# The Daily COVID-19 Literature Surveillance Team Report

## June 3, 2020

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# COVID-19 Daily Literature Surveillance

COVID19LST

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

# LEVEL 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.**

**How to cite the Levels of Evidence Table**

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

** OCEBM Table of Evidence Working Group = Jeremy Howick, Iain Chalmers (James Lind Library), Paul Glasziou, Trish Greenhalgh, Carl Heneghan, Alessandro Liberati, Ivan Moschetti, Bob Phillips, Hazel Thornton, Olive Goddard and Mary Hodgkinson*

# EDITOR'S NOTE

As protests continue my heart is heavy but hopeful. Black bodies and black lives have long been treated without deference, without care, and without love. Not just in this country, but world-wide. The institutions that we have created, supported, and continue to participate in are systems that perpetuate race-based thinking and institutionalize discrimination. This is not simply a problem that exists within law enforcement; this is a problem that persists everywhere - including healthcare. Until Monday, we will be decreasing the number of articles in our report each day so that our contributors can focus on what is most important to them at this time, and to give our community time to assess our privilege and educate ourselves. This is something that is highly important to the LST and we are doing our best to support the peaceful participation of our members in the movement.

The time for change has passed. The time to act is now.

Jasmine Rah
Editor in Chief,
COVID– 19 LST

# EXECUTIVE SUMMARY

**Climate:**

- Authors from UC, Irvine warn of increased domestic violence during the pandemic, as was seen in past national disasters such as Hurricane Katrina, and advocates for increased allocation of resources to this disproportionately affected population.

**Epidemiology:**

- Italian dermatologists organize cutaneous manifestations of COVID-19 into 2 groups:
    - 1. Inflammatory exanthems – Erythematous, morbilliform, urticarial, and papulovesicular.
    2. Vasculitis - chilblain lesions, livedo reticularis, and purpura.
- Authors raise concern for a second wave of COVID-19 in cities that are reopening too rapidly. They state that containment efforts should include three aspects:
    1) "Movement restriction"
    2) "Active case finding and reporting"
    3) "Lockdown of active outbreak areas"

**Transmission and Prevention:**

- Researchers inoculated plasma and whole blood with SARS-CoV-2 before treating it with UV light and riboflavin (a photosensitizer). Levels of the virus fell below level of detection within plasma and were reduced by a mean of 3.30 log units in whole blood. suggesting this may be a viable strategy to prevent transfusion-related transmission.
- Researchers from India discuss the current limitations to contact tracing in resource limited areas, and suggest that individuals should be "encouraged to maintain their own contact list on a daily basis" to aid in public health efforts.

**Management:**

- A study of 100 patients in France utilized the Apple Watch ECG feature to effectively monitor QT-intervals in at-risk patients, suggesting that 1-lead ECGs may be effective in quarantined outpatients receiving QT prolonging medications.
- A large observational study of 2,075 hospitalized patients in Spain found the administration of heparin was associated with lower mortality, suggesting prevention against COVID-19 coagulopathy.

**Adjusting Practice:**

- A prospective study in a non-hot spot region of Ohio found that fear of COVID-19 increased door-to-balloon time in STEMI presentations during the post-COVID-19 period. Authors propose telemedicine may be an effective means of increasing access to care.

**R&D Diagnosis and Treatment:**

- A systematic review and meta-analysis found the accuracy of chest CT for COVID-19 to be 94.6% sensitivity and 46.0% specificity , suggesting a relatively high sensitivity and potential aid to increase negative predictive value .

**Mental Health and Resilience:**

- Art therapy to address the mental health challenges surrounding isolation and fear amid the COVID-19 pandemic. Authors from George Fox University describe how art therapy can be used to promote resilience and mindfulness.
- A cross-sectional study of mental health in Australia found that participants with a history of an eating disorder reported increased restrictive behaviors and exercise. Those without a history of an eating disorder also reported increased restrictive behaviors, but decreased exercise. This highlights the importance of promoting healthy eating habits for all populations.

# TABLE OF CONTENTS

# CLIMATE

## AFFECTING THE HEALTHCARE WORKFORCE

### PERSPECTIVES COVID-19 AND PPE IN CONTEXT: AN INTERVIEW WITH CHINA

Harvey J.. J Public Health (Oxf). 2020 May 30:fdaa077. doi: 10.1093/pubmed/fdaa077. Online ahead of print.
Level of Evidence: 5

#### BLUF

The authors interviewed a UK small-to-medium enterprise (SME) located in Shanghai during the COVID-19 pandemic to highlight the inflation in personal protective equipment (PPE) prices, the flexibility of smaller businesses to communicate freely with international entities, the preference for branded PPE, and the prolonged lead time causing slow deliveries of PPE globally. These insights suggest the importance of understanding business communication to improve the delivery of medical equipment during disease outbreaks.

#### ABSTRACT

The author aims to depict the current COVID-19 pandemic and personal protective equipment (PPE) crisis in the UK. The current situation is put into context exploring the history of global outbreaks of infectious disease and what has been learnt. These lessons are then applied and weighed against the recent response to coronavirus. An in-depth interview with a UK biomedical SME based in Shanghai, China is reported in order to inform future procurement of PPE. It is hoped that an appreciation of the dynamic nature of the market will allow adaptations to be made in order to secure reliable supply chains moving forwards.

# DISPARITIES

### RACISM IN MY MEDICAL EDUCATION

Ko M.. Health Aff (Millwood). 2020 Jun;39(6):1087-1091. doi: 10.1377/hlthaff.2019.00743.
Level of Evidence: Other

#### BLUF

The author argues that the segregation and inequities observed in underserved, minority communities stem from inequalities in the medical education system since schools that focus on serving the underprivileged, such as King/Drew in Los Angeles, are largely reserved for minority and underprivileged students. The author advocates for all medical education to adopt this focus on the underserved, as opposed to keeping the emphasis segregated to certain medical schools.

#### ABSTRACT

An Asian American physician calls for more diversity and a commitment to health equity in US medical schools.

### HOME IS NOT ALWAYS A HAVEN: THE DOMESTIC VIOLENCE CRISIS AMID THE COVID-19 PANDEMIC

Kofman YB, Garfin DR.. Psychol Trauma. 2020 Jun 1. doi: 10.1037/tra0000866. Online ahead of print.
Level of Evidence: Other

#### BLUF

Authors from the University of California, Irvine in the United States discuss how the COVID-19 pandemic may result in increased rates of domestic violence, as seen in other national disasters such as Hurricane Katrina, suggesting that stay at home orders and social distancing guidelines may be increasing the occurrence of violence, inability of victims to attain medical help, and lack of space at shelters. This article suggests that as preparation for the second wave of COVID-19 moves forward, allocation of services and resources for domestic violence victims must be made.

## ABSTRACT

The novel coronavirus (SARS-CoV-2) and the associated disease it causes, COVID-19, have caused unprecedented social disruption. Due to sweeping stay-at-home orders across the United States and internationally, many victims and survivors of domestic violence (DV), now forced to be isolated with their abusers, run the risk of new or escalating violence. Numerous advocates, organizations, and service centers anticipated this: Upticks in domestic violence were reported in many regions soon after stay-at-home directives were announced. In this commentary, we delineate some of the recent events leading up to the reported spike in DV; review literature on previously documented disaster-related DV surges; and discuss some of the unique challenges, dilemmas, and risks victims and survivors face during this pandemic. We conclude with recommendations to allocate resources to DV front-liners and utilize existing DV guidelines for disaster preparedness, response, and recovery.

# EPIDEMIOLOGY

## LOCKDOWN TO CONTAIN COVID-19 IS A WINDOW OF OPPORTUNITY TO PREVENT THE SECOND WAVE

Wilder-Smith A, Bar-Yam Y, Fisher D.. J Travel Med. 2020 May 30:taaa091. doi: 10.1093/jtm/taaa091. Online ahead of print.
Level of Evidence: Other

### BLUF

The authors express concern that many cities are reopening too rapidly and will have a second wave of COVID-19. They state that containment efforts should include three aspects:
1) "Movement restriction"
2) "Active case finding and reporting"
3) "Lockdown of active outbreak areas"
The authors argue that this strategy could rapidly contain an outbreak, in about 5 to 7 weeks, and warn that many places that are now re-opening may need another lockdown in the future.

# SYMPTOMS AND CLINICAL PRESENTATION

## CUTANEOUS MANIFESTATIONS IN PATIENTS WITH COVID-19: A PRELIMINARY REVIEW OF AN EMERGING ISSUE

Marzano AV, Cassano N, Genovese G, Moltrasio C, Vena GA.. Br J Dermatol. 2020 Jun 1. doi: 10.1111/bjd.19264. Online ahead of print.
Level of Evidence: Other

### BLUF

In this article, authors affiliated with the Department of Dermatology, Pathophysiology, and Transplantation in Italy, conducted a literature review on skin manifestations associated with COVID-19 up to April 30, 2020. Six types of skin lesions were identified (urticarial rash, confluent erythematous/maculo-papular/morbilliform rash, papulovesicular exanthem, chilblain-like acral pattern, livedo reticularis/racemosa-like pattern, and purpuric "vasculitic" pattern. These were grouped into "inflammatory/exanthematous" or "vasculopathic/vasculitic" groups. See Figure 1 for examples of some of the identified skin manifestations.

### SUMMARY

The six patterns of skin lesions are grouped as follows:
1. "Inflammatory/exanthematous - Urticarial rash, confluent erythematous, maculopapular/ morbilliform rash, papulovesicular exanthem.
2. Vasculopathic/ Vasculitis - chilblain like acral pattern, livedo reticularis/ racemosa like pattern, purpuric vasculitic pattern."
Although, pathogenic mechanisms of these skin manifestations are unknown, the authors hypothesized that a hyperactive immune response, complement activation, and/or microvascular injury may be involved.
See Figure 1 for examples of some of the identified skin lesions.

### ABSTRACT

BACKGROUND: The infection caused by the recently identified SARS-CoV-2, called COronaVIrus Disease-19 (COVID-19), has rapidly spread throughout the world. With the exponential increase of patients worldwide, the clinical spectrum of COVID-19 is being better defined and new symptoms are emerging. Numerous reports are documenting the occurrence of different cutaneous manifestations in COVID-19 patients.
OBJECTIVES: To provide a brief overview of the COVID-19-associated cutaneous lesions.
METHODS: Literature search was performed in the PubMed, Scopus and Web of Science databases up to 30 April 2020. This narrative review summarizes the available data regarding clinical and histological features of COVID-19-associated skin manifestations.

RESULTS: Literature reports showed a great heterogeneity in COVID-19-associated cutaneous manifestations, as well as in their latency periods and associated extracutaneous symptoms. Pathogenic mechanisms are unknown, although the role of hyperactive immune response, complement activation and microvascular injury has been hypothesized. Based on our experience and the literature data, we subdivided the reported cutaneous lesions into six main clinical patterns: i) urticarial rash, ii) confluent erythematous/maculo-papular/morbilliform rash, iii) papulovesicular exanthem, iv) chilblain-like acral pattern, v) livedo reticularis/racemosa-like pattern, vi) purpuric "vasculitic" pattern. These six patterns can be merged into two main settings: the first one - inflammatory/exanthematous - including the first three groups cited above and the second one including the vasculopathic/vasculitic lesions of the last three aforementioned groups.
CONCLUSIONS: The possible presence of cutaneous findings leading to suspect COVID-19 puts dermatologists in a relevant position. Further studies are needed to delineate the diagnostic and prognostic value of such cutaneous manifestations.

### FIGURES


Figure 1. COVID-19-associated cutaneous manifestations. A, Urticarial rash. B, Combination of confluent erythematous rash on the chest with petechial lesions on the abdomen and upper extremities. C, Acral chilblain-like lesions on the foot . D, Vesicular exanthem. E, Palpable purpura on the knees. F, Livedo racemosa-like lesions on the thighs. All the photographs belong to the authors' own collection.

# ADULTS

## HERALDING HEALTHCARE PROFESSIONALS: RECOGNITION OF NEUROLOGICAL DEFICITS IN COVID-19

Baig AM, Sanders EC.. ACS Chem Neurosci. 2020 May 29. doi: 10.1021/acschemneuro.0c00286. Online ahead of print.
Level of Evidence: Other

### BLUF

A review by an international team of researchers explores the neurological implications of SARS-CoV-2 infection. The authors highlight the location of ACE2 receptors in glial cells and neurons as well as signs and symptoms of anosmia, ageusia, ataxia, loss of consciousness, and reported cerebrovascular disease in some cases. Researchers posit that changes in breathing pattern and apnea found in early COVID-19 disease might be implicated in respiratory failure seen later on in the clinical course in many case reports. The researchers also review the following potential pathways for neurological infection:
1. 'Cytokine storm' leading to a compromised blood-brain barrier.
2. Direct infiltration through the cribriform plate.

### ABSTRACT

The 2019 novel coronavirus disease (COVID-19) caused by Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) is a zoonotic disease that is dominated by pulmonary symptoms. However, recent reports of isolation of the virus from cerebrospinal fluid (CSF) coupled with radiological evidence of zones of necrosis in the brain, have elucidated the neurotropic potential of SARS-CoV-2. The acute respiratory failure seen in patients with COVID-19 is alarming and could be due to the effects of SARS-CoV-2 on the central respiratory regulatory centers in the brainstem. Appropriate interventions can be implemented to prevent severe outcomes of neurological invasion by SARS-CoV-2 to reduce the morbidity and mortality of patients with COVID-19. It is of paramount importance that the scientific community alerts the healthcare professionals of the pieces of evidence that can herald them on the covert neurological deficits in progress in COVID-19.

# UNDERSTANDING THE PATHOLOGY

## IN SILICO

### CORONAVIRUS3D: 3D STRUCTURAL VISUALIZATION OF COVID-19 GENOMIC DIVERGENCE

Sedova M, Jaroszewski L, Alisoltani A, Godzik A.. Bioinformatics. 2020 May 29:btaa550. doi: 10.1093/bioinformatics/btaa550. Online ahead of print.
Level of Evidence: Other

#### BLUF

A modeling study conducted by the University of California Riverside School of Medicine used the Coronavirus3D server to model SARS-CoV-2 protein structures and demonstrated how specific mutations can influence viral structure and function. Figure 1 demonstrates two mutations, one in RNA-directed RNA polymerase and one in Spike glycoprotein, which are examples of the more than 27,000 discovered genomes and 3 viral clades for SARS-CoV-2. Studies into SARS-CoV-2 mutations could be useful in determining the possible influence of mutations on the COVID-19 pandemic.

#### ABSTRACT

MOTIVATION: As the COVID-19 pandemics is spreading around the world, the SARS-CoV-2 virus is evolving with mutations that potentially change and fine-tune functions of the proteins coded in its genome. RESULTS: Coronavirus3D website integrates data on the SARS-CoV-2 virus mutations with information about 3D structures of its proteins, allowing users to visually analyze the mutations in their 3D context. AVAILABILITY: Coronavirus3D server is freely available at https://coronavirus3d.org.

#### FIGURES

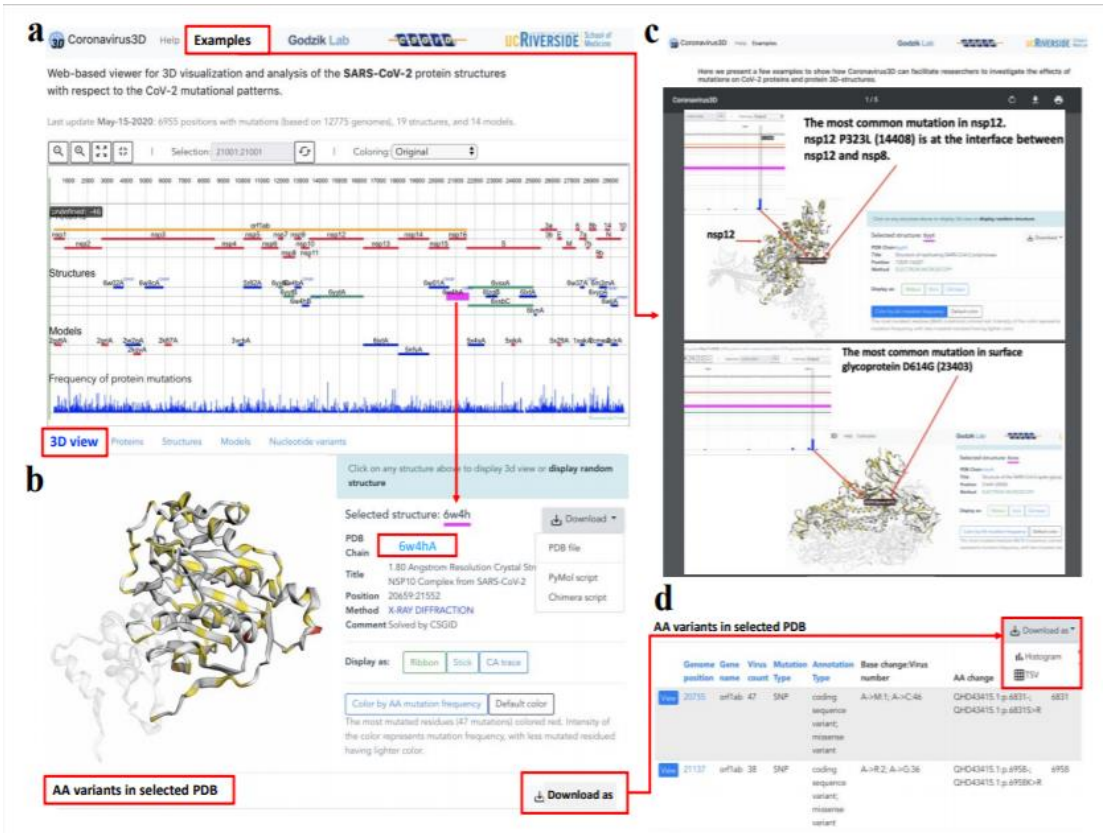



**Figure 1**. The overview of the Coronavirus3D server. (a) Top panel of the main page contains a zoomable genome viewer. (b) The lower panel of the main page shows an interactive visualization of the structure selected above (6w4h). A pale yellow to reddish color spectrum in the 3D view of the protein structure represents low to high rates of mutations (counts of viral genomes with this mutation). (c) The "Examples" tab provides examples of how Coronavirus3D can provide insights into the effects of mutations on structures of SARS-CoV-2 proteins. (d) A downloadable list of amino acid mutations in the selected PDB structure.

