

May 4, 2020

Daily COVID-19 Literature Surveillance Summary



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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.

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NOW LIVE!



COVID-19 Daily Literature Surveillance

COVID19LST



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

Coming soon:



The Swab

Jasmine Rah



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

May 4th, 2020

Executive Summary

Climate

- After high profile endorsements, there were dramatic increases in [internet searches as users attempted to purchase of chloroquine and hydroxychloroquine](#), highlighting influences for unproven and even hazardous treatments.
 - Based on a cross sectional survey, [social media was the main source](#) of information for pharmacists.
 - Physicians are reminded to adhere to the [principles of evidenced based medicine](#) despite widespread misinformation
- There was a “[dramatic decrease](#)” in [subarachnoid hemorrhage cases](#) in France after the COVID-19 measures were put in place. This decrease is attributed to fear of becoming infected through the health system, insufficient care in an overburdened system, undiscovered death undiscovered during quarantine.
- An editorial outlines current [uncertainties and challenges faced by academic institutions](#) and how to best prepare for what lies ahead during the COVID-19 pandemic.
- Dual [tobacco and electronic cigarette users](#) had an increased perceived risk of harm from the virus and increased motivation to quit both types of cigarettes.
- Telehelth services and mailed labroatory testing are reccomended for [men-who-have-sex-with-men](#) in the United States to ensure access to sexual health services.

Epidemiology

- A study of COVID cases by borough in New York found that the Bronx, which has the highest proportion of ethnic minorities, the most people living in poverty, and the lowest level of education had [higher rates of COVID-19 hospitalization](#) than higher income boroughs such as Manhattan.
- Mobile phone data from over 11 million people in China demonstrates correlation between outward population flow from Wuhan and cumulative number of infections as well as exhibiting a [94% reduction of interprovincial outflow following imposition of quarantine](#) on January 23rd.
- A systematic review including 6 studies found that COVID-19 mortality rate is higher in patients with [superimposed acute kidney injury](#).
- A case report of a 71 year old man who developed rapidly progressive flaccid tetraparesis was found to be SARS-CoV-2 positive and was diagnosed with [COVID-19 associated with Guillain-Barre Syndrome](#), highlighting the possible neurological manifestations of the virus.

Understanding the Pathology

- In 300 [asthma patients, there was higher expression of angiotensin converting enzyme 2 and transmembrane protease serine 2](#) (shown to mediate SARS CoV-2 infection) in the following subgroups: males, African Americans, and patients with diabetes mellitus

Transmission & Prevention

- Analysis of a series of 36 patients who exhibited prolonged viral RNA shedding of over 30 days found the [mean duration of viral shedding to be 54 days](#).
- Researchers in Hong Kong repurposed a [non-medical elastomeric respirator mask](#) to function as a N95 mask, providing a feasible alternative should N95s become increasingly scarce.

- Rapid implementation of and training for [powered air-purifying respirators](#) at a hospital in Singapore has helped the intensive care and anesthesiology departments achieve 0 patient to doctor transmissions of SARS-CoV-2.

Management

- A newly developed [short ultrasound training program for obstetricians and gynecologists](#) to detect lung involvement in pregnant women, who may have COVID-19, improved their abilities to recognize lung abnormalities from a mean of 6/10 correct classifications to 9/10.
- A [systematic review of 9 studies confirmed elevated D-dimer levels were associated with poor survival](#) but also stated current data is too limited to give anticoagulation to all patients with COVID-19 pneumonia.
 - Another found [no evidence for or against the continued use of inhaled corticosteroids](#) in disease severity so it is suggested that treatment should continue in stable patients.
- Researchers from Spain were able to classify [cutaneous manifestations of COVID-19 into 5 clinical patterns](#): pseudo-chilblain (19%), other vesicular eruptions (9%), urticarial lesions (19%), other maculopapules (47%), and livedo/necrosis (6%).

Adjusting Practice during COVID-19

- New guidelines and recommendations from this weekend include:
 - Italian provisional guidelines for [autopsy](#) during the pandemic
 - [Cardiovascular magnetic resonance](#)
 - [Interventional radiology](#) practice recommendations
 - Head and neck [mucosal malignancies](#)
 - ICU acute [bed shortage ethics](#).
 - Management of patients with [liver disease](#)
 - Management of adults with [rheumatic disease](#).
 - [Role of cardiologists](#) in care and management
 - [Blood purification treatment](#)
 - [Skull base surgery](#)
- A literature review found no evidence of an association between [inflammatory bowel disease therapies](#) and increased risk of COVID-19.
- Analysis of health records and hospital data in England shows that urgent referrals for suspected cancer are down 76% and chemotherapy appointments are down 60% from pre-COVID-19 numbers, leading to concerns over a [rise in cancer mortality](#) due to the pandemic.

R&D: Diagnosis & Treatments

- A cross sectional study found [seroconversion to IgG was detectable in 100% of patients within 19 days](#) after symptoms onset.
 - The [EU has certified a SARS-CoV-2 IgG assay](#), with high sensitivity and specificity, for use in assessing patients 14 days or more after the onset of symptoms.
- A cohort study of 96 COVID-19 patients found [chloroquine significantly prolongs the QTc intervals](#), which was also found in [another cohort study](#). So, ECG monitoring is recommended for those who are prescribed chloroquine.
- In another study with 6 COVID-19 patients, [convalescent therapy was effective in discontinuing viral shedding but not mortality](#).

- Preliminary data from a case series of 21 severe COVID-19 patients given [tocilizumab](#) found it to improve clinical outcomes immediately and reduce mortality.

Mental Health & Resilience

- A cross sectional analysis of [personality and behavioral responses to the pandemic](#) in over 200 people in the UK found that older people were less likely to report self isolating as well as significant psychological conflict between the desire to stay safe and the urge to live a normal lifestyle.

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- [COVID-19: a defining moment for clinical pharmacology?](#)
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- [Covid-19: Balancing Personal Risk and Professional Duty](#)

Disparities

- [Characterizing the Impact of COVID-19 on Men Who Have Sex with Men Across the United States in April, 2020.](#)
- [Covid-19: challenges for people with intellectual disability.](#)

Epidemiology

- [Variation in COVID-19 Hospitalizations and Deaths Across New York City Boroughs](#)
- [Association Between Regional Selenium Status and Reported Outcome of COVID-19 Cases in China](#)
- [Does vitamin D status impact mortality from SARS-CoV-2 infection?](#)
- [Covid-19 and Health at Work.](#)

Modeling

- [Population flow drives spatio-temporal distribution of COVID-19 in China.](#)
- [Changes in contact patterns shape the dynamics of the COVID-19 outbreak in China.](#)

Symptoms and Clinical Presentation

Adults

[Survival rate in acute kidney injury superimposed COVID-19 patients: a systematic review and meta-analysis.](#)

[Interferon-induced transmembrane protein-3 genetic variant rs12252-C is associated with disease severity in COVID-19](#)

[Acute Kidney Injury Due to Collapsing Glomerulopathy Following COVID-19 Infection.](#)

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[COVID-19 Related Genes in Sputum Cells in Asthma: Relationship to Demographic Features and Corticosteroids.](#)

[Respiratory Pathophysiology of Mechanically Ventilated Patients with COVID-19: A Cohort Study.](#)

In silico

[A deadly spillover: SARS-CoV-2 outbreak.](#)

[A Molecular Modeling Approach to Identify Effective Antiviral Phytochemicals Against the Main Protease of SARS-CoV-2](#)

[Natural Products May Interfere With SARS-CoV-2 Attachment to the Host Cell](#)

[Decoding the evolution and transmissions of the novel pneumonia coronavirus \(SARS-CoV-2 / HCoV-19\) using whole genomic data.](#)

[Stilbene-based Natural Compounds as Promising Drug Candidates against COVID-19.](#)

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[COVID-19 and Smoking. Is Nicotine the Hidden Link?](#)

Transmission & Prevention

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[A Second Pandemic: Mental Health Spillover From the Novel Coronavirus \(COVID-19\).](#)

[COVID-19: A personal perspective.](#)

[Social isolation in Covid-19: The impact of loneliness](#)

[COVID-19: Increased Risk to the Mental Health and Safety of Women Living with HIV in South Africa.](#)

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[COVID-19 in Italy: Dataset of the Italian Civil Protection Department.](#)

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Acknowledgements

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 n-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, n-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 n-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>

We have added Level 6 to denote papers that do not cite any sources or provide any supporting evidence.

Climate

Global

Redundancy in reporting on COVID-19.

Papes, Dino; Ozimec, Elizabeta

Eur J Clin Invest

2020 Apr 29; PMID: 32350859

Level of Evidence: 5 - Expert Opinion

Type of Article: Letter

BLUF: This letter gives several examples of redundancy in published articles associated with COVID-19 and proposes alternative methods to streamline reporting such as living online documents and consolidation of narratives.

Abstract:

Additional to the problems described very well by Dr. Ioannidis , there is another issue that became highlighted during this pandemic: redundancy in research and reporting. Redundant articles repeat already known information and are mostly published just for the sake of publishing. By searching through Pubmed, one can easily see that the number of publications related to COVID-19 is growing exponentially.

The Elderly & COVID-19: Cocooning or Culling: - the choice is ours.

Donnelly S.

QJM.

2020 Apr 28; PMID: 32343807

Level of Evidence: 5 - Expert Opinion

Type of Article: Commentary

Summary: The author of this article discusses the ethical concerns related to caring for the aging population during the COVID-19 pandemic. He discusses different approaches including utilitarianism versus duty to do no harm despite age, disability or wealth in caring for the elderly. “COVID-19 has uncovered the reality of how truly we care about the elderly and the vulnerable. How far will we go to protect them?”

Impact of COVID-19 on blood centres in Zhejiang province China.

Wang, Yongjun; Han, Wenjuan; Pan, Lingling; Wang, Cuier; Liu, Yan; Hu, Wei; Zhou, Huapin; Zheng, Xiaofan

Vox Sang

2020 Apr 29; PMID: 32347566

Level of Evidence: 3- Cohort study

Type of Article: Research

BLUF: This study evaluated how the COVID-19 epidemic has altered blood donations in Zhejiang province after a retrospective analysis of blood utilization in affected patients from the First Affiliated Hospital of Zhejiang University School of Medicine, which showed a drop in blood donors to one-third of the usual number and differences in the characteristics of donors. A subsequent survey of 133,490 donors revealed that fear of contracting COVID-19 was one of the primary reasons for this shortage in donors, highlighting the importance of education about COVID-19 transmission and utilizing preventive methods such as PPE to protect and reassure donors.

Abstract:

Background and Objectives: A worldwide pandemic of coronavirus disease 2019 (COVID-19) has affected millions of people. A ‘closed-off management’ protocol has been launched nationwide in China to cope with this major public health emergency. However, these procedures may cause a crisis for blood donation and blood supply. In this study, we assessed the impact of the COVID-19 pandemic on blood donation and supply in Zhejiang province, which could provide reference and insight for developing countermeasures in other countries.

Materials and Methods: Blood donor and supply information from 38 blood centres during the Spring Festival of 2019 and 2020 were reviewed. A self-administered questionnaire was carried out.

Results: Due to the COVID-19 pandemic, the number of whole blood donors dropped by 67%. The success rate of recruitment for donations dropped by 60%. Most respondents (81·2%) were worried about the ‘possibility of acquiring COVID-19 during blood donation’. The total amount of RBCs supply dropped by 65%. In the first week of the outbreak, the weekly amount of issued RBC units (10171·5 u) was almost six times higher than the collected units (1347·5 u). The mean haemoglobin value for RBCs transfusion was about 6·3 g/dl. About 4% of RBCs and 2·8% of frozen plasma were used in COVID-19 patients.

Conclusion: The secondary consequences of the COVID-19 pandemic are blood shortages caused by the unavailability of blood donors, and this is likely to be replicated in many countries with high burdens of COVID-19. Practical actions to broaden sources and reduce use for the global crisis must be taken proactively.

Table 1 TableProfile of whole blood donor

Characteristics	2020		2019		χ^2	<i>P</i>
	<i>N</i>	%	<i>N</i>	%		
Sex						
Male	3380	64·5	9505	60·9	19·807	<0·001
Female	1873	35·5	6104	39·1		
Age (years)						
18–25	421	8·0	4573	29·3	1563·747	<0·001
26–35	1129	21·5	4558	29·2		
36–45	1828	34·8	3653	23·4		
>45	1875	35·7	2825	18·1		
Education						
Primary	599	11·4	3715	23·8	686·717	<0·001
Secondary	1134	21·6	3106	19·9		
University	2832	53·9	5697	36·5		
Other	688	13·1	3091	19·8		
Appointment						
Yes	5253	100	2607	16·7	11 613·841	<0·001
No	0	0	13002	83·3		
Donor status						
Regular	4607	87·7	5822	37·3	3993·963	<0·001
First time	646	12·3	9787	62·7		
Total	5253	100·0	15609	100·0		

Table 2 TableSurvey responses

Items	Frequencies	
Are you willing to donate blood this time?	<i>N</i>	%
Yes	5253	3·9
No	128 237	96·1
Barriers to blood donation		
Inconvenient location	1735	1·3
Fear of infection	108 395	81·2
Weaken immune defence	18 822	14·1
Avoidance of public places	3604	2·7
Other	934	0·7
Total	133 490	100

Internet Searches for Unproven COVID-19 Therapies in the United States.

Liu M, Caputi TL, Dredze M, Kesselheim AS, Ayers JW. Liu M

JAMA Intern Med

2020 Apr 29; PMID: 32347895

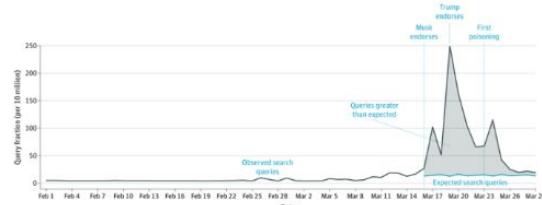
Level of Evidence: 4 - Cross-sectional study

Type of Article: Research Letter

BLUF: Using internet search data, volume of searches regarding the purchase of chloroquine and hydroxychloroquine increased 442% and 1389% respectively shortly after high profile endorsements such as Elon Musk's tweet on 3/16 and US President Donald Trump's endorsement on 3/19 suggesting the influence of endorsements on demand for unverified and potentially hazardous treatments.

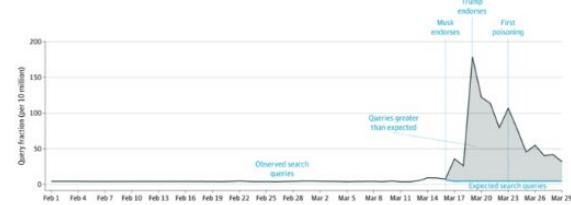
Summary: The demand for chloroquine and hydroxychloroquine rose shortly after being endorsed by high-profile figures. To better understand the rise in demand, internet searches from Google were examined. Searches that were indicative of shopping for chloroquine and hydroxychloroquine within 14 days increased 442% and 1389%, respectively. This suggests that in times of public health crises, the demand for unproven and potentially hazardous COVID-19 treatments is massively increased by endorsements.

Figure 1. Internet Searches for Purchasing Chloroquine



Queries included chloroquine in combination with buy, order, Amazon, eBay, or Walmart (the latter being the top 3 e-commerce companies). The first dotted vertical line corresponds to entrepreneur Elon Musk's tweet on March 16, the second corresponds to President Donald Trump's endorsement on March 19, and the third corresponds to the first reported chloroquine poisoning on March 23.

Figure 2. Internet Searches for Purchasing Hydroxychloroquine



Queries included hydroxychloroquine in combination with buy, order, Amazon, eBay, or Walmart (the latter being top 3 e-commerce companies). The first dotted vertical line corresponds to entrepreneur Elon Musk's tweet on March 16, the second corresponds to President Donald Trump's endorsement on March 19, and the third corresponds to the first reported chloroquine poisoning on March 23.

The Risks of Prescribing Hydroxychloroquine for Treatment of COVID-19-First, Do No Harm.

DeJong C, Wachter RM

JAMA Intern Med

2020 Apr 29; PMID: 32347894

Level of Evidence: 5 - Expert Opinion

Type of Article: Letter

Summary: The authors comment on the widespread popularity and use of hydroxychloroquine following US President Donald Trump's endorsement without substantial evidential support. They would like to remind physicians to treat and support patients while adhering to the principles of evidence-based medicine and fight misinformation.

Change in tobacco and electronic cigarette use and motivation to quit in response to COVID-19.

Klempner EM, West JC, Peasley-Miklus C, Villanti AC.

Nicotine Tob Res

2020 Apr 28, PMID: 32343816

Level of Evidence: 4 - Cross-sectional survey

Type of Article: Research

BLUF: A cross-sectional online survey of dual tobacco and electronic cigarette users demonstrated that the COVID-19 pandemic is associated with a perceived increased risk of harm from the virus by tobacco and electronic cigarette users and increased motivation to quit both types of cigarettes.

Summary: A cross-sectional online survey of dual tobacco and electronic cigarette users assessed for

changes in cigarette use, motivation to quit due to COVID-19, and their concern for how their cigarette use increased their risk of harm from COVID-19. Major survey results suggest “positive but weak correlations between perceived risk of harm from COVID-19” due to tobacco or electronic cigarettes use and motivation to quit for both tobacco cigarettes ($p < .01$) and electronic cigarettes ($p < .01$). “Perceived risk of harm was not associated with change in use or access” to either cigarette type although a “[g]reater perceived risk was associated with increased motivation to quit both products.” Study findings are limited in generalizability by the use of a sample of Mechanical Turk workers who have had prior attempts to quit or reduce tobacco or electronic cigarette use.

Let Africa into the market for COVID-19 diagnostics.

Nkengasong J

Nature

2020 Apr 28; PMID: 32346145

Level of Evidence: 5 - Expert Opinion

Type of Article: Editorial

Summary: The global impact of COVID-19 has shifted the dynamic of global cooperation in a way that limits the ability for Africa to gain access to medical resources such as diagnostic testing. To address this, the authors propose utilization of existing resources within Africa, partnership with non-government laboratories, use of pre existing technology platforms, and the launch of Partnership to Accelerate COVID-19 Testing (PACT).

Navigating the Clean Energy Transition in the COVID-19 Crisis

Steffen, B; Egli, F; Pahle, M; Schmidt, TS

Joule

2020 Apr 29; PMID: 32352076

Level of Evidence: 5 - Expert Opinion

Type of Article: Guidelines

BLUF: Authors make short-term, mid-term, and long-term recommendations for energy policy in the context of the COVID-19 pandemic:

- Short-term
 - Prioritize new frameworks for clean energy
 - Use temporary waivers or postponements on policy changes to ease burdens
 - Do not allow exploitations of national fuel efficiency standards
 - Instead of short-term relief packages for the green energy agenda, attempt to make structural changes
- Mid-term
 - Private industry should utilize this time to make cheap investments in low-carbon technology
 - With oil prices so low, use this time to start fossil fuel reform
- Long-term
 - Create and pass carbon-pricing strategies that are adjustable to “shock” situations such as a pandemic

Abstract:

Bjarne Steffen is a senior researcher at ETH Zurich's Energy Politics Group. His research addresses policies related to energy innovation and the role of finance in the energy transition. He previously worked at MIT's Center for Energy and Environmental Policy Research, the World Economic Forum, and a strategy consultancy. Bjarne holds a Master's in economics from the University of Mannheim

and a PhD in energy economics from the University of Duisburg-Essen. Florian Egli is a PhD candidate at ETH Zurich's Energy Politics Group. His research focuses on the role of finance in the energy transition and climate finance more generally. He is a World Economic Forum Global Shaper, is associated with the think tank foraus as its former vice president, and held a Mercator Fellowship on International Affairs in 2015 and 2016. Florian holds a Master's in International Economics from the Graduate Institute of International and Development Studies (IHEID) in Geneva. Michael Pahle is head of the working group "Climate and Energy Policy" at the Potsdam-Institute for Climate Impact Research. His research focuses on carbon pricing and power market design. He holds a Master's in Physics from Potsdam University and a PhD in economics from TU Berlin. Tobias S. Schmidt is Assistant Professor and the head of ETH Zurich's Energy Politics Group, an interdisciplinary group analyzing the interaction of energy policy and its underlying politics with technological change in the energy sector. His research covers both developed and developing countries. Tobias holds a Bachelor's and Master's of Science in electrical engineering (energy focus) from the Technical University Munich and a PhD from ETH Zurich in management, technology, and economics.

What might the Future Bring? COVID-19 Planning Considerations for Faculty and Universities.

Majowicz SE

Epidemiol Infect.

2020 Apr 29; PMID: 32345390

Level of Evidence: 5 - Expert Opinion

Type of Article: Editorial

Summary: This report outlines how current uncertainties surrounding COVID-19 may impact the future of academia and provides suggestions on what university faculty and institutions should be considering now to prepare for what may come.

Current uncertainties include:

- What social distancing and activity restrictions will be like in the fall
- How faculty, staff, and students will be impacted in terms of their direct health as well as grief and burn-out
- If university resources, such as public funding or laboratory space, will be diverted to help the pandemic response

To prepare for the future now:

- Test possible future scenarios to see how they would hold up with current decisions and plans
- Consider what you might wish you had implemented if the future scenario came to be
- Compile the ever-changing variables of the pandemic into broad categories such as political, economical, ethical, technological, and legal, and determine what might need to change if these factors change
- Apply an “equity lens” throughout all planning to oppose discrimination
- Integrate diverse perspectives, including how other faculty and institutions are dealing with these issues

Impact of COVID-19 pandemic on Subarachnoid Hemorrhage.

Bernat AL, Giammattei L, Abbritti R, Froelich S

J Neurosurg Sci

2020 Apr 29; PMID: 32347681

Level of Evidence: 5 - Expert Opinion

Type of Article: Letter

Summary: In the two week period following the French government's introduction of COVID-19 mitigation measures on 3/17/20, the authors noted an unquantified "dramatic decrease" in subarachnoid hemorrhage (SAH) cases. They postulate that the incidence has not actually decreased, rather these patients are collateral damage of the COVID-19 pandemic as patients with SAH are likely:

1. Avoiding medical care out of fear of infection
2. Are being misdiagnosed due to over-burdened hospital systems
3. Dead at home and undiscovered due to quarantine

Affecting the Healthcare Workforce

Media's effect on shaping knowledge, awareness risk perceptions and communication practices of pandemic COVID-19 among pharmacists.

Karasneh R, Al-Azzam S, Muflih S, Soudah O, Hawamdeh S, Khader Y.

Res Social Adm Pharm.

2020 Apr 23; PMID: 32340892

Level of Evidence: 4 - Cross-sectional

Type of Article: Research

BLUF: A self-reported questionnaire was completed by 486 pharmacists relating to perception, knowledge, and source of knowledge pertaining to COVID-19. Social media was the main source of information (n=283). Most pharmacists (n = 198) scored at least an 80% on factual knowledge. Female gender, living with children, and living in a city were statistically significant for increased perception of COVID-19 risk.

Abstract:

Coronavirus disease (COVID-19), an infection of the zoonotic coronavirus, is presenting a healthcare challenge around the globe. This study aims to assess the levels of disease knowledge and risk perception among pharmacists. We also recognize predictors of risk perception and perceived media roles.

Methods: This is a questionnaire-base cross-sectional study. The questionnaire was developed on a web-based platform and invitations were sent to pharmacists nationwide to participate in the study using social media applications.

Results: A total of 486 pharmacists participated in this study, where females were dominant (78.6%, n = 382). Most (40.4%, n = 198) pharmacists scored 4 out of 5 in basic disease knowledge, and more than half were able to recognize common methods of spread. Risk was highly perceived among participants, and was predicted by gender, living area, and having children ($p < 0.05$). Frequency of watching the media and sources of information also influenced both risk perception and perceived media roles.

Conclusion: Disease awareness among pharmacists, as well as risk perception must be considered for effective risk communication planning. The role of media in shaping perceptions should also be carefully studied to encourage compliance with government containment measures and engagement in preventive behaviors

COVID-19: a defining moment for clinical pharmacology?

van der Graaf PH, Giacomini KM

Clin Pharmacol Ther

2020 Apr 29; PMID: 32350861

Level of Evidence: 5 - Expert opinion

Type of Article: Editorial

Summary: An argument for the role of clinical pharmacologists as leaders in efforts to repurpose existing drugs for COVID-19 relief. The authors cite clinical pharmacologists' deep understanding of drug pharmacodynamics, pharmacokinetics, and interactions in arguing that they should take a leading role in developing informed models to help determine appropriate drug dosing and in creating and conducting rigorous and innovative clinical trials. They detail several areas including pharmacogenomics and "Real World Data" analysis that may be both instrumental to efforts against COVID-19.

Teaching anatomy at the time of COVID-19.

Saverino D.

Clin Anat

2020 Apr 29; PMID: 32350908

Level of Evidence: 5 - Expert Opinion

Type of Article: Letter

Summary: The author of this letter argues that COVID-19 necessitates teaching anatomy without cadaver dissection and instead utilizing video and technology based learning. She also argues that anatomy courses have already been moving toward this modality of teaching - alongside efforts to move towards teaching strategies designed to encourage long term memory over rote memorization - and that COVID-19 may speed this process of change to anatomy curriculums.

Development of clinical care guidelines for faculty and residents in the era of COVID-19.

Park, J. S., El-Sayed, I. H., Young, V. N., Pletcher, S. D.

Head Neck

2020 Apr 29; PMID: 32348581

Level of Evidence: 5 – Expert Opinion

Type of Article: Correspondence

BLUF: In order to mitigate risk of COVID-19 transmission, optimize patient care, and maximize education the authors of the article believe a small-team based approach with guidelines for faculty/resident roles should be utilized in otolaryngology resident education.

Abstract:

Background: The global COVID-19 pandemic brings new challenges to otolaryngology resident education. Surgical volume and clinic visits are curtailed, personal protective equipment for operating room participation is restricted, and the risk of COVID-19 disease transmission during heretofore routine patient care is the new norm.

Methods: We describe a small-team "cohorting" protocol including guidelines for faculty and resident in common clinical scenarios with attention paid to the risk of common otolaryngologic procedures.

Results: A rotating small-team approach was implemented at each clinical site, limiting interaction between Department members but providing comprehensive coverage. Faculty were involved at the earliest phase of clinical interactions. Guidelines delineated faculty and resident roles based on risk stratification by patient COVID status and anticipated procedures. Special consideration was given to high-risk procedures such as endoscopy and tracheotomy.

Conclusions: A small-team based approach with guidelines for faculty/resident roles may mitigate risk while optimizing patient care and maximizing education.

Covid-19: Balancing Personal Risk and Professional Duty

Harkin DW

BMJ

2020 Apr 29; PMID: 32350003

Level of Evidence: 5 – Expert Opinion

Type of Article: Letter to the Editor

Summarizing excerpt: The author of this commentary in the United Kingdom during the COVID-19 pandemic makes the statement that “physicians must balance personal risk and professional duty, but reciprocally, society must ensure that staff are supported, throughout the pandemic and beyond.”

Disparities

Characterizing the Impact of COVID-19 on Men Who Have Sex with Men Across the United States in April, 2020.

Sanchez TH, Zlotorzynska M, Rai M, Baral SD.

AIDS Behav

2020 Apr 29; PMID: 32350773

Level of Evidence: 3 - Local Non-Random Sample

Type of Article: Research

BLUF: A online survey administered to 1051 men who have sex with men in early April found that a majority of the participants reported decreased quality of life, fewer sexual partners, and no change in condom access or use. Some of the participants reported disrupted access to STI testing and PrEP prescriptions, and some of the HIV positive participants reported decreased access to care visits, laboratory testing, and medications. The authors recommend use of telehealth services and mailed laboratory testing to ensure access to sexual health services for this population during the pandemic.

Abstract: The COVID-19 pandemic is reinforcing health inequities among vulnerable populations, including men who have sex with men (MSM). We conducted a rapid online survey (April 2 to April 13, 2020) of COVID-19 related impacts on the sexual health of 1051 US MSM. Many participants had adverse impacts to general wellbeing, social interactions, money, food, drug use and alcohol consumption. Half had fewer sex partners and most had no change in condom access or use. Some reported challenges in accessing HIV testing, prevention and treatment services. Compared to older MSM, those 15-24 years were more likely to report economic and service impacts. While additional studies of COVID-19 epidemiology among MSM are needed, there is already evidence of emerging interruptions to HIV-related services. Scalable remote solutions such as telehealth and mailed testing and prevention supplies may be urgently needed to avert increased HIV incidence among MSM during the COVID-19 pandemic era.

Covid-19: challenges for people with intellectual disability.

Courtenay K

BMJ

2020 Apr 29; PMID: 32349992

Level of Evidence: 6 - No data cited

Type of Article: Letter

Summary: This letter poses the unique challenges faced by individuals with intellectual disability and their care-givers during the COVID-19 pandemic, such as changes in routine and rapidly changing social support structures. The article concludes that support services and clinicians must collaborate to reduce the risk of infection in this population and minimize the negative impact of environmental changes.

Epidemiology

Variation in COVID-19 Hospitalizations and Deaths Across New York City Boroughs

Wadhera RK, Wadhera P, Gaba P, Figueroa JF, Joynt Maddox KE, Yeh RW, Shen C. Wadhera RK
JAMA

2020 Apr 29; PMID: 32347898

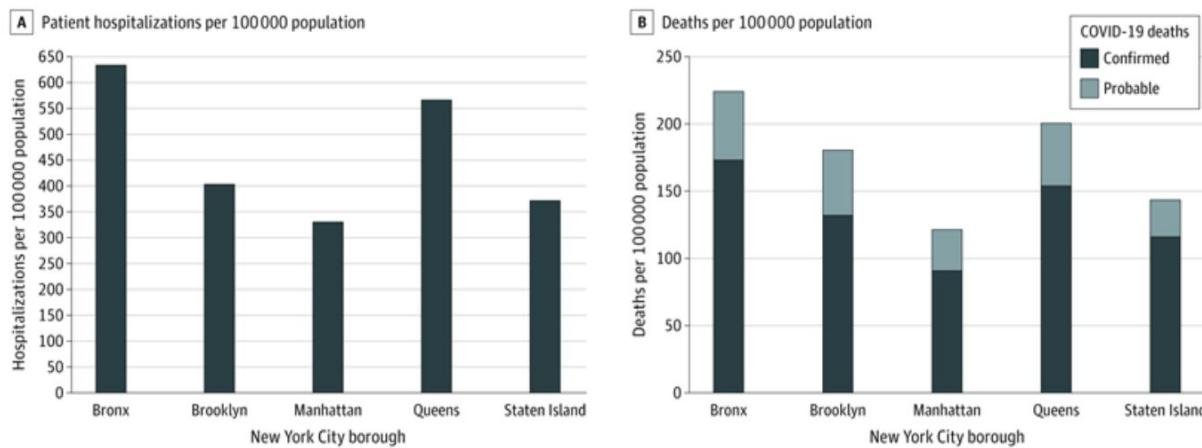
Level of Evidence: 4- Cross-Sectional

Type of Article: Research Letter

BLUF: "This study describes demographic characteristics and hospital bed capacities of the 5 New York City boroughs, and evaluates whether differences in testing for coronavirus disease 2019 (COVID-19), hospitalizations, and deaths have emerged as a signal of racial, ethnic, and financial disparities."

Summary: New York City emerges as an epicenter of COVID-19, reporting 17% of the total cases in the US. The idea of examining population characteristics and hospital bed capacities across the five boroughs of New York City and evaluating rates of COVID-19 testing, hospitalizations, and deaths is necessary to improve public health and policy strategies to mitigate the spread of COVID-19. Results reveal the Bronx which has the highest proportion of racial/ethnic minorities, the most persons living in poverty, and the lowest of education had higher rates of hospitalization whereas Manhattan, an affluent borough, had the lowest hospitalization and deaths rates from COVID-19. The contrast from the five boroughs may be due to underlying comorbid illness, occupational exposures, socioeconomic determinants, and race-based structural inequities. However limitations from the ecological design and limited follow-up suggests further studies are needed to examine the disproportionate burden of COVID-19 in lower income and minority communities in other regions of the US.

Figure. Rates of Coronavirus Disease 2019 (COVID-19) Hospitalizations and Deaths by New York City Borough



Association Between Regional Selenium Status and Reported Outcome of COVID-19 Cases in China

Jinsong Zhang, Ethan Will Taylor, Kate Bennett, Ramy Saad, Margaret P Rayman
Am J Clin Nutr.

2020 Apr 28, PMID: 32342979

Level of Evidence: 5- Mechanism based study

Type of Article: Letter

Summary: Selenium has been previously shown to have antiviral effects. This retrospective population-based study compared the cure rate, as measured through cessation of symptoms and two consecutive negative RT-PCR tests, and death rate of various cities in China with respect to selenium levels as measured in multiple previous population studies through levels present in hair. It was found that Enshi city, renowned for its high selenium intake status, had a cure rate of 36.4%, which is much higher than other cities where the overall cure rate was 13.1. On the other hand, Keshan city, known for a low selenium status, had a much higher death rate at 2.4%.

Does vitamin D status impact mortality from SARS-CoV-2 infection?

Marik PE, Kory P, Varon J.

Med Drug Discov.

2020 Apr 29; PMID: 32352080

Level of Evidence: 5 - Expert Opinion

Type of Article: Editorial

Summary: Vitamin D deficiency is a risk factor for the persistent inflammation that is characteristic of acute respiratory distress syndrome. It is also associated with an increased risk of respiratory infections by pathogens such as respiratory syncytial virus infection, tuberculosis and influenza. The authors calculated the case fatality rate (number of deaths/number of confirmed cases) of COVID-19 for each of the 50 states in the USA and showed that mortality tends to increase with increasing latitude, suggesting COVID-19 mortality is related to Vitamin D levels.

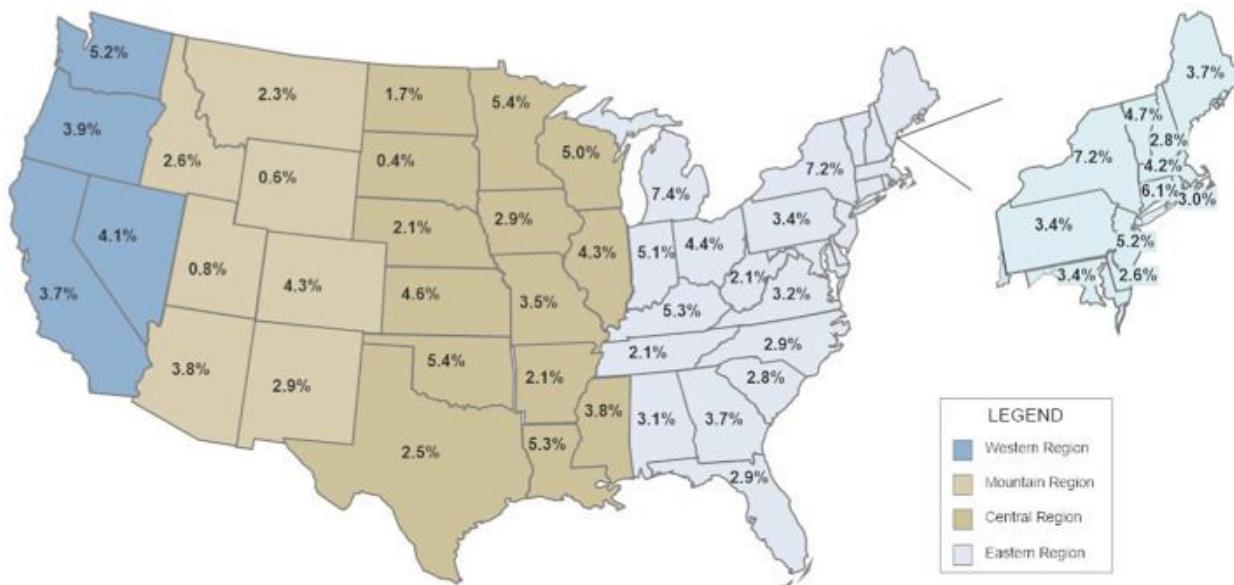


Figure 1. The reported case fatality rate (number of deaths/number of confirmed cases) for each of the 50 states in the USA as reported on 4/19/2020 by the Center for Systems Science and Engineering at Johns Hopkins University.

Covid-19 and Health at Work.

Agius R.Agius R.

Occup Med (Lond)

2020 Apr 29; PMID: 32347933

Level of Evidence: 5- Expert Opinion

Type of Article: Letter

Summary: The authors discuss workers at risk of contracting COVID-19 in London due to lack of protection. They evaluate the United Kingdom's poor response to COVID-19, which is largely due to delaying testing, lack of central leadership, and delaying quarantine. To prevent exposure to the virus

for workers, they suggest aggressive reporting of COVID-19-related illnesses to better track transmission.

Modeling

Population flow drives spatio-temporal distribution of COVID-19 in China.

Jia JS, Lu X, Yuan Y, Xu G, Jia J, Christakis NA

Nature

2020 Apr 29; PMID: 32349120

Level of Evidence: Statistical Modeling

Type of Article: Research

BLUF: Using nationwide mobile phone data to track movement out of Wuhan China between January 1 and January 24, 2020, authors found differences in growth trends between predicted and confirmed cases that indicated higher levels of community transmission. These methods are generalizable to any dataset that captures population movements and allows for the possibility of live implementation along with the ability to provide information on areas with higher virus transmission risk or more effective containment measures.

