



**April 10th, 2020**  
**Daily COVID-19 Literature Surveillance Summary**

Jasmine Rah, BA, MS3<sup>1</sup>  
Erin Hartnett, BA, BS, MS3<sup>2</sup>  
Emily V. Nelson, Ph.D<sup>3</sup>  
Samuel M. Philbrick, MD<sup>4</sup>  
Will Smith, MD, Paramedic, FAEMS<sup>1,5</sup>

© 2020 | COVID19LST.org

Author Affiliations:

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



## **Disclaimer:**

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

This is not an official product of institutions affiliated with the authors, nor do the ideas and opinions described within this document represent the authors' or their affiliated institutions' values, opinions, ideas or beliefs. This is a good faith effort to share and disseminate accurate summaries of the current literature- but is not a guarantee.

# Table of Contents

## Levels of Evidence

### Climate

- Coronavirus in cats, climate cancellation and missing African trials.
- Covid-19: Testing times for the government-but not for NHS staff.
- Covid-19: Trump threatens to stop funding WHO amid "China-centric" claims.
- Covid-19: testing times.
- Covid-19: Africa records over 10 000 cases as lockdowns take hold.
- COVID-19 economic cost; impact on forcibly displaced people.
- COVID-19 in humanitarian settings and lessons learned from past epidemics.
- Ensuring Access to Medications in the US During the COVID-19 Pandemic.
- COVID-19 is not just a flu. Learn from Italy and act now.
- Cardiopulmonary Resuscitation During the COVID-19 Pandemic: A View from Trainees on the Frontline.
- Maintaining HIV care during the COVID-19 pandemic.
- Possible Consequences of a Shortage of Hydroxychloroquine for Lupus Patients Amid the COVID-19 Pandemic.
- Abortion during the Covid-19 Pandemic - Ensuring Access to an Essential Health Service.
- Should Infants Be Separated from Mothers with COVID-19? First, Do No Harm.
- Physical inactivity and cardiovascular disease at the time of coronavirus disease 2019 (COVID-19).
- Coronavirus disease 2019: a bibliometric analysis and review.

### Epidemiology

- Generalizability of COVID-19 Clinical Prediction Models.
- Rapid Sentinel Surveillance for COVID-19 - Santa Clara County, California, March 2020.
- Detection of SARS-CoV-2 Among Residents and Staff Members of an Independent and Assisted Living Community for Older Adults - Seattle, Washington, 2020.
- Limited transmissibility of coronavirus (SARS-1, MERS, and SARS-2) in certain regions of Africa.
- Awareness, Attitudes, and Actions Related to COVID-19 Among Adults With Chronic Conditions at the Onset of the U.S. Outbreak: A Cross-sectional Survey.
- Data Analysis of Coronavirus CoVID-19 Epidemic in South Korea Based on Recovered and Death Cases.
- Obesity in patients younger than 60 years is a risk factor for Covid-19 hospital admission.
- Radiological findings and clinical characteristics of pregnant women with COVID-19 pneumonia.
- Clinical characteristics of a case series of children with coronavirus disease 2019.

### Understanding the Pathology

- Comparative replication and immune activation profiles of SARS-CoV-2 and SARS-CoV in human lungs: an ex vivo study with implications for the pathogenesis of COVID-19.
- Role of Nonstructural Proteins in the Pathogenesis of SARS-CoV-2.
- Neurological manifestations in COVID-19 caused by SARS-CoV-2.

### Transmission & Prevention

- COVID-19: emerging protective measures.
- Salivary Glands: Potential Reservoirs for COVID-19 Asymptomatic Infection.

- Presymptomatic Transmission of SARS-CoV-2 - Singapore, January 23–March 16, 2020.
- Asymptomatic and Presymptomatic Infectors: Hidden Sources of COVID-19 Disease.
- Four cases from a family cluster were diagnosed as COVID-19 after 14-day of quarantine period.
- Factors associated with prolonged viral RNA shedding in patients with COVID-19.
- Delivery in pregnant women infected with SARS-CoV-2: A fast review.
- Severe acute respiratory syndrome coronavirus 19 and human pregnancy.
- Food Safety and COVID-19.

### Diagnosis

- False-negative of RT-PCR and prolonged nucleic acid conversion in COVID-19: Rather than recurrence.
- Effect of throat washings on detection of 2019 novel coronavirus.
- Comparative Performance of SARS-CoV-2 Detection Assays using Seven Different Primer/Probe Sets and One Assay Kit.
- High-resolution Chest CT Features and Clinical Characteristics of Patients Infected with COVID-19 in Jiangsu, China.
- New clinical experiences and evaluation of clinical and paraclinical features of deceased patients with COVID-19 infection referred to Shahid Mostafa Khomeini Hospital of Ilam, Iranin.
- Just the Facts: Recommendations on Point of Care Ultrasound Use and Machine Infection Control During the COVID-19 Pandemic.

### Management

- Predictors of refractory Coronavirus disease (COVID-19) pneumonia.
- Prediction for Progression Risk in Patients with COVID-19 Pneumonia: the CALL Score.
- Predictors of Mortality for Patients with COVID-19 Pneumonia Caused by SARS-CoV-2: A Prospective Cohort Study.
- Cardiac and arrhythmic complications in Covid-19 patients.
- Critical patients with coronavirus disease 2019: Risk factors and outcome nomogram.
- ANNALS EXPRESS: Electrolyte Imbalances in Patients with Severe Coronavirus Disease 2019 (COVID-19).
- Understanding pathways to death in patients with COVID-19.
- Intensive care management of coronavirus disease 2019 (COVID-19): challenges and recommendations.
- Successful treatment of COVID-19 using extracorporeal membrane oxygenation, a case report.
- Coping with COVID-19: ventilator splitting with differential driving pressures using standard hospital equipment.

### Managing other diseases during COVID-19

- Management of Patients with Crohn's Disease and Ulcerative Colitis During the COVID-19 Pandemic: Results of an International Meeting.
- Acute stroke management pathway during Coronavirus-19 pandemic.
- Interim Guidance for Basic and Advanced Life Support in Adults, Children, and Neonates With Suspected or Confirmed COVID-19: From the Emergency Cardiovascular Care Committee and Get With the Guidelines((R))-Resuscitation Adult and Pediatric Task Forces of the American Heart Association in Collaboration with the American Academy of Pediatrics, American Association for Respiratory Care, American College of Emergency Physicians, The Society of Critical Care Anesthesiologists, and American Society of Anesthesiologists: Supporting Organizations: American Association of Critical Care Nurses and National EMS Physicians.
- Expert consensus from the Italian Society for Colposcopy and Cervico-Vaginal Pathology (SICPCV) for colposcopy and outpatient surgery of the lower genital tract during the COVID-19 pandemic.
- Vaso-occlusive Crisis and Acute Chest Syndrome in Sickle Cell Disease due to 2019 Novel Coronavirus Disease (COVID-19).

- Digestive system involvement of novel coronavirus infection: prevention and control infection from a gastroenterology perspective.
- Surgical management of head and neck tumours during the SARS-CoV (Covid-19) pandemic.
- Early virus clearance and delayed antibody response in a case of COVID-19 with a history of co-infection with HIV-1 and HCV.

### Therapeutics

- In silico identification of vaccine targets for 2019-nCoV.
- Structure of the RNA-dependent RNA polymerase from COVID-19 virus
- Structure of Mpro from COVID-19 virus and discovery of its inhibitors
- Intensive care management of coronavirus disease 2019 (COVID-19): challenges and recommendations. [Review of potential treatments]
- Will Complement Inhibition be the New Target in Treating COVID-19 Related Systemic Thrombosis?
- Safety considerations with chloroquine, hydroxychloroquine and azithromycin in the management of SARS-CoV-2 infection.
- Chloroquine and hydroxychloroquine in covid-19.
- Considerations for statin therapy in patients with COVID-19.
- The possible of immunotherapy for COVID-19: A systematic review.
- Coronavirus membrane fusion mechanism offers as a potential target for antiviral development.
- Does recombinant human Erythropoietin administration in critically ill COVID-19 patients have miraculous therapeutic effects?
- Structure of M(pro) from COVID-19 virus and discovery of its inhibitors.

### Mental Health & Resilience

- Coronavirus Epidemic and Geriatric Mental Healthcare in China: How a Coordinated Response by Professional Organizations Helped Older Adults During an Unprecedented Crisis.
- Traumatic stress in the age of COVID-19: A call to close critical gaps and adapt to new realities.
- Psychiatry's Niche Role in the COVID-19 Pandemic.
- Mental Health and Psychosocial Problems of Medical Health Workers during the COVID-19 Epidemic in China.

# Levels of Evidence

Oxford Centre for Evidence-Based Medicine 2011 Levels of Evidence

Question	Step 1 (Level 1*)	Step 2 (Level 2*)	Step 3 (Level 3*)	Step 4 (Level 4*)	Step 5 (Level 5)
<b>How common is the problem?</b>	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
<b>Is this diagnostic or monitoring test accurate? (Diagnosis)</b>	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
<b>What will happen if we do not add a therapy? (Prognosis)</b>	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
<b>Does this intervention help? (Treatment Benefits)</b>	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
<b>What are the COMMON harms? (Treatment Harms)</b>	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
<b>What are the RARE harms? (Treatment Harms)</b>	Systematic review of randomized trials or n-of-1 trial	Randomized trial or (exceptionally) observational study with dramatic effect			
<b>Is this (early detection) test worthwhile? (Screening)</b>	Systematic review of randomized trials	Randomized trial	Non -randomized controlled cohort/follow-up study**	Case-series, case-control, or historically controlled studies**	Mechanism-based reasoning

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

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

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

# Climate

## Coronavirus in cats, climate cancellation and missing African trials.

[PMID: 32269354, Apr 10, 2020](#)

No authors listed

Nature

Level of Evidence: : 5 - Expert opinion

Type of Article: News

### Summary:

1. COVID-19 and Cats:
  - a. COVID-19 can infect cats and they can then pass it on to other felines. Whether cats are contagious to humans is not confirmed, nor is how applicable the data is to real-world settings of transmission.
2. Delayed Climate Talks:
  - a. The UN has postponed its 26<sup>th</sup> annual international climate conference until 2021. World nations are behind on their commitments to the Paris climate agreement and this conference was set to make new commitments to improve the response to climate change internationally.
3. Physics Experiment Delays:
  - a. Physics facilities have been shut down, notably at the Department of Energy. Upgrades are also delayed which will impact further studies and data collection.
4. Coronavirus Trials and African Nations:
  - a. The WHO SOLIDARITY trial which is testing four potential treatments does not have participants in African countries. This demonstrates a lack of research into the virus response in African nations where COVID-19 is likely to spread rapidly in the near future. Most trials are currently conducted in high-income countries where participants will not mirror the populations in developing nations.

## Covid-19: Testing times for the government-but not for NHS staff.

[PMID: 32269082, Apr 10, 2020](#)

Cowper, Andy

BMJ

Level of Evidence: N/A

Type of Article: Editorial

**Summary Statement:** Author argues that the UK government's communication during the covid-19 crisis has been inadequate, and that communication gaps signal incompetence.

## Covid-19: Trump threatens to stop funding WHO amid "China-centric" claims.

[PMID: 32269034, Apr 10, 2020](#)

Mahase, Elisabeth

BMJ

Level of Evidence: N/A

Type of Article: News

**Summary Statements:** Author writes that “Donald Trump has warned that the US could stop funding the World Health Organization, as he accused it of being ‘China-centric’ and of calling ‘every shot wrong.’” WHO Spokesperson responded, ““It would be disastrous for WHO to lose funding, but through the technology that exists today we will continue the technical work despite whatever tensions occur.”

## Covid-19: testing times.

[PMID: 32269032, Apr 10, 2020](#)

Beeching, Nick J; Fletcher, Tom E; Beadsworth, Mike B J  
BMJ

Level of Evidence: N/A

Type of Article: Editorial

**Summary:** Higher test volume and validated testing is needed to fight against covid-19 and to understand its real prevalence and morbidity.