# TRANSMISSION & PREVENTION

## COVID-19 AND OTHER PANDEMICS: HOW MIGHT THEY BE PREVENTED?

Oldfield E, Malwal SR.. ACS Infect Dis. 2020 Jun 1. doi: 10.1021/acsinfecdis.0c00291. Online ahead of print.
Level of Evidence: Other

### BLUF

A narrative review conducted by two researchers at the Department of Chemistry at the University of Illinois evaluated the history of personal protective equipment (PPE) through the ages, including commentary regarding the SARS, MERS, and COVID-19 pandemics for the purposes of identifying improvements in PPE that maybe used to reduce infection transmission to healthcare workers (HCWs). There were two major conclusions presented by the authors:

1. Eye protection using filtered eye masks may be used to prevent ocular transmission

2. Pre-filtered valved respirators (ex. N100 masks) should be used to more effectively block viral transmission

### ABSTRACT

Pandemics such as influenza, smallpox, and plague have caused the loss of hundreds of millions of lives and have occurred for many centuries. Fortunately, they have been largely eliminated by the use of vaccinations and drugs. More recently, Severe Acute Respiratory Syndrome (SARS), Middle East Respiratory Syndrome (MERS), and now Coronavirus Disease 2019 (COVID-19) have arisen, and given the current absence of highly effective approved vaccines or drugs, brute-force approaches involving physical barriers are being used to counter virus spread. A major basis for physical protection from respiratory infections is eye, nose, and mouth protection. However, eye protection with goggles is problematic due to "fogging", while nose/mouth protection is complicated by the breathing difficulties associated with non-valved respirators. Here, we give a brief review of the origins and development of face masks and eye protection to counter respiratory infections on the basis of

experiments conducted 100 years ago, work that was presaged by the first use of personal protective equipment, "PPE", by the plague doctors of the 17th Century. The results of the review lead to two conclusions: first, that eye protection using filtered eye masks be used to prevent ocular transmission; second, that new, pre-filtered, valved respirators be used to even more effectively block viral transmission.

## FIGURES

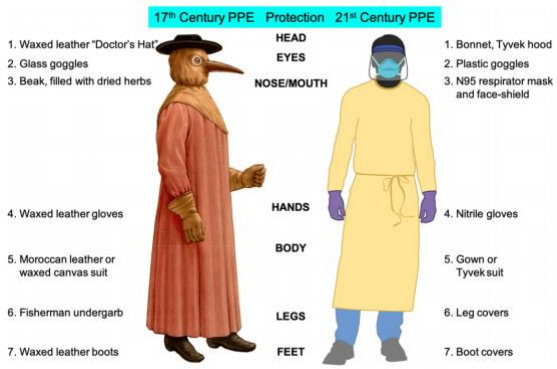



Figure 3: Comparison between the personal protective equipment, PPE, used by the 17th Century plague doctors and by 21st Century medical personnel. The plague doctor image is derived from the original image, A physician wearing a seventeenth-century plague preventive costume; Wellcome Library, London, under Creative Commons license CC BY 4.0 (https://creativecommons.org/licenses/by/4.0). The 21st Century PPE image is derived from the CDC Website, https://www.cdc.gov/coronavirus/2019-ncov/downloads/COVID-19_PPE_illustrations-p.pdf.

# DEVELOPMENTS IN TRANSMISSION & PREVENTION

## PATHOGEN REDUCTION OF SARS-COV-2 VIRUS IN PLASMA AND WHOLE BLOOD USING RIBOFLAVIN AND UV LIGHT

Ragan I, Hartson L, Pidcoke H, Bowen R, Goodrich R.. PLoS One. 2020 May 29;15(5):e0233947. doi: 10.1371/journal.pone.0233947. eCollection 2020.
Level of Evidence: 5

### BLUF

Researchers at Colorado State University inoculated plasma and whole blood units with SARS-CoV-2 and subsequently treated them with UV light and riboflavin (a photosensitizer). Levels of the virus fell below level of detection within plasma and were reduced by a mean of 3.30 log units in whole blood. Authors concluded that pathogen reduction of blood products could be a viable strategy to prevent transfusion-related transmission, although this type of transmission has not been reported to date and thus, remains a theoretical risk.

### ABSTRACT

BACKGROUND: Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) has recently been identified as the causative agent for Coronavirus Disease 2019 (COVID-19). The ability of this agent to be transmitted by blood transfusion has not been documented, although viral RNA has been detected in serum. Exposure to treatment with riboflavin and ultraviolet light (R + UV) reduces blood-borne pathogens while maintaining blood product quality. Here, we report on the efficacy of R + UV in reducing SARS-CoV-2 infectivity when tested in human plasma and whole blood products. STUDY DESIGN AND METHODS: SARS-CoV-2 (isolate USA-WA1/2020) was used to inoculate plasma and whole blood units that then underwent treatment with riboflavin and UV light (Mirasol Pathogen Reduction Technology System, Terumo BCT, Lakewood, CO). The infectious titers of SARS-CoV-2 in the samples before and after R + UV treatment were determined by plaque assay on Vero E6 cells. Each plasma pool (n = 9) underwent R + UV treatment performed in triplicate using individual units of plasma and then repeated using individual whole blood donations (n = 3). RESULTS: Riboflavin and UV light reduced the infectious titer of SARS-CoV-2 below the limit of detection for plasma products at 60-100% of the recommended energy dose. At the UV light dose recommended by the manufacturer, the mean log reductions in the viral titers were >= 4.79 +- 0.15 Logs in plasma and 3.30 +- 0.26 in whole blood units. CONCLUSION: Riboflavin and UV light effectively reduced the titer of SARS-CoV-2 to the limit of detection in human plasma and by 3.30 +- 0.26 on average in whole blood. Two clades of SARS-CoV-2 have been described and questions remain about whether exposure to one strain confers strong immunity to the other. Pathogen-reduced blood products may be a safer option for critically ill patients with COVID-19, particularly those in high-risk categories.

## THE USE OF INFORMATION TECHNOLOGY FOR MANAGING THE COVID-19 PANDEMIC: PRACTICE IN CHINA

Ye Q, Zhou J, Wu H.. JMIR Med Inform. 2020 May 30. doi: 10.2196/19515. Online ahead of print.
Level of Evidence: Other

### BLUF

Authors from Wuhan emphasize that emerging information technologies can play a pivotal role in controlling the spread of COVID-19. They discuss a "Health Information Technology" (HIT) framework (Figure 1) for monitoring, detecting, early warning, prevention, and overall management of COVID-19. They argue that public health agencies worldwide should adopt such strategies (Figure 2), while being cognizant of privacy and ethical issues that surround electronic transmission of confidential medical information.

### ABSTRACT

UNSTRUCTURED: The COVID-19 epidemic poses an enormous challenge to the global health system, and governments have taken active preventive and control measures. Health informatics community in China has taken active actions to leverage health information technologies for epidemic monitoring, detecting, early warning, preventing and controlling and other work. In this study, we develop a technical framework responding to the COVID-19 epidemic from a health informatics perspective. Based on the framework, we review specific HIT practices for managing the outbreak in China, describe the highlight

applications in detail, and finally discuss critical issues to consider on HIT using. Practice in China shows that health information technologies play a pivotal role in responding to the COVID-19 epidemic.

## FIGURES

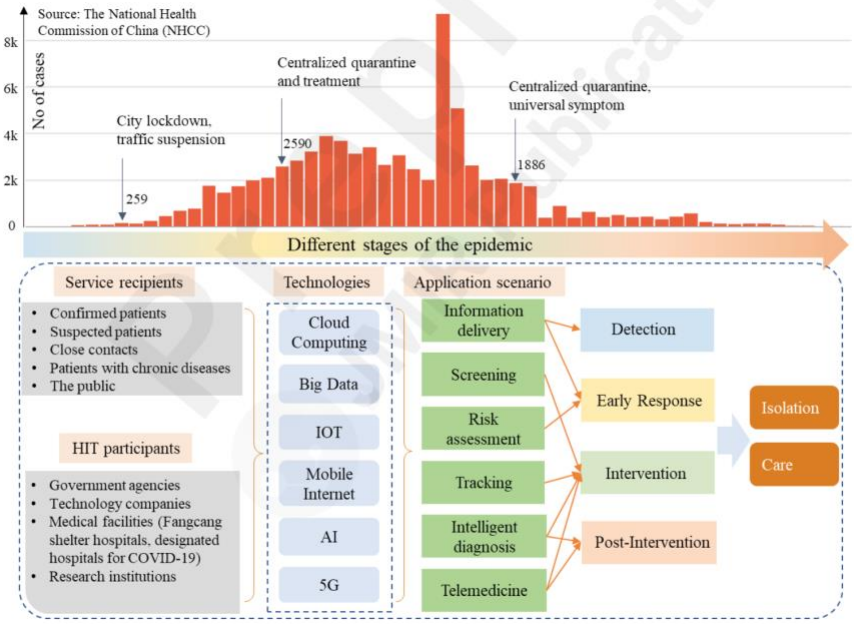



Figure 1. HIT framework for responding to the epidemic

Table 1. HIT practices for managing the COVID-19 outbreak in China

| Technologies | Scenarios | Description | Specific cases | References |
|---|---|---|---|---|
| Mobile Internet | Internet hospital, online service | Provide a variety of online services for the public during the outbreak, including screening, mental health or other disease consultation services | Chunyu Yisheng, WeDoctor, China Mobile | Gong et al. [10]; Liu et al. [12]; Zheng et al. [16]; Sun et al. [17]; |
| | Online information dissemination platforms | Release of official statistics about the COVID-19 epidemic and keep the public correctly informed of the current situation timely | People's Daily, WeChat official account "Healthy China" | People's Daily [18]; NHCPRC [19]; |
| Big Data | Contact trace | Record health status and activity trajectory, monitor crowd movement or find close contacts | Health QR code, the 'close contact detector' app | Diao et al. [20]; Wang et al. [21]; Boulos et al. [22]; Ienca et al. [2]; Boulos et al. [22]; |
| | Epidemic prediction | Predictive modeling and turning point projection, crowd activity monitoring | Predictive model for COVID-19 | Wang et al. [21]; Liu et al. [23]; |
| | Spread track | Assistance in developing epidemic prevention and control strategies | The dynamic information query system | Zhou et al. [24]; Peng et al. [25]; |
| Cloud Computing | Supercomputing | Provide computing power | Supercomputing for big data analytics, vaccine and drug development | Ali group[26]; Liu et al. [23]; Li et al. [27]; |
| Internet of Things | Real-time data collection | Achieve intelligent management of information | Intelligent Diagnosis and Treatment Assistant Program | Bai et al. [28]; |
| AI | Drones | Deployed for fever detection and crowd activity monitoring | DJI drones | Liu et al. [23]; |
| | Intelligent diagnosis | Assist doctors in CT diagnosis, reduce work pressure and improve accuracy. | The DL-based computer-aided diagnostic system | Li et al. [29]; Gozes et al. [14]; |
| | Temperature detection | Rapid body temperature measurement of the public | Airport infrared thermal cameras | Baidu [30]; |
| | Robots | Simple operations such as disinfection, delivering medications and food during an epidemic are done by intelligent robots | Robots for disinfection, delivering medications and measuring vital signs. | Brickwood [31]; Huber [32]; Yang et al. [33]; |
| 5G | 5G + Telemedicine | Support for remote video consultations and diagnostics | 5G telehealth system | Paul [34]; Augenstein [35]; Li et al. [36]; |
| Comprehensive | Clinical information systems | Clinical management related to COVID-19 | Electronic health record(EHR) | Ren et al. [37]; |

Figure 2a. HIT practices for managing the COVID-19 outbreak in China

## MODELING COMPLIANCE WITH COVID-19 PREVENTION GUIDELINES: THE CRITICAL ROLE OF TRUST IN SCIENCE

Plohl N, Musil B.. Psychol Health Med. 2020 Jun 1:1-12. doi: 10.1080/13548506.2020.1772988. Online ahead of print.
Level of Evidence: Other

### BLUF

Two researchers in the Department of Psychology at the University of Maribor (Slovenia) conducted a prospective cohort study of 617 participants using a survey-dependent methodology to investigate factors associated with compliance with COVID-19 prevention guidelines. The study utilized structural equation modeling (SEM) to show "that COVID-19 risk perception and trust in science both independently predict compliance with COVID-19 prevention guidelines, while the remaining variables in the model (political conservatism, religious orthodoxy, conspiracy ideation and intellectual curiosity) do so via the mediating role of trust in science." These findings provide support for the idea that trust in science is a crucial component of explaining differing levels of compliance with COVID-19 prevention guidelines among individuals.

### ABSTRACT

The coronavirus pandemic is one of the biggest health crises of our time. In response to this global problem, various institutions around the world had soon issued evidence-based prevention guidelines. However, these guidelines, which were designed to slow the spread of COVID-19 and contribute to public well-being, are (deliberately) disregarded by some individuals. In the present study, we aimed to develop and test a multivariate model that could help us identify individual characteristics that make a person more/less likely to comply with COVID-19 prevention guidelines. A total of 525 attentive participants completed the online survey. The results of structural equation modeling (SEM) show that COVID-19 risk perception and trust in science both independently predict compliance with COVID-19 prevention guidelines, while the remaining variables in the model (political conservatism, religious orthodoxy, conspiracy ideation and intellectual curiosity) do so via the mediating role of trust in science. The described model exhibited an acceptable fit (chi2(1611) = 2485.84, p < .001, CFI = .91, RMSEA = .032, SRMR = .055). These findings thus provide empirical support for the proposed multivariate model and underline the importance of trust in science in explaining the different levels of compliance with COVID-19 prevention guidelines.

### FIGURES

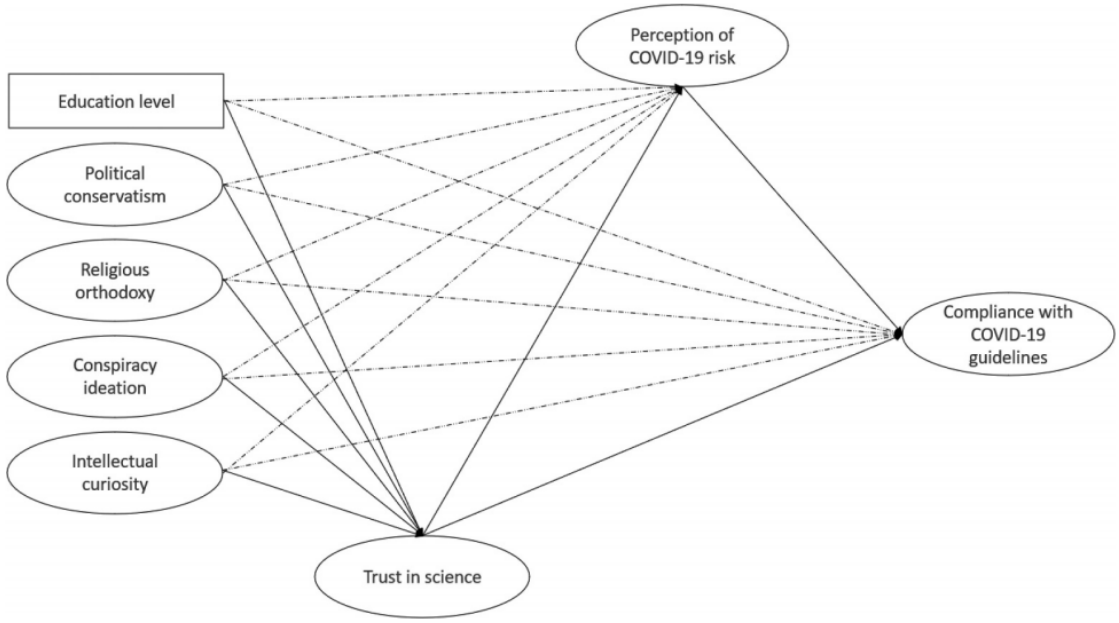



Figure 1: Theoretical model.