Specifically, the authors examined several impacts of population flow:

- Interprovincial outflow dropped 94% and intraprovincial outflow dropped 84% from January 22 to 24, illustrating that travel out of Wuhan almost completely stopped following imposition of quarantine on January 23-24 (Figure 1).
- There was a strong correlation between total population flow from Wuhan and cumulative number of infections (r increased from 0.522 on January 24 to 0.952 February 19, $p < 0.001$), indicating exportation of the virus and community transmission (Figure 2).
- Creation of a “risk source model” for cross-sectional and dynamic models combined with a supervised machine learning approach illustrated that the spreading pattern gradually converges to the distribution of population outflow from Wuhan, suggesting that population flow determines eventual distribution of total infections.
- The authors used a spatio-temporal model for changes in distribution and growth (modified Cox proportional hazards framework) to derive a COVID-19 epidemic curve and growth pattern, which illustrated that inclusion of local population and GDP with total population outflow from Wuhan increases R^2 from 0.927 (total population alone) to 0.957.
- Daily risk score (difference between predicted and confirmed cases) indicates success or failure in implementing public health measures and decreasing community transmission.
- Differences in growth trends between predicted and confirmed cases indicate higher levels of community transmission.
- These methods are generalizable to any dataset that captures population movements and allows for the possibility of live implementation along with the ability to provide information on areas with higher virus transmission risk or more effective containment measures.

Abstract:

Sudden, large-scale, and diffuse human migration can amplify localized outbreaks into widespread epidemics.¹⁻⁴ Rapid and accurate tracking of aggregate population flows may therefore be epidemiologically informative. Here, we use mobile-phone-data-based counts of 11,478,484 people egressing or transiting through the prefecture of Wuhan between 1 January and 24 January 2020 as they moved to 296 prefectures throughout China. First, we document the efficacy of quarantine in ceasing movement. Second, we show that the distribution of population outflow from Wuhan accurately predicts the relative frequency and geographic distribution of COVID-19 infections through

February 19, 2020, across all of China. Third, we develop a spatio-temporal "risk source" model that leverages population flow data (which operationalizes risk emanating from epidemic epicenters) to not only forecast confirmed cases, but also to identify high-transmission-risk locales at an early stage. Fourth, we use this risk source model to statistically derive the geographic spread of COVID-19 and the growth pattern based on the population outflow from Wuhan; the model yields a benchmark trend and an index for assessing COVID-19 community transmission risk over time for different locations. This approach can be used by policy-makers in any nation with available data to make rapid and accurate risk assessments and to plan allocation of limited resources ahead of ongoing outbreaks.

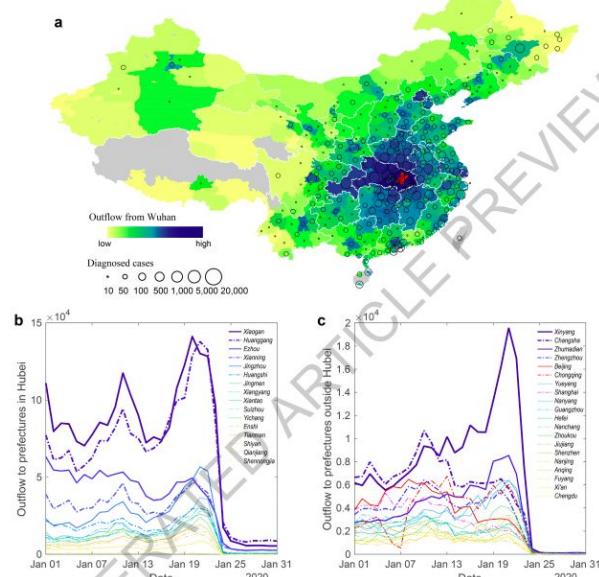


Fig. 1 Geographical distribution of population outflow and confirmed COVID-19 cases as of February 19, 2020. **a**, there is a high overlap between the geographical distribution of aggregate population outflow from Wuhan through January 24, 2020 (in red) and confirmed cases of COVID-19 in other Chinese prefectures ($N=296$; map source: National Catalogue Service for Geographic Information). Gray areas lack population outflow data. **b, c**, During what is historically the peak period for outbound Lunar New Year holiday travel, total

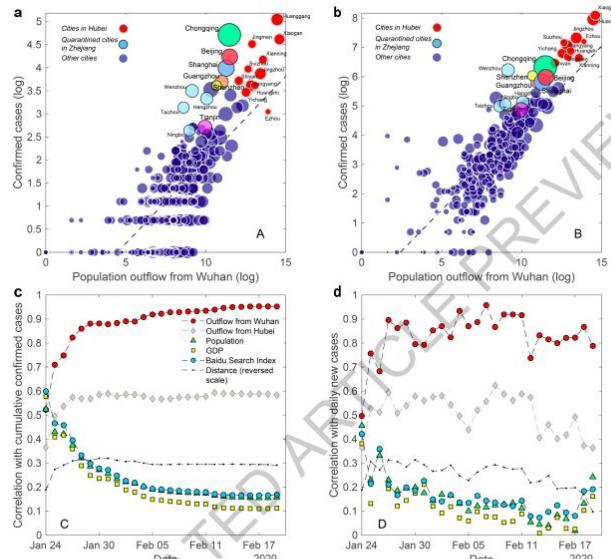


Fig. 2 Factors correlated with confirmed COVID-19 cases. **a, b**, The relationship between aggregate population outflow from Wuhan (up to January 24, 2020) and confirmed cases of COVID-19 in other Chinese prefectures ($N=296$; red circles = prefectorates in Hubei; light blue circles = four quarantined prefectures in Zhejiang (including Wenzhou); and the six largest prefectures in China are indicated with unique colors). **c**, Relationship over time between number of confirmed cases (**c**, cumulative through February 19 on x-axis) and prefecture's (**i**) cumulative population inflow (up to Jan. 24) from Wuhan, (**ii**) cumulative inflow from Hubei province excluding Wuhan, (**iii**) frequency of Baidu search terms related to the virus, (**iv**) GDP, (**v**) population, and (**vi**) distance from Wuhan. Over time, the correlation between population outflow from Wuhan and the number of infection cases increases from

Pearson's $r=0.522$ on January 24 to $r=0.932$ ($N=296$). The decline in the predictive strength of online search behavior might reflect information fatigue among the public. The increase in population inflow, and distance suggests that late-stage human migration from Wuhan was to more diverse set of prefectures (and not merely to the closest, largest, and most developed prefectures) and/or that community transmissions began to predominate. The correlation with daily infections (**d**) is consistent, with Pearson's $r=0.496$ on January 24 to a peak of 0.926 on February 4 ($N=296$). Fluctuations are likely lags in case reporting (that are smoothed in **c**); weaker correlations on the last few days reflect that >90% of prefectures outside of Hubei reported no new cases.

Changes in contact patterns shape the dynamics of the COVID-19 outbreak in China.

Zhang J, Litvinova M, Liang Y, Wang Y, Wang W, Zhao S, Wu Q, Merler S, Viboud C, Vespignani A, Ajelli M, Yu H, Science

2020 Apr 29, PMID: 32350060

Level of Evidence: Statistical modeling

Type of Article: Research

BLUF: The authors analyzed contact surveys in Wuhan and Shanghai to calculate susceptibility rates of COVID-19 and created a transmission model to synthesize the impact of social distancing and school closures on transmission. Evidence from the study supports the authors' conclusions that interventions and the resulting changes in human behavior in Wuhan and Shanghai decreased daily contacts and reduced SARS-CoV-2 transmission.

Abstract:

Intense non-pharmaceutical interventions were put in place in China to stop transmission of the novel coronavirus disease (COVID-19). As transmission intensifies in other countries, the interplay between age, contact patterns, social distancing, susceptibility to infection, and COVID-19 dynamics remains unclear. To answer these questions, we analyze contact surveys data for Wuhan and Shanghai before and during the outbreak and contact tracing information from Hunan Province. Daily contacts were

reduced 7-8-fold during the COVID-19 social distancing period, with most interactions restricted to the household. We find that children 0-14 years are less susceptible to SARS-CoV-2 infection than adults 15-64 years of age (odd ratio 0.34, 95%CI 0.24-0.49), while in contrast, individuals over 65 years are more susceptible to infection (odd ratio 1.47, 95%CI: 1.12-1.92). Based on these data, we build a transmission model to study the impact of social distancing and school closure on transmission. We find that social distancing alone, as implemented in China during the outbreak, is sufficient to control COVID-19. While proactive school closures cannot interrupt transmission on their own, they can reduce peak incidence by 40-60% and delay the epidemic.

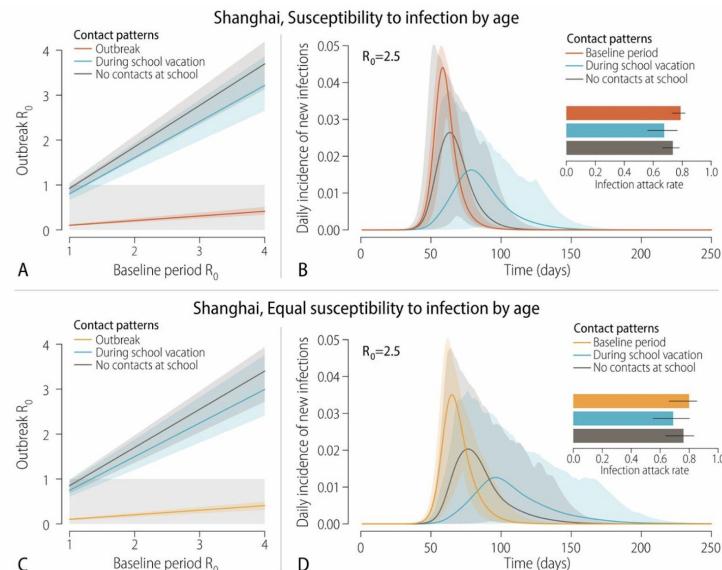


Figure 1. (a) Estimated R_0 during the outbreak as a function of baseline for three contact patterns in Shanghai. (b) Daily incidence of new SARS-CoV-2 infections estimated by the model for three contact patterns. (c) As (a) but in Wuhan. (d) As (b) but in Wuhan.

Symptoms and Clinical Presentation

Adults

Survival rate in acute kidney injury superimposed COVID-19 patients: a systematic review and meta-analysis.

Ali H, Daoud A, Mohamed MM, et al.

Ren Fail.

2020 Nov; PMID: 32340507

Level of Evidence: 1 - Systematic Review of Inception Cohort Studies

Type of Article: Research

BLUF: Systematic review looked to determine the survival rate among patients with COVID-19 and superimposed acute kidney injury (AKI). Review showed that severe AKI is associated with higher risk of mortality.

Summary: To date, the published incidence of AKI among patients with COVID-19 is highly variable. It has been reported to occur in up to 27% of patients with COVID-19. The survival rate among patients with COVID-19 and superimposed acute kidney injury (AKI) remains unclear. In this systematic review, AKI was defined as subjects who require acute renal replacement therapy (RRT) or meet the Kidney Disease Improving Global Outcome (KDIGO) definition of AKI stage III. Out of six studies included in the systematic review, only three studies met the inclusion criteria and were pooled into a meta-analysis. Review showed that severe AKI is associated with higher risk of mortality (relative risk = 3.08, confidence interval ranges from 1.54 to 6.19). Further studies are needed to understand the factors associated with worse outcomes among COVID-19 patients with AKI.

[Interferon-induced transmembrane protein-3 genetic variant rs12252-C is associated with disease severity in COVID-19](#)

Zhang Y, Qin L, Zhao Y, Zhang P, Xu B, Li K, Liang L, Zhang C, Dai Y, Feng Y, Sun J, Hu Z, Xiang H, Knight JC, Dong T, Jin R, Zhang Y, et al.
J Infect Dis.

2020 Apr 29; PMID: 32348495

Level of Evidence: 3 - Retrospective Cohort study

Type of Article: Brief Report

BLUF: A cohort study conducted between Jan-Feb 2020 separated n=80 hospitalized patients from Beijing Youan Hospital into mild and severe symptoms of COVID-19 who were genotyped for IFITM3 (interferon-induced transmembrane protein 3) for genetic variants. Results showed 35% (n=28/80) of all hospitalized patients were homozygous for the CC allele, which was associated with severe disease (OR= 6.37, p=0.0093 on a regression analysis) when comparing severe and mild cases with adjusted age groups. The authors conclude that defects in a host immune system may result in prolonged and severe disease, however, a larger cohort study is needed to confirm this.

Abstract:

A major unanswered question in the current global COVID-19 outbreak is why a small minority of infected individuals develop severe disease. Here we report that homozygosity for the C allele of rs12252 in the interferon-induced transmembrane protein 3 (IFITM3) gene is associated with more severe disease in an age dependent manner. This supports a role for IFITM3 in disease pathogenesis and the opportunity for early targeted intervention in at risk individuals.

[Acute Kidney Injury Due to Collapsing Glomerulopathy Following COVID-19 Infection.](#)

Peleg Y, Kudose S, et al.

Kidney Int Rep.

2020 Apr 28; PMID: 32346659

Level of Evidence: 4 - Case Study

Type of Article: Case Report

BLUF: Patients with the APOL1 high risk genotype, commonly Africans, may be at risk for collapsing glomerulopathy (CG) exacerbation in the setting of COVID-19 illness.

Summary: This case presented a 46-year-old West African man with severe acute kidney injury requiring renal replacement therapy due to collapsing glomerulopathy (CG) in the context of COVID-19 illness. CG is an aggressive variant of focal segmental glomerulosclerosis exhibiting high rates of podocyte injury and depletion. CG has not been reported in outbreaks in China and Europe probably because APOL1 high risk genotypes (associated with CG) are only present in populations of African Ancestry. Considering the projected 50-80% attack rates of COVID-19 in the general population, a significant fraction of the population with West African ancestry may be at risk of developing kidney injury from CG as the COVID-19 pandemic sweeps through the Americas and the African continent.

Clinical characteristics of patients with 2019 coronavirus disease in a non-Wuhan area of Hubei Province, China: a retrospective study.

Zhao XY, Xu XX, Yin HS, Hu QM, Xiong T, Tang YY, Yang AY, Yu BP, Huang ZP.

BMC Infect Dis.

2020 Apr 29; PMID: 32345226

Level of Evidence: 4 - Case series

Type of Article: Research

BLUF: A retrospective study of 91 patients with COVID-19 was performed to analyze clinical characteristics, course, and management. Cough (82.4%), fever (64.8%), fatigue (38.5%), and diarrhea (15.4%) were the most common chief complaints. Extrapulmonary symptoms such as cardiovascular, gastrointestinal, and renal were reported. Almost all patients received antibacterial therapy (98.9%) and most received antiviral (89%) and glucocorticoid therapy (86.8%).

Abstract:

Background: Since December 2019, the 2019 coronavirus disease (COVID-19) has expanded to cause a worldwide outbreak that more than 600,000 people infected and tens of thousands died. To date, the clinical characteristics of COVID-19 patients in the non-Wuhan areas of Hubei Province in China have not been described.

Methods: We retrospectively analyzed the clinical characteristics and treatment progress of 91 patients diagnosed with COVID-19 in Jingzhou Central Hospital.

Results: Of the 91 patients diagnosed with COVID-19, 30 cases (33.0%) were severe and two patients (2.2%) died. The severe disease group tended to be older (50.5 vs. 42.0 years; $p = 0.049$) and have more chronic disease (40% vs. 14.8%; $p = 0.009$) relative to mild disease group. Only 73.6% of the patients were quantitative polymerase chain reaction (qPCR)-positive on their first tests, while typical chest computed tomography images were obtained for each patient. The most common complaints were cough ($n = 75$; 82.4%), fever ($n = 59$; 64.8%), fatigue ($n = 35$; 38.5%), and diarrhea ($n = 14$; 15.4%). Non-respiratory injury was identified by elevated levels of aspartate aminotransferase ($n = 18$; 19.8%), creatinine ($n = 5$; 5.5%), and creatine kinase ($n = 14$; 15.4%) in laboratory tests. Twenty-eight cases (30.8%) suffered non-respiratory injury, including 50% of the critically ill patients and 21.3% of the mild patients.

Conclusions: Overall, the mortality rate of patients in Jingzhou was lower than that of Wuhan. Importantly, we found liver, kidney, digestive tract, and heart injuries in COVID-19 cases besides respiratory problems. Combining chest computed tomography images with the qPCR analysis of throat swab samples can improve the accuracy of COVID-19 diagnosis.

Epidemiological and Clinical Characteristics of 333 Confirmed Cases with Coronavirus Disease 2019 in Shanghai, China.

Yu X, Sun X, Cui P, Pan H, Lin S, Han R, Jiang C, Fang Q, Kong D, Zhu Y, Zheng Y, Gong X, Xiao W, Mao S, Jin B, Wu H, Fu C

Transbound Emerg Dis

2020 Apr 29; PMID: 32351037

Level of Evidence: 4- Case series

Type of Article: Research

BLUF: A case series of all 333 confirmed COVID-19 positive (RT-PCR) individuals in Shanghai as of Feb 19 including demographic data, exposure history, and clinical findings. Highlights of their findings include an overall mortality rate of 0.06% with male sex, older age, and underlying heart disease associated with severe illness.

Abstract

Coronavirus Disease 2019 (COVID-19) is an emerging infectious disease first identified in Wuhan City, Hubei Province, China. As of February 19th, 2020, there had been 333 confirmed cases reported in Shanghai, China. This study elaborates on the epidemiological and clinical characteristics of COVID-19 based on a descriptive study of the 333 patients infected with COVID-19 in Shanghai for the purpose of probing into this new disease and providing reference. Among the 333 confirmed cases in Shanghai, 172 (51.7%) were males and 161 (48.3%) were females, with a median age of 50 years. 299 (89.8%) cases presented mild symptoms. 139 (41.7%) and 111 (33.3%) cases were infected in Wuhan and Shanghai, respectively. 148 (44.4%) cases once had contact with confirmed cases before onset, while 103 (30.9%) cases had never contacted confirmed cases but they had a sojourn history in Wuhan. The onset date of the first case in Shanghai was December 28th, with the peak appearing on January 27th. The median incubation period of COVID-19 was estimated to be 7.2 days. 207 (62.2%) cases had fever symptoms at the onset, whereas 273 (82.0%) cases experienced fever before hospitalization. 56 (18.6%) adults experienced a decrease in white blood cell and 84 (42.9%) had increased c-reactive protein after onset. Elderly, male, and heart disease history were risk factors for severe or critical pneumonia. These findings suggest that most cases experienced fever symptoms and had mild pneumonia. Strengthening the health management of elderly men, especially those with underlying diseases, may help reduce the incidence of severe and critical pneumonia. Time intervals from onset to visit, hospitalization and diagnosis confirmed were all shortened after Shanghai's first-level public health emergency response. Shanghai's experience proves that COVID-19 can be controlled well in megacities.

Outcome of Parkinson's Disease patients affected by COVID-19.

Antonini A, Leta V, Teo J, Chaudhuri KR

Mov Disord.

2020 Apr 29; PMID: 32347572

Level of Evidence: 5 - Case series

Type of Article: Research

BLUF: In this case series (n=10), patients with Parkinson's Disease may have a higher mortality rate (40%) and more severe disease course from COVID-19,

Summary: This case series investigated the outcome of ten patients with advanced Parkinson's disease (PD) infected by SARS-CoV-2. Patients were from the Parkinson and Movement Disorders Unit in Padua, Italy and the Parkinson's Foundation Centre of Excellence at King's College Hospital in London, UK. Four out of the ten patients died from COVID-19, suggesting a high mortality rate

(40%). The other six patients either recovered or were recovering by the time of publication. The authors conclude that patients with PD may experience a more severe course of illness and should be considered a susceptible group for COVID-19.

HIV/SARS-CoV-2 co-infected patients in Istanbul, Turkey.

Altuntas Aydin, Ozlem; Kumbasar Karaosmanoglu, Hayat; Kart Yasar, Kadriye

J Med Virol

2020 Apr 29; PMID: 32347975

Level of Evidence: 4 - Case Series

Type of Article: Letter to the Editor

BLUF: This is a case series of four HIV-infected patients with varying clinical characteristics who were co-infected with COVID-19. This limited data demonstrates additional comorbidities, such as hypertension and diabetes, play a role in mortality of HIV-infected patients with COVID-19; this should be further explored to establish significance of the correlation.

Abstract:

In December 2019, the causative agent of Coronavirus disease 2019 (COVID-19) was identified and named as SARS-CoV-2. Since then it has been spreading and severe form of the illness predominantly occurs in adults with advanced age or underlying comorbidities. The European AIDS Clinical Society states the lack of evidence for a higher COVID-19 infection rate among people living with HIV (PLHIV) and there is a few published literature on the course of COVID-19 co-infection in PLHIV. We described four HIV/SARS-CoV-2 co-infected patients with different characteristics. The impression is that comorbidities is an *[sic]* important factor in mortality in HIV/SARS-CoV-2 co-infected cases.

COVID-19 Anosmia Reporting Tool: Initial Findings.

Kaye R, Chang CWD, Kazahaya K, Brereton J, Denneny JC 3rd

Otolaryngol Head Neck Surg

2020 Apr 28; PMID: 32340555

Level of Evidence: 4 - Case Series

Type of Article: Research

BLUF: The authors present a preliminary analysis of data collected from March 25, 2020 to April 3, 2020 from the COVID-19 Anosmia Reporting Tool for Clinicians created by The American Academy of Otolaryngology - Head and Neck Surgery, a survey developed to allow providers to submit cases of anosmia and dysgeusia. 237 entries were made and of those anosmia was noted in 73% of patients prior to diagnosis and was the initial symptom in 26.6% of patients (see Table 2 below).

Abstract:

There is accumulating anecdotal evidence that anosmia and dysgeusia are associated with the COVID-19 pandemic. To investigate their relationship to SARS-CoV2 infection, the American Academy of Otolaryngology–Head and Neck Surgery developed the COVID-19 Anosmia Reporting Tool for Clinicians for the basis of this pilot study. This tool allows health care providers to confidentially submit cases of anosmia and dysgeusia related to COVID-19. We analyzed the first 237 entries, which revealed that anosmia was noted in 73% of patients prior to COVID-19 diagnosis and was the initial symptom in 26.6%. Some improvement was noted in 27% of patients, with a mean time to improvement of 7.2 days in this group (85% of this group improved within 10 days). Our findings suggest that anomia can be a presenting symptom of COVID-19, consistent with other emerging international reports. Anosmia may be critical in timely identification of individuals infected with SARS-CoV2 who may be unwittingly transmitting the virus.

Table 2. Timing of Anosmia.^a

	No. (%) or Mean ± SD
Anosmia onset	
Before diagnosis	172 (73)
Anosmia contributed to testing for COVID-19	94 (40)
After diagnosis	65 (27)
Symptoms before anosmia	
None	64 (27)
Fever	90 (38)
Chills	63 (27)
Malaise	93 (39)
Cough	98 (41)
Headache	88 (37)
Nasal congestion	60 (25)
Rhinorrhea	42 (18)
Gastrointestinal distress	24 (10)
Other	28 (13)
Resolution of anosmia	
Complete resolution	30 (13)
Partial resolution	32 (14)
None, not yet	175 (74)
Time to improvement, d	7.2 ± 3.1

Covid-19, Coronavirus, SARS-CoV-2 and the small bowel.

Mönkemüller K, Fry L, Rickes S.

Rev Esp Enferm Dig.

2020 Apr 28; PMID: 32343593

Level of Evidence: 5 – Review

Type of Article: Literature Review

BLUF: This is a review of the interaction of SARS-CoV-2 with enterocytes and its potential complications including mesenteric node inflammation, hemorrhage and necrosis. It was noted that the small bowel may serve as a viral entry site or as a potentiating organ as it is the largest lymphoid organ of the body.

Abstract:

Although SARS-CoV-2 may primarily enter the cells of the lungs, the small bowel may also be an important entry or interaction site, as the enterocytes are rich in angiotensin converting enzyme (ACE)-2 receptors. The initial gastrointestinal symptoms that appear early during the course of Covid-19 support this hypothesis. Furthermore, SARS-CoV virions are preferentially released apically and not at the basement of the airway cells. Thus, in the setting of a productive infection of conducting airway epithelia, the apically released SARS-CoV may be removed by mucociliary clearance and gain access to the GI tract via a luminal exposure. In addition, post-mortem studies of

mice infected by SARS-CoV have demonstrated diffuse damage to the GI tract, with the small bowel showing signs of enterocyte desquamation, edema, small vessel dilation and lymphocyte infiltration, as well as mesenteric nodes with severe hemorrhage and necrosis. Finally, the small bowel is rich in furin, a serine protease which can separate the S-spike of the coronavirus into two "pinchers" (S1 and S2). The separation of the S-spike into S1 and S2 is essential for the attachment of the virion to both the ACE receptor and the cell membrane. In this special review, we describe the interaction of SARS-CoV-2 with the cell and enterocyte and its potential clinical implications.

Pediatrics

Novel Coronavirus disease (COVID-19) in newborns and infants: what we know so far.

De Rose DU, Piersigilli F, Ronchetti MP, Santisi A, Bersani I, Dotta A, Danhaive O, Auriti C; Study Group of Neonatal Infectious Diseases of The Italian Society of Neonatology (SIN).

Ital J Pediatr.

2020 Apr 29; PMID: 32349772Review.

Level of Evidence: 5 - Literature Review

Article Type: Review

BLUF: This literature review on COVID-19 infected newborns and infants up to 6 months of age found that the common clinical features in this population include runny nose, cough, sputum production, fever, or no symptoms (Table 2). In addition, the authors propose that neonates' different ACE distribution compared to adults and inability to create cytokine storm may describe this population's decreased susceptibility to COVID-19 infection. The authors also recommend testing suspected infants with exposure to COVID-19, emphasize the lack of evidence for maternal fetal transmission vertically or with breastfeeding, and outline treatment and prevention of transmission with negative pressure room, PPE, and NICU transfer for COVID-19 manifestations.

Abstract:

Recently, an outbreak of viral pneumonitis in Wuhan, Hubei, China successively spread as a global pandemic, led to the identification of a novel betacoronavirus species, the 2019 novel coronavirus, successively designated 2019-nCoV then SARS-CoV-2). The SARS-CoV-2 causes a clinical syndrome designated coronavirus disease 2019 (COVID19) with a spectrum of manifestations ranging from mild upper respiratory tract infection to severe pneumonitis, acute respiratory distress syndrome (ARDS) and death. Few cases have been observed in children and adolescents who seem to have a more favorable clinical course than other age groups, and even fewer in newborn babies. This review provides an overview of the knowledge on SARS-CoV-2 epidemiology, transmission, the associated clinical presentation and outcomes in newborns and infants up to 6 months of life.

Table 2 Clinical features of infants with a confirmed COVID-19

Patient	1	2	3	4	5
Reported in:	Wei et al. [43]				Kam et al. [44]
Age	1 month 26 days	3 months	3 months 22 days	6 months	6 months
Sex	Female	Female	Female	Male	Male
Country	China	China	China	China	Singapore
Symptoms at onset	Runny nose; cough	Cough; sputum production	Fever	NA	None
Time between admission and diagnosis (days)	1	1	1	2	NA
Epidemiologic history: no. of family members infected	2	2	1	1	3
Linkage to Wuhan	Yes	Yes	NA	No	Yes
Mechanical ventilation	No	No	No	No	No
Severe complications	No	No	No	No	No

*NA not available

this population's decreased susceptibility to COVID-19 infection. The authors also recommend testing suspected infants with exposure to COVID-19, emphasize the lack of evidence for maternal-fetal transmission vertically or with breastfeeding, and outline treatment and prevention of transmission with negative pressure room, PPE, and NICU transfer for COVID-19 manifestations.

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Recently, an outbreak of viral pneumonitis in Wuhan, Hubei, China successively spread as a global pandemic, led to the identification of a novel betacoronavirus species, the 2019 novel coronavirus, successively designated 2019-nCoV then SARS-CoV-2). The SARS-CoV-2 causes a clinical syndrome designated coronavirus disease 2019 (COVID19) with a spectrum of manifestations ranging from mild upper respiratory tract infection to severe pneumonitis, acute respiratory distress syndrome (ARDS) and death. Few cases have been observed in children and adolescents who seem to have a more favorable clinical course than other age groups, and even fewer in newborn babies. This review provides an overview of the knowledge on SARS-CoV-2 epidemiology, transmission, the associated clinical presentation and outcomes in newborns and infants up to 6 months of life.

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Symptoms at onset	Runny nose; cough	Cough; sputum production	Fever	NA	None
Time between admission and diagnosis (days)	1	1	1	2	NA
Epidemiologic history: no. of family members infected	2	2	1	1	3
Linkage to Wuhan	Yes	Yes	NA	No	Yes
Mechanical ventilation	No	No	No	No	No
Severe complications	No	No	No	No	No

*NA not available

Advanced age

Epidemiologic characteristics of traumatic fractures in elderly patients during the outbreak of coronavirus disease 2019 in China.

Zhu Y, Chen W, Xin X, Yin Y, Hu J, Lv H, Li W, Deng X, Zhu C, Zhu J, Zhang J, Ye F, Chen A, Wu Z, Ma Z, Zhang X, Gao F, Li J, Wang C, Zhang Y, Hou Z

Int Orthop

2020 Apr 29; PMID: 32350584

Level of Evidence: 3 - Retrospective Cohort Study

Type of Article: Research

BLUF: The authors conducted a retrospective multi-center (14 hospitals) study of 436 patients >65 years of age in China from 1/20/20 - 2/19/20 who sustained a total of 453 fractures during the COVID-19 pandemic. They analyzed the characteristics of these fractures (place of fracture occurrence, type of fracture, mechanism of injury, and treatment modality) and found a high prevalence of hip fractures (58.3% - figure 1) with a majority occurring at home (94.5%) due to low

impact falls (89.2%). Authors suggest that these findings indicate an importance of fall prevention measures while patients are confined to their homes during the pandemic.

Abstract:

Purpose: This study aimed to describe the epidemiologic characteristics of fracture in the elderly during the COVID-19.

Methods: This was a retrospective multi-centre [sic] study, which included patients who sustained fractures between 20 January and 19 February 2020. The collected data included patients' demographics (age and gender), injury-related (injury type, fracture location, injury mechanism, places where fracture occurred), and treatment modality. SPSS 23.0 was used to describe the data and perform some analysis.

Results: A total of 436 patients with 453 fractures were included; there were 153 males and 283 females, with an average age of 76.2 years (standard deviation, SD, 7.7 years; 65 to 105). For either males or females, 70-74 years was the most commonly involved age group. A total of 317 (72.7%) patients had their fractures occurring at home. Among 453 fractures, there were 264 (58.3%) hip fractures, accounting for 58.3%. Fall from standing height was the most common cause of fracture, making a proportion of 89.4% (405/453). Most fractures (95.8%, 434/453) were treated surgically, and 4.2% (19/453) were treated by plaster fixation or traction. Open reduction and internal fixation (ORIF) was the most used surgical method, taking a proportion of 49.2% (223/453).

Conclusion: These findings highlighted the importance of primary prevention (home prevention) measures and could be used for references for individuals, health care providers, or health administrative department [sic] during the global pandemic of COVID-19.

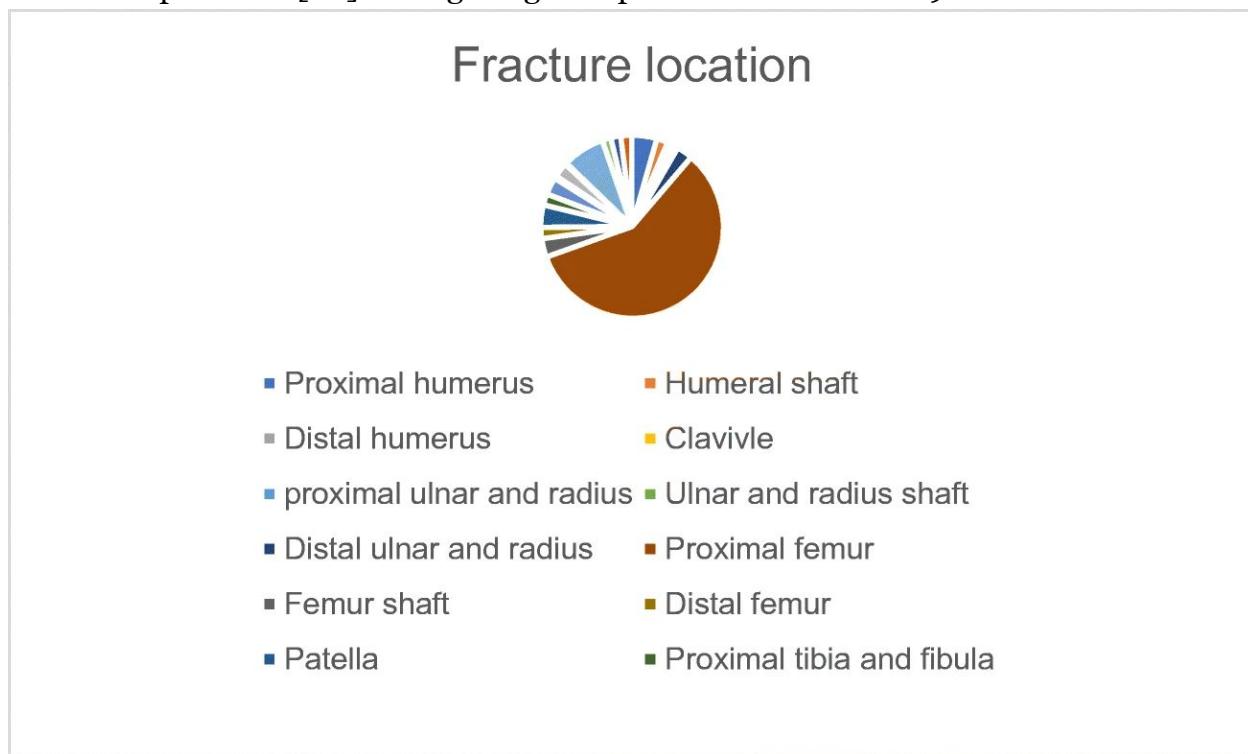


Figure 1: The distribution of fracture locations

Understanding the Pathology

Correlation between Heart fatty acid binding protein and severe COVID-19: A case-control study.

Yin L, Mou H, Shao J, Zhu Y, Pang X, Yang J, Zhang J, Shi W, Yu S, Wang H.

PLoS One.

2020 Apr 29; PMID: 32348339

Level of Evidence: 4 - Case Series

Type of Article: Research

BLUF: A preliminary retrospective study of 46 patients positively correlates heart-fatty acid bind protein (HFABP) with severity of COVID-19 such that elevated HFABP levels also cause rapid development with COVID-19 into severe COVID-19. Lower levels of HFABP may also be seen as a protective factor.

Abstract:

Background: Heart-fatty acid binding protein (HFABP) has been recognized as a highly heart-specific marker. However, it is currently unknown that its HFABP is also closely related to the severity of COVID-19.

Methods: We retrospectively screened 46 patients who met our inclusion criteria within 4 weeks. They were tested for HFABP after the diagnosis of COVID-19, and monitored for HFABP during their hospital stay. We tracked the patients during their hospital stay to determine if they had severe COVID-19 or mild-to-severe transition features. We calculated the chi-square test values found for HFABP to predict the correlation between HFABP levels and the severity of the COVID-19.

Results: Of these 46 cases, 16 cases with confirmed COVID-19 were tested for HFABP > 7 ng / mL upon admission; among them, 14 cases were diagnosed with severe COVID-19 within the hospitalization. The Odds ratio of the measured HFABP elevation was 6.81(95% confidence interval [CI] 5.23-8.40), and 3 patients with severe COVID-19 progressed in 5 patients with mild HFABP > 7 ng/mL.

Conclusion: These data indicate that the elevation of HFABP is closely related to the severity of COVID-19 in the patients, and the elevated HFABP may cause rapid development of patients with mild COVID-19 into severe COVID-19. But serum HFABP negative maybe make patients with mild COVID-19 safer, the current data show no effect on the all-cause mortality.

Narcolepsy and COVID-19: sleeping on an opportunity?

Fernandez FX, Flygare J, Grandner MA

J Clin Sleep Med

2020 Apr 29; PMID: 32347205

Level of Evidence: 5 - Mechanism Based Reasoning

Type of Article: Editorial

Summary: Authors discuss the increased incidence of narcolepsy in children and young adults observed after the 2009 H1N1 pandemic and vaccinations, indicating that hypocretin cells responsible for regulating arousal in the wake-sleep circuitry may be targeted by T-cells activated by the pathogenic antigens. This suggests that the current COVID-19 pandemic may provide mechanistic insight into the biological events that trigger the development of narcolepsy in genetically susceptible individuals.

COVID-19 Related Genes in Sputum Cells in Asthma: Relationship to Demographic Features and Corticosteroids.

Peters MC, Sajuthi S, Deford P, Christenson S, Rios CL, Montgomery MT, Woodruff PG, Mauger DT, Erzurum SC, Johansson MW, Denlinger LC, Jarjour NN, Castro M, Hastie AT, Moore W, Ortega VE, Bleeker ER, Wenzel SE, Israel E, Levy BD, Seibold MA, Fahy JV; National Heart, Lung, and Blood Institute Severe Asthma Research Program-3 Investigators.

Am J Respir Crit Care Med.

