

April 19, 2020

Daily COVID-19 Literature Surveillance Summary



Jasmine Rah, BA, MS^{3*}
Erin Hartnett, BA, BS, MS^{2*}
Emily V. Nelson, Ph.D^{3*}
Samuel M. Philbrick, MD^{4*}
Thamanna Nishath, MSPH, MS^{2¹}
Jackson Schmidt, BA, MS^{3¹}
Daniel Lee, BS, MS^{3¹}
Zainab Khan, BS, MS^{4²}
Brennan Enright, BS, MS^{1²}
Jenny Jensen, BS, MS^{1[°]}
Will Smith, MD, Paramedic, FAEMS^{1,5#}

All contributors acknowledged on the final page.

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Contributor Affiliations:

- ¹ University of Washington School of Medicine
² University of Arizona College of Medicine Phoenix
³ Bernhard Nocht Institute for Tropical Medicine
⁴ United States Air Force
⁵ Wilderness and Emergency Medicine Consulting LLC.



Editor in Chief*, Assistant Editor*, Major Contributors*, Contributors*, Associate Contributors*, Advisor*

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This free and open source document represents a good faith effort to provide real time, distilled information for guiding best practices during the COVID-19 pandemic. This document is not intended to and cannot replace the original source documents and clinical decision making. These sources are explicitly cited for purposes of reference but do not imply endorsement, approval or validation.

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Coming soon:



COVID-19 Daily Literature Surveillance

COVID19LST



Bringing you real time, distilled information for guiding best practices during the COVID-19 pandemic



The Swab

Jasmine Rah



The untold stories of the coronavirus (COVID-19) pandemic.

April 19th, 2020

Executive Summary

Climate:

- [Systematic metaanalysis of reviews coming out on Covid-19 were consistently found to be of low or critically low quality based on the AMSTAR 2](#) (A MeaSurement Tool to Assess systematic Reviews). The authors recommend exercising caution when using systematic reviews to make clinical and public policy decisions. Inclusion of a methodologist in the research team and funding support were associated with increased quality.
- Continued concerns for the [disproportionate impact of the pandemic on the underserved](#)

Epidemiology

- Predictive modeling suggests
 - That countries with [older populations will experience a greater burden of disease](#) and higher mortality rates.
 - High incidence of [COVID-19 in South Korea through June 2020](#), and advises continued social distancing
 - Other [studies caution against leaning too heavily on modeling studies](#) because they require dynamic updating with high quality data
- [9282 COVID-19 patients in the United States were Health care workers](#), 55% reported a known exposure at their job only and 27 have unfortunately passed.
- Data supporting that [hepatic](#), [cardiac](#) and [neurological dysfunction](#) are also clinical findings that are highly associated with COVID-19.
- More evidence for [smell dysfunction](#) and the potential role of [androgens](#)

Pathology

- Histological sections of lung samples from patients who died from COVID-19 suggest “generalized thrombotic microvascular injury [Complement Associated Microvascular Injury and Thrombosis in the Pathogenesis of Severe COVID-19 Infection: A Report of Five Cases](#)”, complement deposition and inflammatory response.

Guidelines:

1. How to [protect patients and staff](#) in outpatient cardiology and valve surgeries
2. [Emergent abdominal surgeries](#)
3. Limiting exposure to on [orthopedic trauma](#) and [pediatric ortho](#) services
4. [Infantile hemangiomas](#)

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[Mental Health Problems and Social Media Exposure During COVID-19 Outbreak](#)

[COVID-19 and Working Conditions in Health Care.](#)

Levels of Evidence

Oxford Centre for Evidence-Based Medicine 2011 Levels of Evidence

Question	Step 1 (Level 1*)	Step 2 (Level 2*)	Step 3 (Level 3*)	Step 4 (Level 4*)	Step 5 (Level 5)
How common is the problem?	Local and current random sample surveys (or censuses)	Systematic review of surveys that allow matching to local circumstances**	Local non-random sample**	Case-series**	n/a
Is this diagnostic or monitoring test accurate? (Diagnosis)	Systematic review of cross sectional studies with consistently applied reference standard and blinding	Individual cross sectional studies with consistently applied reference standard and blinding	Non-consecutive studies, or studies without consistently applied reference standards**	Case-control studies, or "poor or non-independent reference standard**	Mechanism-based reasoning
What will happen if we do not add a therapy? (Prognosis)	Systematic review of inception cohort studies	Inception cohort studies	Cohort study or control arm of randomized trial*	Case-series or case-control studies, or poor quality prognostic cohort study**	n/a
Does this intervention help? (Treatment Benefits)	Systematic review of randomized trials or <i>n</i> -of-1 trials	Randomized trial or observational study with dramatic effect	Non-randomized controlled cohort/follow-up study**	Case-series, case-control studies, or historically controlled studies**	Mechanism-based reasoning
What are the COMMON harms? (Treatment Harms)	Systematic review of randomized trials, systematic review of nested case-control studies, <i>n</i> -of-1 trial with the patient you are raising the question about, or observational study with dramatic effect	Individual randomized trial or (exceptionally) observational study with dramatic effect	Non-randomized controlled cohort/follow-up study (post-marketing surveillance) provided there are sufficient numbers to rule out a common harm. (For long-term harms the duration of follow-up must be sufficient.)**	Case-series, case-control, or historically controlled studies**	Mechanism-based reasoning
What are the RARE harms? (Treatment Harms)	Systematic review of randomized trials or <i>n</i> -of-1 trial	Randomized trial or (exceptionally) observational study with dramatic effect			
Is this (early detection) test worthwhile? (Screening)	Systematic review of randomized trials	Randomized trial	Non-randomized controlled cohort/follow-up study**	Case-series, case-control, or historically controlled studies**	Mechanism-based reasoning

* Level may be graded down on the basis of study quality, imprecision, indirectness (study PICO does not match questions PICO), because of inconsistency between studies, or because the absolute effect size is very small; Level may be graded up if there is a large or very large effect size.

** As always, a systematic review is generally better than an individual study.

Credit: OCEBM Levels of Evidence Working Group*. "The Oxford 2011 Levels of Evidence". Oxford Centre for Evidence-Based Medicine.
<http://www.cebm.net/index.aspx?o=5653>

Climate

[Assessment of the quality of systematic reviews on COVID-19: A comparative study of previous coronavirus outbreaks.](#)

Yu Y, Shi Q, Zheng P, Gao L, Li H, Tao P, Gu B, Wang D, Chen H.

J Med Virol

2020 Apr 17; PMID: 32301508

Level of Evidence: 1- Systematic review

Type of Article: Research

BLUF: Systemic reviews coming out on Covid-19 are consistently of low or critically low quality based on the AMSTAR 2 (A MeaSurement Tool to Assess systematic Reviews). The authors recommend exercising caution when using systematic reviews to make clinical and public policy decisions. Inclusion of a methodologist in the research team and funding support were associated with increased quality.

Abstract

Background: Several systematic reviews (SRs) have been conducted on COVID-19 outbreak, which together with the SRs on previous coronavirus outbreaks, form important sources of evidence for clinical decision and policy making. Here, we investigated the methodological quality of SRs on COVID-19, SARS, and MERS.

Methods: Online searches were performed to obtain SRs on COVID-19, SARS, and MERS. The methodological quality of the included SRs was assessed using the AMSTAR-2 tool. Descriptive statistics were used to present the data.

Results: In total, of 49 SRs that were finally included in our study, 17, 16, and 16 SRs were specifically on COVID-19, MERS, and SARS, respectively. The growth rate of SRs on COVID-19 was the highest (4.54/month) presently. Of the included SRs, 6, 12, and 31 SRs were of moderate, low, and critically low quality, respectively. SRs on SARS showed the optimum quality among the SRs on the three diseases. Subgroup analyses showed that the SR topic ($P < 0.001$), involvement of a methodologist ($P < 0.001$), and funding support ($P = 0.046$) were significantly associated with the methodological quality of the SR. According to the adherence scores, adherence to AMSTAR-2 items sequentially decreased in SRs on SARS, MERS, and COVID-19.

Conclusions: The methodological quality of most SRs on coronavirus outbreaks is unsatisfactory, and those on COVID-19 have higher risks of poor quality, despite the rapid actions taken to conduct SRs. The quality of SRs should be improved in the future. Readers must exercise caution in accepting and using the results of these SRs.

[How Can Blockchain Help People in the Event of Pandemics Such as the COVID-19?](#)

Chang MC, Park D

J Med Syst.

2020 Apr 16; PMID: 32300906

Level of Evidence: 6

Type of Article: Editorial

Summary:

The authors of the article state that blockchain technology will allow for quick and accurate sharing of diagnostic information on a peer to peer network without intermediary reporting. In blockchain, all information once entered electronically cannot be amended preventing intermediary editing, information withholding, and spread of false information. The authors believe these features of blockchain make it invaluable in dealing with COVID-19.

Rapid Scholarly Dissemination and Cardiovascular Community Engagement to Combat the Infodemic of the COVID-19 Pandemic

Vervoort, Dominique; Ma, Xiya; Luc, Jessica; Zieroth, Shelley

Can J Cardiol

2020 Apr 4; PMID: 32299782

Level of Evidence: 5 – Expert Opinion

Type of Article: Correspondence

BLUF: Amidst the COVID-19 pandemic, the voices of physicians are needed to combat the infodemic in order to best manage and prepare for the surge of COVID-19-positive cardiovascular patients.

Summary:

As the literature on COVID-19-related cardiac complications continues to develop alongside the surge of confirmed cases, the infodemic surrounding the disease via print and social media poses opportunities for both education and misinformation. In order to properly inform patients and the public, such a setting necessitates “preprints, open-access information, and asynchronous global scholarly dissemination” in addition to the acceleration of “the generation and dissemination of groundbreaking research” concerning COVID-19. The author praises the Canadian Journal of Cardiology for taking such measures as well as the Canadian Cardiovascular Society for their dissemination of “evidence-based and consensus-based recommendations” regarding COVID-19-positive cardiovascular patients by means of establishing a COVID-19 Rapid Response Team, hosting a live-virtual townhall, and encouraging cardiovascular physicians to engage on social media (e.g. #GetMePPE, #StayHomeSaveLives).

The Untold Toll - The Pandemic's Effects on Patients without Covid-19.

PMID: 32302076

Publication Date: Apr 17, 2020

Rosenbaum L

N Engl J Med

Level of Evidence: Level 6 - No evidence provided

Type of Article: Article

Summary: Using stories, the author illustrates how fear of COVID-19 has discouraged people from seeking out medical attention. Additionally, she notes that patients without COVID-19 are receiving worse care because of wasted time investigating a COVID-19 etiology and less time diagnosing/treating more likely etiologies. Lastly, the author emphasizes how the emotional aspect of patient care has been lacking in this crisis for non-COVID-19 patients due to less PPE, fear of transmitting COVID-19, and decreased time.

[Global Surveillance, Travel and Trade During a Pandemic.](#)

Çetin C, Kara A.Çetin C, et al.Turk

J Med Sci

2020 Apr 16; PMID: 32299207

Level of Evidence: Level 6 – No Data Cited

Type of Article: Letter

Summarizing Excerpt: “Pandemics do not have borders; therefore, efforts should be given globally, definition of pandemic should be established as soon as possible, and protective measures should be shared with countries. If these are not done, severe health consequences and serious economic problems are inevitable.”

[COVID-19-Looking Beyond Tomorrow for Health Care and Society.](#)

Fontanarosa PB, Bauchner H.

JAMA.

2020 Apr 17, PMID: 32301955

Level of Evidence: 5 - Expert Opinion

Article Type: Commentary

Summary: As new data and studies continue to be published on COVID-19, it is essential for health professionals to be informed of current findings and possible future outcomes. It is important to utilize current information to begin preparing for potential long term consequences in patients that recover from COVID-19.

['Let us Help'- Why Senior Medical Students are the Next Step in Battling the COVID-19 Pandemic](#)

Thomson E, Lovegrove S.

International Journal of Clinical Practice

2020 Apr 16; PMID: 32301206

Level of Evidence: 5 - Expert opinion

Type of Article: Letter

Summary: Two fourth year medical students in the UK cite mortality rates by age and make an impassioned argument for mobilizing the younger cohort of student-doctors. They compare the COVID-19 crisis to a battle front and the use of student-doctors, in roles suiting their training, to the shifting of the work-force in WWII.

[Three lessons for the COVID-19 response from pandemic HIV.](#)

Hargreaves J, Davey C; Group for lessons from pandemic HIV prevention for the COVID-19 response
Lancet HIV

2020 Apr 9; PMID: 32298644

Level of Evidence: 6-No Data Cited

Type of Article: Comment

Summary: We can learn from the HIV pandemic as we act against the Covid-19 pandemic. Specifically we should anticipate the inequalities that Covid-19 will exacerbate and work to minimize them. We should use a **socio-ecological framework** to involve the communities most likely to be heavily impacted in decision making and new norm setting. We need a multidisciplinary effort to control this pandemic, including epidemiology but also social and behavioral theory.

[Africa in the Path of the COVID-19.](#)

El-Sadr WM, Justman J.

N Engl J Med.

2020 Apr 17; PMID: 32302075

Level of Evidence: Level 6

Type of Article: Perspective

Summary: Africa remains at great risk of significant burden from the COVID-19 pandemic, given their poor access to advanced health care, overcrowding, and unreliable transport of resources. Although the continent has considerably less confirmed cases compared to regions facing critical outbreaks, the health infrastructure remains unprepared for a surge. Coordinated global support may be paramount in protecting the vulnerable populations in Africa.

[The economic impact of the Coronavirus 2019 \(Covid-2019\): Implications for the mining industry.](#)

Laing T

Extr Ind Soc

2020 Apr 16; PMID: 32300537

Level of Evidence: 6-No Data Cited

Type of Article: Comment

BLUF: Global reduction in construction and manufacturing has led to decreased demand for a wide range of minerals while physical distancing efforts have decreased mining production. The insecurity and uncertainty faced by the mining industry is of concern for vulnerable countries that depend heavily on their mining production as well as for technological advancements which rely on these resources.

Abstract

The Coronavirus 2019 (Covid-19) global pandemic has not only caused infections and deaths, but it has also wreaked havoc with the global economy on a scale not seen since at least the Great Depression. Covid-19 has the potential to destroy individual livelihoods, businesses, industries and entire economies. The mining sector is not immune to these impacts, and the crisis has the potential to have severe consequences in the short, medium and long-term for the industry. Understanding these impacts, and analysing their significance for the industry, and the role it plays in wider economic development is a crucial task for academic research.

[Protect Indigenous peoples from COVID-19.](#)

Ferrante L, Fearnside PM. Ferrante L, et al.

Science.

2020 Apr 17; PMID: 32299940

Level of Evidence: 6 - No Data Cited

Type of Article: Letter

Summary: Brazil's indigenous population is at increased risk of infection due to SARS-CoV-2. The author argues that access to areas of isolated indigenous groups be restricted from missionaries and that greater efforts by the Brazilian government be to provide doctors, PPE, and rapid testing to these areas.

Epidemiology

Demographic science aids in understanding the spread and fatality rates of COVID-19

Dowd JB, Andriano L, Brazel DM, Rotondi V, Block P, Ding X, Liu Y, Mills MC.

Proceedings of the National Academy of Sciences of the U S A

2020 Apr 16; PMID: 32300018

Level of Evidence: 5 - Expert opinion

Type of Article: Risk prediction model

BLUF: The authors present a model to predict mortality from COVID-19 in Italy, S. Korea, Brazil and Nigeria using age as the main independent variable. Based on this, they argue that **countries with older populations should prepare for greater burden of disease and higher mortality rates.**

Abstract: Governments around the world must rapidly mobilize and make difficult policy decisions to mitigate the coronavirus disease 2019 (COVID-19) pandemic. Because **deaths have been concentrated at older ages**, we highlight the important role of demography, particularly, how **the age structure of a population may help explain differences in fatality rates across countries and how transmission unfolds**. We examine the role of age structure in deaths thus far in Italy and South Korea and illustrate how the pandemic could unfold in populations with similar population sizes but different age structures, showing **a dramatically higher burden of mortality in countries with older versus younger populations**. This powerful interaction of demography and current age-specific mortality for COVID-19 suggests that social distancing and other policies to slow transmission should consider the age composition of local and national contexts as well as intergenerational interactions. We also call for countries to provide case and fatality data disaggregated by age and sex to improve real-time targeted forecasting of hospitalization and critical care needs.

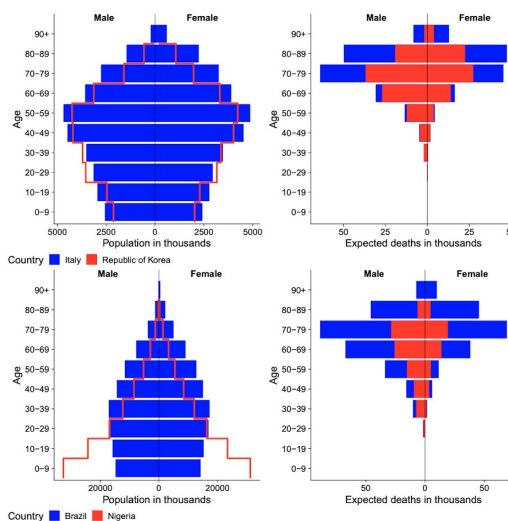


Fig. 1. Population composition (Left) and expected deaths in population (Right) for Italy and Republic of Korea (Top) and Nigeria and Brazil (Bottom). Projections assume 10% population infection rate and current age-sex-specific case fatality rates from Italy (Dataset S1).

Predictive Mathematical Models of the COVID-19 Pandemic: Underlying Principles and Value of Projections.

Jewell NP, Lewnard JA, Jewell BL, Jewell NP, et al. =

JAMA

2020 Apr 16; PMID: 32297897

Level of Evidence: 6 - no data cited

Type of Article: Viewpoint

BLUF: Mathematical models cannot accurately predict needs during the pandemic without concise and individualized data. Over and underpredicting pandemic impact both lead to negative consequences such as lack of response preparation or scarcity of supplies from excess demand.

Summarizing Excerpt: A lack of data on key variables has led to huge differences in best-case v worst-case predictions. “Always assuming the worst-case scenario at state and national levels will lead to inefficiencies and competition for beds and supplies and may compromise effective delivery and quality of care, while assuming the best-case scenario can lead to disastrous underpreparation.” “For projections of hospital needs...” The authors write, “Local data should be used as soon as those data become available with reasonable accuracy.” High-quality models need to be dynamically updated, transparent about their design and limitations, clearly define uncertainty by reporting ranges of possible outcomes, and discuss differences between other model systems. To improve public understanding of the situation, reports on models must be “...appropriately circumspect... to avoid the misinterpretation that these forecasts represent scientific truth.”

The association between international and domestic air traffic and the coronavirus (COVID-19) outbreak.

Lau H, Khosrawipour V, Kocbach P, Mikolajczyk A, Ichii H, Zacharski M, Bania J, Khosrawipour T. Lau H, et al.

J Microbiol Immunol Infect.

2020 Mar 28; PMID: 32299783

Level of Evidence: 2 - Cross sectional study

Type of Article: Research

BLUF: Data from late March indicates a correlation between airline passenger volume and COVID-19 cases in relation to the disease epicenter.

