chest CT showed greatest severity approximately 10 days after initial onset of symptoms.

Ren, Y. H., et al. (2020). "[When COVID-19 encounters interstitial lung disease: challenges and management]." Zhonghua Jie He He Hu Xi Za Zhi **43**(0): E039.

In December 2019, a new type of coronavirus pneumonia (COVID-19) emerged in Wuhan, Hubei, and spread rapidly to China and over 100 countries around the world. The lung injury and repair caused by COVID-19 has many similarities with the onset and progression of interstitial lung disease (ILD). Therefore, it is difficult to distinguish between COVID-19 and some types of new-onset ILD or other causes leading to acute exacerbation of ILD. Clinicians need to comprehensively analyze the epidemic history, disease onset characteristics, clinical manifestations, image characteristics, serological andpathogenic microorganism test results to confirm diagnosis. Because of this, the article will discuss the issues related to the differential diagnosis and management of COVID-19 and ILD, and try to provide reasonable suggestions.

Repici, A., et al. (2020). "Coronavirus (COVID-19) outbreak: what the department of endoscopy should know." Gastrointest Endosc.

Italy recorded its first case of confirmed acute respiratory case due to Coronavirus on February 18, 2020, soon after the initial reports in China. Since that time, Italy and nations throughout the world have adopted very stringent and severe measures to protect populations from spread of infection. Despite these measures, the number of infected people is growing exponentially with a significant number of patients developing acute respiratory insufficiency. Endoscopy departments face significant risk for diffusion of respiratory diseases that can be spread via an airborne route, including aspiration of oral and fecal material via endoscopes. The purpose of this article is to discuss the measures, with specific focus on personal protection equipment and dressing code modalities, which have been implemented in our hospital to prevent further dissemination of COVID-19 infection.

Sun, M. L., et al. (2020). "[Inhibitors of RAS Might Be a Good Choice for the Therapy of COVID-19 Pneumonia]." Zhonghua Jie He He Hu Xi Za Zhi **43**(3): 219-222.

The novel coronavirus 2019 (COVID-19) infected patients by binding human ACE2, leading to severe pneumonia and highly mortality rate in patients. At present, there is no definite and effective treatment for COVID-19. ACE2 plays an important role in the RAS, and the imbalance between ACE/Ang II/AT1R pathway and ACE2/Ang (1-7)/Mas receptor pathway in the RAS system will lead to multi-system inflammation. Increased ACE and Ang II are poor prognostic factors for severe pneumonia. Animal studies have shown that RAS inhibitors could

effectively relieve symptoms of acute severe pneumonia and respiratory failure. The binding of COVID-19 and ACE2 resulted in the exhaustion of ACE2, and then ACE2/Ang (1-7)/Mas receptor pathway was inhibited. The balance of the RAS system was broken, and this would lead to the exacerbation of acute severe pneumonia. Therefore, we speculate that ACEI and AT1R inhibitors could be used in patients with COVID-19 pneumonia under the condition of controlling blood pressure, and might reduce the pulmonary inflammatory response and mortality.

Sun, M. L., et al. (2020). "[Inhibitors of RAS Might Be a Good Choice for the Therapy of COVID-19 Pneumonia]." Zhonghua Jie He He Hu Xi Za Zhi **43**(0): E014.

The novel coronavirus 2019 (COVID-19) infected patients by binding human ACE2, leading to severe pneumonia and highly mortality rate in patients. At present, there is no definite and effective treatment for COVID-19. ACE2 plays an important role in the RAS, and the imbalance between ACE/Ang II/AT1R pathway and ACE2/Ang (1-7)/Mas receptor pathway in the RAS system will lead to multi-system inflammation. Increased ACE and Ang II are poor prognostic factors for severe pneumonia. Animal studies have shown that RAS inhibitors could effectively relieve symptoms of acute severe pneumonia and respiratory failure. The binding of COVID-19 and ACE2 resulted in the exhaustion of ACE2, and then ACE2/Ang (1-7)/Mas receptor pathway was inhibited. The balance of the RAS system was broken, and this would lead to the exacerbation of acute severe pneumonia. Therefore, we speculate that ACEI and AT1R inhibitors could be used in patients with COVID-19 pneumonia under the condition of controlling blood pressure, and might reduce the pulmonary inflammatory response and mortality.

Sun, P., et al. (2020). "Understanding of COVID-19 based on current evidence." J Med Virol.

Since December 2019, a series of unexplained pneumonia cases have been reported in Wuhan, China. On 12 January 2020, the World Health Organization (WHO) temporarily named this new virus as the 2019 novel coronavirus (2019-nCoV). On 11 February 2020, the WHO officially named the disease caused by the 2019-nCoV as coronavirus disease (COVID-19). The COVID-19 epidemic is spreading all over the world, especially in China. Based on the published evidence, we systematically discuss the characteristics of COVID-19 in the hope of providing a reference for future studies and help for the prevention and control of the COVID-19 epidemic.

Tian, S., et al. (2020). "Characteristics of COVID-19 infection in Beijing." J Infect **80**(4): 401-406.

BACKGROUND: Since the first case of a novel coronavirus (COVID-19) infection pneumonia was detected in Wuhan, China, a series of confirmed cases of the COVID-19 were found in Beijing. We analyzed the data of 262 confirmed cases to determine the clinical and epidemiological characteristics of COVID-19 in Beijing. METHODS: We collected patients who were transferred by Beijing Emergency Medical Service to the designated hospitals. The information on demographic, epidemiological, clinical, laboratory test for the COVID-19 virus, diagnostic classification, cluster case and outcome were obtained. Furthermore we compared the characteristics between severe and common confirmed cases which including mild cases, no-pneumonia cases and asymptomatic cases, and we also compared the features between COVID-19 and 2003 SARS. FINDINGS: By Feb 10, 2020, 262 patients were transferred from the hospitals across Beijing to the designated hospitals for special treatment of the COVID-19 infected by Beijing emergency medical service. Among of 262 patients, 46 (17.6%) were severe cases, 216 (82.4%) were common cases, which including 192 (73.3%) mild cases, 11(4.2%) non-pneumonia cases and 13 (5.0%) asymptomatic cases respectively. The median age of patients was 47.5 years old and 48.5% were male. 192 (73.3%) patients were residents of Beijing, 50 (26.0%) of which had been to Wuhan, 116 (60.4%) had close contact with confirmed cases, 21 (10.9%) had no contact history. The most common symptoms at the onset of illness were fever (82.1%), cough (45.8%), fatigue (26.3%), dyspnea (6.9%) and headache (6.5%). The median incubation period was 6.7 days, the interval time from between illness onset and seeing a doctor was 4.5 days. As of Feb 10, 17.2% patients have discharged and 81.7% patients remain in hospital in our study, the fatality of COVID-19 infection in Beijing was 0.9%. INTERPRETATION: On the basis of this study, we provided the ratio of the COVID-19 infection on the severe cases to the mild, asymptomatic and non-pneumonia cases in Beijing. Population was generally susceptible, and with a relatively low fatality rate. The measures to prevent transmission was very successful at early stage, the next steps on the COVID-19 infection should be focused on early isolation of patients and quarantine for close contacts in families and communities in Beijing. FUNDING: Beijing Municipal Science and Technology Commission and Ministry of Science and Technology.

Tian, S., et al. (2020). "Pulmonary Pathology of Early-Phase 2019 Novel Coronavirus (COVID-19) Pneumonia in Two Patients With Lung Cancer." J Thorac Oncol.

There is currently a lack of pathologic data on the novel coronavirus (severe acute respiratory syndrome coronavirus 2) pneumonia, or coronavirus disease 2019 (COVID-19), from autopsy or biopsy. Two patients who recently underwent lung lobectomies for adenocarcinoma were retrospectively found to have had COVID-19 at the time of the operation. These two cases thus provide important first opportunities to study the pathology of COVID-19. Pathologic examinations revealed that apart from the tumors, the lungs of both patients exhibited edema, proteinaceous exudate, focal reactive hyperplasia of pneumocytes with patchy inflammatory cellular infiltration, and multinucleated giant cells. Hyaline membranes were not prominent. Because both patients did not exhibit symptoms of pneumonia at the time of operation, these changes likely represent an early phase of the lung pathology of COVID-19 pneumonia.

Tilocca, B., et al. (2020). "Molecular basis of COVID-19 relationships in different species: a one health perspective." Microbes Infect.

Outside the Hubei province, China, the mild form of infection and the progressive recover of the COVID-19 patients suggest the intervention of "unconventional" biological mechanisms worthy of attention. Based on the high-homology between the Spike protein epitopes of taxonomically-related coronaviruses, we hypothesized that past contact with infected dogs shield humans against the circulating SARS-CoV-2. Elseways, the recurrent virus exposure over a short time-lapse might result in the Antibody Dependent Enhancement, triggering the violent immune reaction responsible for the severe clinical outcomes observed in the Hubei province. Nevertheless, further experimental studies are desired for a confidential evaluation of the postulated hypotheses.