2020 Apr 29; PMID: 32348692

Level of Evidence: 3 - Retrospective cohort study

Type of Article: Research

BLUF: ACE2 and TMPRSS2 expressions have been shown to mediate SARS-CoV-2 infection of host cells. In this retrospective cohort study involving 300 asthma patients, the authors determined that there was higher expression of ACE2 and TMPRSS2 in males, African Americans, and patients with diabetes mellitus, thus providing a plausible explanation for why these patients are considered higher risk for severe SARS-CoV-2 infections.

Abstract:

Background: Coronavirus disease 2019 (COVID-19) is caused by SARS-coronavirus 2 (SARS-CoV-2). Angiotensin converting enzyme 2 (ACE2) and transmembrane protease serine 2 (TMPRSS2) mediate viral infection of host cells. We reasoned that differences in ACE2 or TMPRSS2 gene expression in sputum cells among asthma patients may identify subgroups at risk for COVID19 morbidity.

Methods: We analyzed gene expression for ACE2 and TMPRSS2, and for intercellular adhesion molecule 1 (ICAM-1)(rhinovirus receptor as a comparator), in sputum cells from 330 participants in the Severe Asthma Research Program-3 and 79 healthy controls.

Results: Gene expression of ACE2 was lower than TMPRSS2, and expression levels of both genes was similar in asthma and health. Among asthma patients, male gender, African Americans race, and history of diabetes mellitus, was associated with higher expression of ACE2 and TMPRSS2. Use of inhaled corticosteroids (ICS) was associated with lower expression of ACE2 and TMPRSS2, but treatment with triamcinolone acetonide (TA) did not decrease expression of either gene. These findings differed from those for ICAM-1, where gene expression was increased in asthma and less consistent differences were observed related to gender, race, and use of ICS.

Conclusion: Higher expression of ACE2 and TMPRSS2 in males, African Americans, and patients with diabetes mellitus provides rationale for monitoring these asthma subgroups for poor COVID19 outcomes. The lower expression of ACE2 and TMPRSS2 with ICS use warrants prospective study of ICS use as a predictor of decreased susceptibility to SARS-CoV-2 infection and decreased COVID19 morbidity.

Respiratory Pathophysiology of Mechanically Ventilated Patients with COVID-19: A Cohort Study.

Ziehr DR, Alladina J, Petri CR, Maley JH, Moskowitz A, Medoff BD, Hibbert KA, Thompson BT, Hardin CC.Ziehr DR, et al.

Am J Respir Crit Care Med.

2020 Apr 29; PMID: 32348678

Level of Evidence: 4 - Cohort Study

Type of Article: Letter

BLUF: Electronic medical records data was extracted for 66 COVID-19 patients from Boston hospitals during March 2020 with acute respiratory distress syndrome managed with mechanical ventilation to conduct statistical analysis. The authors found that that the patients had similar gas

exchange, respiratory system mechanics, and response to ventilation, all of which are intended to add to the limited description of pathophysiological characteristics of respiratory failure in COVID-19.

In silico

A deadly spillover: SARS-CoV-2 outbreak.

Mori M, Capasso C, Carta F, Donald WA, Supuran CT.

Expert Opin Ther Pat.

2020 Apr 29; PMID: 32321324

Level of Evidence: 5- Mechanism based

Type of Article: Commentary

Summary: Referencing David Quammen's, *Spillover: Animal Infections and the Next Human Pandemic*, the author discusses the global effort to understand the genomics and treatments for COVID-19. Homology comparisons reveal proteases that may be targeted by therapies.

Lopinavir/ritonavir, remdesivir, and vaccine development are currently researched treatments.

A Molecular Modeling Approach to Identify Effective Antiviral Phytochemicals Against the Main Protease of SARS-CoV-2

Islam R, Parves R, Paul AS, Uddin N, Rahman MS, Mamun AA, Hossain MN, Ali MA, Halim MA

J Biomol Struct Dyn

2020 Apr 27; PMID: 32340562

Level of Evidence: Level 5- Mechanism based

Type of Article: Research

BLUF: The authors selected 40 antiviral phytochemicals to perform *in silico* docking analysis to the SARS-CoV-2 main protease (Mpro), responsible for viral polyprotein processing. Their final analysis, including pharmacokinetic property prediction, yielded five hits, including baicalin and cyanidin 3-glucoside, which are non-carcinogenic and might interact with important ABC transporters for cell entry.

Abstract:

The main protease of SARS-CoV-2 is one of the important targets to design and develop antiviral drugs. In this study, we have selected 40 antiviral phytochemicals to find out the best candidates which can act as potent inhibitors against the main protease. Molecular docking is performed using AutoDock Vina and GOLD suite to determine the binding affinities and interactions between the phytochemicals and the main protease. The selected candidates strongly interact with the key Cys145 and His41 residues. To validate the docking interactions, 100 ns molecular dynamics (MD) simulations on the five top-ranked inhibitors including hypericin, cyanidin 3-glucoside, baicalin, glabridin, and α-ketoamide-11r were performed. Principal component analysis (PCA) of potential energy components of MD discloses that baicalin, cyanidin 3-glucoside, and α-ketoamide-11r have structural similarity with the apo-form of the main protease. These findings are also strongly supported by root-mean-square deviation (RMSD), root-mean-square fluctuation (RMSF), radius of gyration (Rg), and solvent accessible surface area (SASA) investigations. PCA is also used to find out the quantitative structure-activity relationship (QSAR) for pattern recognition of the best ligands. Multiple linear regression (MLR) of QSAR reveals the R² value of 0.842 for the training set and 0.753 for the test set. Our proposed MLR model can predict the favorable binding energy compared with the binding energy detected from molecular docking. ADMET analysis demonstrates that these candidates appear to be safer inhibitors. Our comprehensive computational and statistical analysis show that these selected phytochemicals can be used as potential inhibitors against the SARS-CoV-2.

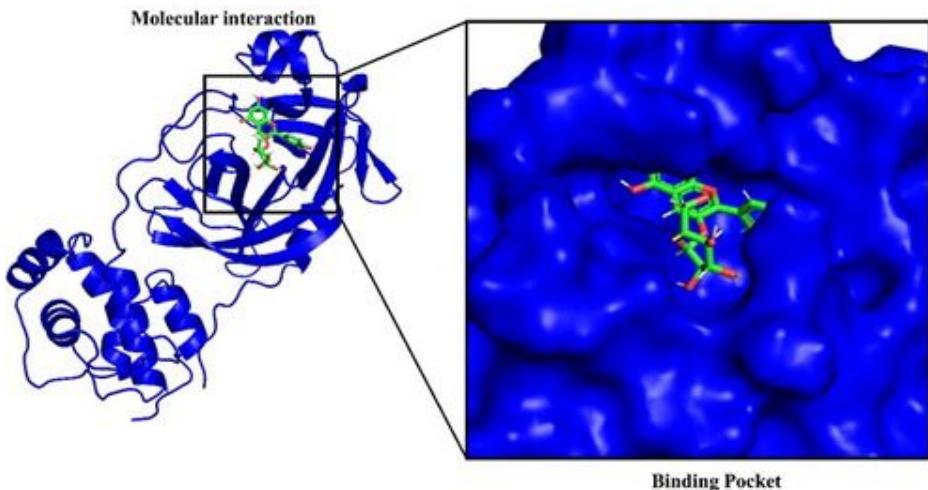


Figure 1. Sample dock of a phytochemical into a putative binding pocket of the SARS-CoV-2 main protease (Mpro).

Natural Products May Interfere With SARS-CoV-2 Attachment to the Host Cell

Elfiky AA

J Biomol Struct Dyn

2020 Apr 27; PMID: 32340551

Level of Evidence: Level 5- Mechanism based

Type of Article: Research

BLUF: The author models binding of a group of phytoestrogens *in silico* to heat shock protein A5 (HSPA5), a protein upregulated in stress and infection that might facilitate SARS-CoV-2 entry. A number of high-affinity compounds complex with HSPA5 and prevent binding of HSPA5 to the SARS-CoV-2 spike protein. Phytoestrogens could potentially be helpful for treating COVID-19, especially for patients with high cellular stress (elders, cancer patients).

Abstract:

Objectives: SARS-CoV-2 has been emerged [sic] in December 2019 in China, causing deadly (5% mortality) pandemic pneumonia, termed COVID-19. More than one host-cell receptor is reported to be recognized by the viral spike protein, among them is the cell-surface Heat Shock Protein A5 (HSPA5), also termed GRP78 or BiP. Upon viral infection, HSPA5 is upregulated, then translocating to the cell membrane where it is subjected to be recognized by the SARS-CoV-2 spike. In this study, some natural product compounds are tested against the HSPA5 substrate-binding domain β (SBD β), which reported to be the recognition site for the SARS-CoV-2 spike.

Methods: Molecular docking and molecular dynamics simulations are used to test some natural compounds binding to HSPA5 SBD β .
Results: The results show high to a moderate binding affinity for the phytoestrogens (Diadiazin, Genistein, Formontein, and Biochanin A), chlorogenic acid, linolenic acid, palmitic acid, caffeic acid, caffeic acid phenethyl ester, hydroxytyrosol, cis-p-Coumaric acid, cinnamaldehyde, thymoquinone, and some physiological hormones such as estrogens, progesterone, testosterone, and cholesterol to the HSPA5 SBD β . Based on its binding affinities, the phytoestrogens and estrogens are the best in binding HSPA5, hence may interfere with SARS-CoV-2 attachment to the stressed cells.

Conclusion: These compounds can be successful as anti-COVID-19 agents for people with a high risk of cell stress like elders, cancer patients, and front-line medical staff.

Decoding the evolution and transmissions of the novel pneumonia coronavirus (SARS-CoV-2 / HCoV-19) using whole genomic data.

Yu WB, Tang GD, Zhang L, Corlett RT.

Zool Res.

2020 Apr 29; PMID: 32351056

Level of Evidence: In silico modeling

Type of Article: Research

BLUF: Genomic analysis was performed on 93 complete SARS-CoV-2 genomes. Many substitutions were noted, but there were no signs of genetic recombination. Phylogenetic networks show that the H1 haplotype (Huanan Market) was likely imported from elsewhere; another finding was that the H13 haplotype (Shenzhen family) and H38 haplotype (first US COVID patient) were ancestral haplotypes when a bat coronavirus genome was applied as the outgroup.

Abstract:

The outbreak of COVID-19 started in mid-December 2019 in Wuhan, China. Up to 29 February 2020, SARS-CoV-2 (HCoV-19 / 2019-nCoV) had infected more than 85 000 people in the world. In this study, we used 93 complete genomes of SARS-CoV-2 from the GISAID EpiFlu TM database to investigate the evolution and human-to-human transmissions of SARS-CoV-2 in the first two months of the outbreak. We constructed haplotypes of the SARS-CoV-2 genomes, performed phylogenomic analyses and estimated the potential population size changes of the virus. The date of population expansion was calculated based on the expansion parameter tau (τ) using the formula $t = \tau/2 u$. A total of 120 substitution sites with 119 codons, including 79 non-synonymous and 40 synonymous substitutions, were found in eight coding-regions in the SARS-CoV-2 genomes. Forty non-synonymous substitutions are potentially associated with virus adaptation. No combinations were detected. The 58 haplotypes (31 found in samples from China and 31 from outside China) were identified in 93 viral genomes under study and could be classified into five groups. By applying the reported bat coronavirus genome (bat-RaTG13-CoV) as the outgroup, we found that haplotypes H13 and H38 might be considered as ancestral haplotypes, and later H1 was derived from the intermediate haplotype H3. The population size of the SARS-CoV-2 was estimated to have undergone a recent expansion on 06 January 2020, and an early expansion on 08 December 2019. Furthermore, phyloepidemiologic approaches have recovered specific directions of human-to-human transmissions and the potential sources for international infected cases.

Stilbene-based Natural Compounds as Promising Drug Candidates against COVID-19.

Wahedi HM, Ahmad S, Abbasi SW

J Biomol Struct Dyn

2020 Apr 29; PMID: 32345140

Level of Evidence: In silico modeling

Type of Article: Research

BLUF: Using software to analyze the 3D interactions between several stilbene-based compounds and SARS-CoV-2, researchers demonstrate that Resveratrol may be an effective inhibitor of the SARS-CoV-2 S-protein interaction with ACE-2, potentially inhibiting viral entry into host cells.

Abstract

The pandemic coronavirus disease (COVID-19) caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) presents a great threat to public health. Currently, no potent medicine is available to treat COVID-19. Quest for new drugs especially from natural plant sources is an area of

immense potential. The current study aimed to repurpose stilbenoid analogs, reported for some other biological activities, against SARS-CoV-2 spike protein and human ACE2 receptor complex for their affinity and stability using molecular dynamics simulation and binding free energy analysis based on molecular docking. Four compounds in total were probed for their binding affinity using molecular docking. All of the compounds showed good affinity (> -7 kcal/mol). However, fifty nanoseconds molecular dynamic simulation in aqueous solution revealed highly stable bound conformation of resveratrol to the viral protein: ACE2 receptor complex. Net free energy of binding using MM-PBSA also affirmed the stability of the resveratrol-protein complex. Based on the results, we report that stilbene based compounds in general and resveratrol, in particular, can be promising anti-COVID-19 drug candidates acting through disruption of the spike protein. Our findings in this study are promising and call for further *in vitro* and *in vivo* testing of stilbenoids [sic], especially resveratrol against the COVID-19.

In vitro

COVID-19 and Nicotine as a Mediator of ACE-2.

Janice M Leung , Chen Xi Yang, Don D Sin

Eur Respir J

2020 Apr 29, PMID: 32350104

Level of Evidence: 5 - Mechanism Based Reasoning

Type of Article: Correspondence

Summary: Sequencing analysis of epithelial cell brushings from the bronchoscopy of a cohort of 42 subjects demonstrated that airway epithelial cell expression of a nicotinic receptor ($\alpha 7$ -nAChR) was significantly correlated with the expression of ACE2. Furthermore, this receptor was weakly positively correlated with BMI, which may explain why obese individuals have made up a considerable proportion of COVID-19 cases.

COVID-19 and Smoking. Is Nicotine the Hidden Link?

Russo P, Bonassi S, Giacconi R, Malavolta M, Tomino C, Maggi F.

Eur Respir J

2020 Apr 27; PMID: 32341101

Level of Evidence: 5 - Mechanism-Based Reasoning

Type of Article: Correspondence

BLUF: Smoking might promote cellular uptake mechanisms of SARS-CoV-2 through $\alpha 7$ -nAChR signaling. The authors detail experiments they performed with human bronchial epithelial cells (HBEpC) that support the hypothesis that nicotine induction of angiotensinogen-converting enzyme (ACE)2 is mediated by $\alpha 7$ -nAChR, a nicotinic receptor. This induction of ACE2 by nicotine may negatively impact COVID-19 clinical outcomes.

Summary: Previous studies have shown that smoking might be associated with a negative progression of COVID-19 and adverse outcomes, however, there is still a need for more evidence. The authors propose a mechanistic explanation for this finding. Nicotine influences the renin-angiotensin system (RAS) by up-regulating the angiotensinogen-converting enzyme (ACE)/angiotensin (ANG)-II/ANG II type 1 receptor axis and down-regulating the compensatory ACE2/ANG-(1-7)/Mas receptor axis. Nicotine increases the expression and/or activity of ACE in the lung. ACE2 serves as a relevant cellular entry receptor for SARS-CoV, the human respiratory Coronavirus NL63, and probably SARS-CoV-2. To explore this proposed mechanism the authors report the results of their experiments utilizing human bronchial epithelial cells (HBEpC). Semi-confluent cells were either treated with: 1.0×10^{-7} M nicotine dissolved in saline in complete medium (the concentration of

nicotine present in the alveolar lining fluids after one cigarette) for one hour, $1.0 \times 10^{-6}M$ of α -bungarotoxin (α -BTX) dissolved in saline, or with continuous nicotine for additional passages with 1 passage every 48 hours for a total of 16 passages. With this the authors showed for the first time that nicotine at $1.0 \times 10^{-7}M$ increased ACE2 in HBEpC. To verify the hypothesis that ACE2 is induced by nicotine through $\alpha 7$ -nAChR, HBEpC at 4th passage in the exponential growth phase were incubated with $\alpha 7$ -nAChR siRNA (0.1 μ g) diluted in 100 μ l of siRNA transfection medium and transfected. Treatment of a clone of the transfected HBEpC that did not express $\alpha 7$ -nAChR proteins with nicotine did not cause expression of $\alpha 7$ -nAChR or induce ACE2. This supports the hypothesis that the ACE2 increase is specifically mediated by $\alpha 7$ -nAChR. Additionally, when the HBEpC were incubated with nicotine and α -bungarotoxin (α -BTX), an $\alpha 7$ nicotine antagonist, no induction of ACE2 was observed. Based on this study, the authors suggest that smoking may promote cellular uptake mechanisms of SARS-CoV-2 through $\alpha 7$ -nAChR signaling. nAChR is present in both neuronal and non-neuronal cells and therefore smoking may impact COVID-19 pathophysiology and clinical outcome in several organ systems, including the brain.

Transmission & Prevention

Developments in Transmission & Prevention

Prolonged SARS-CoV-2 RNA shedding: Not a rare phenomenon.

Li N, Wang X, Lv T, Li N, et al.

J Med Virol.

2020 Apr 29; PMID: 32347980

Level of Evidence: 4- Case Series

Article Type: Letter to the Editor

BLUF: The authors studied the clinical characteristics of 36 patients with confirmed COVID-19 who continued to shed viral RNA for longer than 30 days. Among these patients, the median duration of viral RNA shedding was 53.5 days (IQR 47.75-60.5) with high IgM levels in the 9th week after symptom onset. Furthermore, patients with an early-onset of symptoms had longer durations of viral shedding and more severe illness compared to those with later onset.

Abstract:

A few studies have reported the long shedding of SARS-CoV-2 RNA. However, the duration of RNA shedding in Wuhan is rarely known and the meaning of the prolonged shedding is still under investigation. Almost 10% patients diagnosed of COVID-19 had a RNA shedding longer than 30 days even if the symptom elimination. The IgM was in a high level in the 9th week after symptom onset in these prolonged-RNA-shedding patients. Further study should be conducted to know the infectivity of the virus and the relationship between RNA shedding and antibody expression.

Fig 1 Duration of RNA shedding in the early-onset and late-onset groups

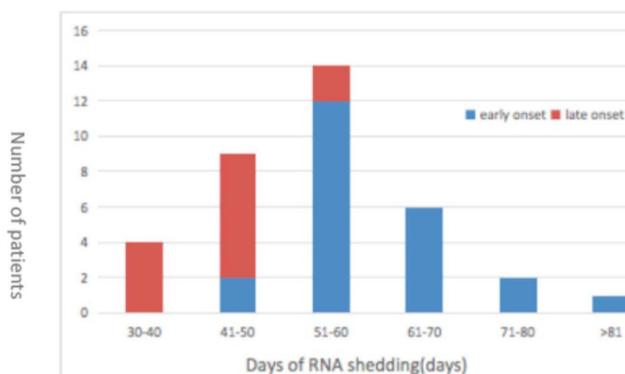
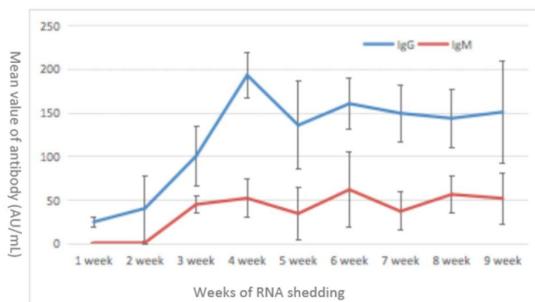


Fig 2 Variation in IgM and IgG levels of SARS-CoV-2 with time in the 36 prolonged-RNA-shedding patients



Prevention in the Community

Response and Role of Palliative Care During the COVID-19 Pandemic: A National Telephone Survey of Hospices in Italy

Costantini, M; Sleeman, KE; Peruselli, C; Higginson, IJ

Palliat Med

2020 Apr 29; PMID: 32348711

Level of Evidence: 4 - Cross-sectional Survey

Type of Article: Research

BLUF: Researchers surveyed a group of hospice centers in Italy with varied prevalence of COVID-19 and highlight the following results:

- Preparedness - hospice centers did have written guidance on COVID-19 but no setting-specific guidance
- Personal protective equipment (PPE) - understanding and practice was varied across hospices
- Holistic hospice care - hospice centers were quick to adapt to the lack of face to face visiting with daily telephone calls or transferring inpatient hospice to home-based care

Abstract:

Background: Palliative care is an important component of health care in pandemics, contributing to symptom control, psychological support, and supporting triage and complex decision making.

Aim: To examine preparedness for, and impact of, the COVID-19 pandemic on hospices in Italy to inform the response in other countries.

Design: Cross-sectional telephone survey, in March 2020.

Setting: Italian hospices, [sic] purposively sampled according to COVID-19 regional prevalence categorised as high (>25), medium (15-25) and low prevalence (<15) COVID-19 cases per 100,000 inhabitants. A brief questionnaire was developed to guide the interviews. Analysis was descriptive.

Results: Seven high, five medium and four low prevalence hospices provided data. Two high prevalence hospices had experienced COVID-19 cases among both patients and staff. All hospices had implemented policy changes, and several had rapidly implemented changes in practice including transfer of staff from inpatient to community settings, change in admission criteria and daily telephone support for families. Concerns included scarcity of personal protective equipment, a lack of hospice-specific guidance on COVID-19, anxiety about needing to care for children and other relatives, and poor integration of palliative care in the acute planning response.

Conclusion: The hospice sector is capable of responding flexibly and rapidly to the COVID-19 pandemic. Governments must urgently recognise the essential contribution of hospice and palliative care to the COVID-19 pandemic and ensure these services are integrated into the health care system response. Availability of personal protective equipment and setting-specific guidance is essential. Hospices may also need to be proactive in connecting with the acute pandemic response.

A cluster of COVID-19 cases in a small Italian town: a successful example of contact tracing and swab collection.

Valent F, Gallo T, Mazzolini E, Pipan C, Sartor A, Merelli M, Bontempo G, Marzinotto S, Curcio F, Tascini C. Valent F, et al.

Clin Microbiol Infect.

2020 Apr 25; PMID: 32344169

Level of Evidence: 5 - Expert Opinion

Type of Article: Letter

BLUF: The article describes a small town public health project in Italy, in which nasal swab testing was performed extensively in symptomatic and asymptomatic patients with exposure risk with extensive contact tracing. These strategies limited confirmed cases of COVID-19 to 18 in a population of 6000. The author concludes that contact tracing, identification and isolation of cases may serve to reduce the spread of COVID-19.

Summarizing excerpt: "We describe the course and management of a cluster of COVID-19 cases in Remanzacco, a 6000-inhabitant town in Udine province of FVG [Friuli Venezia Giulia region, in North Eastern Italy]... This experience shows that prompt contact tracing of confirmed cases and extensive collection of nasal swabs from close, even asymptomatic, contacts of cases, with consequent isolation or quarantine, can be effective in extinguishing the COVID-19 epidemic."

Masks and thermometers: Paramount measures to stop the rapid spread of SARS-CoV-2 in the United States.

Wu E, Qi D, Wu E, et al.

Genes Dis.

2020 Apr 25; PMID: 32341947

Level of Evidence: 5 - Expert Opinion

Type of Article: Commentary

BLUF: This commentary made a case for adding masks and gloves to the United States regulations found in the COVID-19 prevention plan (see image below). They discussed that healthy and infected individuals could reduce transmission with these, as well as a range of modalities, which could include a handheld infrared thermometer that could be a cost effective way of screening, since 98.6% of COVID-19 patients had a fever.

Abstract:

In the United States, there is currently an exponential growth for the COVID-19 cases. The US president's coronavirus guidelines for Americans "30 Days to Slow The Spread" are necessary. To effectively curb the rapid spread of SARS-CoV-2, two more control measures masks and thermometers are strongly suggested to be included in the Guidelines.

Frequent Handwashing Amidst the COVID-19 Outbreak: Prevention of Hand Irritant Contact Dermatitis and Other Considerations

Abtahi-Naeini, Bahareh

Health Sci Rep

2020 Apr 27; PMID: 32346616

Level of Evidence: 5 - Expert Opinion

Type of Article: Clinical Protocol

Summary: Author provides a handwashing protocol in the context of COVID-19, which aims to help mitigate the irritant contact dermatitis that can develop due to frequent handwashing:

- Education on proper handwashing, and the use of emollients
- Use synthetic detergents instead of harsh soaps when hands are visibly soiled
- Use alcohol-based cleanser for hands when not visibly dirty
- Use lukewarm water (45 to 50 degrees celsius)
- Use proper hand-drying techniques
- Use emollients after hand washing or when at home
- Avoid water-based moisturizer
- Use topical anti-inflammatories as prescribed by a specialist

Moving Personal Protective Equipment Into the Community: Face Shields and Containment of COVID-19.

Perencevich EN, Diekema DJ, Edmond MB.

JAMA

2020 Apr 29; PMID: 32347911

Level of Evidence: 5 - Expert opinion

Type of Article: Viewpoint

Summarizing excerpt: Transmission rates consistent with droplet and contact spread imply that “easy-to-use barriers, [such as face masks and shields], to respiratory droplets, along with hand hygiene and avoidance of touching the face, could help prevent community transmission when physical distancing and stay-at-home measures are relaxed.” Although there are no efficacy studies to evaluate face shields on source control, face shields “should be included as part of strategies to safely and significantly reduce transmission in the community setting” since they are “quickly and affordably produced and distributed.”

Universal use of face masks for success against COVID-19: evidence and implications for prevention policies.

Esposito S, Principi N, Leung CC, Migliori GB. Esposito S

Eur Respir J

2020 Apr 29; PMID: 32350103

Level of Evidence: 5 - Literature Review

Type of Article: Correspondence

Summary: With the rise in COVID-19 cases, public health efforts such as social distancing and city lockdowns were implemented with the intention to minimize the spread of the disease. However, these efforts fail to address the cross-transmission through unavoidable person-to-person contact from respiratory droplets and aerosol particles. As a solution, the authors recommend universal use of face masks in public places to create a physical barrier and limit the spread of these droplets and aerosol particles. The benefit from early use of facial masks will decrease the risk for resurgence during relaxation of social distancing measures on reopening.

Prevention in the Hospital

Adapting reusable elastomeric respirators to utilise anaesthesia circuit filters using a 3D-printed adaptor; a potential alternative to address N95 shortages during the COVID-19 pandemic.

Liu DCY, Koo TH, Wong JKK, Wong YH, Fung KSC, Chan Y, Lim HS

Anaesthesia

2020 Apr 29. PMID: 32348561

Level of Evidence: 4 - Case series

Type of Article: Letter

BLUF: The authors modified a National Institute for Occupational Safety and Health (NIOSH)-approved elastomeric respirator not intended for medical use to function as an N95 respirator and conducted a small feasibility study. There were some complaints of discomfort, but respirators such as these could be a feasible alternative if N95s and approved respirators become even more difficult to source.

Abstract:

The COVID-19 pandemic has increased demand for disposable N95 respirators. Re-usable elastomeric respirators may provide a suitable alternative. Proprietary elastomeric respirator filters may become depleted as demand increases. An alternative may be the virus/bacterial filters used in anaesthesia circuits, if they can be adequately fitted onto the elastomeric respirators. In addition, many re-usable elastomeric respirators do not filter exhaled breaths. If used for sterile procedures, this would also require modification. We designed a 3D-printed adaptor that permits elastomeric respirators to interface with anaesthesia circuit filters and created a simple modification to divert exhaled breaths through the filter. We conducted a feasibility study evaluating the performance of our modified elastomeric respirators. A convenience sample of eight volunteers was recruited.

Quantitative fit testing, respiratory rate and end-tidal carbon dioxide were recorded during fit testing exercises and after one hour of wear. All eight volunteers obtained excellent quantitative fit testing throughout the trial. The mean (SD) end-tidal carbon dioxide was 4.5 (0.5) kPa and 4.6 (0.4) kPa at baseline and after one hour of wear ($p = 0.148$). The mean (SD) respiratory rate was 16 (4) breaths.min⁻¹ and 17 (3) breaths.min⁻¹ at baseline and after one hour of wear ($p = 0.435$). Four of eight subjects self-reported discomfort; two reported facial pressure, one reported exhalation resistance and one reported transient dizziness on exertion. Reusable elastomeric respirators to utilise anaesthesia circuit filters through a 3D-printed adaptor may be a potential alternative to disposable N95 respirators during the COVID-19 pandemic.

Bronchoscopy, Laryngoscopy and Esophagoscopy during the COVID-19 Pandemic.

Reddy PD, Nguyen SA, Deschler D.

Head Neck.

2020 Apr 29, PMID: 32348600

Level of Evidence: 5 - Literature Review

Article Type: Research

BLUF: The authors conducted a literature review for guidelines on the use of bronchoscopy, laryngoscopy, and esophagoscopy and composed a detailed list of recommendations. The main recommendations are: the use of bronchoscopy, laryngoscopy, esophagoscopy should be used last for COVID-19 testing, proper use of PPE, create a risk categorization for patients, and when possible create surgical site tenting.

Abstract:

Background: The United States now has the highest death toll due to COVID-19. Many otolaryngology procedures, including laryngoscopy, bronchoscopy, and esophagoscopy, place otolaryngologists at increased risk of coronavirus transmission due to close contact with respiratory droplets and aerosolization from the procedure. The aim of this study is to provide an overview of guidelines on how to perform these procedures during the coronavirus pandemic.

Methods: Literature review was performed. Articles citing laryngoscopy, bronchoscopy, esophagoscopy use with regard to COVID-19 were included.

Results: Laryngoscopy, bronchoscopy, and esophagoscopy are all used in both emergent and elective situations. Understanding the risk stratification of cases and the varied necessity of personal protective equipment is important in protecting patients and health care workers.

Conclusions: Summary guidelines based on the literature available at this time are presented in order to decrease transmission of the virus and protect those involved.

Maximising application of the Aerosol Box in protecting healthcare workers during the COVID-19 pandemic.

Malik JS, Jenner C, Ward PA.

Anaesthesia

2020 Apr 29; PMID: 32348556

Level of Evidence: 5 - Expert Opinion

Type of Article: Letter

Summary: This article presents modifications made to the Aerosol Box, a device originally developed to minimize exposure to aerosols during tracheal intubation. The modifications enable use of the device with ramped positioning, space to maneuver additional airway equipment (e.g., gum elastic bougies), and improved ergonomics for operators. The authors note that this device is intended as an adjunct to appropriate personal protective equipment (PPE), not a replacement.

Abstract: We report the rapid evolution of the Aerosol Box, originally designed by Dr Hsien Yung Lai, Mennonite Christian Hospital, Taiwan. The Aerosol Box was intended to protect healthcare workers performing aerosol generating procedures (AGPs), specifically tracheal intubation, by providing a physical barrier to droplet and/or aerosol exposure. An increased infection rate has been reported in healthcare workers internationally, particularly when the level of personal protective equipment (PPE) has been inadequate or when the supply of PPE has been depleted. The Aerosol Box can be made of transparent acrylic or polycarbonate sheeting, and is re-usable after careful decontamination with an appropriate cleansing agent. The original model was based on a simple cuboid design, with two access ports for arms.

Using effective hand hygiene practice to prevent and control infection.

Hillier MD.

Nurs Stand

2020 Apr 29, PMID: 32337862

Level of Evidence: 5 - Expert opinion

Type of Article: Guidelines

BLUF: The authors recommend for all healthcare staff to follow local policy and best practice guidelines for hand hygiene and describe the differences between alcohol-based gels and soap in addition to the evidence behind duration of hand washing.

Abstract:

Decontamination using hand hygiene remains one of the most important and effective methods for reducing healthcare-associated infections and cross-infection between patients. In 1860, Florence Nightingale wrote that nurses should wash their hands frequently throughout the day, demonstrating an early awareness of the effectiveness of this simple procedure. The COVID-19 pandemic has demonstrated that effectively applied hand hygiene is a vital intervention that can be used to prevent the spread of disease. This article details the correct procedure required for effective hand hygiene and emphasises the need for nurses to keep up to date with evidence-based guidelines. The article also outlines the differences between hand decontamination using alcohol-based hand gels and soap and water, and the complex factors that can interfere with effective hand hygiene compliance.

Rapid ramp-up of powered air-purifying respirator (PAPR) training for infection prevention and control during the COVID-19 pandemic.

Chen Q, Lim B, Ong S, Wong WY, Kong YC

Br J Anaesth

2020 Apr 15; PMID: 32340733
Level of Evidence: 5- Expert opinion
Type of Article: Letter

Summary: A detailed description including pictures and thought processes of the “just-in-time” infection control training used in the Department of Anaesthesiology, Intensive Care, and Pain Medicine of Tan Tock Seng Hospital in Singapore. With this training in place they had zero documented cases of patient to doctor transmission of COVID-19 between January-March. Highlights of their process include prioritization of staff working without supervision, use of simulated scenarios, and a focus on teaching principles over prescriptive procedures.

[Universal Masking in Hospitals in the COVID-19 era: Is it Time to consider Shielding?](#)

Advani S, Smith B, Lewis S, Anderson DJ, Sexton DJ.
Infect Control Hosp Epidemiol.

2020 Apr 29; PMID: 32345392
Level of Evidence: 5 - Expert Opinion
Type of Article: Commentary

BLUF: While masks are useful for preventing transmission of COVID-19, the benefits of implementing a universal mask policy is uncertain. Limited supply is one main drawback of a universal mask policy. Face shields are an alternative to surgical masks. Masks should be an adjunct, and not replace other preventative measures.

Abstract: With concerns for presymptomatic transmission of COVID-19 and increasing burden of contact tracing and employee furloughs, several hospitals have supplemented pre-existing infection prevention measures with universal masking of all personnel in hospitals. Other hospitals are currently faced with the dilemma of whether or not to proceed with universal masking in a time of critical mask shortages. This viewpoint summarizes the rationale behind a universal masking policy in healthcare settings, important considerations before implementing such a policy, the challenges with masking and discusses proposed solutions such as universal face shields.

[Risks of viral contamination in healthcare professionals during laparoscopy in the Covid-19 pandemic.](#)

Veziant J, Bourdel N, Slim K
J Visc Surg
2020 Apr 17; PMID: 32340900
Level of Evidence: 5 - Expert Opinion
Type of Article: Review

BLUF: Authors examine the risk of laparoscopy in the setting of the COVID-19 pandemic including:

- The increased risk of contamination during laparoscopy compared to laparotomy due to the higher concentration of aerosolized particles.
- The risk of contamination during laparoscopy is highest during the insertion of trocars, extraction of the excised tissue, and removal of trocars (Table 1).
- The need for measures to protect healthcare professions (HCPs) including personal protective equipment (PPE), laparoscopy equipment, surgical technique, and operating room organization.
- Organizational measures to raise awareness among HCPs and training to implement prevention measures (Table 2).

Abstract:

The Covid-19 pandemic has markedly changed our practices. This article analyses the risks of contamination among healthcare professionals (HCPs) during laparoscopic surgery on patients with Covid-19. Harmful effects of aerosols from a pneumoperitoneum, with the virus present, have not yet been quantified. Measures for the protection of HCPs are an extrapolation of those taken during other epidemics. They must still be mandatory to minimise the risk of viral contamination. Protection measures include personal protection equipment for HCPs, adaptation of surgical technique (method for obtaining pneumoperitoneum, filters, preferred intracorporeal anastomosis, precautions during the exsufflation of the pneumoperitoneum), and organisation of the operating room.

Table 1 Technical measures for preventing contamination of HCPs by SARS-CoV-2.

- Prefer the "closed" technique for obtaining pneumoperitoneum
- Reduce the pneumoperitoneum pressure as much as possible (without compromising safety)
- Reduce the power of electrosurgery and ultrasonic dissection
- Systematically use laparoscopic smoke aspiration systems
- Systematically use particle filters
- Prefer intracorporeal anastomosis
- Extract excised tissue after complete emptying of the pneumoperitoneum
- Fully aspirate the pneumoperitoneum before removing the last trocar

Table 2 Organisational measures for preventing contamination of HCPs by SARS-CoV-2.

- Train HCPs in protection measures
- Set up separate circuits for patients with Covid-19 or suspected of having Covid-19 and for certainly non-Covid-19 patients
- Have as few HCPs as possible in operating rooms
- Avoid movement or changing of HCPs during laparoscopy
- Ventilate the operating room
- Manage waste appropriately during and after laparoscopy
- Encourage the surgical team to leave the operating room during the intubation and extubation phases
- Take general hygiene measures (hand-washing, cleaning of furniture and instruments, etc.)

Management

Acute care

Emergency Medicine

The role of natriuretic peptide estimation in severe COVID-19.

Mahajan K, Negi P.

Monaldi Arch Chest Dis.

2020 Apr 27; PMID: 32340429

Level of Evidence: 5 - Review

Type of Article: Review

Summary: This review underlines how to differentiate a respiratory versus cardiac cause of respiratory distress in patients with severe COVID-19. Essentially, the authors believe that this can be done by the estimation of natriuretic peptides [BNP (B-type natriuretic peptide) and NT-pro BNP (N-terminal prohormone BNP)] which can help guide therapy.

Diagnostic Radiology

Ultrasound on the Frontlines of COVID-19: Report from an International Webinar.

Liu RB, Tayal VS, Panebianco NL, Tung-Chen Y, Nagdev A, Shah S, Pivetta E, Henwood PC, Nelson MJ, Moore CL, Liu RB, et al.

Acad Emerg Med.