Summary:

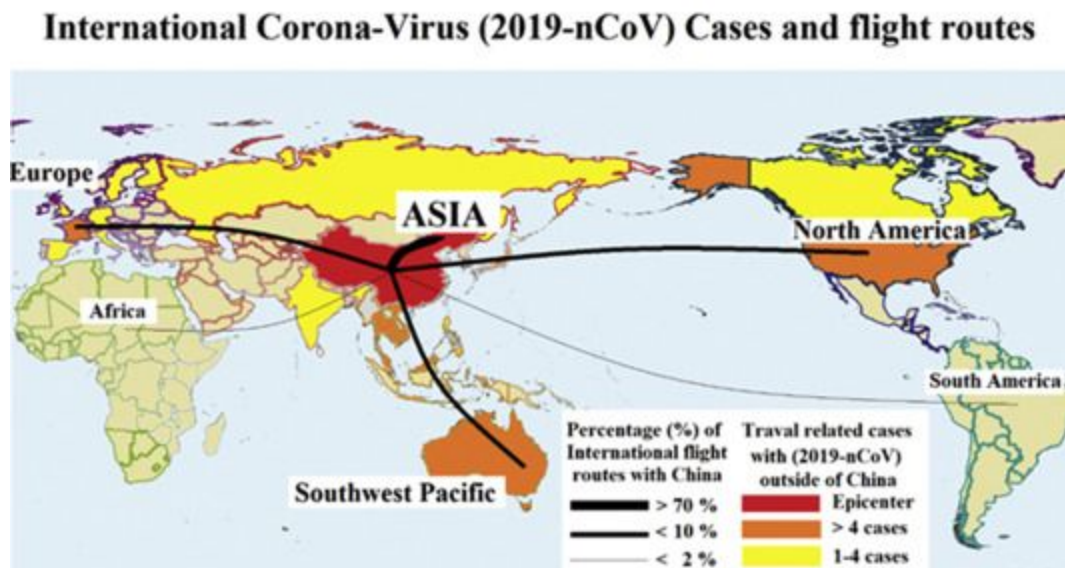
Background: The World Health Organization (WHO) has declared the current outbreak of the novel coronavirus (COVID-19) a global pandemic. Many countries are facing increasing numbers of COVID-19 cases, which are, in their origin mostly attributed to regular international flight connections with China. This study aims to investigate this relation by analyzing available data on air traffic volume and the spread of COVID-19 cases.

Methods: and findings: We analyzed available data on current domestic and international passenger volume and flight routes and compared these to the distribution of domestic and international COVID-19 cases.

Results: **Our data indicate a strong linear correlation between domestic COVID-19 cases and passenger volume for regions within China** ($r^2 = 0.92$, $p = 0.19$) and a **significant correlation between international COVID-19 cases and passenger volume** ($r^2 = 0.98$, $p < 0.01$).

Conclusions: The number of flight routes as well as total passenger volume are highly relevant risk factors for the spread of current COVID-19. Multiple regions within Asia, as well as some in North America and Europe are at serious risk of constant exposure to COVID-19 from China and other highly infected countries. Risk for COVID-19 exposure remains relatively low in South America and Africa. If adequate measures are taken, including **on-site disease detection and temporary**

passenger quarantine, limited but not terminated air traffic can be a feasible option to prevent a long-term crisis. Reasonable risk calculations and case evaluations per passenger volume are crucial aspects which must be considered when reducing international flights.



Can cats become infected with Covid-19?

Li X, Li X.

Vet Rec.

2020 Apr 18; PMID: 32299985

Level of Evidence: Level 5 - Expert opinion

Type of Article: Letter

Summarizing excerpt: “SARS-CoV-2 can be transmitted between cats via respiratory droplets and from people to cats, but it remains unknown if the reverse transmission from cats to people can occur. In the same study, it was reported that 39 cat serum samples taken before the Covid-19 outbreak were serologically negative, which **suggested cats may not transmit the virus to people.** The role cats play in this Covid-19 pandemic should be further explored. However, we should never abandon our family pets.”

Clinical Characteristics of Pregnant Women with Covid-19 in Wuhan, China.

Chen L, Li Q, Zheng D, Jiang H, Wei Y, Zou L, Feng L, Xiong G, Sun G, Wang H, Zhao Y, Qiao J, Chen L, et al.

N Engl J Med.

2020 Apr 17; PMID: 32302077

Level of Evidence: Level 5 - Expert Opinion

Type of Article: Letter to Editor

BLUF: Due to the limited data on pregnant women with Covid-19, the authors compile and share clinical characteristics and demographics of 118 Covid-19 positive pregnant women in Wuhan.

Summary: The authors of this letter compiled epidemiologic, clinical, laboratory, radiologic, treatment, and outcome information on 118 COVID-19 positive, pregnant women in Wuhan. Data

(Table 1) was extracted from the epidemic reporting system of the National Health Commission of China between the dates of December 8, 2019 to March 20, 2020. According to their analysis, a total of 109 of 118 women (92%) had mild disease, and 9 (8%) had severe disease. Severe disease developed in 6 of the 9 women after delivery, with one woman receiving noninvasive mechanical ventilation. There were 3 spontaneous abortions, 2 ectopic pregnancies, and 4 induced abortions (due to patients' concerns about COVID-19). Of the 68 patients who delivered during the study period, 63 (93%) underwent cesarean section with 38 of 62 cases (61%) having the procedure because of concerns about the effects of Covid-19 on the pregnancy. A total of 14 deliveries (21%) were premature; 8 were induced (7 due to concerns about Covid-19). No babies had neonatal asphyxia. Testing for Covid-19 was performed with neonatal throat swabs of 8 newborns and breast-milk samples of 3 mothers, and no positive results were reported.

Characteristic	All Patients (N=118)	Disease Severity	
		Nonsevere (N=109)	Severe (N=9)
General characteristics			
Median age (IQR) — yr	31 (28–34)	30 (28–34)	34 (33–35)
Nulliparous — no./total no. (%)	55/106 (52)	51/97 (53)	4/9 (44)
Parous — no./total no. (%)	51/106 (48)	46/97 (47)	5/9 (56)
Signs and symptoms			
Asymptomatic — no. (%)†	6 (5)	6 (6)	0
Symptomatic — no. (%)‡	112 (95)	103 (94)	9 (100)
Fever — no./total no. (%)	84/112 (75)	77/103 (75)	7/9 (78)
Cough — no./total no. (%)	82/112 (73)	73/103 (71)	9/9 (100)
Chest tightness — no./total no. (%)	20/112 (18)	15/103 (15)	5/9 (56)
Fatigue — no./total no. (%)	19/112 (17)	17/103 (17)	2/9 (22)
Dyspnea — no./total no. (%)	8/112 (7)	5/103 (5)	3/9 (33)
Diarrhea — no./total no. (%)	8/112 (7)	6/103 (6)	2/9 (22)
Headache — no./total no. (%)	7/112 (6)	5/103 (5)	2/9 (22)
Pregnancy outcome			
Delivery — no. (%)	68 (58)	61 (56)	7 (78)
Live birth — no./total no. (%)§	70/70 (100)	63/63 (100)	7/7 (100)
Preterm birth — no./total no. (%)	14/68 (21)	11/61 (18)	3/7 (43)
Iatrogenic	8/14 (57)	6/11 (55)	2/3 (67)
Abortion — no. (%)	9 (8)	9 (8)	0
Spontaneous abortion — no./total no. (%)	3/9 (33)	3/9 (33)	0
Induced abortion — no./total no. (%)¶	4/9 (44)	4/9 (44)	0
Ectopic pregnancy — no./total no. (%)	2/9 (22)	2/9 (22)	0
Cesarean section — no./total no. (%)	63/68 (93)	58/61 (95)	5/7 (71)
Due to obstetrical indications	24/62 (39)	22/57 (39)	2/5 (40)
Due to concern about Covid-19	38/62 (61)	35/57 (61)	3/5 (60)
Natural delivery — no./total no. (%)	5/68 (7)	3/61 (5)	2/7 (29)
Pregnancy ongoing — no. (%)	41 (35)	39 (36)	2 (22)
Median 1-min Apgar score (IQR)**	9 (8–9)	9 (8–9)	8 (8–10)
Neonatal asphyxia — no./total no.	0/70	0/63	0/7
Neonatal death — no./total no.	0/70	0/63	0/7

* The denominators of patients who were included in each analysis are provided if they differed from the total numbers in the relevant study group. Percentages may not total 100 because of rounding. Covid-19 denotes coronavirus disease 2019, and IQR interquartile range.

† Asymptomatic patients were screened because of exposure to persons with confirmed or suspected Covid-19.

‡ The signs and symptoms listed include those reported to occur before admission and during hospitalization. Data were extracted from the medical record and may not reflect complete accounting of symptoms.

§ The reason that there were 70 live births but 68 deliveries was that there were 2 sets of twins.

¶ These abortions were induced because of the patient's concern about Covid-19.

|| The data shown are as of March 20, 2020.

** The Apgar score at 1 minute was available for 66 babies.

[Geographic Differences in COVID-19 Cases, Deaths, and Incidence - United States, February 12-April 7, 2020.](#)

CDC COVID-19 Response Team
MMWR Morb Mortal Wkly Rep
2020 Apr 17; PMID: 32298250

Level of Evidence: 4 - Case-series

Type of Article: Research

BLUF: The cumulative incidence of COVID-19 ranges widely based on geographic differences in cases, deaths, incidence, and changing incidence. These variations are likely due to the differential implementation of mitigation strategies, availability of testing, and population density variations.

Abstract:

Community transmission of coronavirus disease 2019 (COVID-19) was first detected in the United States in February 2020. By mid-March, all 50 states, the District of Columbia (DC), New York City (NYC), and four U.S. territories had reported cases of COVID-19. This report describes the geographic distribution of laboratory-confirmed COVID-19 cases and related deaths reported by each U.S. state, each territory and freely associated state,* DC, and NYC during February 12-April 7, 2020, and estimates cumulative incidence for each jurisdiction. In addition, it projects the jurisdiction-level trajectory of this pandemic by estimating case doubling times on April 7 and changes in cumulative incidence during the most recent 7-day period (March 31-April 7). As of April 7, 2020, a total of 395,926 cases of COVID-19, including 12,757 related deaths, were reported in the United States. Cumulative COVID-19 incidence varied substantially by jurisdiction, ranging from 20.6 cases per 100,000 in Minnesota to 915.3 in NYC. On April 7, national case doubling time was approximately 6.5 days, although this ranged from 5.5 to 8.0 days in the 10 jurisdictions reporting the most cases. Absolute change in cumulative incidence during March 31-April 7 also varied widely, ranging from an increase of 8.3 cases per 100,000 in Minnesota to 418.0 in NYC. **Geographic differences in numbers of COVID-19 cases and deaths, cumulative incidence, and changes in incidence likely reflect a combination of jurisdiction-specific epidemiologic and population-level factors, including 1) the timing of COVID-19 introductions; 2) population density; 3) age distribution and prevalence of underlying medical conditions among COVID-19 patients (1-3); 4) the timing and extent of community mitigation measures; 5) diagnostic testing capacity; and 6) public health reporting practices.** Monitoring jurisdiction-level numbers of COVID-19 cases, deaths, and changes in incidence is critical for understanding community risk and making decisions about community mitigation, including social distancing, and strategic health care resource allocation.

[Prediction of COVID-19 transmission dynamics using a mathematical model considering behavior changes.](#)

PMID: 32299157

Publication Date: Apr 13, 2020

Kim S, Seo YB, Jung E, Kim S, et al.

Epidemiol Health

Level of Evidence: Level 5 - Expert opinion

Type of Article: Risk prediction model

BLUF: Using mathematical models, the authors predict that incidence of COVID-19 in Daegu/Gyeongbuk, Republic of Korea will **continue to be high until mid-June**. Therefore the authors recommend that nonpharmaceutical interventions continue to be practiced until that time.

Abstract:

Since the report of the first confirmed case in Daegu on February 18, 2020, local transmission of COVID-19 in the Republic of Korea has continued. In this study, we aimed to identify the pattern of local transmission of COVID-19 using mathematical modeling and predict the epidemic size and the timing of the end of the spread. We modeled the COVID-19 outbreak in the Republic of Korea by

applying a mathematical model of transmission that factors in behavioral changes. We used the Korea Centers for Disease Control and Prevention data of daily confirmed cases in the country to estimate the nationwide and Daegu/Gyeongbuk area-specific transmission rates as well as behavioral change parameters using a least-squares method. The number of transmissions per infected patient was estimated to be about 10 times higher in the Daegu/Gyeongbuk area than the average of nationwide. Using these estimated parameters, our models predicts that about 13,800 cases will occur nationwide and 11,400 cases in the Daegu/Gyeongbuk area until mid-June. We mathematically demonstrate that the relatively high per-capita rate of transmission and the low rate of changes in behavior have caused a large-scale transmission of COVID-19 in the Daegu/Gyeongbuk area in the Republic of Korea. Since the outbreak is expected to continue until May, nonpharmaceutical interventions that can be sustained over the long term are required.

Community Responses during Early Phase of COVID-19 Epidemic, Hong Kong.

PMID: 32298227

Publication Date: Apr 16, 2020

Kwok KO, Li KK, Chan HHH, Yi YY, Tang A, Wei WI, Wong SYS. Kwok KO, et al.

Emerging Infectious Diseases

Level of Evidence: Level 5 - Survey Analysis

Type of Article: Research

BLUF: Risk perceptions and behavioral responses of the general community during the early phase of the COVID-19 epidemic in Hong Kong were examined through an online survey, which included measures of preventive behaviors, general anxiety, risk perceptions, and information exposure. Residents of Hong Kong took voluntary preventive measures for slowing transmission: $\geq 78\%$ adopted enhanced personal-hygiene measures, $\geq 90\%$ adopted travel-avoidance, and $39\%–93\%$ adopted social-distancing. Timely psychological and behavioral assessments of the community can help with developing appropriate interventions and communication strategies to mitigate transmission.

Abstract:

During the early phase of the coronavirus disease epidemic in Hong Kong, 1,715 survey respondents reported high levels of perceived risk, mild anxiety, and adoption of personal-hygiene, travel-avoidance, and social-distancing measures. Widely adopted individual precautionary measures, coupled with early government actions, might slow transmission early in the outbreak.

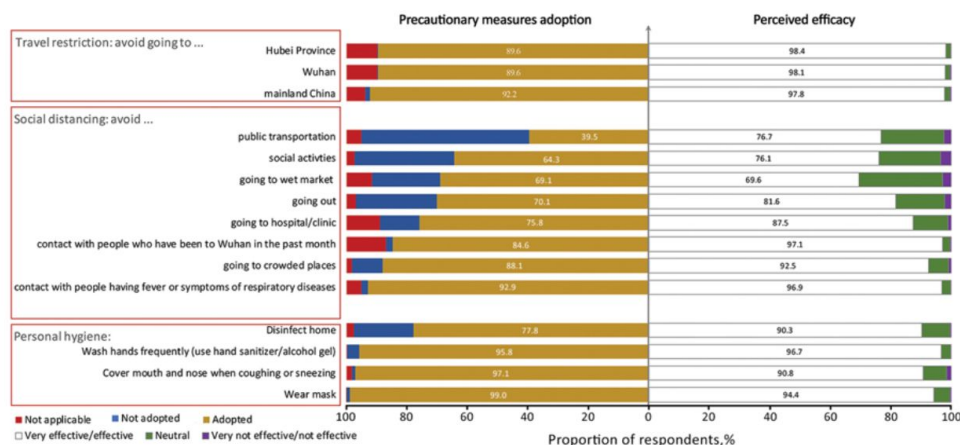


Figure 2. Perceived efficacy and actual adoption of precautionary measures to prevent transmission of severe acute respiratory syndrome coronavirus 2 and avoid contracting coronavirus disease, Hong Kong.

[Geospatial Hotspots Need Point-of-Care Strategies to Stop Highly Infectious Outbreaks: Ebola and Coronavirus.](#)

Kost GJ.Kost GJ.

Arch Pathol Lab Med.

2020 Apr 16; PMID: 32298139

Level of Evidence: 5 - Expert Opinion

Type of Article: Comment

Summary: “The COVID-19 pandemic demonstrates unequivocally that governments must support POCT and multidisciplinary healthcare personnel must learn its principles, then adopt POC geospatial strategies, so that onsite diagnostic testing can ramp up to meet needs in times of crisis.” These recommendations from an Emeritus professor at UC Davis include development of highly sensitive and specific rapid response diagnostic tests for SARS-CoV-2, Influenza A/B, and other respiratory infections.

[SARS-CoV-2 infection \(COVID-19\) in febrile infants without respiratory distress.](#)

Paret M, Lighter J, Pellett Madan R, Raabe VN, Shust GF, Ratner AJ.Paret M, et al.

Clin Infect Dis.

2020 Apr 17; PMID: 32301967

Level of Evidence: Level 4 – Case Series

Type of Article: Case Series

Summary: Authors present 2 cases – 25 and 56 day-old febrile infants without respiratory symptoms, ill contacts or history of travel who were both positive for SARS-CoV-2. The need to routinely hospitalize febrile infants for workup of potential invasive bacterial disease **may serve as an unrecognized source of SARS-COV-2 introduction into hospital settings.**

[Clinical characteristics of COVID-19 in children compared with adults in Shandong Province, China.](#)

Du W, Yu J, Wang H, Zhang X, Zhang S, Li Q, Zhang Z.

Infection

2020 Apr 16; PMID: 32301099

Level of Evidence: 4 - Case series

Type of Article: Research

BLUF: This study analyzed 67 cases of COVID-19 in the Shandong Province, China, including 53 adults and 14 children, of which only 1 case was the severe type and no one was in critical condition, which is far lower than reported in Wuhan. There is less clinical disease in children, possibly due lower pronounced inflammatory response, but even then substantial lung injuries were seen among children.

Abstract:

Aims and background: The COVID-19 outbreak spread in China and is a threat to the world. We reported on the epidemiological, clinical, laboratory, and radiological characteristics of children cases to help health workers better understand and provide timely diagnosis and treatment.

Methods: Retrospectively, two research centers' case series of 67 consecutive hospitalized cases including 53 adult and 14 children cases with COVID-19 between 23 Jan 2020 and 15 Feb 2020 from Jinan and Rizhao were enrolled in this study. Epidemiological, clinical, laboratory, and radiological characteristics of children and adults were analyzed and compared.

Results: Most cases in children were mild (21.4%) and conventional cases (78.6%), with mild clinical signs and symptoms, and all cases were of family clusters. **Fever (35.7%) and dry cough (21.4%) were described as clinical manifestations in children cases. Dry cough and phlegm were not the most common symptoms in children compared with adults ($p = 0.03$).** In the early stages of the disease, **lymphocyte counts did not significantly decline but neutrophils count did in children compared with adults ($p = 0.02$).** **There was a lower level of CRP ($p = 0.00$) in children compared with adults.** There were 8 (57.1%) asymptomatic cases and 6 (42.9%) symptomatic cases among the 14 children cases. The age of asymptomatic patients was younger than that of symptomatic patients ($p = 0.03$). **Even among asymptomatic patients, 5 (62.5%) cases had lung injuries including 3 (60%) cases with bilateral involvement, which was not different compared with that of symptomatic cases ($p = 0.58$, $p = 0.74$).**

Conclusions: The clinical symptoms of children are mild, there is substantial lung injury even among children, but that there is less clinical disease, perhaps because of a less pronounced inflammatory response, and that the occurrence of this pattern appears to inversely correlate with age.

[Well-aerated Lung on Admitting Chest CT to Predict Adverse Outcome in COVID-19 Pneumonia.](#)

Colombi D, Bodini FC, Petrini M, Maffi G, Morelli N, Milanese G, Silva M, Sverzellati N Prof, Michieletti E. Colombi D, et al.