## Covid-19: Africa records over 10,000 cases as lockdowns take hold.

[PMID: 32269023, Apr 10, 2020](#)

Dyer, Owen  
BMJ

Level of Evidence: N/A

Type of Article: Editorial

**Summary:** Public health experts are worried that it will be impossible to stop mass spread of covid-19 now that over 10,000 cases have been confirmed in Africa. Social distancing is not practical for communities that do not have social safety nets to feed people if economic activity halts, and there is concern social distancing recommendations will be ignored as a result.

## COVID-19 economic cost; impact on forcibly displaced people.

[PMID: 32272198, Apr 10, 2020](#)

Kabir, Mehwish; Afzal, Muhammad Sohail; Khan, Aisha; Ahmed, Haroon

Travel Med Infect Dis

Level of Evidence: N/A

Type of Article: Editorial

**Summary:** Countries are spending more on their own citizens and displaced persons, especially in refugee camps, may suffer disproportionately from COVID-19.

## COVID-19 in humanitarian settings and lessons learned from past epidemics.

[PMID: 32269357, Apr 10, 2020](#)

Lau, Ling San; Samari, Goleen; Moresky, Rachel T; Casey, Sara E; Kachur, S Patrick; Roberts, Leslie F; Zard, Monette

Nat Med

Level of Evidence: Level 5- Expert Opinion

Article type: Comment

**Summarizing excerpt:** “Previous epidemics have shown us that stigmatizing viral transmission only further places populations at risk and reduces access to care. Harsh migration enforcement and disregard for displaced populations undermines the first defense that we have in public health, which is the willingness of people to disclose symptoms and seek care. Trust is a critical commodity in pandemic responses, and it must be preserved. Pandemics do not discriminate, and access to health care should not discriminate either. In the age of COVID-19, protecting the most vulnerable among us is not just a moral imperative but an urgent public health objective: the health of one is the health of all.”

## Ensuring Access to Medications in the US During the COVID-19 Pandemic.

[PMID: 32271871, Apr 10, 2020](#)

Alexander, G Caleb; Qato, Dima M

JAMA

Level of Evidence: Level 5- Expert Opinion

Type of Article: Viewpoint

**Summary:** In preparation of the surge and potential for medicine shortages or disruptions in the supply chain, the author argues that we need to: “1) develop an essential medicines strategy, 2) prevent drug stockpiling/shortages, 3) expand capacity for mail-order and home delivery, 4) finance an emergency supply of essential medicines, 5) implement a long term strategy to safeguard access.”

## COVID-19 is not just a flu. Learn from Italy and act now.

[PMID: 32272199, Apr 10, 2020](#)

De Giorgio, Andrea

Travel Med Infect Dis

Level of Evidence: N/A

Type of Article: Editorial

**Summary:** Do not underestimate covid-19.

## Cardiopulmonary Resuscitation During the COVID-19 Pandemic: A View from Trainees on the Frontline.

[PMID: 32271616, Apr 10, 2020](#)

DeFilippis, Ersilia M; Ranard, Lauren S; Berg, David D

Circulation

Level of Evidence: N/A

Type of Article: Editorial

**Summarizing Excerpt:** “As trainees, so much of our learning is focused on “doing” – instinctively taking someone with ST elevations to the cardiac catheterization lab or starting chest compressions when there is no pulse. But to know when not to do something is often much harder.”

## Maintaining HIV care during the COVID-19 pandemic.

[PMID: 32272084, Apr 10, 2020](#)

Jiang, Hongbo; Zhou, Yi; Tang, Weiming

Lancet HIV

Level of Evidence: Level 5- Expert Opinion

Type of Article: Comment

**Summary:** The author explains how social distancing has impacted HIV care

1. Reduced access to routine HIV testing
2. Reduced resources for patients with HIV
3. Quarantine may actually prevent patients from picking up ART

## Possible Consequences of a Shortage of Hydroxychloroquine for Lupus Patients Amid the COVID-19 Pandemic.

[PMID: 32269064](#), Apr 10, 2020

Peschken, Christine A

J Rheumatol

Level of Evidence: Level 5- Expert Opinion

Type of Article: Editorial

**Summarizing excerpt:** “Rheumatologists caring for lupus patients will need to provide reassurance if a few doses are missed and evidence based guidance on the use of HCQ for COVID-19, while joining the chorus of healthcare providers, patients, and advocacy groups urging protection of HCQ supply for lupus patients.”

## Abortion during the Covid-19 Pandemic - Ensuring Access to an Essential Health Service.

[PMID: 32272002](#) Apr 10, 2020

Bayefsky, Michelle J; Bartz, Deborah; Watson, Katie L

N Engl J Med

Level of Evidence: Level 5 - Expert opinion

Type of Article: Perspective

**Summarizing excerpt:** “The medical profession’s response to the Covid-19 pandemic must include continuing to meet other urgent health care needs, including the need for time-sensitive abortion care. The speed with which some governors have suspended abortion care during this pandemic highlights the extreme vulnerability of abortion access in the United States...If the entire profession can actively support abortion care as an essential health service during the Covid-19 pandemic, such unity could form a foundation for strengthening our abortion care infrastructure for years to come.”

## Should Infants Be Separated from Mothers with COVID-19? First, Do No Harm.

[PMID: 32271625](#), Apr 10, 2020

Stuebe, Alison

Breastfeed Med

Level of Evidence: Level 5 - Expert Opinion

Type of Article: Editorial

**Summary:** The benefit of separating newborns from mothers is that it minimize the risk of COVID-19 transmission from mother to child. However, the author argues that 1)there is no evidence that separation from the mother prevents other exposures, 2) skin to skin is essential and its disruption can be detrimental to feeding and bonding, 3) increased maternal cortisol, 4) disruption of normal breastfeeding which provides important antibodies, 5)separation of the couplet consumes more resources.

## **Physical inactivity and cardiovascular disease at the time of coronavirus disease 2019 (COVID-19).**

[\*\*PMID: 32270698\*\*](#), Apr 10, 2020

Lippi, Giuseppe; Henry, Brandon M; Sanchis-Gomar, Fabian

Eur J Prev Cardiol

Level of Evidence: Level 5- Expert Opinion

Type of Article: Commentary

**Summary:** Quarantine is likely to increase physical inactivity and the negative health consequences associated with inactivity. The author also describes how the sudden reduction in activity, specifically, has been associated with metabolic derangements.

## **Coronavirus disease 2019: a bibliometric analysis and review.**

[\*\*PMID: 32271460\*\*](#), Apr 10, 2020

Lou, J; Tian, S-J; Niu, S-M; Kang, X-Q; Lian, H-X; Zhang, L-X; Zhang, J-J

Eur Rev Med Pharmacol Sci

Level of Evidence: Level 5- critical data not displayed

Type of Article: Research paper

**Summary:** Most of the publications from January 12 - Feb 29, 2020 were published from Chinese institutions.

**OBJECTIVE:** On December 8, 2019, many cases of pneumonia with unknown etiology were first reported in Wuhan, China, subsequently identified as a novel coronavirus infection aroused worldwide concern. As the outbreak is ongoing, more and more researchers focused interest on the COVID-19. Therefore, we retrospectively analyzed the publications about COVID-19 to summarize the research hotspots and make a review, to provide reference for researchers in the world.

**MATERIALS AND METHODS:** We conducted a search in PubMed using the keywords "COVID-19" from inception to March 1, 2020. Identified and analyzed the data included title, corresponding author, language, publication time, publication type, research focus.

**RESULTS:** 183 publications published from 2020 January 14 to 2020 February 29 were included in the study. The first corresponding authors of the publications were from 20 different countries. Among them, 78 (42.6%) from the hospital, 64 (35%) from the university and 39 (21.3%) from the research institution. All the publications were published in 80 different journals. Journal of Medical Virology published most of them (n=25). 60 (32.8%) were original research, 29 (15.8%) were review, 20 (10.9%) were short communications. 68 (37.2%) epidemiology, 49 (26.8%) virology and 26 (14.2%) clinical features.

**CONCLUSIONS:** According to our review, China has provided a large number of research data for various research fields, during the outbreak of COVID-19. Most of the findings play an important role in preventing and controlling the epidemic around the world. With research on the COVID-19 still booming, new vaccine and effective medicine for COVID-19 will be expected to come out in the near future with the joint efforts of researchers worldwide.

# Epidemiology

## Generalizability of COVID-19 Clinical Prediction Models.

[PMID: 32271865, Apr 10, 2020](#)

Hooli, Shubhada; King, Carina

Clinical Infectious Diseases

Level of Evidence: 5 – Expert opinion

Type of Article: Letter

**Summary:** Referring to “Epidemiological and Clinical Predictors of COVID-19” by Sun et al. The authors question how reproducible the prediction models are regarding overfitting the model to a derivation sample. The authors state that models need to be generalized and reliable, especially in the face of limited testing resources.

## Rapid Sentinel Surveillance for COVID-19 - Santa Clara County, California, March 2020.

[PMID: 32271724, Apr 10, 2020](#)

Zwald, Marissa L; Lin, Wen; Sondermeyer Cooksey, Gail L; Weiss, Charles; Suarez, Angela; Fischer, Marc; Bonin, Brandon J; Jain, Seema; Langley, Gayle E; Park, Benjamin J; Moulia, Danielle; Benedict, Rory; Nguyen, Nang; Han, George S

MMWR Morb Mortal Wkly Rep

Level of Evidence: Level 3: Proof of concept

Type of Article: Research

**Summarizing excerpt:** “During March 5–14, among patients with respiratory symptoms evaluated at one of four Santa Clara County urgent care centers serving as sentinel surveillance sites, 23% had positive test results for influenza. Among a subset of patients with negative test results for influenza, 11% had positive test results for COVID-19..COVID-19 cases identified through this sentinel surveillance system helped confirm community transmission in the county. Local health departments can use sentinel surveillance to understand the level of community transmission of COVID-19 and to better guide the selection and implementation of community mitigation measures.”

## Detection of SARS-CoV-2 Among Residents and Staff Members of an Independent and Assisted Living Community for Older Adults - Seattle, Washington, 2020.

[PMID: 32271726, Apr 10, 2020](#)

Roxby, Alison C; Greninger, Alexander L; Hatfield, Kelly M; Lynch, John B; Dellit, Timothy H; James, Allison; Taylor, Joanne; Page, Libby C; Kimball, Anne; Arons, Melissa; Schieve, Laura A; Munanga, Albert; Stone, Nimalie; Jernigan, John A; Reddy, Sujan C; Lewis, James; Cohen, Seth A; Jerome, Keith R; Duchin, Jeffrey S; Neme, Santiago

MMWR Morb Mortal Wkly Rep

Level of Evidence: Level 4- Case study

Type of Article: Research

**Summarizing excerpt:** “Symptom-based screening might not identify SARS-CoV-2 infections in independent and assisted living facility residents, underscoring the importance of adhering to CDC guidance to prevent COVID-19 transmission in senior living communities.”

## **Limited transmissibility of coronavirus (SARS-1, MERS, and SARS-2) in certain regions of Africa.**

[PMID: 32270498](#), Apr 10, 2020

Ahmed, Anwar E

Journal of Medical Virology

Level of Evidence: 5 – Expert opinion

Type of Article: Letter

**BLUF:** Previous coronavirus outbreaks have shown geographical variability and further investigations into possible environmental factors related to COVID-19 transmissibility could aid the prevention of increased cases of the pandemic in African countries.

### **Abstract:**

A novel coronavirus disease (COVID-19) was first identified in Wuhan, China in December 2019, and after a few weeks, the World Health Organization (WHO) declared the outbreak as a global pandemic. Scientifically, the virus was named "severe acute respiratory syndrome (SARS-2) coronavirus". High-level endemic transmissions occurred in several countries, and while yet very limited, have spread in certain regions of the globe, particularly in Africa.