2020 Apr 29; PMID: 32348585

Level of Evidence: 5 - Expert Opinion

Type of Article: Commentary

BLUF: This commentary collected expert knowledge on the resource utilization and infectious risk of the current imaging approaches, including computed tomography (CT), chest radiography (CXR), and ultrasonography.

- CT is very sensitive for COVID-19, but airborne transmission/ventilation is concerning and decontamination could take hours, thus, it is not used as a first line diagnostic.
- CXR has not been evaluated enough for sensitivity, specificity and diagnostics, but its portability makes it beneficial despite the infectious risk, but innovative ideas are being discussed to deal with this.
- Ultrasonography has shown promise, such as that it outperformed CXR in assessing pathologies, and was agreeable to CT. Furthermore, ultrasonography shows high sensitivity and specificity with respiratory conditions that may prove similarly useful to COVID-19, and it can detect acute illness before hypoxia presents.

Abstract:

The COVID-19 pandemic has spread to 185 countries with over 2.1 million confirmed cases and 145,000 deaths, as per the Johns Hopkins University COVID-19 dashboard provided at <https://coronavirus.jhu.edu/map.html>. Imaging modalities such as chest radiography, thoracic and cardiovascular ultrasound, and computed tomography have roles in the diagnosis, prognosis, monitoring, and therapy of COVID-19. However, the potential benefits of imaging need to be balanced against resource utilization and infectious risk.

Use of CT and artificial intelligence in suspected or COVID-19 positive patients: statement of the Italian Society of Medical and Interventional Radiology.

Neri E, Miele V, Coppola F, Grassi R.

Radiol Med.

2020 Apr 29; PMID: 32350794

Level of Evidence: 5 - Expert Opinion

Type of Article: Research

BLUF: The Italian Society of Medical and Interventional Radiology released the following recommendations for the radiological management of COVID-19:

- Chest X-ray should be used for first-line imaging as part of initial assessment in undifferentiated patient
- CT should be used as an additional tool to show typical features of COVID-19 pneumonia, but not as a screening tool
- Lung ultrasound can be used to monitor effectiveness of prone-supine maneuvers
- The use of artificial intelligence is helpful as a predictive or prognostic decision support system but should not be used in screening or first-line testing to diagnose COVID-19

Abstract: The COVID-19 pandemic started in Italy in February 2020 with an exponential growth that has exceeded the number of cases reported in China. Italian radiology departments found themselves at the forefront in the management of suspected and positive COVID cases, both in diagnosis, in estimating the severity of the disease and in follow-up. In this context SIRM recommends chest X-ray as first-line imaging tool, CT as additional tool that shows typical features of COVID pneumonia, and ultrasound of the lungs as monitoring tool. SIRM recommends, as high priority, to ensure appropriate sanitation procedures on the scan equipment after detecting any suspected or positive COVID-19 patients. In this emergency situation, several expectations have been raised by the scientific community about the role that artificial intelligence can have in improving the diagnosis and treatment of coronavirus infection, and SIRM wishes to deliver clear statements to the radiological community, on the usefulness of artificial intelligence as a radiological decision support system in COVID-19 positive patients. (1) SIRM supports the research on the use of artificial intelligence as a predictive and prognostic decision support system, especially in hospitalized patients and those admitted to intensive care, and welcomes single center or multicenter studies for a clinical validation of the test. (2) SIRM does not support the use of CT with artificial intelligence for screening or as first-line test to diagnose COVID-19. (3) Chest CT with artificial intelligence cannot replace molecular diagnosis tests with nose-pharyngeal swab (rRT-PCR) in suspected COVID-19 patients.

Critical Care

Pulmonary Embolism and Increased Levels of d-Dimer in Patients with Coronavirus Disease.

Griffin DO, Jensen A, Khan M, Chin J, Chin K, Saad J, Parnell R, Awwad C, Patel D, Griffin DO, et al. Emerg Infect Dis.

2020 Apr 29; PMID: 32348233

Level of Evidence: 4 - Case Series

Type of Article: Research

BLUF: This case series discusses pulmonary embolism arising in three COVID-19 patients who were given interleukin-6 and intravenous steroids. The development of the emboli was not prevented by standard deep vein thrombosis prophylaxis. These cases showed cytokine storm led disseminated

intravascular coagulation and thromboembolic complications, and the authors support that anticoagulation may be associated with a decrease in COVID-19 mortality rates.

Abstract:

We report 3 patients with coronavirus disease who had a decline in respiratory status during their hospital course that responded well to intravenous steroids and interleukin-6 receptor antagonist therapy. These patients later showed development of persistent hypoxia with increased levels of d-dimer levels and were given a diagnosis of pulmonary embolisms.

It's not over until it's over: the chameleonic behavior of COVID-19 over a six-day period.

Fichera G, Stramare R, De Conti G, Motta R, Giraudo

Radiol Med.

2020 Apr 29; PMID: 32350796

Level of Evidence: 4- Case Series

Type of Article: Research

BLUF: Radiologists from a tertiary care hospital in Italy found, in preliminary data from 18 patients with severe COVID-19 disease requiring intubation, that despite 55% showing prompt improvement within the first 24 hours following intubation, 33% of these patients subsequently experienced a rapid worsening of clinical conditions within the next six days. Results of this study imply that serial chest radiographs may have a role in monitoring clinical progression of disease in ICU patients requiring mechanical ventilation, but should be interpreted with caution, especially in the first 24 hours.

Abstract:

The current global outbreak of COVID-19 represents a major challenge in terms of epidemiology, contagiousness, treatment, as well as clinical and radiological behavior of this disease. Radiological imaging plays a key role in the diagnostic process and during the monitoring of the clinical conditions especially of patients with severe symptoms. According to the preliminary data collected in our tertiary center, we have documented a peculiar behavior in patients requiring endotracheal intubation who underwent seriate chest X-rays. In fact, the radiological pattern of COVID-19 patients may worsen despite a prompt amelioration after the onset of mechanical ventilation. Thus, according to our initial evidence, we recommend to perform seriate chest X-rays in the days following the onset of mechanical ventilation even if the immediate monitoring suggests an improvement. Studies on a larger scale are necessary to fully assess the findings at chest radiographs of critical, mechanically ventilated patients and their correlation with the long-term outcome.

COVID-19: treating and managing severe cases.

Ai J, Li Y, Zhou X, Zhang W. Ai J, et al

Cell Research

2020 Apr 29; PMID: 32350393

Level of Evidence: 5- Expert Opinion

Type of Article: Review / Guidelines

BLUF: Infectious disease experts affiliated with the Huashan Hospital in Shanghai critically evaluate current evidence for management of severe COVID-19 disease, specifically regarding Hydroxychlorquine/Azithromycin, Remdesivir, and glucocorticoids. They ultimately conclude that a lack of sufficient evidence exists and larger, randomized, and adequately controlled clinical trials are needed.

Summary: “In this highlight, we illustrate current strategies for the management of severe COVID-19 patients” and the following conclusions:

- Hydroxychloroquine/Azithromycin: Trials lack control, power, and peer review.
- Remdesivir: May be efficacious, but the compassionate-use RCT is limited by single-arm design, short follow-up time, and failure to collect quantitative viral load data.
- Methylprednisolone: A short course of low-moderate dose steroids may be considered for patients in “early stages of excessive inflammatory reactions” and at “high risk of disease progression”. However, steroids may reduce viral clearance and likely will not benefit patients who have already produced a “cytokine storm”.

Medical subspecialties

Inhaled corticosteroids and COVID-19: a systematic review and clinical perspective.

Halpin DMG, Singh D, Hadfield RM.

Eur Respir J.

2020 Apr 27, PMID: 32341100

Level of Evidence: 1 – Systematic review

Type of Article: Systematic review

BLUF: There is no evidence as to whether pre-morbid use or continued use of inhaled corticosteroids (ICS) is a factor for adverse or beneficial outcomes in acute respiratory infections due to COVID-19.

There is no evidence to support withdrawal of ICS, and doing so could be harmful. Patients with asthma and COPD who are stable while using ICS should continue treatment.

Abstract: The current COVID-19 pandemic, caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection, raises important questions as to whether pre-morbid use or continued administration of inhaled corticosteroids (ICS) affects the outcomes of acute respiratory infections due to coronavirus. Many physicians are concerned about whether individuals positive for SARS-CoV-2 and taking ICS should continue them, or stop them, given that ICS are often regarded as immunosuppressive. A number of key questions arise: are people with asthma or COPD at increased risk of developing COVID-19; do ICS modify this risk, either increasing or decreasing it; and do ICS influence the clinical course of COVID-19 (fig. 1). Whether ICS modify the risk of developing COVID-19 or the clinical course of COVID-19 in people who do not have lung disease should also be considered (fig. 1).

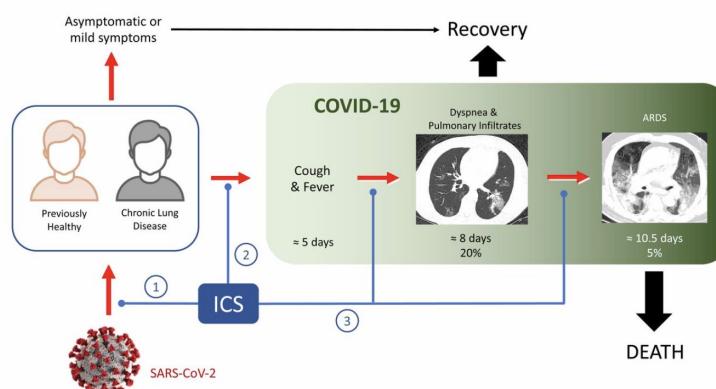


FIGURE 1

Potential steps in the development and evolution of SARS-CoV-2 infection that may be affected beneficially or adversely by inhaled corticosteroids (ICS):
1: infection with SARS-CoV-2; 2: development of COVID-19 disease; 3: progression of COVID-19.

Effects Of ARBs And ACEIs On Virus Infection, Inflammatory Status And Clinical Outcomes In COVID-19 Patients With Hypertension: A Single Center Retrospective Study.

Yang G, Tan Z, Zhou L, Yang M, Peng L, Liu J, Cai J, Yang R, Han J, Huang Y, He S.

Hypertension

2020 Apr 29; PMID: 32348166

Level of Evidence: 4 - Case-control

Type of Article: Research

BLUF: This retrospective case-control study designed to assess the effects of angiotensin II receptor blockers and angiotensin-converting enzyme inhibitors (ARBs/ACEIs) on SARS-CoV-2 infection evaluated the outcomes of 126 COVID-19 patients with preexisting hypertension (n=43 in the ARBs/ACEIs subgroup) and 125 age and sex-matched COVID-19 patients without hypertension at Hubei Provincial Hospital of Traditional Chinese Medicine (HPHTCM) in Wuhan from Jan 5 to Feb 22, 2020. The authors found that:

- The non-hypertension group had fewer critical illnesses (14[11.2%]) and fewer deaths (8[6.4%])
- Patients on ARBs/ACEIs had a slightly lower proportion of critical patients ($p=0.061$) and lower death rate ($p=0.283$) than those on non-ARB/ACIs hypertensive medications, but this was not statistically significant
- The ARBs/ACEIs group had significantly lower concentrations of C-reactive protein (CRP, $p=0.049$) and procalcitonin ($p=0.008$) than those on other hypertensive medications

Abstract:

With the capability of inducing elevated expression of ACE2, the cellular receptor for SARS-CoV-2, angiotensin II receptor blockers or angiotensin-converting enzyme inhibitors (ARBs/ACEIs) treatment may have a controversial role in both facilitating virus infection and reducing pathogenic inflammation. We aimed to evaluate the effects of ARBs/ACEIs on COVID-19 in a retrospective, single-center study. 126 COVID-19 patients with preexisting hypertension at Hubei Provincial Hospital of Traditional Chinese Medicine (HPHTCM) in Wuhan from January 5 to February 22, 2020 were retrospectively allocated to ARBs/ACEIs group (n=43) and non-ARBs/ACEIs group (n=83) according to their antihypertensive medication. 125 age- and sex-matched COVID-19 patients without hypertension were randomly selected as non-hypertension controls. In addition, the medication history of 1942 hypertension patients that were admitted to HPHTCM from November 1 to December 31, 2019 before COVID-19 outbreak were also reviewed for external comparison. Epidemiological, demographic, clinical and laboratory data were collected, analyzed and compared between these groups. The frequency of ARBs/ACEIs usage in hypertension patients with or without COVID-19 were comparable. Among COVID-19 patients with hypertension, those received either ARBs/ACEIs or non-ARBs/ACEIs had comparable blood pressure. However, ARBs/ACEIs [sic] group had significantly lower concentrations of CRP ($p=0.049$) and procalcitonin (PCT, $p=0.008$). Furthermore, a lower proportion of critical patients (9.3% vs 22.9%; $p=0.061$), and a lower death rate (4.7% vs 13.3%; $p=0.216$) were observed in ARBs/ACEIs group than non-ARBs/ACEIs group, although these differences failed to reach statistical significance. Our findings thus support the use of ARBs/ACEIs in COVID-19 patients with preexisting hypertension.

Pulmonary Embolism or Pulmonary Thrombosis in COVID-19? Is the Recommendation to Use High-Dose Heparin for Thromboprophylaxis Justified?

Cattaneo M, Bertinato EM, Birocchi S, Brizio C, Malavolta D, Manzoni M, Muscarella G, Orlandi M.

Thromb Haemost.

2020 Apr 29; PMID: 32349132

Level of Evidence: 4 - Case series

Article Type: Research

Summary: A case series of 64 patients with COVID-19 demonstrated that bilateral leg compression ultrasound is not effective in finding a deep vein thrombosis (DVT) in these patients. Additionally, there are insufficient guidelines on the use of low-molecular weight heparin (LMWH). Based on previous literature the authors conclude that high-dose heparin may contribute to hemorrhagic microangiopathy and recommend the use of 40 mg enoxaparin in non-ICU COVID-19 patients with an underlying DVT.

Arterial and venous abdominal thrombosis in a 79-year-old woman with COVID-19 pneumonia.

De Barry O, Mekki A, Diffre C, Seror M, Hajjam ME, Carlier RY.

Radiol Case Rep.

2020 Apr 23; PMID: 32351657

Level of Evidence: 4- Case Report

Type of Article: Research

BLUF: In this case report, French radiologists describe a 79-year-old woman hospitalized with COVID-19 pneumonia who developed a combined arterial and venous thrombosis of upper mesenteric vessels. Clinical implications of this report include increased awareness of COVID-19 coagulopathy when evaluating non-respiratory symptoms such as acute abdominal pain.

Abstract:

As coronavirus [sic] pandemic continue [sic] to spread over the world, we have to be aware of potential complications on [sic] hospitalized patients. We report a case of a 79-year-old woman with COVID-19 pneumonia complicated by combined arterial and venous thrombosis of upper mesenteric vessels. As unenhanced chest-CT scan plays a key-role in managing the COVID-19 pandemic we should pay attention to indirect signs of thrombosis.

Inappropriate Antibiotic Consumption as a Possible Cause of Inflammatory Storm and Septic Shock in Patients Diagnosed With Coronavirus Disease 2019 (COVID-19)

Hantoushzadeh, S; Norooznezhad, AH

Arch Med Res

2020 Apr 4; PMID: 32340759

Level of Evidence: 5 - Literature Review

Type of Article: Research

BLUF: Authors of this literature review propose that empiric antibiotic administration may be part of the inflammatory response that COVID-19 generates in severe cases. The authors review past animal studies that show inflammatory marker generation in response to certain antibiotics such as ceftazidime or ciprofloxacin and recommend clinicians to be aware of this during disease management.

Abstract:

The novel coronavirus (SARS-CoV-2) infection which has been known as Coronavirus diseases 2019 (COVID-19) has become an endemic emergent situation by the World Health Organization. So far, no successful specific treatment has been found for this disease. As has been reported, most of

non-survivor patients with COVID-19 (70%) had septic shock which was significantly higher than survived ones. Although the exact pathophysiology of septic shock in these patients is still unclear, it seems to be possible that part of it would be due to the administration of empiric antibiotics with inflammatory properties especially in the absence of bacterial infection. Herein, we have reviewed possible molecular pathways of septic shock in the patients who have received antibiotics with inflammatory properties which mainly is release of interleukin 1 β (IL-1 β), IL-6, and tumor necrosis factor α (TNF- α) through different routes. Altogether, we highly recommend clinicians to look after those antibiotics with anti-inflammatory activity for both empiric antibiotic therapy and reducing the inflammation to prevent septic shock in patients with diagnosed [sic] COVID-19.

Risk of reactivation or reinfection of novel coronavirus (COVID-19).

Alizargar J.

J Formos Med Assoc

2020 Apr 23; PMID: 32340768

Level of Evidence: 5 - Expert opinion

Type of Article: Correspondence

Summary: With the expansion of the COVID-19 pandemic, more precautions must be enforced to be sure that patients have truly recovered from COVID-19 with multiple negative tests and will not reactivate again after recovery.

COVID-19 and (hydroxy)chloroquine-Azithromycin combination: Should we take the risk for our patients?

Javelot H, El-Hage W, Meyer G, Becker G, Michel B, Hingray C.

Br J Clin Pharmacol.

2020 Apr 29; PMID: 32350872

Level of Evidence: 5 - Expert Opinion

Type of Article: Letter

Summarizing Excerpt: “We need to alert prescribers that the extensive use (hydroxy)chloroquine-azithromycin would place patients, and particularly those with mental health conditions, at an important increased risk of QTc-prolonging and, consequently, torsade de pointes (TdP) and death.”

Allergy and immunology

Covid-19 in Immune-Mediated Inflammatory Diseases - Case Series from New York.

Haberman R, Axelrad J, Chen A, Castillo R, Yan D, Izmirly P, Neumann A, Adhikari S, Hudesman D, Scher JU. Haberman R

N Engl J Med

2020 Apr 29; PMID: 32348641

Level of Evidence: 4 - Case Series

Type of Article: Research

BLUF: A case series comparing ambulatory vs hospitalized status of 86 confirmed or suspected COVID-19 patients (59 and 27 respectively) who were receiving anti cytokine biologics, immunomodulatory therapies or both found an “incidence of hospitalization among patients with immune-mediated inflammatory disease that was consistent with that among patients with COVID-19 in the general population in New York City” (table 1) Suggesting that “baseline use of biologics is not associated with worse COVID-19 symptoms.”

Summary: This prospective case series focuses on patients with immune-mediated inflammatory disease (rheumatoid arthritis, psoriatic arthritis, ankylosing spondylitis, psoriasis, IBD, etc) that were taking anticytokine biologics, immunomodulatory therapies or both when confirmed or suspected for COVID-19. Within this population, a comparison between ambulatory patients and hospitalized patients was made to distinguish the potential effects from the use of the biologics and or immunomodulatory therapies. The overall result reveals a lower percentage rate of patients hospitalized with immune-mediated inflammatory disease compared to a higher percentage rate of ambulatory patients that were taking their biologics or immunomodulators. This finding urges the need to better understand the effects of COVID-19 for patients with immune-mediated inflammatory disease and the effects of anticytokine and other immunosuppressive therapies to help improve patient care.

Table 1. Baseline Characteristics of the Patients in Whom Covid-19 Was Confirmed or Highly Suspected. ^a			
Characteristic	All Patients (N = 86)	Ambulatory Patients (N = 72)	Hospitalized Patients (N = 14)
Mean age (range) — yr	46 (22–74)	46 (22–74)	50 (25–73)
Female sex — no. (%)	49 (57)	42 (58)	7 (50)
Diagnosis of Covid-19 — no. (%)			
Positive	59 (69)	45 (62)	14 (100)
Suspected	27 (31)	27 (38)	0
Primary IMID diagnosis — no. (%) [†]			
Psoriasis	14 (16)	13 (18)	1 (7)
Psoriatic arthritis	21 (24)	18 (25)	3 (21)
Rheumatoid arthritis	20 (23)	14 (19)	6 (43)
Ulcerative colitis	17 (20)	14 (19)	3 (21)
Crohn's disease	20 (23)	19 (26)	1 (7)
Ankylosing spondylitis	9 (10)	9 (12)	0
BMI [‡]	27.4±6	26.7±5	30.8±8
Cocexisting conditions — no. (%)			
History of organ transplantation	1 (1)	1 (1)	0
Congestive heart failure	1 (1)	1 (1)	0
Hypertension	11 (13)	6 (8)	5 (36)
Diabetes	5 (6)	3 (4)	2 (14)
Chronic obstructive pulmonary disease	4 (5)	3 (4)	1 (7)
Asthma	15 (17)	15 (21)	0
Currently pregnant	2 (2)	1 (1)	1 (7)

Long-term medications — no. (%)	13 (15)	8 (11)	5 (36)
ACE inhibitor or ARB	13 (15)	8 (11)	5 (36)
Any medication for primary IMID diagnosis	75 (87)	62 (86)	13 (93)
Methotrexate	17 (20)	11 (15)	6 (43)
Hydroxychloroquine	8 (9)	5 (7)	3 (21)
Oral glucocorticoids	8 (9)	4 (6)	4 (29)
Any biologic or JAK inhibitor	62 (72)	55 (76)	7 (50)
Tumor necrosis factor inhibitor	38 (44)	35 (49)	3 (21)
Interleukin-17 blocker	6 (7)	5 (7)	1 (7)
Interleukin-23 blocker	3 (3)	3 (4)	0
Interleukin-12/23 blocker	6 (7)	6 (8)	0
JAK inhibitor	6 (7)	5 (7)	1 (7)
Covid-19 symptoms — no. (%)			
Fever	72 (84)	60 (83)	12 (86)
Cough	36 (42)	24 (33)	12 (86)
Shortness of breath	35 (41)	22 (31)	13 (93)
Rhinorrhea	5 (6)	4 (6)	1 (7)
Sore throat	9 (10)	9 (12)	0
Diarrhea	13 (15)	9 (12)	4 (29)
Anosmia	10 (12)	6 (8)	4 (29)
Ageusia	10 (12)	6 (8)	4 (29)
Hospitalization			
Days from first symptom to hospitalization			5.8±4
Regular floor — no. (%)			12 (86)
Use of supplementary oxygen — no. (%)			7 (50)
ICU-level care, mechanical ventilation, or both — no. (%)			1 (7)
Death — no. (%)			1 (7)

* Plus-minus values are means ±SD. A patient in whom Covid-19 was highly suspected was defined as any patient with new fever (temperature >99°F) or a known contact with Covid-19 plus one or more respiratory symptoms (dry cough, anosmia, sore throat, or shortness of breath) in whom Covid-19 could not be confirmed given the limited availability in New York of polymerase-chain-reaction testing to detect SARS-CoV-2. ACE denotes angiotensin-converting-enzyme; ARB angiotensin II-receptor blocker; ICU intensive care unit, and JAK Janus kinase.

[†] Patients may have more than one immune-mediated inflammatory disease (IMID).

[‡] Body-mass index (BMI) is the weight in kilograms divided by the square of the height in meters.

Dermatology

Classification of the cutaneous manifestations of COVID-19: a rapid prospective nationwide consensus study in Spain with 375 cases.

Galván Casas C, Català A, Carretero Hernández G, Rodríguez-Jiménez P, Fernández Nieto D, Rodríguez-Villa Lario A, Navarro Fernández I, Ruiz-Villaverde R, Falkenhain D, Llamas Velasco M, García-Gavín J, Baniandrés O, González-Cruz C, Morillas-Lahuerta V, Cubiró X, Figueras Nart I, Selda-Enriquez G, Romaní J, Fustà-Novell X, Melian-Olivera A, Roncero Riesco M, Burgos-Blasco P, Sola Ortigosa J, Feito Rodriguez M, García-Doval I

Br J Dermatol

2020 Apr 29; PMID: 32348545

Level of Evidence: 3 - Retrospective Cohort Study

Type of Article: Research

BLUF: The authors conducted a retrospective cohort study of 375 patients in Spain with cutaneous lesions and either confirmed or suspected COVID-19 from 3/3/20-3/16/20 (during peak of pandemic

in Spain). The authors then analyzed the photographs of these rashes and were able to classify nearly all cases into 5 clinical patterns: pseudo-chilblain (19% [figure 1]), other vesicular eruptions (9%), urticarial lesions (19%), other maculopapules (47%), and livedo/necrosis (6% [figure 2]). They found that these different patterns appeared at unique times and with varying severity of COVID-19. These cutaneous manifestations can help clinicians when considering disease differentials.

Abstract:

Background: Cutaneous manifestations of COVID-19 disease are poorly characterized.

Objectives: To describe the cutaneous manifestations of COVID-19 disease and to relate them to other clinical findings.

Methods: Nationwide case collection survey of images and clinical data. Using a consensus, we described 5 clinical patterns. We later described the association of these patterns with patient demographics, timing in relation to symptoms of the disease, severity, and prognosis.

Results: Lesions may be classified as acral areas of erythema with vesicles or pustules (Pseudo-chilblain) (19%), other vesicular eruptions (9%), urticarial lesions (19%), maculopapular eruptions (47%) and livedo or necrosis (6%). Vesicular eruptions appear early in the course of the disease (15% before other symptoms). The pseudo-chilblain pattern frequently appears late in the evolution of the COVID-19 disease (59% after other symptoms), while the rest tend to appear with other symptoms of COVID-19. Severity of COVID-19 shows a gradient from less severe disease in acral lesions to most severe in the latter groups. Results are similar for confirmed and suspected cases, both in terms of clinical and epidemiological findings. Alternative diagnoses are discussed but seem unlikely for the most specific patterns (pseudo-chilblain and vesicular).

Conclusions: We provide a description of the cutaneous manifestations associated with COVID-19 infection. These may help clinicians approach patients with the disease and recognize paucisymptomatic cases.



Figure 1: Acral areas of erythema-edema with vesicles or pustules (pseudo-chilblain). Most commonly affecting younger patients, lasting for a mean of 12.7 days, took place later in the course of COVID-19 and associated with less severe disease.



Figure 2: Livedoid areas. Primarily found in older patients with more severe disease (10% mortality).

Cardiology

Coronavirus Disease 2019 (COVID-19) Information for Cardiologists-Systematic Literature Review and Additional Analysis.

Sugimoto T, Mizuno A, Kishi T, Ito N, Matsumoto C, Fukuda M, Kagiyama N, Shibata T, Ohmori T, Oishi S, Fuse J, Kida K, Kawai F, Ishida M, Sanada S, Komuro I, Node K.
Circ J.

2020 Apr 29; PMID: 32350235

Level of Evidence: 1- Systematic Literature Review

Type of Article: Review

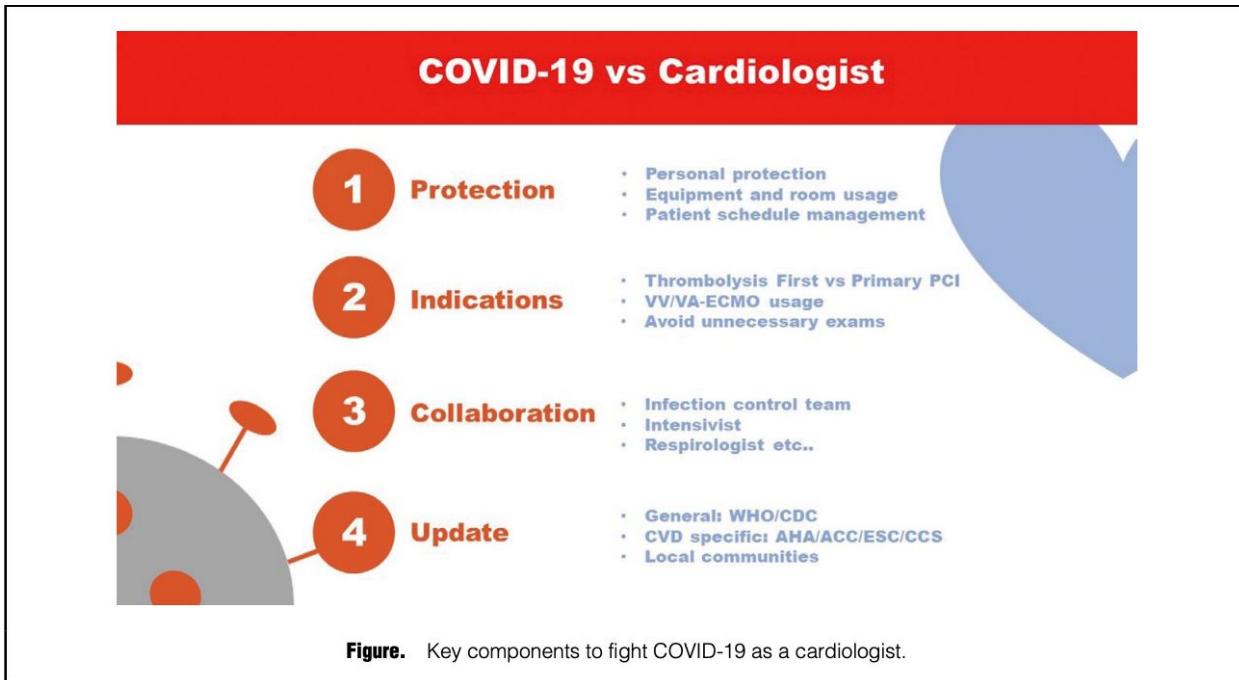
BLUF: In this systematic review, an interdisciplinary group of Japanese clinicians confirm, as previous studies have suggested, that patients with severe COVID-19 disease are more likely to be older and have pre-existing comorbidities, especially vasculopathy. While mechanisms of cardiac injury are unknown, leading theories implicate myocarditis and hypoxia-induced hemodynamic damage. They conclude that cardiologists ultimately have a limited role in primary management of COVID-19 patients, but recommend preparation to serve as consults, emphasizing knowledge of indications for interventions and proper infection precautions.

Abstract:

Background: Despite the rapidly increasing attention being given to Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) infection, more commonly known as coronavirus disease 2019 (COVID-19), the relationship between cardiovascular disease and COVID-19 has not been fully described.

Methods and Results: A systematic review was undertaken to summarize the important aspects of COVID-19 for cardiologists. Protection both for patients and healthcare providers, indication for treatments, collaboration with other departments and hospitals, and regular update of information are essentials to front COVID-19 patients.

Conclusions: Because the chief manifestations of COVID-19 infection are respiratory and acute respiratory distress syndrome, cardiologists do not see infected patients directly. Cardiologists need to be better prepared regarding standard disinfection procedures, and be aware of the indications for extracorporeal membrane oxygenation and its use in the critical care setting.



Current perspectives on Coronavirus 2019 (COVID-19) and cardiovascular disease: A white paper by the JAHA editors.

Gupta AK, Jneid H, Addison D, Ardehali H, Boehme AK, Borgaonkar S, Boulestreau R, Clerkin K, Delarche N, DeVon HA, Grumbach IM, Gutierrez J, Jones DA, Kapil V, Maniero C, Mentias A, Miller PS, May Ng S, Parekh JD, Sanchez RH, Teodor Sawicki K, S J M Te Riele A, Ann Remme C, London B. J Am Heart Assoc 2020 Apr 29; PMID: 32347144

Level of Evidence: 5 - Expert Opinion

Type of Article: Perspective

BLUF: COVID-19 is associated with increased severity of disease and risk of death in patients that have cardiovascular conditions or comorbidities such as myocardial injury from elevated troponin levels, hypertension, heart failure, and cardiac arrhythmias. To combat this, recommendations include statin use, timely percutaneous coronary intervention (PCI), and early venovenous and venoarterial extracorporeal membrane oxygenation (ECMO).

Abstract:

Coronavirus Disease 2019 (COVID-19), caused by the Severe Acute Respiratory Syndrome Coronavirus-2 (SARS-CoV-2), has infected more than 3.0 million people worldwide and killed more than 200,000 as of April 27, 2020, making it the most lethal pandemic since the Spanish flu of 1918. COVID-19 may preferentially infect individuals with cardiovascular conditions, is more severe in subjects with cardiovascular comorbidities, may directly or indirectly affect the heart and may interact with cardiovascular medications. In addition, the widespread effects of the pandemic on the global healthcare system affects the routine and emergency cardiac care for patients who are, may be, or are not infected with COVID-19.

A Marker of Systemic Inflammation or Direct Cardiac Injury: Should Cardiac Troponin Levels Be Monitored in COVID-19 Patients?

Bassam Atallah, Saad I Mallah, Laila AbdelWareth, Wael AlMahmeed, Gregg C Fonarow
Eur Heart J Qual Care Clin Outcome

2020 Apr 29, PMID: 32348472

Level of Evidence: 5 - Expert opinion

Type of Article: Review

Summary: Based on current published literature, Atallah and colleagues make the following recommendations for monitoring COVID-19 patients and cardiovascular symptoms.

- Screening COVID-19 positive patients using high sensitivity troponin in order to triage them into high and low risk groups.
- Monitoring daily troponin levels when elevated. If not elevated, monitor longitudinally at different intervals, to predict potential worsening disease course.
- Consider troponin levels in the context of clinical signs and symptoms, ECGs, chest x-rays, echocardiogram, and other clinical and laboratory investigations.
- Since the reported prevalence of coagulopathy in COVID-19 seems to differ from other coagulopathies, the use of anticoagulants in patients with elevated biomarkers is recommended.
- Monitoring d-dimers, troponins T and I, NT-pro-BNP, CRP, Lipoprotein (a), fibrinogen and LDH to allow for a more proactive approach to management.

Nephrology

Expert Recommendations on Blood Purification Treatment Protocol for Patients With Severe COVID-19: Recommendation and Consensus

Yang, XH; Sun, RH; Zhao, MY; Chen, EZ; Liu, J; Wang, HL; Yang, RL; Chen, DC

Chronic Dis Transl Med

2020 Apr 28; PMID: 32346492

Level of Evidence: 5 - Expert Opinion

Type of Article: Clinical Protocol

BLUF: Authors outline a protocol for blood purification in the context of a possible COVID-19 treatment for severe cases, detailed below:

- Step 1, Indication: severe COVID-19 with signs of renal function overload, with or without baseline kidney disease
- Step 2, Prescribing
 - considering type of filtration - continuous renal replacement therapy (CRRT) is most common
 - central venous vascular access preferred, not subclavian
 - Choosing the right blood purification filter - synthetic, less than $50 \text{ ml} \cdot \text{h}^{-1} \text{ mmHg}^{-1}$
 - Anticoagulation: heparin or low molecular weight heparin. None if actively bleeding.
- Step 3, Monitoring
 - Maintain a negative fluid balance when possible due to the possibility of acute respiratory distress syndrome (ARDS) developing
 - Monitor vitals and electrolytes per standard of care
 - Use pulmonary imaging, chest radiographs or computed tomography to monitor progression
- Step 4, Downtime
 - No consensus so far
 - If patient has reduced ventilator needs, stable vitals, and urinary output is above 500-1000 ml without diuretics
 - Signs of systemic inflammatory response syndrome (SIRS) is reduced

Abstract:

Coronavirus disease (COVID-19) was first diagnosed in Wuhan in December 2019. The World Health Organization defined the subsequent outbreak of COVID-19 worldwide as a public health emergency of international concern. Epidemiological data indicate that at least 20% of COVID-19 patients have severe disease. In addition to impairment of the respiratory system, acute kidney injury (AKI) is a major complication. Immune damage mediated by cytokine storms and concomitant AKI is a key factor for poor prognosis. Based on previous experience of blood purification for patients with severe acute respiratory syndrome and Middle East respiratory syndrome combined with clinical front-line practice, we developed a blood purification protocol for patients with severe COVID-19. This protocol is divided into four major steps. The first step is to assess whether patients with severe COVID-19 require blood purification. The second step is to prescribe a blood purification treatment for patients with COVID-19. The third step is to monitor and adjust parameters of blood purification. The fourth step is to evaluate the timing of discontinuation of blood purification. It is expected that blood purification will play a key role in effectively reducing the mortality of patients with severe COVID-19 through the standardized implementation of the present protocol.

Surgical Subspecialties

Otolaryngology

[Skull Base Surgery During the Covid-19 Pandemic: The Italian Skull Base Society Recommendations](#)

Casetnovo et al.

Int Forum Allergy Rhinol

2020 Apr 29, PMID: 32348025

Level of Evidence: 5 – Literature Review

Type of Article: Guidelines

BLUF: The authors of this review offer detailed guidelines for performing skull based surgery on both COVID-19 negative and COVID-19 positive patients during the pandemic in Italy while limiting exposure of SARS-CoV-2 healthcare workers and patients.

- COVID-19 negative patients
 - Use at least an Filtering Face Piece 2 (FFP2)/N95 respirator
 - Avoid use of drills, which aerosolize mucous particles
- COVID-19 positive patients
 - Postpone procedures until after negative swab
 - If surgery is urgent, use FFP3 and/or Powered Air Purifying Respirators (PAPRs) devices, goggles, full-face visor, double gloves, water-resistant gowns and protective caps

Abstract:

Severe acute respiratory syndrome-coronavirus-2 (SARS-CoV-2), which causes coronavirus disease 2019 (Covid-19), is highly contagious with devastating impacts for healthcare systems worldwide. Medical staff are at high risk of viral contamination and it is imperative to know what personal protective equipment is appropriate for each situation. Furthermore, elective clinics and operations have been reduced in order to mobilize manpower to the acute specialties combatting the outbreak; appropriate differentiation between patients who require immediate care and those who can receive telephone consultation or whose treatment might viably be postponed is therefore crucial. Italy was one of the earliest and hardest-hit European countries and therefore the Italian Skull Base Society board has promulgated specific recommendations based on consensus best practices and the

literature, where available. Only urgent surgical operations are recommended and all patients should be tested at least twice (on days 4 and 2 prior to surgery). For positive patients, procedures should be postponed until after swab test negativization [*sic*]. If the procedure is vital to the survival of the patient, FFP3 and/or PAPRs devices, goggles, full-face visor, double gloves, water-resistant gowns and protective caps, are mandatory. For negative patients, use of at least FFP2 mask is recommended. In all cases the use of drills, which promote the aerosolization of potentially infected mucous particles, should be avoided. Given the potential neurotropism of SARS-CoV-2, dura handling should be minimized. It is only through widely-agreed protocols and teamwork that we will be able to deal with the evolving and complex implications of this new pandemic.