Radiology

2020 Apr 17; PMID: 32301647

Level of Evidence: 3 - Cohort study

Type of Article: Original research

BLUF: RT-PCR confirmed COVID-19 patients with ≥ 4 lobe lung involvement and/or emphysema on initial CT were more likely to have increased morbidity and mortality. **Limited well-aerated lung parenchyma defined by software estimation of $< 71\%$ and absolute volume $< 2.8\text{L}$ were independently associated with poor outcomes.**

Abstract:

Background

Computed tomography (CT) of patients with severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) disease depicts the extent of lung involvement in COVID-19 pneumonia.

Purpose

The aim of the study was to determine the value of quantification of the well-aerated lung obtained at baseline chest CT for determining prognosis in patients with COVID-19 pneumonia.

Materials and Methods

Patients who underwent chest CT suspected for COVID-19 pneumonia at the emergency department admission between February 17 to March 10, 2020 were retrospectively analyzed. Patients with negative reverse-transcription polymerase chain reaction (RT-PCR) for SARS-CoV-2 in nasal-pharyngeal swabs, negative chest CT, and incomplete clinical data were excluded. CT was analyzed for quantification of well aerated lung visually (%V-WAL) and by open-source software (%S-WAL and absolute volume, VOL-WAL). Clinical parameters included demographics, comorbidities, symptoms and symptom duration, oxygen saturation and laboratory values. Logistic regression was used to evaluate relationship between clinical parameters and CT metrics versus patient outcome (ICU admission/death vs. no ICU admission/ death). The area under the receiver operating characteristic curve (AUC) was calculated to determine model performance.

Results

The study included 236 patients (females 59/123, 25%; median age, 68 years). A %V-WAL<73% (OR, 5.4; 95% CI, 2.7-10.8; $P<0.001$), %S-WAL<71% (OR, 3.8; 95% CI, 1.9-7.5; $P<0.001$), and VOL-WAL<2.9 L (OR, 2.6; 95% CI, 1.2-5.8; $P<0.01$) were predictors of ICU admission/death. In comparison with clinical model containing only clinical parameters (AUC, 0.83), all three quantitative models showed higher diagnostic performance (AUC 0.86 for all models). The models containing %V-WAL<73% and VOL-WAL<2.9L were superior in terms of performance as compared to the models containing only clinical parameters ($P=0.04$ for both models).

Conclusion

In patients with confirmed COVID-19 pneumonia, visual or software quantification the extent of CT lung abnormality were predictors of ICU admission or death.

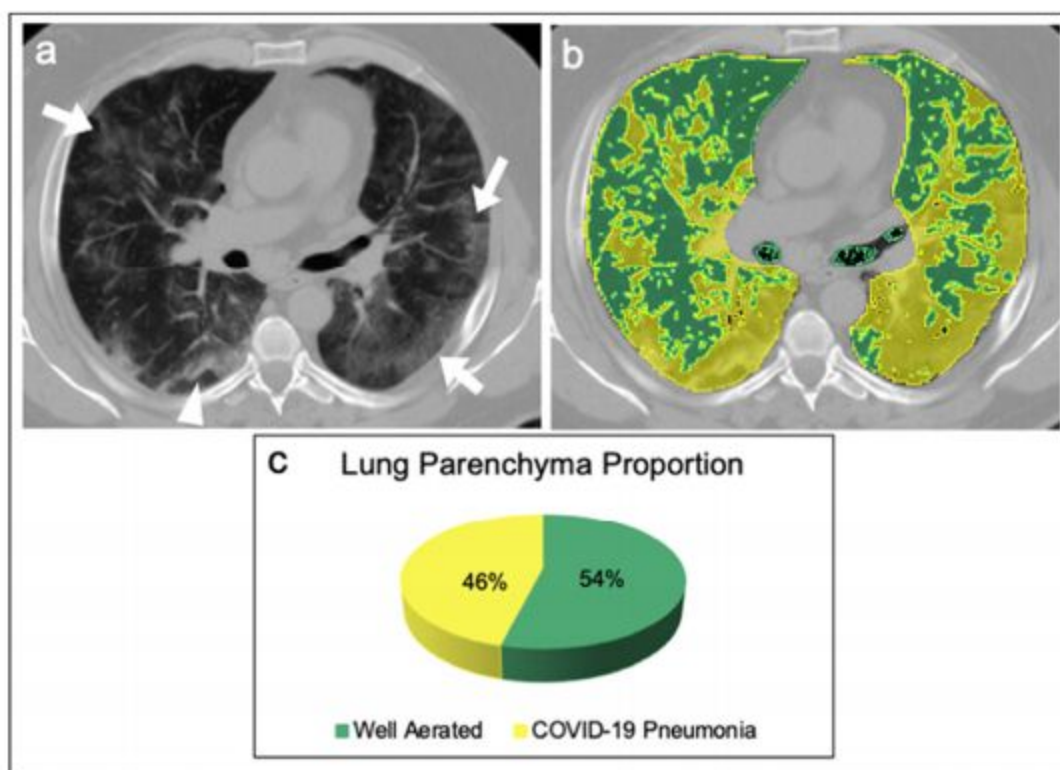


Figure 4. A 65 years old male affected by COVID-19 pneumonia admitted in ICU. (a) Nonenhanced axial chest CT image showed bilateral patchy ground glass opacities (arrows) with random distribution and peripheral band-like consolidation in the right lower lobe (arrowhead), with a visual quantification

of the well aerated lung of 35%. (b) The same image, displaying highlighted in green the well aerated lung and COVID-19 pneumonia in yellow; the analysis of the relative density histogram, quantified an overall well aerated volume of 54%, corresponding to an absolute volume of 2.3 L. (c) The 3D pie-chart showed the proportion of COVID-19 pneumonia and well aerated lung parenchyma. Abbreviations: COVID-19, severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) disease; CT, computed tomography; 3D, three-dimensional.

ST-Segment Elevation in Patients with Covid-19 - A Case Series.

PMID: 32302081

Publication Date: Apr 17, 2020

Bangalore S, Sharma A, Slotwiner A, Yatskar L, Harari R, Shah B, Ibrahim H, Friedman GH, Thompson C, Alviar CL, Chadow HL, Fishman GI, Reynolds HR, Keller N, Hochman JS. Bangalore S, et al.

New England Journal of Medicine

Level of Evidence: Level 4 - Case Series

Type of Article: Letter to the Editor

Summary: This report presents 18 patients COVID-19 patients in New York hospitals with ST-segment elevation. The population was 83% men, average age of 63, 33% with chest pain on presentation and all had elevated dimers. Overall, there was “variability in presentation, a high prevalence of nonobstructive disease, and a poor prognosis.”

Central nervous system manifestations of COVID-19: A systematic review.

Asadi-Pooya AA, Simani L. Asadi-Pooya AA, et al.

J Neurol Sci.

2020 Apr 11; PMID: 32299017

Level of Evidence: Level 3 – Systematic review of surveys that allow matching to local circumstances

Type of Article: Literature Review

BLUF: Review of current literature yielded 8 studies in which up to 25% of patients with COVID-19 presented with CNS manifestations.

Abstract:

Objective: In this systematic review, we will discuss the **evidence on the occurrence of central nervous system (CNS) involvement and neurological manifestations** in patients with COVID-19.

Methods: MEDLINE (accessed from PubMed) and Scopus from December 01, 2019 to March 26, 2020 were systematically searched for related published articles. In both electronic databases, the following search strategy was implemented and these key words (in the title/abstract) were used: “COVID 19” OR “coronavirus” AND “brain” OR “CNS” OR “neurologic”.

Results: Through the search strategy, **we could identify two articles about neurological involvement by COVID- 19.** One of these publications was a narrative review and the other one was a viewpoint. However, the authors scanned the reference lists of the included studies and could identify multiple references. One study, specifically investigated the neurological manifestations of COVID-19 and could document CNS manifestations in 25% of the patients. Most of the studies investigated the manifestations of COVID-19 in general.

Conclusion: **While neurological manifestations of COVID-19 have not been studied appropriately, it is highly likely that some of these patients, particularly those who suffer from a severe illness, have CNS involvement and neurological manifestations.** Precise and targeted documentation of neurological symptoms, detailed clinical, neurological, and electrophysiological investigations of the patients, attempts to isolate SARS-CoV-2 from cerebrospinal

fluid, and autopsies of the COVID-19 victims may clarify the role played by this virus in causing neurological manifestations.

Characteristics of Liver Tests in COVID-19 Patients.

Cai Q, Huang D, Yu H, Zhu Z, Xia Z, Su Y, Li Z, Zhou G, Gou J, Qu J, Sun Y, Liu Y, He Q, Chen J, Liu L, Xu L

J Hepatol

2020 Apr 13; PMID: 32298767

Level of Evidence: 4-Case control

Type of Article: Research

BLUF: “Highlight: Of 417 patients with COVID-19 in a referral hospital in Shenzhen, 76.3% had abnormal liver tests and 21.5% had liver injury during hospitalization. Patients with abnormal liver tests, especially in hepatocyte type or mixed type, had significantly higher odds of developing severe pneumonia. **The use of lopinavir/ritonavir increased the odds of liver injury**”

Abstract

Background & aims: Recent data on the coronavirus disease 2019 (COVID-19) outbreak caused by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) has begun to shine light on the impact of the disease on the liver. But no studies to date have systematically described liver test abnormalities in patients with COVID-19. We evaluated the clinical characteristics of COVID-19 in patients with abnormal liver tests.

Methods: Clinical records and laboratory results were obtained from 417 laboratory-confirmed COVID-19 patients who were admitted to the only referral hospital in Shenzhen, China from January 11 to February 21, 2020 and followed up to March 7, 2020. Information of clinical features of patients with abnormal liver tests were collected for analysis.

Results: Of 417 patients with COVID-19, 318 (76.3%) had abnormal liver test results and 90 (21.5%) had liver injury during hospitalization. The presence of abnormal liver tests became more pronounced during hospitalization within 2 weeks, with 49 (23.4%), 31 (14.8%), 24 (11.5%) and 51 (24.4%) patients raising liver enzyme levels to more than 3 times of upper limit units in alanine aminotransferase, aspartate aminotransferase, total bilirubin and gamma-glutamyl transferase, respectively. Patients with abnormal liver test of hepatocellular type or mixed type at admission had higher odds of progressing to severe disease (odds ratios (OR)=2.73, 95% confidence interval (CI) 1.19-6.3, and 4.44, 95% CI 1.93-10.23, respectively). The use of lopinavir/ritonavir was also found to lead to increased odds of liver injury (OR from 4.44 to 5.03, both $P < 0.01$).

Conclusion: Patients with abnormal liver tests had higher risks of progressing to severe disease. The detrimental effects on liver injury mainly related to certain medications used during hospitalization, should be monitored and evaluated frequently.

Understanding the Pathology

Complement Associated Microvascular Injury and Thrombosis in the Pathogenesis of Severe COVID-19 Infection: A Report of Five Cases

Magro M, Mulvey JJ, Berlin D, Nuovo G, Salvatore S, Harp J, Baxter-Stoltzfus A, Laurence J
Transl Res

2020 Apr 15; PMID: 32299776

Level of Evidence: Level 3 – Local Sample

Type of Article: Research

BLUF: This paper investigates the **histological manifestations of COVID-19** using lung samples from 5 patients who succumbed to the disease, and further, highlights key features that **distinguish it from ARDS**, thought to be a lethal complication of COVID-19. The results suggest a mechanism involving “**generalized thrombotic microvascular injury**” **mediated by the accessory and lectin complement pathways**, leading to pulmonary alveolar septal destruction, complement deposition, and neutrophil infiltration.

Abstract:

Acute respiratory failure and a systemic coagulopathy are critical aspects of the morbidity and mortality characterizing infection with severe acute respiratory distress syndrome-associated coronavirus-2 (SARS-CoV-2), the etiologic agent of Coronavirus disease 2019 (COVID-19). We examined skin and lung tissues from 5 patients with severe COVID-19 characterized by respiratory failure (n=5) and purpuric skin rash (n=3). The **pattern of COVID-19 pneumonitis** was predominantly a **pauci-inflammatory septal capillary injury** with significant septal capillary mural and luminal **fibrin deposition** and **permeation of the inter-alveolar septa by neutrophils**. No viral cytopathic changes were observed and the diffuse alveolar damage (DAD) with hyaline membranes, inflammation, and type II pneumocyte hyperplasia, hallmarks of classic ARDS, were not prominent. **These pulmonary findings were accompanied by significant deposits of terminal complement components** C5b-9 (membrane attack complex), C4d, and mannose binding lectin (MBL)-associated serine protease (MASP)2, in the microvasculature, consistent with sustained, systemic activation of the alternative and lectin-based complement pathways. The purpuric skin lesions similarly showed a pauci-inflammatory thrombogenic vasculopathy, with deposition of C5b-9 and C4d in both grossly involved and normally-appearing skin. In addition, there was **co-localization of COVID-19 spike glycoproteins with C4d and C5b-9 in the inter-alveolar septa and the cutaneous microvasculature** of two cases examined. In conclusion, at least a subset of sustained, severe COVID-19 may define a type of catastrophic microvascular injury syndrome mediated by activation of complement pathways and an associated procoagulant state. It provides a foundation for further exploration of the pathophysiologic importance of complement in COVID-19, and could suggest targets for specific intervention.

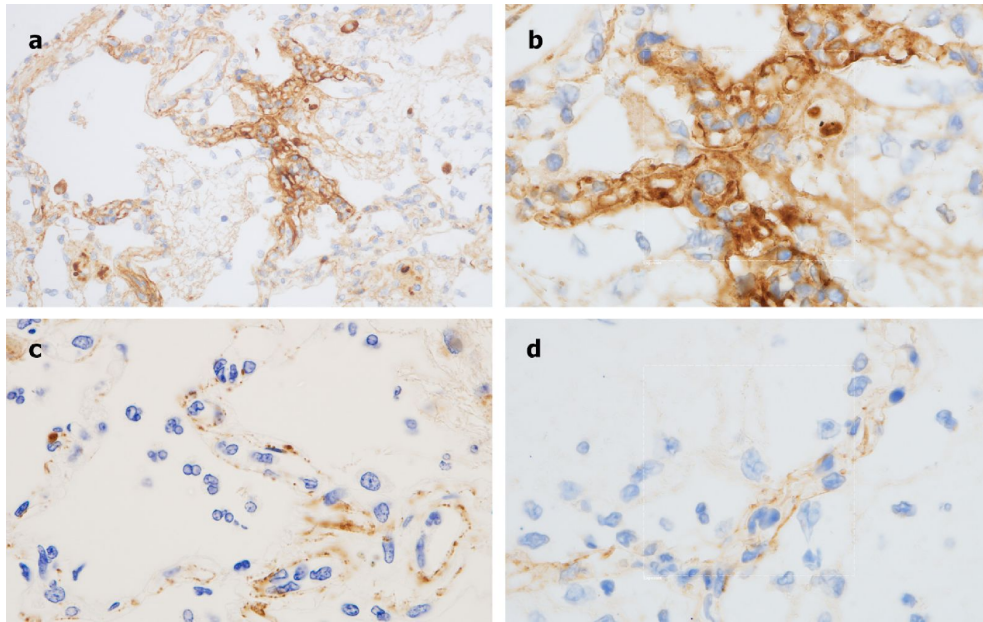


Fig. 2. Immunohistochemistry analysis of pulmonary autopsy samples from Case 1. A: Extensive C4d deposition is seen throughout the lung parenchyma, with striking septal capillary localization. (Diaminobenzidine stain, 200x.) B: Higher power magnification documents a clear localization of C4d within septal capillaries. (Diaminobenzidine, 1000x.) C: A similar septal capillary distribution for C5b-9 deposition is observed, although it is less pronounced than that observed for C4d. (Diaminobenzidine, 1000x.) D: A similar septal capillary distribution of C3d staining is observed, although it is also less pronounced than was observed for C4d. (Diaminobenzidine, 1000x.)

[Antiplatelet Therapy Following Percutaneous Coronary Intervention in Patients Complicated by COVID-19: Implications from Clinical Features to Pathological Findings.](#)

PMID: 32298134

Publication Date: Apr 16, 2020

Zhou X, Li Y, Yang Q.Zhou X, et al.

Circulation

Level of Evidence: Level 5 - Expert Opinion

Type of Article: Comment

Summary: The article raises safety concerns regarding dual antiplatelet therapy (DAPT) on life-threatening bleeding complications among SARS-CoV-2 patients, especially for the risk for Diffuse Alveolar hemorrhage (DAH); pathology shown in Figure below. “In addition to thrombosis and hemostasis, emerging evidence supports a **putative role of platelets in host defense against infections**” and so the timing of administration (should use in early phase of infection), choice of oral P2Y₁₂ inhibitors (specifically should use ticagrelor), and circulating platelet counts (thrombocytopenia associated with increased risk for infection) should be considered for disease progression. To counterbalance DAPT, large randomized controlled trials “support a net **benefit of aspirin-free strategies after PCI for patients at low, intermediate and high risk for both ischemia and bleeding.**”

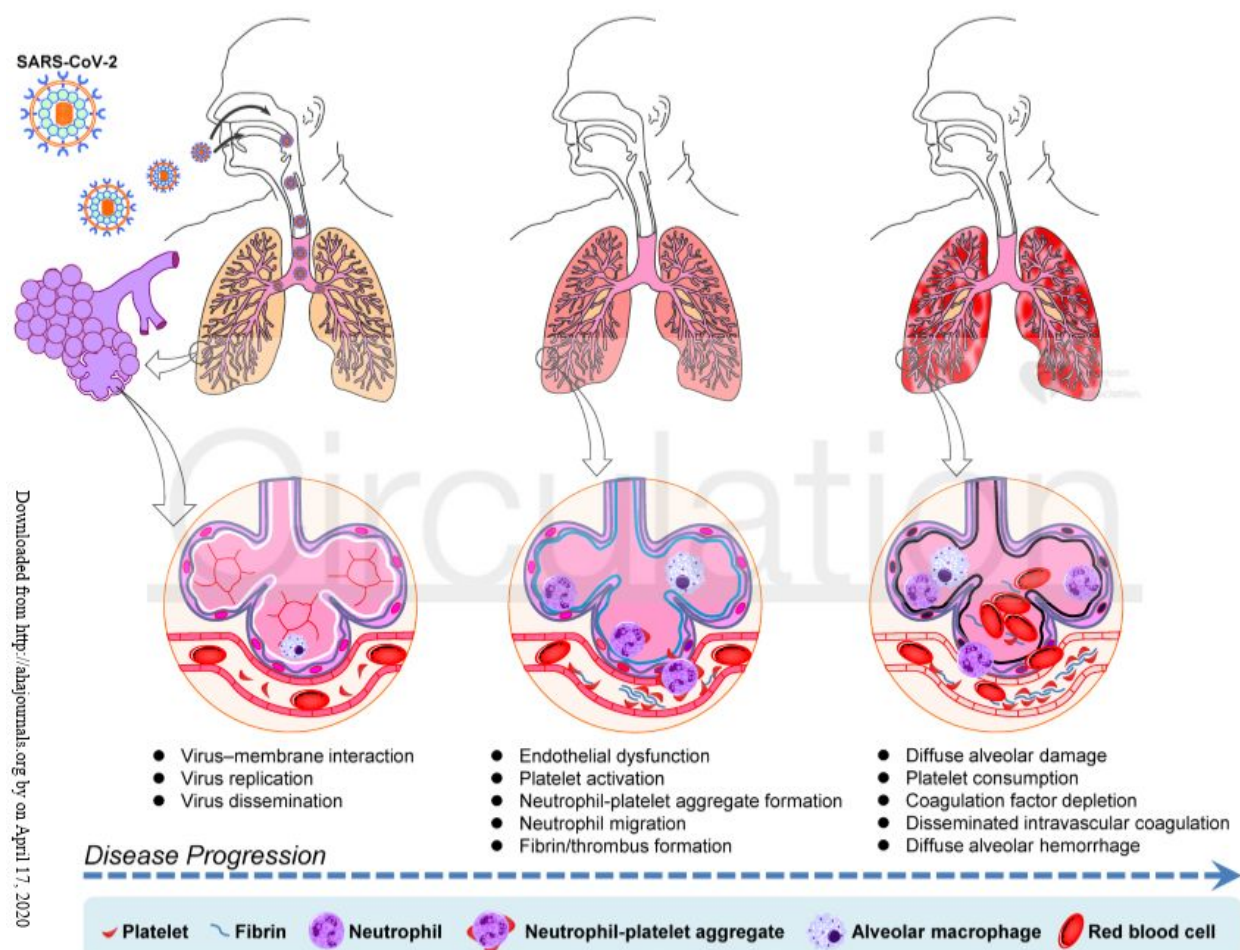


Figure. The potential pathophysiological evolution of SARS-CoV-2 infection in lung tissue and implications for antiplatelet therapy. Early antiplatelet therapy, especially P2Y₁₂ antagonists, may be beneficial due to their inhibitory effects on platelet activation and generation of neutrophil-platelet aggregates, key mechanisms in both thrombus formation and pulmonary neutrophil recruitment.