## SUCCESSFUL SMALLPOX ERADICATION: WHAT CAN WE LEARN TO CONTROL COVID-19?

Heymann DL, Wilder-Smith A.. J Travel Med. 2020 May 30:taaa090. doi: 10.1093/jtm/taaa090. Online ahead of print.
Level of Evidence: Other

### BLUF

In this editorial, physicians from the United Kingdom and Germany compare and contrast the current COVID-19 pandemic and the fight against it to the presentation and eradication of smallpox. While the presentation of SARS-CoV-2 infection is quite different than that of smallpox (which presented as a discernible rash among other symptoms and involved few asymptomatic carriers), the authors argue that if world leaders work collaboratively, a large-scale vaccination campaign just may prove successful in this new context.

### SUMMARY

"All countries need to use enhanced testing to identify cases, test contacts who are identified during contact tracing and become sick within the period of surveillance, and isolate all those who are infected. Such focused public health measures were also successful for smallpox. It all boils down to disease surveillance, prompt patient identification, diagnosis and isolation of all cases, contact tracing and surveillance of contacts. The public health community needs to learn from history and needs to regain its ability to do shoe-leather public health. If we come together collectively and use the public health tools that we have at hand, enhanced by vaccination, we will be successful in containing COVID-19 despite geopolitical tensions, just as we were successful in eradicating smallpox despite the Cold War at the time."

## CONTACT TRACING: A LESSON FROM THE NIPAH VIRUS IN THE TIME OF COVID-19

Wilson A, Warrier A, Rathish B.. Trop Doct. 2020 May 31:49475520928217. doi: 10.1177/0049475520928217. Online ahead of print.
Level of Evidence: Other

### BLUF

Researchers from India discuss the power of contact tracing with quarantining to limit the spread of disease by reviewing their successful use of in-hospital contact tracing to limit the Nipah outbreak in 2019 to a single case. They discuss current limitations to contact tracing including cost, efficiency, availability of resources, and the need for public support and suggest that individuals should be "encouraged to maintain their own contact list on a daily basis" to aid in contact tracing efforts by public health agencies.

### ABSTRACT

Without a vaccine or proven therapeutic options in COVID-19, the World Health Organization (WHO) recommends a combination of measures: rapid diagnosis and immediate isolation of cases; rigorous contact tracing; and precautionary self-isolation of close contacts to curb the spread of COVID-19. During a Nipah outbreak in Kerala, India in 2019, it was confined to a single case. The authors were involved in the in-hospital contact tracing. With a single patient producing a contact list of 98 in a healthcare setting, the implications in a community setting during a pandemic of the scale of COVID-19 are huge but it proves that early and rigorous tracing with quarantining is an effective strategy to limit clusters. We believe that if the public is encouraged to maintain their own contact list on a daily basis, it would help in significantly reducing the time and effort invested into contact tracing in the event of a person contracting COVID-19.

# MANAGEMENT

## EMPIRICAL TREATMENT AND PREVENTION OF COVID-19

Shin HS.. Infect Chemother. 2020 Jun 1. Online ahead of print.
Level of Evidence: Other

### BLUF

An infectious disease expert from the Korean Society of Zoonoses proffers a provisional set of review-based management guidelines for COVID-19. Notably, COVID-19 is stratified into common cold-like and pneumonia-like symptoms. Further, the author considers the likelihood of cold- and pneumonia-specific treatments (Table 1 & 2) to work for COVID-19, though they acknowledge that many of these treatments warrant further research to gauge efficacy.

### ABSTRACT

The rapid spread of severe acute respiratory coronavirus syndrome 2 (SARS-CoV-2) in the population and throughout the cells within our body has been developing. Another major cycle of coronavirus disease 2019 (COVID-19), which is expected in the coming fall, could be even more severe than the current one. Therefore, effective countermeasures should be developed based on the already obtained clinical and research information about SARS-CoV-2. The aim of this review was to summarize the data on the empirical treatment of COVID-19 acquired during this SARS-CoV-2 infection cycle; this would aid the establishment of an appropriate healthcare policy to meet the challenges in the future. The infectious disease caused by SARS-CoV-2 is characterized by common cold along with hypersensitivity reaction. Thus, in addition to treating common cold, it is essential to minimize the exposure of cells to the virus and to mitigate the uncontrolled immune response. A proper combination of antiviral agents, immune modulators such as prednisolone, and anticoagulants such as heparin and anti-C5a antagonists could be employed to minimize lung damage and prevent systemic involvements. Finally, strategies to achieve population immunity against SARS-CoV-2 should be developed through understanding of the interaction between the immune system and the virus.

### FIGURES

| Symptoms | Drug |
|---|---|
| Analgesics for pain and fever | Prednisolone 10 mg PO,<br>Hydrocortisone 25 - 50 mg PO,<br>Ibuprofen, naproxen, and other nonsteroidal anti-inflammatory drugs: be cautious to hypersensitivity reactions and acute thromboembolic side effects.<br>Aspirin can cause Reye's syndrome |
| Antihistamines for runny nose | Diphenhydramine, loratadine, fexofenadine, cetirizine, levocetirizine, etc. |
| Decongestants for stuffy nose | Pseudoephedrine: contraindicated for the patients with uncontrolled high blood pressure |
| Anti-tussives | Dextromethorphan, codeine. |
| Phosphodiesterase inhibitor, non-selective | Theophylline at low doses (100 - 200mg PO twice per day) |
| Immune modulators with antibacterial effect | Azithromycin, clarithromycin |

PO, per os.

Table 1: Medications for common cold.

**Table 2. Treatments for pneumonia**

| **Anti-viral agents** | | | |
|---|---|---|---|
| Drug | | Duration | Remark |
| Nucleotide/nucleoside analogues | Remdesivir, tenofovir/emtricitabine, | 5 - 14 days | Acyclovir, famciclovir, and ganciclovir need to be studied |
| HIV NNRTIs | Rilpivirine, efavirenz, etravirine | 5 - 14 days | Doravirine may be efficacious. |
| HIV protease inhibitors | Lopinavir/ritonavir, darunavir/ritonavir or cobicistat, atazanavir | 5 - 14 days | |
| Antimalarials | Chloroquine, hydroxychloroquine, mefloquine | 3 days | Mefloquine should be administered up to 5 tablets. |
| **Corticosteroids** | | | |
| Severity of pneumonia | Treatment | Duration | Remark |
| Mild pneumonia | Steroid inhaler or prednisolone 10 - 20mg PO | Preemptive: 5 - 7 days<br>Therapeutic: 5 - 21 days<br>Not recommended after 3 weeks of illness, except for cases with proliferative inflammation on biopsy.<br>Rapid tapering is required. | Prednisolone is safer than methylprednisolone. Hydrocortisone 300 mg/day can be used for patients with unexpected side effects. |
| Moderate pneumonia | Prednisolone 30mg PO | | |
| Severe/critical pneumonia | Prednisolone 40mg once or twice daily PO, or methylprednisolone 1mg/kg/day IV | | |
| **Antibiotics for other coinfections/superinfections** | | | |
| Severity of pneumonia, or coinfection | Treatment | Duration | Remark |
| Mild pneumonia | Ceftriaxone or macrolide (azithromycin/clarithromycin) | Around 3 days | Macrolide, cephalosporin, and glycopeptide antimicrobial increases the innate immunity |
| Moderate pneumonia | Ceftriaxone + macrolide ± teicoplanin/vancomycin | Around 7 days | |
| Severe/critical pneumonia | Vancomycin + macrolide ± meropenem | 7 - 14 days | Consider the epidemiologic patterns of microbes |

| Influenza | Oseltamivir | 5 days | Consider false negative result of the rapid diagnostic test |
|---|---|---|---|
| **Anticoagulants:** Recommended for patients with anyone of followings; 1) patients of ≥65 years 2) dyspnea and hypoxia requiring 3L/min oxygen to correct hypoxemia, 3) respiratory rate >24/min, 4) decreased consciousness, 5) unstable vital signs, 6) patients requiring mechanical ventilation, hemodialysis, CRRT, or ECMO. Preemptive use is preferable to decrease lung sequelae, if available. | | | |
| Drug | Administration route/dose | | |
| Heparin | IV, SQ, inhalation; heparin has a thrombolytic effect.<br>IV unfractionated heparin sulfate; initial dose: 80 units/kg bolus (maximum = 10,000 units), initial infusion rate: 18 units/kg/h (maximum = 23,000 units/h), then adjust the target aPTT range (60 - 85)<br>Nebulized unfractionated heparin sulfate 10,000 - 25, 000U every 4h (height ≥ 165 cm) or every 6 hours (height <165 cm) | | |
| Anti-C5a antagonist | IV; inhalation/nebulization may be possible. | | |
| Camostat mesylate/ nafamostat mesylate | IV; the efficacy could be limited due to suppression of C3b and C5b facilitation. | | |
| Warfarin | PO; preemptive and prophylactic use is considered for high-risk patients. Drug interactions are common. | | |
| **Interferon:** 1) Interferon-β 1b, mainly by Inhalation. Consider the combination of SQ + inhalation. 2) Patients of the age ≥70 years are indicated. Consider the administration of interferon for the high-risk patients of ≥40 years. The maximum effect of interferon will be achieved within 3 days of the onset of COVID-19. 3) Duration: 7 days for patients of ≥70 years, 14 days for the patients of ≥80 years and high-risk patients | | | |
| **Antipyretics:** Hydrocortisone 25 – 50 mg PO/IV, or prednisolone 10 mg PO | | | |
| **Phosphodiesterase type-5 inhibitors (sildenafil)**: rescue therapy (50 mg PO every 8 h) for patients with impending respiratory failure | | | |
| **Epinephrine: nebulization/endotracheal/IV**; emergency use for patients showing acute hypersensitivity reactions with shock | | | |

HIV, human immunodeficiency virus; NNRTI, non-nucleoside reverse transcriptase inhibitor; PO, per os; IV, intravenously; CRRT, continuous renal replacement therapy; ECMO, extracorporeal membrane oxygenation; SQ, subcutaneously; aPTT, activated partial thromboplastin time.

All medications should be administered with caution as they might cause unexpected hypersensitivity reactions and serious side effects. Older medications are desirable but may have minor side effects that are easy to control. All medications can be used preemptively for patients with symptoms of pneumonia or systemic involvement and can be adjusted based on the ideal body weight, but should be prescribed for children at recommended doses.

# ACUTE CARE

## TOCILIZUMAB THERAPY IN FIVE SOLID AND COMPOSITE TISSUE TRANSPLANT RECIPIENTS WITH EARLY ARDS DUE TO SARS-COV-2

Morillas JA, Marco Canosa F, Srinivas P, Asadi T, Calabrese C, Rajendram P, Budev M, Poggio ED, Narayanan Menon KV, Gastman B, Koval C.. Am J Transplant. 2020 May 31. doi: 10.1111/ajt.16080. Online ahead of print.
Level of Evidence: 4

### BLUF

A case series presented by physicians at Cleveland Clinic found favorable short-term outcomes from tocilizumab treatment in 4 out of 5 patients with solid organ and composite tissue transplant history presenting with SARS-CoV-2-related acute respiratory distress syndrome. As a result of these findings, the authors advocate for randomized comparative trials to further study tocilizumab's therapeutic potential in transplant patients.

### ABSTRACT

There is emerging data depicting the clinical presentation of COVID-19 in solid organ transplant recipients but negligible data-driven guidance on clinical management. A biphasic course has been described in some infected with SARS-CoV-2, beginning with a flu-like illness followed by an intense inflammatory response characterized by elevated c-reactive protein (CRP), interleukin 6 (IL-6), and acute respiratory distress syndrome (ARDS) associated with high mortality. The exuberant and possibly dysregulated immune response has prompted interest in therapeutic agents that target the cytokines involved, particularly IL-6. Tocilizumab is an IL-6 receptor antagonist with a record of use for a variety of rheumatologic conditions and cytokine release syndrome due to CAR T-cell therapy but experience in solid organ and composite tissue transplant recipients (SOT/CTTRs) with SARS-CoV-2-related ARDS has not been previously reported in detail. We present the clinical course of five SOT/CTTRs with SARS-CoV-2-related ARDS that received tocilizumab with favorable short-term outcomes in four. Responses were characterized by reductions in CRP, discontinuation of vasopressors, improved oxygenation and respiratory mechanics, and variable duration of ventilator support. Four bacterial infections occurred within two weeks of tocilizumab administration. We discuss safety concerns and the need for randomized comparative trials to delineate tocilizumab's clinical utility in this population.

## CHARACTERISTICS OF INFLAMMATORY FACTORS AND LYMPHOCYTE SUBSETS IN PATIENTS WITH SEVERE COVID-19

Ni M, Tian FB, Xiang DD, Yu B.. J Med Virol. 2020 May 29. doi: 10.1002/jmv.26070. Online ahead of print.
Level of Evidence: 4

### BLUF

Researchers in Wuhan, China analyzed retrospective biomarker data of 27 patients admitted with severe COVID-19 in February 2020. On admission, patients with severe COVID-19 had elevated pro-inflammatory markers and lymphopenia (Table 2). The authors suggest pro-inflammatory markers, particularly IL-2R, IL-6, TNF-α, and CRP, could be used as objective measures of disease severity.

### ABSTRACT

OBJECTIVE: To investigate the inflammatory factors and lymphocyte subsets which play an important role in the course of severe COVID-19.
METHODS: A total of 27 patients with severe COVID-19 who were admitted to Tongji Hospital in Wuhan from 1 to 21 February 2020 were recruited to the study. The characteristics of interleukin (IL)-1beta, IL-2 receptor (IL-2R), IL-6, IL-8, IL-10, tumor necrosis factor (TNF)-alpha, C-reactive protein (CRP), serum ferritin and procalcitonin (PCT), and lymphocyte subsets of these patients were retrospectively compared before and after treatment.
RESULTS: Before treatment, there was no significant difference in most inflammatory factors (IL-1beta, IL-2R, IL-6, IL-8, IL-10, CRP and serum ferritin) between male and female patients. Levels of IL-2R, IL-6, TNF-alpha and CRP decreased significantly after treatment, followed by IL-8, IL-10 and PCT. Serum Ferritin was increased in all patients before treatment, but did not decrease significantly after treatment. IL-1beta was normal in most patients before treatment. Lymphopenia was common among these patients with severe COVID-19. Analysis of lymphocyte subsets showed that CD4+ and particularly CD8+ T

lymphocytes increased significantly after treatment. However, B lymphocytes and natural killer cells showed no significant changes after treatment.
CONCLUSIONS: A pro-inflammatory response and decreased level of T lymphocytes were associated with severe COVID-19.


## FIGURES

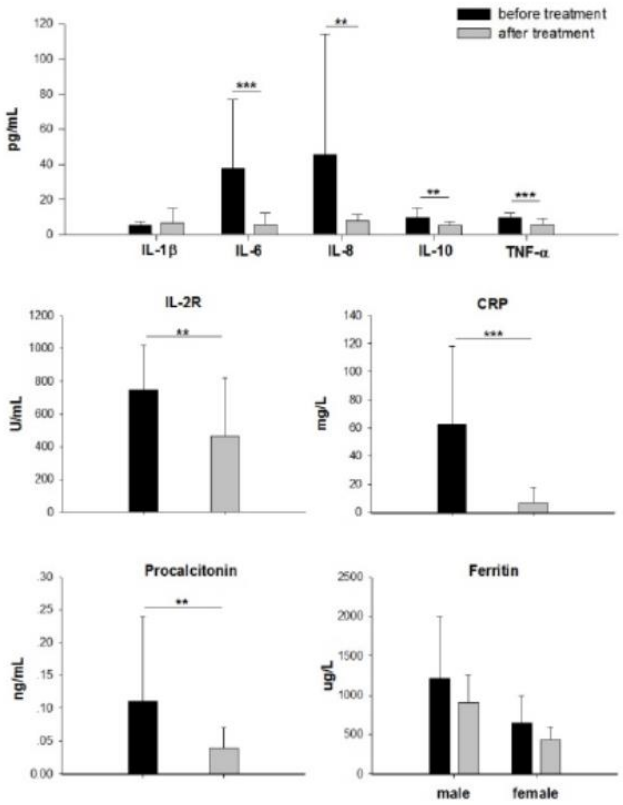



Figure 1. inflammatory factors in severe COVID-19 patients before and after comprehensive treatment. Levels of IL-1B, IL-2R, IL-6, IL-8, IL-10, TNF-a, CRP, PCT and serum ferritin were measured before and after treatment. Data are expressed as mean ± SD and were compared using the independent samples t-test; *p < 0.05, **p < 0.01, ***p < 0.001.

| | Before treatment | After treatment | *p* value |
|---|---|---|---|
| WBC ($\times 10^9$/L) | 5.7±2.2 | 6.6±2.6 | 0.214 |
| N ($\times 10^9$/L) | 4.4±2.0 | 4.4±2.4 | 0.981 |
| L ($\times 10^9$/L) | 0.9±0.5 | 1.5±0.5 | **0.000** |
| M ($\times 10^9$/L) | 0.7±1.8 | 0.6±0.2 | 0.696 |
| T cell (/μL) | 720±398 | 1080±341 | **0.002** |
| B cell (/μL) | 143±80 | 177±85 | 0.176 |
| CD4+ T-cell (/μL) | 472±280 | 678±255 | **0.012** |
| CD8+ T-cell (/μL) | 219±113 | 355±138 | **0.001** |
| NK-cell (/μL) | 117±79 | 164±97 | 0.083 |

Table 2. The results of complete blood count and lymphocyte subset before and after treatment (mean +- SD)

# CRITICAL CARE

## RESPIRATORY MECHANICS OF COVID-19 VS. NON-COVID-19 ASSOCIATED ACUTE RESPIRATORY DISTRESS SYNDROME

Haudebourg AF, Perier F, Tuffet S, de Prost N, Razazi K, Mekontso Dessap A, Carteaux G.. Am J Respir Crit Care Med. 2020 Jun 1. doi: 10.1164/rccm.202004-1226LE. Online ahead of print.
Level of Evidence: 4

### BLUF

This ancillary report of an ongoing prospective single-center observational study conducted at the Henri Mondor University Hospital medical ICU in France from 1/17/2020 to 4/3/2020, found no significant global differences in the respiratory mechanics between COVID-19 related acute respiratory distress syndrome (ARDS) patients and non-COVID-19 ARDS patients, although there was heterogeneity in respiratory mechanics and lung recruitability within these groups. This indicates the continued need to systematically assess and personalize ventilator settings for each patient. The authors note the need for further research given the small sample size and presence of confounding factors, such as the statistically significant difference in body mass index (BMI) between the two patient groups of this study.