Transplant Surgery

COVID-19 in kidney transplant recipients.

Nair V, Jandovitz N, Hirsch JS, Nair G, Abate M, Bhaskaran M, Grodstein E, Berlinrut I, Hirschwerk D, Cohen SL, Davidson KW, Dominello AJ, Osorio GA, Richardson S, Teperman LW, Molmenti EP. Am J Transplant.

2020 Apr 29, PMID: 32351040

Level of Evidence: 4 – Case series

Type of Article: Research

BLUF: Kidney transplant recipients infected with COVID-19 should be monitored closely in the setting of lowered immunosuppression. Presenting symptoms are similar to non-transplant individuals. In those patients who were hospitalized, mortality and acute kidney injury was high.

Abstract: There is minimal information on COVID-19 in immunocompromised individuals. We have studied 10 patients treated at 12 adult care hospitals. Ten kidney transplant recipients tested positive for SARS-CoV-2 by PCR, and 9 were admitted. The median age was 57 (IQR 47-67), 60% were male, 40% Caucasian, and 30% Black/African American. Median time from transplant to COVID-19 testing was 2822 days (IQR 1272-4592). The most common symptom was fever, followed by cough, myalgia, chills, and fatigue. The most common CXR and CT abnormality was multifocal patchy opacities. 3 patients had no abnormal findings. Leukopenia was seen in 20% of patients, and allograft function was stable in 50% of patients. 9 patients were on tacrolimus and a mycophenolic antimetabolite, and 70% were on prednisone. Hospitalized patients had their antimetabolite agent stopped. All hospitalized patients received hydroxychloroquine (HCQ) and azithromycin. 3 patients died (30%), five (50%) developed acute kidney injury. Kidney transplant recipients infected with COVID-19 should be monitored closely in the setting of lowered immunosuppression. Most individuals required hospitalization and presenting symptoms were similar to those of non-transplant individuals.

COVID-19 in a lung transplant recipient.

Aigner C, Dittmer U, Kamler M, Collaud S, Taube C.

J Heart Lung Transplant.

2020 Apr 13, PMID: 32340870

Level of Evidence: 5 – Case report

Type of Article: Research

BLUF: A case report of a 59 year old woman who presented at 13 months-post lung transplant follow-up and was incidentally found to be COVID-19 positive highlights that COVID-19 can be present even in relatively asymptomatic patients after lung transplantation. Early diagnostic testing is advised.

Summary: Herein, the authors report the case of a 59-year-old woman 13 months after bilateral lung transplant who presented with SARS-CoV-2 infection. On the day of hospitalization (Day 0), she presented to the outpatient clinic for a routine follow-up visit with no apparent symptoms. Lung function testing showed a drop in forced expiratory volume at one second to 1.28 (57% predicted). Upon questioning, she expressed mild exercise dyspnea and a dry cough, but no fever or diarrhea. RT-PCR of nasal and pharyngeal swabs showed evidence of SARS-CoV-2 RNA. A chest computerized tomography scan showed ground glass opacities mainly in the left lower lobe. Antibacterial therapy was empirically started based on suspected bacterial superinfection. Otherwise, no major changes in medications were made. RT-PCR remained positive at day 7 and day 14, while she remained relatively stable and asymptomatic. Patient was discharged home on day 21 after RT-PCR did not show SARS-CoV-2 RNA.

OBGYN

[Analysis of vaginal delivery outcomes among pregnant women in Wuhan, China during the COVID-19 pandemic.](#)

Liao J, He X, Gong Q, Yang L, Zhou C, Li J. Liao J, et al.

Int J Gynaecol Obstet.

2020 Apr 29; . PMID: 32350871

Level of Evidence: 4 - Case Series

Type of Article: Research

BLUF: This retrospective comparison of vaginal delivery outcomes between 10 pregnant women with COVID-19 and 53 pregnant women without COVID-19 found no statistical difference between vaginal delivery complications (Table 3) nor increased risk of COVID-19 infection in neonates (Table 4).

Abstract:

Objective: To study vaginal delivery outcomes and neonatal prognosis and summarize the management of vaginal delivery during the COVID-19 pandemic.

Methods: A retrospective analysis of medical records and comparison of vaginal delivery outcomes between 10 pregnant women with clinical diagnosis of COVID-19 and 53 pregnant women without COVID-19 admitted to Zhongnan Hospital of Wuhan University between January 20 and March 2, 2020. Results of laboratory tests, imaging tests, and SARS-CoV-2 nucleic acid tests were also analyzed in neonates delivered by pregnant women with clinical diagnosis of COVID-19.

Results: There were no significant differences in gestational age, postpartum hemorrhage, and perineal resection rates between the two groups. There were no significant differences in birth weight of neonates and neonatal asphyxia rates between the two groups. Neonates delivered by pregnant women with clinical diagnosis of COVID-19 tested negative for SARS-CoV-2 infection.

Conclusions: Under the premise of full evaluation of vaginal delivery conditions and strict protection measures, pregnant women with ordinary type COVID-19 can try vaginal delivery without exacerbation of COVID-19 and without increasing the risk of SARS-CoV-2 infection in neonates.

TABLE 3 Comparison of vaginal delivery outcomes between pregnant women with clinical diagnosis of COVID-19 and pregnant women without COVID-19.^a

Outcome	Pregnant women with clinical diagnosis of COVID-19 (n=10)	Pregnant women without COVID-19 (n=53)	t/Fisher exact test	P value
Perineal incision	3 (30.0)	20 (37.7)	/	0.734
Amniotic fluid pollution	2 (20.0)	12 (22.6)	/	1.000
Postpartum hemorrhage, mL	245 ± 49.72	237 ± 85.99	0.258	0.797
Neonatal asphyxia	0 (0)	4 (7.5)	/	1.000
Premature delivery	1 (10.0)	5 (9.4)	/	1.000
Neonatal birth weight, g	3283 ± 449	3274 ± 456	0.059	0.953

^aValues given as number (percentage) or mean ± SD unless otherwise indicated.

TABLE 4 Results for seven neonates delivered by pregnant women with clinical diagnosis of COVID-19.

	P4	P5	P6	P7	P8	P9	P10
White blood cell count, ×10 ⁹ cells per L	12.47	13.77	12.13	13.09	10.62	11.93	11.00
Lymphocyte count, ×10 ⁹ cells per L	2.25	4.30	2.45	3.88	2.12	2.72	2.56
Lymphocyte ratio, %	18.8	31.2	2.2	29.7	20.0	22.8	23.2
SARS-CoV-2 nucleic acid tests	–	–	–	–	–	–	–
Chest X-ray	–	–	–	–	–	–	Hyaline membrane disease

Early Acute Respiratory Support for Pregnant Patients With Coronavirus Disease 2019 (COVID-19) Infection.

Pacheco LD, Saad AF, Saade G.

Obstet Gynecol

2020 Apr 29; PMID: 32349051

Level of Evidence: 5 - Expert Opinion

Type of Article: Commentary

Summary: This article presents guidelines for respiratory support therapy for pregnant patients with severe COVID-19 infection. These include:

- Start supplemental oxygen when SpO₂ values fall below 94% in pregnant patients and consider prone positioning in patients at less than 20 weeks gestation.
- Given the higher risk of pulmonary edema in pregnancy, avoid use of maintenance fluids and consider use of furosemide in patients with worsening respiratory status.
- Consider using high flow nasal cannulas and noninvasive positive pressure ventilation before invasive mechanical ventilation in patients that require more support.
- Daily nonstress testing may be appropriate for stable patients beyond 24 weeks gestation. Continuous fetal monitoring may be appropriate for patients on mechanical ventilation beyond 28 weeks gestation. Cesareans may be considered beyond 28 weeks in patients with deteriorating conditions.

Abstract: The present coronavirus disease 2019 (COVID-19) pandemic is affecting pregnant patients worldwide. Although it appears that the severity of disease is reduced in pregnant patients, some are likely to develop severe disease. Our objective is to summarize the basic initial respiratory support interventions recommended for pregnant patients with infection with the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2).

Effectiveness of a 'fast lung ultrasound teaching program' for gynecologists/obstetricians dealing with pregnant women with suspicion of COVID-19 infection.

Buonsenso D, Moro F, Inchegolo R, Smargiassi A, Demi L, Soldati G, Moroni R, Lanzone A, Scambia G, Testa AC

Ultrasound Obstet Gynecol.

2020 Apr 29; PMID: 32349175

Level of Evidence: 5 - Mechanism-based reasoning

Type of Article: Research

BLUF: The authors developed a brief ultrasound training program for obstetricians and gynecologists to detect lung involvement in pregnant women who may have COVID-19. Eleven clinicians were trained with the program, and improved their ability to recognize lung abnormalities with ultrasound from a mean of 6/10 correct classifications to 9/10. The authors suggest the program may be a useful tool for lung ultrasound training.

Summarizing statement: “Lung ultrasound has been suggested as a useful tool to detect lung involvement during COVID-19, particularly desirable for pregnant women. We developed a specific single day training program to provide gynecologists/obstetricians, already skilled in ultrasound examination, the theoretical background for the recognition of the main lung ultrasound patterns. Feasibility of the program and its effectiveness by comparing the number of correct answers in pre and post-training results were evaluated. The training program was developed at Fondazione Policlinico Universitario A. Gemelli IRCCS, Rome, Italy and at University of Trento.”

Infection Control Measures for COVID-19 in the Labour Suite and Neonatal Unit.

Ng PC.

Neonatology.

2020 Apr 29; PMID: 32348989

Level of Evidence: 5 - Expert opinion

Type of Article: Opinion

Summary: This article reviews current knowledge regarding COVID-19 and pregnancy, pointing out that current research suggests transmission does not occur vertically and that infection should not be an indication to induce labor. The authors emphasize that key infection control strategies include the effective separation of COVID-19 patients from non-infected cases and ensuring appropriate PPE for healthcare providers.

Adjusting Practice During COVID-19 For Healthcare Professionals

Measuring Weight With E-Scales in Clinical and Research Settings During the COVID-19 Pandemic.

Krukowski, R. A., & Ross, K. M.

Obesity

2020 Apr 27; PMID: 32339394

Level of Evidence: 5 – Expert Opinion

Type of Article: Commentary

BLUF: The authors highlight e-scales as a way for clinicians and researchers to be able to continue to study obesity, while being able to avoid in person contact during the COVID-19 pandemic.

Abstract:

With the COVID-19 pandemic, clinicians and researchers have been suddenly confronted with the difficulty of treatment provision and continuation of clinical trials without face-to-face contact. This predicament has resulted in the rapid adoption of telehealth methodologies. Clinicians and researchers focused on obesity management have an additional need-- a remote way to measure weight. In this piece, we will describe electronic scales (e-scales) and provide guidance on how clinicians/researchers might best implement e-scales in their clinical practice or research studies to remotely measure weight.

Development of Telemedicine Infrastructure at an LGBTQ+ Clinic to Support HIV Prevention and Care in Response to COVID-19, Providence, RI.

Rogers BG, Coats CS, Adams E, Murphy M, Stewart C, Arnold T, Chan PA, Nunn A

AIDS Behav

2020 Apr 29; PMID: 32350772

Level of Evidence: 5- Expert opinion

Type of Article: Editorial

Summary: A detailed look at Open Door Health in Rhode Island's transition to telehealth. They describe their appointment flow and the benefits and challenges encountered. They found patient and provider satisfaction was high with few no-shows and smooth coordination with laboratories when needed. There were challenges including some limited technical issues and limitations to the physical exam, but overall acceptance was high and continuing telehealth after COVID-19 seems likely if reimbursement policies are maintained.

Telemedicine during the COVID-19 pandemic: experiences from western China.

Hong Z, Li N, Li D, Li J, Li B, Xiong W, Li WM, Zhou D, Hong Z, et al.

J Med Internet Res.

2020 Apr 29; PMID: 32349962

Level of Evidence: 5- Expert Opinion

Type of Article: Commentary

Summarizing excerpt: "As healthcare systems are set to be further stretched with the increasing burden of COVID-19, telemedicine, including tele-education may be an effective way to rationally allocate medical resources. During the COVID-19 pandemic, practice showed that telemedicine was a

feasible, effective way with good acceptability in western China, translating in significant improvement in professional coverage in this underserviced area. The successes of telemedicine in western China may provide a useful reference for other parts of the world”

Acute care

Emergency Medicine

Truncated IV acetylcysteine treatment duration has potential to safely preserve resources during the COVID-19 pandemic.

Goodnough R, Canseco K.

Clin Toxicol (Phila).

2020 Apr 29; PMID: 32345063

Level of Evidence: 5 - Expert opinion

Type of Article: Letter to the Editor

Summary: The standard treatment of acetaminophen overdose (APAP) consists of 20-21 hours of IV N-acetylcysteine. However, studies have shown that a truncated 12-hour treatment of IV acetylcysteine is safe and effective. The authors propose that utilizing a 12hr regimen would free up valuable hospital resources that are needed for the COVID-19 pandemic.

The experience of treating patients with acute myocardial infarction under the COVID-19 epidemic.

Xiao Z, Xu C, Wang D, Zeng H

Catheter Cardiovasc Interv

2020 Apr 29. PMID: 32348003

Level of Evidence: 4 - Case Series

Type of Article: Case Report

BLUF: Case series of three patients living in Wuhan with acute myocardial infarction, illustrating how rapid treatment of AMI is one of the most important factors of a good prognosis, and how PCI and fibrinolytic therapy can both be efficacious.

Summary: The authors present three case reports of patients with acute MI treated during the COVID-19 pandemic.

Case 1: A 62-year old man from Wuhan with no history of hypertension, diabetes, or dyslipidemia presented to the ED with sudden chest pain for 4 hours. ECG showed ST-segment elevations in leads II, III, and aVF, and a diagnosis of inferior wall AMI was made. He had no symptoms of COVID-19, no close contacts, and his lymphocyte count and chest CT showed no evidence of SARS-CoV-2 infection. He was administered fibrinolytic therapy of IV enoxaparin and recombinant tPA; door-to-needle time was 95 minutes. His chest pain resolved within 2 hours, he had >50% resolution of ST-segments, two virus antibody tests were negative, and he was discharged 7 days later.

Case 2: A 42-year old man from Wuhan presented with fever, dry cough, and dyspnea for 1 month. Blood lymphocyte and CT chest led to a diagnosis of COVID-19. 20 days prior to admission he had undergone PCI for an anterior AMI with drug eluting stent placement in his proximal LAD. On day three of admission, he had sudden chest pain and ECG showed ST-segment elevation in V1-V5. The patient went into cardiogenic shock and was transferred to an isolated catheter lab for coronary angiography which revealed a thrombus completely occluding the stent. Two additional stents were placed, V-A ECMO was removed two days later, and the patient was transferred out of the ICU to an isolated general ward for further monitoring.

Case 3: A 78-year old man from Wuhan presented to the ED with sudden chest pain for 5 hours. ECG showed ST-segment elevation in leads V1-V6, I, aVL, and an anterior wall AMI was diagnosed. He had no symptoms of COVID-19, no close contacts, and his lymphocyte count and chest CT showed no evidence of SARS-CoV-2 infection. He was transferred to an isolated catheter lab, where coronary angiogram revealed an occluded LAD. Two drug eluting stents were placed in the proximal LAD; door-to-balloon time was 139 minutes.

Diagnostic radiology

Society for Cardiovascular Magnetic Resonance (SCMR) guidance for the practice of cardiovascular magnetic resonance during the COVID-19 pandemic.

Han Y, Chen T, Bryant J, Bucciarelli-Ducci C, Dyke C, Elliott MD, Ferrari VA, Friedrich MG, Lawton C, Manning WJ, Ordovas K, Plein S, Powell AJ, Raman SV, Carr J. Han Y
Cardiovasc Magn Reson

2020 Apr 27; PMID: 32340614

Level of Evidence: 5 - Expert opinion

Type of Article: Guidelines

BLUF: Recommendations on cardiovascular magnetic resonance (CMR) are as follow:

- Modifications to routine CMR operations
 - Identify indications to aid in timing of necessary exams based on clinical indications
- Safety precautions and procedures
 - All patients should be screened for COVID-19 by phone prior to arrival
 - Minimize patient time in waiting room
 - Appropriate personal protective equipment (PPE) at all times
- CMR protocols
 - Imaging personnel should be properly trained and experienced
 - Tailor CMR protocols according to each individual case
- CMR in ventilated patients
 - An MRI conditional or compatible ventilator must be used
 - Rapid real-time free breathing imaging sequences
- CMR for confirmed active COVID-19 patients
 - Important to differentiate possible etiologies in patients with elevated troponin levels
 - CMR is most appropriate for clinical suspected acute myocardial injury
 - Consult with multimodality imaging experts
- Operational procedures
 - CMR control room closed off as a separate area
 - Proper precaution for intubated patients to reduce aerosol transmission
 - Acute kidney injuries, CMR exam with gadolinium contrast delay until eGFR >30 ml/min/1.73m²

Abstract: The aim of this document is to provide general guidance and specific recommendations on the practice of cardiovascular magnetic resonance (CMR) in the era of the COVID-19 pandemic. There are two major considerations. First, continued urgent and semi-urgent care for the patients who have no known active COVID-19 should be provided in a safe manner for both patients and staff. Second, when necessary, CMR on patients with confirmed or suspected active COVID-19 should focus on the specific clinical question with an emphasis on myocardial function and tissue characterization while optimizing patient and staff safety.

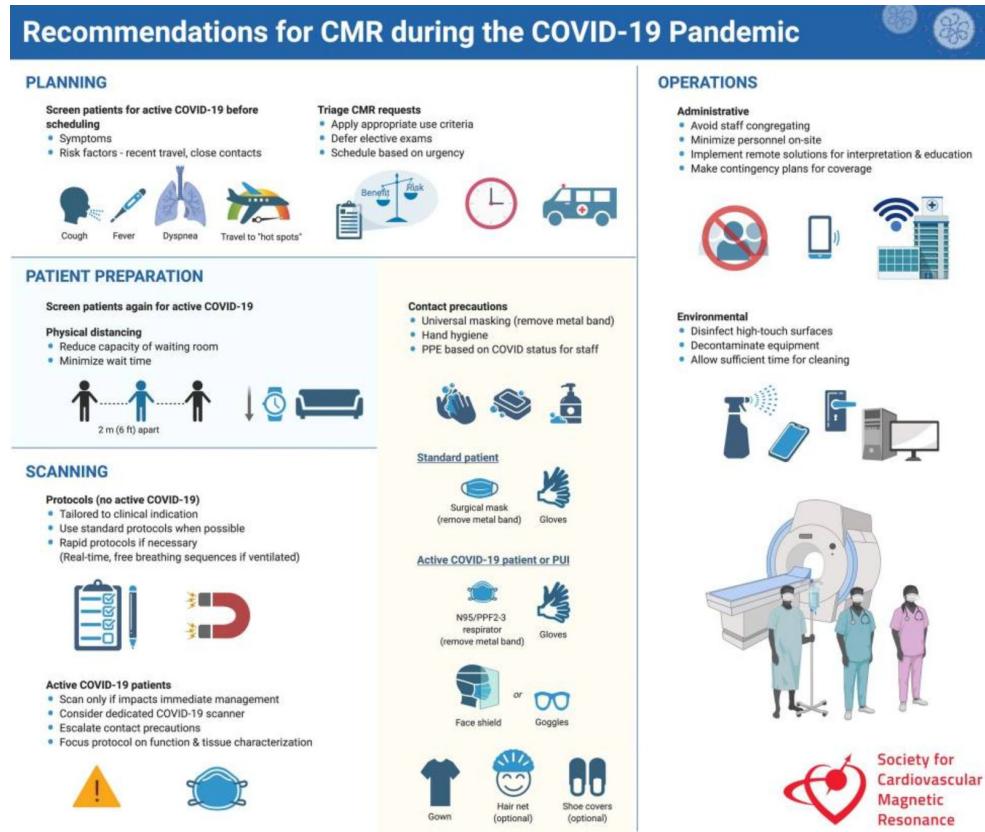


Fig. 1 Recommendations for CMR during the COVID-19 Pandemic

Interventional Radiology

COVID-19: What Should Interventional Radiologists Know and What Can They Do?

Zhu HD, Zeng CH, Lu J, Teng GJ, Zhu HD, et al.

J Vasc Interv Radiol.

2020 Apr 9; PMID: 32340864

Level of Evidence: Level 5 - Expert Opinion

Article Type: Editorial

BLUF: Reflecting on their own practices during COVID-19 pandemic, the authors provide recommendations for interventional radiologists (IR): 1) establishing an IR Emergency Leadership Team, 2) encouraging all staff to stay current with knowledge on COVID-19 transmission, 3) placing protection of oneself as higher priority than assisting patients, 4) considering modifications to current infrastructure, 5) classifying patients (i.e. confirmed COVID-19, without exclusion of COVID-19, or uninfected) to determine necessity of IR procedure.

Abstract:

The outbreak of coronavirus disease 2019 (COVID-19) in late December 2019 in Wuhan, China, has been characterized as a "pandemic" by the World Health Organization and has resulted in 81,603 confirmed cases in China, among the 334,981 cases confirmed in 189 countries as of 09:00 am, March 24, 2020 (China central standard time). During the past 3 months, hundreds of thousands of Chinese health care workers, including interventional radiologists (IRs), have been fighting this battle against the horrifying COVID-19 disease. As IRs, what should we know and what can we do when facing this challenge? This paper shares the experience we have gone through.

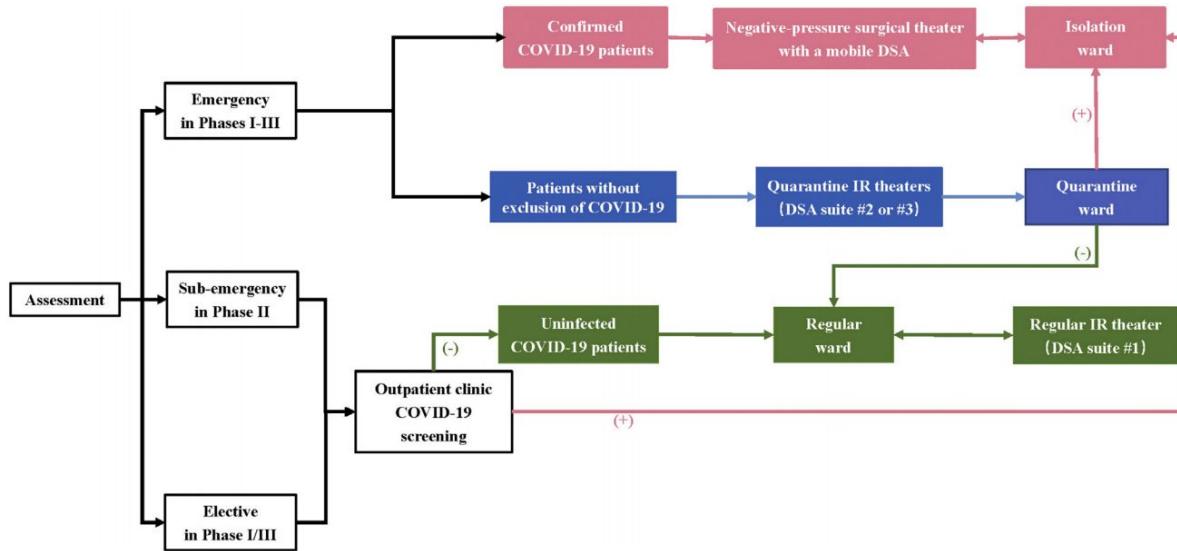


Figure 2. Workflow for IR hospitalization and procedures. DSA = digital subtraction angiography.

Anaesthesia

Procedural Precautions and Personal Protective Equipment during Head and Neck Instrumentation in the COVID-19 Era.

Panuganti BA, Pang J, Califano J, Chan JYK.

Head Neck.

2020 Apr 29, PMID: 32348594

Level of Evidence: 5 - Literature Review

Article Type: Research

BLUF: A comparison for practice recommendations between the CDC, WHO and recent published literature for head and neck procedures found that there is agreement on the following recommendations:

- Head and neck examination: droplet precautions (surgical mask and eye protection); gown and gloves if anticipating body fluid contact
- Flexible laryngoscopy or endoscopy without additional instrumentation: droplet precautions (surgical mask and eye protection); if instrumentation then airborne precautions using N95 mask.
- Non-mucosal in office procedures: droplet precautions (gloves and gown)
- Airborne generating procedures: airborne precautions (gloves and gown, eye protection) in anticipation of body fluid contact.
- Non-mucosal procedure in operating room: droplet precautions (gloves and gown) if anticipating body fluid contact.

Abstract:

Background: Otolaryngologists represent a subset of healthcare workers uniquely vulnerable to COVID-19 transmission. Given the segmentation of extant guidelines concerning precautions and protective equipment for SARS-CoV2, we aimed to provide consolidated recommendations regarding appropriate personal protective equipment (PPE) in head neck surgery during the COVID-19 era.

Methods: Guidelines published by international and United States governing bodies were reviewed in conjunction with published literature concerning COVID-19 transmission risk, testing, and PPE, to

compile situation-specific recommendations for head and neck providers managing COVID-19 patients.

Results: High-quality data regarding the aerosolization potential of head and neck instrumentation and appropriate PPE during head and neck surgeries are lacking. However, extrapolation of recommendations by governing bodies suggest strongly that head and neck mucosal instrumentation warrants strict adherence to airborne-level precautions.

Conclusions: We present a series of situation-specific recommendations for PPE use and other procedural precautions for otolaryngology providers to consider in the COVID-19 era.

Critical Care

Ethical Aspects of the COVID-19 Crisis: How to Deal With an Overwhelming Shortage of Acute Beds

Vincent, JL; Creteur, J

Eur Heart J Acute Cardiovasc Care.

2020 Apr 29; PMID: 32347745

Level of Evidence: 5 - Expert Opinion

Type of Article: Clinical Guidelines

BLUF: Authors provide recommendations regarding intensive care unit (ICU) management during the COVID-19 pandemic:

- ICU bed management
 - if too sick to benefit, consider non-ICU management
 - Increase number of beds by converting other units
- Triage
 - Do not triage solely based on likelihood of surviving, instead of surviving in the context of needing an ICU with their comorbidities
 - Do not apply “first come first serve”
 - Identify a triage leader who is solely responsible for resource allocation to relieve burden on ICU staff

Abstract:

The current outbreak of SARS-CoV-2 has and continues to put huge pressure on intensive care units (ICUs) worldwide. Many patients with COVID-19 require some form of respiratory support and often have prolonged ICU stays, which results in a critical shortage of ICU beds. It is therefore not always physically possible to treat all the patients who require intensive care, raising major ethical dilemmas related to which patients should benefit from the limited resources and which should not. Here we consider some of the approaches to the acute shortages seen during this and other epidemics, including some guidelines for triaging ICU admissions and treatments.

Neurology

COVID-19 and stroke-A global World Stroke Organization perspective.

Markus HS, Brainin M.

Int J Stroke

2020 Apr 29, PMID: 32310017

Level of Evidence: 5 - Expert opinion

Type of Article: Review

BLUF: The World Stroke Organization has identified a sharp reduction in the number of acute stroke admission, thereby suggesting that even patients with moderate or severe symptoms are not receiving acute care. The authors suggest that research is needed to assess the relationship between COVID-19

and stroke prevalence and outcome, telemedicine is suitable for acute stroke and TIA management, and expertise and best practice guidelines must continue to be shared worldwide.

Abstract:

The COVID-19 pandemic affecting all parts of the world is having huge implications for stroke care. Not only do stroke patients appear to be more susceptible to severe infection, but the pandemic is having major implications on how we deliver stroke care, while ensuing safety of both our patients and health care professionals. COVID-19 infection itself has also been described as a risk factor for stroke. The World Stroke Organization has been monitoring the impact of the pandemic globally, and has identified an initial marked fall in stroke presentations as well as a widespread impact on stroke services. The pandemic is changing the way we deliver care, and has highlighted the enormous potential of telemedicine in stroke care.

Medical subspecialties

Dermatology

Which Dermatology Patients Attend to Dermatology Outpatient Clinics During the SARS-CoV-2 Outbreak in Turkey and What Happened to Them?

Cengiz FP, Emiroglu N, Bahali AG, Dizman D, Taslidere N, Akarslan TC, Gunes B, Mert O, Su Kucuk O, Onsun N.

Dermatol Ther.

2020 Apr 29; PMID: 32347618

Level of Evidence: 4 - Cross Sectional

Type of Article: Research

BLUF: Dermatological visits from 390 patients to outpatient dermatology clinics during the COVID-19 pandemic were analyzed. The most common reason for visit was acne (24%), and 19% of patients required an urgent visit (e.g. dose adjustment). Five patients were later reported to have tested positive for COVID-19. Elective examinations during the pandemic are of concern for risk of transmission.

Abstract:

Coronavirus disease, first emerged in Wuhan, rapidly spread all over the World since December 2019. There are concerns about elective dermatology appointments and its results. Herein, we aimed to find out which type of dermatologic patients attended to dermatology outpatient clinic [sic]. The patients visiting the clinics for elective dermatologic diseases between 11 and March 18, 2020 were included in this study. Their age, sex, diagnosis of disease, requirement for emergent intervention, and their medical records about COVID-19 were obtained. There were 390 patients attending to the [sic] dermatology outpatient clinic in this period. The most common disease was acne (N:94, 24%), only 19% of patients need emergent interventions or dose adjustment. There were 40 (10%) patients over the age of 65. After their visits, 5 patients were diagnosed as COVID-19 in two weeks. Dermatologic examinations may be a vector for SARS-CoV-2 transmission since being closed to the patient. Five of our patients were diagnosed as COVID-19 after their elective visit to hospital. Since the asymptomatic course of some young patients, most of the our [sic] patients weren't screened for COVID-19. Our findings support the concerns of elective physician examinations.

The Danger of Neglecting Melanoma During the COVID-19 Pandemic

Gomolin T, Cline A, Handler MZ

J Dermatolog Treat

2020 Apr 29, PMID: 32347761
Level of Evidence: 5 – Expert Opinion
Type of Article: Correspondence

BLUF: The authors of this correspondence urge dermatologists to maintain efficient melanoma management without jeopardizing diagnostic accuracy through the use of telehealth (when appropriate), while limiting exposure of SARS-CoV-2 to healthcare workers and patients during the COVID-19 pandemic in New York, USA.

Abstract:

Due to the COVID-19 pandemic, planned medical and surgical activities are being postponed. For the dermatology community, this interruption to the healthcare system can lead to delays in the diagnosis and treatment of melanoma. Neglecting melanoma during this crisis can result in increased mortality, morbidity and healthcare costs. With the COVID-19 pandemic evolving and no clear solutions in sight, it is time for the prospective evaluation of teledermatology. However, dermatologists should be cautious and continue seeing patients with pigmented lesions in person due to the necessity of early surgical intervention.

The role of virtual support groups for patients with hidradenitis suppurativa during the COVID-19 pandemic.

Stout M. *J Womens Dermatol.*
2020 Apr 29; PMID: 32352025

Level of Evidence: Level 5 - Expert Opinion
Article Type: Editorial

Summary: The authors share their experience of implementing a virtual discussion for patients with hidradenitis suppurativa to confide in each other about their condition. The authors suggest that live video conferencing support groups could benefit patients with morbid dermatological diseases during the COVID-19 pandemic.

Changing Paradigms of Dermatology Practice in Developing Nations in the Shadow of COVID-19: Lessons Learnt From the Pandemic.

Dermatol Ther.
Sheetanshu Kumar, Anuradha Bishnoi, Keshavamurthy Vinay
2020 Apr 29, PMID: 32347612

Level of Evidence: 5 - Expert opinion
Type of Article: Letter

Summary: This letter outlines strategies that can be used by Dermatologists to tackle the upcoming surge of patients while still maintaining the precautions of COVID-19 social distancing. First, increasing clinic hours and implementing staff shifts can mitigate overcrowding in waiting areas. Also, screening patients to determine COVID-19 risk before attending clinic can further lower risk of transmission. Lastly, designing transparent plastic or glass chambers for visual examination may enhance doctor-patient interaction comfort, while minimizing transmission.

The covid-19 outbreak in Italy: preventive and protective measures adopted by the dermatology unit of bologna university hospital.

Patrizi A, Bardazzi F, Filippi F, Abbenante D, Piraccini BM.
Dermatol Ther.

2020 Apr 29; PMID: 32347635.
Level of Evidence: 5 - Expert Opinion
Type of Article: Letter to the Editor

BLUF: This article details some changes by a dermatology clinic at Bologna University Hospital due to COVID-19 including cancelling unneeded surgeries and utilizing telemedicine.

Summary: This article details some of the changes that a dermatology clinic at Bologna University Hospital went through in order to deal with the COVID-19 pandemic. Surgeries were done on an as needed basis and telemedicine was utilized as much as possible. When a clinic visit was needed, hospital staff would contact the patient beforehand to establish their health and the patient was instructed to come to their appointment alone.

Cardiology

Recommendations for the organization of electrophysiology and cardiac pacing services during the COVID-19 pandemic : Latin American Heart Rhythm Society (LAHRS) in collaboration with: Colombian College Of Electrophysiology, Argentinian Society of Cardiac Electrophysiology (SADEC), Brazilian Society Of Cardiac Arrhythmias (SOBRAC), Mexican Society Of Cardiac Electrophysiology (SOMEEC).

Saenz LC, Miranda A, Speranza R, Texeira RA, Rojel U, Enriquez A, Figuereido M.
J Interv Card Electrophysiol.

2020 Apr 29; PMID: 32350745
Level of Evidence: 5 - Review
Type of Article: Review

BLUF: The purpose of this review is to provide recommendations regarding triaging for electrophysiology and cardiac pacing services in order to define what procedures, device checks, and clinic visits can be postponed during the COVID-19 pandemic. Overall, a case-by-case risk stratification of patients previously scheduled for in-clinic consult must be conducted (Table 1).

Abstract:

COVID-19 is a rapidly evolving public health emergency that has largely impacted the provision of healthcare services around the world. The challenge for electrophysiology teams is double; on one side preventing disease spread by limiting all nonessential face-to-face interactions, but at the same time ensuring continued care for patients who need it. These guidelines contain recommendations regarding triaging in order to define what procedures, device checks, and clinic visits can be postponed during the pandemic. We also discuss best practices to protect patients and healthcare workers and provide guidance for the management of COVID-19 patients with arrhythmic conditions.

High risk (evaluation needed)	Intermediate risk (case-by-case analysis)	Low risk (postpone until the pandemic has subsided)
<ul style="list-style-type: none"> - Pacing-dependent patients nearing battery depletion - Suspected device malfunction - ICD shocks - Activated alarms - Lead alerts (new high threshold, high/low impedance, lead noise in ICDs) - Syncope of suspected cardiac etiology - Suspected device infection 	<ul style="list-style-type: none"> - Non-pacing-dependent patients nearing battery depletion 	<ul style="list-style-type: none"> - Asymptomatic, non-pacing-dependent patients with adequate battery longevity - Patients with primary prevention ICD

Table 1. Risk stratification of patients followed in device clinic

Gastroenterology

COVID-19 and the digestive system: protection and management during the SARS-CoV-2 pandemic.

Crespo J, Iglesias-García J, Hinojosa Del Val JE, García García F, Gil de Miguel Á, Fernández Carrillo C, Ampuero J, Pérez-Cuadrado Martínez E. Crespo J, et al.

Rev Esp Enferm Dig.

2020 Apr 27; PMID: 32338017

Level of Evidence: 5 - Expert opinion

Type of Article: Review

BLUF: The authors offer recommendations for treating patients with gastrointestinal disorders in the midst of the COVID-19 pandemic. They recommend particular caution be used for patients on immunosuppression and acknowledge digestive endoscopy as a high-risk procedure for transmitting SARS-CoV-2.

Abstract: The purpose of this rapid review is to provide an update on the impact of SARS-CoV-2 infection on Gastroenterology and Hepatology departments, our patients, and our new way of working. The gastrointestinal tract and the liver are affected by SARS-CoV-2, especially in patients with immunosuppressive therapies. Patients with liver transplantation should be followed closely. Digestive endoscopy is a high-risk procedure for the transmission of SARS-CoV-2. While the pandemic lasts, we must adapt its indications and promote protective measures for patients and healthcare professionals alike. The COVID-19 pandemic has changed our priorities and the way we work, although we do not know what the repercussions will be after normality is reinstated.

Chapter of Gastroenterologists professional guidance for management of patients with liver disease in Singapore during the COVID-19 pandemic.

Chang JPE, Wong YJ, Yang WL, Lim KBL, Tan PS, Ho GH, Yip BCH, Li JW, Chong CH, Ong DEH, Chua TS, Vu CKF, Gwee KA, Ang TL, Tan CK.

Singapore Med J.

2020 Apr 29; PMID: 32349198

Level of Evidence: 5 –Review

Type of Article: Review

BLUF: This review summarizes the current available data on liver disease in COVID-19 and makes recommendations to guide management for patients in Singapore (Figure 1).