## **Awareness, Attitudes, and Actions Related to COVID-19 Among Adults With Chronic Conditions at the Onset of the U.S. Outbreak: A Cross-sectional Survey.**

[PMID: 32271861](#), Apr 10, 2020

Wolf, Michael S; Serper, Marina; Opsasnich, Lauren; O'Conor, Rachel M; Curtis, Laura M; Benavente, Julia Yoshino; Wismer, Guisselle; Batio, Stephanie; Eifler, Morgan; Zheng, Pauline; Russell, Andrea; Arvanitis, Marina; Ladner, Daniela; Kwasny, Mary; Persell, Stephen D; Rowe, Theresa; Linder, Jeffrey A; Bailey, Stacy C

Ann Intern Med

Level of Evidence: 5 - Survey

Type of Article: Cross-sectional survey

**BLUF:** Authors report results of a survey intended to describe attitudes and awareness about COVID-19, and conclude that many people vulnerable to COVID-19 are not educated about the disease or changing their behavior.

### **Abstract**

Background: The evolving outbreak of coronavirus disease 2019 (COVID-19) is requiring social distancing and other measures to protect public health. However, messaging has been inconsistent and unclear.

Objective: To determine COVID-19 awareness, knowledge, attitudes, and related behaviors among U.S. adults who are more vulnerable to complications of infection because of age and comorbid conditions.

Design: Cross-sectional survey linked to 3 active clinical trials and 1 cohort study.

Setting: 5 academic internal medicine practices and 2 federally qualified health centers.

Patients: 630 adults aged 23 to 88 years living with 1 or more chronic conditions.

Measurements: Self-reported knowledge, attitudes, and behaviors related to COVID-19.

Results: A fourth (24.6%) of participants were “very worried” about getting the coronavirus. Nearly a third could not correctly identify symptoms (28.3%) or ways to prevent infection (30.2%). One in 4

adults (24.6%) believed that they were “not at all likely” to get the virus, and 21.9% reported that COVID-19 had little or no effect on their daily routine. One in 10 respondents was very confident that the federal government could prevent a nationwide outbreak. In multivariable analyses, participants who were black, were living below the poverty level, and had low health literacy were more likely to be less worried about COVID-19, to not believe that they would become infected, and to feel less prepared for an outbreak. Those with low health literacy had greater confidence in the federal government response.

**Limitation:** Cross-sectional study of adults with underlying health conditions in 1 city during the initial week of the COVID-19 U.S. outbreak.

**Conclusion:** Many adults with comorbid conditions lacked critical knowledge about COVID-19 and, despite concern, were not changing routines or plans. Noted disparities suggest that greater public health efforts may be needed to mobilize the most vulnerable communities.

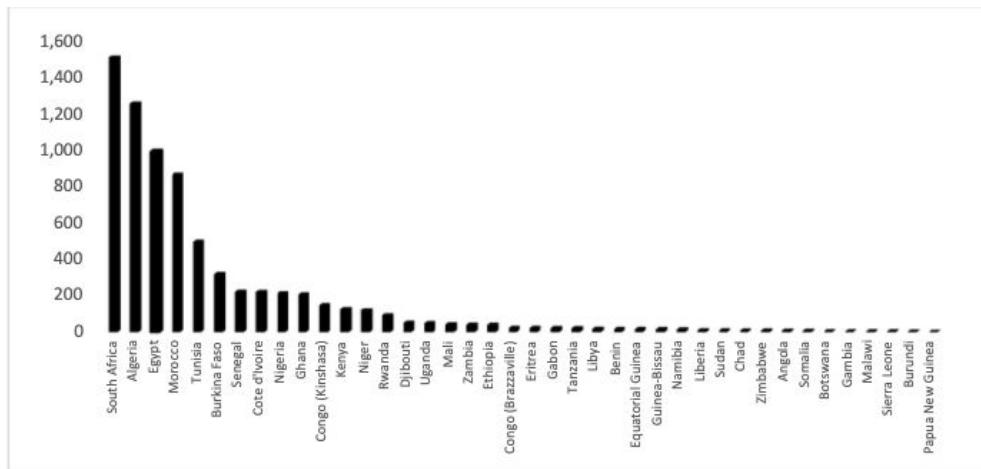


Figure 1. SARS-2 outbreaks in Africa by countries, since February 2020.

## Data Analysis of Coronavirus CoVID-19 Epidemic in South Korea Based on Recovered and Death Cases.

[PMID: 32270521](#), Apr 10, 2020

Al-Rousan, Nadia; Al-Najjar, Hazem

Journal of Medical Virology

Level of Evidence: 4 – Case series

Type of Article: Research

**BLUF:** The majority of the deceased were over 60 years old. Sex was also shown to have a strong relationship with the numbers of recovered and deceased cases. There were also geographical differences in percent recovered vs not recovered.

### Abstract:

Coronavirus epidemic caused announcing emergency case in South Korea. The virus started with one infected case by January 20, 2020, where 9583 announced cases were reported by March 29, 2020. This indicates that the number of confirmed cases is increasing rapidly, which can cause national crises for South Korea. The aim of this study is to fill a gap between previous studies and the current development of CoVID-19 spreading, by **extracting a relationship between independent**

**variables and dependent variable.** This research statistically analyzed the effect of sex, region, infection reasons, birth year, and released or diseased date on the reported numbers of recovered and deceased cases. **The results found that sex, region, and infection reasons affected on both recovered and deceased cases, while birth year only affected on deceased cases.** Besides, no deceased cases are reported for released cases, while 11.3% of deceased cases positive confirmed after their deceased. Unknown reason of infection is the main variable that detected in South Korea with more than 33% of total infected cases.

## Obesity in patients younger than 60 years is a risk factor for Covid-19 hospital admission.

[PMID: 32271368](#), Apr 10, 2020

Lighter, Jennifer; Phillips, Michael; Hochman, Sarah; Sterling, Stephanie; Johnson, Diane; Francois, Fritz; Stachel, Anna

Clinical Infectious Diseases

Level of Evidence: 3- Cohort study

Type of Article: Letter/Research

**Summarizing Excerpt:** “Patients aged <60 years with a BMI between 30-34 were 2.0 (95% 1.6-2.6, p<0.0001) and 1.8 (95% CI 1.2-2.7, p=0.006) times more likely to be admitted to acute and critical care, respectively, compared to individuals with a BMI <30 (Table 1). Likewise, patients with a BMI >35 and aged <60 years were 2.2 (95% CI 1.7-2.9, p<.0001) and 3.6 (95% CI 2.5-5.3, p=<.0001) times more likely to be admitted to acute and critical care compared to patients in the same age category who had BMI <30. Though patients aged <60 years are generally considered a lower risk group of Covid-19 disease severity, based on data from our institution, obesity appears to be a previously unrecognized risk factor for hospital admission and need for critical care.”

## Radiological findings and clinical characteristics of pregnant women with COVID-19 pneumonia.

[PMID: 32270479](#), Apr 10, 2020

Wu, Xiaoqing; Sun, Ruihong; Chen, Jianpu; Xie, Yuanliang; Zhang, Shutong; Wang, Xiang  
Int J Gynaecol Obstet

Level of Evidence: Level 4- case series

Type of Article: Clinical Article

BLUF: Describes radiological findings in pregnant patients with COVID-19

### Abstract:

OBJECTIVE: To study chest CT images and clinical characteristics of COVID-19 pneumonia in pregnant patients to examine any correlation.

METHODS: Between December 31, 2019 and March 7, 2020, 23 hospitalized pregnant patients with confirmed COVID-19 were enrolled in the study. Clinical presentations were collected retrospectively from records, including laboratory testing, chest CT imaging, and symptoms. Descriptive analysis and correlation of patients' clinical and CT characteristics were performed. Laboratory results from time of first admission and CT absorption (defined as reduction in lesion area, decrease in density, and absorption of some solid components) were compared between symptomatic and asymptomatic patients.

RESULTS: Fifteen (65.2%) patients were asymptomatic with patchy ground-glass opacity in a single lung lobe. Eight (34.8%) patients were symptomatic with multiple patchy ground-glass shadows, consolidation, and fibrous stripes. Differences in lymphocyte percentage and neutrophil granulocyte

rate between first admission and CT absorption were significant ( $P<0.001$ ). Median absorption time was shorter in the asymptomatic group compared with the symptomatic group (5 vs 10 days;  $P<0.001$ ). Median hospitalization time between asymptomatic and symptomatic patients was 14 vs 25.5 days;  $P>0.001$ . Median absorption time and length of hospitalization for all patients was 6 days (IQR 5-8) and 17 days (IQR 13-25), respectively.

**CONCLUSION:** Radiological findings and clinical characteristics in pregnant women with COVID-19 were similar to those of non-pregnant women with COVID-19. Median absorption time and length of hospitalization in asymptomatic patients were significantly shorter than in symptomatic patients. Lymphocyte percentage and neutrophil granulocyte rate may be used as laboratory indicators of CT absorption.

## Clinical characteristics of a case series of children with coronavirus disease 2019.

[PMID: 32270592](#), Apr 10, 2020

Zhu, Li; Wang, Jian; Huang, Rui; Liu, Longgen; Zhao, Haiyan; Wu, Chao; Zhu, Chuanwu  
Pediatr Pulmonol

Level of Evidence: Level 3- Local non-random sample

Type of Article: Research

Summarizing Excerpt: "COVID-19 children present less severe symptoms and have better outcomes.

# Understanding the Pathology

## Comparative replication and immune activation profiles of SARS-CoV-2 and SARS-CoV in human lungs: an ex vivo study with implications for the pathogenesis of COVID-19.

[PMID: 32270184](#), Apr 10, 2020

Chu, Hin; Chan, Jasper Fuk-Woo; Wang, Yixin; Yuen, Terrence Tsz-Tai; Chai, Yue; Hou, Yuxin; Shuai, Huiping; Yang, Dong; Hu, Binjie; Huang, Xiner; Zhang, Xi; Cai, Jian-Piao; Zhou, Jie; Yuan, Shuofeng; Kok, Kin-Hang; To, Kelvin Kai-Wang; Chan, Ivy Hau-Yee; Zhang, Anna Jinxia; Sit, Ko-Yung; Au, Wing-Kuk; Yuen, Kwok-Yung

Clinical Infectious Diseases

Level of Evidence: 5- Bench research, mechanism-based reasoning

Type of Article: Research

**Summarizing Excerpt:** “The comparative viral kinetics, cell tropism, and innate immune response profiles of SARSCoV-2 and SARS-CoV in human lungs were characterized in ex-vivo organ cultures. SARSCoV-2 exhibited more efficient replication but induced significantly less host interferon and proinflammatory response than SARS-CoV.”

### Abstract:

**BACKGROUND:** Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is an emerging coronavirus that has resulted in nearly 1,000,000 laboratory-confirmed cases including over 50,000 deaths. **Although SARS-CoV-2 and SARS-CoV share a number of common clinical manifestations, SARS-CoV-2 appears to be highly efficient in person-to-person transmission and frequently cause asymptomatic infections.** However, the underlying mechanism that confers these viral characteristics on high transmissibility and asymptomatic infection remain incompletely understood.

**METHODS:** We comprehensively investigated the replication, cell tropism, and immune activation profile of SARS-CoV-2 infection in human lung tissues with SARS-CoV included as a comparison.

**RESULTS: SARS-CoV-2 infected and replicated in human lung tissues more efficiently than that of SARS-CoV.** Within the 48-hour interval, SARS-CoV-2 generated 3.20 folds more infectious virus particles than that of SARS-CoV from the infected lung tissues ( $P<0.024$ ). SARS-CoV-2 and SARS-CoV were similar in cell tropism, with both targeting types I and II pneumocytes, and alveolar macrophages. Importantly, despite the more efficient virus replication, SARS-CoV-2 did not significantly induce types I, II, or III interferons in the infected human lung tissues. **In addition, while SARS-CoV infection upregulated the expression of 11 out of 13 (84.62%) representative pro-inflammatory cytokines/chemokines, SARS-CoV-2 infection only upregulated 5 of these 13 (38.46%) key inflammatory mediators despite replicating more efficiently.**

**CONCLUSIONS:** Our study provided the first quantitative data on the comparative replication capacity and immune activation profile of SARS-CoV-2 and SARS-CoV infection in human lung tissues. Our results provided important insights on the pathogenesis, high transmissibility, and asymptomatic infection of SARS-CoV-2.