# NEUROLOGY

## OLFACTORY AND GUSTATORY DYSFUNCTION IN A COVID-19 PATIENT WITH ANKYLOSING SPONDYLITIS TREATED WITH ETANERCEPT: CASE REPORT

Lee JM, Lee SJ.. J Korean Med Sci. 2020 Jun 1;35(21):e201. doi: 10.3346/jkms.2020.35.e201.
Level of Evidence: Other

### BLUF

The authors report a 53-year-old female patient with ankylosing spondylitis who tested positive for COVID-19 on March 3rd in South Korea. The patient was found to have delayed olfactory and gustatory dysfunction after several days of mild symptoms. The authors hypothesize that the delayed-onset of hyposmia and hypogeusia may be due to treatment with etanercept (TNF-alpha inhibitor) producing a protective effect on olfactory inflammation. See Figure 1 for additional clinical details.

### SUMMARY

Case report of a 53-year-old female with a 3-year history of ankylosing spondylitis, treated with etanercept (TNF-alpha inhibitor) injections every three weeks, who was diagnosed with COVID-19 on March 3rd. Throughout the course of her illness, the patient's symptoms remained mild (cough and rhinorrhea without fever) and she self-administered etanercept on March 25th since she began experiencing ankylosing spondylitis symptoms and her last injection was February 20th. Although she was released from quarantine on April 7th, she reported a hyposmia and hypogeusia that began on April 5th. Previous studies report early neurologic manifestations in COVID-19 disease. However, it was hypothesized that a TNF-alpha inhibitor may delayed the development of olfactory and gustatory dysfunction in this patient. See Figure 1 for additional clinical details.

### ABSTRACT

The neurologic manifestations concerning coronavirus disease 2019 (COVID-19) are highly penetrated. Anosmia and ageusia are one of the common acute neurologic symptoms, which develop in the early stage of COVID-19. However, it is not reported that how immunosuppressive agents affect these symptoms. We report olfactory and gustatory dysfunctions in a patient with ankylosing spondylitis (AS) treated with etanercept during COVID-19. A 53-year-old female showing AS controlled with tumor necrosis factor-alpha inhibitor, etanercept, had been diagnosed with severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection, presenting cough and rhinorrhea. One month after diagnosis, she complained about hyposmia and hypogeusia two days before the seronegative conversion of SARS-CoV-2, which were confirmed by a neurological examination. We speculate that the etanercept may have delayed the development of olfactory and gustatory dysfunction in the patient.

## FIGURES

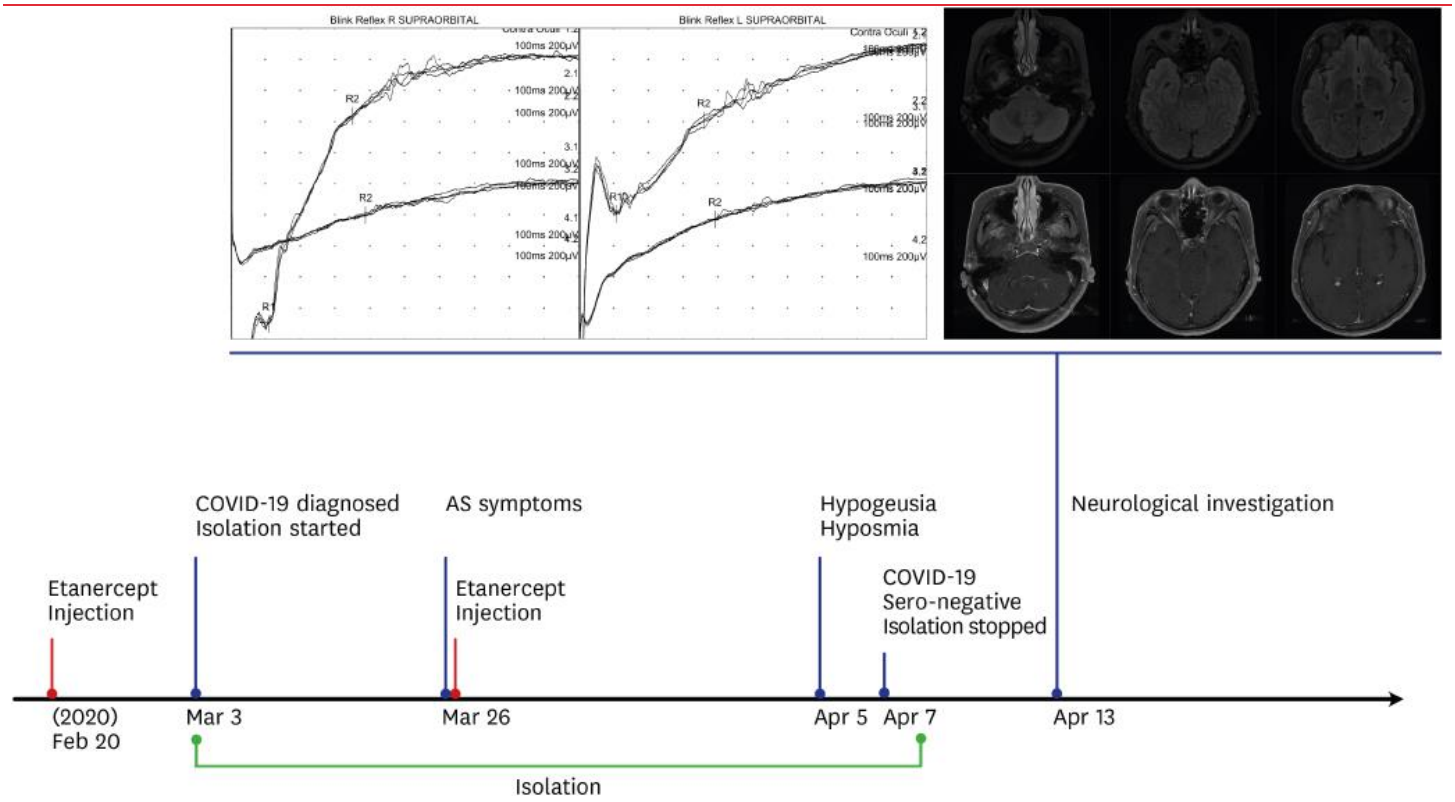



Figure 1. The timeline of clinical data, results of the blink reflex, and brain MRI. Clinical presentation and etanercept administration are depicted on the appropriate date. The blink reflex showed normal R1 and R2 responses bilaterally. A brain MRI revealed normal structures, including a normal frontal lobe, maxilla, sphenoid, and frontal sinus. The patient consented to publish her clinical records and images.
COVID-19 = coronavirus disease 2019, MRI = magnetic resonance imaging, AS = ankylosing spondylitis.

# MEDICAL SUBSPECIALTIES

# CARDIOLOGY

## VALIDATING QT-INTERVAL MEASUREMENT USING THE APPLE WATCH ECG TO ENABLE REMOTE MONITORING DURING THE COVID-19 PANDEMIC

Strik M, Caillol T, Ramirez FD, Abu-Alrub S, Marchand H, Welte N, Ritter P, Haïssaguerre M, Ploux S, Bordachar P..
Circulation. 2020 Jun 1. doi: 10.1161/CIRCULATIONAHA.120.048253. Online ahead of print.
Level of Evidence: 4

### BLUF

A study of 100 individuals in sinus rhythm conducted in Bordeaux, France between December 2019 and January 2020 found Apple Watch ECG monitoring on the left wrist effectively determined QT-intervals and patients at high risk for QT-interval prolongation. It was suggested that Apple Watches, as well as other 1-lead ECGs (Figure 1), may be effective to monitor QT interval in quarantined outpatients taking QT prolonging medications.

### SUMMARY

A study of 100 patients in sinus rhythm was conducted to determine the effectiveness of the ECG lead on an Apple Watch at determining the QT-interval. Patients recorded 30-second Apple Watch ECG equivalents of lead I (left wrist), lead II (left ankle), and V6 (left lateral chest) (Figure 1). The participants also underwent a standard 12-lead ECG. A cardiologist then measured

RR and QT-intervals on both the Apple Watch recordings and the 12-lead ECG. Finally, a second, blinded cardiologist repeated the same measurements (interrater reliability, κ=0.92). Findings included:
- "Apple Watch ECG tracings allowed for adequate QT measurements when the smartwatch was worn on the left wrist in 85% of patients. This figure increased to 94% when the smartwatch was moved to alternative positions." (Figure 1).
- Heart rates were similar on the Apple Watch and the 12-lead (70±13 versus 69±11 bpm).
- Eight patients were identified as high risk when measuring the QT-interval on the 12-lead, all of which were also identified by the Apple Watch.
- In general, there was agreement between the QT-interval on the 12-lead and on the Apple Watch.
- However, 6% of individuals in the study did not have adequate measurements on the Apple Watch due to low T-wave amplitude or baseline artifact.

Overall, Apple Watches and other 1-lead ECGs may have the potential to aid in outpatient monitoring of COVID-19 patients at high risk for QT-interval prolongation (e.g. taking hydroxychloroquine/azithromycin).

## FIGURES

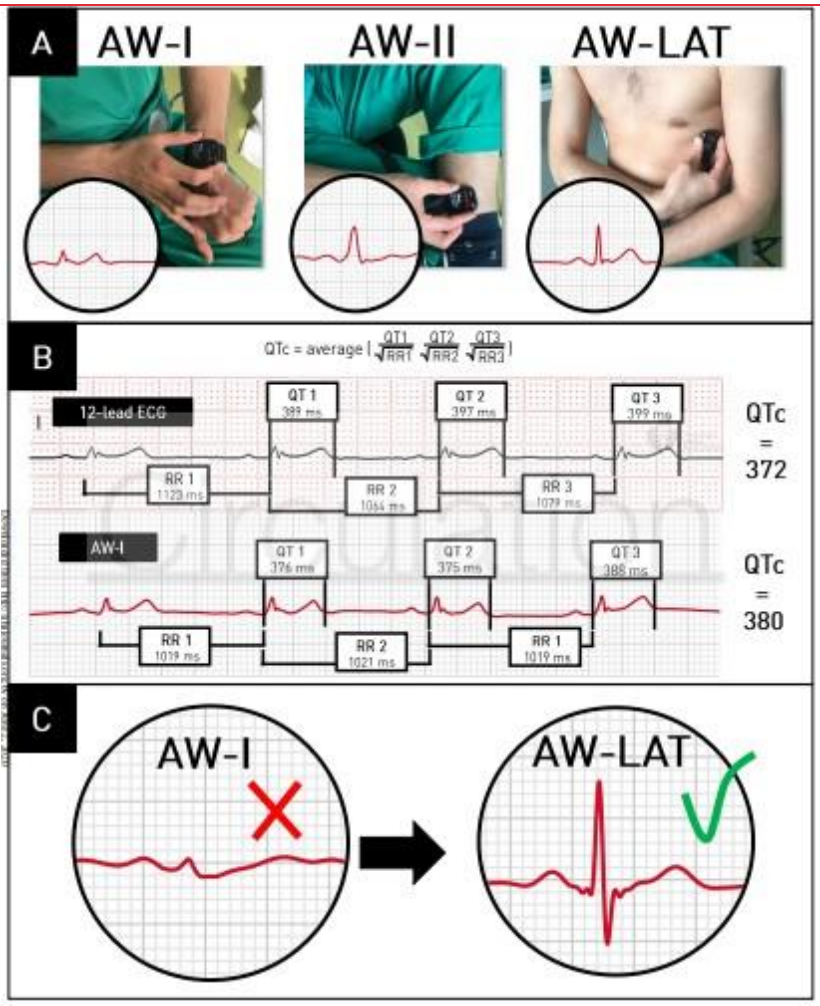



Figure 1. Apple Watch ECG recordings, QT interval measurements, and impact of recording tracings from non-standard smartwatch positions. A. Recording Apple Watch ECG equivalents of lead I (AW-I, watch on left wrist), lead II (AW-II, watch on left ankle), and a simulated lead V6 (AW-LAT, watch on left lateral chest). B. Corrected QT interval (QTc) measurements from a 12-lead ECG and an Apple Watch lead I ECG (AW-I). QTc using the 12-lead ECG is 372 ms, QTc using AW-I is 380 ms (absolute difference of 8 ms and a bias of -8 ms). C. Repositioning the Apple Watch may improve signal quality and measurement of the QT interval. Example of two smartwatch ECG recordings from the same patient. Measurement of the QT interval was deemed impossible in lead II (AW-II) due to low T-wave amplitude (≤0.1 mV). After moving the smartwatch to the left lateral chest wall (AW-LAT), the T-wave amplitude increased to 2 mV, markedly facilitating the measurement of the QT-interval. Note the similar increase in QRS complex amplitudes.

## THE ASSOCIATION BETWEEN TREATMENT WITH HEPARIN AND SURVIVAL IN PATIENTS WITH COVID-19

Ayerbe L, Risco C, Ayis S.. J Thromb Thrombolysis. 2020 May 31. doi: 10.1007/s11239-020-02162-z. Online ahead of print.
Level of Evidence: 3

### BLUF

A large observational study of 2,075 hospitalized patients in 17 Spanish hospitals, conducted in the HM Hospitales network between March 1 and April 20, 2020, found that the administration of heparin was associated with lower mortality among hospitalized patients with COVID-19 [OR (95% CI) 0.55 (0.37-0.82) p = 0.003], suggesting that heparin use may be considered in clinical settings for preventing coagulopathy associated with COVID-19 (Table 1). These findings should be validated in randomized trials, as well as the impact of heparin administration on preventing readmissions.

### ABSTRACT

This study investigates the association between the treatment with heparin and mortality in patients admitted with Covid-19. Routinely recorded, clinical data, up to the 24th of April 2020, from the 2075 patients with Covid-19, admitted in 17 hospitals in Spain between the 1st of March and the 20th of April 2020 were used. The following variables were extracted for this study: age, gender, temperature, and saturation of oxygen on admission, treatment with heparin, hydroxychloroquine, azithromycin, steroids, tocilizumab, a combination of lopinavir with ritonavir, and oseltamivir, together with data on mortality. Multivariable logistic regression models were used to investigate the associations. At the time of collecting the data, 301 patients had died, 1447 had been discharged home from the hospitals, 201 were still admitted, and 126 had been transferred to hospitals not included in the study. Median follow up time was 8 (IQR 5-12) days. Heparin had been used in 1734 patients. Heparin was associated with lower mortality when the model was adjusted for age and gender, with OR (95% CI) 0.55 (0.37-0.82) p = 0.003. This association remained significant when saturation of oxygen < 90%, and temperature > 37 C were added to de model with OR 0.54 (0.36-0.82) p = 0.003, and also when all the other drugs were included as covariates OR 0.42 (0.26-0.66) p < 0.001. The association between heparin and lower mortality observed in this study can be acknowledged by clinicians in hospitals and in the community. Randomized controlled trials to assess the causal effects of heparin in different therapeutic regimes are required.