Are We Facing a Crashing Wave of Neuropsychiatric Sequelae of COVID-19? Neuropsychiatric Symptoms and Potential Immunologic Mechanisms.

Troyer EA, Kohn JN, Hong S.

Brain Behav Immun

2020 Apr 13; PMID: 32298803

Level of Evidence: Level 5 – Expert Opinion

Type of Article: Review

Summary: The authors discuss COVID-19's potential to cause neuropsychiatric symptoms. Their review includes neuropsychiatric sequelae of historical pandemics, observations of acute neuropsychiatric symptoms in COVID-19 patients (including cerebrovascular events, encephalopathy, and anosmia/ageusia), and the potential mechanisms for yet unknown neuropsychiatric symptoms that could develop after recovery from COVID-19. The authors urge continued research in this area.

Abstract: The coronavirus disease 19 (COVID-19) pandemic is a significant psychological stressor in addition to its tremendous impact on every facet of individuals' lives and organizations in virtually all social and economic sectors worldwide. Fear of illness and uncertainty about the future precipitate

anxiety- and stress-related disorders, and several groups have rightfully called for the creation and dissemination of robust mental health screening and treatment programs for the general public and front-line healthcare workers. **However, in addition to pandemic-associated psychological distress, the direct effects of the virus itself (several acute respiratory syndrome coronavirus; SARS-CoV-2), and the subsequent host immunologic response, on the human central nervous system (CNS) and related outcomes are unknown.** We discuss currently available evidence of COVID-19 related neuropsychiatric sequelae while drawing parallels to past viral pandemic-related outcomes. **Past pandemics have demonstrated that diverse types of neuropsychiatric symptoms, such as encephalopathy, mood changes, psychosis, neuromuscular dysfunction, or demyelinating processes, may accompany acute viral infection, or may follow infection by weeks, months, or longer in recovered patients.** The potential mechanisms are also discussed, including viral and immunological underpinnings. Therefore, prospective neuropsychiatric monitoring of individuals exposed to SARS-CoV-2 at various points in the life course, as well as their neuroimmune status, are needed to fully understand the long-term impact of COVID-19, and to establish a framework for integrating psychoneuroimmunology into epidemiologic studies of pandemics.

Transmission & Prevention

Walk-Through Screening Center for COVID-19: An Accessible and Efficient Screening System in a Pandemic Situation.

Kim SI, Lee JY.

J Korean Med Sci

2020 Apr 20; PMID: 32301300

Level of Evidence: 5 – Expert Opinion

Type of Article: Comment

Summary: The authors describe a walk-through screening center that has been implemented at a 350 bed general hospital in Seoul, Korea. The walk-through screening center was developed as an alternative to a drive-through screening center. A key feature of the walk-through testing center was the use of booths with a negative pressure design to help minimize transmission risk while collecting patient samples. The authors review the workflow employed at the walk-through testing center and the considerations that went into disinfectant procedures for the booths. The use of the walk-through testing center at this institution improved accessibility and efficiency of screening care.

Abstract: “With the ongoing novel coronavirus disease 2019 (COVID-19) pandemic, the number of individuals that need to be tested for COVID-19 has been rapidly increasing. A walk-through (WT) screening center using negative pressure booths that is inspired by the biosafety cabinet has been designed and implemented in Korea for easy screening of COVID-19 and for safe and efficient consultation for patients with fever or respiratory symptoms. Here, we present the overall concept, advantages, and limitations of the COVID-19 WT screening center. The WT center increases patient access to the screening clinics and adequately protects healthcare personnel while reducing the consumption of personal protective equipment. It can also increase the number of people tested by 9-10 fold. However, there is a risk of cross-infection at each stage of screening treatment, including the booths, and adverse reactions with disinfection of the booths. These limitations can be overcome using mobile technology and increasing the number of booths to reduce congestion inside the center, reducing booth volume for sufficient and rapid ventilation, and using an effective, harmless, and certified environmental disinfectant. A WT center can be implemented in other institutions and countries and modified depending on local needs to cope with the COVID-19 pandemic.”

COVID-19 Screening Center: How to Balance between the Speed and Safety?

Lee J

J Korean Med Sci

2020 Apr 20; PMID: 32301302

Level of Evidence: 5-Expert Opinion

Type of Article: Editorial

Summary: The author discusses the pros and cons of screening center formats including drive through, closed booth walk through, and open air walk through. The main concerns throughout are providers exposure to the elements and the risks of contamination-through inadequate glove/gown changing practices, inadequate decontamination time, or inadequate separation of testing booths.

Viral Transportation in COVID-19 Pandemic: Inactivated Virus Transportation Should be Implemented for Safe Transportation and Handling at Diagnostics Laboratories.

Dewar R, Baunoch D, Wojno K, Parkash V, Khosravi-Far R. Dewar R, et al.

Arch Pathol Lab Med

2020 Apr 16; PMID: 32298137

Level of Evidence: 5 - Expert Opinion

Type of Article: Archives

Summary: The current recommendations by the Center for Disease Control for transporting viable SAR-Cov-2/Covid-19 virus via viral transport media causes concern that it may be posing unnecessary risk to transportation and laboratory personnel.

Protecting patients and healthcare personnel from COVID-19: considerations for practice and outpatient care in cardiology.

Dörr, R

Herz.

2020 Apr 16; PMID: 32300815

Level of Evidence: 5 - Expert opinion

Type of Article: Letter to the Editor

BLUF: The author recommends the guidelines in Table 1 be followed to avoid COVID-19 transmission to healthcare workers, especially in outpatient cardiology.

Table 1 Take-home messages for practice and outpatient care in cardiology ^a	
1.	Screen for COVID-19 symptoms by telephone and at the front desk
2.	Consider non-contact body temperature checks at the entrance
3.	Review all scheduled visits and examinations for urgency
4.	Postpone all visits and examinations without relevant subsequent changes in patient management
5.	Postpone elective invasive/interventional procedures in stable patients with chronic ischemic heart disease (this is also based on recent evidence from the ISCHEMIA trial)
6.	Perform transesophageal echocardiography (TEE) only if absolutely indicated. Avoid all cardiopulmonary exercise stress tests (spiroergometry, exercise ECG, exercise stress echocardiography, etc.). Pharmacological stress testing is preferable
7.	Provide personal protective equipment (PPE) for all medical staff members (gloves, N95 masks, gowns, caps, goggles/face shields)
8.	Maintain segregation and social distancing between patients and medical personnel
9.	Ensure meticulous hygiene and disinfection of medical equipment and rooms after every patient
10.	Consider a lung CT scan as a first-line testing method in patients with acute dyspnea of unknown origin and elevated body temperature

^aThe author is well aware that this list may still be incomplete and that all recommendations will be subject to frequent updating and scientific revision in the near future

[COVID-19 & the General Surgical Department - Measures to Reduce Spread of SARS-COV-2 Among Surgeons.](#)

PMID: 32301805

Publication Date: Apr 13, 2020

Yeo D, Yeo C, Kaushal S, Tan G. Yeo D, et al.

Annals of Surgery

Level of Evidence: Level 5 - Expert Opinion

Type of Article: Editorial

Summary: “It is important to prevent the spread of COVID-19 within a department, not only for the personal health of our colleagues, but also for essential surgical services preservation to ensure that the department remains functional to carry out our duties, as well as maintain department morale.” Measures taken within the department to reduce transmission are: secondment of manpower going to the COVID-19 screening center, managing surgical workload and subspecialty teams by triaging patients and postponing appointments, adapting protocols for surgery for stricter screening and enforcement of PPE, increasing measures taken to deal with COVID-19 patients in the ward, reducing non-essential gatherings and chance of inadvertent infection, and increasing care for healthcare workers.

[Can an effective SARS-CoV-2 vaccine be developed for the older population?](#)

Pawelec G, Weng NP. Pawelec G, et al.

Immun Ageing.

2020 Apr 11; PMID: 32300370

Level of Evidence: 5 - Expert opinion

Type of Article: Editorial

BLUF: The authors consider it unlikely that a SARS-CoV-2 vaccine based on young adult responses will be effective in the elderly population though rapid distribution of a vaccine could lead to a herd immunity that protects the elderly.

Summary: The authors suggest that, though not entirely understood, immunosenescence in elderly population arises from “dysfunctional antigen-presenting cells and a dearth of antigen-specific CD4+ Th helper cells,” and continue to say that “[a]chieving such immune protection by a vaccine is quite feasible in the young, but it may prove to be challenging in old populations” as evidenced by the low efficacy of seasonal influenza vaccine in such populations.” In addition, The Journal of Immunity and Ageing welcomes articles focusing on these topics and will fast track the peer review process for any submissions.

[Community Transmission of SARS-CoV-2 at Two Family Gatherings - Chicago, Illinois, February-March 2020](#)

Ghinai I, Woods S, Ritger KA, McPherson TD, Black SR, Sparrow L, Fricchione MJ, Kerins JL, Pacilli M, Ruestow PS, Arwady MA, Beavers SF, Payne DC, Kirking HL, Layden JE

MMWR Morb Mortal Wkly Rep

2020 Apr 17; PMID: 32298035

Level of Evidence: 4

Type of Article: Correspondence

BLUF: Findings from a Chicago Department of Public Health investigation of a large, multi-family cluster of COVID-19 cases reveals adherence to CDC recommended social distancing, stay at home orders and avoidance of gatherings is required to prevent non-household, community transmission of SARS-CoV-2.

Abstract:

SARS-CoV-2, the virus that causes coronavirus disease 2019 (COVID-19), has spread rapidly around the world since it was first recognized in late 2019. Most early reports of person-to-person SARS-CoV-2 transmission have been among household contacts, where the secondary attack rate has been estimated to exceed 10% (1), in health care facilities (2), and in congregate settings (3). However, widespread community transmission, as is currently being observed in the United States, requires more expansive transmission events between nonhousehold contacts. In February and March 2020, the **Chicago Department of Public Health (CDPH) investigated a large, multifamily cluster of COVID-19**. Patients with confirmed COVID-19 and their close contacts were interviewed to **better understand nonhousehold, community transmission of SARS-CoV-2**. This report describes the cluster of 16 cases of confirmed or probable COVID-19, including three deaths, likely resulting from transmission of SARS-CoV-2 at two family gatherings (a funeral and a birthday party). **These data support current CDC social distancing recommendations intended to reduce SARS-CoV-2 transmission. U.S residents should follow stay-at-home orders when required by state or local authorities.**

[High prevalence of SARS-CoV-2 infection in repatriation flights to Greece from three European countries.](#)

Lytras, Theodore; Dellis, George; Flountzi, Anastasia; Hatzianastasiou, Sophia; Nikolopoulou, Georgia; Tsekou, Katerina; Diamantis, Zafiris; Stathopoulou, Grigoria; Togka, Marianthi; Gerolymatos, Gerasimos; Rigakos, George; Sapounas, Spiridon; Tsiodras, Sotirios
J Travel Med

2020 Apr 17 ; PMID: 32297940

Level of Evidence: 5 - Case Series

Type of Article: Research

ABSTRACT: Passengers on repatriation flights to Greece from the UK, Spain and Turkey were screened with oropharyngeal swabs on arrival for SARS-CoV-2 infection. Despite almost all passengers being asymptomatic, many tested positive (3.6% from UK, 6.3% from Spain and 6.3% from Turkey), indicating widespread transmission of SARS-CoV-2 in these countries.

[Transmission of COVID-19 to Health Care Personnel During Exposures to a Hospitalized Patient - Solano County, California, February 2020.](#)

Heinzerling A, Stuckey MJ, Scheuer T, Xu K, Perkins KM, Resseger H, Magill S, Verani JR, Jain S, Acosta M, Epson E

MMWR Morb Mortal Wkly Rep

2020 Apr 17; PMID: 32298249

Level of Evidence: 4-Case series

Type of Article: Research

BLUF: “Among 121 HCP exposed to a patient with unrecognized COVID-19, 43 became symptomatic and were tested for SARS-CoV-2, of whom three had positive test results; **all three had unprotected patient contact**. Exposures while performing physical examinations or during **nebulizer treatments** were more common among HCP with COVID-19.”

[The duration of viral shedding of discharged patients with severe COVID-19.](#)

Zhou B, She J, Wang Y, Ma X.

Clin Infect Dis

2020 Apr 17; PMID: 32302000

Level of Evidence: 4 - Case series

Type of Article: Research

BLUF: 41 patients discharged after hospitalization with severe Covid-19 in a single Chinese hospital were evaluated for duration of viral shedding via RT-PCR for viral nucleic acid on throat swabs.

Median duration of viral nucleic acid detection was 31 days from illness onset with a range of 18-48 days.

Abstract: The 2019 coronavirus disease (COVID-19) has drawn global intensive attention. Most of studies paid attention to epidemiological, clinical, and radiological features of inpatients with COVID-19. However, little studies have focused on clinical characteristics of discharged patients with severe COVID-19, especially the duration of viral shedding.

[Characteristics of Health Care Personnel with COVID-19 - United States, February 12-April 9, 2020.](#)

CDC COVID-19 Response Team.

MMWR Morb Mortal Wkly Rep.

2020 Apr 17; PMID: 32298247

Level of Evidence: Level 4 - Cohort study

Type of Article: Research

BLUF: As of April 9, 2020, 9282 COVID-19 patients were documented as being health care workers. Of those, 73% were female, 38% reported at least one underlying health condition, 55% reported contact with a COVID-19 patient only in health care settings, and 27 patients died.

Abstract: As of April 9, 2020, the coronavirus disease 2019 (COVID-19) pandemic had resulted in 1,521,252 cases and 92,798 deaths worldwide, including 459,165 cases and 16,570 deaths in the United States. Health care personnel (HCP) are essential workers defined as paid and unpaid persons serving in health care settings who have the potential for direct or indirect exposure to patients or infectious materials. During February 12-April 9, among 315,531 COVID-19 cases reported to CDC using a standardized form, **49,370 (16%) included data on whether the patient was a health care worker in the United States; including 9,282 (19%) who were identified as HCP.** Among HCP patients with data available, **the median age was 42 years (interquartile range [IQR] = 32-54 years), 6,603 (73%) were female, and 1,779 (38%) reported at least one underlying health condition.** Among HCP patients with data on health care, household, and community exposures, **780 (55%) reported contact with a COVID-19 patient only in health care settings.** Although 4,336 (92%) HCP patients reported having at least one symptom among fever, cough, or shortness of breath, the remaining 8% did not report any of these symptoms. Most HCP with COVID-19 (6,760, 90%) were not hospitalized; however, severe outcomes, **including 27**

deaths, occurred across all age groups; deaths most frequently occurred in HCP aged ≥ 65 years. These preliminary findings highlight that whether HCP acquire infection at work or in the community, **it is necessary to protect the health and safety of this essential national workforce.**

Management

COVID-19 Outbreak and Steroids Administration: Are Patients Treated for Sars-Cov-2 at Risk of Adrenal Insufficiency?

PMID: 32300975

Publication Date: April 16, 2020

Scaroni, C.; Armigliato, M.; Cannavo, S.

Journal of Endocrinological Investigation

Level of Evidence: Level 5- Expert Opinion

Type of Article: Letter

Summary: Currently, steroids are used to treat patients with severe acute respiratory syndrome caused by Sars-Cov-2 despite contradicting data on their effectiveness and safety. HPA axis suppression after steroid withdrawal can cause adrenal insufficiency, a condition that is difficult to recognize and can potentially be associated with increased morbidity and mortality. Steroid use can be further complicated by CYP450 inhibitors, such as Ritonavir, which increase the half-life of steroids, leading to increased HPA suppression. To avoid these risks, the author emphasizes the **importance of appropriate dose tapering and daily monitoring of blood pressure, weight, serum sodium and cortisol, and any symptoms that may indicate adrenal impairment** (i.e. fatigue, nausea, abdominal pain).

A Brief Telephone Severity Scoring System and Therapeutic Living Centers Solved Acute Hospital-Bed Shortage during the COVID-19 Outbreak in Daegu, Korea.

PMID: 32301298

Publication Date: Apr 14, 2020

Kim SW, Lee KS, Kim K, Lee JJ, Kim JY; Daegu Medical Association. Kim SW, et al.

Journal of Korean Medical Science

Level of Evidence: Level 5 - Mechanism Based

Type of Article: Brief Communication

BLUF: Hospital-bed shortage became a great challenge to the local healthcare system in Daegu, Korea so a **telephone severity scoring system was employed for hospital prioritization of patients**. The 4 classifications of patients are outlined in Table 2. Of those participating, 2.67% of them were transferred to the hospital after the isolation facility and is thought to have been due to the telephone severity scoring system.

Abstract:

With the epidemic of coronavirus disease 2019 (COVID-19) caused by severe acute respiratory syndrome coronavirus-2, the number of infected patients was rapidly increasing in Daegu, Korea. With a maximum of 741 new patients per day in the city as of February 29, 2020, hospital-bed shortage was a great challenge to the local healthcare system. We developed and applied a remote brief severity scoring system, administered by telephone for assigning priority for hospitalization and arranging for facility isolation ("therapeutic living centers") for the patients starting on February 29,

2020. Fifteen centers were operated for the 3,033 admissions to the COVID-19 therapeutic living centers. Only 81 cases (2.67%) were transferred to hospitals after facility isolation. We think that this brief severity scoring system for COVID-19 worked safely to solve the hospital-bed shortage. Telephone scoring of the severity of disease and therapeutic living centers could be very useful in overcoming the shortage of hospital-beds that occurs during outbreaks of infectious diseases.