Tolksdorf, K., et al. (2020). "Influenza-associated pneumonia as reference to assess seriousness of coronavirus disease (COVID-19)." Euro Surveill **25**(11).

Information on severity of coronavirus disease (COVID-19) (transmissibility, disease seriousness, impact) is crucial for preparation of healthcare sectors. We present a simple approach to assess disease seriousness, creating a reference cohort of pneumonia patients from sentinel hospitals. First comparisons exposed a higher rate of COVID-19 patients requiring ventilation. There were more case fatalities among COVID-19 patients without comorbidities than in the reference cohort. Hospitals should prepare for high utilisation of ventilation and intensive care resources.

Touret, F. and X. de Lamballerie (2020). "Of chloroquine and COVID-19." Antiviral Res **177**: 104762.

Recent publications have brought attention to the possible benefit of chloroquine, a broadly used antimalarial drug, in the treatment of patients infected by the novel emerged coronavirus (SARS-CoV-2). The scientific community should consider this information in light of previous experiments with chloroquine in the field of antiviral research.

Wan, S., et al. (2020). "Clinical Features and Treatment of COVID-19 Patients in Northeast Chongqing." J Med Virol.

BACKGROUND: The outbreak of the novel coronavirus in China (SARS CoV-2) that began in December 2019 presents a significant and urgent threat to global health. This study was conducted to provide the international community with a deeper understanding of this new infectious disease. METHODS: Epidemiological, clinical features, laboratory findings, radiological characteristics, treatment, and clinical outcomes of 135 patients in northeast Chongqing were collected and analyzed in this study. RESULTS: A total of 135 hospitalized patients with COVID-19 were enrolled. The median age was 47 years (IQR 36-55), and there was no significant gender difference (53.3% men). The majority of patients had contact with people from the Wuhan area. Forty-three (31.9%) patients had underlying disease, primarily hypertension (13 [9.6%]), diabetes (12 [8.9%]), cardiovascular disease (7 [5.2%]), and malignancy (4 [3.0%]). Common symptoms included fever (120 [88.9%]), cough (102 [76.5%]), and fatigue (44 [32.5%]). Chest CT scans showed bilateral patchy shadows or ground glass opacity in the lungs of all of the patients. All of the patients received antiviral therapy (135 [100%] (Kaletra and interferon were both used), antibacterial therapy (59 [43.7%]), and corticosteroids (36 [26.7%]). In addition, many patients received traditional Chinese medicine (124 [91.8%]). It is suggested that patients should receive Kaletra early and should be treated by a combination of western and Chinese medicine. Compared with the mild cases, the severe cases had lower lymphocyte counts and higher plasma levels of Pt, APTT, D-dimer, LDH, PCT, ALB, CRP, and AST. CONCLUSION: In this study, the clinic features and therapies of 135 COVID-19 patients were demonstrated. Kaletra and traditional Chinese medicine played an important role in the treatment of the viral pneumonia. Further studies are required to explore the role of Kaletra and traditional Chinese medicine in the treatment of

COVID-19. This article is protected by copyright. All rights reserved.

Wang, C., et al. (2020). "Immediate Psychological Responses and Associated Factors during the Initial Stage of the 2019 Coronavirus Disease (COVID-19) Epidemic among the General Population in China." Int J Environ Res Public Health **17**(5).

Background: The 2019 coronavirus disease (COVID-19) epidemic is a public health emergency of international concern and poses a challenge to psychological resilience. Research data are needed to develop evidence-driven strategies to reduce adverse psychological impacts and psychiatric symptoms during the epidemic. The aim of this study was to survey the general public in China to better understand their levels of psychological impact, anxiety, depression, and stress during the initial stage of the COVID-19 outbreak. The data will be used for future reference. Methods: From 31 January to 2 February 2020, we conducted an online survey using snowball sampling techniques. The online survey collected information on demographic data, physical symptoms in the past 14 days, contact history with COVID-19, knowledge and concerns about COVID-19, precautionary measures against COVID-19, and additional information required with respect to COVID-19. Psychological impact was assessed by the Impact of Event Scale-Revised (IES-R), and mental health status was assessed by the Depression, Anxiety and Stress Scale (DASS-21). Results: This study included 1210 respondents from 194 cities in China. In total, 53.8% of respondents rated the psychological impact of the outbreak as moderate or severe; 16.5% reported moderate to severe depressive symptoms; 28.8% reported moderate to severe anxiety symptoms; and 8.1% reported moderate to severe stress levels. Most respondents spent 20-24 h per day at home (84.7%); were worried about their family members contracting COVID-19 (75.2%); and were satisfied with the amount of health information available (75.1%). Female gender, student status, specific physical symptoms (e.g., myalgia, dizziness, coryza), and poor self-rated health status were significantly associated with a greater psychological impact of the outbreak and higher levels of stress, anxiety, and depression ($p < 0.05$). Specific up-to-date and accurate health information (e.g., treatment, local outbreak situation) and particular precautionary measures (e.g., hand hygiene, wearing a mask) were associated with a lower psychological impact of the outbreak and lower levels of stress, anxiety, and depression ($p < 0.05$). Conclusions: During the initial phase of the COVID-19 outbreak in China, more than half of the respondents rated the psychological impact as moderate-to-severe, and about one-third reported moderate-to-severe anxiety. Our findings identify factors associated with a lower level of psychological impact and better mental health status that can be used to formulate psychological interventions to improve the mental health of vulnerable groups during the COVID-19 epidemic.

Wang, Y., et al. (2020). "Unique epidemiological and clinical features of the emerging 2019 novel coronavirus pneumonia (COVID-19) implicate special control measures." J Med Virol.

By Feb 27(th), 2020, the outbreak of COVID-19 caused 82623 confirmed cases and 2858 deaths globally, more than Severe Acute Respiratory Syndrome (SARS) (8273 cases, 775 deaths) and Middle East Respiratory Syndrome (MERS) (1139 cases, 431 deaths) caused in 2003 and 2013 respectively. COVID-19 has spread to 46 countries internationally. Total fatality rate of COVID-19 is estimated at 3.46% by far based on published data from Chinese Center for Disease Control and Prevention (China CDC). Average incubation period of COVID-19 is around 6.4 days, ranges from 0-24 days. The basic reproductive number (R0 ) of COVID-19 ranges from 2-3.5 at the early phase regardless of different prediction models, which is higher than SARS and MERS. A study from China CDC showed majority of patients (80.9%) were considered asymptomatic or mild pneumonia but released large amounts of viruses at the early phase of infection, which posed enormous challenges for containing the spread of COVID-19. Nosocomial transmission was another severe problem. 3019 health workers were infected by Feb 12, 2020, which accounted for 3.83% of total number of infections, and extremely burdened the health system, especially in Wuhan. Limited epidemiological and clinical data suggest that the disease spectrum of COVID-19 may differ from SARS or MERS. We summarize latest literatures on genetic, epidemiological, and clinical features of COVID-19 in comparison to SARS and MERS and emphasize special measures on diagnosis and potential interventions. This review will improve our understanding of the unique features of COVID-19 and enhance our control measures in the future. This article is protected by copyright. All rights reserved.

Wang, Y., et al. (2020). "[Estimating the basic reproduction number of COVID-19 in Wuhan, China]." Zhonghua Liu Xing Bing Xue Za Zhi **41**(4): 476-479.

Objective: The number of confirmed and suspected cases of the COVID-19 in Hubei province is still increasing. However, the estimations of the basic reproduction number of COVID-19 varied greatly

across studies. The objectives of this study are 1) to estimate the basic reproduction number (R (0)) of COVID-19 reflecting the infectiousness of the virus and 2) to assess the effectiveness of a range of controlling intervention. Method: The reported number of daily confirmed cases from January 17 to February 8, 2020 in Hubei province were collected and used for model fit. Four methods, the exponential growth (EG), maximum likelihood estimation (ML), sequential Bayesian method (SB) and time dependent reproduction numbers (TD), were applied to estimate the R (0). Result: Among the four methods, the EG method fitted the data best. The estimated R (0) was 3.49 (95% CI: 3.42-3.58) by using EG method. The R (0) was estimated to be 2.95 (95%CI: 2.86-3.03) after taking control measures. Conclusion: In the early stage of the epidemic, it is appropriate to estimate R (0) using the EG method. Meanwhile, timely and effective control measures were warranted to further reduce the spread of COVID-19.

Weston, S. and M. B. Frieman (2020). "COVID-19: Knowns, Unknowns, and Questions." mSphere **5**(2).

The recent emergence of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) from the Hubei province in China in late 2019 demonstrates the epidemic potential of coronaviruses. The rapid spread of this virus across the world in only 2 months highlights the transmissibility of this family of viruses and the significant morbidity and mortality that they can cause. We highlight the current state of knowledge of coronavirus biology while answering questions concerning the current outbreak of SARS-CoV-2.

Wujtewicz, M., et al. (2020). "COVID-19 - what should anaethesiologists and intensivists know about it?" Anaesthesiol Intensive Ther **52**(1): 34-41.