Abstract:

In this paper, we aim to provide professional guidance to clinicians who are managing patients with chronic liver disease during the current coronavirus disease 2019 (COVID-19) pandemic in Singapore. We reviewed and summarised [sic] the available relevant published data on liver disease in COVID-19 and the advisory statements that were issued by major professional bodies, such as the American Association for the Study of Liver Diseases and European Association for the Study of the Liver, contextualizing [sic] the recommendations to our local situation.

Disclaimer: The following recommendations are summarized from position statements published by international liver societies. ^{1,2}		
All patients with liver disease should comply with general recommendations for COVID-19 <ul style="list-style-type: none">• Good hand hygiene, practice physical distancing, wear a mask if unwell and seek medical advice promptly		
With pre-existing liver disease		
Outpatient clinic <ul style="list-style-type: none">• Limit outpatient visits to essential cases only• Where possible, consider the use of phone consultation or telemedicine to replace in-person clinic visits• Ensure all patients who visit the clinic are screened for potential COVID-19 symptoms or exposure• Consider limiting the number of caregivers accompanying patients to the clinic visit• Ensure appropriate physical distancing in the waiting area• A face mask is mandatory for physicians in outpatient hepatology clinic• Patients with severe COVID-19 symptoms should not be seen in the hepatology clinic but should be referred to a dedicated facility equipped with adequate PPE and infection control protocols.	Liver cirrhosis <ul style="list-style-type: none">• Consider telemedicine instead of in-person visits• Consider pneumococcal and influenza vaccination where feasible• Endoscopy for variceal screening should be deferred• Consider optimization of anticoagulation for patients at high risk of bleeding• Consider optimizing outpatient ambulatory services for paracentesis to reduce hospital admissions	Endoscopy <ul style="list-style-type: none">• Proceed with elective endoscopy only if the procedure is likely to have a significant clinical impact on patients' care. Otherwise, all non-urgent endoscopy procedures should be deferred• Consider using the Baveno-VI criteria to risk-stratify compensated cirrhosis patients for variceal screening• Refer to the Chapter of Gastroenterologists' professional guidance on endoscopy during the COVID-19 pandemic in Singapore³
Hepatocellular carcinoma (HCC) <ul style="list-style-type: none">• Continue usual surveillance for HCC. A delay in imaging for HCC surveillance may be considered depending on the patient's risk profile• Proceed with HCC treatment as indicated. Avoid delaying treatment due to the pandemic as its duration is unknown	Liver biopsy <ul style="list-style-type: none">• In patients without COVID-19, liver biopsy should proceed in those with active liver injury or ultrasound findings to confirm diagnosis prior to initiating treatment• Liver biopsy may be deferred for grading/staging of disease in stable patients with mildly elevated transaminases• In patients with active COVID-19, biopsy should be deferred unless absolutely necessary	No pre-existing liver disease <ul style="list-style-type: none">• When assessing elevated liver biochemistries in patients with COVID-19 consider etiologies unrelated to COVID-19 (e.g. hepatitis B and C, myositis, ischemia, cytokine release syndrome and drug-induced liver injury)• Limit unnecessary imaging for COVID-19 patients unless there is clinical suspicion of biliary obstruction, cholangitis or venous thrombosis• The presence of abnormal liver biochemistries should not be a contraindication to use investigational or off-label therapeutic agents for the treatment of COVID-19
Chronic viral hepatitis <ul style="list-style-type: none">• Consider telemedicine visits for follow-up of stable patients on long-term antiviral therapy. Send follow-up prescriptions by mail• Continue treatment of chronic hepatitis B and C patients who are already on treatment	Immunosuppression in liver disease <ul style="list-style-type: none">• Consult primary hepatologist regarding initiation or titration of immunosuppressants in patients with COVID-19• Prednisolone should be minimized; the dose but maintain a sufficient dosage to avoid adrenal insufficiency• Azathioprine or mycophenolate: consider reducing dose if there is lymphopenia, fever or worsening pneumonia• Calcineurin inhibitors: consider reducing but not stopping daily CNI dosage	Liver Transplant <ul style="list-style-type: none">• Adhere to the relevant advisories from the International Society for Liver Transplantation• Refer to published advisories from AASLD⁴ and EASL⁵ for more detailed information on management of pre and post liver transplant patients

Figure 1. Summary of recommendations published by international liver societies and contextualised for Singapore.

Ambulatory Management of perianal Crohn's Disease during the Covid-19 Pandemic.

Andrea D, Bruno S, Giuseppe S.

Colorectal Dis

2020 Apr 29; PMID: 32348620

Level of Evidence: 5 - Expert Opinion

Type of Article: Letter

Summary: The authors of this article, affiliated with an irritable bowel disease (IBD) center in Italy, present outpatient exploration of the anal canal and rectum as an alternative to exploration under anesthesia for Crohn's patients with symptomatic anal fistulas during the COVID-19 pandemic. They note that this modality requires fewer medical personnel to perform and does not require anesthesia, therefore decreasing the risk of COVID-19 transmission. They also caution that this procedure should only be offered at high volume IBD centers.

Hematology and Oncology

The Need for Prioritizing Cancer Surgeries Amidst the COVID-19 Pandemic.

Krishnamurthy A, Gopinath KS.

Indian J Surg Oncol.

2020 Apr 29; PMID: 32351285

Level of Evidence: 5 - Expert Opinion

Type of Article: Editorial

BLUF: It is difficult to prioritize cancer treatments amidst the COVID-19 pandemic, but the authors provided the following guidelines:

References

¹AASLD clinical insights for hepatology and liver transplant providers during the COVID-19 pandemic. April 7, 2020

²Boettler T, Newsonne PN, Mario UM et al. Care of patients with liver disease during the COVID-19 pandemic. Hepatology. 2020;71(4):1001-1007. DOI: <https://doi.org/10.1016/j.hepat.2020.100113>

³Ang TL, Li JW, Vu CK, et al. Chapter of Gastroenterologists' professional guidance on risk mitigation of gastrointestinal endoscopy during COVID-19 pandemic in Singapore. Singapore Med J. 2020 Apr 3; doi: 10.1142/smedj.2020050.

- Any life-threatening surgical emergencies warrant immediate surgical intervention
- Among non-emergent cases, priority should be given to cancer cases with a higher likelihood of cure or when there are no effective non-surgical treatments
- Patients scheduled for cancer surgeries should be triaged based on the risk of progression

Covid-19: Cancer mortality could rise at least 20% because of pandemic, study finds.

Wise J

BMJ

2020 Apr 29; PMID: 32349991

Level of Evidence: 5-Expert opinion

Type of Article: News

Summary: This news article covers research from University College London and Data-Can ([Lai A et al. 2020](#)) that analyzes health records and weekly hospital data in England and finds that urgent referrals for suspected cancer are down 76% and chemotherapy appointments are down 60% from pre-COVID-19 numbers. The combination of skipped screening appointments, missed chemotherapy, and potential infection with COVID-19 puts this group at high risk of mortality. The researchers urge increased use of telehealth primary care for early detection and more research to determine treatment priorities during this pandemic.

Oncology: navigating the COVID-19 Pandemic and Steer the Course.

Zimmermann S, Dietrich PY, Michelin O, Betticher D, Peters S.

Rev Med Suisse.

2020 Apr 29; PMID: 32348043

Level of Evidence: 5 - Expert Opinion

Type of Article: Comment

Summarizing excerpt: “We propose that optimal standards of care be upheld, and short-term safety concerns due to exposure to SARS-CoV-2 be weighed against a long-term compromise in cancer prognosis when deciding on adjustments in cancer care. Proper mitigation strategies in the clinic and use of less resource-heavy but equivalent treatment alternatives often allow optimal cancer care. The magnitude of benefit of cancer treatments needs to be systematically considered.”

Cancer at the time of the COVID-19 hurricane.

Blandino G.

J Exp Clin Cancer Res.

2020 Apr 29; PMID: 32349775

Level of Evidence: 5 - Expert Opinion

Type of Article: Comment

Summary: The COVID-19 pandemic has “halted patient enrolment into active clinical trials, it disabled new clinical studies and it delayed all in-person cancer meetings by almost 1 year,” and because of this, cancer centers have had to significantly decrease their census. There is no consensus on what can and should be done in light of these events, and this commentary proposes a future conference or global research platform discussing a new standard of care on the basis of latest research.

Letter: Surgical Management of Brain Tumor Patients in the COVID-19 Era.

Zacharia BE, Eichberg DG, Ivan ME, Hanft S, Boockvar JA, Isildak H, Mansouri A, Komotar RJ, D'Amico RS.

Neurosurgery.

2020 Apr 29; PMID: 32347942

Level of Evidence: 5 - Expert Opinion

Type of Article: Letter

Summary: The authors provide guidelines for optimal surgical decision-making to treat brain tumor patients during the COVID-19 pandemic:

- Intracranial tumor cases should be stratified according to urgency
- All patients should be tested for COVID-19 as close to surgery as possible
- Precautions should be taken peri-operatively for a patient with confirmed or suspected COVID-19
- Defer endoscopic endonasal procedures unless absolutely necessary due to the risk of aerosolization

Maintaining stereotactic radiosurgical treatments during Covid-19 outbreak: the case of the Gamma Knife Unit in Brescia - Italy.

Franzin A, Spatola G, Giudice L, Migliorati K, Vivaldi O, Giorgi C.

Br J Neurosurg.

2020 Apr 29; PMID: 32347128

Level of Evidence: 5 - Expert opinion

Type of Article: Letter to the Editor

BLUF: The authors state that stopping all non-urgent treatments during the COVID-19 pandemic is unrealistic given the amount of time it will take to resolve. They suggest implementing ways to prevent transmission during procedures including limiting visitors, taking temperatures of all patients and staff daily, and wearing appropriate personal protective equipment (PPE). They outline the changes they have made to the Gamma Knife services at Fondazione Poliambulanza including admitting patients directly to the office, limiting daily patient load, creating a “protected COVID-free path”, halting in-person follow-ups, and ceasing hypofractionated treatments.

Rheumatology

American College of Rheumatology Guidance for the Management of Adult Patients with Rheumatic Disease During the COVID-19 Pandemic.

Mikuls TR, Johnson SR, Fraenkel L, Arasaratnam RJ, Baden LR, Bermas BL, Chatham W, Cohen S, Costenbader K, Gravellese EM, Kalil AC, Weinblatt ME, Winthrop K, Mudano AS, Turner A, Saag KG
Arthritis Rheumatol

2020 Apr 29; PMID: 32349183

Level of Evidence: 5 - Expert opinion

Type of Article: Review, Guideline

BLUF: The American College of Rheumatology (ACR) developed a task force, consisting of 10 rheumatologists and 4 infectious disease specialists, to review recent literature and develop guidelines for treating rheumatologic diseases during the COVID-19 pandemic. Overall, they found the current evidence to be of low quality on topics of interest (risk assessment, general infection prevention and rheumatic disease treatment during COVID-19), and after a thorough voting process they published

25 guidance statements on rheumatic disease treatment during COVID-19 to be revised as more research continues to surface.

Abstract:

Objective: To provide guidance to rheumatology providers on the management of adult rheumatic disease patients in the context of the COVID-19 pandemic.

Methods: A task force, including 10 rheumatologists and 4 infectious diseases specialists from North America, was convened. Clinical questions were collated, and an evidence report was rapidly generated and disseminated. Questions and drafted statements were reviewed and assessed using a modified Delphi process. This included two rounds of asynchronous anonymous voting by email and three webinars with the entire panel. Task force members voted on agreement with draft statements using a 9-point numeric scoring system (1 to 9), and consensus was determined to be "low", "moderate", or "high", based on the dispersion of votes. For approval, median votes were required to meet pre-defined levels of agreement (median values of 7-9, 4-6, and 1-3 defined as "agreement", "uncertainty" or "disagreement", respectively) with either moderate or high levels of consensus.

Results: The task force approved 77 initial guidance statements, 36 with moderate and 41 with high consensus. These were combined, resulting in 25 final guidance statements.

Conclusion: These guidance statements are provided to promote optimal care during the current pandemic. However, given the low level of available evidence and the rapidly evolving literature, this guidance is presented as a "living document" and future updates are anticipated.

Surgical Subspecialties

General Surgery

Hernia in the time of COVID-19.

Campanelli G.

Hernia

2020 Apr 29; PMID: 32350734

Level of Evidence: 5 - Review

Type of Article: Editorial

BLUF: This review provides a brief overview of the importance of continued abdominal hernia surgery research in the context of COVID-19.

Summarizing Excerpt:

"In this context [COVID-19], examination of the problems associated with contaminated or potentially contaminated fields has, once again, highlighted the importance of considering the use of different types of prosthesis, such as the recently marketed biosynthetic prostheses... This issue also sets out to describe the current situation as regards abdominal wall surgery in a selection of European countries, as opposed to several low-resource countries. I feel it is worth stressing that the personal experience acquired by many of us through repeated humanitarian missions in countries with low availability of resources confirms that excellent hernia surgeries can be performed even when resources are limited. Education plays a huge role in this, both the education we ourselves enjoyed, and the knowledge we are able to pass on to young surgeons in these areas."

Plastic Surgery

The Effects of a Novel Global Pandemic (COVID-19) on a Plastic Surgery Department

Singh P, Ponniah A, Nikkhah D, Mosahebi A

Aesthet Surg J

2020 Apr 29; PMID: 32347920

Level of Evidence: 5 – Expert Opinion

Type of Article: Letter to the Editor

Summary: The authors of this letter discuss possible strategies to limit transmission of SARS-CoV-2 in plastic surgery departments across the United Kingdom during the COVID-19 pandemic in order to limit transmission of SARS-CoV-2, including prioritization of emergency work over elective cases; redistribution of the workforce to acute medicine, emergency rooms, intensive care units; self-isolation of healthcare workers that may have been exposed; consideration of stricter measures on social distancing.

Neurosurgery

Neurosurgery at the time of COVID-19: how this pandemic infectious disease is influencing neurosurgical activities and patient management.

Ricciardi L, Trungu S, Scerrati A, De Bonis P, Miscus M, Raco A

J Neurosurg Sci

2020 Apr 29; PMID: 32347683; No abstract available

Level of Evidence: 5- Expert opinion

Type of Article: Research

Summary: Due to the life-threatening medical emergency from COVID-19, elective surgeries have been almost completely interrupted. This has made a substantial impact on patients with neurological medical conditions. Physicians are unable to perform pertinent physical examinations or adequately check on patients' postsurgical wounds and neurological-clinical status. To remedy these issues, cases are being addressed by telephone evaluation, dedicated buildings have been converted into surgical and hospitalization departments, and patients are being educated to disinfect and dress their own surgical wounds.

Neurosurgical activity during COVID-19 pandemic: an expert opinion from China, South Korea, Italy, United Stated of America, Colombia and United Kingdom.

Fontanella MM, Saraceno G, Lei T, Bederson JB, You N, Rubiano AM, Hutchinson P,

Wiemeijer-Timmer F, Servadei F

J Neurosurg Sci

2020 Apr 29; PMID: 32347685

Level of Evidence: 5 - Expert Opinion

Type of Article:

BLUF: Expert neurosurgeons from 6 countries (China, Italy, South Korea, United States, Columbia, and the United Kingdom) reported on the impact of COVID-19 on their healthcare system reorganization, response, and impacts on neurological activity:

- China:

- One hospital was closed, another was reserved for COVID-19 patients, and the main hospital was used for urgent non-COVID-19 patients. COVID-19 testing was performed at the outpatient department.
- Elective surgeries were not admitted, and neurosurgery staff were deployed as infection staff.
- Patients in an observation ward undergo two nasal swabs for COVID-19 and are transferred to the clean unit (both swabs negative) or the COVID hospital (one or both

swabs positive), and the neurosurgical ward has been reformed into three zones and two passages (Figure 4).

- United States (Mount Sinai Health System, New York City):
 - System was placed in near total lockdown with a tent hospital created in Central Park, capacity was doubled in negative-pressure ICU rooms, and the neurosurgery staff was fully deployed in direct COVID-19 patient care or to fill in for emergency neurosurgical or neurovascular coverage.
 - Increased incidence of large vessel occlusion strokes in young patients with COVID-19 has led to an increased neuroendovascular emergency volume (2-3 endovascular and emergency surgery cases per day).
 - Urgent neurosurgery cases in patients without COVID-19 are transferred along a “green” or “Cold COVID” pathway involving separate entrances, elevators, and floors from COVID units, and patients are tested twice prior to surgery.
- South Korea:
 - Body temperatures are screened at every entrance with brief medical history taking and obligatory protective masks, with restricted movement and minimized contact in the hospitals and sterilizing chambers placed at hospital entrances (Figure 1).
 - First triage occurs in the emergency department with exposure history, symptoms, and chest CT indicating the need for naso-pharyngeal swab and/or isolation.
 - Floor isolation and negative pressure ORs are used for suspected or confirmed COVID-19 patients, and non-infected or quarantined patient surgeries are performed in the last surgical slot following complete OR disinfection.
- Italy:
 - The health system was reorganized into three main hubs (Figure 2), with a mandatory neurotrauma (2 neurosurgeons on duty at all times) and general trauma team, orthopedists, neurosurgery-reserved ICU beds, stroke interventional radiologists, a non-COVID OR and a negative pressure OR; and a fourth hub hospital for neuro-oncological patients.
 - Patients are initially placed in a “filter area” for chest x-ray and nasal swab, and are then transferred to a clean ward (both tests negative) or COVID ward (one or both results positive).
 - The hub hospitals are equipped to treat hyperacute conditions such as hemorrhage, acute hydrocephalus, vertebral tumors risking medullary compression, brain tumors risking intracranial hypertension, and spinal/head trauma.
- Colombia and the Latin American Region:
 - Prevention is key considering the possibility of PPE exhaustion, and guidelines are being developed for management of potential positive cases in emergent surgery cases.
 - With the Federation of Neurosurgical Societies, recommendations have been developed for non-emergent and spinal surgeries.
 - Funding for medical services, scarcity of PPE, and lack of rapid testing are some concerns.
- United Kingdom:
 - The NHS coordinated reorganization of the healthcare system, and a technical guide was produced to guide the management of neurotrauma cases in the setting of emergency department attendance and obligatory in-patient.
 - Patients with easily reversible conditions benefit from admission to major trauma centers, and patients with cranial/spinal injuries can be managed conservatively.
 - Studies are being conducted for effective and scalable management of neurosurgical conditions.

Abstract:

Background: More than a million and a half people are infected worldwide with more than 90.000 casualties. The ongoing COVID-19 pandemic is radically altering both socio-economic and health care scenarios.

Methods: On April 4, 2020, at 13.30 CET, a webinar was broadcasted, organized by Global Neuro and supported by WFNS. Expert neurosurgeons from 6 different countries (China, Italy, South Korea, USA, Colombia and United Kingdom) reported on the impact of the COVID-19 pandemic on their health care systems and neurosurgical activity.

Results: The first part focused on the epidemiology until that date. The USA were the most affected State with 450.000 cases, followed by Italy (140.000 cases and 19.000 casualties), China (83.305 cases and 3.345 had died), South Korea (10.156 cases with 177 casualties), the UK (38.168 cases and 3.605 deaths) and Colombia (1.267 cases and 25 deaths). The second part concerned Institution and staff reorganization. In every country all surgical plans have been modified. In Wuhan the staff was enrolled in COVID-units. In New York, the Mount Sinai Health System was in lockdown mode. In South Korea, sterilizing chambers have been placed. In Italy some Departments were reorganized in a Hub and Spoke fashion. In the Latin American region, they adopted special measures for every case. In the UK a conference center has been used to accommodate intensive care unit (ICU) beds. The third part was about neurosurgical practice during the COVID-19 pandemic. In Wuhan the main hospital was used for urgent non-COVID patients. In New York the neurosurgeon staff work in ICU as advanced practitioner (APP). In South Korea every patient is screened. In Italy the on-duty Hub neurosurgeons have been doubled. In the Latin American region recommendations have been developed by some neurosurgical societies. In the UK local non-specialists and traumatologists neurosurgical experts are collaborating in terms of best practice. The final part touched upon how to perform safe surgery and re-start after the pandemic. In China elective surgical procedures are performed very carefully. In New York, surgery planning will be based on patient's viral load. In South Korea and in Italy disinfection plans and negative-pressure O.R. were created. In the Latin American region, the aim is to have a rapid testing system. In the UK they have developed flowcharts to guide trauma patient management.

Conclusions: In general, the pandemic scenario was presented as a thought-provoking challenge in all countries which requires tireless efforts for both maintaining emergency and elective neurosurgical procedures.

Otolaryngology

Evidence-Based Guidelines for Management of Head and Neck Mucosal Malignancies During the COVID-19 Pandemic

Crosby DL, Sharma A

Otolaryngol Head Neck Surg

2020 Apr 28, PMID: 32340549

Level of Evidence: 4- Meta Analysis of Expert Opinion Guidelines

Type of Article: Research

BLUF: Researchers systematically examine 45 papers on COVID-19 and management of head and neck mucosal cancers (HNC) in order to provide evidence-based guidelines for performing surgical interventions on HNC patients while minimizing risk to patients and healthcare workers and maintaining a safe environment during the COVID-19 pandemic.

- **Initial assessment**

- Telemedicine: Evaluation using telehealth when appropriate

- Treat all patients as if they have COVID-19 and wear high-level personal protective equipment (PPE), including gown, gloves, eye protection, and at least an N-95 respirator
- Use of flexible fiberoptic laryngoscopy (FFL) should be used for emergent cases
- Limit visitors, but if they must remain, ensure that they are wearing full PPE
- **Determination of Treatment Plan**
 - Timing of surgery depends on local and regional factors such as impact of COVID-19 pandemic, availability of PPE, and patient-related factors such as chances of oncologic cure, quality of life, potential side effects, etc.
 - Surgical candidates must be evaluated for risk factors for adverse outcomes on the basis of age, sex, comorbidities, and metastatic cancer
- **Operating Room (OR) management**
 - Initial testing for SARS-CoV-2 within 48 hours of surgery, followed by secondary testing within one day of surgery
 - Both tests negative: continue with surgery
 - If testing not available, treat the patient as if COVID-19 positive and follow all precautionary measures
 - Perform surgical procedure in a negative-pressure room and with full PPE, including disposable gowns, disposable surgical caps, gloves, N95 respiratory with face shield or powered air-purifying respirator
 - Only essential personnel should be in the room
 - Use of adhesive and sterile drapes to separate mucosal from non-mucosal sites during surgical resection to minimize risk
- **Airway management**
 - Most senior team member to perform all airway interventions
 - All nonessential team members to be excused from OR during manipulation of airway and from procedures involving the mucosa of head and neck
 - Avoid aerosol-generating procedures when appropriate
 - If they must be used, ensure video set up such that the practitioner's face is not in close proximity to patient's face
 - Use disposable airway management tools
 - Avoid tracheotomy when possible, but if indicated, performed in negative-pressure room as well as take the following precautions: induce complete paralysis to avoid coughing, stop ventilation prior to entering the airway, and reduce suctioning during the procedure
 - Open tracheotomy is the preferred surgical airway method
- **Postoperative care**
 - Full PPE to be donned by staff as patients typically require inpatient postoperative care
- **Surveillance**
 - Risk of COVID-19 with FFL calls into question the necessity and frequency of surveillance for patients with glottic cancer
 - After social distancing protocols are no longer enforced, it will be important to follow up with HNC patients for psychiatric issues

Abstract:

Objective: Due to the current coronavirus disease 2019 (COVID-19) pandemic, otolaryngologists face novel challenges when treating patients with head and neck cancer. The purpose of this review is to evaluate the current evidence surrounding the treatment of these patients during this pandemic and to provide evidence-based recommendations with attention to increased risk in this setting.

Data sources: A review of the literature was performed with PubMed. Because recently published articles on this topic may not yet be indexed into PubMed, otolaryngology journals were hand searched for relevant articles. Guidelines from national organizations were reviewed to identify additional relevant sources of information.

Review methods: Two groups of search terms were created: one with terms related to COVID-19 and another with terms related to head and neck cancer and its management. Searches were performed of all terms in each group as well as combinations of terms between groups. Searches and subsequent exclusion of articles were performed in accordance with the PRISMA guidelines (Preferred Reporting Items for Systematic Reviews and Meta-analyses). Additional articles were identified after relevant journals and guidelines from national organizations were reviewed.

Conclusions: Patients with head and neck mucosal malignancy require continued treatment despite the current pandemic state. Care must be taken at all stages of treatment to minimize the risk to patients and health care workers while maintaining focus on minimizing use of limited resources.

Implications for practice: Patient care plans should be guided by best available evidence to optimize outcomes while maintaining a safe environment in the setting of this pandemic.

Self-removing passive drain to facilitate postoperative care via telehealth during the COVID-19 pandemic.

Qualliotine, Jesse R; Orosco, Ryan K

Head Neck

2020 Apr 29; PMID: 32347997

Level of Evidence: 4 - Case Report

Type of Article: Case Report

BLUF: This is a case report of a 57 year-old female with a history of submandibular malignant adenoid cystic carcinoma who subsequently underwent an uncomplicated tumor removal with the placement of a simple Penrose drain placed instead of a customary closed-suction drain. By doing this, providers were able to use telehealth for postoperative follow-up, thereby preventing additional risk of transmission of COVID-19; adaptations such as these can help mitigate unnecessary exposure for patients and healthcare workers.

Abstract:

Background: Telehealth postoperative visits are an attractive strategy to minimize exposure, especially during the SARS-CoV-2 (COVID-19) pandemic. The use of a surgical drain often prevents this minimal-exposure approach in that patients return to the outpatient clinic for drain removal.

Methods and results: Following unilateral neck dissection, the customary closed-suction drain was replaced with a self-removing, passive drain dressing to facilitate same-day discharge and telehealth postoperative follow-up. The patient removed the dressing and drain at home during a telehealth visit on postoperative day 4 and she healed favorably without any signs of infection or seroma.

Conclusions: When thoughtfully applied in the appropriate clinical context, small practice adaptations like this can facilitate telehealth solutions that diminish unnecessary exposure for patients, their caregivers, and health care staff.

Best Practice Recommendations for Pediatric Otolaryngology during the COVID-19 Pandemic.

Bann DV, Patel VA, Saadi R, Goyal N, Gniady JP, McGinn JD, Goldenberg D, Isildak H, May J, Wilson MN.

Otolaryngol Head Neck Surg.

2020 Apr 28, PMID: 32340588

Level of Evidence: 5 - Literature Review

Article Type: Research

BLUF: The authors conducted a literature review on pediatric COVID-19 cases for practice recommendations and found that various articles agreed on PPE use, specifically N95, and further protection if performing a procedure. It is preferred to use disposable laryngoscopes, HEPA filters for anesthesia machines, avoid high-flow nasal cannulas, screen for COVID-19 prior to procedures, prioritize bilateral hearing loss, and attempt to treat medically before scheduling surgery.

Abstract:

Objective: To review the impact of coronavirus disease 2019 (COVID-19) on pediatric otolaryngology and provide recommendations for the management of children during the COVID-19 pandemic.

Data Sources: Clinical data were derived from peer-reviewed primary literature and published guidelines from national or international medical organizations. Preprint manuscripts and popular media articles provided background information and illustrative examples.

Methods: Included manuscripts were identified via searches using PubMed, MEDLINE, and Google Scholar, while organizational guidelines and popular media articles were identified using Google search queries. Practice guidelines were developed via consensus among all authors based on peer-reviewed manuscripts and national or international health care association guidelines. Strict objective criteria for inclusion were not used due to the rapidly changing environment surrounding the COVID-19 pandemic and a paucity of rigorous empirical evidence.

Conclusions: In the face of the COVID-19 pandemic, medical care must be judiciously allocated to treat the most severe conditions while minimizing the risk of long-term sequelae and ensuring patient, physician, and health care worker safety.

Implications for practice: The COVID-19 pandemic will have a profound short- and long-term impact on health care worldwide. Although the full repercussions of this disease have yet to be realized, the outlined recommendations will guide otolaryngologists in the treatment of pediatric patients in the face of an unprecedented global health crisis.

Management of Dysphagia in The Head and Neck Cancer Patient During COVID-19 Pandemic: A Practical Strategy

Ku PK et al.

Head Neck

2020 Apr 29, PMID: 32348591

Level of Evidence: 5 – Literature Review

Type of Article: Guidelines

BLUF: The authors of this review provide practical workflow guidelines for managing dysphagia in head and neck cancer (HNC) patients on both COVID-19 negative and COVID-19 positive patients during the pandemic in Italy while limiting exposure of SARS-CoV-2 in healthcare workers and patients.

- Preference of the videofluoroscopic swallowing studies (VFSS) procedure over the fiberoptic endoscopic evaluation of swallowing (FEES) due to lower risk of aerosolization from the nasal passage and nasopharynx
 - Use of IQAir® HealthPro® (Incen AG, Switzerland) air-filter with HEPA class H13 filtration system is recommended during VFSS procedure
- Suspension of laryngeal sensory testing
- Mandatory use of high-level PPE, including N95 respirators and positive airway power respirators (PAPR), face shield, goggles, and isolation gown during aerosol-generating procedures

- If condition is not urgent, postpone any FEES or VFSS for 14 days in high-risk patients based on history of travel, occupation, contact and clustering phenomenon) and symptomatology
- If condition is urgent, SARS-CoV-2 testing or full aerosol PPE are recommended
- Clinical evaluation and swallowing therapy done through telehealth

Abstract:

The global pandemic of 2019 Novel Coronavirus Disease (COVID-19) has tremendously altered routine medical service provision and imposed unprecedented challenges to the healthcare system. This impacts patients with dysphagia complications caused by head and neck cancers. As this pandemic of COVID-19 may last longer than SARS in 2003, a practical workflow for managing dysphagia is crucial to ensure a safe and efficient practice to patients and healthcare personnel. This document provides clinical practice guidelines based on available evidence to date to balance the risks of SARS-CoV-2 exposure with the risks associated with dysphagia. Critical considerations include reserving instrumental assessments for urgent cases only, optimizing the non-instrumental swallowing evaluation, appropriate use of PPE, and use of telehealth when appropriate. Despite significant limitations in clinical service provision during the pandemic of COVID-19, a safe and reasonable dysphagia care pathway can still be implemented with modifications of setup and application of newer technologies.

[The Effects of the COVID-19/SARS-CoV-2 Pandemic Outbreak on Otolaryngology Activity in Italy.](#)

Ralli M, Greco A, de Vincentiis M.

Ear Nose Throat J.

2020 Apr 29, PMID: 32347112

Level of Evidence: 5 - Expert Opinion

Article Type: Letter to the Editor

BLUF: The authors write how COVID-19 has changed practice in otolaryngology and has impacted services provided to patients and increased waiting times to schedule future appointments. Patients currently seen in Italy are for oncology, epistaxis, new onset hearing loss, abscesses, and respiratory distress evaluation. The authors suspect their practice will continue to be affected even after the pandemic.

Abstract:

The coronavirus disease 2019 (COVID-19) pandemic during the first months of 2020 is causing profound changes in worldwide health care systems, resulting in a major reduction of surgical interventions and routine non-urgent outpatient diagnostic procedures. The lockdown due to the COVID-19 pandemic in Italy, one of the most affected countries in Europe, is having severe effects on the otolaryngology medical and surgical activities. The main changes are represented by the postponement of outpatient visits and scheduled surgery, while the only guaranteed service is reserved to diagnostics and surgery for oncology and urgent patients. In these cases, given the sites of action typical of the otolaryngology practice, physicians and nurses are exposed to a high risk of contagion through virus aerosol transmission. Furthermore, as the current measures of lockdown continue, it will be difficult to perform scheduled and new diagnostic assessments, medical treatments and surgical procedures in a timely manner favoring the risk of diagnostic and therapeutic delays with severe impact on patients' health.

Health workers' safety during tracheostomy in COVID-19 patients: Homemade protective screen.

Cordier PY, De La Villeon B, Martin E, Goudard Y, Haen P.
Head Neck.

2020 Apr 29; PMID: 32347991

Level of Evidence: 5 - Expert Opinion

Article Type: Letter to the Editor

BLUF: The authors write about their experience on limiting secretions and share their equipment idea which includes the use of a metal frame surrounding the patient's neck and covering with single use clear C-arm with height of metal sufficient to allow for working under it. Authors found this to be quick and accessible while decreasing their risk of exposure to aerosolized secretions.

Abstract:

As an aerosol and droplets generating procedure, tracheostomy increases contamination risks for health workers in the coronavirus disease context. To preserve the health care system capacity and to limit virus cross-transmission, protecting caregivers against coronavirus infection is of critical importance. We report the use of external fixator equipment to set up a physical interface between the patient's neck and the caregiver performing a tracheostomy in COVID-19 patients. Once the metal frame set in place, it is wrapped with a single-use clear and sterile cover for surgical C-arm. This installation is simple, easy, and fast to achieve and can be carried out with inexpensive material available in every hospital. This physical interface is an additional safety measure that prevents the direct projection of secretions or droplets. It should, of course, only be considered as a complement to strict compliance with barrier precautions and personal protective equipment.

Transplant Surgery

How to Guarantee Liver Transplantation in the North of Italy During the COVID-19 Pandemic. A Sound Transplant Protection Strategy

Lauterio A, De Carlis R, Belli L, Fumagalli R, De Carlis L
Transpl Int

2020 Apr 29; PMID: 32348586

Level of Evidence: 5 – Expert Opinion

Type of Article: Letter

BLUF: A group of physicians pen a letter detailing how their hospital managed liver transplantation and non-COVID-19 ICU admissions in the midst of high capacity of ICUs already retrofitted to accommodate more patients. They urge separation of corridors and ICUs to prevent COVID-19 infection, and they screen transplant donors for SARS-CoV-2 to determine eligibility. Their protocols have resulted in the same number of transplants this year compared to 2019, prior to Italy's COVID-19 outbreak.

Abstract:

The impact on the Italian national healthcare service of the COVID-19 pandemic has already been reported (1). To date, measures have been taken to adapt our healthcare systems (2). The number of patients infected in Italy since 20 February 2020 has closely followed an exponential trend, challenging our universal-coverage public healthcare system especially in terms of the availability of intensive care unit (ICU) beds, healthcare providers, and blood products (1,2).

OBGYN

Should we stop aspirin prophylaxis in pregnant women diagnosed with COVID-19?

Mathilde G, Rolnik DL, Hoffman MK, Panchaud A, Baud D.

Ultrasound Obstet Gynecol.

2020 Apr 29; PMID: 32349165

Level of Evidence: 5 - Expert opinion

Type of Article: Letter

Summarizing Excerpt: "We recommend immediate cessation of aspirin prescribed for preeclampsia prophylaxis upon diagnosis of a SARS-CoV-2 infection, avoidance of aspirin for the duration of the disease, and restarting the medication after full recovery; especially for women in the third trimester of pregnancy, as the benefit is minimal and aspirin could contribute to severe bleeding in thrombocytopenic COVID-19 patients or if emergency delivery (cesarean section) is indicated by maternal condition."

Orthopaedics

Educating Surgeons to Educate Patients About the COVID-19 Pandemic.

Saxena A, Bullock M, Danoff JR, Rodd DS, Fischer SJ, Stronach BM, Levine BR

J Arthroplasty

2020 Apr 18; PMID: 32340829

Level of Evidence: 5 - Expert Opinion

Type of Article: Communication

BLUF: Authors compile information regarding COVID-19 to educate physicians and patients:

- Specifically regarding elective orthopedic procedures, if delaying the surgery more than 4-6 weeks will cause more harm than good, is it recommended to conduct the surgery but discuss the risk of perioperative COVID-19 infection.
- The FDA is recommending to avoid the use of NSAIDs as it may aggravate COVID-19 symptoms, so selection of alternative treatments in patients with symptomatic arthritis is recommended.
-

Abstract:

The spring of 2020 has been a trying time for the global medical community as it has faced the latest pandemic, COVID-19. This contagious and lethal virus has impacted patients and health care workers alike. Elective surgeries have been suspended, and the very core of our health care system is being strained. The following brief communication reviews pertinent details about the virus, delaying elective surgeries, and what patients can do during this time. The goal is to disseminate factual data that surgeons can then use to educate their patients.

Foot and ankle service adaptation in response to COVID-19 and beyond.

Feeley I, McAleese T, Clesham K, Maloney D, Crozier-Shaw G, Hughes A, Bayer T

Ann Med Surg (Lond)

2020 Apr 28; PMID: 32346473

Level of Evidence: 5 - Expert opinion

Type of Article: Commentary

BLUF: The author comments on how their foot and ankle orthopedic practice has implemented evidence-based changes to minimize transmission of COVID-19. They describe their use of technology

for communication/referrals, zoom fracture conferences, and restructuring of surgical follow up including tele-medicine appointments and developing a website to provide patients with home rehabilitation physiotherapy.

Abstract:

The disruption to healthcare provision as a result of the COVID-19 pandemic has compelled us to streamline healthcare delivery. This has given us an opportunity to implement healthcare technology, reform inter-disciplinary collaboration and ultimately enhance patient care. We discuss some of the advances made by the foot and ankle department at our hospital. These innovations have broad applicability and will hopefully ignite discussion among a number of healthcare teams about improving the future care of their patients

Pathology

The Autopsy Debate During the COVID-19 Emergency: The Italian Experience

Sapino A, Facchetti F, Bonoldi E, Gianatti A, Barbareschi M, Società Italiana di Anatomia Patologica e Citologia - SIAPEC

Virchows Arch

2020 Apr 29; PMID: 32350596

Level of Evidence: 5 – Mechanism-based Reasoning

Type of Article: Editorial

Summary: The authors represent the Italian Society of Surgical Pathology and Cytology in a letter that lays out provisional guidelines for autopsy during this emergent time of pandemic. The guidelines below aim to protect the workers by minimized exposure.