## Role of Nonstructural Proteins in the Pathogenesis of SARS-CoV-2.

[PMID: 32270884](#), Apr 10, 2020

da Silva, Severino Jefferson Ribeiro; da Silva, Caroline Targino Alves; Mendes, Renata Pessoa Germano; Pena, Lindomar

Journal of Medical Virology  
Level of Evidence: 5 – Expert opinion  
Type of Article: Letter

**Summary:** Referring to “COVID-2019: The role of the nsp2 and nsp3 in its pathogenesis” by Angeletti et al. The authors argue that differences in viral pathogenesis cannot be defined based on a small number of gene mutations. They also argue that mutations can have different effects in different environments and may not be generalizable. Reverse genetic systems that enable more in-depth study of SARS-CoV-2 will be necessary for accurate analysis of its characteristics.

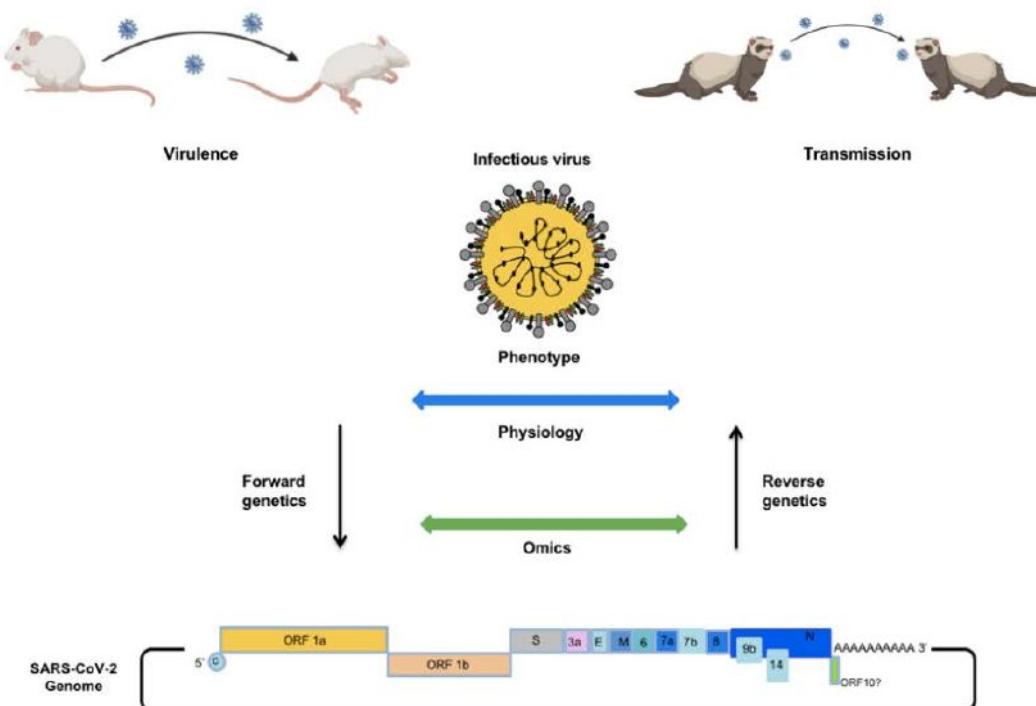


Figure 1- Schematic representation of forward and reverse genetic approaches. Forward genetics aims to identify the viral genotype that is responsible for a specific phenotype, whereas reverse genetic techniques enable the generation of an infectious virus from a cloned full-length genome and the subsequent studies of the phenotypic effects of specific gene sequences in a biological system. Relevant animal models can used to study viral phenotypes, including virulence and transmissibility.

## Neurological manifestations in COVID-19 caused by SARS-CoV-2.

[PMID: 32266761](#), Apr 9, 2020

Baig, Abdul Mannan

CNS Neurosci Ther

Level of Evidence: Level 5- Expert Opinion

Type of article: Editorial Commentary

**Summary:** Historically coronaviruses have been known to infect the CNS. The author surmises the virus to infect hematogenously or through the cribriform plate- perhaps explaining the loss of smell and taste in addition to the other neurological symptoms seen in COVID-19 patients: headaches, ataxia, convulsion and hypoxia.

# Transmission & Prevention

## COVID-19: emerging protective measures.

PMID: 32271461, Apr 10, 2020

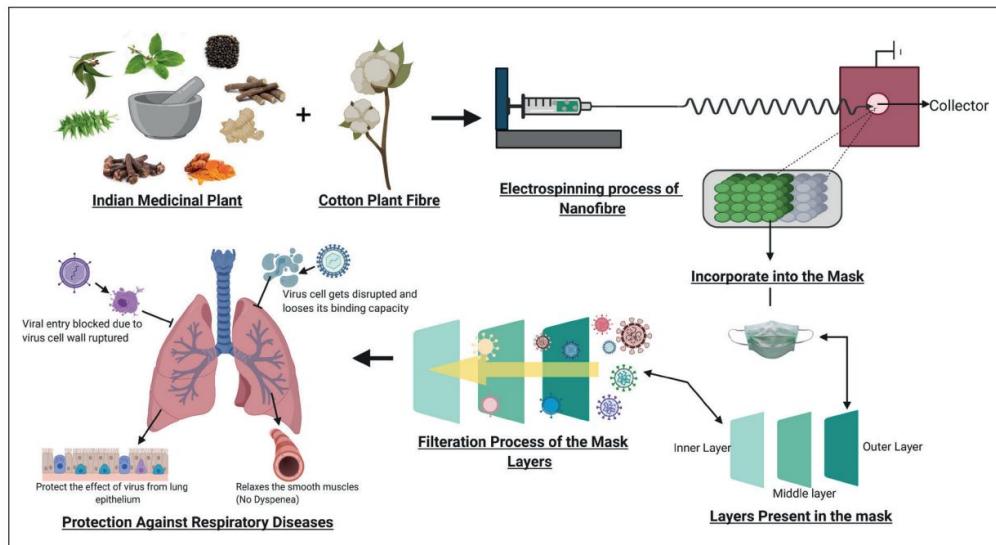
Balachandar, V; Mahalaxmi, I; Kaavya, J; Vivekanandhan, G; Ajithkumar, S; Arul, N; Singaravelu, G; Senthil Kumar, N; Mohana Dev, S

Eur Rev Med Pharmacol Sci

Level of Evidence: Level 5- Mechanism based reasoning

Type of Article: Research

**Summary:** Authors explore infusing nanofibers with antiviral plant compounds for use in masks for extended wear.



**Figure 1.** Mask with medicinal plant filter for prevention and deactivation of the viruses. This figure depicts the process involved in the production of the mask with medicinal plant infused filter as a precautionary measure against viruses. **A**, Medicinal plants and fiber will be fused to produce a nanofiber. **B**, Schematic representation of the electrospinning method which will be used for the production of nanofibers mixed with the plants active compound and cotton fiber. **C**, Incorporation of the medicinal plant and cotton fiber infused nanofiber into the three layers of the mask. **D**, The antiviral filtration efficiency of the mask. **E**, The usefulness of this mask to protect the lung from various virus. The mask will have three layers where the first or outer layer of the mask has the nature to stop the viral attachment. The second or middle layer of the mask has the property to increase the permeability of the viral cell wall leading to cell leakage. The third or inner will provide the smoothing effects to the lungs which get destructed due to the viral infection.

## Salivary Glands: Potential Reservoirs for COVID-19 Asymptomatic Infection.

PMID: 32271653, Apr 10, 2020

Xu, J; Li, Y; Gan, F; Du, Y; Yao, Y

J Dent Res

Level of Evidence: Level 5- Mechanism based reasoning

Type of Article: Letters to the Editor

**Summary:** ACE2 is much more highly expressed in salivary glands than in lungs and may be a target for infection. There is some evidence that suggest that viral RNA appears in saliva before lung lesions can be observed by imaging.

## **Presymptomatic Transmission of SARS-CoV-2 - Singapore, January 23–March 16, 2020.**

[PMID: 32271722, Apr 10, 2020](#)

Wei, Wycliffe E; Li, Zongbin; Chiew, Calvin J; Yong, Sarah E; Toh, Matthias P; Lee, Vernon  
JMMWR Morb Mortal Wkly Rep

Level of Evidence: Level 3: Local non-random sample

**Summarizing excerpt:** “Investigation of all 243 cases of COVID-19 reported in Singapore during January 23–March 16 identified seven clusters of cases in which presymptomatic transmission is the most likely explanation for the occurrence of secondary cases.”

## **Asymptomatic and Presymptomatic Infectors: Hidden Sources of COVID-19 Disease.**

[PMID: 32271372, Apr 10, 2020](#)

Li, Guanjian; Li, Weiran; He, Xiaojin; Cao, Yunxia

Clinical Infectious Diseases

Level of Evidence: 5- Expert opinion

Type of Article: Letter

**Summary:** Referring to “First Mildly Ill, Non-Hospitalized Case of Coronavirus Disease 2019 (COVID-19) Without Viral Transmission in the United States - Maricopa County, Arizona, 2020” by Scott et al. The authors caution that “a single COVID-19 case to demonstrate the infectivity of all mild cases is insufficient”. Asymptomatic and mild cases need to be further studied and isolated to prevent possible further pandemic spread.

## **Four cases from a family cluster were diagnosed as COVID-19 after 14-day of quarantine period.**

[PMID: 32270500, Apr 10, 2020](#)

Chen, Dexiong; Li, Yueping; Deng, Xilong; Huang, Huanliang; Ou, Xueting; Lin, Yuebao; Pan,

Xingfei; Lei, Chunliang

Journal of Medical Virology

Level of Evidence: 4– Case series

Type of Article: Research

**Summary:** 14 days has been the acceptable quarantine for suspected cases of COVID-19 and individuals were assumed to be non-contagious after that time period. The authors report a case of 4 individuals from a family who tested positive for COVID-19 after a 14 day quarantine.

## **Factors associated with prolonged viral RNA shedding in patients with COVID-19.**

[PMID: 32271376, Apr 10, 2020](#)

Xu, Kaijin; Chen, Yanfei; Yuan, Jing; Yi, Ping; Ding, Cheng; Wu, Wenrui; Li, Yongtao; Ni, Qin; Zou, Rongrong; Li, Xiaohe; Xu, Min; Zhang, Ying; Zhao, Hong; Zhang, Xuan; Yu, Liang; Su, Junwei; Lang, Guanjing; Liu, Jun; Wu, Xiaoxin; Guo, Yongzheng; Tao, Jingjing; Shi, Ding; Yu, Ling; Cao, Qing; Ruan, Bing; Liu, Lei; Wang, Zhaoqin; Xu, Yan; Liu, Yingxia; Sheng, Jifang; Li, Lanjuan

Clinical Infectious Diseases

Level of Evidence: 3- Cohort study

Type of Article: Research

**BLUF:** Patients can shed COVID-19 RNA for a median of 17 days. Prolonged shedding was seen more in patients who were male, had a delayed admission, and required invasive respiratory support.

## Abstract:

**BACKGROUND:** An outbreak of coronavirus disease 2019 (COVID-19) is becoming a public health emergency. Data are limited on the duration and host factors related to viral shedding.

**METHODS:** In this retrospective study, **risk factors associated with severe acute respiratory coronavirus 2 (SARS-CoV-2) RNA shedding** were evaluated in a cohort of 113 symptomatic patients from two hospitals outside Wuhan.