### FIGURES

| | | N | Age M(SD) | Female n(%) | Death n(%) |
|---|---|---|---|---|---|
| Total cohort | | 2075 | 67.57 (15.52) | 819 (39.47%) | 301 (14.51%) |
| Oxygen saturation < 90% | Yes | 70 | 73.18 (13.7) | 20 (28.57) | 28 (53.85) |
| | No | 221 | 67.00 (16.14) | 95 (42.99) | 24 (46.15) |
| Temperature > 37° C | Yes | 159 | 61.20 (17.27) | 47 (29.56) | 24 (10.86) |
| | No | 1422 | 68.53 (15.65) | 577 (40.58) | 197 (89.14) |
| Heparin | Yes | 1734 | 68.77 (15.09) | 686 (39.56) | 242 (13.96) |
| | No | 285 | 61.76 (17.67) | 96 (33.68) | 44 (15.44) |
| Hydroxychloroquine | Yes | 1857 | 67.11 (15.51) | 705 (37.96) | 237 (12.76) |
| | No | 162 | 73.47 (16.22) | 77 (47.53) | 49 (30.25) |
| Azithromycin | Yes | 1223 | 68.33 (15.03) | 456 (37.29) | 146 (11.94) |
| | No | 796 | 66.54 (16.51) | 326 (40.95) | 140 (17.59) |
| Steroids | Yes | 960 | 69.88 (16.76) | 330 (34.38) | 200 (20.83) |
| | No | 1059 | 65.58 (16.76) | 452 (42.68) | 86 (8.12) |
| Tocilizumab | Yes | 421 | 66.1 (13.11) | 117 (27.79) | 89 (21.14) |
| | No | 1598 | 68.00 (16.24) | 665 (41.61) | 197 (12.33) |
| Lopinavir + Ritonavir | Yes | 1230 | 63.94 (14.28) | 421 (34.23) | 160 (13.01) |
| | No | 789 | 73.37 (15.99) | 361 (45.75) | 126 (15.97) |
| Oseltamivir | Yes | 132 | 67.78 (13.79) | 51 (38.64) | 26 (19.70) |
| | No | 1887 | 67.61 (15.78) | 731 (38.74) | 260 (13.78) |

Table 1. Description of the patients included in the study

# OBGYN

## PREECLAMPSIA-LIKE SYNDROME INDUCED BY SEVERE COVID-19: A PROSPECTIVE OBSERVATIONAL STUDY

Mendoza M, Garcia-Ruiz I, Maiz N, Rodo C, Garcia-Manau P, Serrano B, Lopez-Martinez RM, Balcells J, Fernandez-Hidalgo N, Carreras E, Suy A.. BJOG. 2020 Jun 1. doi: 10.1111/1471-0528.16339. Online ahead of print.
Level of Evidence: 3

### BLUF

Authors in Spain conducted a prospective cohort study of 42 pregnant COVID-19 patients at greater than 20 weeks of gestation and found that 14.3% of the pregnancies developed preeclampsia like features, all from the severe COVID-19 cohort (n=8). Abnormal soluble fms-like tyrosine kinase-1/placental growth factor (sFlt-1/PlGF), uterine artery pulsatility index (UtAPI), and lactate dehydrogenase (LDH) were only present in the one patient who continued to meet preeclampsia/HELLP diagnostic criteria after recovery from COVID-19 pneumonia, suggesting that these markers could be used to distinguish true preeclampsia from a preeclampsia-like syndrome.

### ABSTRACT

OBJECTIVES: To investigate the incidence of clinical, ultrasonographic and biochemical findings related to preeclampsia (PE) in pregnancies with COVID-19, and to assess their accuracy to differentiate between PE and the PE-like features associated with COVID-19. DESIGN: A prospective, observational study.
SETTING: Tertiary referral hospital.
PARTICIPANTS: Singleton pregnancies with COVID-19 at >20+0 weeks.
METHODS: 42 consecutive pregnancies were recruited and classified into two groups: severe and nonsevere COVID-19, according to the occurrence of severe pneumonia. Uterine artery pulsatility index (UtAPI) and angiogenic factors (soluble fms-like tyrosine kinase-1/placental growth factor [sFlt-1/PlGF]) were assessed in women with suspected PE.
MAIN OUTCOME MEASURES: Incidence of signs and symptoms related to PE, such as hypertension, proteinuria, thrombocytopenia, elevated liver enzymes, abnormal UtAPI and increased sFlt-1/PlGF.
RESULTS: 34 cases were classified as nonsevere and 8 as severe COVID-19. Six (14.3%) women presented signs and symptoms of PE, all six being among the severe COVID-19 cases (75.0%). However, abnormal sFlt-1/PlGF and UtAPI could only be demonstrated in one case. Two cases remained pregnant after recovery from severe pneumonia and had a spontaneous resolution of the PE-like syndrome.
CONCLUSIONS: Pregnant women with severe COVID-19 can develop a PE-like syndrome that might be distinguished from actual PE by sFlt-1/PlGF, LDH and UtAPI assessment. Health care providers should be aware of its existence and monitor pregnancies with suspected preeclampsia with caution.

## LUNG ULTRASOUND CAN INFLUENCE THE CLINICAL TREATMENT OF PREGNANT WOMEN WITH COVID-19

Yassa M, Birol P, Mutlu AM, Tekin AB, Sandal K, Tug N.. J Ultrasound Med. 2020 Jun 1. doi: 10.1002/jum.15367. Online ahead of print.
Level of Evidence: 4

### BLUF

This retrospective review of eight pregnant COVID-19 patients conducted by Turkish obstetricians evaluates the use of routine lung ultrasound to guide management of pregnant women with COVID-19 (Figure 1 & 2). The authors suggest a 14-area scanning and scoring system to classify disease severity and propose the use of this modality to guide decisions to induce delivery or change medical management. Despite low reproducibility amongst obstetricians, the authors support the continued use of this inexpensive and accessible modality in the face of the COVID-19 pandemic.

### ABSTRACT

Lung ultrasound (LUS) is an effective tool to detect and monitor patients infected with 2019 coronavirus disease (COVID-19). The use of LUS on pregnant women is an emerging trend, considering its effectiveness during the outbreak. Eight pregnant women with a diagnosis of COVID-19 confirmed by nasal/throat real-time reverse transcription polymerase chain reaction testing who underwent point-of-care LUS examinations after routine obstetric ultrasound are described. A routinely

performed LUS examination revealed serious lung involvement in 7 cases: 2 were initially asymptomatic; 3 have chest computed tomography; 1 had initial negative real-time reverse transcription polymerase chain reaction results; and 1 had initial negative computed tomographic findings. Treatment for COVID-19 was either commenced or changed in 87.5% of the patients (n = 7 of 8) on LUS findings. Among patients with abnormal LUS findings, treatment was commenced in 5 patients (71.5%) and changed in 2 patients (28.5%). One normal and 7 abnormal LUS cases indicate the impact of routine LUS on the clinical outcome and treatment of pregnant women.

## FIGURES

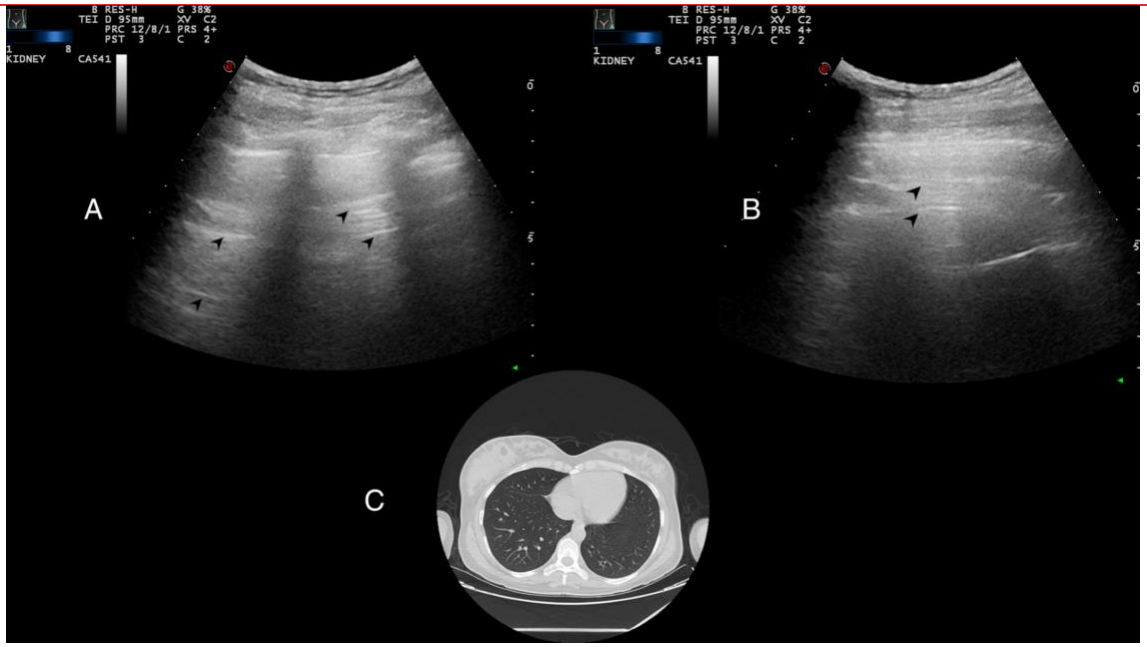



Figure 1: Normal LUS pattern with the convex transducer positioned longitudinally (A) and in the intercostal space (B). Arrowheads indicate horizontal A-lines at regular intervals. Normal CT findings do not indicate viral pneumonia (C).

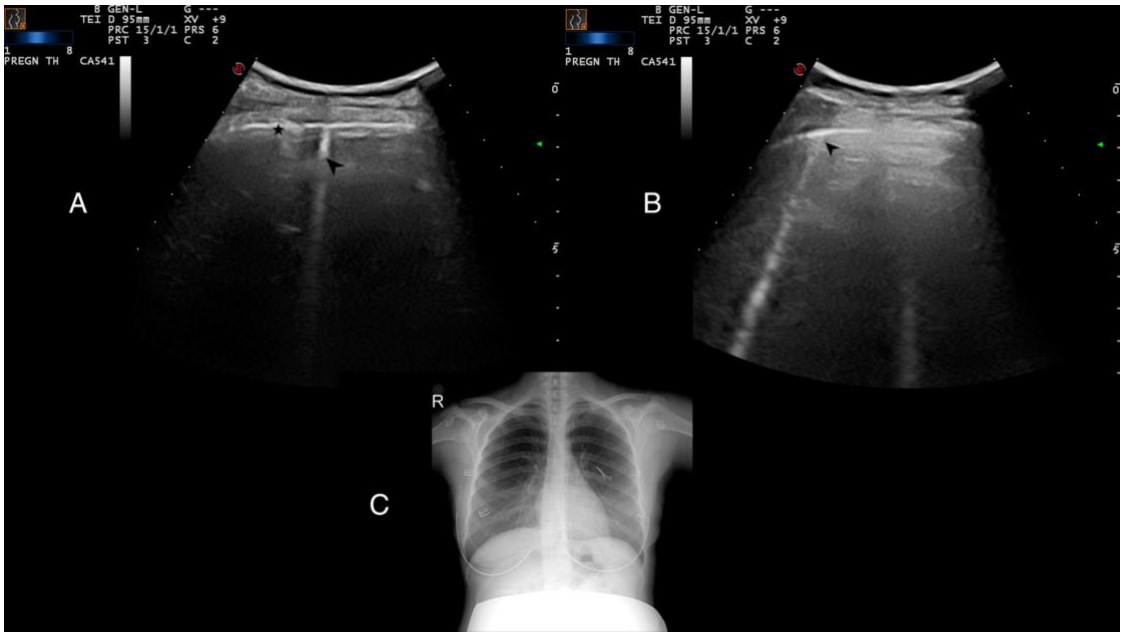



Figure 2: Abnormal LUS findings in an asymptomatic pregnant woman. Landmarks 2, 7, and 12 were classified as score 1. The star indicates the disrupted and thickened pleural line, and a small white area is noticeable below the indent; the arrowhead indicates a sporadic B-line (A). The arrowhead indicates a disrupted and thickened pleural line and a sporadic B-line arising from the pleura, which is a hyperechoic vertical line touching the bottom of the screen (B). Normal chest radiographic findings did not indicate viral pneumonia (C).

# EMERGENCY MEDICINE

## IMPACT OF COVID-19 PANDEMIC ON ST-ELEVATION MYOCARDIAL INFARCTION IN A NON-COVID-19 EPICENTER

Hammad TA, Parikh M, Tashtish N, Lowry CM, Gorbey D, Forouzandeh F, Filby SJ, Wolf WM, Costa MA, Simon DI, Shishehbor MH.. Catheter Cardiovasc Interv. 2020 Jun 1. doi: 10.1002/ccd.28997. Online ahead of print.
Level of Evidence: 3

### BLUF

This prospective study in Northeast Ohio, a non-hot spot for COVID-19, investigated the impact of pandemic-related fears and stay-at-home orders on ST-elevation myocardial infarction (STEMI) presentation and management in the emergency department (ED). Authors found that some patients feared COVID-19 exposure in the ED, were more likely to present with severe cardiac features (Figure 1) and experienced an increased door-to-balloon time in the post-COVID-19 period (Figure 3). The authors make a case for telemedicine consultation to provide accessible care and urge health officials to educate the public on the safety of the ED during this pandemic.

### ABSTRACT

OBJECTIVES: We sought to study the impact of COVID-19 pandemic on the presentation delay, severity, patterns of care, and reasons for delay among patients with ST-elevation myocardial infarction (STEMI) in a non-hot-spot region. BACKGROUND: COVID-19 pandemic has significantly reduced the activations for STEMI in epicenters like Spain. METHODS: From January 1, 2020, to April 15, 2020, 143 STEMIs were identified across our integrated 18-hospital system. Pre- and post-COVID-19 cohorts were based on March 23rd, 2020, when stay-at-home orders were initiated in Ohio. We used presenting heart rate, blood pressure, troponin, new Q-wave, and left ventricle ejection fraction (LVEF) to assess severity. Duration of intensive care unit stay, total length of stay, door-to-balloon (D2B) time, and radial versus femoral access were used to assess patterns of care. RESULTS: Post-COVID-19 presentation was associated with a lower admission LVEF (45 vs. 50%, p = .015), new Q-wave, and higher initial troponin; however, these did not reach statistical significance. Among post-COVID-19 patients, those with >12-hr delay in presentation 31(%) had a longer average D2B time (88 vs. 53 min, p = .033) and higher peak troponin (58 vs. 8.5 ng/ml, p = .03). Of these, 27% avoided the hospital due to fear of COVID-19, 18% believed symptoms were COVID-19 related, and 9% did not want to burden the hospital during the pandemic. CONCLUSIONS: COVID-19 has remarkably affected STEMI presentation and care. Patients' fear and confusion about symptoms are integral parts of this emerging public health crisis.

### FIGURES

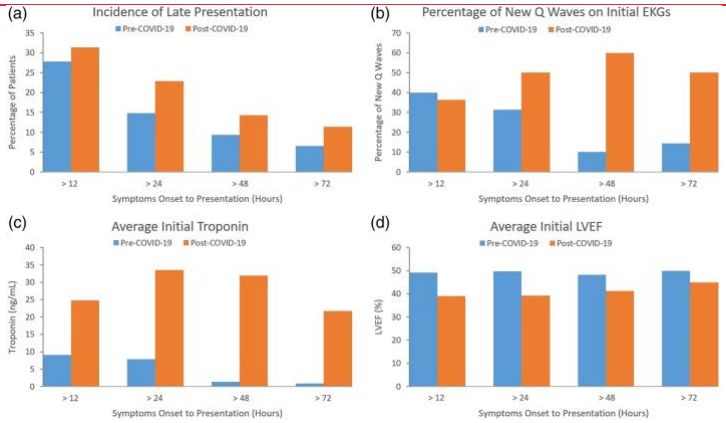



Figure 1: ST- elevation myocardial infarction presentation in the pre- and post-COVID-19 periods. (a) Incidence of late presentation was consistently higher in the post-COVID-19 cohort regardless which cutoff was used to define late

presentation; similarly, the proportion of patients with (b) new Q-waves and (c) average initial troponin was consistently higher; and (d) the average initial LVEF was consistently lower.

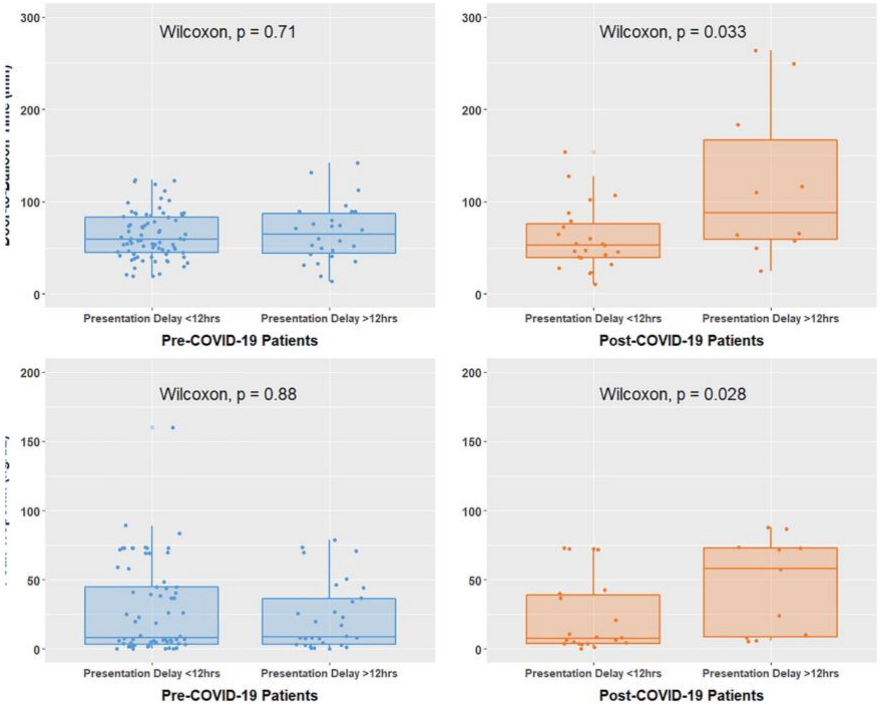



Figure 3: Door-to-balloon (D2B) times and peak troponin levels with and without presentation delay in the pre- and-post-COVID-19 cohorts. D2B times and peak troponin levels were not different between the pre- and post-COVID-19 cohorts. However, when comparing patients with and without >12-hr presentation delay within these two cohorts, we found that (b) the D2B times and (d) peak troponin levels were significantly higher in the patients who presented greater than 12 hr after symptom onset in the post-COVID-19 cohort.