- “For the entire period of the emergency phase, autopsies or post-mortem diagnostic studies should not be performed in full-blown cases of COVID-19”
- “...limit the execution of the autopsies to those aimed at diagnosing the cause of death, strictly limiting those for study purposes”
- “A careful preventive assessment of the risks and benefits associated with any autopsy request should be done”
- “Any procedure which can produce aerosols should be avoided”

Geriatrics

On the Pharmacy Radar: COVID-19 and Older People

Alderman, Chris

Sr Care Pharm

2020 May 1; PMID: 32340654

Level of Evidence: 5 - Expert Opinion

Type of Article: Clinical Guidelines

BLUF: This author provides a brief summary of current COVID-19 drug therapies and issues for a pharmacy audience with special regard to the care of older adults, detailed below:

- COVID-19 surface survival: in some studies COVID-19 could survive on surfaces such as plastic or stainless steel up to 72 hours.
- Therapeutics: a phase 1 COVID-19 vaccine trial has begun, otherwise there have been insufficient trials to recommend one drug therapy over another

Abstract:

The COVID-19 pandemic presents many medical and social issues for older people. Presented here is a range of information arising from related areas that have impact upon the safety and efficacy of drug therapy in the context of COVID-19. Issues include pharmacy practice, clinical therapeutics, and possible new treatments for the virus. More information will be published in the coming issues of *The Senior Care Pharmacist*.

PM&R

Redefining Pathways into Acute Rehabilitation During the COVID-19 Crisis.

Gitkind AI, Levin S, Dohle C, Herbold J, Thomas M, Oh-Park M, Bartels MN. Gitkind AI, et al. PM R.

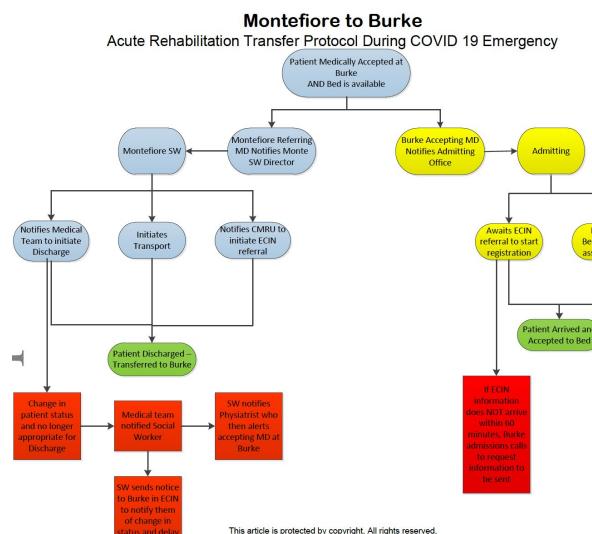
2020 Apr 29; PMID: 32347661

Level of Evidence: Level 5 - Expert Opinion

Article Type: Editorial

BLUF: The authors share their challenges and strategies as an inpatient rehabilitation facility (IRF) during the COVID-19 pandemic, specifically touching on their surge plans to increase bed capacity, new patient screening process and admission criteria (which included collaborating with internal medicine colleagues), implementation of a direct physician to physician referral process, assigning beds based on COVID-19 status, shortening transfer time to IRF, and adjusting therapy services to be at bedside.

Abstract: The COVID-19 Pandemic has necessitated drastic changes across the spectrum of healthcare, all of which have occurred with unprecedented rapidity. The need to accommodate change on such a large scale has required ingenuity and decisive thinking. Within the field of Physical Medicine and Rehabilitation we have been faced with many of these challenges. In New York City, the epicenter of the pandemic in the United States, we were among the first to encounter many of these challenges. One of the largest lessons included learning how to streamline our admissions and transfer process into our acute rehabilitation hospital as part of a concerted effort to make acute care hospital beds available as quickly as possible.



Beyond acute care: Why collaborative self-management should be an essential part of rehabilitation pathways for COVID-19 patients.

Wainwright TW, Low M.

J Rehabil Med.

2020 Apr 29; PMID: 32350542

Level of Evidence: 5 - Expert opinion

Type of Article: Letter to the Editor

Summary: In this article, the authors discuss how self-management strategies have been shown to be a key factor in the “management of longer-term conditions, and are recognized as being important for patients recovering from acute illness and disaster situations.” The authors stress that self-management and inter-disciplinary care is not a current standard of rehabilitation care, and that facilities should plan for its implementation.

Psychiatry

Urgent need to develop evidence-based self-help interventions for mental health of healthcare workers in COVID-19 pandemic.

Yang L, Yin J, Wang D, Rahman A, Li X.Yang L, et al.

Psychol Med.

2020 Apr 28; PMID: 32340642

Level of Evidence: 5 - Expert Opinion

Type of Article: Article

Summary: Due to the limitations of implementing conventional evidence based medicine mental health interventions, such as face-to-face psychotherapy and lack of participation in individual or group sessions from healthcare workers, the authors propose the World Health Organization evidence based medicine self-help intervention called “Self Help +.” Self-help + is based on an Acceptance Commitment Therapy and uses pre-recorded audio sessions with an illustrated self-help book.

R&D: Diagnosis & Treatments

Current Diagnostics

The Role of Antibody Testing for SARS-CoV-2: Is There One?

St Theel, E. S., Slev, P., Wheeler, S., Couturier, M. R., Wong, S. J., Kadkhoda, K.

J Clin Microbiol

2020 Apr 29; PMID: 32350047

Level of Evidence: 5 – Expert Opinion

Type of Article: Commentary

BLUF: Commercial serologic assays are highly variable, differing in format, antibody class detected, targeted antigen and specimen types. In addition, the lack of understanding for how such assays should be utilized and what the results indicate or do not makes the interpretation of results complicated.

Abstract:

The emergence of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) brought with it rapid development of both molecular and serologic assays for identification of COVID-19 infections. While Food and Drug Administration (FDA) emergency use authorization (EUA) is required for clinical application of SARS-CoV-2 molecular tests, submission for EUA is currently a voluntary process for manufacturers of serologic assays. The absence of FDA oversight of serologic tests is concerning, given that the commercially available serologic assays are highly variable, differing in their format, the antibody class detected, the targeted antigen and the acceptable specimen types. An added complication is the lack of a clear understanding for how such assays should be utilized and what the reported results ultimately indicate, or perhaps more importantly, what they do not indicate. Here, we provide a brief summary of the performance of a number of serologic assays reported in the literature, comment on what we do and do not know regarding our immune response to SARS-CoV-2, and provide a number of scenarios for which serologic testing will play a role in during our global response to this pandemic.

Developments in Diagnostics

Antibody responses to SARS-CoV-2 in patients with COVID-19.

Long Q, Liu B, Deng H, Wu G, Deng K, et al.

Nature Medicine

2020 Apr 29; PMID: 32350462

Level of Evidence: 4- Cross Sectional Study

Type of Article: Research

BLUF: In this multicenter cross-sectional cohort study from three Chinese hospitals in Hubei province, serum serology testing performed at three day intervals on confirmed COVID-19 patients found seroconversion to IgG was detectable in 100% of patients within 19 days after symptoms onset. Since patients were not tested for viral neutralization, clinical implications that correlate immune response to duration of infectivity are limited. However, serosurveys will continue to play an important role in determining the true infectivity and mortality rates of COVID-19, as well as estimating herd immunity.

Abstract:

We report acute antibody responses to SARS-CoV-2 in 285 patients with COVID-19. Within 19 days after symptom onset, 100% of patients tested positive for antiviral immunoglobulin-G (IgG).

Seroconversion for IgG and IgM occurred simultaneously or sequentially. Both IgG and IgM titers

plateaued within 6 days after seroconversion. Serological testing may be helpful for the diagnosis of suspected patients with negative RT-PCR results and for the identification of asymptomatic infections.

Covid-19: Antibody test that claims to be 99% accurate is certified by EU.

Mahase E

BMJ

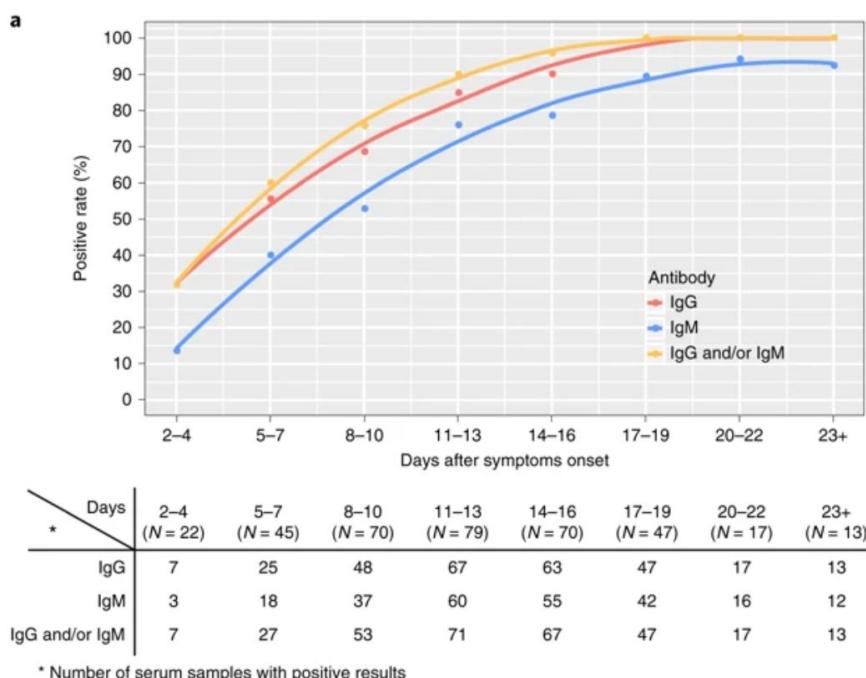
2020 Apr 29. PMID: 32349966

Level of Evidence: -

Type of Article: News

BLUF: A SARS-CoV-2 IgG assay has been certified for use by the EU to assess patients 14 days or more after the onset of symptoms. A study performed by the manufacturer determined that the test has 100% sensitivity (95% confidence interval of 95.07% to 100%) for 73 positive samples $>/=14$ days post symptom onset (excluding immunocompromised patient) and >99.6% specificity (95% confidence interval of 99.05% to 99.90%) for 1070 negative samples.”

Fig. 1: Antibody responses against SARS-CoV-2.



An Evolving Approach to the Laboratory Assessment of COVID-19.

Lu H, Stratton CW, Tang YW.

J Med Virol.

2020 Apr 29; PMID: 32347966.

Level of Evidence: 5 - Literature review

Type of Article: Review

BLUF: This article discusses the requirements for molecular screening for COVID-19 from specimen collection (swabs/viral transport mediums) to test algorithms. The authors also discuss how the use of serological assays, specifically against SARS-CoV-2 N protein, could be used to determine immunity status.

Abstract:

As the COVID-19 outbreak has evolved in each country, the approach to the laboratory assessment of SARS-CoV-2 infection has had to evolve as well. This review addresses the evolving approach to the laboratory assessment of COVID-19 and discusses how algorithms for testing have been driven, in part, by the demand for testing overwhelming the capacity to accomplish such testing. This review focused on testing in the United States as this testing is evolving whereas in China and other countries such as South Korea testing is widely available and includes both molecular testing for SARS-CoV-2 as well as serological testing using both ELISA methodology and lateral flow immunoassay methodology. Although commercial testing systems are becoming available, there will likely be insufficient numbers of such tests due to high demand. Serological testing will be the next testing issue as the COVID-19 begins to subside. This will allow immunity testing as well as will allow the parameters of the COVID-19 outbreak to be defined.

Massively multiplexed nucleic acid detection using Cas13.

Ackerman CM, Myhrvold C, Thakku SG, Freije CA, Metsky HC, Yang DK, Ye SH, Boehm CK, Kosoko-Thoroddsen TF, Kehe J, Nguyen TG, Carter A, Kulesa A, Barnes JR, Dugan VG, Hung DT, Blainey PC, Sabeti PC.

Nature

2020 Apr 29; PMID: 32349121

Level of Evidence: 5 - Mechanism-Based Reasoning

Type of Article: Research

BLUF: The authors developed Combinatorial Arrayed Reactions for Multiplexed Evaluation of Nucleic acids (CARMEN) to enable highly multiplexed nucleic acid detection. The authors demonstrated a broad set of uses for the combination of CARMEN and Cas13 detection (CARMEN-Cas13) including differentiating viral sequences at the species, strain, and SNP levels and the capability to rapidly develop and validate highly multiplexed detection panels.

Abstract:

The overwhelming majority of globally circulating pathogens go undetected, undermining patient care and hindering outbreak preparedness and response. To enable routine surveillance and comprehensive diagnostic applications, there is a need for detection technologies that can scale to test many samples^{1–3} while simultaneously testing for many pathogens^{4–6}. Here, we develop Combinatorial Arrayed Reactions for Multiplexed Evaluation of Nucleic acids (CARMEN), a platform for scalable, multiplexed pathogen detection. In the CARMEN platform, nanoliter droplets containing CRISPR-based nucleic acid detection reagents⁷ self-organize in a microwell array⁸ to pair with droplets of amplified samples, testing each sample against each CRISPR RNA (crRNA) in replicate [sic]. The combination of CARMEN and Cas13 detection (CARMEN-Cas13) enables robust testing of >4,500 crRNA-target pairs on a single array. Using CARMEN-Cas13, we developed a multiplexed assay that simultaneously differentiates all 169 human-associated viruses with ≥10 published genome sequences and rapidly incorporated an additional crRNA to detect the causative agent of the 2020 COVID-19 pandemic. CARMEN-Cas13 further enables comprehensive subtyping of influenza A strains and multiplexed identification of dozens of HIV drug-resistance mutations. CARMEN's intrinsic multiplexing and throughput capabilities make it practical to scale, as miniaturization decreases reagent cost per test >300-fold. Scalable, highly-multiplexed CRISPR-based nucleic acid detection shifts diagnostic and surveillance efforts from targeted testing of high-priority samples to comprehensive testing of large sample sets, greatly benefiting patients and public health^{9–11}.

Developments in Treatments

Chloroquine-induced QTc prolongation in COVID-19 patients.

Van den Broek MPH, Möhlmann JE, et al.

Neth Heart J.

2020 Apr 29; PMID: 32350818

Level of Evidence: 3 - Non-Randomized Controlled Cohort

Type of Article: Research

BLUF: This cohort study assessed the degree of chloroquine-induced QTc prolongation in hospitalised COVID-19 patients by comparing baseline and follow-up QTc intervals. Results showed that chloroquine significantly prolongs the QTc interval, highlighting the need for ECG monitoring when prescribing chloroquine to COVID-19 patients.

Abstract:

Background: In the battle against the SARS-CoV-2 pandemic, chloroquine has emerged as a new potential therapeutic option for the treatment of infected patients. A safety consideration for the application of chloroquine is its QTc-prolonging potential. Thus far, no data are available on the QTc-prolonging potential of chloroquine in COVID-19 patients.

Objective: To assess the degree of chloroquine-induced QTc prolongation in hospitalised COVID-19 patients.

Methods: A baseline electrocardiogram (ECG) and ECGs recorded during chloroquine treatment were retrospectively collected in patients suspected of having COVID-19. The QTc interval was calculated by computerised and manual interpretation. Baseline and follow-up QTc intervals were compared using the paired samples t-test.

Results: A total of 95 patients had a baseline ECG recording and at least one ECG recording during chloroquine therapy. Chloroquine treatment resulted in a mean QTc prolongation of 35 ms (95% CI 28-43 ms) using computerised interpretation and 34 ms (95% CI 25-43 ms) using manual interpretation. No torsade de pointes was observed during chloroquine treatment. After manual review, 22 patients (23%) had a QTc interval exceeding 500 ms during chloroquine treatment. None of these patients had a prolonged QTc interval prior to the initiation of chloroquine treatment.

Conclusions: Chloroquine significantly prolongs the QTc interval in a clinically relevant manner. This highlights the need for ECG monitoring when prescribing chloroquine to COVID-19 patients.

Effect of Convalescent Plasma Therapy on Viral Shedding and Survival in COVID-19 Patients.

Zeng QL, Yu ZJ, Gou JJ, Li GM, Ma SH, Zhang GF, Xu JH, Lin WB, Cui GL, Zhang MM, Li C, Wang ZS, Zhang ZH, Liu ZS.

J Infect Dis.

2020 Apr 29, PMID: 32348485

Level of Evidence: 3 – Retrospective, observational study

Type of Article: Research

BLUF: In the experience of six COVID-19-positive patients, convalescent plasma therapy was effective in discontinuing viral shedding, but did not lengthen survival.

Abstract: Currently, the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) disease 2019 (COVID-19) has been reported in almost all countries globally, and no effective therapy has been documented for COVID-19 and the role of convalescent plasma therapy is unknown. **In current study, 6 COVID-19 subjects with respiratory failure received convalescent plasma at a median of 21.5 days after first detection of viral shedding, all tested negative for**

SARS-CoV-2 RNA by 3 days after infusion, and 5 died eventually. In conclusion, convalescent plasma treatment can discontinue SARS-CoV-2 shedding but cannot reduce mortality in critically end-stage COVID-19 patients, and treatment should be initiated earlier.

The Effect of Chloroquine, Hydroxychloroquine and Azithromycin on the Corrected QT Interval in Patients with SARS-CoV-2 Infection.

Saleh M, Gabriels J, Chang D, Kim BS, Mansoor A, Mahmood E, Makker P, Ismail H, Goldner B, Willner J, Beldner S, Mitra R, John R, Chinitz J, Skipitaris N, Mountantonakis S, Epstein LM. Circ Arrhythm Electrophysiol.

2020 Apr 29; PMID: 32347743

Level of Evidence: 4 - Cohort Study

Type of Article: Research

BLUF: This is a prospective, observational study of 201 patients who were treated for COVID-19 with chloroquine/hydroxychloroquine. Overall, there were no instances of Torsade de pointes (TdP) or arrhythmogenic death reported, although use of these medications resulted in QT prolongation.

Abstract:

Background: The novel SARs-CoV-2 coronavirus is responsible for the global COVID-19 pandemic. Small studies have shown a potential benefit of chloroquine/hydroxychloroquine ± azithromycin for the treatment of COVID-19. Use of these medications alone, or in combination, can lead to a prolongation of the QT interval, possibly increasing the risk of Torsade de pointes (TdP) and sudden cardiac death.

Methods: Hospitalized patients treated with chloroquine/hydroxychloroquine ± azithromycin from March 1st through the 23rd at three hospitals within the Northwell Health system were included in this prospective, observational study. Serial assessments of the QT interval were performed. The primary outcome was QT prolongation resulting in TdP. Secondary outcomes included QT prolongation, the need to prematurely discontinue any of the medications due to QT prolongation and arrhythmogenic death.

Results: Two hundred one patients were treated for COVID-19 with chloroquine/hydroxychloroquine. Ten patients (5.0%) received chloroquine, 191 (95.0%) received hydroxychloroquine and 119 (59.2%) also received azithromycin. The primary outcome of TdP was not observed in the entire population. Baseline QTc intervals did not differ between patients treated with chloroquine/hydroxychloroquine (monotherapy group) vs. those treated with combination group (chloroquine/hydroxychloroquine and azithromycin) (440.6 ± 24.9 ms vs. 439.9 ± 24.7 ms, $p = 0.834$). The maximum QTc during treatment was significantly longer in the combination group vs the monotherapy group (470.4 ± 45.0 ms vs. 453.3 ± 37.0 ms, $p = 0.004$). Seven patients (3.5%) required discontinuation of these medications due to QTc prolongation. No arrhythmogenic deaths were reported.

Conclusions: In the largest reported cohort of COVID-19 patients to date treated with chloroquine/hydroxychloroquine {plus minus} azithromycin, no instances of TdP or arrhythmogenic death were reported. Although use of these medications resulted in QT prolongation, clinicians seldomly needed to discontinue therapy. Further study of the need for QT interval monitoring is needed before final recommendations can be made.

Effective treatment of severe COVID-19 patients with tocilizumab.

Xu X, Han M, Li T, Sun W, Wang D, Fu B, Zhou Y, Zheng X, Yang Y, Li X, Zhang X, Pan A, Wei H. Proc Natl Acad Sci U S A

2020 Apr 29; 32350134

Level of Evidence: 4 - Case Series

Type of Article: Research

BLUF: This is a preliminary study of 21 patients diagnosed as severe or critical COVID-19 in The First Affiliated Hospital of University of Science and Technology of China and Anhui Fuyang Second People's Hospital who were given tocilizumab in addition to routine therapy between Feb 5, 2020 and Feb 14, 2020. The authors found that within 5 days, 15 out of 20 patients on oxygen lowered their oxygen intake, the percentage of lymphocytes in 10 out of 19 patients returned to normal, and CRP decreased significantly in 16 out of 19 patients. The body temperature of all patients returned to normal one day after treatment. CT scans after treatment showed the lesions were absorbed in 19 patients and improved in the others. The viral load in all patients was completely cleared and most were discharged two weeks after treatment. There were no serious adverse events caused by tocilizumab. The authors conclude that tocilizumab may be an efficient therapeutic treatment for COVID-19.

Abstract:

After analyzing the immune characteristics of patients with severe coronavirus disease 2019 (COVID-19), we have identified that pathogenic T cells and inflammatory monocytes with large amount of interleukin 6 secreting [sic] may incite the inflammatory storm, which may potentially be curbed through monoclonal antibody that targets the IL-6 pathways. Here, we aimed to assess the efficacy of tocilizumab in severe patients with COVID-19 and seek a therapeutic strategy. The patients diagnosed as severe or critical COVID-19 in The First Affiliated Hospital of University of Science and Technology of China (Anhui Provincial Hospital) and Anhui Fuyang Second People's Hospital were given tocilizumab in addition to routine therapy between 5 and 14 February 2020. The changes of clinical manifestations, computerized tomography (CT) scan image, and laboratory examinations were retrospectively analyzed. Fever returned to normal on the first day, and other symptoms improved remarkably within a few days. Within 5 d after tocilizumab, 15 of the 20 patients (75.0%) had lowered their oxygen intake, and 1 patient needed no oxygen therapy. CT scans manifested that the lung lesion opacity absorbed in 19 patients (90.5%). The percentage of lymphocytes in peripheral blood, which decreased in 85.0% of patients (17/20) before treatment (mean, $15.52 \pm 8.89\%$), returned to normal in 52.6% of patients (10/19) on the fifth day after treatment. Abnormally elevated C-reactive protein decreased significantly in 84.2% of patients (16/19). No obvious adverse reactions were observed. All patients have been discharged on average 15.1 d after giving tocilizumab. Preliminary data show that tocilizumab, which improved the clinical outcome immediately in severe and critical COVID-19 patients, is an effective treatment to reduce mortality.

Use of Non-Invasive Vagus Nerve Stimulation to Treat Respiratory Symptoms Associated With COVID-19: A Theoretical Hypothesis and Early Clinical Experience.

Staats P, Giannopoulos G, Blake J, Liebler E, Levy RM

Neuromodulation

2020 Apr 27; PMID: 32342609

Level of Evidence: 4 – Case series

Type of Article: Research

BLUF: The authors hypothesize that non-invasive vagus nerve stimulation (nVNS) may provide clinical benefits in patients with COVID-19 as this therapy has been previously shown to block cytokine production. Excess cytokine production is a complication of COVID-19 that leads to respiratory compromise. Two patients self-reported symptomatic relief by using nVNS, including symptoms of chest tightness, shortness of breath, and cough. Information on these patients was obtained through email correspondence and phone interviews with patients.

Abstract:

Objectives: Coronavirus disease 2019 (COVID-19), caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), is a pandemic with no specific therapeutic agents and substantial mortality, and finding new treatments is critical. Most cases are mild, but a significant minority of patients develop moderate to severe respiratory symptoms, with the most severe cases requiring intensive care and/or ventilator support. This respiratory compromise appears to be due to a hyperimmune reaction, often called a cytokine storm. Vagus nerve stimulation has been demonstrated to block production of cytokines in sepsis and other medical conditions. We hypothesize that non-invasive vagus nerve stimulation (nVNS) might provide clinical benefits in patients with respiratory symptoms similar to those associated with COVID-19.

Materials and methods: Information on two case reports was obtained via email correspondence and phone interviews with the patients.

Results: Both patients reported clinically meaningful benefits from nVNS therapy. In Case 1, the patient used nVNS to expedite symptomatic recovery at home after hospital discharge and was able to discontinue use of opioid and cough suppressant medications. In Case 2, the patient experienced immediate and consistent relief from symptoms of chest tightness and shortness of breath, as well as an improved ability to clear his lungs.

Conclusions: Preliminary observations and a strong scientific foundation suggest that nVNS might provide clinical benefits in patients with COVID-19 via multiple mechanisms.

Rational Use of Tocilizumab in the Treatment of Novel Coronavirus Pneumonia.

Zhang, S., Li, L., Shen, A., Chen, Y., & Qi, Z.

Clin Drug Investig.

2020 Apr 26; PMID: 32337664

Level of Evidence: 5 – Expert Opinion

Type of Article: Research

BLUF: Clinical trials are in progress for Tocilizumab, an IL-6 receptor antagonist for the treatment of cytokine storm, a complication of COVID-19. Because cytokine storm is thought to play a key role in the rapid progression of the disease, Tocilizumab is a promising drug currently under investigation.

Abstract:

Since December 2019, a novel coronavirus pneumonia (COVID-19) has broken out in Wuhan, China and spread rapidly. Recent studies have found that ~ 15.7% of patients develop severe pneumonia, and cytokine storm is an important factor leading to rapid disease progression. Currently, there are no specific drugs for COVID-19 and the cytokine storm it causes. IL-6 is one of the key cytokines involved in infection-induced cytokine storm. Tocilizumab, which is the IL-6 receptor antagonist, has been approved by the US FDA for the treatment of cytokine release syndrome (CRS), is expected to treat cytokine storm caused by COVID-19 and is now in clinical trials. In this paper, we will elaborate the role of cytokine storm in COVID-19, the mechanism of tocilizumab on cytokine storm and the key points of pharmaceutical care based on the actual clinical application for COVID-19 in our hospital, the latest research reports, clinical trial progress of tocilizumab, drug instruction from the US FDA, and "Diagnosis and Treatment Plan of Novel Coronavirus Pneumonia (seventh trial edition)" in China, so as to provide reference for the treatment of COVID-19.

Understanding the Renin-Angiotensin-Aldosterone-SARS-CoV-Axis: A Comprehensive Review.

Ingraham NE, Barakat AG, Reilkoff R, Bezdicek T, Schacker T, Chipman JG, Tignanelli CJ, Puskarich MA.

Eur Respir J.

2020 Apr 27; PMID: 32341103

Level of Evidence: 5 - Literature Review

Type of Article: Review

BLUF: The renin-angiotensin-aldosterone system-severe acute respiratory syndrome-coronavirus-2 (RAAS-SARS-CoV-2) axis is a possible future path of pharmacological intervention for COVID-19. However, the risk of stopping current cardiovascular treatments that utilize the RAAS axis may be greater than the benefit proposed by preventing SARS-CoV-2 infection. Future randomized control trials need to be performed to analyze the efficacy of this approach.

Abstract:

Importance: Coronavirus Disease 19 (COVID-19), the disease caused by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), has been declared a global pandemic with significant morbidity and mortality since first appearing in Wuhan, China, in late 2019. As many countries are grappling with the onset of their epidemics, pharmacotherapeutics remain lacking. The window of opportunity to mitigate downstream morbidity and mortality is narrow but remains open. The renin-angiotensin-aldosterone system (RAAS) is crucial to the homeostasis of both the cardiovascular and respiratory systems. Importantly, SARS-CoV-2 utilises and interrupts this pathway directly, which could be described as the renin-angiotensin-aldosterone-SARS-CoV-2-axis (RAAS-SCoV-axis). There exists significant controversy and confusion surrounding how anti-hypertensive agents might function along this pathway. **This review explores the current state of knowledge regarding the RAAS-SCoV-axis**, informed by prior studies of SARS-CoV, how this relates to our currently evolving pandemic, and how these insights might guide our next steps in an evidence-based manner.

Observations: This review discusses the role of the RAAS-SCoV-axis in acute lung injury and the effects, risks, and benefits of pharmacologic modification of this axis. There may be an opportunity to leverage the different aspects of RAAS inhibitors to mitigate indirect viral-induced lung injury.

Concerns have been raised that such modulation might exacerbate the disease. **While relevant preclinical, experimental models to date favor a protective effect of RAAS-SCoV-axis inhibition on both lung injury and survival, clinical data related to the role of RAAS modulation in the setting of SARS-CoV-2 remains limited.**

Conclusion: Proposed interventions for SARS-CoV-2 predominantly focus on viral microbiology and aim to inhibit viral cellular injury. While these therapies are promising, immediate use may not be feasible, and the time window of their efficacy remains a major unanswered question. An alternative approach is the modulation of the specific downstream pathophysiologic effects caused by virus that lead to morbidity and mortality. We propose a preponderance of evidence that supports clinical equipoise regarding the efficacy of RAAS-based interventions, and the imminent need for a multisite randomised controlled clinical trial to evaluate the inhibition of the RAAS-SCoV-axis on acute lung injury in COVID-19.

Epitope based vaccine prediction for SARS-COV-2 by deploying immuno-informatics approach.

Joshi A, Joshi BC, Mannan MA, Kaushik V.

Inform Med Unlocked.

2020 Apr 29; PMID: 32352026.

Level of Evidence: In Silico Modeling

Type of Article: Research

BLUF: In this study, the authors use a variety of bioinformatics servers and immuno-informatics tools to identify and recognize the T-cell epitopes from the available protein sequences and structures (specifically envelope protein, ORF3a protein, nucleocapsid phosphoprotein, ORF7a protein, and membrane glycoprotein) that are related to SARS-COV-2. The results showed that the ITLCFTLKR epitope of the ORF-7A protein has “good antigenicity, exhibits active binding with MHC HLA-Alleles, and has maximum population coverage for different geographical regions” and would be a good target for vaccine crafting and designing.

Abstract:

A new virus termed SARS-COV-2 (causing COVID-19 disease) can exhibit a progressive, fatal impact on individuals. The World Health Organization (WHO) has declared the spread of the virus to be a global pandemic. Currently, there are over 1 million cases and over 100,000 confirmed deaths due to the virus. Hence, prophylactic and therapeutic strategies are promptly needed. In this study we report an epitope, ITLCFTLKR, which is biochemically fit to HLA allelic proteins. We propose that this could be used as a potential vaccine candidate against SARS-COV-2. A selected putative epitope and HLA-allelic complexes show not only better binding scores, but also RMSD values in the range of 0-1 Å. This epitope was found to have a 99.8% structural favorability as per Ramachandran-plot analysis. Similarly, a suitable range of IC₅₀ values and population coverage was obtained to represent greater validation of T-cell epitope analysis. Stability analysis using MDWeb and half-life analysis using the ProtParam tool has confirmed that this epitope is well-selected. This new methodology of epitope-based vaccine prediction is fundamental and fast in application, ad [sic] can be economically beneficial and viable.

Rethinking the role of hydroxychloroquine in the treatment of COVID-19.

Meyerowitz, E. A., Vannier, A., Friesen, M., Schoenfeld, S., Gelfand, J. A., Callahan, M. V., Kim, A. Y., Reeves, P. M., Poznansky, M. C.

FASEB J

2020 Apr 29; PMID: 32350928

Level of Evidence: 5 – Expert Opinion

Type of Article: Review

BLUF: Due to the broad range of adverse effects, therapeutic use of hydroxychloroquine and chloroquine should be used cautiously in carefully thought out trials or only on a case-by-case basis after rigorous contemplation of risks and benefits with these drugs.

Abstract:

There are currently no proven or approved treatments for coronavirus disease 2019 (COVID-19). Early anecdotal reports and limited in vitro data led to the significant uptake of hydroxychloroquine (HCQ), and to lesser extent chloroquine (CQ), for many patients with this disease. As an increasing number of patients with COVID-19 are treated with these agents and more evidence accumulates, there continues to be no high-quality clinical data showing a clear benefit of these agents for this disease. Moreover, these agents have the potential to cause harm, including a broad range of adverse events including serious cardiac side effects when combined with other agents. In addition, the known and potent immunomodulatory effects of these agents which support their use in the treatment of auto-immune conditions, and provided a component in the original rationale for their use in patients with COVID-19, may, in fact, undermine their utility in the context of the treatment of this respiratory viral infection. Specifically, the impact of HCQ on cytokine production and suppression of antigen

presentation may have immunologic consequences that hamper innate and adaptive antiviral immune responses for patients with COVID-19. Similarly, the reported in vitro inhibition of viral proliferation is largely derived from the blockade of viral fusion that initiates infection rather than the direct inhibition of viral replication as seen with nucleoside/tide analogs in other viral infections. Given these facts and the growing uncertainty about these agents for the treatment of COVID-19, it is clear that at the very least thoughtful planning and data collection from randomized clinical trials are needed to understand what if any role these agents may have in this disease. In this article, we review the datasets that support or detract from the use of these agents for the treatment of COVID-19 and render a data informed opinion that they should only be used with caution and in the context of carefully thought out clinical trials, or on a case-by-case basis after rigorous consideration of the risks and benefits of this therapeutic approach.

Should we try the antiinflammatory natural product, celastrol, for COVID-19?

Habtemariam S, Nabavi SF, Berindan-Neagoe I, Cismaru CA, Izadi M, Sureda A, Nabavi SM. Phytother Res.

2020 Apr 29; PMID: 32347602.

Level of Evidence: 5 - Mechanism-based evidence

Type of Article: Letter to the Editor

Summary: This article reviews several studies showing that celastrol has been effective at suppressing NF- κ B signalling, decreasing cytokines, and improving chronic obstructive pulmonary disease (COPD) in animal models. Due to these trials, the authors suggest the future study of celastrol for the treatment of critically ill COVID-19 patients due to its anti-inflammatory properties.

Structural elucidation of SARS-CoV-2 vital proteins: Computational methods reveal potential drug candidates against main protease, Nsp12 polymerase and Nsp13 helicase.

Mirza, M. U., Froeyen, M.

J Pharm Anal.

2020 Apr 28; PMID: 32346490

Level of Evidence: 5 - Mechanism-based Reasoning

Type of Article: Research

BLUF: Computational drug discovery methods that identify small molecules that specifically target the viral replication apparatus are being undertaken. According to the authors, an integrated computational approach has the highest potential towards antiviral drug discovery.

Abstract:

The recently emerged SARS-CoV-2 caused a major outbreak of coronavirus disease 2019 (COVID-19) and instigated a widespread fear, threatening global health security. To date, no licensed antiviral drugs or vaccines are available against COVID-19 although several clinical trials are underway to test possible therapies. During this urgency situation, computational drug discovery methods provide an alternative to tiresome high-throughput screening, particularly in the hit-to-lead-optimization stage. Identification of small molecules that specifically target viral replication apparatus has indicated highest potential towards antiviral drug discovery. In this work, we present potential compounds that specifically target SARS-CoV-2 vital proteins, including the main protease, Nsp12 RNA polymerase and Nsp13 helicase. An integrative virtual screening and molecular dynamics simulations approach led to the identification of potential binding modes and favourable molecular interaction profile of corresponding compounds. Moreover, the identification of structurally important binding site

residues in conserved motifs located inside the active site highlights relative importance of ligand binding based on residual energy decomposition analysis. Although the current study lacks experimental validation, the structural information obtained from this computational study has paved way for the design of targeted inhibitors to combat COVID-19 outbreak.

Clinical trials during COVID-19.

Singh AG, Chaturvedi P

Head Neck.

2020 Apr 29; PMID: 32348582

Level of Evidence: 5 - Expert opinion

Type of Article: Correspondence

BLUF: This article provides recommendations for clinical trials during COVID-19 including:

- Starting new trials: Assess risk/benefits as well as feasibility due to COVID-19.
- Ongoing trials: Safety is paramount. Keep participants informed.
- Obtaining informed consent: electronic written consent or three way video call if unable to produce written consent.
- Reporting changes: Discuss with internal review board (IRB).
- Alternate forms of visits: Case by case situation and is under discrepancy of the sponsor.
- Home delivery of IMP: Important to document and maintain IMPs accountability.
- Missing data: Important to explain missing information.

Abstract:

As this ever-evolving pandemic lays itself, more of its impact is being understood. Until recently, most guidelines were reported to aid in managing and treating suspected or confirmed cases. Research institutions around the world are responding with a sense of confusion. Some are continuing routinely, especially those who are overseeing clinical trials that could offer life-saving therapies, particularly against the novel coronavirus. Since research must continue even in the face of a shutdown, we aim to collate the currently available recommendations from various organizations and provide guidance to head and neck researchers across the world during these trying times.

Metformin and COVID-19: A novel deal of an Old Drug.

El-Arabey, Amr Ahmed; Abdalla, Mohnad

J Med Virol

2020 Apr 29; PMID: 32347974

Level of Evidence: 5 - Expert Opinion

Type of Article: Letter to the Editor

BLUF: This letter advocates for the FDA to alter the status of metformin to be an additional therapy for COVID-19 in order to reduce mortality in the elderly, obese, and diabetic patients. Evidence cited to support this includes Metformin's ability to reduce mortality in diabetic patients with pneumonia (retrospective cohort study), effects on macrophage cytokine synthesis, and ability to reduce asthma exacerbation in diabetic patients (cohort study).