**RESULTS:** The median duration of SARS-CoV-2 RNA detection was 17 days (Interquartile Range [IQR], 13-22 days) as measured from illness onset. When comparing patients with early (<15 days) and late viral RNA clearance (>/=15 days after illness onset), prolonged SARS-CoV-2 RNA shedding was associated with male sex ( $p=0.009$ ), old age ( $p=0.033$ ), concomitantly with hypertension ( $p=0.009$ ), delayed admission to hospital after illness onset ( $p=0.001$ ), severe illness at admission ( $p=0.049$ ), invasive mechanical ventilation ( $p=0.006$ ), and corticosteroid treatment ( $p=0.025$ ).

Patients with longer SARS-CoV-2 RNA shedding duration had slower recovery of body temperature ( $p<0.001$ ) and focal absorption on radiograph images ( $p<0.001$ ) than patients with early SARS-CoV-2 RNA clearance. Male sex (odds ratio [OR], 3.24 [95% CI, 1.31-8.02]), delayed hospital admission (OR, 1.30 [95% CI, 1.10-1.54]), and invasive mechanical ventilation (OR, 9.88 [95% CI, 1.11-88.02]) were independent risk factors for prolonged SARS-CoV-2 RNA shedding.

**CONCLUSIONS:** **Male sex, delayed admission to hospital after illness onset, and invasive mechanical ventilation were associated with prolonged SARS-CoV-2 RNA shedding.**

Hospital admission and general treatments should be started as soon as possible in symptomatic COVID-19 patients, especially male patients.

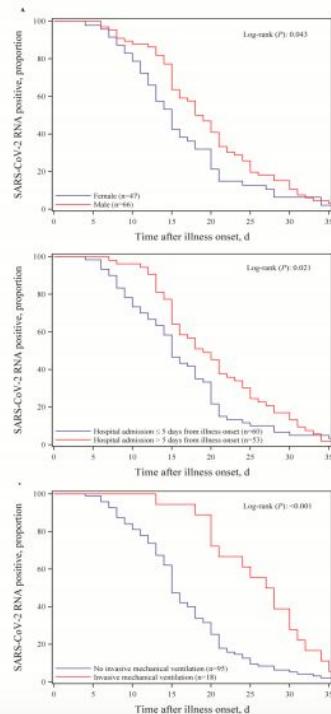


Figure 2. A. Cumulative proportion of patients with detectable SARS-CoV-2 RNA by day after illness onset between male patients and female patients (log-rank  $P = 0.043$ ). B. Cumulative proportion of patients with detectable SARS-CoV-2 RNA by day after illness onset between patients admitted to the hospital  $\leq 5$  days and those admitted > 5 days after illness onset (log-rank  $P = 0.021$ ). C. Cumulative proportion of patients with detectable SARS-CoV-2 RNA by day after illness onset between patients who had invasive mechanical ventilation and those who did not (log-rank  $P < 0.001$ ).

## **Delivery in pregnant women infected with SARS-CoV-2: A fast review.**

[PMID: 32271947](#), Apr 10, 2020

Parazzini, Fabio; Bortolus, Renata; Mauri, Paola Agnese; Favilli, Alessandro; Gerli, Sandro; Ferrazzi, Enrico

Int J Gynaecol Obstet

Level of Evidence: Level 1- Systematic Review

Type of Article: Research

**BLUF:** The current body of evidence suggests that SARS-CoV-2 is not associated with preterm birth or immediate adverse outcomes in the neonate. It also suggests that this virus is unlikely to be transmitted vertically or during the peripartum period. There is no data on spontaneous vaginal delivery or breastfeeding.

### **Abstract**

#### BACKGROUND:

Few case reports and clinical series exist on pregnant women infected with SARS-CoV-2 who delivered.

#### OBJECTIVE:

To review the available information on mode of delivery, vertical/peripartum transmission, and neonatal outcome in pregnant women infected with SARS-CoV-2.

#### SEARCH STRATEGY:

Combination of the following key words: COVID-19, SARS-CoV-2, and pregnancy in Embase and PubMed databases.

#### SELECTION CRITERIA:

Papers reporting cases of women infected with SARS-CoV-2 who delivered.

#### DATA COLLECTION AND ANALYSIS:

The following was extracted: author; country; number of women; study design; gestational age at delivery; selected clinical maternal data; mode of delivery; selected neonatal outcomes.

#### MAIN RESULTS:

In the 13 studies included, vaginal delivery was reported in 6 cases (9.4%; 95% CI, 3.5-19.3). Indication for cesarean delivery was worsening of maternal conditions in 31 cases (48.4%; 95% CI, 35.8-61.3). Two newborns testing positive for SARS-CoV-2 by real-time RT-PCR assay were reported. In three neonates, SARS-CoV-2 IgG and IgM levels were elevated but the RT-PCR test was negative.

#### CONCLUSIONS:

The rate of vertical or peripartum transmission of SARS-CoV-2 is low, if any, for cesarean delivery; no data are available for vaginal delivery. Low frequency of spontaneous preterm birth and general favorable immediate neonatal outcome are reassuring.

## **Severe acute respiratory syndrome coronavirus 19 and human pregnancy.**

[PMID: 32270743](#), Apr 10, 2020

Perez-Lopez, Faustino R; Saviron-Cornudella, Ricardo; Chedraui, Peter; Genazzani, Andrea R  
Gynecol Endocrinol

Level of evidence: Level 4- Review of case series

Type of Article: Review

#### **Summary:**

1. Pregnant women can get COVID-19 but have less severe disease than SARS-CoV1 or

## MERS

- a. Expectant mothers do not appear more susceptible to COVID-19
- b. Fatality rate among pregnant women is similar to age matched non-pregnant women
2. No evidence of vertical transmission in SARS-CoV-1, MERS or COVID-19
3. More data needed

## Food Safety and COVID-19.

PMID: 32271867, Apr 10, 2020

Desai, Angel N; Aronoff, David M

JAMA

Level of Evidence: 5- Expert Opinion

Type of Article: News



# Diagnosis

## False-negative of RT-PCR and prolonged nucleic acid conversion in COVID-19: Rather than recurrence.

[PMID: 32270882](#), Apr 10, 2020

Xiao, Ai Tang; Tong, Yi Xin; Zhang, Sheng

Journal of Medical Virology

Level of Evidence: 3- Cohort study

Type of Article: Letter/Research

**Summary:** Referring to “Stability issues of RT-PCR testing of SARS-CoV-2 for hospitalized patients clinically diagnosed with COVID-19” by Li et al. The authors conducted a study looking at nucleic acid conversion in patients infected with COVID-19. They had a 21.4% rate of patients “turning positive” after two consecutive negative tests. This may represent false-negative tests instead of recurrence. Patients with non-consecutive false negative tests were shown to be younger and had a shorter nucleic acid conversion time.

## Effect of throat washings on detection of 2019 novel coronavirus.

[PMID: 32271374](#), Apr 10, 2020

Guo, Wen-Liang; Jiang, Qian; Ye, Feng; Li, Shao-Qiang; Hong, Cheng; Chen, Li-Yan; Li, Shi-Yue  
Clinical Infectious Diseases

Level of Evidence: 4- Case series

Type of Article: Research

### Abstract:

The 2019 novel coronavirus was detected in the self-collected throat washings. Positive testing rate of throat washing was much higher than that of Nasopharyngeal swabs. Throat washing is a promising candidate for 2019-nCoV screening and monitoring due to its noninvasive and reliability.

## Comparative Performance of SARS-CoV-2 Detection Assays using Seven Different Primer/Probe Sets and One Assay Kit.

[PMID: 32269100](#), Apr 10, 2020

Nalla, Arun K; Casto, Amanda M; Huang, Meei-Li W; Perchetti, Garrett A; Sampoleo, Reigran; Shrestha, Lasata; Wei, Yulun; Zhu, Haiying; Jerome, Keith R; Greninger, Alexander L  
*J Clin Microbiol*

Level of Evidence: Level 2- Comparative study with consistently applied reference standard

Article type: Research

**BLUF:** Assays that use E-gene primer/probe set described by Corman et al and N2 set developed by CDC are the most sensitive.

### Abstract:

Nearly 400,000 people worldwide are known to have been infected with SARS-CoV-2 beginning in December 2019. The virus has now spread to over 168 countries including the United States, where the first cluster of cases was observed in the Seattle metropolitan area in Washington. Given the rapid increase in the number of cases in many localities, the availability of accurate, high-throughput SARS-CoV-2 testing is vital to efforts to manage the current public health crisis. In the course of

optimizing SARS-CoV-2 testing performed by the University of Washington Clinical Virology Lab (UW Virology Lab), we evaluated assays using seven different primer/probe sets and one assay kit. We found that the most sensitive assays were those that used the E-gene primer/probe set described by Corman et al. (Eurosurveillance 25 (3), 2020, [Detection of 2019 novel coronavirus \(2019-nCoV\) by real-time RT-PCR](#)) and the N2 set developed by the CDC (Division of Viral Diseases, Centers for Disease Control and Prevention, 2020, [Avian H7 \(Eurasian Lineage\) Influenza Real-time RT-PCR Panel Primer Probes](#)). All assays tested were found to be highly specific for SARS-CoV-2, with no cross-reactivity with other respiratory viruses observed in our analyses regardless of the primer/probe set or kit used. These results will provide valuable information to other clinical laboratories who are actively developing SARS-CoV-2 testing protocols at a time when increased testing capacity is urgently needed worldwide.

## High-resolution Chest CT Features and Clinical Characteristics of Patients Infected with COVID-19 in Jiangsu, China.

[PMID: 32272262](#), Apr 10, 2020

Dai, Hui; Zhang, Xin; Xia, Jianguo; Zhang, Tao; Shang, Yalei; Huang, Renjun; Liu, Rongrong; Wang, Dan; Li, Min; Wu, Jinping; Xu, Qiuzhen; Li, Yonggang

Int J Infect Dis

Level of Evidence: 5 – Retrospective Analysis

Type of Article: Research Article

**Summary:** Some HRCT findings correlate with disease stage in COVID-19 pneumonia, epidemiologic and clinical history are still critical factors in diagnosis.

### Abstract:

**BACKGROUND:** A pneumonia associated with the coronavirus disease 2019 (COVID-19) recently emerged in China. It was recognized as a global health hazard.

**Methods:** 234 inpatients with COVID-19 were included. Detailed clinical data, chest HRCT basic performances and certain signs were recorded, and ground-glass opacity (GGO), consolidation, fibrosis and air trapping were quantified. Both clinical types and CT stages were evaluated.

**Results:** Most patients (approximately 90%) were classified as common type and with epidemiologic history. Fever and cough were main symptoms. Chest CT showed abnormal attenuation in bilateral multiple lung lobes, distributed in the lower and/or periphery of the lungs (94.98%), with multiple shapes. GGO and vascular enhancement sign were most frequent seen, followed by interlobular septal thickening and air bronchus sign as well as consolidation, fibrosis and air trapping. There were significant differences in most of CT signs between different stage groups. The SpO<sub>2</sub> and OI were decreased in stage IV, and the CT score of consolidation, fibrosis and air trapping was significantly lower in stage I ( $P < 0.05$ ). A weak relevance was between the fibrosis score and the value of PaO<sub>2</sub> and SpO<sub>2</sub> ( $P < 0.05$ ).

**Conclusions:** Clinical performances of patients with COVID-19, mostly with epidemiologic history and typical symptoms, were critical (sic) valuable in the diagnosis of the COVID-19. While chest HRCT provided the distribution, shape, attenuation and extent of lung lesions, as well as some typical CT signs of COVID-19 pneumonia.

## New clinical experiences and evaluation of clinical and paraclinical features of deceased patients with COVID-19 infection referred to Shahid Mostafa Khomeini Hospital of Ilam, Iranin.

[PMID: 32272197](#), Apr 10, 2020

Ghaysouri, Abas; Sadeghifard, Nourkhoda; Nazari, Ali; Kalvandi, Gholamreza; Feizi, Jalil; Qasemi, Esmail; Kafashian, Mohamadreza; Borji, Milad; Kokhazadeh, Taleb; Tavan, Hamed  
Travel Med Infect Dis

Level of Evidence: 5 – Case Series

Type of Article: Case Series

**Summary:** The authors reviewed 56 patients admitted to the hospital with COVID-19, report 7.14% mortality, provide CT images, and suggest CT can be used to diagnose COVID-19.