Table 2. Brief severity scoring criteria for prioritization for hospitalization or admission to the therapeutic living centers

Categories	Criteria	Points	Deduction
Severity of disease, one option	1) Asymptomatic to mild: asymptomatic to common cold-like symptoms	0	-
	2) Moderate: cough and fever ($\geq 37.5^{\circ}\text{C}$)	1	-
	3) Severe: suspicion of severe pneumonia (cough and $\geq 38^{\circ}\text{C}$ over 3 days)	5	-
	4) Critical: suspicion of critical pneumonia (shortness of breath ≥ 1 day, respiratory rate $\geq 30/\text{min}$)	10	-
Age, one option	≤ 50	0	-
	51–60	1	-
	61–70	2	-
	> 70	3	-
Underlying diseases, multiple options	Hypertension	1	-
	Diabetes	2	-
	Cancer (not including complete cure)	3	-
	End-stage renal failure (on dialysis)	4	-
	Chronic pulmonary disease	4	-
	Congestive heart failure	3	-
	Heart disease (except congestive heart failure)	1	-
	Others (taking immunosuppressants: steroids with prednisolone 15 mg or more per day, on anticancer therapy, taking immunomodulators, etc.)	5	-
Social factors	Long-term care facilities and facilities for the disabled	5	-
	If the doctor judges the patient to be unlikely to recover even with active treatment due to long-term disease (long-term schizophrenia, etc.) and old age (> 75 years)		-3
Summation		To be calculated	-
Recommendation	Tertiary hospital, ICU (negative pressure room)	≥ 10	-
	Tertiary hospital, general ward (negative pressure room)	8–9	-
	Public hospitals, A group ^a	6–7	-
	Public hospitals, B group ^a	4–5	-
	Therapeutic living center	≤ 3	-

ICU = intensive care unit.

^aGroup A and B: A is more severe than B.

[A case of a readmitted patient who recovered from COVID-19 in Chengdu, China.](#)

Li XJ, Zhang ZW, Zong ZY, Li XJ, et al.

Crit Care.

2020 Apr 16; PMID: 32299477

Level of Evidence: 5 - Case report

Type of Study: Letter to Editor

Summarizing excerpt: “In our report, after 2–3 weeks of treatment, the patient was discharged. On February 22, the patient’s symptoms reoccurred, CT and nucleic acid tests for 2019-nCoV suggested that the virus in the body may not have been completely cleared from the patient on February 3 when he was discharged, and **current criteria for hospital discharge (7th edition) may need to be re-evaluated** and further adjusted.”

From the Insight of Glucose Metabolism Disorder: Oxygen Therapy and Blood Glucose Monitoring Are Crucial for Quarantined COVID-19 Patients.

Li Z, Liu G, Wang L, Liang Y, Zhou Q, Wu F, Yao J, Chen B.

Ecotoxicol Environ Saf

2020 Apr 11; PMID: 32298856

Level of Evidence: 4 – Case Series

Type of Article: Letter

BLUF: In light of evidence that COVID-19 hypoxia leads to dysregulated aerobic glucose metabolism, the authors advocate for management strategies that **ensure sufficient oxygen intake and blood glucose monitoring in the management setting of home quarantine.**

Summary: The authors review the evidence that COVID-19 hypoxia is associated with an unbalanced aerobic glucose metabolism (see Figure below). The authors also present preliminary findings from a study investigating markers for dysregulated aerobic metabolism and the impact of oxygen supplementation on these markers based on data from 65 COVID-19 cases treated at the General Hospital of Chinese PLA Central Theater Command in Wuhan, China. When comparing 23 severe cases to 42 mild cases of COVID-10, the more severe cases were more likely to have high blood LDH levels (91.3% vs. 30.9%), hyperglycemia (56.5% vs. 21.4%), and high blood lactate levels (26.1% vs. 2.4%). In patients treated continuously with oxygen in the hospital setting, glucose concentrations decreased from 6.24 mmol/L to 5.76 mmol/L and LDH concentrations decreased from 238 IU/L to 192 IU/L. The authors indicate their belief that early oxygen supplementation could lead to improved prognosis and advocate for blood glucose monitoring and ensuring adequate oxygen intake in the home quarantine setting.

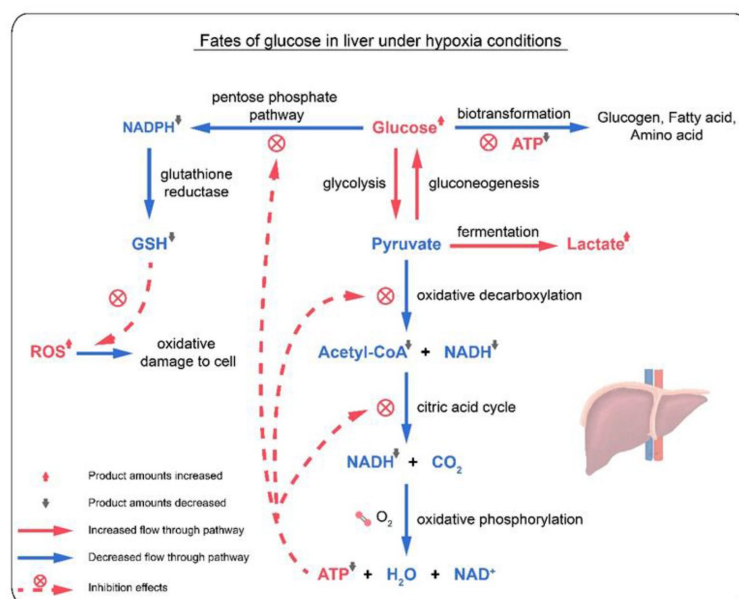


Figure. Mechanism of aerobic glucose metabolism disturbances under hypoxia conditions.

[Binding of SARS-CoV-2 and Angiotensin-Converting Enzyme 2: Clinical Implications](#)

PMID: 32301968

Publication Date: April 17, 2020

Murray, Eleanor; Tomaszewski, Maciej; Guzik, Tomasz J.

Cardiovascular Research

Level of Evidence: Level 5: Expert Opinion

Type of Article: Editorial

Summary: SARS-COV2 virus achieves cell entry by binding to the cellular ACE-2 receptor. Due to this mechanism, there is controversy over whether ACE inhibitors and ARBs are beneficial or detrimental for patients with COVID-19. The author cited multiple studies concluding that there is not enough data to determine the effects of the drugs on COVID-19 severity, however, **the risk of stopping such medications is dangerous given the harmful cardiovascular effects this virus can have.** At this time, the American College of Physicians, Canadian Cardiovascular Society, European Society of Cardiology, Hypertension Canada, International Society of Hypertension and The Renal Association encourage the continuation of ACE inhibitors/ARBs unless there is a clinical reason to withdraw them.

[COVID-19 in Solid Organ Transplant Recipients: A Single-Center Case Series from Spain](#)

Fernandez-Ruiz M, Andres A, Loinaz C, Delgado JF, Lopez-Medrano F, San Juan R, Gonzalez E, Polanco N, Dolores Folgueira M, Lalueza A, Lumbreras C, Aguado JM.

Am J Transplant.

2020 Apr 16; PMID: 32301155

Level of Evidence: Level 4

Type of Article: Brief Communication

BLUF: Solid-organ transplant recipients, when infected with SARS-CoV2, present and progress similarly to immunocompetent hosts.

Abstract:

The clinical characteristics, management and outcome of coronavirus disease 2019 (COVID-19) caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) after solid organ transplantation (SOT) remain unknown. We report our preliminary experience with 18 SOT (kidney [44.4%], liver [33.3%] and heart [22.2%]) recipients diagnosed with COVID-19 by March 23, 2020 at a tertiary-care center at Madrid. Median age at diagnosis was 71.0 ± 12.8 years, and the median interval since transplantation was 9.3 years. **Fever (83.3%) and radiographic abnormalities in form of unilateral or bilateral/multifocal consolidations (72.2%) were the most common presentations.** Lopinavir/ritonavir (usually associated with hydroxychloroquine [HCQ]) was used in 50.0% of patients, and had to be prematurely discontinued in two of them. Other antiviral regimens included HCQ monotherapy (27.8%) and interferon- β (16.7%). As of April 4, the case fatality rate was 27.8% (5/18). **After a median follow-up of 18 days from symptom onset, 30.8% (4/13) of survivors developed progressive respiratory failure, 7.7% (1/13) showed stable clinical condition or improvement, and 61.5% (8/13) had been discharged home.** C reactive protein levels at various points were significantly higher among recipients that experienced unfavorable outcome. In conclusion, this frontline report suggests that SARS-CoV-2 infection has a severe course in SOT recipients.

How do we decide to de-isolate COVID-19 patients?

Liao CH, Hung SC, Lee YT, Hung HC, Hsueh PR. Liao CH, et al.

J Microbiol Immunol Infect.

2020 Apr 1 (Available online); PMID: 32299784

Level of Evidence: Level 4 - Case Series

Type of Article: Commentary

BLUF: In order to understand the contagious period of COVID-19, this study tracked the presence of SARS-CoV-2 RNA through upper airway serial collection of 2 infected patients. The authors hypothesized that viral detection directly correlates with transmission risk.

Summary: This study observed the clinical course and presence of SARS-CoV-2 RNA in serial collections of oropharyngeal swab and saliva specimens of two COVID-19 patients, a wife and husband. The data (Figure 1) revealed longer and more intermittent viral detections in the upper airway of the wife, who had a more severe case than her husband. **However, the authors could not determine if the positive results of the rRT-PCR refer to an ongoing infection or the presence of residual sequences of viral RNA. The actual contagious period of SARS-CoV-2 infection remains unknown.** For the time being, rRT-PCR assays of upper airway serial specimens may be the only way to decide whether COVID-19 patients can be de-isolated.

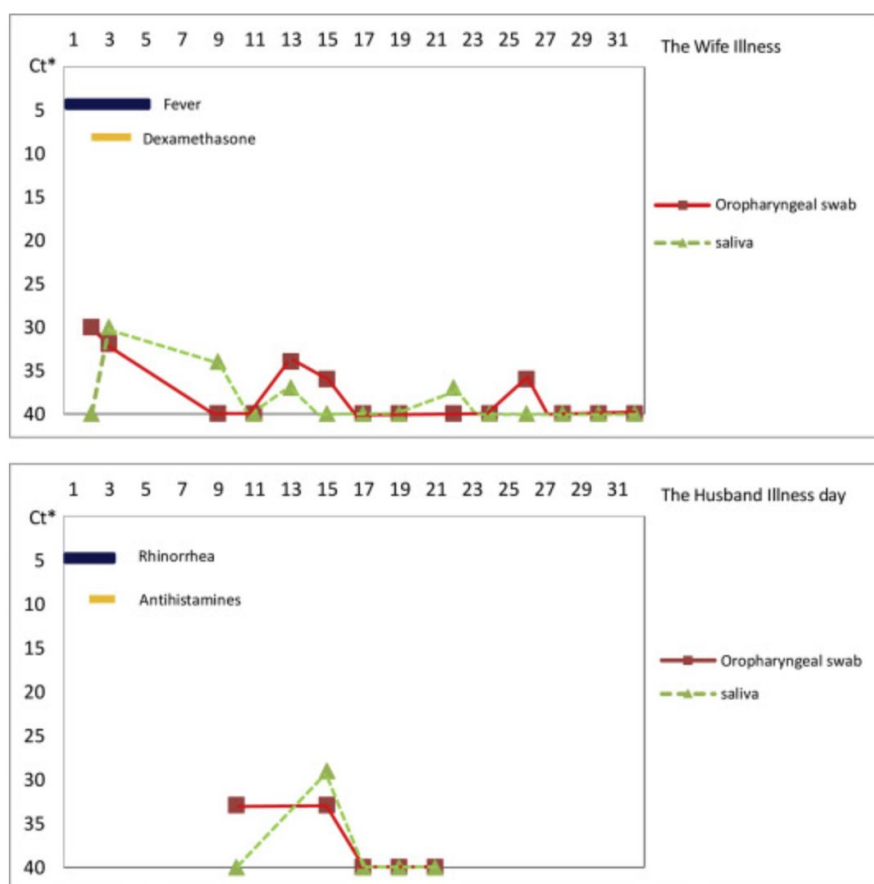


Figure 1. Clinical course of the wife and the husband with COVID-19 and the threshold cycle (ct) values of rRT-PCR for SARS-CoV-2 in their oropharyngeal swab and saliva specimens.

Clinical Chemistry Tests for Patients With COVID-19 - Important Caveats for Interpretation

Kavsak PA, de Wit K, Worster A

Clin Chem Lab Med

2020 Apr 16; PMID: 32301748

Level of Evidence: 5 – Expert Opinion

Type of Article: Editorial

Summary:

Important caveats must be considered in specific clinical chemistry tests for the biochemical monitoring of patients with COVID-19 as pre-analytical, analytical and post-analytical issues can affect interpretation. These include pneumatic tube system transportation, in vitro hemolysis and availability of testing at different laboratories, hospitals and clinical settings.

COVID-19 pneumonia: ARDS or not?

Gattinoni L, Chiumello D, Rossi S. Gattinoni L, et al.

Crit Care.

2020 Apr 16; PMID: 32299472

Level of Evidence: 5- Expert Opinion

Type of Article: Editorial

BLUF: The authors describe two different presentations of COVID-19 pneumonia, in which one is more representative of ARDS and the other is more distinct. These two different “types” of COVID-pneumonia patients require different management and treatment.

Summary: This editorial proposes categorizing patients into two categories (type 1 patients or “non ARDS” and type 2 patients or “ARDS”) due to their notable distinguishing characteristics, both in clinical presentation and on CT imaging (Fig. 1). For instance, type 1 patients tend to have severe hypoxemia with near normal respiratory system compliance of $>50\text{ml/cmH}_2\text{O}$. On the other hand, type 2 patients with severe hypoxemia are observed with decreased compliance of $<40\text{ml/cmH}_2\text{O}$. The authors outline management and treatment for the two types of patients as follows:

Type 1 patients:

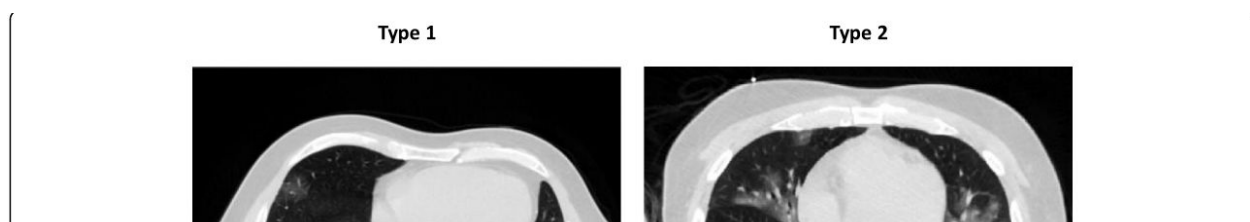
- PEEP levels should be kept lower in patients with high pulmonary compliance
- Tidal volume thresholds should not be limited at 6 ml/kg
- Respiratory rate should not exceed 20 breaths/min
- Patients should be left “quiet”; avoiding doing too much is of higher benefit than intervening at any cost

Type 2 patients:

- Standard treatment for severe ARDS should be applied with lower tidal volume, prone positioning, and relatively high PEEP

Both patients:

- Recommend calculating shunt fraction to quantify efficiency of pulmonary exchange
- Daily check of coagulation parameters in, particular D-dimer levels



Management of other conditions during COVID-19

CAR T Cell Therapy During the COVID-19 Pandemic.

PMID: 32298807

Publication Date: Apr 13, 2020

Bachanova V, Bishop MR, Dahi P, Dholaria B, Grupp SA, Hayes-Lattin B, Janakiram M, Maziarz RT, McGuirk JP, Nastoupil LJ, Oluwale OO, Perales MA, Porter DL, Riedell PA. Bachanova V, et al.

Biology of Blood and Marrow Transplantation

Level of Evidence: Level 5 - Expert Opinion

Type of Article: Review

BLUF: The resources for and delivery of chimeric antigen receptor (CAR) T cell therapy used for adults relapsed/refractory (R/R) diffuse large B-cell lymphomas and pediatric R/R acute lymphoblastic leukemia have been impacted by COVID-19 but the authors suggest that the benefits are significant enough to warrant treatment provisions, in a time of competition for resources. Table 2 outlines approaches to alleviate the difficulties in management and application during the COVID-19 crisis.

Abstract:

The COVID-19 pandemic has significantly impacted the delivery of cellular therapeutics, including chimeric antigen receptor (CAR) T cells. This impact has extended beyond patient care to include logistics, administration, and distribution of increasingly limited health care resources. Based on the collective experience of the CAR T-cell Consortium investigators, we review and address several questions and concerns regarding cellular therapy administration in the setting of COVID-19 and make general recommendations to address these issues. Specifically we address: 1) necessary resources for safe administration of cell therapies; 2) determinants of cell therapy utilization; 3) selection among patients with B-cell non-Hodgkin lymphomas and 4) B-cell acute lymphocytic leukemia; 5) supportive measures during cell therapy administration; 6) use and prioritization of tocilizumab, and 7) collaborative care with referring physicians. These recommendations were carefully formulated with the understanding that resources allocation is of the utmost importance and the decision to proceed with CAR T cell therapy will require extensive discussion of potential risks and benefits. Though these recommendations are fluid, at this time it is our opinion that the COVID-19 pandemic should not serve as a reason to defer CAR T cell therapy for patients truly in need of a potentially curative therapy.

	Measures to mitigate the risk of COVID-19 or its complications ²⁸
Pre-CAR T cell	
Screening measures	<ul style="list-style-type: none"> Assess for signs/symptoms of COVID-19 at relevant timepoints including pre-apheresis, pre-lymphodepleting chemotherapy, and pre-CAR T cell infusion Consider laboratory PCR testing for COVID-19 on all patients (including asymptomatic) within 48-72 hours prior to apheresis Perform laboratory PCR testing for COVID-19 on all patients (including asymptomatic) within 48-72 hours of lymphodepleting chemotherapy and 7 days of CAR T cell infusion Consider repeating laboratory PCR testing for COVID-19 within 72 hours of CAR T cell infusion to enhance sensitivity and ensure there has not been an interim infection Once routinely available, consider serologic testing for COVID-19 seroconversion Use multiplex PCR to rule-out other viruses for symptomatic patients
Preventive measures	<ul style="list-style-type: none"> Limit in-person visits and substitute with telemedicine visits, as appropriate Ensure patient access to a thermometer and other vital sign monitoring equipment Patients to use facemasks in public including at healthcare facilities
Post-CAR T cell	
Care delivery	<ul style="list-style-type: none"> Limit in-person visits after day+7, but continue close monitoring via telemedicine, as feasible Encourage caregiver participation
Education	<ul style="list-style-type: none"> Provide education to caregivers about vital sign monitoring and ICANS questionnaires to log daily following hospital discharge/transition to outpatient care Establish a contingency plan for CAR-T patients who present with fevers and/or COVID-19
Supportive care	<ul style="list-style-type: none"> Consider G-CSF for periods of prolonged neutropenia after CAR T cell therapy Consider thrombopoietin mimetics for severe prolonged thrombocytopenia after CAR T cell therapy to limit transfusion needs and clinic visits
Infection prophylaxis	<ul style="list-style-type: none"> Antimicrobial prophylaxis during periods of neutropenia Antiviral prophylaxis for HSV and VZV Antifungal prophylaxis with a mold-active agent for patients with >7 days of high-dose steroids or neutropenia >14 days PJP prophylaxis with Bactrim, Dapsone or Atovaquone. Consider avoiding pentamidine during the COVID-19 pandemic
IVIG	<ul style="list-style-type: none"> Prophylactic IVIG is not currently recommended to prevent COVID-19 Consider IVIG to prevent other infections if IgG <400 mg/dl
PUI/COVID-19+ and CAR T cell	<ul style="list-style-type: none"> Delay T cell apheresis, lymphodepleting chemotherapy and/or CAR T cell infusion at least 14 days from symptom resolution, depending on clinical course Consider repeat laboratory PCR testing for COVID-19 positive patients after 14-day delay

Abbreviations: PCR: polymerase chain reaction, PUI: person under investigation, G-CSF: granulocyte-colony stimulating factor, PJP: Pneumocystis jirovecii Pneumonia, VZV: varicella-zoster virus, HSV: herpes simplex virus, IVIG: intravenous immunoglobulin

Table 2: Recommended guidance to manage CAR T cell patients at risk for COVID-19

Management of elective aortic valve replacement over the long term in the era of COVID-19.