Over the past three months, the world has faced an unprecedented health hazard. The World Health Organization has announced a pandemic infection with an unknown species of coronavirus called SARS-CoV-2. Spreading mainly through the droplet route, the virus causes mild symptoms in the majority of cases, the most common being: fever (80%), dry cough (56%), fatigue (22%) and muscle pain (7%); less common symptoms include a sore throat, a runny nose, diarrhea, hemoptysis and chills. A life-threatening complication of SARS-CoV-2 infection is an acute respiratory distress syndrome (ARDS), which occurs more often in older adults, those with immune disorders and co-morbidities. Severe forms of the infection, being an indication for treatment in the intensive care unit, comprise acute lung inflammation, ARDS, sepsis and septic shock. The article presents basic information about etiology, pathogenesis and diagnostics (with particular emphasis on the importance of tomocomputer imaging), clinical picture, treatment and prevention of the infection. It goes on to emphasize the specific risks of providing anesthesiology and intensive care services. Due to the fact that effective causal treatment is not yet available and the number of infections and deaths increases day by day, infection prevention and strict adherence to recommendations of infection control organizations remain the basis for fighting the virus.

Xia, W., et al. (2020). "Clinical and CT features in pediatric patients with COVID-19 infection: Different points from adults." Pediatr Pulmonol.

PURPOSE: To discuss the different characteristics of clinical, laboratory, and chest computed tomography (CT) in pediatric patients from adults with 2019 novel coronavirus (COVID-19) infection. METHODS: The clinical, laboratory, and chest CT features of 20 pediatric inpatients with COVID-19 infection confirmed by pharyngeal swab COVID-19 nucleic acid test were retrospectively analyzed during 23 January and 8 February 2020. The clinical and laboratory information was obtained from inpatient records. All the patients were undergone chest CT in our hospital. RESULTS: Thirteen pediatric patients (13/20, 65%) had an identified history of close contact with COVID-19 diagnosed family members. Fever (12/20, 60%) and cough (13/20, 65%) were the most common symptoms. For laboratory findings, procalcitonin elevation (16/20, 80%) should be pay attention to, which is not common in adults. Coinfection (8/20, 40%) is common in pediatric patients. A total of 6 patients presented with unilateral pulmonary lesions (6/20, 30%), 10 with bilateral pulmonary lesions (10/20, 50%), and 4 cases showed no abnormality on chest CT (4/20, 20%). Consolidation with surrounding halo sign was observed in 10 patients (10/20, 50%), ground-glass opacities were observed in 12 patients (12/20, 60%), fine mesh shadow was observed in 4 patients (4/20, 20%), and tiny nodules were observed in 3 patients (3/20, 15%). CONCLUSION: Procalcitonin elevation and consolidation with surrounding halo signs were common in pediatric patients which were different from adults. It is suggested that underlying coinfection may be more common in pediatrics, and the consolidation with surrounding halo sign which is considered as a typical sign in pediatric patients.

Xiao, H., et al. (2020). "The Effects of Social Support on Sleep Quality of Medical Staff Treating Patients with Coronavirus Disease 2019 (COVID-19) in January and February 2020 in China." Med Sci Monit **26**: e923549.

BACKGROUND Coronavirus disease 2019 (COVID-19), formerly known as severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and 2019 novel coronavirus (2019-nCoV), was first identified in December 2019 in Wuhan City, China. Structural equation modeling (SEM) is a multivariate analysis method to determine the structural relationship between measured variables. This observational study aimed to use SEM to determine the effects of social support on sleep quality and function of medical staff who treated patients with COVID-19 in January and February 2020 in Wuhan, China. MATERIAL AND METHODS A one-month cross-sectional observational study included 180 medical staff who treated patients with COVID-19 infection. Levels of anxiety, self-efficacy, stress, sleep quality, and social support were measured using the and the Self-Rating Anxiety Scale (SAS), the General Self-Efficacy Scale (GSES), the Stanford Acute Stress Reaction (SASR) questionnaire, the Pittsburgh Sleep Quality Index (PSQI), and the Social Support Rate Scale (SSRS), respectively. Pearson's correlation analysis and SEM identified the interactions between these factors. RESULTS Levels of social support for medical staff were significantly associated with self-efficacy and sleep quality and negatively associated with the degree of anxiety and stress. Levels of anxiety were significantly associated with the levels of stress, which negatively impacted self-efficacy and sleep quality. Anxiety, stress, and self-efficacy were mediating variables associated with social support and sleep quality. CONCLUSIONS SEM showed that medical staff in China who were treating patients with COVID-19 infection during January and February 2020 had levels of anxiety, stress, and self-efficacy that were dependent on sleep quality and social support.

Xiao, H., et al. (2020). "Social Capital and Sleep Quality in Individuals Who Self-Isolated for 14 Days During the Coronavirus Disease 2019 (COVID-19) Outbreak in January 2020 in China." Med Sci Monit **26**: e923921.

BACKGROUND From the end of December 2019, coronavirus disease 2019 (COVID-19) began to spread in central China. Social capital is a measure of social trust, belonging, and participation. This study aimed to investigate the effects of social capital on sleep quality and the mechanisms involved in people who self-isolated at home for 14 days in January 2020 during the COVID-19 epidemic in central China. MATERIAL AND METHODS Individuals (n=170) who self-isolated at home for 14 days in central China, completed self-reported questionnaires on the third day of isolation. Individual social capital was assessed using the Personal Social Capital Scale 16 (PSCI-16) questionnaire. Anxiety was assessed using the Self-Rating Anxiety Scale (SAS) questionnaire, stress was assessed using the Stanford Acute Stress Reaction (SASR) questionnaire, and sleep was assessed using the Pittsburgh Sleep Quality Index (PSQI) questionnaire. Path analysis was performed to evaluate the relationships between a dependent variable (social capital) and two or more independent variables, using Pearson's correlation analysis and structural equation modeling (SEM). RESULTS Low levels of social capital were associated with increased levels of anxiety and stress, but increased levels of social capital were positively associated with increased quality of sleep. Anxiety was associated with stress and reduced sleep quality, and the combination of anxiety and stress reduced the positive effects of social capital on sleep quality. CONCLUSIONS During a period of individual self-isolation during the COVID-19 virus epidemic in central China, increased social capital improved sleep quality by reducing anxiety and stress.

Xu, K., et al. (2020). "[Management of corona virus disease-19 (COVID-19): the Zhejiang experience]." Zhejiang Da Xue Xue Bao Yi Xue Ban **49**(1): 0.

The current epidemic situation of corona virus disease-19 (COVID-19) still remained severe. As the National Clinical Research Center for Infectious Diseases, the First Affiliated Hospital of Zhejiang University School of Medicine is the primary medical care center for COVID-19 inZhejiang Province. Based on the present expert consensus carried out by National Health Commission and National Administration of Traditional Chinese Medicine, our team summarized and established an effective treatment strategy centered on "Four-Anti and Two-Balance" for clinical practice. The "Four-Anti and Two-Balance"strategy included antivirus, anti-shock, anti-hyoxemia, anti-secondary infection, and maintaining of water, electrolyte and acid base balance and microecological balance. Meanwhile, integrated multidisciplinarypersonalized treatment was recommended to improve therapeutic effect. The importance of early viralogical detection, dynamic monitoring of inflammatory indexes and chest radiograph was emphasized in clinical decision-making. Sputum was observed with the highest positive rate of RT-PCR results. Viral nucleic acids could be detected in10% patients'blood samples at acute periodand 50% of patients had positive RT-PCR results in their feces. We also isolated alive viral strains from feces, indicating potential infectiousness of feces.Dynamic cytokine detection was necessary to timely identifyingcytokine storms and application of artificial liver blood purification system. The "Four-Anti and Two-Balance"strategyeffectively increased

cure rate and reduced mortality. Early antiviral treatment could alleviate disease severity and prevent illness progression, and we found lopinavir/ritonavir combined with abidol showed antiviraleffects in COVID-19. Shock and hypoxemia were usually caused by cytokine storms. The artificial liver blood purification system could rapidly remove inflammatory mediators and block cytokine storm.Moreover, it also favoredthe balance of fluid, electrolyte and acid-base and thus improved treatment efficacy in critical illness. For cases of severe illness, early and also short periods of moderate glucocorticoid was supported. Patients with oxygenation index below 200 mmHg should be transferred to intensive medical center. Conservative oxygen therapy was preferred and noninvasive ventilation was not recommended. Patients with mechanical ventilation should be strictly supervised with cluster ventilator-associated pneumonia prevention strategies. Antimicrobial prophylaxis should be prescribed rationally and was not recommended except for patients with long course of disease, repeated fever and elevated procalcitonin (PCT), meanwhile secondary fungal infection should be concerned.Some patients with COVID-19 showed intestinal microbialdysbiosis with decreasedprobiotics such as Lactobacillus and Bifidobacterium. Nutritional and gastrointestinal function should be assessed for all patients.Nutritional support and application of prebiotics or probiotics were suggested to regulate the balance of intestinal microbiota and reduce the risk of secondary infection due to bacterial translocation. Anxiety and fear were common in patients with COVID-19. Therefore, we established dynamic assessment and warning for psychological crisis. We also integrated Chinese medicine in treatment to promote disease rehabilitation through classification methods of traditional Chinese medicine. We optimized nursing process for severe patients to promote their rehabilitation. It remained unclear about viral clearance pattern after the SARS-CoV-2 infection. Therefore, two weeks' quarantine for discharged patients was required and a regular following up was also needed.The Zhejiang experience above and suggestions have been implemented in our center and achieved good results. However, since COVID-19 was a newly emerging disease, more work was warranted to improve strategies of prevention, diagnosis and treatment for COVID-19.