## Just the Facts: Recommendations on Point of Care Ultrasound Use and Machine Infection Control During the COVID-19 Pandemic.

[PMID: 32268930](#), Apr 10, 2020

Kim, Daniel J; Jelic, Tomislav; Woo, Michael Y; Heslop, Claire; Olszynski, Paul

CJEM

Level of Evidence: 5- Expert Opinion

Type of Article: Recommendations

**Summary:**

1. Training
  - a. Because of the highly hands on nature and high level of training required to be competent with POCUS, suspend training until constraints on PPE, cleaning material and clinical time has lifted.
2. POCUS for COVID-19
  - a. Method
    - i. Set US to lung preset; if unavailable use cardiac or abdominal preset with tissue harmonic imaging (THI) and multi-beam (MB) settings off.
  - b. Common COVID-19 findings
    - i. Often in the posterior and inferior lung fields
    - ii. B lines that begin focally and becomes multifocal and confluent with disease progression
    - iii. Subpleural consolidations
    - iv. Pleural thickening or irregularity
    - v. Occasional air bronchograms
    - vi. Cardiac manifestations with severe disease: ventricular dilation or reduced LV ejection fraction.
      1. Heart failure
      2. Myocarditis
      3. Cardiogenic shock
3. Have a designated COVID-19 ultrasound machine with a protocol for donning/doffing the US machine
  - a. Preferentially deploy machines for use with COVID-19 patients
    - i. that can be completely covered with a probe cover; such as handheld ultrasounds.
    - ii. That are easily cleaned
    - iii. That do not have a cooling fan

- b. If handheld machine is not available, deploy and use machines that are easy to clean
  - i. Remove anything not necessary for ultrasound function from the cart
  - ii. touch screens are easier to clean than keyboards
- c. Cover non-essential components of US with drapes, gown or plastic overs cover the probe and cord
  - i. These must serve as barriers; they do not have to be sterile
- d. Use single use gel packets
- e. Scan your patient
- f. Sanitize gloved hands before leaving patient room
- g. Remove all the drapes/covers
  - i. Be careful not to disperse viral particles from covers while doffing
  - ii. Dispose inside patient's room
- h. Wipe down entire machine with disinfectant wipes inside the patient's room and give adequate time to dry
  - i. “Most ultrasound manufacturers are waiving rules about machine-specific disinfectants and will support the use of any product effective against COVID-19. All cleaned surfaces should be fully wet for the product’s required contact time.”
- i. Remove machine out of room, doff PPE
- j. Don new gloves and wipe/disinfect the entire machine again.



# Management

## Predictors of refractory Coronavirus disease (COVID-19) pneumonia.

[PMID: 32271373](#), Apr 10, 2020

Abu-Raya, Bahaa

Clinical Infectious Diseases

Level of Evidence: 5- Expert opinion

Type of Article: Letter

**Summarizing Excerpt:** “In their paper [“Clinical characteristics of refractory COVID19 pneumonia in Wuhan, China” by Mo et al], the authors included the treatment introduced at the time of patient admission and/or hospitalization in the multivariate analysis aiming to identify independent risk factors for refractory COVID-19. One potential concern is that patients who are sicker at time of admission or during hospitalization are more likely to need oxygen and receive expectorant, corticosteroids, anti-viral and immune-enhancers and thus are more likely to have refractory COVID-19 as compared with general COVID-19. Including these variables might potentially have affected the results. The authors should have included in their multivariate model only baseline and clinical characteristics and laboratory results at admission to accurately identify independent risk factors associated with refractory COVID-19.”

## Prediction for Progression Risk in Patients with COVID-19 Pneumonia: the CALL Score.

[PMID: 32271369](#), Apr 10, 2020

Ji, Dong; Zhang, Dawei; Xu, Jing; Chen, Zhu; Yang, Tieniu; Zhao, Peng; Chen, Guofeng; Cheng, Gregory; Wang, Yudong; Bi, Jingfeng; Tan, Lin; Lau, George; Qin, Enqiang

Clinical Infectious Diseases

Level of Evidence: 3 – Cohort study

Type of Article: Research

**Summarizing Excerpt:** “This multi-center retrospective study showed underlying comorbidity, older age, higher LDH and lower lymphocyte count were independent high-risk factors associated with COVID-19 progression, and a novel scoring model (CALL score) can predict the progression with optimal sensitivity and specificity.”

### Abstract:

**BACKGROUND:** We aimed to clarify the high-risk factors with multivariate analysis and establish a **prediction of disease progression**, so as to help clinicians to better choose therapeutic strategy.

**METHODS:** All the consecutive patients with COVID-19 admitted to Fuyang second people's hospital or the fifth medical center of Chinese PLA general hospital between January 20 and February 22, 2020, were enrolled and their clinical data were retrospectively collected. Multivariate COX regression was used to identify the risk factors associated with progression, and then were incorporated into the nomogram to establish a novel prediction scoring model. ROC was used to assess the performance of the novel model.

**RESULTS:** Overall, 208 patients were divided into stable group (n=168, 80.8%) and progressive group (n=40,19.2%) based on whether their conditions worsened during the hospitalization.

Univariate and multivariate analysis showed that **comorbidity, older age, lower lymphocyte and higher lactate dehydrogenase at presentation were independent high-risk** factors for COVID-19 progression. Incorporating these 4 factors, the nomogram achieved good concordance indexes of 0.86 (95%CI 0.81 - 0.91), and had well-fitted calibration curves. A novel scoring model, named as CALL, was established, and its area under ROC was 0.91 (95% CI 0.86 to 0.94). Using a

cutoff value of 6 points, the positive and negative predictive values were 50.7% (38.9% - 62.4%) and 98.5% (94.7% - 99.8%), respectively.

**CONCLUSION:** Using the CALL score model, clinicians can improve the therapeutic effect and reduce the mortality of COVID-19 with more accurate and reasonable resolutions on medical resources.

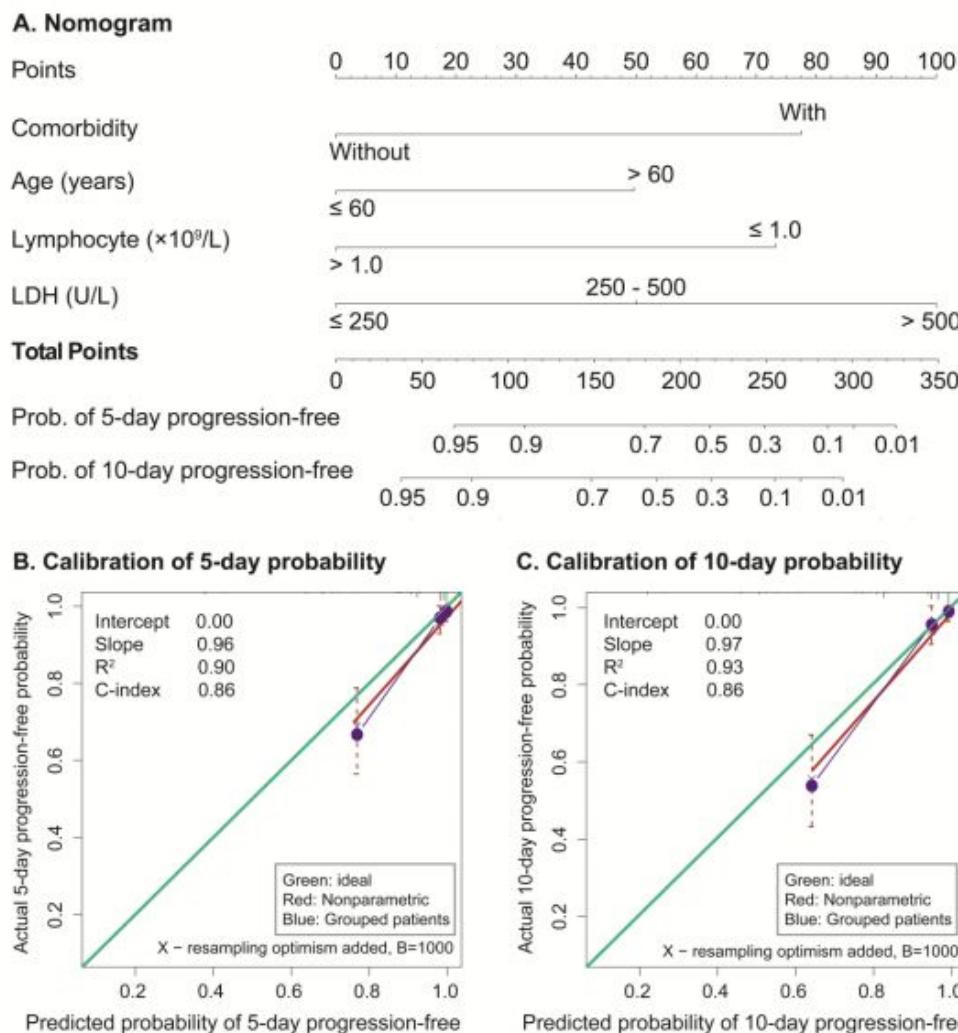


Figure 2. Formulated nomogram for prediction of progression risk and its performance assessment (A) Nomogram to estimate the risk of progression in patients with COVID-19. The value of each variable is given a certain score on a point scale from 0 to 100, to use the nomogram, find the position of each variable on the corresponding axis, draw a line to the points axis for the number of points, add the points from all of the variables, and project the total points to the lower risk lines to determine the 5- or 10-day progression probabilities. (B) Validity of 5-day predictive performance of the with bootstrap. (C) Validity of 10-day predictive performance of the with bootstrap.

## Predictors of Mortality for Patients with COVID-19 Pneumonia Caused by SARS-CoV-2: A Prospective Cohort Study.

[PMID: 32269088](#), Apr 10, 2020

Du, Rong-Hui; Liang, Li-Rong; Yang, Cheng-Qing; Wang, Wen; Cao, Tan-Ze; Li, Ming; Guo, Guang-Yun; Du, Juan; Zheng, Chun-Lan; Zhu, Qi; Hu, Ming; Li, Xu-Yan; Peng, Peng; Shi, Huan-Zhong

Eur Respir J

Level of Evidence: Level 1 - Local and current sample, prospective

Type of Article: Research

**BLUF:** “Age  $\geq$  65 years, preexisting concurrent cardiovascular or cerebrovascular diseases, CD3+ CD8+ T cells  $\leq$  75 cell/ $\mu$ L, and cardiac troponin I  $\geq$  0.05 ng/mL, especially the latter two factors, were predictors for mortality of COVID-19 pneumonia patients.”

## ABSTRACT

To identify factors associated with the death for patients with COVID-19 pneumonia caused by a novel coronavirus SARS-CoV-2. All clinical and laboratory parameters were collected prospectively from a cohort of patients with COVID-19 pneumonia who were hospitalized to Wuhan Pulmonary Hospital, Wuhan City, Hubei Province, China, between December 25, 2019 and February 7, 2020. Univariate and multivariate logistic regression was performed to investigate the relationship between each variable and the risk for death of COVID-19 pneumonia patients. A total of 179 patients with COVID-19 pneumonia (97 male and 82 female) were included in the present prospective study, of whom 21 died. Univariate and multivariate logistic regression analysis revealed that age  $\geq$  65 years (odd ratio, 3.765; 95% confidence interval, 1.146–17.394;  $P$  = 0.023), preexisting concurrent cardiovascular or cerebrovascular diseases (2.464; 0.755–8.044;  $P$  = 0.007), CD3+ CD8+ T cells  $\leq$  75 cell/ $\mu$ L (3.982; 1.132–14.006;  $P$  < 0.001), and cardiac troponin I  $\geq$  0.05 ng/mL (4.077; 1.166–14.253;  $P$  < 0.001) were associated with an increase in risk of mortality of COVID-19 pneumonia. In the sex-, age-, and comorbid illness-matched case study, CD3+ CD8+ T cells  $\leq$  75 cell/ $\mu$ L and cardiac troponin I  $\geq$  0.05 ng/mL remained to be the predictors for high mortality of COVID-19 pneumonia. We identified four risk factors, age  $\geq$  65 years, preexisting concurrent cardiovascular or cerebrovascular diseases, CD3+ CD8+ T cells  $\leq$  75 cell/ $\mu$ L, and cardiac troponin I  $\geq$  0.05 ng/mL, especially the latter two factors, were predictors for mortality of COVID-19 pneumonia patients.