# CRITICAL CARE

## ADAPTING STEMI CARE FOR THE COVID-19 PANDEMIC: THE CASE FOR LOW-RISK STEMI TRIAGE AND EARLY DISCHARGE

Lopez JJ, Ebinger JE, Allen S, Yildiz M, Henry TD.. Catheter Cardiovasc Interv. 2020 Jun 1. doi: 10.1002/ccd.28993. Online ahead of print.
Level of Evidence: Other

### BLUF

In this literature review, the authors address the practice of managing post acute coronary syndrome patients in the ICU, particularly during a pandemic when ICU beds are limited. They report data that shows ST-elevation myocardial infarction (STEMI) patients can be managed outside of ICU care and can be discharged early without higher short or long-term mortality rates when patients are classified as low-risk by the CADILLAC or Zwolle Risk Scores (Fig 1). The authors conclude that low-risk STEMI patients can be triaged for early discharge without sacrificing quality patient care.

### ABSTRACT

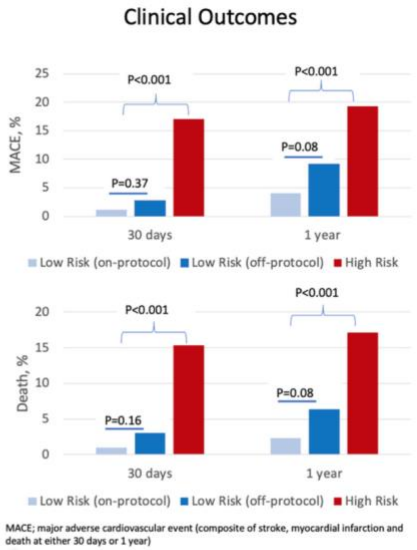
The coronavirus pandemic has resulted in the need for rapid assessment of resource utilization within our hospital systems. Specifically, the overwhelming need for intensive care unit (ICU) beds within epicenters of the pandemic has created a need for consideration as to how acute coronary syndrome cases, and specifically ST-elevation myocardial infarction (STEMI) patients, are managed postprocedure. While most patients in the United States continue to be managed in coronary care units after primary percutaneous coronary intervention, there is a robust literature regarding the ability to triage STEMI patients safely and efficiently with low-risk features to non-ICU beds. We review the various risk scores for STEMI triage and the data supporting their usage. In summary, these findings support an approach to low-risk STEMI triage that does not come at the

expense of quality patient care or outcomes, where up to two-thirds of patients with STEMI may be able to be safely managed without ICU-level care.

## FIGURES

| Modified Zwolle Risk Score for STEMI | |
|---|---|
| | Points |
| *Killip class* | |
| 1 | 0 |
| 2 | 4 |
| 3-4 | 9 |
| *TIMI flow post* | |
| 3 | 0 |
| 2 | 1 |
| 1 | 2 |
| *Age* | |
| <60 | 0 |
| ≥60 | 2 |
| *3-vessel disease* | |
| No | 0 |
| Yes | 1 |
| *Anterior infarct* | |
| No | 0 |
| Yes | 1 |
| *Ischemia time (>4 h)* | |
| No | 0 |
| Yes | 1 |
| Total score | /16 |

| Risk Score Interpretation | |
|---|---|
| Low Risk | ≤3 points |
| High Risk | ≥4 points |
| *Cardiac Arrest?* | |
| *Yes* | High Risk |




Ebinger JE, Strauss CE, Garberich RR, Bradley SM, Rush P, Chavez IJ, et al. Value-based ST-segment-elevation myocardial infarction care using risk-guided triage and early discharge. Circ Cardiovasc Qual Outcomes. 2018

Figure 1: Left: Modified Zwolle Risk Score. Center: Classification of scoring into low- and high-risk STEMI groups. Right: Outcomes of prospectively applied modified Zwolle Risk Score in a population of 549 STEMI patients. MACE, major adverse cardiovascular event (composed of stroke, myocardial infarction and death at either 30 days or 1 year); STEMI, ST-elevation myocardial infarction.

# MEDICAL SUBSPECIALTIES

# DERMATOLOGY

## TOPICAL RH-AFGF: AN EFFECTIVE THERAPEUTIC AGENT FOR FACEMASK WEARING-INDUCED PRESSURE SORES

Luo P, Liu D, Li J.. Dermatol Ther. 2020 Jun 1:e13745. doi: 10.1111/dth.13745. Online ahead of print.
Level of Evidence: Other

### BLUF

A review written by a group of pharmacists at Tongji Hospital in Wuhan, China suggests that topical treatment with recombinant human acidic fibroblast growth factor (rh-aFGF) may be effective at soothing and healing pressure sores associated with long-term mask-wearing in healthcare professionals, suggesting that topical use of this medication may aid mitigate discomfort as well as associated mild and severe infections in these essential workers.

### ABSTRACT

Protecting healthcare workers is crucial during coronavirus disease 2019 (COVID-19) pandemic and facemask wearing is considered an effective measure to prevent severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection. However, long-time use of a facemask can cause pressure sores on the ears and nose bridge and increase the risk of infection. The topical recombinant human acidic fibroblast growth factor (rh-aFGF) was used to cure pressure sores for healthcare workers at Zhongfaxincheng campus of Tongji Hospital. The results from a small sample size survey conducted in Zhongfaxincheng campuses of Tongji Hospital showed that treatment with topical rh-aFGF could significantly inhibit the progression of pressure sores and accelerate the wound healing with no apparent ill-effects. Therefore, we propose that

topical rh-aFGF is an effective therapeutic agent for facemask wearing-induced pressure sores and worth of popularizing and applying. 

# CARDIOLOGY

## THE IMPACT OF COVID-19 ON HEART FAILURE HOSPITALIZATION AND MANAGEMENT: REPORT FROM A HEART FAILURE UNIT IN LONDON DURING THE PEAK OF THE PANDEMIC

Bromage DI, Cannata A, Rind IA, Gregorio C, Piper S, Shah AM, McDonagh TA.. Eur J Heart Fail. 2020 Jun 1. doi: 10.1002/ejhf.1925. Online ahead of print.
Level of Evidence: 4

### BLUF

This cross-sectional study, performed at King's College Hospital in London, compared admissions, patient demographics, hospital management, and discharge medication in acute heart failure (AHF) patients from March 2 to April 19, 2020 with the same time frame in 2017-2019 (Table 1-3), to determine the impact of COVID-19 on this patient population. They concluded there was a significant decrease in the number of AHF hospitalizations post-COVID-19 compared to pre-COVID-19 (Fig 1), with only 26 in 2020. The patients that were admitted had increased severity of symptoms (96% of patients had NYHA class III or IV symptoms in 2020, compared to 77% in 2019 [p=0.03]), posing the dilemma that lack of presentation to hospitals due to COVID-19 may result in worsening long-term outcomes.

### ABSTRACT

AIMS: To examine the impact of COVID-19 on acute heart failure (AHF) hospitalization rates, clinical characteristics and management of patients admitted to a tertiary Heart Failure Unit in London during the peak of the pandemic.
METHODS AND RESULTS: Data from King's College Hospital, London, reported to the National Heart Failure Audit for England and Wales, between 2nd March - 19th April 2020 were compared both to a pre-COVID cohort and the corresponding time periods in 2017-2019 with respect to absolute hospitalization rates. Furthermore, we performed detailed comparison of patients hospitalized during the COVID-19 pandemic and patients presenting in the same period in 2019 with respect to clinical characteristics and management during the index admission. A significantly lower admission rate for AHF was observed during the study period compared to all other included time periods. Patients admitted during the COVID-19 pandemic had higher rates of NYHA III or IV symptoms (96% vs. 77%, p=0.03) and severe peripheral oedema (39% vs. 14%, p=0.01). We did not observe any differences in inpatient management, including place of care and pharmacological management of heart failure with reduced ejection fraction (HFrEF)
CONCLUSION: Incident AHF hospitalization significantly declined in our centre during the COVID-19 pandemic, but hospitalized patients had more severe symptoms at admission. Further studies are needed to investigate whether the incidence of AHF declined or patients did not present to hospital while the national lockdown and social distancing restrictions were in place. From a public health perspective, it is imperative to ascertain whether this will be associated with worse long-term outcomes.

### FIGURES

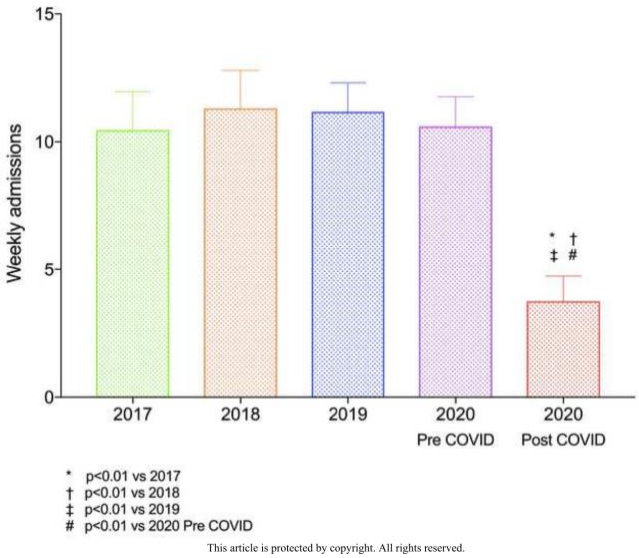





Fig 1: Weekly admissions for heart failure pre- and post-COVID-19 and in corresponding time periods in 2017-2019

**Table 1:** Baseline characteristics by year of presentation.

| | 2019 (N=78, 75%) | 2020 (N=26, 25%) | P |
|---|---|---|---|
| **Age (years), mean (SD)** | 71 (15) | 73 (14) | NS |
| **Male, n (%)** | 45 (58) | 14 (54) | NS |
| **Height (cm), mean (SD)** | 167 (9) | 167 (9) | NS |
| **Race, n (%)** | | | |
| White | 41 (53) | 14 (54) | NS |
| Black | 30 (39) | 11 (42) | |
| Other | 7 (9) | 1 (4) | |
| **Admission BMI, mean (SD)** | 30 (9) | 31 (8) | NS |
| **Admission heart rate (bpm), mean (SD)** | 88 (24) | 86 (25) | NS |
| **Admission rhythm, n (%)** | | | |
| Sinus rhythm | 41 (54) | 10 (42) | NS |
| Atrial fibrillation | 29 (38) | 12 (50) | NS |
| **Admission blood pressure (mmHg), mean (SD)** | | | |
| Systolic | 134 (26) | 140 (30) | NS |
| Diastolic | 79 (17) | 78 (21) | NS |
| **NYHA class, n (%)** | | | |
| I | 4 (5) | 0 (0) | 0.01 |
| II | 14 (18) | 1 (4) | |
| III | 41 (53) | 10 (38) | |
| IV | 19 (24) | 15 (58) | |
| **Severity of oedema, n (%)** | | | |
| None | 10 (13) | 5 (19) | 0.02 |
| Mild | 19 (24) | 5 (19) | |
| Moderate | 38 (49) | 6 (23) | |
| Severe | 11 (14) | 10 (39) | |
| **HF classification at admission, n (%)** | | | |
| HFrEF | 48 (63) | 18 (69) | NS |
| HFpEF | 28 (37) | 8 (31) | |
| **Comorbidities, n (%)** | | | |
| IHD | 29 (37) | 8 (31) | NS |
| Acute myocardial infarction | 8 (10) | 5 (19) | NS |
| Valve disease | 40 (51) | 7 (27) | 0.04 |
| Hypertension | 54 (69) | 21 (81) | NS |
| Diabetes | 39 (50) | 14 (54) | NS |
| Asthma | 7 (9) | 2 (8) | NS |
| COPD | 16 (21) | 5 (19) | NS |
| Device | 13 (17) | 9 (35) | NS |

BMI, body mass index; NYHA, New York Heart Association; HF, heart failure; HFrEF, heart failure with reduced ejection fraction; HFpEF, heart failure with preserved ejection fraction; IHD, ischaemic heart disease; COPD, chronic obstructive pulmonary disease.

**Table 2:** In-hospital management by year of presentation.

| | 2019 (N=78, 75%) | 2020 (N=26, 25%) | P |
|---|---|---|---|
| **Place of care, n (%)** | | | |
| Cardiology | 29 (37) | 6 (23) | NS |
| General medicine | 40 (51) | 19 (73) | |
| Other | 9 (12) | 1 (4) | |
| **Specialist input, n (%)** | 61 (78) | 15 (56) | NS |
| **Discharge bloods, mean (SD)** | | | |
| Haemoglobin (g/L) | 119 (22) | 115 (17) | NS |
| Urea (mmol/L) | 11 (8) | 12 (7) | NS |
| Creatinine (μmol/L) | 130 (83) | 144 (66) | NS |
| Sodium (mmol/L) | 138 (4) | 139 (3) | NS |
| Potassium (mmol/L) | 4.2 (0.6) | 4.3 (0.5) | NS |
| **Weight change (kg), mean (SD)** | -3 (3) | -3 (4) | NS |
| **Length of stay (days), median [IQR]** | 7 [3-13] | 6 [4-9] | NS |
| **Multidisciplinary HF team follow-up** | 22 (28) | 8 (31) | NS |
| **Died in hospital, n (%)** | 2 (2) | 1 (4) | NS |

HF, heart failure.

**Table 3:** Discharge medication for patients with HFrEF by year of presentation.

| | 2019 (N=48, 73%) | 2020 (N=18, 27%) | P |
|---|---|---|---|
| **Discharge medication, n (%)** | | | |
| ACEI or ARB | 37 (77) | 15 (83) | NS |
| Beta blocker | 43 (90) | 14 (78) | NS |
| Diuretic | 45 (94) | 17 (94) | NS |
| MRAs | 27 (56) | 10 (56) | NS |
| ACEI or ARB, beta blocker and MRA | 20 (42) | 7 (39) | NS |
| Digoxin | 10 (21) | 3 (18) | NS |

ACE, angiotensin converting enzyme; ARB, angiotensin receptor blocker; MRA, mineralocorticoid receptor antagonist.

## PATIENT CARE PROTOCOLS AND PERSONAL SAFETY MEASURES FOR HEALTH CARE PROFESSIONALS IN CARDIAC CATHETERIZATION ROOMS DURING THE COVID-19 OUTBREAK IN THE NATIONAL INSTITUTE OF CARDIOLOGY

Eid-Lidt G, Farjat Pasos JI.. Catheter Cardiovasc Interv. 2020 Jun 1. doi: 10.1002/ccd.28979. Online ahead of print.
Level of Evidence: Other

### BLUF

Authors from the Ignacio Chavez National Institute of Cardiology provide protocols for patients with acute coronary syndromes, structural heart disease, and congenital heart disease who have to undergo cardiac catheterization procedures during the COVID-19 pandemic (see Figure 1 for protocol description). The authors also highlight a strategic approach for donning and doffing PPE for interventional cardiologists performing procedures (see Figure 2 for protocol description). The intent of these protocols is to allow healthcare workers to provide quality care in cardiac catheterization rooms while minimizing transmission risks during the pandemic.

### ABSTRACT

The COVID-19 was first described in late 2019 that quickly became a pandemic affecting every health system as we know it. The high transmissibility among humans represents a well-known high burden of morbidity and mortality not only for cardiovascular patients but also for a higher risk between health care professionals that must deliver high-quality care to them

in any scenario, and cardiac catheterization rooms are no exception. This creates a new dilemma, minimize exposure to patients and health care professionals to COVID-19 while maintaining high quality in cardiovascular therapeutics. In order to achieve this, several international recommendations on treatment algorithms modifications and in safety measures in the catheterization room have been published, always aiming to solve this dilemma in the best possible way. Hereby, we present a summary of the most recent treatment algorithms in the most important cardiovascular interventions (acute coronary syndromes, structural and congenital heart diseases) as well as specific safety measures with a step-by-step preparedness before and after any interventional procedure during COVID-19 outbreak. The objective of this document is to inform and to train health care professionals that works in cardiac catheterization rooms on the risks as well on the plan for containment, mitigation, and response to the global situation of COVID-19 infection in order to apply this in their own local work environments.