Xu, T., et al. (2020). "Clinical features and dynamics of viral load in imported and non-imported patients with COVID-19." Int J Infect Dis.

OBJECTIVES: To compare the clinical characteristics and the dynamics of viral load between the imported and non-imported patients with COVID-19. DESIGN AND METHODS: Data from 51 laboratory-confirmed patients were retrospectively analyzed. RESULTS: The incubation period in the tertiary group was longer than that in the imported and secondary groups (both $P < 0.05$). Fever was the most common symptom at the onset of illness (73.33%, 58.82%, and 68.42%, respectively), and half of the patients had a low-grade temperature (<38.0) with a short duration of fever (<7 days). The CT scan showed that most patients had bilateral pneumonia in the three groups (80.00%, 76.47%, and 73.68%, respectively). Ct values detected from the tertiary patients were similar to those from the imported and secondary groups at the time of admission (both $P > 0.05$). For the tertiary group, the viral load was undetectable for half of the patients (52.63%) on day 7, and all patients on day 14. For 1/3(rd) of the patients in the imported and secondary groups, the viral load remained positive on day 14 after the admission. CONCLUSIONS: COVID-19 can present as pneumonia with less onset of symptoms, and the infectivity of SARS-CoV2 may gradually decrease in the tertiary patients.

Xu, Y., et al. (2020). "[Clinical Management of Lung Cancer Patients during the Outbreak of 2019 Novel Coronavirus Disease (COVID-19)]." Zhongguo Fei Ai Za Zhi **23**(3): 136-141.

Since late December 2019, an outbreak of 2019 novel coronavirus diseases (COVID-19) in Wuhan, China has spread quickly nationwide. With the spread of COVID-19, the routine clinical diagnosis and treatment for lung cancer patients has been disturbed. Due to the systemic immunosuppressive of lung cancer patients caused by the malignancy and anticancer treatments, lung cancer patients are more susceptible to infection than healthy individuals. Furthermore, patients with cancer had poorer prognosis from infection. Lung cancer patients should be the priority group for COVID-19 prevention. The protection provisions and control measures aiming to protect lung cancer patients from COVID-19 have been increasingly concerned. During the COVID-19 outbreak period, it should be carefully differentiated for fever and respiratory symptoms for lung cancer patients receiving anti-tumor treatment, in order to evaluate the risk of COVID-19. Moreover, it is necessary to carry out meticulous and individualized clinical management for lung cancer patients to effectively protect the patients from COVID-19.

Yang, J., et al. (2020). "Prevalence of comorbidities in the novel Wuhan coronavirus (COVID-19) infection: a systematic review and meta-analysis." Int J Infect Dis.

BACKGROUND: An outbreak of Novel Coronavirus (COVID -19) in Wuhan, China, the epidemic is more widespread than initially estimated,

with cases now confirmed in multiple countries. AIMS: The aim of the meta-analysis was to assess the prevalence of comorbidities in the COVID-19 infection patients and the risk of underlying diseases in severe patients compared to non-severe patients. METHODS: A literature search was conducted using the databases PubMed, EMBASE, and Web of sciences until February 25, 2020. Risk ratio (OR) and 95% confidence intervals (CIs) were pooled using random-effects models. RESULTS: Eight studies were included in the meta- analysis, including 46248 infected patients. The result showed the most prevalent clinical symptom was fever ( 91 +/- 3, 95% CI 86-97% ), followed by cough (67 +/- 7, 95% CI 59-76%), fatigue ( 51 +/- 0, 95% CI 34-68% ) and dyspnea ( 30 +/- 4, 95% CI 21-40%). The most prevalent comorbidity were hypertension (17 +/- 7, 95% CI 14-22%) and diabetes ( 8 +/- 6, 95% CI 6-11% ), followed by cardiovascular diseases ( 5 +/- 4, 95% CI 4-7% ) and respiratory system disease ( 2 +/- 0, 95% CI 1-3% ). Compared with the Non-severe patient, the pooled odds ratio of hypertension, respiratory system disease, cardiovascular disease in severe patients were (OR 2.36, 95% CI: 1.46-3.83), (OR 2.46, 95% CI: 1.76-3.44) and (OR 3.42, 95% CI: 1.88-6.22)respectively. CONCLUSION: We assessed the prevalence of comorbidities in the COVID-19 infection patients and found underlying disease, including hypertension, respiratory system disease and cardiovascular, may be a risk factor for severe patients compared with Non-severe patients.

Yang, L., et al. (2020). "[Diagnostic and therapeutic strategies of lung cancer patients during the outbreak of 2019 novel coronavirus disease (COVID-19)]." Zhonghua Zhong Liu Za Zhi **42**(0): E006.

With the increasing number of cases and widening geographical spread, the 2019 novel coronavirus disease (COVID-19) has been classified as one of the class B infectious diseases but prevented and controlled as class A infectious disease by the National Health Commission of China. The diagnosis and treatment of lung cancer patients have been challenged greatly because of extraordinary public health measures since the lung cancer patients are a high-risk population during the COVID-19 outbreak period. Strict protection for lung cancer patients is needed to avoid infection. Lung cancer patients are difficult to differentiate from patients with COVID-19 in terms of clinical symptoms, which will bring great trouble to the clinical work and physical and mental health of lung cancer patients. This review will demonstrate how to applicate appropriate and individual management for lung cancer patients to protect them from COVID-19.

Yang, S., et al. (2020). "Early estimation of the case fatality rate of COVID-19 in mainland China: a data-driven analysis." Ann Transl Med **8**(4): 128.

Background: An ongoing outbreak of pneumonia caused by a novel coronavirus [severe acute respiratory syndrome coronavirus (SARS-CoV)-2], named COVID-19, hit a major city of China, Wuhan in December 2019 and subsequently spread to other provinces/regions of China and overseas. Several studies have been done to estimate the basic reproduction number in the early phase of this outbreak, yet there are no reliable estimates of case fatality rate (CFR) for COVID-19 to date. Methods: In this study, we used a purely data-driven statistical method to estimate the CFR in the early phase of the COVID-19 outbreak. Daily numbers of laboratory-confirmed COVID-19 cases and deaths were collected from January 10 to February 3, 2020 and divided into three clusters: Wuhan city, other cities of Hubei province, and other provinces of mainland China. Simple linear regression model was applied to estimate the CFR from each cluster. Results: We estimated that CFR during the first weeks of the epidemic ranges from 0.15% (95% CI: 0.12-0.18%) in mainland China excluding Hubei through 1.41% (95% CI: 1.38-1.45%) in Hubei province excluding the city of Wuhan to 5.25% (95% CI: 4.98-5.51%) in Wuhan. Conclusions: Our early estimates suggest that the CFR of COVID-19 is lower than the previous coronavirus epidemics caused by SARS-CoV and Middle East respiratory syndrome coronavirus (MERS-CoV).

Yang, T., et al. (2020). "Point-of-Care RNA-Based Diagnostic Device for COVID-19." Diagnostics (Basel) **10**(3).

At the end of 2019, the novel coronavirus disease (COVID-19), a fast-spreading respiratory disease caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), was reported in Wuhan, China and has now affected over 123 countries globally [...].

Yang, W., et al. (2020). "Clinical characteristics and imaging manifestations of the 2019 novel coronavirus disease (COVID-19):A multi-center study in Wenzhou city, Zhejiang, China." J Infect **80**(4): 388-393.

BACKGROUND: Little is known about COVID-19 outside Hubei. The aim of this paper was to describe the clinical characteristics and imaging manifestations of hospitalized patients with confirmed COVID-19 infection in Wenzhou, Zhejiang, China. METHODS: In this retrospective cohort study, 149 RT-PCR confirmed positive patients were consecutively enrolled from January 17th to February

10th, 2020 in three tertiary hospitals of Wenzhou. Outcomes were followed up until Feb 15th, 2020. FINDINGS: A total of 85 patients had Hubei travel/residence history, while another 49 had contact with people from Hubei and 15 had no traceable exposure history to Hubei. Fever, cough and expectoration were the most common symptoms, 14 patients had decreased oxygen saturation, 33 had leukopenia, 53 had lymphopenia, and 82 had elevated C-reactive protein. On chest computed tomography (CT), lung segments 6 and 10 were mostly involved. A total of 287 segments presented ground glass opacity, 637 presented mixed opacity and 170 presented consolidation. Lesions were more localized in the peripheral lung with a patchy form. No significant difference was found between patients with or without Hubei exposure history. Seventeen patients had normal CT on admission of these, 12 had negative findings even10 days later. INTERPRETATION: Most patients presented with a mild infection in our study. The imaging pattern of multifocal peripheral ground glass or mixed opacity with predominance in the lower lung is highly suspicious of COVID-19 in the first week of disease onset. Nevetheless, some patients can present with a normal chest finding despite testing positive for COVID-19. FUNDING: We did not receive any fundings.