## Cardiac and arrhythmic complications in Covid-19 patients.

[PMID: 32270559](#), Apr 10, 2020

Kochi, Adriano Nunes; Tagliari, Ana Paula; Forleo, Giovanni Battista; Fassini, Gaetano Michele; Tondo, Claudio

J Cardiovasc Electrophysiol

Level of Evidence: Level 4- Expert opinion + case series

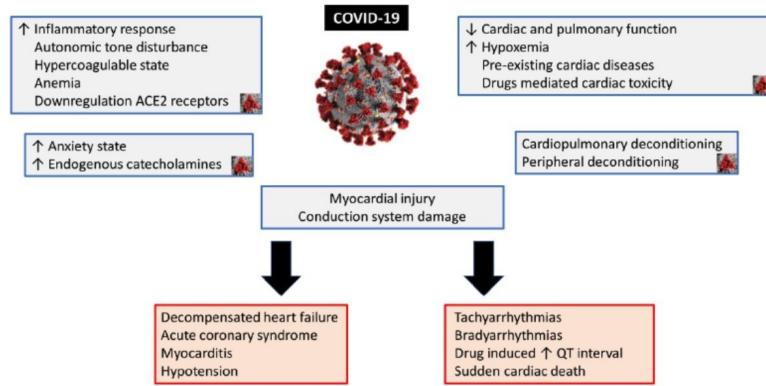
Type of Article: Review

**Summary:** There is increasing evidence that suggests COVID-19 may be associated with myocardial injury and arrhythmia.

### Abstract

In December 2019, the world started to face a new pandemic situation, the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). Although COVID-19 clinical manifestations are mainly respiratory, major cardiac complications are being reported. Cardiac manifestations etiology seems to be multifactorial, comprising direct viral myocardial damage, hypoxia, hypotension, enhanced inflammatory status, ACE2-receptors downregulation, drug toxicity, endogenous catecholamine adrenergic status, among others. Studies evaluating COVID-19 patients presenting cardiac injury markers show that it is associated with poorer outcomes, and arrhythmic events are not uncommon. Besides, drugs currently used to treat the COVID-19 are known to prolong the QT interval and can have a proarrhythmic propensity. This review focus on COVID-19 cardiac and arrhythmic manifestations and, in parallel, makes an appraisal of other virus epidemics as SARS-CoV, MERS-CoV, and H1N1 influenza.

**Figure 1.** Mechanisms and consequences of COVID-19 myocardial damage.



## Critical patients with coronavirus disease 2019: Risk factors and outcome nomogram.

[PMID: 32272120](#), Apr 10, 2020

Li, Dr Lingzhi; Chen, Mrs Xiaobei

Journal of Infection

Level of Evidence: 3 – Cohort study

Type of Article: Letter/Research

**Summary:** Referring to “Clinical characteristics and imaging manifestations of the 2019 novel coronavirus disease (COVID-19): A multi-center study in Wenzhou city, Zhejiang, China” by Yang et al. Patient in the Wenzhou study often presented with mild clinical manifestations. The authors looked at patients in Renmin hospital in Wuhan and had on average more severe patient presentations. They analyzed these critical patients and showed significant effects of elderly age, high initial neutrophil count, and increased BUN/LDH. They further analyzed that survival rate in early critical disease could be predicted using a multivariate analysis of these factors.

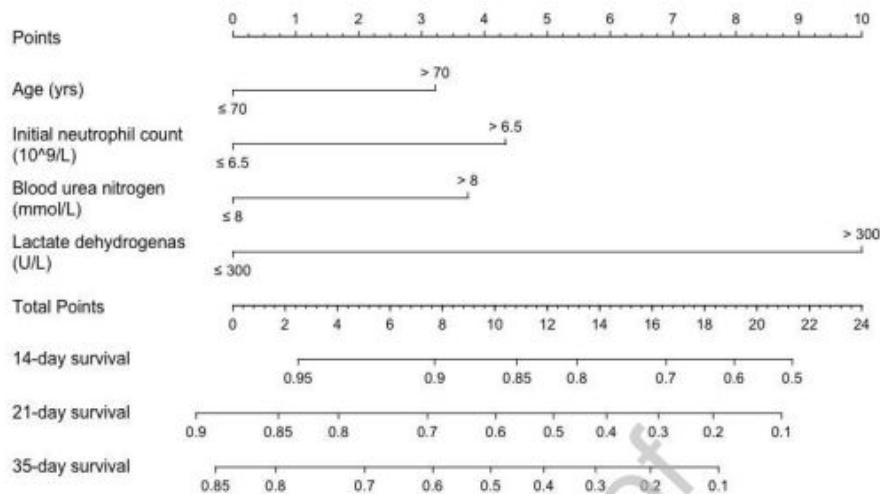


Figure 1. Nomogram for predicting survival of critical patients with COVID-19. The nomogram derived based on the multivariate Cox regression coefficients are shown in Figure 1. To use the nomogram, locate the first variable. Draw a line straight upwards to the Points axis to determine the number of points received for the variable. Repeat this process for the other three variables and sum up the points achieved for each variable. Sum of these numbers is located on the Total Points axis, and a line is drawn downwards to the survival axes to determine the likelihood of 14-, 21-, 35-day survival. Calculation of survival can be automated through computerized programming.

# ANNALS EXPRESS: Electrolyte Imbalances in Patients with Severe Coronavirus Disease 2019 (COVID-19).

PMID: 32266828, Apr 9, 2020

Lippi, Giuseppe; South, Andrew Michael; Henry, Brandon Michael

Ann Clin Biochem

Level of Evidence: Level 1- systematic review with consistent reference standard

Type of Article: Research

**Summarizing excerpt:** "This pooled analysis confirms that COVID-19 severity is associated with lower serum concentrations of sodium, potassium, and calcium. We recommend electrolytes be measured at initial presentation and serially monitored during hospitalization in order to establish timely and appropriate corrective actions."

## Abstract

**Background:** Early studies have reported various electrolyte abnormalities at admission in patients who progress to the severe form of coronavirus disease 2019 (COVID-19). As electrolyte imbalance may not only impact patient care, but provide insight into the pathophysiology of COVID-19, we aimed to analyze all early data reported on electrolytes in COVID-19 patients with and without severe form.

**Methods:** An electronic search of Medline (PubMed interface), Scopus, and Web of Science was performed for articles comparing electrolytes (sodium, potassium, chloride, and calcium) between COVID-19 patients with and without severe disease. A pooled analysis was performed to estimate the weighted mean difference (WMD) with 95% confidence interval.

**Results:** Five studies with a total sample size of 1415 COVID-19 patients. Sodium was significantly lower in patients with severe COVID-19 (WMD: -0.91 mmol/L [95% CI: -1.33 to -0.50 mmol/L]). Similarly, potassium was also significantly lower in COVID-19 patients with severe disease (WMD: -0.12 mmol/L [95%CI: -0.18 to -0.07 mmol/L],  $I^2=33\%$ ). For chloride, no statistical differences were observed between patients with severe and non-severe COVID-19 (WMD: 0.30 mmol/L [95%CI: -0.41 to 1.01 mmol/L]). For calcium, a statistically significant lower concentration was noted in patients with severe COVID-19 (WMD: -0.20 mmol/L [95% CI: -0.25 to -0.15 mmol/L]).

**Conclusions:** This pooled analysis confirms that COVID-19 severity is associated with lower serum concentrations of sodium, potassium, and calcium. We recommend electrolytes be measured at initial presentation and serially monitored during hospitalization in order to establish timely and appropriate corrective actions.

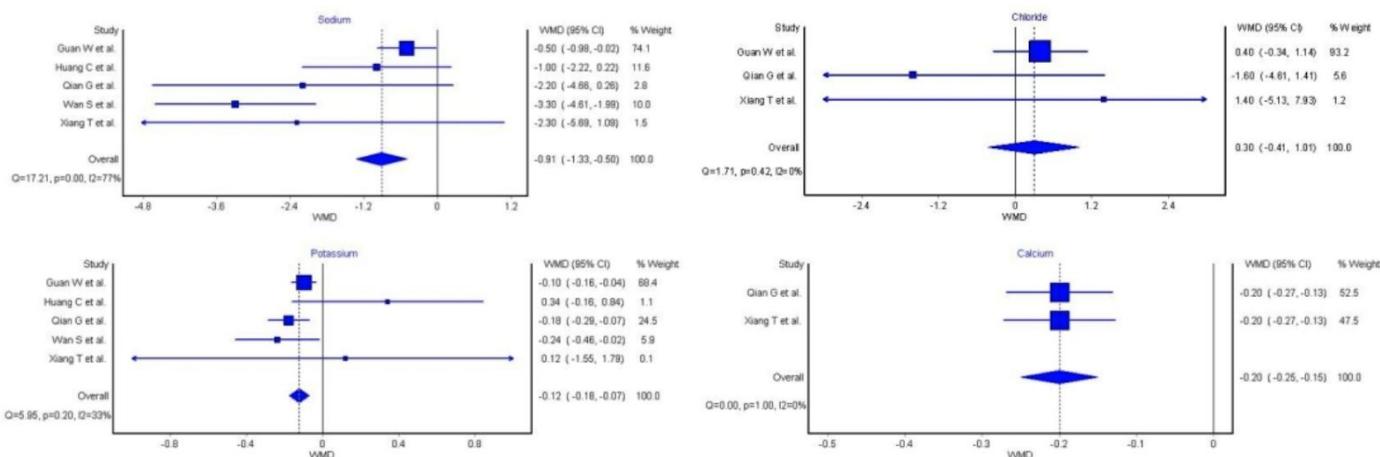


Figure 1. Forest plots comparing sodium, potassium, chloride, and calcium levels between coronavirus disease 2019 (COVID-19) patients with or without severe disease. Individual weighted mean differences indicated by squares and 95% CI. Dashed vertical lines and diamonds indicate weighted mean difference, with diamonds further including the 95% CI.

## **Understanding pathways to death in patients with COVID-19.**

[PMID: 32272081, Apr 10, 2020](#)

Vincent, Jean-Louis; Taccone, Fabio S

Lancet Respir Med

Level of Evidence: Level 5- Expert opinion and mechanism based reasoning

Type of Article: Comment

### **Panel: Three possible characteristics of the dying process in COVID-19**

#### **Predominant terminal organ failure**

- Terminal respiratory failure: mechanical ventilation and ECMO used
- Terminal respiratory failure: mechanical ventilation used, ECMO available but not used
- Terminal respiratory failure: mechanical ventilation used, ECMO not available
- Respiratory failure: mechanical ventilation available but not used
- Respiratory failure: mechanical ventilation hardly or not available
- Septic shock, multiple organ failure
- Cardiogenic shock (acute myocardial injury or myocarditis)
- Other

#### **Proportionality of care in the dying process**

- Withholding life support: life support available but considered to be disproportionate; life support hardly available (significant constraints)
- Withdrawing life support
- Full care but no cardiopulmonary resuscitation
- Full care including cardiopulmonary resuscitation

#### **Involvement of COVID-19 in the dying process**

- Death attributed only to COVID-19 (previously healthy, predicted long life expectancy)
- Death primarily due to old age, frailty, or advanced disease (COVID-19 is an epiphomenon)
- Death due to COVID-19 in an individual with limited life expectancy

COVID-19=coronavirus disease 2019. ECMO=extracorporeal membrane oxygenation.