## FIGURES

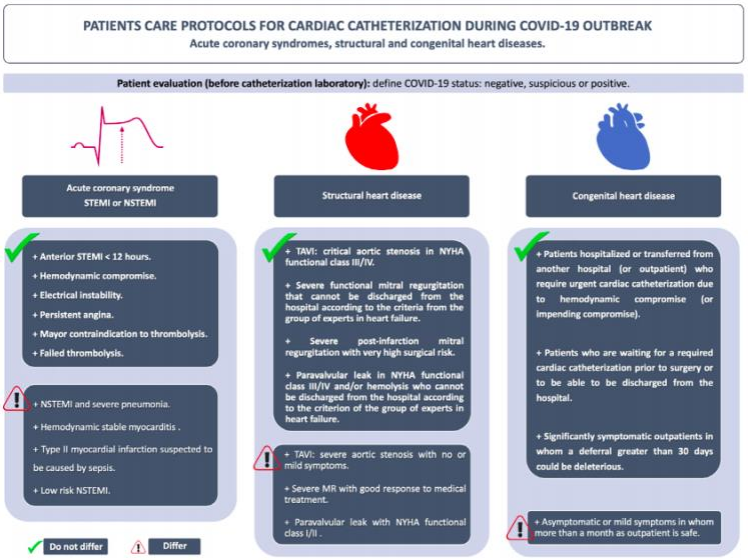



Figure 1. Patient protocols in case of acute coronary syndrome, structural, or congenital heart diseases during COVID-19 outbreak.

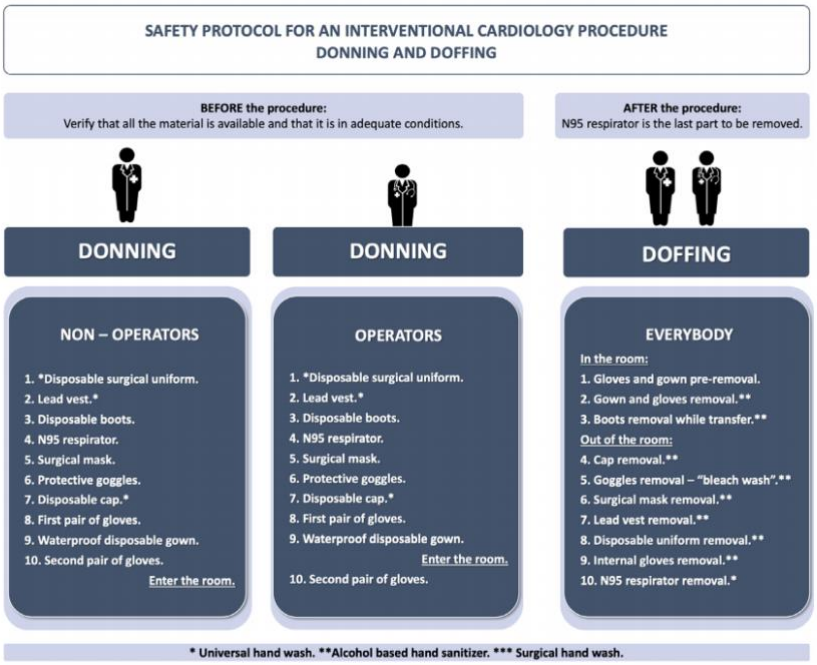



Figure 2. Donning and doffing before and after any percutaneous cardiovascular intervention during COVID-19 outbreak.

# SURGICAL SUBSPECIALTIES

## OTOLARYNGOLOGY

### TELEMEDICINE FOR HEAD AND NECK AMBULATORY VISITS DURING COVID-19: EVALUATING USABILITY AND PATIENT SATISFACTION

Layfield E, Triantafillou V, Prasad A, Deng J, Shanti RM, Newman JG, Rajasekaran K.. Head Neck. 2020 Jun 1. doi: 10.1002/hed.26285. Online ahead of print.
Level of Evidence: 3

#### BLUF

This retrospective study done by researchers at the University of Pennsylvania assessed patient satisfaction from 100 otolaryngology telemedicine encounters between March 25th, 2020 and April 24th, 2020. Data from a telehealth usability questionnaire (Table 3) found the average score summed from responses to all questions was a 6.01 out of 7, with highest scores for ease of use (6.21) and effectiveness (6.20) and lowest scores for reliability of the technology (4.86), suggesting that patients are generally satisfied with the implementation of telemedicine.

#### ABSTRACT

BACKGROUND: In light of the COVID-19 pandemic, there has been a rapid increase in telemedicine visits. Otolaryngology patient satisfaction with these visits has not yet been extensively studied using a validated survey. METHODS: All patients who had telemedicine visits with three head and neck surgeons, by phone or video-based platform, between March 25, 2020 and April 24, 2020. Retrospective chart reviews were conducted to determine demographic, disease, and treatment information. Patients who had a video visit were contacted by telephone and, if they could be reached and consented, were administered the telehealth usability questionnaire (TUQ). RESULTS: Hundred surveys were completed. The average score across all questions was 6.01 on a scale from 1 to 7, where 7 indicated the highest level of patient agreement. The highest scores were for questions related to satisfaction with telehealth (6.29), while the lowest were related to reliability (4.86). CONCLUSIONS: Patients are generally highly satisfied with telemedicine.

#### FIGURES

| Item (number of answers) | Mean score (SD) | Range (1-7) |
|---|---|---|
| 1. Telehealth improves my access to healthcare services | 6.03 (1.30) | (1.0-7.0) |
| 2. Telehealth saves me time traveling to a hospital or specialist clinic | 6.63 (0.86) | (2.0-7.0) |
| 3. Telehealth provides for my healthcare needs | 5.64 (1.34) | (2.0-7.0) |
| **Usefulness scale summary (Items 1-3)** | **6.10 (0.50)** | (1.0-7.0) |
| 4. It was simple to use this system | 6.31 (1.15) | (1.0-7.0) |
| 5. It was easy to learn to use this system | 6.21 (1.20) | (1.0-7.0) |
| 6. I believe I could become productive quickly using this system | 6.08 (1.01) | (1.0-7.0) |
| 7. The way I interact with this system is pleasant | 6.23 (1.14) | (1.0-7.0) |
| 8. I like using the system | 6.03 (1.23) | (1.0-7.0) |
| 9. The system is simple and easy to understand | 6.38 (0.95) | (2.0-7.0) |
| **Ease of use scale summary (Items 4-9)** | **6.21 (0.13)** | (1.0-7.0) |
| 10. This system is able to do everything I would want it to be able to do | 5.27 (1.70) | (1.0-7.0) |
| 11. I could easily talk to the clinician using the telehealth system | 6.60 (1.06) | (1.0-7.0) |
| 12. I could hear the clinician clearly using the telehealth system | 6.63 (1.01) | (1.0-7.0) |
| 13. I felt I was able to express myself effectively | 6.61 (1.11) | (2.0-7.0) |
| 14. Using the telehealth system, I could see the clinician as well as if we met in person | 5.91 (1.64) | (1.0-7.0) |
| **Effectiveness scale summary (Items 10-14)** | **6.20 (0.60)** | (1.0-7.0) |
| 15. I think the visits provided over the telehealth system are the same as in-person visits | 4.02 (2.15) | (1.0-7.0) |
| 16. Whenever I made a mistake using the system, I could recover easily and quickly | 5.69 (1.95) | (2.0-7.0) |
| 17. The system gave error messages that clearly told me how to fix problems. | 4.86 (2.58) | (1.0-7.0) |
| **Reliability scale summary (Items 15-17)** | **4.86 (0.84)** | (1.0-7.0) |
| 18. I feel comfortable communicating with the clinician using the telehealth system. | 6.52 (1.41) | (2.0-7.0) |
| 19. Telehelath is an acceptable way to receive healthcare services | 5.82 (1.86) | (1.0-7.0) |
| 20. I would use telehealth services again | 6.42 (1.72) | (2.0-7.0) |
| 21. Overall, I am satisfied with this telehealth system | 6.39 (1.66) | (4.0-7.0) |
| **Satisfaction scale summary (Items 18-21)** | **6.29 (0.32)** | (1.0-7.0) |
| **Total average** | **6.01 (0.65)** | (1.0-7.0) |

Table 3. Telehealth usability questionnaire (TUQ). Note: Likert scale used: 1: strongly disagree; 2: disagree; 3: somewhat disagree; 4: neutral; 5: somewhat agree; 6: agree; 7: strongly agree.

# PSYCHIATRY

## THE IMPACT OF THE COVID-19 PANDEMIC ON EATING DISORDER RISK AND SYMPTOMS

Rodgers RF, Lombardo C, Cerolini S, Franko DL, Omori M, Fuller-Tyszkiewicz M, Linardon J, Courtet P, Guillaume S.. Int J Eat Disord. 2020 Jun 1. doi: 10.1002/eat.23318. Online ahead of print.
Level of Evidence: Other

### BLUF

An article from the International Journal of Eating Disorders discusses disruption of daily activities, media exposure, and emotional factors (fears of contagion, anxiety, etc) as three possible pathways that can increase eating disorder (ED) risks and symptoms during the COVID-19 pandemic (Figure 1). The authors suggest the need for research in this area to evaluate these factors and better understand how the pandemic influences ED risk.

### ABSTRACT

The current COVID-19 pandemic has created a global context likely to increase eating disorder (ED) risk and symptoms, decrease factors that protect against EDs, and exacerbate barriers to care. Three pathways exist by which this pandemic may exacerbate ED risk. One, the disruptions to daily routines and constraints to outdoor activities may increase weight and shape concerns, and negatively impact eating, exercise, and sleeping patterns, which may in turn increase ED risk and symptoms. Relatedly, the pandemic and accompanying social restrictions may deprive individuals of social support and adaptive coping strategies, thereby potentially elevating ED risk and symptoms by removing protective factors. Two, increased exposure to ED-specific or anxiety-provoking media, as well as increased reliance on video conferencing, may increase ED risk and symptoms. Three, fears of contagion may increase ED symptoms specifically related to health concerns, or by the pursuit of restrictive diets focused on increasing immunity. In addition, elevated rates of stress and negative affect due to the pandemic and social isolation may also contribute to increasing risk. Evaluating and assessing these factors are key to better understanding the impact of the pandemic on ED risk and recovery and to inform resource dissemination and targets.

### FIGURES

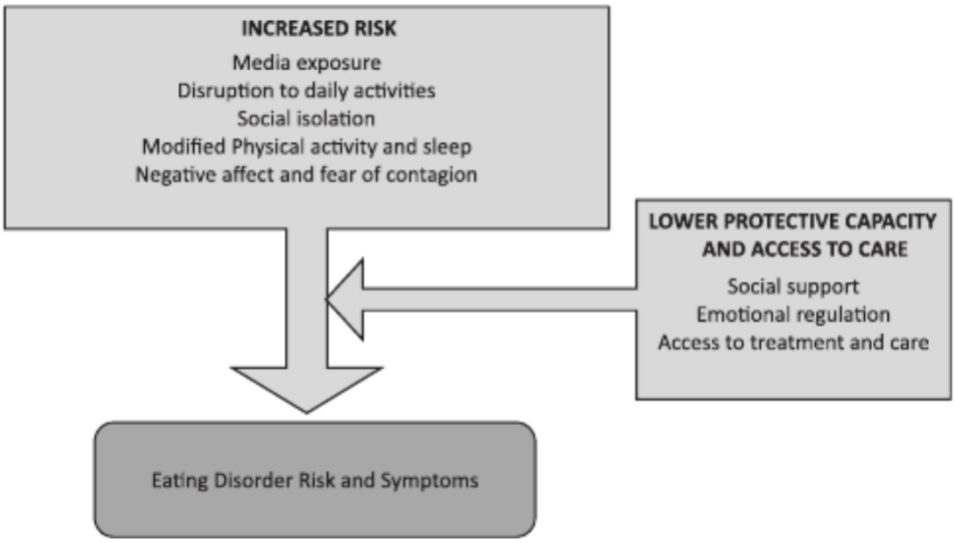



Figure 1. Summary of the pathways through which the COVID-19 pandemic may increase eating disorder risk and symptoms

## SYSTEMATIC REVIEW AND META-ANALYSIS ON THE VALUE OF CHEST CT IN THE DIAGNOSIS OF CORONAVIRUS DISEASE (COVID-19): SOL SCIENTIAE, ILLUSTRA NOS

Adams HJA, Kwee TC, Yakar D, Hope MD, Kwee RM.. AJR Am J Roentgenol. 2020 Jun 1:1-9. doi: 10.2214/AJR.20.23391. Online ahead of print.
Level of Evidence: 1

### BLUF

A systematic review and meta-analysis of six studies was performed by researchers in San Francisco and The Netherlands to analyze the diagnostic accuracy of chest CT for patients with COVID-19. Mean prevalence of COVID-19 was 47.9%, sensitivity ranged from 92.9-97.0% (pooled estimate 94.6%) and specificity ranged from 25.0% to 71.9% (pooled estimate 46.0%) (Fig. 4). This suggests chest CT has a relatively high sensitivity in patients with COVID-19 symptoms who are at high risk of infection, however it cannot exclude COVID-19 disease.

### ABSTRACT

OBJECTIVE. The purpose of this article is to systematically review and meta-analyze the diagnostic accuracy of chest CT in detecting coronavirus disease (COVID-19).
MATERIALS AND METHODS. MEDLINE was systematically searched for publications on the diagnostic performance of chest CT in detecting COVID-19. Methodologic quality was assessed using the Quality Assessment of Diagnostic Accuracy Studies 2 (QUADAS-2) tool. Meta-analysis was performed using a bivariate random-effects model.
RESULTS. Six studies were included, comprising 1431 patients. All six studies included patients at high risk of COVID-19, and five studies explicitly reported that they included only symptomatic patients. Mean prevalence of COVID-19 was 47.9% (range, 27.6-85.4%). High or potential risk of bias was present throughout all QUADAS-2 domains in all six studies. Sensitivity ranged from 92.9% to 97.0%, and specificity ranged from 25.0% to 71.9%, with pooled estimates of 94.6% (95% CI, 91.9-96.4%) and 46.0% (95% CI, 31.9-60.7%), respectively. The included studies were statistically homogeneous in their estimates of sensitivity ($p = 0.578$) and statistically heterogeneous in their estimates of specificity ($p < 0.001$).
CONCLUSION. Diagnostic accuracy studies on chest CT in COVID-19 suffer from methodologic quality issues. Chest CT appears to have a relatively high sensitivity in symptomatic patients at high risk of COVID-19, but it cannot exclude COVID-19. Specificity is poor. These data, along with other local factors such as COVID-19 prevalence, available real-time reverse transcriptase-polymerase chain reaction tests, staff, hospital, and CT scanning capacity, can be useful to healthcare professionals and policy makers to decide on the utility of chest CT for COVID-19 detection in the hospital setting.

### FIGURES

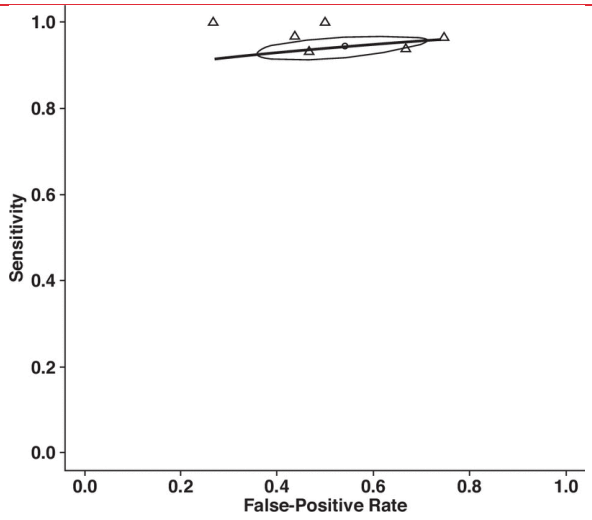


Fig. 4 —ROC plot for included studies. Black line denotes summary ROC curve; gray oval shows confidence region (95% confidence ellipse of pooled sensitivity and specificity). Triangles represent data points, and circle denotes summary estimate.

# DEVELOPMENTS IN TREATMENTS

## VIRTUAL SCREENING-DRIVEN DRUG DISCOVERY OF SARS-COV2 ENZYME INHIBITORS TARGETING VIRAL ATTACHMENT, REPLICATION, POST-TRANSLATIONAL MODIFICATION AND HOST IMMUNITY EVASION INFECTION MECHANISMS

Quimque MTJ, Notarte KIR, Fernandez RAT, Mendoza MAO, Liman RAD, Lim JAK, Pilapil LAE, Ong JKH, Pastrana AM, Khan A, Wei DQ, Macabeo APG.. J Biomol Struct Dyn. 2020 Jun 1:1-23. doi: 10.1080/07391102.2020.1776639. Online ahead of print.
Level of Evidence: 5

### BLUF

The authors performed an in silico simulation of 97 antiviral secondary metabolites from fungi and found that polyketide isochaetochromin D1, fumiquinazoline alkaloids quindadoline B and scedapin had the highest binding affinity to five target proteins (PLpro, 3CLpro, RdRp, nsp15, 5S spike protein) notable for SARS-CoV-2 infectivity (Figure 3). In addition, quindadoline B was calculated to have high gastrointestinal absorption, low blood brain barrier permeability, and high drug-likeness through ADMET (absorption, distribution, metabolism, excretion and toxicity) prediction software. These findings and simulations provide possible new compounds with which to develop COVID-19 drugs.