Abstract:

In 2002, China witnessed the emergence of a severe acute respiratory disease caused by coronavirus SARS-CoV. Ten years later in 2012 a new version of the virus appeared in the Middle East known as Middle East Respiratory Syndrome Coronavirus MERS-CoV. At the end of 2019, the Chinese Center for Disease Control and Prevention (China CDC) recorded a pneumonia of unknown causes. Epidemiologically, the pneumonia was linked to a wet animal and seafood wholesale market in

Wuhan, Hubei Province, China, later Known by COVID-19. The COVID-19 is a global pandemic infectious disease caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). Till now the total number of confirmed cases is 2,709,483 in over 225 countries around the world. A recent report indicates that obesity may responsible [sic] for increasing the mortality of COVID-19 in Italy rather than in China. Here we would like to shed light on a new suggestion to decrease the mortality rate of COVID-19.

An independent appraisal and re-analysis of hydroxychloroquine treatment trial for COVID-19.

Intson, Katheron; Kumar, Sachin; Botta, Amy; Neckles, Rachael; Leung, Connie; Jawaaid, Ali
Swiss Med Wkly

2020 Apr 29; PMID: 32347963

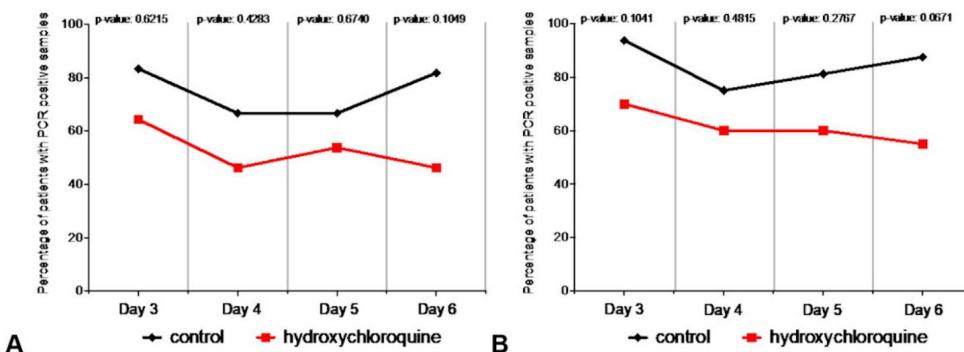
Level of Evidence: 5 - Expert Opinion

Type of Article: Viewpoint

BLUF: In this viewpoint, authors highlighted additional limitations in the French open-label clinical trial of hydroxychloroquine in patients with SARS-CoV-2 done by [Gautret et al, 2020](#). They proposed their own analysis of the data with control for some of these limitations which revealed that there was no significant difference in virological clearance rates between the hydroxychloroquine-treatment group and control group.

Summary: The authors evaluate the French open-label clinical trial of hydroxychloroquine in patients with SARS-CoV-2 conducted by Gautret et al. They highlight additional limitations with the study design and methods, including the significant difference in age between the treatment group and control group, the limited capacity to ascertain synergistic effects of hydroxychloroquine-azithromycin therapy, discrepancies in the stated methods, and inconsistencies in exclusion and inclusion criteria. The authors re-analyzed the data from the control and hydroxychloroquine-treated groups in the Gautret et al. study, which yielded no significant differences in virological clearance rates between the two groups (Figure 1). There is not yet sufficient data to show that hydroxychloroquine has a significant effect on reducing viral load of SARS-CoV-2 and there is a need for additional trials to be done.

Figure 1: Gautret et al. [1] differences in PCR testing results between patient-groups are not significant when excluding missing patient data or using an intention-to-treat model for data analysis. (A) Percentage of patients with PCR-positive nasopharyngeal samples from day 3 to day 6 post-inclusion from control and hydroxychloroquine-treated groups, exclusive of all missing datasets. Multiple Fisher's exact tests revealed no significant differences between the groups on any of the analysed treatment days. (B) Percentage of patients with PCR-positive nasopharyngeal samples from day 3 to day 6 post-inclusion from control and hydroxychloroquine-treated groups, inclusive of all patients using an intention-to-treat design. Multiple Fisher's exact tests revealed no significant differences between the groups on any of the analysed treatment days. All statistical analysis was performed using Prism 8 software.



Anti COVID-19 Drugs: Need for More Clinical Evidence and Global Action

Khan Z, Karataş Y, Rahman H

Adv Ther

2020 Apr 29; PMID: 32350686

Level of Evidence: 5 – Literature Review

Type of Article: Review

BLUF: The authors review the current clinical trial data of the most promising drugs for off-label treatments for COVID-19, mainly chloroquine (CQ), hydroxychloroquine (HCQ), and lopinavir/ritonavir. The authors highlight the adverse effects, namely reticular myopathy in CQ, QT elongation in HCQ, or the lack of proven therapeutic efficacy of lopinavir/ritonavir as evidence for the need for more clinical trials globally.

Abstract:

The World Health Organization (WHO) called the outbreak of coronavirus infectious disease-2019 (COVID-19) a "Public Health Emergency of International Concern" (PHEIC). According to the WHO, Centers for Disease Control and Prevention (CDC), and the US Food and Drug Administration (FDA), currently there are no medicines or vaccines that have been claimed to be useful in the prevention or treatment of COVID-19. Several existing antiviral drugs, previously developed or used as treatments for severe acute respiratory syndrome (SARS), Middle East respiratory syndrome (MERS), human immunodeficiency virus (HIV), and malaria, are being investigated as COVID-19 treatments and some of them are being used in clinical trials. According to the CDC and Chinese treatment guidelines for COVID-19, chloroquine, hydroxychloroquine, lopinavir/ritonavir, and one of the investigational agents (remdesivir) are recommended in critically ill older patients. The use of other potential drugs reported in different studies may be considered if treatment with first-line drugs is ineffective. There are currently no complete data available from large randomized clinical trials (RCTs) to provide clinical guidance on the use, dosing, or duration to validate the effective role, safety profile, and adverse effects of all of the trial drugs for prophylaxis or treatment of COVID-19. Until now, it is still unclear which drug can successfully fight against the disease. Therefore, for the better safety of patients with COVID-19, further clinical trials and large randomized controlled studies are needed to validate the effective role, safety profile, and adverse effects of all the potential drugs. Such a measure requires action at the global level.

Camostat mesilate therapy for COVID-19.

Uno Y.

Intern Emerg Med

2020 Apr 29; PMID: 32347443

Level of Evidence: 5 - Expert Opinion

Type of Article: Letter to the Editor

Summary: Camostat mesilate (CM) is an inhibitor of TMPRSS2, a protease that primes the spike protein of highly pathogenic human coronaviruses and facilitates its entry into the host cell. CM has been used in Japan since 1985. It has a relatively limited side effect profile and is cheap. CM has been shown to reduce SARS-CoV-2 infection in mice and has the potential to be used in the treatment of COVID-19. Future human clinical trials are expected.

Will the antimalarial drug take over to combat COVID-19?

T K S, G S.

Z Gesundh Wiss.

2020 Apr 29; PMID: 32351873

Level of Evidence: 5 - Review

Type of Article: Literature Review

BLUF: At the time of this article's publishing, a review of the literature reveals that there are no FDA approved treatments for patients with COVID-19. The World Health Organization launched the global SOLIDARITY project to search for a medical cure to COVID-19. However, many clinical trials are testing remdesivir, chloroquine, and hydroxychloroquine.

Abstract:

Background: China has been fighting the epidemic of pneumonia-like diseases first detected for over a month in the city of Wuhan in December 2019. The disease epidemic is caused by a novel coronavirus, called COVID-19, which has now infected more than 700,000 people worldwide. With a death toll approaching that of China's SARS-CoV outbreak in 2002 and 2003, 2019-nCoV has contributed to an international emergency in public health, placing all health organizations on high alert. Such large numbers of infected and deceased people require an urgent need for reliable, inexpensive, and cheap drugs to control and reduce the outbreak.

Objective: To systematically review and evaluate the pattern of COVID-19 and the treatment plans.

Methods: This systematic review was conducted according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. The articles were searched from databases like PubMed, the Cochrane Library, ScienceDirect, and the Health Research and Development Information Network (HERDIN) combining MeSH and free-text terms.

Results: This analysis highlights the agent of COVID-19 and the possible transmission. The current research taking place to overcome this complex disease and the urgent need to develop improved therapeutics are also discussed.

Conclusion: Herein, we present an epidemiological overview of the currently available information on the treatment claimed to have helped to bring the situation under control.

Developing Vaccines for SARS-CoV-2 and Future Epidemics and Pandemics: Applying Lessons from Past Outbreaks.

Billington J, Deschamps I, Erck SC, Gerberding JL, Hanon E, Ivol S, Shiver JW, Spencer JA, Van Hoof J
Health Secur

2020 Apr 29; PMID: 32348165

Level of Evidence: 5- Expert opinion

Type of Article: Commentary

BLUF: The authors offer an outline and discussion of key steps to facilitate the streamlined production of vaccines in the face of emerging infectious diseases. See key points in table below. They cite the need to decrease the timeline to vaccine production while providing increased protections to vaccine development companies to offset the substantial risks they incur.

Abstract

The COVID-19 pandemic is a stark reminder of the heavy toll that emerging infectious diseases (EIDs) with epidemic and pandemic potential can inflict. Vaccine development, scale-up, and commercialization is a long, expensive, and risky enterprise that requires substantial upfront planning and offers no guarantee of success. EIDs are a particularly challenging target for global health preparedness, including for vaccine development. Insufficient attention has been given to challenges, lessons learned, and potential solutions to support and sustain vaccine industry engagement in vaccine development for EIDs. Drawing from lessons from the most recent Ebola epidemic in the Democratic Republic of the Congo, as well as the 2009 H1N1 influenza, 2014-2016

Ebola, and 2015-16 Zika outbreaks preceding it, we offer our perspective on challenges facing EID vaccine development and recommend additional solutions to prioritize in the near term. The 6 recommendations focus on reducing vaccine development timelines and increasing business certainty to reduce risks for companies. The global health security community has an opportunity to build on the current momentum to design a sustainable model for EID vaccines.

Table 1. Actions Needed in Near-Term and Progress So Far

	<i>Objective</i>	<i>Progress Since 2014-15 Ebola (not exhaustive)</i>
<i>Time:</i> reduce vaccine development timelines	1. Define and streamline the EID/pandemic regulatory pathway.	<ul style="list-style-type: none"> WHO Solidarity Vaccine Trial for SARS-CoV-2 Parallel dossier review for Ebola virus vaccine
	2. Build partnership models that enable more coordination and collaboration end-to-end.	<ul style="list-style-type: none"> CEPI partnership model Event 201 simulation tabletop exercise
	3. Invest in rapid-response platforms and continue to evaluate and fund next-generation approaches.	<ul style="list-style-type: none"> BMGF investments in innovative manufacturing platforms CEPI investments in platform technology
<i>Risk:</i> increase business certainty to reduce risks for companies	4. Ensure proactive, predictable, and sustainable vaccine development and lifecycle funding.	<ul style="list-style-type: none"> WHO R&D blueprint; target product profile for SARS-CoV-2 vaccines CEPI prioritization and proactive funding of early phase (up to 2b)
	5. Improve forecasting for demand and manufacturing requirements.	<ul style="list-style-type: none"> Gavi advanced purchase commitment for Ebola vaccine
	6. Create a global indemnification model.	<ul style="list-style-type: none"> WHO insurance-based indemnification model for investigational products

Note: EID = Emerging Infectious Diseases; CEPI = Coalition for Epidemic Preparedness Innovations; BMGF = Bill & Melinda Gates Foundation; WHO = World Health Organization; Gavi = Gavi, the Vaccine Alliance.

Putative Inhibitors of SARS-CoV-2 Main Protease from A Library of Marine Natural Products: A Virtual Screening and Molecular Modeling Study.

Gentile D, Patamia V, Scala A, Sciortino MT, Piperno A, Rescifina A

Mar Drugs.

2020 Apr 23; PMID: 32340389

Level of Evidence: 5 - Mechanism based reasoning

Type of Article: Research

BLUF: The authors developed a hyphenated pharmacophore model and screened a library of marine natural products for potent inhibitors of the main protease (Mpr), one of the best identified proteins in the life cycle of coronaviruses. They identified 17 possible Mpr inhibitors that could have bioactivity against SARS-CoV-2.

Abstract: The current emergency due to the worldwide spread of the COVID-19 caused by the new severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is a great concern for global public health. Already in the past, the outbreak of severe acute respiratory syndrome (SARS) in 2003 and Middle Eastern respiratory syndrome (MERS) in 2012 demonstrates the potential of coronaviruses to cross-species borders and further underlines the importance of identifying new-targeted drugs. An ideal antiviral agent should target essential proteins involved in the life cycle of SARS-CoV. Currently, some HIV protease inhibitors (i.e., Lopinavir) are proposed for the treatment of COVID-19, although their effectiveness has not yet been assessed. The main protease (Mpr) provides a highly validated pharmacological target for the discovery and design of inhibitors. We identified potent Mpr inhibitors employing computational techniques that entail the screening of a Marine Natural Product (MNP)

library. MNP library was screened by a hyphenated pharmacophore model, and molecular docking approaches. Molecular dynamics and re-docking further confirmed the results obtained by structure-based techniques and allowed this study to highlight some crucial aspects. Seventeen potential SARS-CoV-2 M_{pr} inhibitors have been identified among the natural substances of marine origin. As these compounds were extensively validated by a consensus approach and by molecular dynamics, the likelihood that at least one of these compounds could be bioactive is excellent.

Can melatonin reduce the severity of COVID-19 pandemic?

Shneider A, Kudriavtsev A, Vakhrusheva A

Int Rev Immunol

2020 Apr 29; PMID: 32347747

Level of Evidence: 5 - Expert Opinion

Type of Article: Commentary

BLUF: Melatonin has proven to be an inexpensive, scalable drug with minimal side effects, with antioxidant and antiinflammatory effects, it may be a good adjunctive therapy for COVID-19.

Authors examine relationship of melatonin to immunity and the implications on COVID-19-related complications, including:

- Compared to children, elderly individuals have lower levels of melatonin and are also more susceptible to COVID-19 infections, indicating a potential relationship between melatonin and COVID-19 infection.
- Bats, the natural carriers of coronaviruses, have high levels of melatonin, potentially indicating a protective effect.
- Melatonin has high antioxidant and inflamasome inhibiting properties, making it potentially beneficial in the setting of COVID-19-related immune-mediated lung damage, fibrosis, and ventilation-induced fibrosis.
- Melatonin may be useful for bolstering the immune system during times of prolonged stress, anxiety, and sleep deprivation, as observed during the pandemic.
- Melatonin's antioxidant properties may also make it useful as an adjuvant therapy to reduce oxidative stress and toxicity from lopinavir/ritonavir treatment as well as providing greater efficacy and reducing necessary doses when given with chloroquine/hydroxychloroquine or methylprednisolone.
- Melatonin's immune-modulating properties may also make it useful as a vaccine adjuvant and antiviral immune supplement.
- Melatonin is inexpensive, scalable, with very low reported acute and chronic toxicity risks, although caution should be used in giving melatonin to healthy children, adolescents, and young adults who may experience interference with their already high internal melatonin production.

Abstract:

The current COVID-19 pandemic is one of the most devastating events in recent history. The virus causes relatively minor damage to young, healthy populations, imposing life-threatening danger to the elderly and people with diseases of chronic inflammation. Therefore, if we could reduce the risk for vulnerable populations, it would make the COVID-19 pandemic more similar to other typical outbreaks. Children don't suffer from COVID-19 as much as their grandparents and have a much higher melatonin level. Bats are nocturnal animals possessing high levels of melatonin, which may contribute to their high anti-viral resistance. Viruses induce an explosion of inflammatory cytokines and reactive oxygen species, and melatonin is the best natural antioxidant that is lost with age. The programmed cell death coronaviruses cause, which can result in significant lung damage, is also

inhibited by melatonin. Coronavirus causes inflammation in the lungs which requires inflammasome activity. Melatonin blocks these inflammasomes. General immunity is impaired by anxiety and sleep deprivation. Melatonin improves sleep habits, reduces anxiety and stimulates immunity. Fibrosis may be the most dangerous complication after COVID-19. Melatonin is known to prevent fibrosis.

Mechanical ventilation may be necessary but yet imposes risks due to oxidative stress, which can be reduced by melatonin. Thus, by using the safe over-the-counter drug melatonin, we may be immediately able to prevent the development of severe disease symptoms in coronavirus patients, reduce the severity of their symptoms, and/or reduce the immuno-pathology of coronavirus infection on patients' health after the active phase of the infection is over.

Statin therapy in COVID-19 infection.

Castiglione V, Chiriacò M, Emdin M, Taddei S, Vergaro G

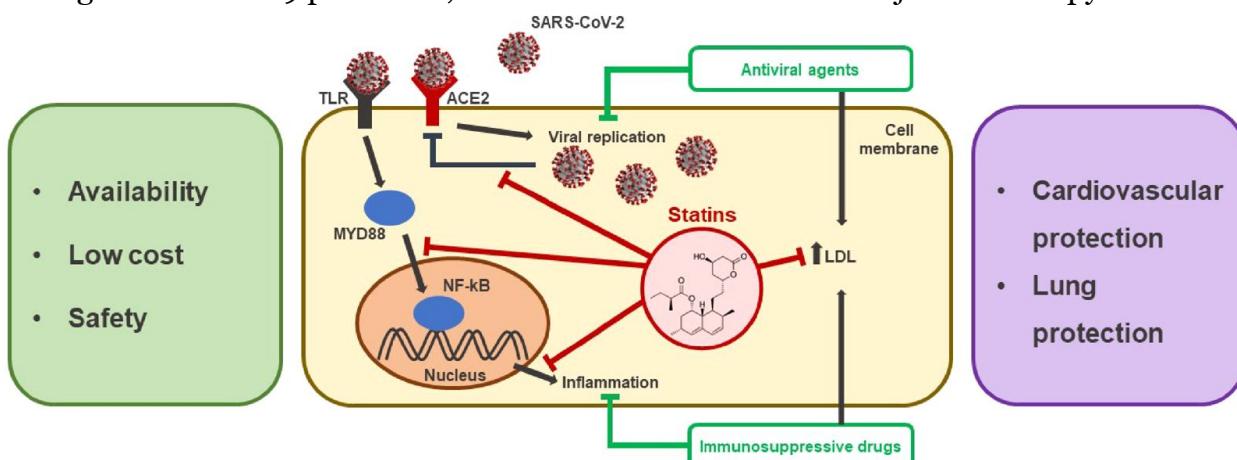
Eur Heart J Cardiovasc Pharmacother

2020 Apr 29. PMID: 32347925

Level of Evidence: 5 - Mechanism-Based Reasoning

Type of Article: Correspondence

Summary: Statins have been shown to be effective as an adjuvant therapy for some viral infections. The authors propose some methods by which statins may have immunomodulatory effects that may be beneficial in treatment of COVID-19; these mechanisms are outlined in Figure 1 and include up-regulation of angiotensin-converting enzyme (ACE2) and inhibition of MYD88-NF- κ B proinflammatory pathway. Statins are low-cost, well-tolerated, unlikely to be affected by a shortage during the COVID-19 pandemic, and should be studied as an adjuvant therapy.



Molecular mechanism of actions and proposed advantages of statins in COVID-19. Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), the causal agent of coronavirus disease 2019 (COVID-19), enters the cell through angiotensin-converting enzyme 2 (ACE2). Once in the cell, SARS-CoV-2 causes ACE2 down-regulation, thus reducing its protective effects on various tissues. Coronaviruses are known to induce a proinflammatory host response via the activation of the Toll-like receptor (TLR)-MYD88-NF- κ B pathway. Statins are available worldwide, and are low-cost, safe drugs with lipid-lowering and immunomodulatory effects. In experimental models, statins inhibit the MYD88-NF- κ B proinflammatory pathway and promote ACE2 up-regulation. Through these mechanisms, statins may prove beneficial in COVID-19 patients. Statins may also counteract hyperlipidaemia caused by some antiviral and immunosuppressive treatments currently used for COVID-19.

Hypertension and COVID-19.

Schiffrin EL, Flack JM, Ito S, Muntner P, Webb RC, et al.

Am J Hypertens.

2020 Apr 29; PMID: 32251498

Level of Evidence: 5 - Expert Opinion

Type of Article: Editorial

BLUF: Angiotensin-converting enzyme (ACE) inhibitors and Angiotensin II receptor blockers (ARBs) can potentially protect from lung injury brought on by SARS-CoV-2 by reducing the inflammatory action of angiotensin II; however, none of these possibilities have been demonstrated in patients yet.

Summary: It has been shown that ACE inhibitors and ARBs increase ACE2, which could theoretically increase the binding of SARS-CoV-2 to the lung and its pathophysiological effects leading to greater lung injury. However, ACE2 has actually been shown to protect from lung injury in experimental studies. ACE2 forms angiotensin 1–7 from angiotensin II, and thus reduces the inflammatory action of angiotensin II, and increases the potential for the anti-inflammatory effects of angiotensin 1–7. By reducing either formation of angiotensin II in the case of ACE inhibitors, or by antagonizing the action of angiotensin II by blocking angiotensin AT1 receptors in the case of ARBs, these agents could actually contribute to reduce inflammation systemically and particularly in the lung, heart, and kidney. None of these possibilities have however been demonstrated in patients yet.

An orally bioavailable broad-spectrum antiviral inhibits SARS-CoV-2 in human airway epithelial cell cultures and multiple coronaviruses in mice.

Sheahan TP, Sims AC, Zhou S, et al.

Sci Transl Med.

2020 Apr 6; PMID: 32253226

Level of Evidence: 5 - mechanism-based reasoning

Type of Article: Research

BLUF: The ribonucleoside analog, β -d-N4-hydroxycytidine, has been shown to have antiviral activity against SARS-CoV-2, MERS-CoV, SARS-CoV, and related zoonotic group 2b or 2c bat-CoVs, as well as increased potency against a CoV bearing resistance mutations to the nucleoside analog inhibitor remdesivir. When studied on mice, this analog improved pulmonary function and reduced virus titer. It has potential utility as an effective antiviral against SARS-CoV-2.

Abstract: Coronaviruses (CoVs) traffic frequently between species resulting in novel disease outbreaks, most recently exemplified by the newly emerged SARS-CoV-2, the causative agent of COVID-19. Here, we show that the ribonucleoside analog β -d-N4-hydroxycytidine (NHC; EIDD-1931) has broad-spectrum antiviral activity against SARS-CoV-2, MERS-CoV, SARS-CoV, and related zoonotic group 2b or 2c bat-CoVs, as well as increased potency against a CoV bearing resistance mutations to the nucleoside analog inhibitor remdesivir. In mice infected with SARS-CoV or MERS-CoV, both prophylactic and therapeutic administration of EIDD-2801, an orally bioavailable NHC prodrug (β -d-N4-hydroxycytidine-5'-isopropyl ester), improved pulmonary function and reduced virus titer and body weight loss. Decreased MERS-CoV yields in vitro and in vivo were associated with increased transition mutation frequency in viral, but not host cell RNA, supporting a mechanism of lethal mutagenesis in CoV. The potency of NHC/EIDD-2801 against multiple CoVs and oral bioavailability highlights its potential utility as an effective antiviral against SARS-CoV-2 and other future zoonotic CoVs.

COVID-19: Is Everything Appropriate to Create an Effective Vaccine?

Andrea Cioffi

J Infect Dis

2020 Apr 29, PMID: 32348489

Level of Evidence: 6 - No data cited

Type of Article: Letter

Summary: Cioffi challenges the bioethical implications of the human challenge study by Eyal et al,

which endorses enlisting young people to accelerate vaccine licensure. First, she claims that the lower risk of severe infections is not eliminated since healthy subjects are still exposed to the virus and the possible risk of serious illness or even death is still relevant. She also challenges the argument of utilitarian mortality claiming that “sacrifice[ing] young people to create a vaccine for a disease that mainly kills elderly people” is also not appropriate or valid.

Mental Health & Resilience Needs

COVID-19's Impact on Healthcare Workforce

The mental health of doctors during the Covid-19 pandemic.

Galbraith N, Boyda D, McFeeters D, Hassan T. Galbraith N, et al.

BJPsych Bull.

2020 Apr 28; PMID: 32340645

Level of Evidence: 5 - Expert Opinion

Type of Article: Letter

Summary: The authors of this paper discuss ways COVID-19 places additional psychological distress for doctors. They evaluate the stigma behind seeking mental health care and argue that authorities must show strong leadership and support for doctors during this time. They suggest including the phrase “ healthcare staff mental health support process” as an agenda item in workplaces.

Impact on Public Mental Health

Coronavirus (COVID-19) in the United Kingdom: A personality-based perspective on concerns and intention to self-isolate.

Bacon AM, Corr PJ. Bacon AM, et al.

Br J Health Psychol.

2020 Apr 29; PMID: 32348015

Level of Evidence: 4 - Cross-sectional study

Type of Article: Research

BLUF: UK psychologists conducted a cross sectional analysis in the UK to understand the emotional and motivational personality traits influencing behavioral responses to COVID-19 pandemic for personal safety, attitudes towards illness, and intention to self-isolate, involving a reinforcement sensitivity theory-personality questionnaire (RST-PQ) on 202 adults, recruited through an online platform called Prolific. They argue that better understanding of emotional, motivational, and behavioral responses to this pandemic can help guide health information and communication strategies. Major results include:

1. "Results suggest psychological conflict between the urge to stay safe and the desire to maintain a normal, pleasurable life."
2. Older people reported themselves less likely to self-isolate.
3. Ways of ameliorating conflict may include maladaptive behaviours (panic buying), reflecting reward-related displacement activity.
4. Personal safety concerns are related to fight–flight–freeze system traits."

Abstract:

Objectives: Public behaviour change is necessary to contain the spread of coronavirus (COVID-19). Based on the reinforcement sensitivity theory (RST) framework, this study presents an examination of individual differences in some relevant psychological factors.

Design: Cross-sectional psychometric.

Methods: UK respondents ($N = 202$) completed a personality questionnaire (RST-PQ), measures of illness attitudes, concerns about the impact of coronavirus on health services and socio-economic infrastructures, personal safety, and likelihood of voluntary self-isolation.

Results: Respondents most concerned were older, had negative illness attitudes, and scored higher on reward reactivity (RR), indicating the motivation to take positive approach action despite prevailing worry/anxiety. Personal safety concerns were highest in those with negative illness attitudes and higher fight–flight–freeze system (FFFS, reflecting fear/avoidance) scores. Results suggest people are

experiencing psychological conflict: between the urge to stay safe (FFFF-related) and the desire to maintain a normal, pleasurable (RR-related) life. Ways of ameliorating conflict may include maladaptive behaviours (panic buying), reflecting reward-related displacement activity. Intended self-isolation related to FFFS, but also low behavioural inhibition system (related to anxiety) scores. Older people reported themselves less likely to self-isolate.

Conclusions: Interventions need to consider individual differences in psychological factors in behaviour change, and we discuss relevant literature to inform policy makers and communicators.

A Second Pandemic: Mental Health Spillover From the Novel Coronavirus (COVID-19).

Choi KR, Heilemann MV, Fauer A, Mead M

J Am Psychiatr Nurses Assoc

2020 Apr 27; PMID: 32340586

Level of Evidence: 5 - Expert Opinion

Type of Article: Letter

BLUF: The authors outline how both social isolation and illness exacerbate mental health problems and make recommendations to anticipate possible health challenges and bolster preparedness in mental health systems and communities.

Abstract:

The novel coronavirus (COVID-19) pandemic has created an unprecedented global health challenge. There is risk that the outbreak will create a "second pandemic" of mental health crises in health systems and communities. Thus, a comprehensive public health response to the pandemic must include **(a) attention to the psychological aspects of hospitalization for patients, families, and staff affected by COVID-19; (b) planning for emergency and acute psychiatric patient care if hospitals become overwhelmed with COVID-19 patients; and (c) innovations for providing mental health care in communities while social distancing is required and health system resources are strained.** Nurses and nurse leaders must anticipate these mental health challenges, assist with preparedness in health systems and communities, and advocate for a coordinated response to promote mental wellness and resilience.

COVID-19: A personal perspective.

Walshe C

Palliat Med

2020 Apr 29; PMID: 32349615; No abstract available

Level of Evidence: 5 - Expert Opinion

Type of Article: Editorial

Summary: The author provides words of awareness and encouragement for patients dying with or from COVID-19 and for the palliative care providers who are supporting them. It is urged that community-wide compassion is maintained and meaningful palliative care research is continued.

Social isolation in Covid-19: The impact of loneliness

Banerjee D, Rai M. Banerjee D, et al.

Int J Soc Psychiatry.

2020 Apr 29; PMID: 32349580

Level of Evidence: 5 - Expert Opinion

Type of Article: Editorial

Summary: This editorial explains the need to transition from a state of loneliness that is associated with “state of being without any company or in isolation from the community/society,” and transform to a state of solitude, “its cousin full of peace and tranquility.” As the world faces COVID-19 through social distancing, the author urges mental health professionals to adhere to their patient’s psychological needs of social interaction by encouraging digital communication with loved ones, weekly telephonic sessions to reduce anxiety or even exchange greetings with neighbors or strangers to give a feeling “we are all in this together.” As a way to combat boredom and loneliness that leads to anger and frustration.

COVID-19: Increased Risk to the Mental Health and Safety of Women Living with HIV in South Africa.

Joska JA, Andersen L, Rabie S, Marais A, Ndwandwa ES, Wilson P, King A, Sikkema KJ. Joska JA, et al.

AIDS Behav.

2020 Apr 29; PMID: 32347405

Level of Evidence: 5- Expert Opinion

Type of Article: Editorial

Summary: The authors proposed “..that the early stages of the COVID-19 epidemic in South Africa may exert the following deleterious mental health effects on women living with HIV: (1) re-kindling of trauma related to restrictions applied to specific communities under Apartheid, (2) increased anxieties related to potential infection with a fatal virus, (3) associated behavioural avoidance leading to further reduced access to care and medication adherence, and (4) increased rates of domestic violence resulting from lockdown.” Thus, they recommended two responses:

1. The South African government should classify psychological treatment as essential and fast-track such treatment especially for women on antiretroviral therapy.
2. Train current community health workers who find and track positive COVID-19 cases in resource-constrained communities on basic counseling and support.

Resources

[COVID-19 Diagnosis and Management: A Comprehensive Review.](#)

Giuseppe Pascarella, Alessandro Strumia, Chiara Piliego, Federica Bruno, et al.

J Intern Med

2020 Apr 29, PMID: 32348588

Level of Evidence: 1 - Systematic Review

Type of Article: Review

BLUF: Publications from 1/1/19 to 4/3/20 that focused on clinical features and treatments of COVID-19 were included. The following were deduced from the included studies:

- Most commonly reported symptoms are fever, cough, fatigue, slight dyspnoea, sore throat, headache, conjunctivitis and gastrointestinal issues.
- Infection is transmitted from human to human and through contact with contaminated environmental surfaces.
- Hand hygiene is important to prevent contamination and wearing PPE is recommended in specific environments.
- Real-time PCR is a diagnostic tool that requires nasal swab, tracheal aspirate or bronchoalveolar lavage samples.
- Typical CT findings were ground glass opacities on the peripheral and lower lobes and bilateral multiple lobular and subsegmental areas of consolidation
- Despite the current use of chloroquine/hydroxychloroquine as treatment regimens, there is no evidence of any effective treatment for COVID-19.

Abstract:

Severe acute respiratory syndrome coronavirus (SARS-CoV)-2, a novel coronavirus from the same family as SARS-CoV and Middle East respiratory syndrome coronavirus, has spread worldwide leading the World Health Organization to declare a pandemic. The disease caused by SARS-CoV-2, coronavirus disease 2019 (COVID-19), presents flu-like symptoms which can become serious in high-risk individuals. Here we provide an overview of the known clinical features and treatment options for COVID-19. We carried out a systematic literature search using the main online databases (PubMed, Google Scholar, MEDLINE, UpToDate, Embase and Web of Science) with the following keywords: 'COVID-19', '2019-nCoV', 'coronavirus' and 'SARS-CoV-2'. We included publications from 1 January 2019 to 3 April 2020 which focused on clinical features and treatments. We found that infection is transmitted from human to human and through contact with contaminated environmental surfaces. Hand hygiene is fundamental to prevent contamination. Wearing personal protective equipment is recommended in specific environments. The main symptoms of COVID-19 are fever, cough, fatigue, slight dyspnoea, sore throat, headache, conjunctivitis and gastrointestinal issues. Real-time PCR is used as a diagnostic tool using nasal swab, tracheal aspirate or bronchoalveolar lavage samples. Computed tomography findings are important for both diagnosis and follow-up. To date, there is no evidence of any effective treatment for COVID-19. The main therapies being used to treat the disease are antiviral drugs, chloroquine/hydroxychloroquine and respiratory therapy. In conclusion, although many therapies have been proposed, quarantine is the only intervention that appears to be effective in decreasing the contagion rate. Specifically designed randomized clinical trials are needed to determine the most appropriate evidence-based treatment modality

Laboratory information system requirements to manage the COVID-19 pandemic: a report from the Belgian national reference testing center.

Weemaes, Matthias; Martens, Steven; Cuypers, Lize; Van Elslande, Jan; Hoet, Katrien; Welkenhuysen, Joris; Goossens, Ria; Wouters, Stijn; Houben, Els; Jeuris, Kirsten; Laenen, Lies; Bruyninckx, Katrien; Beuselinck, Kurt; Andre, Emmanuel; Depypere, Melissa; Desmet, Stefanie; Lagrou, Katrien; Van Ranst, Marc; Verdonck, Ann K L C; Goveia, Jermaine

J Am Med Inform Assoc

2020 Apr 29; PMID: 32348469

Level of Evidence: 5 - Mechanism-based Reasoning

Type of Article: Research

BLUF: The authors discuss the expansion of laboratory information system (LIS) functionality in order to manage a higher demand for tests during the COVID-19 pandemic at their institution, the Belgian National Reference Center; these tools improve aspects such as test ordering, flow, and releasing of results. With the help of effective change management, implementation of technologies such as these can hold great value in alleviating administrative burdens in times of stress.

Abstract:

Objective: To describe the development, implementation and requirements of laboratory information system (LIS) functionality to manage test ordering, registration, sample flow, and result reporting during the COVID-19 pandemic.

Context and setting: Our large (>12,000,000 tests/year) academic hospital laboratory is the Belgian National Reference Center (NRC) for severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) testing. We performed a moving total of > 25,000 SARS-CoV-2 PCR tests in parallel to standard routine testing since the start of the outbreak. A LIS implementation team dedicated to develop tools to remove the bottlenecks, primarily situated in the pre- and post-analytical phase, was established early in the crisis.

Results: We outline the design, implementation and requirements of LIS functionality related to managing increased test demand during the COVID-19 crisis, including tools for test ordering, standardized order sets integrated into a computerized provider order entry module, notifications on shipping requirements, automated triaging based on digital metadata forms, and the establishment of databases with contact details of other laboratories and primary care physicians to enable automated reporting. We also describe our approach to data mining and reporting of actionable daily summary statistics to governing bodies and other policymakers.

Discussion: Rapidly developed, agile extendable LIS functionality and its meaningful use alleviates the administrative burden on laboratory personnel and improves turn-around-time of SARS-CoV-2 testing. It will be important to maintain an environment that is conducive for the rapid adoption of meaningful LIS tools post-COVID crisis.

COVID-19 in Italy: Dataset of the Italian Civil Protection Department.

Italian Civil Protection Department, Morettini M, Sbrollini A, Marcantoni I, Burattini L.

Data in Brief

2020 Apr 10; PMID: 32346568

Level of Evidence: 5 - Mechanistic

Type of Article: Database

Summary: The article describes a freely accessible COVID-19 database created by the Italian Civil Protection Department (link: <https://github.com/pcm-dpc/COVID-19>). The database contains data

on: geographic areas, national spread, provincial spread, regional spread, and various summary sheets. Data is from Italy starting in January 2020.

Coronavirus disease 2019 (COVID-19): A literature review.

Harapan, H., Itoh, N., Yufika, A., Winardi, W., Keam, S., Te, H., Megawati, D., Hayati, Z., Wagner, A. L., Mudatsir, M

J Infect Public Health

2020 Apr 08; PMID: 32340833

Level of Evidence: 5 -Literature Review

Type of Article: Review

BLUF: The author provides a comprehensive review of the literature of publicly available information to illustrate the global nature of the COVID-19 outbreak, urging countries around the world to intensify disease surveillance systems and preparedness in response operations.

Abstract:

In early December 2019, an outbreak of coronavirus disease 2019 (COVID-19), caused by a novel severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), occurred in Wuhan City, Hubei Province, China. On January 30, 2020 the World Health Organization declared the outbreak as a Public Health Emergency of International Concern. As of February 14, 2020, 49,053 laboratory-confirmed and 1,381 deaths have been reported globally. Perceived risk of acquiring disease has led many governments to institute a variety of control measures. We conducted a literature review of publicly available information to summarize knowledge about the pathogen and the current epidemic. In this literature review, the causative agent, pathogenesis and immune responses, epidemiology, diagnosis, treatment and management of the disease, control and prevention strategies are all reviewed.

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