Zhang, H. F., et al. (2020). "Response of Chinese Anesthesiologists to the COVID-19 Outbreak." Anesthesiology.

The coronavirus disease 2019, named COVID-19 officially by the World Health Organization (Geneva, Switzerland) on February 12, 2020, has spread at unprecedented speed. After the first outbreak in Wuhan, China, Chinese anesthesiologists encountered increasing numbers of infected patients since December 2019. Because the main route of transmission is via respiratory droplets and close contact, anesthesia providers are at a high risk when responding to the devastating mass emergency. So far, actions have been taken including but not limited to nationwide actions and online education regarding special procedures of airway management, oxygen therapy, ventilation support, hemodynamic management, sedation, and analgesia. As the epidemic situation has lasted for months (thus far), special platforms have also been set up to provide free mental health care to all anesthesia providers participating in acute and critical caring for COVID-19 patients. The current article documents the actions taken, lesson learned, and future work needed.

Zhang, J. F., et al. (2020). "SARS-CoV-2 turned positive in a discharged patient with COVID-19 arouses concern regarding the present standard for discharge." Int J Infect Dis.

An outbreak of COVID-19 in Wuhan, China caused by SARS-CoV-2 has led to a serious epidemic in China and other countries, resulting in worldwide concern. With the active efforts from prevention and control, the quantity of discharged patients is escalating. How to manage these patients normatively is still challenging. We hereby reported an asymptomatic discharged patient with COVID-19 who was retested positive for SARS-CoV-2, which arouses concern regarding the present discharge standard of COVID-19.

Zhang, L., et al. (2020). "[Analysis of the pregnancy outcomes in pregnant women with COVID-19 in Hubei Province]." Zhonghua Fu Chan Ke Za Zhi **55**(0): E009.

Objective: To study the effect of COVID-19 on pregnancy outcomes and neonatal prognosis in Hubei Province. Methods: A retrospective comparison of the pregnancy outcomes was done between 16 women with COVID-19 and 45 women without COVID-19. Also, the results of laboratory tests, imaging examinations, and the 2019-nCoV nucleic acid test were performed in 10 cases of neonatal deliverd from women with COVID-19. Results: (1) Of the 16 pregnant women with COVID-19, 15 cases were ordinary type and 1 case was severe type. No one has progressed to critical pneumonia. The delivery method of the two groups was cesarean section, and the gestational age were (38.7+/-1.4) and (37.9+/-1.6) weeks, there was no significant difference between the two groups (P> 0.05). Also, there wee no significant differences in the intraoperative blood loss and birth weight of the newborn between the two groups (all P>0.05). (2) Ten cases of neonates delivered from pregnant women with COVID-19 were collected. The 2019-nCoV nucleic acid test were all negative. There were no significant differences in fetal distress, meconium-stained amniotic fluid, preterm birth, and neonatal asphyxia between the two groups (all P>0.05). (3) In the treatment of uterine contraction fatigue, carbetocin or carboprost tromethamine was used more in cesarean section for pregnant women with COVID-19 (1.3+/-0.6), compared with Non-COVID-19 group (0.5+/-0.7), the difference was statistically significant (P=0.001). Conclusions: If there is an indication for obstetric surgery or critical illness of COVID-19 in pregnant women, timely termination of pregnancy will not increase the risk of premature birth and asphyxia of the newborn, but it is beneficial to the treatment and rehabilitation of maternal pneumonia. Preventive use of long-acting uterotonic agents could reduce the incidence of postpartum hemorrhage during surgery.

2019-nCoV infection has not been found in neonates deliverd from pregnant women with COVID-19.

Zhang, S., et al. (2020). "Estimation of the reproductive number of novel coronavirus (COVID-19) and the probable outbreak size on the Diamond Princess cruise ship: A data-driven analysis." Int J Infect Dis **93**: 201-204.

BACKGROUNDS: Up to February 16, 2020, 355 cases have been confirmed as having COVID-19 infection on the Diamond Princess cruise ship. It is of crucial importance to estimate the reproductive number (R0) of the novel virus in the early stage of outbreak and make a prediction of daily new cases on the ship. METHOD: We fitted the reported serial interval (mean and standard deviation) with a gamma distribution and applied "earlyR" package in R to estimate the R0 in the early stage of COVID-19 outbreak. We applied "projections" package in R to simulate the plausible cumulative epidemic trajectories and future daily incidence by fitting the data of existing daily incidence, a serial interval distribution, and the estimated R0 into a model based on the assumption that daily incidence obeys approximately Poisson distribution determined by daily infectiousness. RESULTS: The Maximum-Likelihood (ML) value of R0 was 2.28 for COVID-19 outbreak at the early stage on the ship. The median with 95% confidence interval (CI) of R0 values was 2.28 (2.06-2.52) estimated by the bootstrap resampling method. The probable number of new cases for the next ten days would gradually increase, and the estimated cumulative cases would reach 1514 (1384-1656) at the tenth day in the future. However, if R0 value was reduced by 25% and 50%, the estimated total number of cumulative cases would be reduced to 1081 (981-1177) and 758 (697-817), respectively. CONCLUSION: The median with 95% CI of R0 of COVID-19 was about 2.28 (2.06-2.52) during the early stage experienced on the Diamond Princess cruise ship. The future daily incidence and probable outbreak size is largely dependent on the change of R0. Unless strict infection management and control are taken, our findings indicate the potential of COVID-19 to cause greater outbreak on the ship.

Zhou, L., et al. (2020). "[Cause analysis and treatment strategies of "recurrence" with novel coronavirus pneumonia (covid-19) patients after discharge from hospital]." Zhonghua Jie He He Hu Xi Za Zhi **43**(0): E028.

With a large number of COVID-19 patients discharging from hospital, some had showed re-fever and positive nucleic acid test after discharge from hospital. This might be due to the biological characteristics of 2019-nCoV, and might also be related to the basic disease, clinical status, glucocorticoid using, sample sampling, processing and detecting of patients, and some even related to the re-infection or secondary bacterial virus infection. Therefore, we suggest that in view of this phenomenon, further stratified management of discharge from hospital should be carried out on the basis of guidelines, especially for patients with advanced age, underlying diseases or severe or critical pneumonia. For those patients who can't completely deoxygenate for a long time after hospitalization, individualized treatment methods and different discharge evaluation criteria should be adopted to ensure the complete cure of patients and prevent recurrencing after discharge from hospital.

Zhou, S., et al. (2020). "CT Features of Coronavirus Disease 2019 (COVID-19) Pneumonia in 62 Patients in Wuhan, China." AJR Am J Roentgenol: 1-8.

OBJECTIVE. The purpose of this study was to investigate 62 subjects in Wuhan, China, with laboratory-confirmed coronavirus disease (COVID-19) pneumonia and describe the CT features of this epidemic disease. MATERIALS AND METHODS. A retrospective study of 62 consecutive patients with laboratory-confirmed COVID-19 pneumonia was performed. CT images and clinical data were reviewed. Two thoracic radiologists evaluated the distribution and CT signs of the lesions and also scored the extent of involvement of the CT signs. The Mann-Whitney U test was used to compare lesion distribution and CT scores. The chi-square test was used to compare the CT signs of early-phase versus advanced-phase COVID-19 pneumonia. RESULTS. A total of 62 patients (39 men and 23 women; mean [+/- SD] age, 52.8 +/- 12.2 years; range, 30-77 years) with COVID-19 pneumonia were evaluated. Twenty-four of 30 patients who underwent routine blood tests (80.0%) had a decreased lymphocyte count. Of 27 patients who had their erythrocyte sedimentation rate and high-sensitivity C-reactive protein level assessed, 18 (66.7%) had an increased erythrocyte sedimentation rate, and all 27 (100.0%) had an elevated high-sensitivity C-reactive protein level. Multiple lesions were seen on the initial CT scan of 52 of 62 patients (83.9%). Forty-eight of 62 patients (77.4%) had predominantly peripheral distribution of lesions. The mean CT score for the upper zone (3.0 +/- 3.4) was significantly lower than that for the middle (4.5 +/- 3.8) and lower (4.5 +/- 3.7) zones ($p = 0.022$ and $p = 0.020$, respectively), and there was no significant difference in the mean CT score of the middle and lower zones ($p = 1.00$). The mean CT score for the anterior area (4.4 +/- 4.1) was significantly lower than that for the posterior area (7.7 +/- 6.3) ($p = 0.003$). CT findings for