Basman C, Kliger CA, Pirelli L, Scheinerman SJ. Basman C, et al.

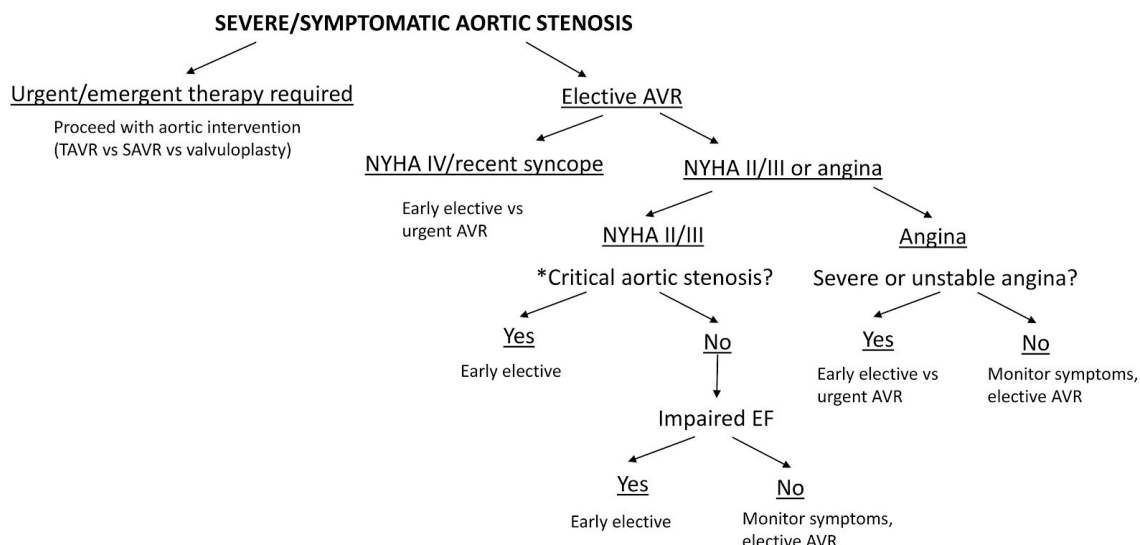
Eur J Cardiothorac Surg.

2020 Apr 17; PMID: 32301976

Level of Evidence: 5 - Expert Opinion

Type of Article: Comment

Summary: The American College of surgeons, CDC, and Centers for Medicare and Medicaid have guidelines of how to treat and when to move follow-up procedures for patients with AS. Development of symptoms is the strongest indicator for intervention, but timing and type of intervention can have a significant impact on healthcare resource use. Patients who receive TAVR instead of surgical AVR show shorter hospital stays. The image summarizes the New York Heart Association guidelines.



Cost-effectiveness of rivaroxaban plus aspirin (dual pathway inhibition) for prevention of ischaemic events in patients with cardiovascular disease: on top optimisation of secondary prevention medication in the context of COVID-19 pandemic.

Rauch B.

Eur J Prev Cardiol.

2020 Apr 17; PMID: 32301349

Level of Evidence: Level 5 - Expert Opinion

Type of Article: Editorial

BLUF: Patients with cardiovascular disease are at an increased risk of adverse outcomes from COVID-19. Therefore, any new antiviral treatments need to be tested for negative interactions with common cardio-protective medications to mitigate adverse events.

Summary: The author argues that the benefits of dual pathway inhibition (DPI), consisting of an antiplatelet medication plus a factor Xa inhibitor, in the prevention of cardiovascular disease have been established in carefully controlled clinical trials with near ideal conditions. However, questions regarding the benefit-risk analysis and cost-effective analysis remain in the utilization of the DPI treatment strategy in clinical practice outside the research setting. The author also recommends that **“new antiviral drugs being developed to treat Sars-CoV-2 infection need to be tested against potentially negative interactions with current cardio-protective medication, including antiplatelet drugs and novel anticoagulants.”**

CANCER IN THE TIME OF COVID: Expert opinion on how to adapt current practice.

Raskin J, Lebeer M, De Bondt C, Wener R, Janssens A, van Meerbeeck JP. Raskin J, et al.

Eur Respir J.

2020 Apr 16; PMID: 32299866

Level of Evidence: 5 - Expert Opinion

Type of Article: Comment

Summary: The following is a synthesis of the various recommendations by the British Thoracic Society and French HCSP on how to modify treatment for various **lung cancers** (SCLC, NSCLC, MPM, and TET) to adapt for the healthcare resource shortage during the COVID-19 pandemic. All are

made in efforts to shorten in-hospital time. Included in the recommendations are replacing IV administration of medication for oral or lengthening the amount of time between doses.

Emergency Surgery in Suspected COVID-19 Patients with Acute Abdomen: Case Series and Perspectives.

Gao Y, Xi H, Chen L, Gao Y, et al.

Ann Surg.

2020 Apr 13; PMID: 32301807

Level of Evidence: Level 4 – Case Series

Type of Article: Perspective

Summary: The authors share 4 cases in which emergency surgery was indicated before COVID-19 test results were available. The authors recommend the following:

- If COVID-19 infection cannot be ruled out, the highest level of protection should be adopted
- Hospitals should designate negative-pressure operating rooms out of heavy-traffic zones and develop specific transfer pathways and isolated recovery rooms, ICUS, and medical wards
- The use of electrocautery or ultrasonic scalpels should be limited as much as possible to reduce risk of aerosol viral dispersal
- In all four of the present cases, exploratory laparotomy was chosen instead of laparoscopic procedures due to the manageable operation time and uncertainty of airborne and aerosol transmission risk.

A review of initial data on pregnancy during the COVID-19 outbreak: implications for assisted reproductive treatments.

Monteleone PA, Nakano M, Lazar V, Gomes AP, de H Martin, Bonetti TC.

JBRA Assist Reprod.

2020 May 1, PMID: 32301600

Level of Evidence: 5 - Literature Review

Article Type: Research

BLUF: It is recommended to postpone embryo transfers and new treatments due to the lack of knowledge on possible outcomes from exposure to COVID-19.

Abstract: The current outbreak of the novel 2019 coronavirus disease (COVID-19) started in China in December 2019 and has since spread to several other countries. On March 25, 2020, a total of 375,498 cases had been confirmed globally with 2,201 cases in Brazil, showing the urgency of reacting to this international public health emergency. While in most cases, mild symptoms are observed, in some cases the infection leads to serious pulmonary disease. As a result, the possible consequences of the COVID-19 outbreak for pregnant women and its potential effects on the management of assisted reproductive treatments, demand attention. In this review, we summarize the latest research progress related to COVID-19 epidemiology and the reported data of pregnant women, and discuss the current evidence of COVID-19 infections during pregnancy and its potential consequences for assisted reproductive treatments. Reported data suggest that symptoms in pregnant women are similar to those in other people, and that there is no evidence for higher maternal or fetal risks. However, considering the initial data and lack of comprehensive knowledge on the pathogenesis of SARS-CoV-2

during pregnancy, human reproduction societies have recommended postponing the embryo transfers and do not initiate new treatment cycles. New evidence must be considered carefully in order to adjust these recommendations accordingly at any time and to guide assisted reproductive treatments.

The Orthopaedic Trauma Service and COVID-19 - Practice Considerations to Optimize Outcomes and Limit Exposure.

Stinner DJ, Lebrun C, Hsu JR, Jahangir AA, Mir HR. Stinner DJ, et al.

J Orthop Trauma.

2020 Apr 13; PMID: 32301767

Level of Evidence: Level 5 - Expert opinion

Type of Article: Review of Expert Guidelines

Summary: This article provides a framework for orthopedic surgeons addressing the pandemic and specifically addresses extensive considerations and recommendations for orthopedic trauma services, fracture clinics, and inpatient surgery teams.

- **Trauma: Use a two-team system**, each operating independent of the other and transitioning care each week to monitor symptoms of members and limit the spread of disease. **Utilize video conferencing** for team member communication and electronic consultation for patients not requiring urgent care.
- **Fracture clinic:** Minimize unnecessary follow up. **Limit in-person visits** to the following circumstances: “immediate post-op visit for suture removal...fracture reduction check for non-operatively managed fractures that had a reduction and splint or cast applied, new acute fractures, patients with potential or concern for complications, and those patients with a potential weightbearing status change that requires x-rays and or cast removal prior to making the decision.” Use telemedicine for all non-essential visits. **Use resorbable sutures and removable splints to minimize follow up**, and provide online resources for self removal of staples/sutures.
- **Inpatient: Limiting those in the OR to only essential personnel.** In urgent cases, perform risk assessment to determine if surgery can be postponed until after testing for COVID-19 is complete. **Segregate operating rooms based on COVID-19 status: positive, negative or unknown.**

Table 1. Considerations for PPE for Orthopaedic Surgeons		
<u>Confirmed Non-COVID-19</u>	<u>COVID-19 Status Unknown</u>	<u>COVID-19 Positive</u>
<u>Minimum</u> Standard PPE (surgical masks, eye protection, gown)	<u>Minimum</u> Standard PPE	<u>Minimum</u> N95 respirator with full-face shield or surgical hood
	<u>Additional PPE considerations for possible aerosolizing orthopaedic procedures⁵</u>	
	N95 respirator with full-face shield or surgical hood	

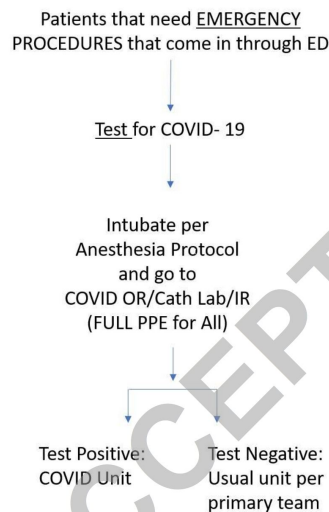


Figure 1: Example of an algorithm from one institution for emergency surgical procedures in trauma patients presenting to the emergency department during the COVID-19 pandemic. Note that all patients are considered COVID unknown and treated as such until test results are confirmed.

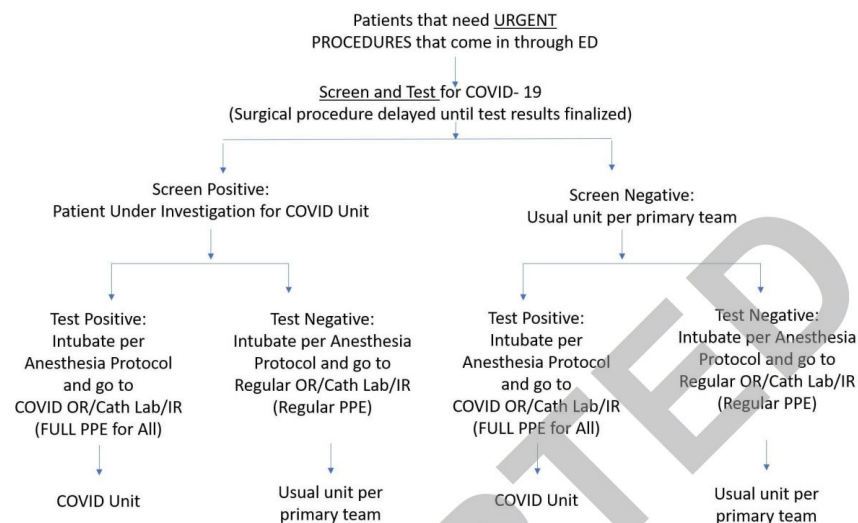


Figure 2: Example of an algorithm from one institution for urgent surgical procedures in trauma patients presenting to the emergency department during the COVID-19 pandemic. Note that all urgent surgical trauma patients are initially screened and tested with surgical intervention delayed until test results are finalized.

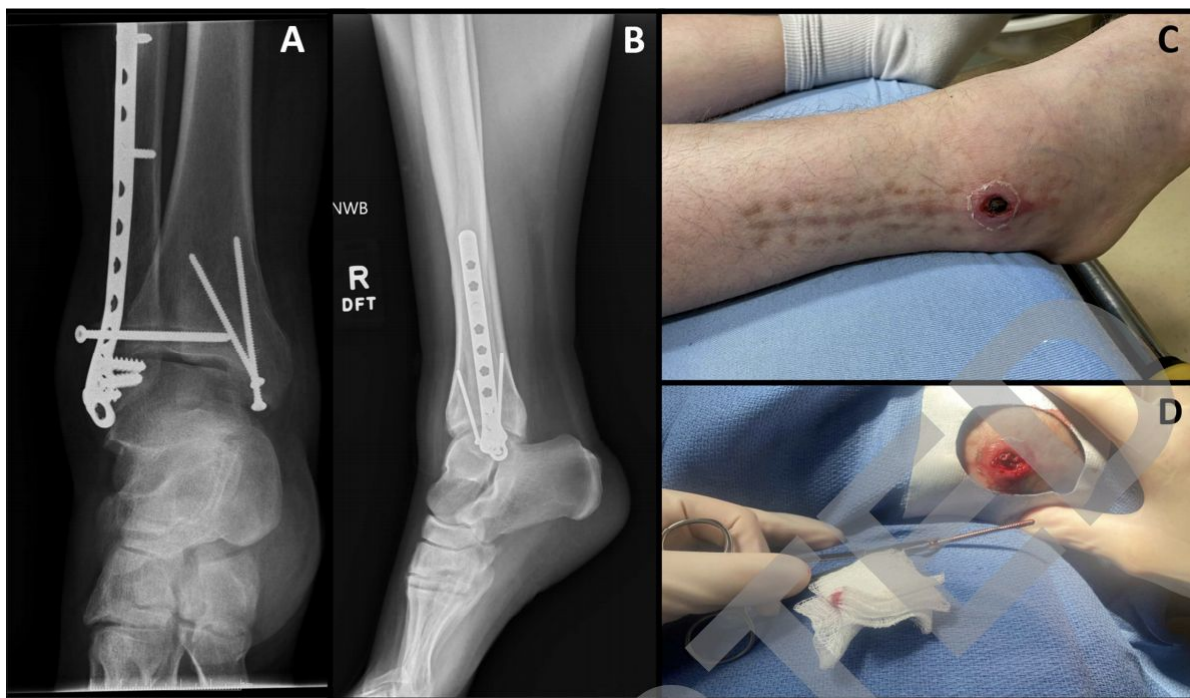


Figure 3: AP (A) and lateral (B) radiographs are shown of the healed ankle fracture and it is clearly evident that the syndesmotomic screw has backed out (A). A clinical photo upon presentation is shown, where the head of the syndesmotomic screw is visible within the wound (C). The screw is shown following removal in the emergency department (D) prior to wound closure with absorbable sutures and placement of a soft dressing to minimize the need for an in-person immediate post-operative follow-up visit during the COVID pandemic.

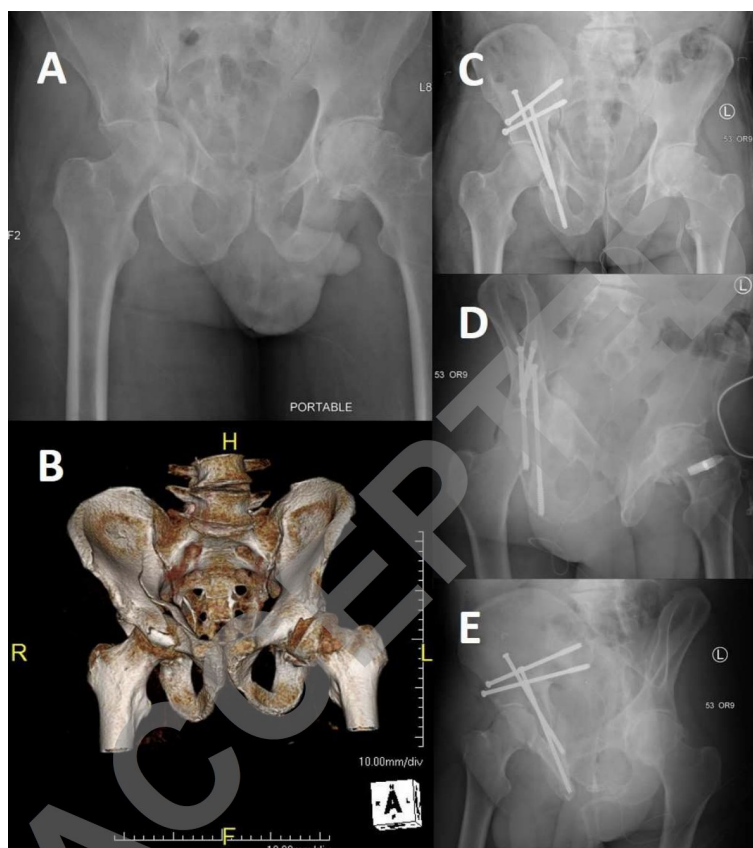


Figure 4: An AP and 3D reconstruction of the pelvis are shown (A and B), demonstrating the anterior column posterior hemitransverse. Postoperative AP and Judet views (C-E) demonstrate adequate reduction with limited internal fixation.

Recommendations for the Care of Pediatric Orthopedic Patients During the COVID Pandemic.

Farrell S, Schaeffer EK, Mulpuri K. Farrell S, et al.

J Am Acad Orthop Surg.

2020 Apr 14; PMID: 32301817

Level of Evidence: Level 5 – Expert Opinion

Type of Article: Guidelines

BLUF: Refer to Table 1-2 for full guidelines including orthopedic pediatric trauma management and pediatric elective management.

Summarizing Excerpt: “These guidelines, based on expert opinion and best available evidence, provide a framework for management of pediatric orthopaedic patients during the COVID pandemic. General principles include limiting procedures to urgent cases such as traumatic injuries, and deferring outpatient visits during the acute phase of the pandemic. Non-operative methods should be considered where possible. For patients with developmental or chronic orthopaedic conditions, it may be possible to delay treatment for 2-4 months without substantial detrimental long-term impact.”

A Multidisciplinary Team Approach for Triage of Elective Cancer Surgery at the Massachusetts General Hospital During the Novel Coronavirus COVID-19 Outbreak.

Qadan M, Hong TS, Tanabe KK, Ryan DP, Lillemoe KD. Qadan M, et al.

Ann Surg

2020 Apr 13; PMID: 32301804

Level of Evidence: 5 - Expert Opinion

Type of Article: Commentary

BLUF: The authors share their approach to addressing the surgical needs of cancer patients despite the severe consequences, including limited resources, of the COVID-19 pandemic.