### ABSTRACT

The novel coronavirus SARS-CoV2, the causative agent of the pandemic disease COVID-19, emerged in December 2019 forcing lockdown of communities in many countries. The absence of specific drugs and vaccines, the rapid transmission of the virus, and the increasing number of deaths worldwide necessitated the discovery of new substances for anti-COVID-19 drug development. With the aid of bioinformatics and computational modelling, ninety seven antiviral secondary metabolites from fungi were docked onto five SARS-CoV2 enzymes involved in viral attachment, replication, post-translational modification, and host immunity evasion infection mechanisms followed by molecular dynamics simulation and in silico ADMET prediction (absorption, distribution, metabolism, excretion and toxicity) of the hit compounds. Thus, three fumiquinazoline alkaloids scedapin C (15), quinadoline B (19) and norquinadoline A (20), the polyketide isochaetochromin D1 (8), and the terpenoid 11a-dehydroxyisoterreulactone A (11) exhibited high binding affinities on the target proteins, papain-like protease (PLpro), chymotrypsin-like protease (3CLpro), RNA-directed RNA polymerase (RdRp), non-structural protein 15 (nsp15), and the spike binding domain to GRP78. Molecular dynamics simulation was performed to optimize the interaction and investigate the stability of the top-scoring ligands in complex with the five target proteins. All tested complexes were found to have dynamic stability. Of the five top-scoring metabolites, quinadoline B (19) was predicted to confer favorable ADMET values, high gastrointestinal absorptive probability and poor blood-brain barrier crossing capacities.

### FIGURES

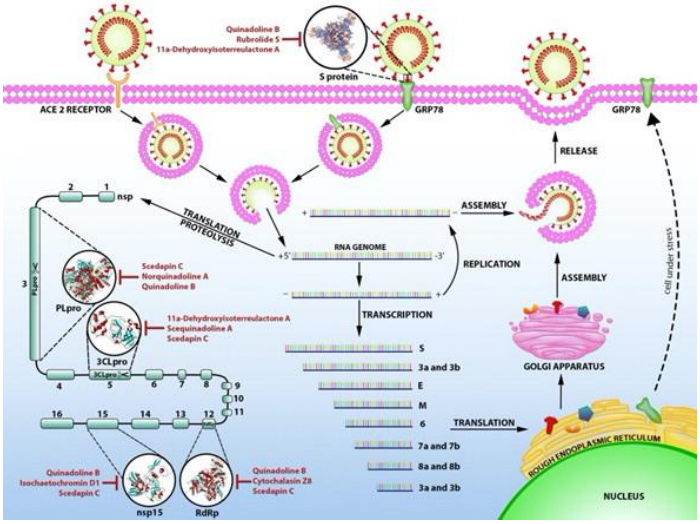


Figure 3. Pathways inhibited by fungal natural products cytochalasin Z8 (4), isochaetochromin D1 (8), 11a-dehydroxyisoterreulactone A (11), scedapin C (15), scequinadoline A (16), quinadoline B (19), norquinadoline A (20) and rubrolide S (23) predicted in silico during SARS-CoV2 host-cell infection.

## VIRTUAL SCREENING, ADME/T, AND BINDING FREE ENERGY ANALYSIS OF ANTI-VIRAL, ANTI-PROTEASE, AND ANTI-INFECTIOUS COMPOUNDS AGAINST NSP10/NSP16 METHYLTRANSFERASE AND MAIN PROTEASE OF SARS COV-2

Maurya SK, Maurya AK, Mishra N, Siddique HR.. J Recept Signal Transduct Res. 2020 Jun 1:1-8. doi: 10.1080/10799893.2020.1772298. Online ahead of print.
Level of Evidence: Other

### BLUF

A team of researchers in India demonstrated with in-silico models a collection of existing pharmaceuticals that have therapeutic potential for SARS-COV-2 infections. The model was found to target both NSP10/NSP16 methyltransferases and a protease (M-pro) that appears ubiquitous among coronaviruses. Agents originally designed for viral & bacterial infections, cancer treatments, and inflammation reduction were found to have a 'good' docking-score for the target molecules (see below). It was recommended that further studies are needed to determine the efficacy of use against SARS-COV-2 in-vitro.

### SUMMARY

Potential Agents: Protease-targeting
- Cyclocytidine hydrochloride (anti-viral and anti-cancer)
- Trifluridine (anti-viral)
- Adonitol (anti-bacterial)
- Meropenem (antibiotic and anti-bacterial)
- Penciclovir (anti-viral)

Potential Agents: Methyltransferase-targeting
-Telbivudine
-Oxytetracycline dihydrate (anti-viral)
-Methylgallate (anti-malarial)
-2-deoxyglucose (anti-cancer)
-Daphnetin (anti-inflammatory, and antitumor)

(see Table 1. for Docking Scores)

### ABSTRACT

Recently, a pathogen has been identified as a novel coronavirus (SARS-CoV-2) and found to trigger novel pneumonia (COVID-19) in human beings and some other mammals. The uncontrolled release of cytokines is seen from the primary stages of symptoms to last acute respiratory distress syndrome (ARDS). Thus, it is necessary to find out safe and effective drugs against this deadly coronavirus as soon as possible. Here, we downloaded the three-dimensional model of NSP10/NSP16 methyltransferase (PDB-ID: 6w6l) and main protease (PDB-ID: 6lu7) of COVID-19. Using these molecular models, we performed virtual screening with our anti-viral, inti-infectious, and anti-protease compounds, which are attractive therapeutics to prevent infection of the COVID-19. We found that top screened compound binds with protein molecules with good dock score with the help of hydrophobic interactions and hydrogen bonding. We observed that protease complexed with Cyclocytidine hydrochloride (anti-viral and anti-cancer), Trifluridine (anti-viral), Adonitol, and Meropenem (anti-bacterial), and Penciclovir (anti-viral) bound with a good docking score ranging from -6.8 to -5.1 (Kcal/mol). Further, NSP10/NSP16 methyltransferase complexed with Telbivudine, Oxytetracycline dihydrate (anti-viral), Methylgallate (anti-malarial), 2-deoxyglucose and Daphnetin (anti-cancer) from the docking score of -7.0 to -5.7 (Kcal/mol). In conclusion, the selected compounds may be used as a novel therapeutic agent to combat this deadly pandemic disease, SARS-CoV-2 infection, but needs further experimental research.HighlightsNSP10/NSP16 methyltransferase and main protease complex of SARS CoV-2 bind with selected drugs.NSP10/NSP16 methyltransferase and protease interacted with drugs by hydrophobic interactions.Compounds show good DG binging free energy with protein complexes.Ligands were found to follow the Lipinski rule of five.

### FIGURES

| | NSP10/NSP16 methyltransferase | | Main protease | |
|---|---|---|---|---|
| SN | Compounds | Dock score (Kcal/mol) | Compounds | Dock score (Kcal/mol) |
| 1 | TYZEKA (telbivudine) | −7.08 | Cyclocytidine hydrochloride | −6.86 |
| 2 | Oxytetracycline dihydrate | −6.07 | Trifluridine | −6.09 |
| 3 | Methylgallate | −6.02 | Adonitol | −5.58 |
| 4 | 2-deoxy-D-glucose | −5.85 | Meropenem | −5.20 |
| 5 | Daphnetin | −5.78 | Penciclovir | −5.14 |

Table 1. Docking score (Kcal/mol) of the NSP10/NSP16 methyltransferase (PDB: 6w61) and main protease (PDB: 6lu7) with selected compounds detected by molecular docking.

# MENTAL HEALTH & RESILIENCE NEEDS

## CONSIDERING GRIEF IN MENTAL HEALTH OUTCOMES OF COVID-19

Bertuccio RF, Runion MC.. Psychol Trauma. 2020 Jun 1. doi: 10.1037/tra0000723. Online ahead of print.
Level of Evidence: Other

### BLUF

Experts at Pennsylvania State University and the Department of Special Services of Fairfax County Public Schools reflect on grief reactions to the pandemic in the context of three frameworks (see below). The authors suggest that grief should be included in current COVID-19 mental health studies and recommend several strategies (self-care, telehealth support services, dialectical thinking, etc.) for coping with grief during this time.
- Ambiguous loss: grief regarding the uncertainty of when normal daily living will resume
- Anticipatory grief: grief concerning anticipated outcomes of the pandemic
- Complicated grief: prolonged and severe symptoms of grieving due to outside circumstances, i .e. the COVID-19 pandemic, that complicate or disrupt the proper mourning process

### ABSTRACT

The novel coronavirus disease of 2019 (COVID-19) pandemic has created challenging circumstances for the physical and mental health of individuals across the United States. This commentary addresses the role of grief in mental health outcomes relating to the pandemic.

## HANDLING UNCERTAINTY AND AMBIGUITY IN THE COVID-19 PANDEMIC

Durodié B.. Psychol Trauma. 2020 Jun 1. doi: 10.1037/tra0000713. Online ahead of print.
Level of Evidence: Other

### BLUF

A British researcher argues that the best way to handle uncertainty and ambiguity in light of the COVID-19 pandemic is to engage people in a larger discussion of core beliefs and morality, rather than on an emphasis on science or official guidance. Engaging people in such discussions is vital for ensuring consent for emergency measures. He also states that disagreeing with experts can help hold them accountable and restore their relationship with the public, which stands in contrast to existing reports.

### ABSTRACT

The 2019 novel coronavirus outbreak is unprecedented. Yet some look to ready-made models to address it. This creates confusion about more adaptive responses that reflect an uncertain and ambiguous context. Those assessing associated mental health challenges must be wary of overdiagnosis. Handling the pandemic well, requires engaging the public as mature partners.

# COVID-19'S IMPACT ON HEALTHCARE WORKFORCE

## ANNALS GRAPHIC MEDICINE - COVID BLUES

Canepa CM.. Ann Intern Med. 2020 Jun 2. doi: 10.7326/G20-0053. Online ahead of print.
Level of Evidence: Other

### BLUF

The author, through images and prose, describes her role as a physician and the emotions experienced while treating patients with COVID-19 (sample below). Treatment options are illustrated and include supportive care such as patient positioning; psychological coaching; and using experimental drugs in scarce supply that have no proven benefit, in turn, making these drugs unavailable for patients who definitively need them. The author uses emotive images to show the toll on the psyche of

the healthcare worker, even when they are away from the workplace, and helps to illustrate the real impact of the COVID-19 pandemic.

## FIGURES

Sample panel

# IMPACT ON PUBLIC MENTAL HEALTH

### EATING AND EXERCISE BEHAVIORS IN EATING DISORDERS AND THE GENERAL POPULATION DURING THE COVID-19 PANDEMIC IN AUSTRALIA: INITIAL RESULTS FROM THE COLLATE PROJECT

Phillipou A, Meyer D, Neill E, Tan EJ, Toh WL, Van Rheenen TE, Rossell SL.. Int J Eat Disord. 2020 Jun 1. doi: 10.1002/eat.23317. Online ahead of print.
Level of Evidence: 3

## BLUF

A cross-sectional study conducted by mental health experts in Australia from April 1st through 4th, 2020 found:
1. Increased restricting, binge eating, purging, and exercise behaviors during the pandemic in 180 self-reporting participants with an eating disorder history
2. Increased restricting/binge eating behaviors and decreased exercise during the pandemic in 5,289 participants without a history of an eating disorder.
The authors indicate that these findings highlight the importance of increased monitoring and support for eating disorder patients during the COVID-19 pandemic and the potential for adverse mental health consequences of the pandemic in the general population.

## ABSTRACT

OBJECTIVE: Emerging evidence suggests that the coronavirus (COVID-19) pandemic may be negatively impacting mental health. The impact on eating and exercise behaviors is, however, currently unknown. This study aimed to identify changes in eating and exercise behaviors in an Australian sample among individuals with an eating disorder, and the general population, amidst the COVID-19 pandemic outbreak.

METHOD: A total of 5,469 participants, 180 of whom self-reported an eating disorder history, completed questions relating to changes in eating and exercise behaviors since the emergence of the pandemic, as part of the COLLATE (COvid-19 and you: mentaL heaLth in AusTralia now survEy) project; a national survey launched in Australia on April 1, 2020.
RESULTS: In the eating disorders group, increased restricting, binge eating, purging, and exercise behaviors were found. In the general population, both increased restricting and binge eating behaviors were reported; however, respondents reported less exercise relative to before the pandemic.
DISCUSSION: The findings have important implications for providing greater monitoring and support for eating disorder patients during the COVID-19 pandemic. In addition, the mental and physical health impacts of changed eating and exercise behaviors in the general population need to be acknowledged and monitored for potential long-term consequences.

## ART THERAPY IN THE TIME OF COVID-19

Braus M, Morton B.. Psychol Trauma. 2020 Jun 1. doi: 10.1037/tra0000746. Online ahead of print.
Level of Evidence: 5

### BLUF

Based on existing art therapy research, authors from George Fox University propose art therapy to address the mental health challenges surrounding the isolation and fear of the COVID-19 pandemic. They indicate that art therapy may be used as a tool to foster resilience and mindfulness.

### ABSTRACT

We are fighting two invisible enemies: COVID-19 and mental health challenges due to unmitigated stress and trauma as we follow directions to avoid the spread of the virus. To address the mental health challenges, art therapy is offered as a tool to support individuals during periods of isolation. Art therapy is a wonderful self-care activity that can benefit individuals throughout the life span.

## PREPARING FOR THE AFTERMATH OF COVID-19: SHIFTING RISK AND DOWNSTREAM HEALTH CONSEQUENCES

Estes KD, Thompson RR.. Psychol Trauma. 2020 Jun 1. doi: 10.1037/tra0000853. Online ahead of print.
Level of Evidence: Other

### BLUF

Members of the University of California, Irvine Department of Psychological Sciences wrote this commentary to highlight the role that ambiguous and constantly changing media coverage has in creating and perpetuating psychological trauma related to risk-taking decisions around individuals' health and COVID-19 protection. The authors caution readers to prepare for the long-term health effects that these constantly changing states of acute stress will have on the population.

### ABSTRACT

Due to the COVID-19 pandemic, the public is currently living through a collective continuous traumatic stressor. Objective risk levels shift with each new piece of data regarding the coronavirus. These data points are communicated through public health officials and the media, easily accessible through modern advanced technology including online news and push notifications. When objective risk changes, individuals must reappraise their subject risk levels. Updating subjective risk levels several times per week is linked to ambiguity of the situation and uncertainty in daily life. The uncertainty and potential feelings of uncontrollability is linked to heightened anxiety. The continuous stress, anxiety, and uncertainty may have several negative downstream mental and physical health effects nationwide. The health care sector must begin preparing for the long-term consequences of the pandemic.

## THE TRAUMATIC IMPACT OF JOB LOSS AND JOB SEARCH IN THE AFTERMATH OF COVID-19

Crayne MP.. Psychol Trauma. 2020 Jun 1. doi: 10.1037/tra0000852. Online ahead of print.
Level of Evidence: Other

### BLUF

The COVID-19 pandemic presents a public health issue extending beyond the direct impact of the virus itself due to the current mass unemployment and the negative psychological effects that job-hunt experiences can have on people. In light of this, it is

important that healthcare providers recognize these effects of the pandemic in order to provide comprehensive mental health care to their patients.


## ABSTRACT

Instability in the global economy in the wake of COVID-19 has resulted in millions of people losing access to employment. As a result, these same individuals will be faced with the pain of job loss in the present and the stress of the job search process in the future. This commentary seeks to draw attention to the psychological trauma that can result from job loss and job search and motivate psychologists to consider issues of work-life spillover in the aftermath of the pandemic.

# SILVER LININGS

## AGE DIFFERENCES IN COVID-19 RISK PERCEPTIONS AND MENTAL HEALTH:EVIDENCE FROM A NATIONAL US SURVEY CONDUCTED IN MARCH 2020

Bruine de Bruin W.. J Gerontol B Psychol Sci Soc Sci. 2020 May 29:gbaa074. doi: 10.1093/geronb/gbaa074. Online ahead of print.
Level of Evidence: 3

### BLUF

A US random sample survey from March 10 to March 31, 2020 found that older-aged adults perceived greater risks of COVID-19 fatality, yet perceived overall lower risks of becoming infected or quarantined, losing their job, or running out of money. They also reported fewer indicators of depression or anxiety. These findings suggest older-aged adults appeared to have relatively greater optimism and better mental health than their younger counterparts during the early stages of the COVID-19 pandemic in the US.

### ABSTRACT

OBJECTIVES: Theories of aging posit that older adult age is associated with less negative emotions, but few studies have examined age differences at times of novel challenges. As COVID-19 spread in the United States, this study therefore aimed to examine age differences in risk perceptions, anxiety and depression.
METHOD: In March 2020, a nationally representative address-based sample of 6666 US adults assessed their perceived risk of getting COVID-19, dying if getting it, getting quarantined, losing their job (if currently working), and running out of money. They completed a mental health assessment for anxiety and depression. Demographic variables and pre-crisis depression diagnosis had previously been reported.
RESULTS: In regression analyses controlling for demographic variables and survey date, older adult age was associated with perceiving larger risks of dying if getting COVID-19, but with perceiving less risk of getting COVID-19, getting quarantined, or running out of money, as well as less depression and anxiety. Findings held after additionally controlling for pre-crisis reports of depression diagnosis.
DISCUSSION: With the exception of perceived infection-fatality risk, US adults who were relatively older appeared to have a more optimistic outlook and better mental health during the early stages of the pandemic. Interventions may be needed to help people of all ages maintain realistic perceptions of the risks, while also managing depression and anxiety during the COVID-19 crisis. Implications for risk communication and mental health interventions are discussed.

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