the patients were as follows: 25 patients (40.3%) had ground-glass opacities (GGO), 21 (33.9%), consolidation; 39 (62.9%), GGO plus a reticular pattern; 34 (54.8%), vacuolar sign; 28 (45.2%), microvascular dilation sign; 35 (56.5%), fibrotic streaks; 21 (33.9%), a subpleural line; and 33 (53.2%), a subpleural transparent line. With regard to bronchial changes seen on CT, 45 patients (72.6%) had air bronchogram, and 11 (17.7%) had bronchus distortion. In terms of pleural changes, CT showed that 30 patients (48.4%) had pleural thickening, 35 (56.5%) had pleural retraction sign, and six (9.7%) had pleural effusion. Compared with early-phase disease (</= 7 days after the onset of symptoms), advanced-phase disease (8-14 days after the onset of symptoms) was characterized by significantly increased frequencies of GGO plus a reticular pattern, vacuolar sign, fibrotic streaks, a subpleural line, a subpleural transparent line, air bronchogram, bronchus distortion, and pleural effusion; however, GGO significantly decreased in advanced-phase disease. CONCLUSION. CT examination of patients with COVID-19 pneumonia showed a mixed and diverse pattern with both lung parenchyma and the interstitium involved. Identification of GGO and a single lesion on the initial CT scan suggested early-phase disease. CT signs of aggravation and repair coexisted in advanced-phase disease. Lesions presented with a characteristic multifocal distribution in the middle and lower lung regions and in the posterior lung area. A decreased lymphocyte count and an increased high-sensitivity C-reactive protein level were the most common laboratory findings.

Zhu, Z. B., et al. (2020). "[Epidemic trend of corona virus disease 2019 (COVID-19) in mainland China]." Zhonghua Yu Fang Yi Xue Za Zhi **54**(0): E022.

Objective: In order to master the epidemic trend of corona virus disease 2019 (COVID-19) and evaluate the effect of prevention and control, we evaluate the epidemic dynamics of COVID-19 in mainland China, Hubei province, Wuhan city and other provinces outside Hubei from January 16 to February 14, 2020. Methods: We collected the daily number of new confirmed COVID-19 cases by nucleic acid detection reported by the National Health Commission from January 16, 2020 to February 14, 2020. The analysis includes the epidemic curve of the new confirmed cases, multiple of the new confirmed cases for period-over-period, multiple of the new confirmed cases for fixed-base, and the period-over-period growth rate of the new confirmed cases. Results: From January 16 to February 14, 2020, the cumulative number of new confirmed cases of COVID-19 in mainland China was 50 031, including 37 930 in Hubei province, 22 883 in Wuhan city and 12 101 in other provinces outside Hubei. The peak of the number of new confirmed cases in other provinces outside Hubei was from January 31 to February 4, 2020, and the peak of new confirmed cases in Wuhan city and Hubei province was from February 5 to February 9, 2020. The number of new confirmed cases in other provinces outside Hubei showed a significant decline (23% compared with the peak) from February 5 to February 9, 2020, while the number of new confirmed cases in Wuhan city (30% compared with the peak) and Hubei Province (37% compared with the peak) decreased significantly from February 10 to February 14, 2020. Conclusion: The epidemic prevention and control measures taken by the state and governments at all levels have shown very significant effects, effectively curbing the spread of the COVID-19 epidemic in China.

Zhuang, G. H., et al. (2020). "[RETRACTED] [Potential false-positive rate among the 'asymptomatic infected individuals' in close contacts of COVID-19 patients]." Zhonghua Liu Xing Bing Xue Za Zhi **41**(4): 485-488.

Objective: As the prevention and control of COVID-19continues to advance, the active nucleic acid test screening in the close contacts of the patients has been carrying out in many parts of China. However, the false-positive rate of positive results in the screening has not been reported up to now. But to clearify the false-positive rate during screening is important in COVID-19 control and prevention. Methods: Point values and reasonable ranges of the indicators which impact the false-positive rate of positive results were estimated based on the information available to us at present. The false-positive rate of positive results in the active screening was deduced, and univariate and multivariate-probabilistic sensitivity analyses were performed to understand the robustness of the findings. Results: When the infection rate of the close contacts and the sensitivity and specificity of reported results were taken as the point estimates, the positive predictive value of the active screening was only 19.67%, in contrast, the false-positive rate of positive results was 80.33%. The multivariate-probabilistic sensitivity analysis results supported the base-case findings, with a 75% probability for the false-positive rate of positive results over 47%. Conclusions: In the close contacts of COVID-19 patients, nearly half or even more of the 'asymptomatic infected individuals' reported in the active nucleic acid test screening might be false positives.

Zhuang, Z., et al. (2020). "Preliminary estimation of the novel coronavirus disease (COVID-19) cases in

Iran: A modelling analysis based on overseas cases and air travel data." Int J Infect Dis.

As of 1 March 2020, Iran has reported 987 COVID-19 cases and including 54 associated deaths. At least six neighboring countries (Bahrain, Iraq, Kuwait, Oman, Afghanistan and Pakistan) have reported imported COVID-19 cases from Iran. We used air travel data and the cases from Iran to other Middle East countries and estimated 16533 (95% CI: 5925, 35538) COVID-19 cases in Iran by 25 February, before UAE and other Gulf Cooperation Council countries suspended inbound and outbound flights from Iran.

Zu, Z. Y., et al. (2020). "Coronavirus Disease 2019 (COVID-19): A Perspective from China." Radiology: 200490.

In December 2019, an outbreak of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection occurred in Wuhan, Hubei Province, China and spread across China and beyond. On February 12, 2020, WHO officially named the disease caused by the novel coronavirus as Coronavirus Disease 2019 (COVID-19). Since most COVID-19 infected patients were diagnosed with pneumonia and characteristic CT imaging patterns, radiological examinations have become vital in early diagnosis and assessment of disease course. To date, CT findings have been recommended as major evidence for clinical diagnosis of COVID-19 in Hubei, China. This review focuses on the etiology, epidemiology, and clinical symptoms of COVID-19, while highlighting the role of chest CT in prevention and disease control. A full translation of this article in Chinese is available.

The above contents are the collected information from Internet and public resources to offer to the people for the convenient reading and information disseminating and sharing.

**References**


1. Ahmed, S. F., et al. (2020). "Preliminary Identification of Potential Vaccine Targets for the COVID-19 Coronavirus (SARS-CoV-2) Based on SARS-CoV Immunological Studies." Viruses 12(3).
2. Ai, T., et al. (2020). "Correlation of Chest CT and RT-PCR Testing in Coronavirus Disease 2019 (COVID-19) in China: A Report of 1014 Cases." Radiology: 200642.
3. Allam, Z. and D. S. Jones (2020). "On the Coronavirus (COVID-19) Outbreak and the Smart City Network: Universal Data Sharing Standards Coupled with Artificial Intelligence (AI) to Benefit Urban Health Monitoring and Management." Healthcare (Basel) 8(1).
4. Al-Qaness, M. A. A., et al. (2020). "Optimization Method for Forecasting Confirmed Cases of COVID-19 in China." J Clin Med 9(3).
5. Baidu. http://www.baidu.com. 2020.
6. Bernard Stoecklin, S., et al. (2020). "First cases of coronavirus disease 2019 (COVID-19) in France: surveillance, investigations and control measures, January 2020." Euro Surveill 25(6).
7. Bernheim, A., et al. (2020). "Chest CT Findings in Coronavirus Disease-19 (COVID-19): Relationship to Duration of Infection." Radiology: 200463.
8. Calvo, C., et al. (2020). "[Recommendations on the clinical management of the COVID-19 infection by the <<new coronavirus>> SARS-CoV2. Spanish Paediatric Association working group]." An Pediatr (Barc).
9. Cancer Biology. http://www.cancerbio.net. 2020.
10. Cao, B., et al. (2020). "A Trial of Lopinavir-Ritonavir in Adults Hospitalized with Severe Covid-19." N Engl J Med.
11. Cascella, M., et al. (2020). Features, Evaluation and Treatment Coronavirus (COVID-19). StatPearls. Treasure Island (FL).
12. Chen, D., et al. (2020). "Expert consensus for managing pregnant women and neonates born to mothers with suspected or confirmed novel coronavirus (COVID-19) infection." Int J Gynaecol Obstet.
13. Chen, H., et al. (2020). "Clinical characteristics and intrauterine vertical transmission potential of COVID-19 infection in nine pregnant women: a retrospective review of medical records." Lancet 395(10226): 809-815.
14. Chen, R., et al. (2020). "Safety and efficacy of different anesthetic regimens for parturients with COVID-19 undergoing Cesarean delivery: a case series of 17 patients." Can J Anaesth.
15. Chinazzi, M., et al. (2020). "The effect of travel restrictions on the spread of the 2019 novel coronavirus (COVID-19) outbreak." Science.
16. Chinese Association of Rehabilitation, M., et al. (2020). "[Recommendations for respiratory rehabilitation of COVID-19 in adult]." Zhonghua Jie He He Hu Xi Za Zhi 43(0): E029.
17. Gilbert, M., et al. (2020). "Preparedness and vulnerability of African countries against importations of COVID-19: a modelling study." Lancet 395(10227): 871-877.
18. Giwa, A. and A. Desai (2020). "Novel coronavirus COVID-19: an overview for emergency clinicians." Emerg Med Pract 22(2 Suppl 2): 1-21.
19. Giwa, A. L., et al. (2020). "Novel 2019 coronavirus SARS-CoV-2 (COVID-19): An