Summary: The authors share their basic outline to approaching surgical management of oncologic operations, specifically gastrointestinal and hepatopancreatobiliary cancers, at Massachusetts General Hospital. GI oncology cases for whom a surgeon suggests operation in the next 7 to 10 days are presented in a 2-hour multidisciplinary midweek video conference to medical oncologists, radiation oncologists, surgeons, gastroenterologists, interventional radiologists, and other providers. The surgeon leads the conference, which includes review of images with a radiologist, discussion of alternative therapies, consequences of delaying surgery, and resource utilization. The chief of the department makes the final decision on each case based on the consensus recommendation from the multidisciplinary panel. MGH guidelines currently recommend proceeding with oncologic surgery for 1) Cancer patients who have completed neoadjuvant therapy, are in the window of resectability, and for whom non-operative temporizing maneuvers are not possible. 2) Aggressive cancers that will grow significant in 2 months and other temporizing therapies are not possible. 3) Second part of staged procedures in which the first stage has been completed. 4) Diagnostic procedure required to initiate appropriate cancer therapy 5) Acute symptoms, such as GI bleeding, bowel obstruction, etc., for which alternative therapies are not appropriate.

COVID-19 pandemic will have a long-lasting impact on the quality of cirrhosis care.

Tapper EB, Asrani SK. Tapper EB, et al.

J Hepatol.

2020 Apr 13; PMID: 32298769

Level of Evidence: 5 - Expert opinion

Type of Article: Commentary

BLUF: Delayed elective procedures and routine care will result in emergent cirrhosis decompensations, morbidity, missed diagnoses, and overwhelmed healthcare systems. Suggested interventions to address these issues include proactive and coordinated care, modified interventions, and integrated telehealth.

Abstract:

The coronavirus disease 2019 (COVID-19) pandemic has shattered the meticulously developed processes by which we delivered quality care for patients with cirrhosis. Care has been transformed by the crisis, but enduring lessons have been learned. In this article, we review how COVID-19 will impact cirrhosis care. We describe how this impact unfolds over 3 waves; i) an **intense period with prioritized high-acuity care with delayed elective procedures and routine care** during physical distancing, ii) a **challenging 'return to normal' following the end of physical distancing**, with **increased emergent decompensations, morbidity, and systems of care overwhelmed by the backlog of deferred care**, and iii) a **protracted period of suboptimal outcomes characterized by missed diagnoses, progressive disease and loss to follow-up**. We outline the concrete steps required to preserve the quality of care provided to patients with cirrhosis. This includes an **intensification of the preventative care provided to patients with compensated cirrhosis, proactive chronic disease management, robust telehealth programs, and a reorganization of care delivery to provide a full service of care with flexible clinical staffing**. Managing the pandemic of a serious chronic disease in the midst of a global infectious pandemic is challenging. It is incumbent upon the entire healthcare establishment to be strong enough to weather the storm. Change is needed.

Management of rheumatic diseases in the time of covid-19 pandemic: perspectives of rheumatology practitioners from India.

PMID: 32299795

Publication Date: April 16, 2020

Gupta L, Misra DP, Agarwal V, Balan S, Agarwal V. Gupta L, et al.

Annals of the Rheumatic Disease

Level of Evidence: Level 5 - Expert opinion

Type of Article: Correspondence

Summary: The article details a survey that was sent to rheumatologists throughout the country of India asking them how they would treat their patients during the COVID-19 crisis. The survey found that “most perceived the need for a change in the management of RDs (online supplementary files). Almost half (47.5%) reduced the usage of biological disease modifying anti-rheumatic drugs (bDMARDs), whereas only 12.2% did so for csDMARDs. Nearly two-thirds (64.2%) were less inclined to change the major immunosuppressant (IS) for impending flare, with 58.3% deferring rituximab (RTX), followed closely by cyclophosphamide, anti-tumor necrosis factors (anti-TNFs), Janus kinase inhibitors (JAKinibs) and other bDMARDs.”

Management of Infantile Hemangiomas during the COVID Pandemic.

Frieden IJ, Püttgen KB, Drolet BA, Garzon MC, Chamlin SL, Pope E, Mancini AJ, Lauren CT, Mathes EF, Siegel DH, Gupta D, Haggstrom AN, Tollefson MM, Baselga E, Morel KD, Shah SD, Holland KE,

Adams DM, Horii KA, Newell BD, Powell J, McCuaig CC, Nopper AJ, Metry DW, Maguiness S;
Hemangioma Investigator Group
Pediatr Dermatol
2020 Apr 16; PMID: 32298480
Level of Evidence: 5 - Expert opinion
Type of Article: Commentary

Summary: Infantile hemangiomas can require urgent evaluation and risk stratification to determine which infants need treatment and which can be managed with continued observation. For those requiring treatment, prompt initiation decreases morbidity and improves long-term outcomes. **For those with standard risk, these infants can be considered as appropriate candidates for telemedicine initiation of oral or topical beta-blocker therapy even in the absence of an in-person visit. Patients with higher risk characteristics should visit the clinic for propranolol initiation as well as to discuss management, risk of extra-cutaneous disease, and to arrange for imaging**

Table 2: Risk stratification when considering beta-blocker treatment
<p>Group 1 (Standard risk): May consider telemedicine initiation of oral or topical beta-blocker therapy* as long as infant does not have additional features listed for Group 2</p> <ul style="list-style-type: none"> <input type="checkbox"/> Adjusted gestational age > 5 weeks <input type="checkbox"/> Normal birth weight <input type="checkbox"/> Recent documented weight (within 2 weeks) <input type="checkbox"/> Normal cardiovascular exam within previous 4 weeks (including ≥ 1 documented HR after nursery discharge) <input type="checkbox"/> Normal respiratory exam within previous 4 weeks <input type="checkbox"/> Healthy in the 24-48 hours prior to scheduled telemedicine visit (especially, no respiratory and gastrointestinal signs and symptoms) <input type="checkbox"/> IH pattern and distribution <i>does not</i> confer risk of PHACE or LUMBAR syndrome <input type="checkbox"/> Lack of ulceration or minimal/superficial ulceration <input type="checkbox"/> Caregiver is able to understand instructions and demonstrate comprehension (e.g. by repeating instructions provided during visit) <input type="checkbox"/> Multiple IH with normal liver ultrasound and without cutaneous IH conferring risks noted in Group 2 <p>Group 2 (Higher risk): Recommend in-person evaluation unless local circumstances make this impossible prior to initiation of systemic beta-blocker therapy**</p> <ul style="list-style-type: none"> <input type="checkbox"/> Corrected gestational age <5 weeks <input type="checkbox"/> Abnormal cardiovascular exam or investigations OR those who lack documentation of this in the post-natal period <input type="checkbox"/> Medium to high risk of PHACE (i.e. large segmental facial or scalp IH in segments S1, S3, S4) <input type="checkbox"/> Medium to high risk of LUMBAR syndrome (i.e. segmental perineal and/or lumbosacral body IH +/- visible associated anatomic abnormalities) <input type="checkbox"/> Significant IH ulceration <input type="checkbox"/> Ongoing poor oral feeding or poor weight gain <input type="checkbox"/> IH with symptoms of airway compromise (e.g. stridor) or bilateral S3 (beard area IH at high risk for airway IH). <input type="checkbox"/> Known pulmonary disease including ongoing respiratory compromise (e.g. dyspnea, frequent wheezing or history of bronchospasm) <input type="checkbox"/> Persistent or ongoing hypoglycemia <input type="checkbox"/> Known or suspected congenital heart disease or suggestive symptoms <ul style="list-style-type: none"> <input type="checkbox"/> Known or suspected aortic coarctation <input type="checkbox"/> History of pathologic heart murmur or abnormal echocardiogram <input type="checkbox"/> Ongoing diaphoresis <input type="checkbox"/> Ongoing tachypnea <input type="checkbox"/> Ongoing tachycardia <input type="checkbox"/> History of syncope

R&D: Diagnosis & Treatments

[Insights from immuno-oncology: the Society for Immunotherapy of Cancer Statement on access to IL-6-targeting therapies for COVID-19.](#)

Ascierto PA, Fox B, Urba W, Anderson AC, Atkins MB, Borden EC, Brahmer J, Butterfield LH, Cesano A, Chen D, de Gruijl T, Dillman RO, Drake CG, Emens LA, Gajewski TF, Gulley JL, Stephen Hodi F, Hwu P, Kaufman D, Kaufman H, Lotze M, McNeel DG, Margolin K, Marincola F, Mastrangelo MJ, Maus MV, Parkinson DR, Romero PJ, Sondel PM, Spranger S, Sznol M, Weiner GJ, Wiggington JM, Weber JS. Ascierto PA, et al.

J Immunother Cancer.

2020 Apr 8; PMID: 32300051.

Level of Evidence: 5 - Expert opinion

Type of Article: Comment

Summary: Because the symptoms and ground-glass appearance on CXR for COVID-19 have similarities to that found in Immune checkpoint-inhibitor induced pneumonitis (ICI), these immuno-oncologists from SITC suggest that anti-IL6 monoclonal antibodies may improve outcomes and quicken recovery in intubated and non-intubated COVID-19 patients. Limited anecdotal evidence shows efficacy of this approach in patients in China and Italy, but randomized trial data has not confirmed these findings.

[A preliminary observation: male pattern hair loss among hospitalized COVID-19 patients in Spain - A potential clue to the role of androgens in COVID-19 severity.](#)

Goren A, Vano-Galvan S, Wambier CG, McCoy J, Gomez-Zubiaur A, Moreno-Arrones OM, Shapiro J, Sinclair R, Gold MH, Kovacevic M, Mesinkovska NA, Goldust M, Washeni K. Goren A, et al.

J Cosmet Dermatol.

2020 Apr 16; PMID: 32301221

Level of Evidence: 4 - Case series

Type of Article: Letter to the Editor

BLUF: There is a predominance of adult male infections worldwide, which may be explained by androgen level variability as androgens are implicated in the protease and receptor likely involved in viral host cell entry. The author speculates based on higher prevalence of androgenetic alopecia, influenced by androgen levels, in a greater percentage of hospitalized COVID-19 patients in Spain compared to expected values from population data. Further study is needed to examine a correlation between AGA and COVID-19 infection.

Summary: Current data shows that men have a higher rate of severe disease in COVID-19 than women and prepubescent children. Androgen expression variability could be a prognostic factor in disease severity. TMPRSS2 transmembrane protease transcription facilitates viral entry of a coronavirus related to COVID-19, as well as influenza A and B. Inhibition of TMPRSS2 impairs viral cell entry. TMPRSS2 and ACE2, a receptor implicated in COVID-19 cell entry are both stimulated by androgens. Androgenetic alopecia (AGA) is mediated by androgens and influenced by X chromosome variants. 29/41 (71%) of hospitalized Caucasian males diagnosed with bilateral SARS-CoV-2 pneumonia in Spain had AGA diagnosed by a visual exam, which is greater than the expected 31-53% prevalence in the general population of age-matched individuals. The authors propose a future cohort-control trial evaluating the possible link of androgens to COVID-19 disease severity.

Smell Dysfunction: A Biomarker for COVID-19.

Moein ST, Hashemian SMR, Mansourafshar B, Khorram-Tousi A, Tabarsi P, Doty RL.

Int Forum Allergy Rhinol

2020 Apr 17; PMID: 32301284

Level of Evidence: Level 4 – Case Control Study

Type of Article: Research

Summary: Quantitative smell testing was performed in 60 COVID-19 patients receiving treatment in Iran, with results compared to 60 healthy, age-matched controls. Significant olfactory dysfunction was observed in a majority COVID-19 patients, and **all but one COVID-19 patient had some degree of dysfunction**. Comparatively, the control group had only a small percentage with minimal olfactory dysfunction. **Only 35% of the COVID-19 group was able to self-report sensory impairment prior to testing**. The authors suggest that testing for olfactory dysfunction may have a role in COVID-19 identification.

Abstract:

Background: SARS-CoV-2, the virus that causes COVID-19 disease, is responsible for the largest pandemic since the 1918 H1N1 influenza outbreak. The symptoms presently recognized by the World Health Organization are cough, fever, tiredness, and difficulty breathing. **Patient-reported smell and taste loss has been associated with COVID-19 infection, yet no empirical olfactory testing on a cohort of COVID-19 patients has been performed.**

Methods: The University of Pennsylvania Smell Identification Test (UPSIT), a well-validated 40-odorant test, was administered to 60 confirmed COVID-19 inpatients and 60 age- and sex-matched controls to assess the magnitude and frequency of their olfactory dysfunction. A mixed effects analysis of variance determined whether meaningful differences in test scores existed between the two groups and if the test scores were differentially influenced by sex.

Results: **Fifty-nine (98%) of the 60 patients exhibited some smell dysfunction** [mean (95% CI) UPSIT score: 20.98 (19.47,22.48); controls: 34.10 (33.31,34.88); $p < 0.0001$]. Thirty-five of the 60 patients (58%) were either anosmic (15/60; 25%) or severely microsmic (20/60; 33%); 16 exhibited moderate microsmia (16/60; 27%), 8 mild microsmia (8/60; 13%), and one normosmia (1/60; 2%). Deficits were evident for all 40 UPSIT odorants. No meaningful relationships between the test scores and sex, disease severity, or comorbidities were found.

Conclusions: **Quantitative smell testing demonstrates that decreased smell function, but not always anosmia, is a major marker for SARS-CoV-2 infection** and suggests the possibility that smell testing may help, in some cases, to identify COVID-19 patients in need of early treatment or quarantine.

Saliva: potential diagnostic value and transmission of 2019-nCoV.

Xu R, Cui B, Duan X, Zhang P, Zhou X, Yuan Q, Xu R, et al.

Int J Oral Sci.

2020 Apr 17; PMID: 32300101

Level of Evidence: 3 - Review without consistently applied reference standards

Type of Article: Review

BLUF: A literature review suggests salivary SARS-CoV-2 RNA detection rates of 50-92% depending on the origin of the saliva. These data exhibit potential for less invasive testing as well as direct oral invasion by SARS-CoV-2.

Summary: “In two studies on coughed out saliva, 11 cases out of 12 (91.67%) and 20 cases out of 23 (86.96%) COVID-19 patients were [SARS-CoV-2] RNA positive in saliva, respectively. In one study of saliva swabs, half of 15 (50%) COVID-19 patients were

[SARS-CoV-2] RNA positive in saliva. In one study of **saliva directly from salivary gland duct, four cases of 31 (12.90%) COVID-19 patients were [SARS-CoV-s] RNA positive** in saliva, three of which were critically ill.” In addition, several studies have demonstrated ACE2 expression in the oral cavity and salivary glands suggesting that direct invasion of the oral cavity by SARS-CoV-2 is possible.

Plasmacytoid lymphocytes in SARS-CoV-2 infection (Covid-19).

Foldes D, Hinton R, Arami S, Bain BJ. Foldes D, et al.

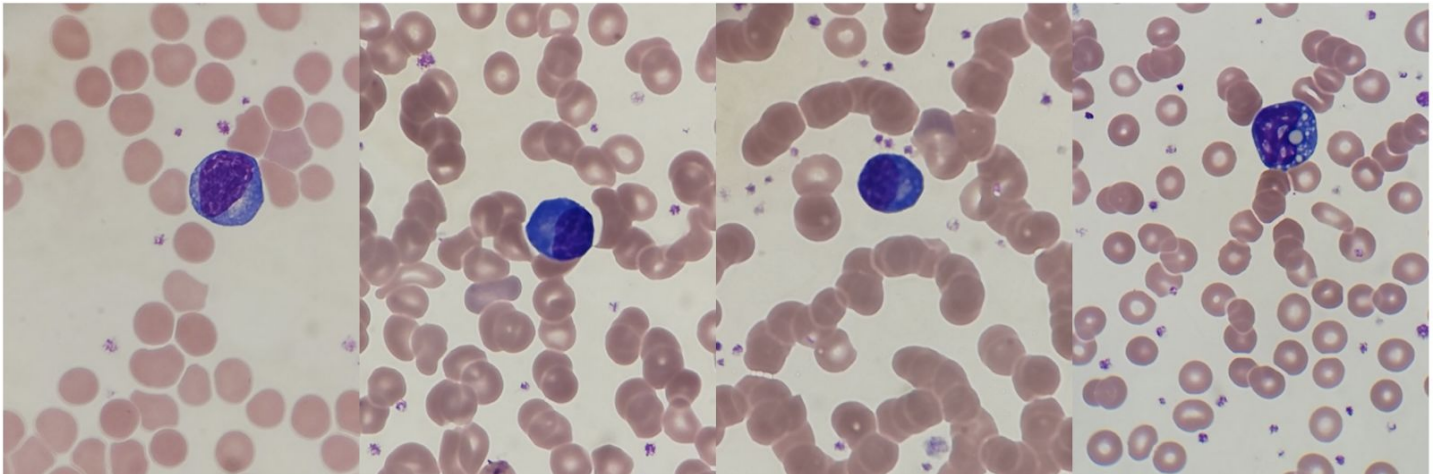
Am J Hematol.

2020 Apr 16; PMID: 32298486

Level of Evidence: Level 4 – Case Study

Type of Article: Case Study

Summary: The authors present the case of a 59-year-old man with COVID-19, multi-organ failure and lymphopenia whose blood film shows atypical lymphocytes that have been commonly observed in patients with clinically significant COVID-19. Below are lymphoplasmacytoid lymphocytes with an eccentric nucleus, deeply basophilic cytoplasm and a prominent paranuclear hof. These lymphocyte features are commonly observed in blood films of patients with clinically significant COVID-19.



A diagnostic model for coronavirus disease 2019 (COVID-19) based on radiological semantic and clinical features: a multi-center study.

Chen X, Tang Y, Mo Y, Li S, Lin D, Yang Z, Yang Z, Sun H, Qiu J, Liao Y, Xiao J, Chen X, Wu X, Wu R, Dai Z.

Eur Radiol.

2020 Apr 16, PMID: 32300971

Level of Evidence: 3 - Cohort

Article Type: Research

BLUF: Ground glass opacities in COVID-19 patients were mainly located on the lung periphery. Other significant differences in imaging between pneumonia patients with COVID-19 and without COVID-19 were: bronchial wall thickening, pleural traction sign, tree-in-bud, pleural thickening, pleural effusions, and vessel augmentation.

Abstract:

OBJECTIVES: Rapid and accurate diagnosis of coronavirus disease 2019 (COVID-19) is critical during the epidemic. We aim to identify differences in CT imaging and clinical manifestations between pneumonia patients with and without COVID-19, and to develop and validate a diagnostic model for COVID-19 based on radiological semantic and clinical features alone.

METHODS: A consecutive cohort of 70 COVID-19 and 66 non-COVID-19 pneumonia patients were retrospectively recruited from five institutions. Patients were divided into primary (n = 98) and validation (n = 38) cohorts. The chi-square test, Student's t test, and Kruskal-Wallis H test were performed, comparing 1745 lesions and 67 features in the two groups. Three models were constructed using radiological semantic and clinical features through multivariate logistic regression. Diagnostic efficacies of developed models were quantified by receiver operating characteristic curve. Clinical usage was evaluated by decision curve analysis and nomogram.

RESULTS: Eighteen radiological semantic features and seventeen clinical features were identified to be significantly different. Besides ground-glass opacities (p = 0.032) and consolidation (p = 0.001) in the lung periphery, the lesion size (1-3 cm) is also significant for the diagnosis of COVID-19 (p = 0.027). Lung score presents no significant difference (p = 0.417). Three diagnostic models achieved an area under the curve value as high as 0.986 (95% CI 0.966~1.000). The clinical and radiological semantic models provided a better diagnostic performance and more considerable net benefits.

CONCLUSIONS: Based on **CT imaging and clinical manifestations alone, the pneumonia patients with and without COVID-19 can be distinguished.** A model composed of radiological semantic and clinical features has an excellent performance for the diagnosis of COVID-19.