updated overview for emergency clinicians." Emerg Med Pract 22(5): 1-28.
20. Glauser, W. (2020). "Proposed protocol to keep COVID-19 out of hospitals." CMAJ 192(10): E264-E265.
21. Goh, G. K., et al. (2020). "Rigidity of the Outer Shell Predicted by a Protein Intrinsic Disorder Model Sheds Light on the COVID-19 (Wuhan-2019-nCoV) Infectivity." Biomolecules 10(2).
22. Goh, K. J., et al. (2020). "Rapid Progression to Acute Respiratory Distress Syndrome: Review of Current Understanding of Critical Illness from COVID-19 Infection." Ann Acad Med Singapore 49(1): 1-9.
23. Gong, F., et al. (2020). "China's local governments are combating COVID-19 with unprecedented responses - from a Wenzhou governance perspective." Front Med.
24. Google. http://www.google.com. 2020.
25. Gostic, K., et al. (2020). "Estimated effectiveness of symptom and risk screening to prevent the spread of COVID-19." Elife 9.
26. He, F., et al. (2020). "Coronavirus Disease 2019 (COVID-19): What we know?" J Med Virol.
27. He, X. W., et al. (2020). "[Impact of complicated myocardial injury on the clinical outcome of severe or critically ill COVID-19 patients]." Zhonghua Xin Xue Guan Bing Za Zhi 48(0): E011.
28. Hu, Z. B. and C. Ci (2020). "[Screening and management of asymptomatic infection of corona virus disease 2019 (COVID-19)]." Zhonghua Yu Fang Yi Xue Za Zhi 54(0): E025.
29. Hu, Z., et al. (2020). "Clinical characteristics of 24 asymptomatic infections with COVID-19 screened among close contacts in Nanjing, China." Sci China Life Sci.
30. Huang, J. Z., et al. (2020). "[Mental health survey of 230 medical staff in a tertiary infectious disease hospital for COVID-19]." Zhonghua Lao Dong Wei Sheng Zhi Ye Bing Za Zhi 38(0): E001.
31. Huang, L. L., et al. (2020). "[Dynamic basic reproduction number based evaluation for current prevention and control of COVID-19 outbreak in China]." Zhonghua Liu Xing Bing Xue Za Zhi 41(4): 466-469.
32. Ji, L. N., et al. (2020). "Clinical features of pediatric patients with COVID-19: a report of two family cluster cases." World J Pediatr.
33. Journal of American Science. http://www.jofamericanscience.org. 2020.
34. Kamel Boulos, M. N. and E. M. Geraghty (2020). "Geographical tracking and mapping of coronavirus disease COVID-19/severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) epidemic and associated events around the world: how 21st century GIS technologies are supporting the global fight against outbreaks and epidemics." Int J Health Geogr 19(1): 8.
35. Kandel, N., et al. (2020). "Health security capacities in the context of COVID-19 outbreak: an analysis of International Health Regulations annual report data from 182 countries." Lancet.
36. Kannan, S., et al. (2020). "COVID-19 (Novel Coronavirus 2019) - recent trends." Eur Rev Med Pharmacol Sci 24(4): 2006-2011.
37. Kobayashi, T., et al. (2020). "Communicating the Risk of Death from Novel Coronavirus Disease (COVID-19)." J Clin Med 9(2).
38. Kwon, K. T., et al. (2020). "Drive-Through Screening Center for COVID-19: a Safe and Efficient Screening System against Massive Community Outbreak." J Korean Med Sci 35(11): e123.
39. Lai, C. C., et al. (2020). "Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and coronavirus disease-2019 (COVID-19): The epidemic and the challenges." Int J Antimicrob Agents 55(3): 105924.
40. Lake, M. A. (2020). "What we know so far: COVID-19 current clinical knowledge and research." Clin Med (Lond) 20(2): 124-127.
41. Lau, H., et al. (2020). "Internationally lost COVID-19 cases." J Microbiol Immunol Infect.
42. Lau, H., et al. (2020). "The positive impact of lockdown in Wuhan on containing the COVID-19 outbreak in China." J Travel Med.
43. Lauer, S. A., et al. (2020). "The Incubation Period of Coronavirus Disease 2019 (COVID-19) From Publicly Reported Confirmed Cases: Estimation and Application." Ann Intern Med.
44. Li, M., et al. (2020). "Coronavirus Disease (COVID-19): Spectrum of CT Findings and Temporal Progression of the Disease." Acad Radiol.
45. Li, P., et al. (2020). "Transmission of COVID-19 in the terminal stage of incubation period: a familial cluster." Int J Infect Dis.
46. Li, X. Q., et al. (2020). "[Comparison of epidemic characteristics between SARS in2003 and COVID-19 in 2020 in Guangzhou]." Zhonghua Liu Xing Bing Xue Za Zhi 41(5): 634-637.
47. Li, Y. and L. Xia (2020). "Coronavirus Disease 2019 (COVID-19): Role of Chest CT in Diagnosis and Management." AJR Am J Roentgenol: 1-7.
48. Li, Y. C., et al. (2020). "The neuroinvasive potential of SARS-CoV2 may play a role in the respiratory failure of COVID-19 patients." J Med Virol.

49. Li, Y. X., et al. (2020). "[Characteristics of peripheral blood leukocyte differential counts in patients with COVID-19]." Zhonghua Nei Ke Za Zhi 59(0): E003.
50. Li, Y., et al. (2020). "[Surgical treatment for esophageal cancer during the outbreak of COVID-19]." Zhonghua Zhong Liu Za Zhi 42(0): E003.
51. Li, Z., et al. (2020). "Vicarious traumatization in the general public, members, and non-members of medical teams aiding in COVID-19 control." Brain Behav Immun.
52. Life Science Journal. http://www.lifesciencesite.com. 2020.
53. Lippi, G. and M. Plebani (2020). "The critical role of laboratory medicine during coronavirus disease 2019 (COVID-19) and other viral outbreaks." Clin Chem Lab Med.
54. Lippi, G., et al. (2020). "Potential preanalytical and analytical vulnerabilities in the laboratory diagnosis of coronavirus disease 2019 (COVID-19)." Clin Chem Lab Med.
55. Lippi, G., et al. (2020). "Thrombocytopenia is associated with severe coronavirus disease 2019 (COVID-19) infections: A meta-analysis." Clin Chim Acta.
56. Liu, D., et al. (2020). "Pregnancy and Perinatal Outcomes of Women With Coronavirus Disease (COVID-19) Pneumonia: A Preliminary Analysis." AJR Am J Roentgenol: 1-6.
57. Liu, F., et al. (2020). "Patients of COVID-19 may benefit from sustained lopinavir-combined regimen and the increase of eosinophil may predict the outcome of COVID-19 progression." Int J Infect Dis.
58. Liu, H., et al. (2020). "Clinical and CT imaging features of the COVID-19 pneumonia: Focus on pregnant women and children." J Infect.
59. Liu, K., et al. (2020). "Clinical feature of COVID-19 in elderly patients: a comparison with young and middle-aged patients." J Infect.
60. Liu, M., et al. (2020). "[Analysis on epidemic situation and spatiotemporal changes of COVID-19 in Anhui]." Zhonghua Yu Fang Yi Xue Za Zhi 54(0): E019.
61. Lu, Q. and Y. Shi (2020). "Coronavirus disease (COVID-19) and neonate: What neonatologist need to know." J Med Virol.
62. Lu, S., et al. (2020). "Alert for non-respiratory symptoms of Coronavirus Disease 2019 (COVID-19) patients in epidemic period: A case report of familial cluster with three asymptomatic COVID-19 patients." J Med Virol.
63. Lu, T. and H. Pu (2020). "Computed Tomography Manifestations of 5 Cases of the Novel Coronavirus Disease 2019 (COVID-19) Pneumonia From Patients Outside Wuhan." J Thorac Imaging.
64. Ludvigsson, J. F. (2020). "Systematic review of COVID-19 in children show milder cases and a better prognosis than adults." Acta Paediatr.
65. Ma H, Chen G. Stem cell. The Journal of American Science 2005;1(2):90-92. doi:10.7537/marsjas010205.14. http://www.jofamericanscience.org/journals/am-sci/0102/14-mahongbao.pdf.
66. Ma H, Cherng S. Eternal Life and Stem Cell. Nature and Science. 2007;5(1):81-96. doi:10.7537/marsnsj050107.10. http://www.sciencepub.net/nature/0501/10-0247-mahongbao-eternal-ns.pdf.
67. Ma H, Cherng S. Nature of Life. Life Science Journal 2005;2(1):7-15. doi:10.7537/marslsj020105.03. http://www.lifesciencesite.com/lsj/life0201/life-0201-03.pdf.
68. Ma H, Yang Y. Turritopsis nutricula. Nature and Science 2010;8(2):15-20. doi:10.7537/marsnsj080210.03. http://www.sciencepub.net/nature/ns0802/03_1279_hongbao_turritopsis_ns0802_15_20.pdf.
69. Ma H. The Nature of Time and Space. Nature and science 2003;1(1):1-11. doi:10.7537/marsnsj010103.01. http://www.sciencepub.net/nature/0101/01-ma.pdf.
70. Marsland Press. http://www.sciencepub.net. 2020.
71. Marsland Press. http://www.sciencepub.org. 2020.
72. National Center for Biotechnology Information, U.S. National Library of Medicine. http://www.ncbi.nlm.nih.gov/pubmed. 2020.
73. Nature and Science. http://www.sciencepub.net/nature. 2020.
74. Pagano, M. B., et al. (2020). "Prepare to adapt: Blood supply and transfusion support during the first 2 weeks of the 2019 Novel Coronavirus (COVID-19) pandemic affecting Washington State." Transfusion.
75. Palacios Cruz, M., et al. (2020). "COVID-19, a worldwide public health emergency." Rev Clin Esp.
76. Pan, F., et al. (2020). "Time Course of Lung Changes On Chest CT During Recovery From 2019 Novel Coronavirus (COVID-19) Pneumonia." Radiology: 200370.
77. Ren, Y. H., et al. (2020). "[When COVID-19 encounters interstitial lung disease: challenges and management]." Zhonghua Jie He He Hu Xi Za Zhi 43(0): E039.

78. Repici, A., et al. (2020). "Coronavirus (COVID-19) outbreak: what the department of endoscopy should know." Gastrointest Endosc.
79. Stem Cell. http://www.sciencepub.net/stem. 2020.
80. Sun, M. L., et al. (2020). "[Inhibitors of RAS Might Be a Good Choice for the Therapy of COVID-19 Pneumonia]." Zhonghua Jie He He Hu Xi Za Zhi 43(3): 219-222.
81. Sun, M. L., et al. (2020). "[Inhibitors of RAS Might Be a Good Choice for the Therapy of COVID-19 Pneumonia]." Zhonghua Jie He He Hu Xi Za Zhi 43(0): E014.
82. Sun, P., et al. (2020). "Understanding of COVID-19 based on current evidence." J Med Virol.
83. Tian, S., et al. (2020). "Characteristics of COVID-19 infection in Beijing." J Infect 80(4): 401-406.
84. Tian, S., et al. (2020). "Pulmonary Pathology of Early-Phase 2019 Novel Coronavirus (COVID-19) Pneumonia in Two Patients With Lung Cancer." J Thorac Oncol.
85. Tilocca, B., et al. (2020). "Molecular basis of COVID-19 relationships in different species: a one health perspective." Microbes Infect.
86. Tolksdorf, K., et al. (2020). "Influenza-associated pneumonia as reference to assess seriousness of coronavirus disease (COVID-19)." Euro Surveill 25(11).
87. Touret, F. and X. de Lamballerie (2020). "Of chloroquine and COVID-19." Antiviral Res 177: 104762.
88. Wan, S., et al. (2020). "Clinical Features and Treatment of COVID-19 Patients in Northeast Chongqing." J Med Virol.
89. Wang, C., et al. (2020). "Immediate Psychological Responses and Associated Factors during the Initial Stage of the 2019 Coronavirus Disease (COVID-19) Epidemic among the General Population in China." Int J Environ Res Public Health 17(5).
90. Wang, Y., et al. (2020). "[Estimating the basic reproduction number of COVID-19 in Wuhan, China]." Zhonghua Liu Xing Bing Xue Za Zhi 41(4): 476-479.
91. Wang, Y., et al. (2020). "Unique epidemiological and clinical features of the emerging 2019 novel coronavirus pneumonia (COVID-19) implicate special control measures." J Med Virol.
92. Weston, S. and M. B. Frieman (2020). "COVID-19: Knowns, Unknowns, and Questions." mSphere 5(2).
93. Wikipedia. The free encyclopedia. http://en.wikipedia.org. 2020.
94. Wujtewicz, M., et al. (2020). "COVID-19 - what should anaethesiologists and intensivists know about it?" Anaesthesiol Intensive Ther 52(1): 34-41.
95. Xia, W., et al. (2020). "Clinical and CT features in pediatric patients with COVID-19 infection: Different points from adults." Pediatr Pulmonol.
96. Xiao, H., et al. (2020). "Social Capital and Sleep Quality in Individuals Who Self-Isolated for 14 Days During the Coronavirus Disease 2019 (COVID-19) Outbreak in January 2020 in China." Med Sci Monit 26: e923921.
97. Xiao, H., et al. (2020). "The Effects of Social Support on Sleep Quality of Medical Staff Treating Patients with Coronavirus Disease 2019 (COVID-19) in January and February 2020 in China." Med Sci Monit 26: e923549.
98. Xu, K., et al. (2020). "[Management of corona virus disease-19 (COVID-19): the Zhejiang experience]." Zhejiang Da Xue Xue Bao Yi Xue Ban 49(1): 0.
99. Xu, T., et al. (2020). "Clinical features and dynamics of viral load in imported and non-imported patients with COVID-19." Int J Infect Dis.
100. Xu, Y., et al. (2020). "[Clinical Management of Lung Cancer Patients during the Outbreak of 2019 Novel Coronavirus Disease (COVID-19)]." Zhongguo Fei Ai Za Zhi 23(3): 136-141.
101. Yang, J., et al. (2020). "Prevalence of comorbidities in the novel Wuhan coronavirus (COVID-19) infection: a systematic review and meta-analysis." Int J Infect Dis.
102. Yang, L., et al. (2020). "[Diagnostic and therapeutic strategies of lung cancer patients during the outbreak of 2019 novel coronavirus disease (COVID-19)]." Zhonghua Zhong Liu Za Zhi 42(0): E006.
103. Yang, S., et al. (2020). "Early estimation of the case fatality rate of COVID-19 in mainland China: a data-driven analysis." Ann Transl Med 8(4): 128.
104. Yang, T., et al. (2020). "Point-of-Care RNA-Based Diagnostic Device for COVID-19." Diagnostics (Basel) 10(3).
105. Yang, W., et al. (2020). "Clinical characteristics and imaging manifestations of the 2019 novel coronavirus disease (COVID-19):A multi-center study in Wenzhou city, Zhejiang, China." J Infect 80(4): 388-393.
106. Zhang, H. F., et al. (2020). "Response of Chinese Anesthesiologists to the COVID-19 Outbreak." Anesthesiology.
107. Zhang, J. F., et al. (2020). "SARS-CoV-2 turned positive in a discharged patient with COVID-19 arouses concern regarding the present standard for discharge." Int J Infect Dis.

108. Zhang, L., et al. (2020). "[Analysis of the pregnancy outcomes in pregnant women with COVID-19 in Hubei Province]." Zhonghua Fu Chan Ke Za Zhi 55(0): E009.
109. Zhang, S., et al. (2020). "Estimation of the reproductive number of novel coronavirus (COVID-19) and the probable outbreak size on the Diamond Princess cruise ship: A data-driven analysis." Int J Infect Dis 93: 201-204.
110. Zhou, L., et al. (2020). "[Cause analysis and treatment strategies of "recurrence" with novel coronavirus pneumonia (covid-19) patients after discharge from hospital]." Zhonghua Jie He He Hu Xi Za Zhi 43(0): E028.
111. Zhou, S., et al. (2020). "CT Features of Coronavirus Disease 2019 (COVID-19) Pneumonia in 62 Patients in Wuhan, China." AJR Am J Roentgenol: 1-8.
112. Zhu, Z. B., et al. (2020). "[Epidemic trend of corona virus disease 2019 (COVID-19) in mainland China]." Zhonghua Yu Fang Yi Xue Za Zhi 54(0): E022.
113. Zhuang, G. H., et al. (2020). "[RETRACTED] [Potential false-positive rate among the 'asymptomatic infected individuals' in close contacts of COVID-19 patients]." Zhonghua Liu Xing Bing Xue Za Zhi 41(4): 485-488.
114. Zhuang, Z., et al. (2020). "Preliminary estimation of the novel coronavirus disease (COVID-19) cases in Iran: A modelling analysis based on overseas cases and air travel data." Int J Infect Dis.
115. Zu, Z. Y., et al. (2020). "Coronavirus Disease 2019 (COVID-19): A Perspective from China." Radiology: 200490.

3/25/2020