[A Tool to Early Predict Severe Corona Virus Disease 2019 \(COVID-19\) : A Multicenter Study using the Risk Nomogram in Wuhan and Guangdong, China.](#)

Gong, Jiao; Ou, Jingyi; Qiu, Xueping; Jie, Yusheng; Chen, Yaqiong; Yuan, Lianxiong; Cao, Jing; Tan, Mingkai; Xu, Wenxiong; Zheng, Fang; Shi, Yaling; Hu, Bo

Clin Infect Dis

2020 Apr 17; PMID: 32296824

Level of Evidence: 4 - Retrospective Cohort Study

Type of Article: Research

BLUF: Older age, higher LDH, CRP, RDW, DBIL, BUN, and lower ALB on admission correlated with higher odds of severe COVID-19. An effective prognostic nomogram composed of these 7 features could allow early identification of patients at risk of exacerbation to severe COVID-19.

ABSTRACT:

Background: Due to no reliable risk stratification tool for severe coronavirus disease 2019 (COVID-19) patients at admission, we aimed to construct an effective model for early identification of cases at high risk of progression to severe COVID-19.

Methods: In this retrospective three-centers study, **372 non-severe COVID-19 patients** during hospitalization were **followed for more than 15 days after admission**. Patients who deteriorated to severe or critical COVID-19 and patients who kept non-severe state were **assigned to**

the severe and non-severe group, respectively. Based on baseline data of the two groups, we constructed a risk prediction nomogram for severe COVID-19 and evaluated its performance. **Results:** The training cohort consisted of **189 patients**, while the **two independent validation cohorts consisted of 165 and 18 patients**. Among all cases, **72 (19.35%) patients developed severe COVID-19**. We found that **old age, and higher serum lactate dehydrogenase, C-reactive protein, the coefficient of variation of red blood cell distribution width, blood urea nitrogen, direct bilirubin, lower albumin**, are associated with severe COVID-19. We generated the nomogram for early identifying severe COVID-19 in the training cohort (AUC 0.912 [95% CI 0.846-0.978], sensitivity 85.71%, specificity 87.58%); in validation cohort (0.853 [0.790-0.916], 77.5%, 78.4%). The calibration curve for probability of severe COVID-19 showed optimal agreement between prediction by nomogram and actual observation. Decision curve and clinical impact curve analysis indicated that nomogram conferred high clinical net benefit. **Conclusion:** Our nomogram could help clinicians to **early identify patients who will exacerbate to severe COVID-19**, which will enable better centralized management and early treatment of severe patients.

Potential for developing a SARS-CoV receptor-binding domain (RBD) recombinant protein as a heterologous human vaccine against coronavirus infectious disease (COVID)-19.

Chen WH, Hotez PJ, Bottazzi ME

Hum Vaccin Immunother

2020 Apr 16; PMID: 32298218

Level of Evidence: 5-Mechanism based reasoning

Type of Article: Research

BLUF: Recombinant proteins manufactured to bind and neutralize SARS-CoV show potential to neutralize SARS-CoV2, despite amino acid differences in the targeted binding motif. These recombinant proteins should be considered in our efforts to create a vaccine against Covid-19.

Abstract

A SARS-CoV receptor-binding domain (RBD) recombinant protein was developed and manufactured under current good manufacturing practices in 2016. The protein, known as RBD219-N1 when formulated on Alhydrogel®, induced high-level neutralizing antibodies and protective immunity with minimal immunopathology in mice after a homologous virus challenge with SARS-CoV (MA15 strain). We examined published evidence in support of whether the SARS-CoV RBD219-N1 could be repurposed as a heterologous vaccine against Coronavirus Infectious Disease (COVID)-19. Our findings include evidence that convalescent serum from SARS-CoV patients can neutralize SARS-CoV-2. Additionally, a review of published studies using monoclonal antibodies (mAbs) raised against SARS-CoV RBD and that neutralizes the SARS-CoV virus *in vitro* finds that some of these mAbs bind to the receptor-binding motif (RBM) within the RBD, while others bind to domains outside this region within RBD. This information is relevant and supports the possibility of developing a heterologous SARS-CoV RBD vaccine against COVID-19, especially due to the finding that the overall high amino acid similarity (82%) between SARS-CoV and SARS-CoV-2 spike and RBD domains is not reflected in RBM amino acid similarity (59%). However, the high sequence similarity (94%) in the region outside of RBM offers the potential of conserved neutralizing epitopes between both viruses.

[Lung Transplantation for elderly patients with end-stage COVID-19 Pneumonia.](#)

Han W, Zhu M, Chen J, Zhang J, Zhu S, Li T, Cai H, Fang Q, Wei G, Liang T.

Ann Surg.

2020 Apr 17; PMID: 32301803

Level of Evidence: Level 5

Type of Article: Brief Clinical Report

BLUF: Lung transplantation may be an effective treatment modality for end-stage COVID-19 patients.

Abstract:

Coronavirus disease 2019 (COVID-19) has been spread worldwide. Despite optimized medical treatment, some patients with end-stage COVID-19 pneumonia progressed to irreversible loss of lung function. Here we report **two lung transplantations of elderly patients with severe COVID-19 pneumonia.**

[Diagnostic Performance of CT and Reverse Transcriptase-Polymerase Chain Reaction for Coronavirus Disease 2019: A Meta-Analysis.](#)

Kim H, Hong H, Yoon SH.

Radiology.

2020 Apr 17; PMID: 32301646

Level of Evidence: Level 2

Type of Article: Research

BLUF: Chest CT scans for the primary screening or diagnosis of COVID-19 would not be beneficial in a low-prevalence region due to the substantial rate of false-positives.

Abstract:

Purpose: To perform a meta-analysis to evaluate diagnostic performance measures, including predictive values, of chest CT and initial reverse transcriptase-polymerase chain reaction (RT-PCR). **Materials and Methods:** MEDLINE and Embase were searched from January 1, 2020 to April 3, 2020 for studies on COVID-19 that reported the sensitivity and/or specificity of CT scans and/or RT-PCR assays. The pooled sensitivity and specificity were estimated by using random-effects models. The actual prevalence (i.e., the proportion of confirmed patients among those tested) in eight countries was obtained from web sources, and the predictive values were calculated. Meta-regression was performed to reveal the effect of potential explanatory factors on the diagnostic performance measures.

Results: The **pooled sensitivity was 94%** (95% CI: 91%, 96%; $I^2=95\%$) **for chest CT** and **89%** (95% CI: 81%, 94%; $I^2=90\%$) **for RT-PCR**. The **pooled specificity was 37%** (95% CI: 26%, 50%; $I^2=83\%$) **for chest CT**. The prevalence of COVID-19 outside China ranged from 1.0% to 22.9%. For chest CT scans, the positive predictive value (PPV) ranged from 1.5% to 30.7%, and the negative predictive value (NPV) ranged from 95.4% to 99.8%. For RT-PCR, the PPV ranged from 47.3% to 96.4%, while the NPV ranged from 96.8% to 99.9%. The sensitivity of CT was affected by the distribution of disease severity, the proportion of patients with comorbidities, and the proportion of asymptomatic patients (all $p < 0.05$). The sensitivity of RT-PCR was negatively associated with the proportion of elderly patients ($p = 0.01$).

Conclusion: Outside of China where there is a low-prevalence of COVID-19 (1-22.9%), chest CT screening of patients with suspected disease had low positive predictive value (1.5-30.7%).

Computational Identification of Small Interfering RNA Targets in SARS-CoV-2.

Chen W, Feng P, Liu K, Wu M, Lin HChen W, et al
Virol Sin

2020 Apr 15; PMID: 32297156

Level of Evidence: 5 -modeling / mechanism-based reasoning

Type of Article: Letter

Summary: The authors used available sequence data from SARS-COV-2 and the human genome to predict nine potential small-inhibitory RNA (siRNA) sequences that could be developed as therapeutics. They note “...there are still some challenges that needed to be overcome for the clinic applications... such as off-target effects and effective delivery.” This will not enter clinical trials for months-years.

Structural basis of SARS-CoV-2 3CL^{pro} and anti-COVID-19 drug discovery from medicinal plants.

Ul Qamar MT, Alqahtani SM, Alamri MA, Chen LL.Ul Qamar MT, et al.J Pharm Anal

2020 Mar 26; PMID: 32296570

Level of Evidence: 5- modeling / mechanism-based reasoning

Type of Article: Research

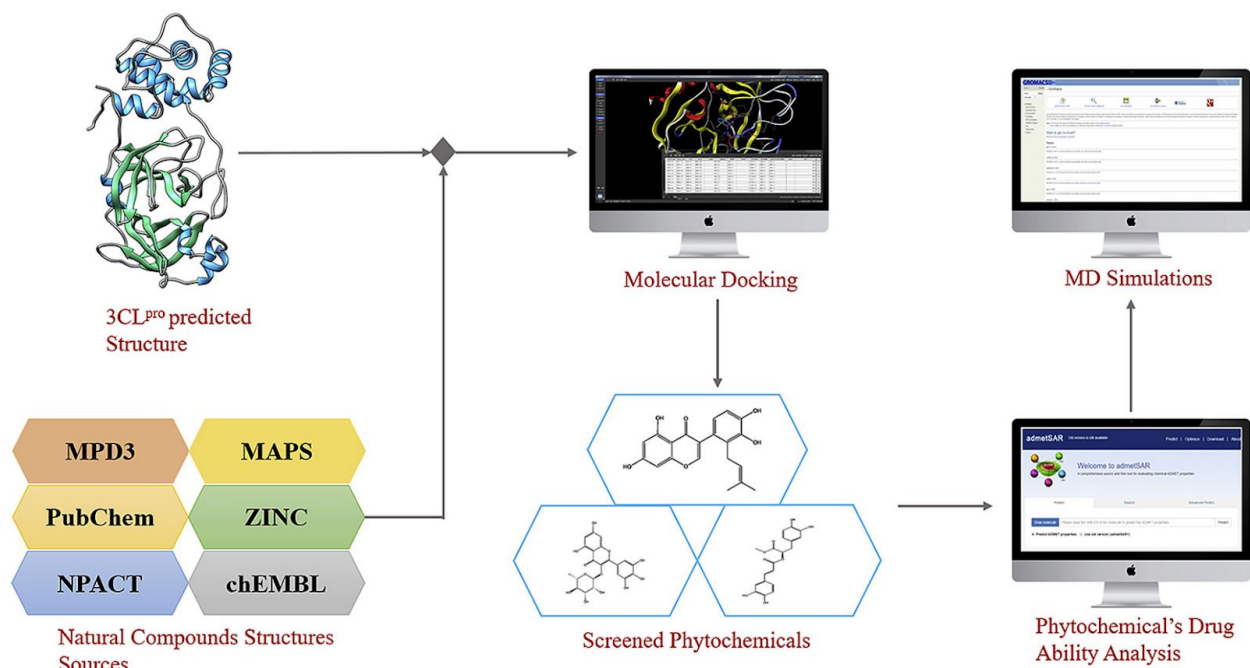
BLUF:

To ‘economize’ space in their genomes, viruses often express several proteins from a single open reading frame (ORFs) as a single peptide that is then cleaved to generate smaller functional proteins. The proteases that catalyze this hydrolysis are attractive targets for antiviral drugs. This group used sequence data, x-ray diffraction structures of similar proteins, and a ‘virtual library’ of natural product compounds to a) analyze the genetic stability of a SARS-CoV-2 serine protease (3CL^{pro}) to estimate its drugability and likelihood for developing drug resistance b) predict the three dimensional structure of 3CL^{pro} c) run an *in silico* screen of a library of >30,000 natural products to identify potential inhibitors. Nine compounds are reported noting that “Further *in-vitro* and *in-vivo* analyses are required to transform these potential inhibitors into clinical drugs.”

Abstract:

The recent outbreak of coronavirus disease 2019 (COVID-19) caused by SARS-CoV-2 in December 2019 raised global health concerns. The viral 3-chymotrypsin-like cysteine protease (3CLpro) enzyme controls coronavirus replication and is essential for its life cycle. 3CLpro is a proven drug discovery target in the case of severe acute respiratory syndrome coronavirus (SARS-CoV) and middle east respiratory syndrome coronavirus (MERS-CoV). Recent studies revealed that the genome sequence of SARS-CoV-2 is very similar to that of SARS-CoV. Therefore, herein, we analysed the 3CLpro sequence, constructed its 3D homology model, and screened it against a medicinal plant library containing 32,297 potential anti-viral phytochemicals/traditional Chinese medicinal compounds. Our analyses revealed that the top nine hits might serve as potential anti- SARS-CoV-2 lead molecules for further optimisation and drug development process to combat COVID-19.

Graphical Abstract:



[Antirheumatic agents in covid-19: is IL-6 the right target?](#)

PMID: 32299796

Date of Publication: Apr 16, 2020

Capecchi PL, Lazzerini PE, Volterrani L, Mazzei MA, Rossetti B, Zanelli G, Bennett D, Bargagli E, Franchi F, Cameli M, Valente S, Cantarini L, Frediani B. Capecchi PL, et al.

Annals of the Rheumatic Disease

Level of Evidence: Level 5 - Expert opinion

Type of Article: Correspondence

Summary: This article is in correspondence to the letter written by Monti *et al* which shows how the use of immunosuppressive therapies such as anti-TNF α and anti-IL-1 β agents as well as inhibition of the IL-6 or JAK 1/2-STAT pathway has been effective at treating COVID-19. **In this article, the authors argue that the therapeutic window for using these agents is very narrow and have an increased risk of other consequences such as induced QT-related arrhythmic events.** Therefore, the authors argue that the use of these drugs in treating COVID-19 should be rationally indicated.

Mental Health & Resilience

[Aging in Times of the COVID-19 Pandemic: Avoiding Ageism and Fostering Intergenerational Solidarity.](#)

Ayalon, Liat; Chasteen, Alison; Diehl, Manfred; Levy, Becca; Neupert, Shevaun D; Rothermund, Klaus; Tesch-Romer, Clemens; Wahl, Hans-Werner

J Gerontol B Psychol Sci Soc Sci

2020 Apr 17; PMID: 32296840

Level of Evidence: 6 - Expert Opinion

Types of Article: Editorial

BLUF: The COVID-19 pandemic has led to an emergence of ageism and intergenerational division that can be combated with avoiding arbitrary age cut-offs, protections for vulnerable or at-risk populations, acknowledging the consequences of physical distancing and the “digital divide,” and stressing that “we’re all in this together.”

SUMMARY: An outbreak of ageism has occurred during the COVID-19 pandemic, as seen in the public discourse of older adults being broadly classified as “helpless, frail, and unable to contribute to society,” when in actuality older adults vary considerably. The internalization of negative stereotypes may have detrimental impacts on health and emotional responses to stress, and may impact younger people’s aging process. Highlighting the value of solidarity between generations through the use of online services, phone calls, letters, and engagement in common activities can foster feelings of relatedness and help in overcoming intergenerational tensions and resulting ageism. There is a need for ethics-based rules for triage situations not based on chronological age. Behavioral scientists recommend avoiding the use of arbitrary age cut-offs and providing protections for older adults with cognitive or physical impairments. Physical distancing may put older adults who have limited access to or ability to use technology at greater risk. Public discourse can be influenced to avoid confrontational discourse and stress that “we’re all in this together.”

[Mental Wellness System for COVID-19](#)

Qiu, Jian-Yin; Zhou, Dong-Sheng; Liu, Jian; Yuan; Ti-Fei

Apr 13, 2020; PMID: 32298801

Brain Behav. Immun.

Level of Evidence: 5 - Expert Opinion

Type of Article: Letter

Summary: To address the psychological anxiety caused by COVID-19, the Shanghai Mental Health Center has adopted several systemic efforts to maintain wellness. These include 1) a Self-assessment mental health survey to understand the psychological effects of a pandemic 2) An online emergency psychiatric service based on artificial intelligence, 3) Promoting online social interaction via website and applications, 4) Installing virtual reality centers in the community, and 5) Organizing human resources for future pandemics.

[Understanding the Impact of COVID-19 on Latino Sexual Minority Men in a US HIV Hot Spot.](#)

Harkness A, Behar-Zusman V, Safren SA.

AIDS Behav

2020 Apr 16; PMID: 32300989

Level of Evidence: Level 4 – Case Series

Type of Article: Editorial

Summary: The authors present a “Pandemic Stress Index,” a survey tool developed to administer to participants of the DÍMELO project. This project was initially developed to investigate how Latino sexual minority men (LSMM) in Miami utilize HIV preventative services. **The Pandemic Stress Index has now been administered to 12 LSMM. These initial responses reflected adherence to social distancing recommendations, financial stressors, decreased sexual activity, substantial changes in mental health and substance use, and limited emotional or social support.** More research is needed to understand how the pandemic will affect the population’s access to PrEP, HIV testing, and other healthcare services.

Mental Health Problems and Social Media Exposure During COVID-19 Outbreak

Gao, Junling; Zhen, Pinpin; Jia, Yingnan; Chen; Hao; Mao, Wimeng

Apr 16, 2020; PMID: 32298385

PLoS One

Level of Evidence: 4 - Cross-sectional Study

Type of Article: Research

Summary: This cross-sectional study from January 31-Feb 2020 evaluates 4872 individuals from 31 Chinese provinces with the Chinese WHO-Five Well-being Index (WHO-5) and Chinese generalized anxiety disorder scale (GAD-7). The prevalence of depression, anxiety and combination of depression and anxiety (CDA) was 48.3% (95%CI: 46.9%-49.7%), 22.6% (95%CI: 21.4%-23.8%) and 19.4% (95%CI: 18.3%-20.6%) during COVID-19 outbreak in Wuhan, China. Of these individuals, 80% (95%CI: 80.9%-83.1%) reported being frequently exposed to social media. After controlling for covariates, **frequent social media exposure was positively associated with high odds of anxiety (OR = 1.72, 95%CI: 1.31–2.26) and a combination of depression and anxiety (OR = 1.91, 95%CI: 1.52–2.41).**

COVID-19 and Working Conditions in Health Care.

Theorell T.

Psychother Psychosom.

2020 Apr 16;1-2; PMID: 32299083

Level of Evidence: 5 - Expert opinion

Type of Article: Editorial

Summary: The author discusses the impact of COVID-19 on working conditions and mental health and states, **“All of the bad classical psychosocial risk factors in the work environment are magnified – extremely high demands, complete lack of control, lack of institutional support in many workplaces, and in addition lack of reward.”** The author also discusses the importance of interventions and makes the following suggestions based on studies:

- Flexible work schedules that are adapted to the ever-changing situation.
- Sleep hygiene, which is facilitated by wise shift cycles and good possibilities for undisturbed sleep.
- Social support to family members. Worries for family members could add to the caregiver’s deterioration in health.
- Participation in decision making.
- Facilitation of good coping.
- Facilitation of cultural experiences, for instance easy electronic access to films, concerts, and lectures during leisure time.

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Contributors:

University of Arizona, School of Medicine

Abel De Castro, MS1
Akshara Malla, MS4
Ann Staudinger Knoll, MS1
Celina Virgen, MS3
Charlotte Archuleta, MS3
John Michael Sherman, MS1
Kathleen Hanlon, MS4
Maggie Donovan, MS1
Marzia Shah, MS4
Michael Olson, MS1
Michelle Arnold, MS3
Shandiin Sam, MS4
Sameer Kandula, MS3

University of Washington, School of Medicine

Avery Forrow, MS2¹
Dax Cvancara, MS1
Luke Johnson, MS1¹
Michael Maenish, MS, Research Scientist
Sara Rutz, MS1

Western University of Health Sciences

Kersti Bellardi, MS3

Kealapon Richardson, Technology & Design
Kaitlin Howard, Strategic Outreach