## **Intensive care management of coronavirus disease 2019 (COVID-19): challenges and recommendations.**

[PMID: 32272080, Apr 10, 2020](#)

Phua, Jason; Weng, Li; Ling, Lowell; Egi, Moritoki; Lim, Chae-Man; Divatia, Jigeeshu Vasishtha; Shrestha, Babu Raja; Arabi, Yaseen M; Ng, Jensen; Gomersall, Charles D; Nishimura, Masaji; Koh, Younsuck; Du, Bin

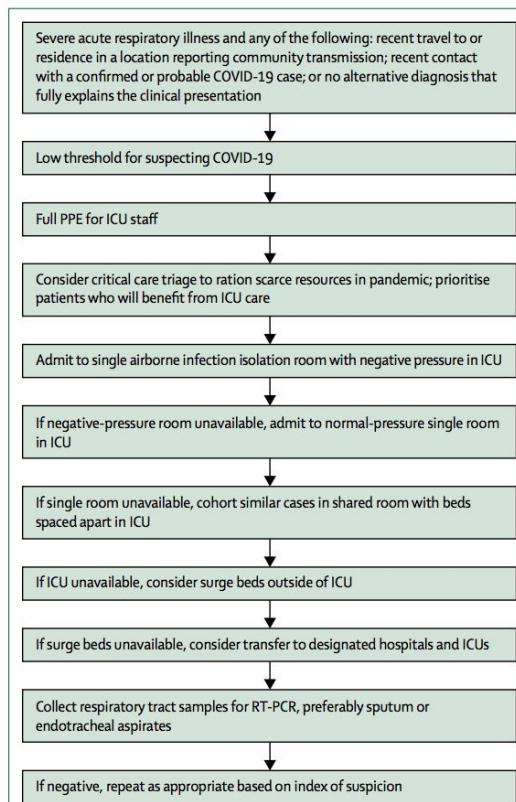
Lancet Respir Med

Level of Evidence: Level 1- Meticulous review

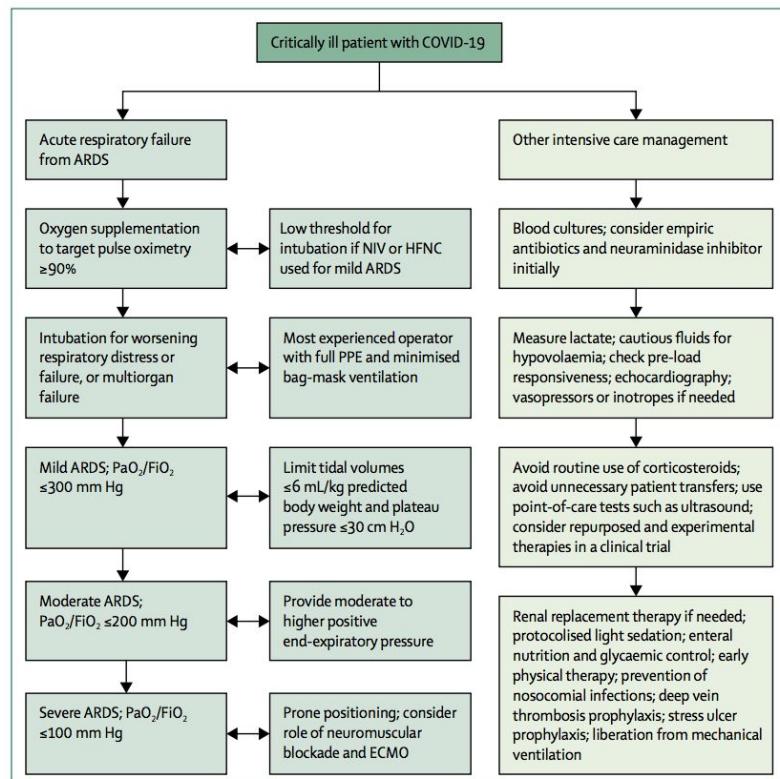
Type of Article: Review

**Summarizing excerpt:** “Clinical features of coronavirus disease 2019 (COVID-19) are non-specific and do not easily distinguish it from other causes of severe community-acquired pneumonia... intensive care unit (ICU) practitioners should increasingly have a high index of suspicion and a low threshold for diagnostic testing for COVID-19. Many questions on clinical management remain unanswered, including the significance of myocardial dysfunction, and the role of non-invasive ventilation, high-flow nasal cannula, corticosteroids, and various repurposed and experimental

therapies. ICU practitioners, hospital administrators, governments, and policy makers must prepare early for a substantial increase in critical care capacity, or risk being overwhelmed by the pandemic. Surge options include the addition of beds to a pre-existing ICU, provision of intensive care outside ICUs, and centralisation of intensive care in designated ICUs, while considering critical care triage and rationing of resources should surge efforts be insufficient. Preparations must focus not just on infrastructure and supplies, but also on staff, including protection from nosocomial transmission and promotion of mental wellbeing”



**Figure 1:** Initial approach to critically ill patients with suspected COVID-19  
 COVID-19=coronavirus disease 2019. ICU=intensive care unit. PPE=personal protective equipment.



**Figure 2:** Clinical management of critically ill patients with COVID-19  
 ARDS=acute respiratory distress syndrome. COVID-19=coronavirus disease 2019. ECMO=extracorporeal membrane oxygenation. HFNC=high-flow nasal cannula. NIV=non-invasive ventilation. PaO<sub>2</sub>/FiO<sub>2</sub>=partial pressure of arterial oxygen to fraction of inspired oxygen. PPE=personal protective equipment.

## Successful treatment of COVID-19 using extracorporeal membrane oxygenation, a case report.

[PMID: 32271455](#), Apr 10, 2020

Zhan, W-Q; Li, M-D; Xu, M; Lu, Y-B

Eur Rev Med Pharmacol Sci

Level of Evidence: Level 4- Case report

Type of Article: Case Report

**Summary:** Authors strongly recommend early ECMO for patients with severe COVID-19

### Abstract

Since the end of 2019, COVID-19 has been prevalent in Wuhan, China, and has been rapidly spreading to mainland China. Currently, more than 80,000 people have been infected, of which over 10,000 were severely ill and had characteristics of dyspnea and hypoxemia about one week after onset. Severe patients had rapidly progressed to acute respiratory distress syndrome (ARDS), causing multiple organ failures and even death, with a mortality rate of nearly 4.3%. The treatment of severe

COVID-19 patients has been rarely reported. This study reported a successful example of a severe COVID-19 patient with extracorporeal membrane oxygenation (ECMO) technology in our hospital. This experience revealed that the early application of ECMO can dramatically promote the recovery of severe COVID-19 patients.

## Coping with COVID-19: ventilator splitting with differential driving pressures using standard hospital equipment.

[PMID: 32271942](#), Apr 10, 2020

Clarke, A L; Stephens, A F; Liao, S; Byrne, T J; Gregory, S D

Anaesthesia

Level of Evidence: Expert Opinion

Type of Article: Letter to the Editor

**BLUF:** The authors successfully ventilated 2 test lungs with different compliances using one ventilator, a Hoffman clamp, and a tracheal tube to modify inspiratory pressure, minute ventilation, and volume delivered to one of the lungs.

### Summary:

The global COVID-19 pandemic has led to a worldwide shortage of ventilators. This shortage has initiated discussions of how to support multiple patients with a single ventilator (ventilator splitting). Ventilator splitting is incompletely tested, experimental and the effects have not been fully characterized.

This study investigated the effect of ventilator splitting on system variables (inspiratory pressure, flow, and volume) and the possibility of different ventilation targets for each limb using only standard hospital equipment. Experiments were conducted on two test lungs with different compliances (0.02 and 0.04 l.cmH<sub>2</sub>O-1). The ventilator was used in both pressure and volume control modes and was set to ventilate the low compliance lungs at end-tidal volumes of  $500 \pm 20$  ml. A flow restrictor apparatus consisting of a Hoffman clamp and tracheal tube was connected in series to the inspiratory limb of the high compliance test lungs and the resistance modified to achieve end-tidal volumes of  $500 \pm 20$  ml. The restriction apparatus successfully modified the inspiratory pressure, minute ventilation, and volume delivered to the high compliance test lungs in both pressure control (27.3–17.8 cm H<sub>2</sub>O, 15.2–8.0 l.min<sup>-1</sup> and 980–499 ml, respectively), and volume control (21.0–16.7 cm H<sub>2</sub>O, 10.7–7.9 l.min<sup>-1</sup> and 659–498 ml, respectively) ventilation modes.

Ventilator splitting is not condoned by the authors. However, these experiments demonstrate the capacity to simultaneously ventilate two test lungs of different compliances, and using only standard hospital equipment, modify the delivered pressure, flow, and volume in each test lung.

# Managing other diseases during COVID-19

## Management of Patients with Crohn's Disease and Ulcerative Colitis During the COVID-19 Pandemic: Results of an International Meeting.

[PMID: 32272113](#), Apr 10, 2020

Rubin, David T; Abreu, Maria T; Rai, Victoria; Siegel, Corey A

Gastroenterology

Level of Evidence: 5- Expert Consensus

Type of Article: Management guidelines

### Summary of Guidance statements (excerpt):

- “The panel agreed that having IBD (either CD or UC) did not increase the risk of becoming infected with SARS-CoV-2 or developing COVID-19 and having an ostomy or J-pouch did not increase the risk for COVID-19.
- The panel also agreed that it is safe to continue to receive infusions in an infusion center, assuming that the infusion center has a SARS-CoV-2 screening protocol in place.
- The group was in agreement that it is appropriate to reduce the dose or discontinue prednisone to prevent infection from SARS-CoV-2, but voted that it was inappropriate to reduce the dose or stop other IBD therapies to prevent infection from SARS-CoV-2.
- There were mixed responses related to the other clinical scenarios and therapies. The key findings regarding the management of medical therapy for IBD in the setting of the COVID-19 pandemic are summarized in Figure 1.

**Figure 1.** Final results of the RAND appropriateness panel for the use of medications to treat IBD in the setting of SARS-CoV-2 or COVID-19

Statement	5-ASA	BUD	PRED ( $\geq 20\text{mg/d}$ )	AZA/6MP	MTX	Anti-TNF	VEDO	UST	TOFA
This therapy increased the risk of infection with SARS-CoV-2.	Red	Red	Green	Yellow	Yellow	Yellow	Red	Red	Yellow
This therapy increases the risk of COVID-19 disease.	Red	Red	Green	Yellow	Yellow	Yellow	Red	Red	Yellow
Patients taking this therapy should reduce the dose of therapy to prevent SARS-CoV-2 infection.	Red	Red	Green	Red	Red	Red	Red	Red	Red
Patients taking this therapy should discontinue therapy to prevent SARS-CoV-2 infection.	Red	Red	Green	Red	Red	Red	Red	Red	Red
Patients taking this therapy should stop therapy if they test positive for SARS-CoV-2 but don't have the COVID-19 disease.	Red	Yellow	Green	Green	Green	Yellow	Yellow	Yellow	Green
Patients taking this therapy should stop therapy if they develop COVID-19.	Red	Yellow	Green	Green	Green	Yellow	Yellow	Green	Green

**LEGEND**

- Appropriate ○
- Uncertain □
- Inappropriate ■

**Figure legend:** IBD = inflammatory bowel disease; SARS-CoV-2 = Severe Acute Respiratory Syndrome-Coronavirus-2; COVID-19 = CoronaVirus Disease; 5-ASA = 5-aminosalicylate; Bud = budesonide; Pred = prednisone; AZA = azathioprine; 6MP = 6-mercaptopurine; MTX = methotrexate; anti-TNF = anti-tumor necrosis factor; VEDO = vedolizumab; UST = ustekinumab; TOFA = tofacitinib.

- In regards to the scenario of a patient receiving combination therapy of an antiTNF and immune modulator, the group was uncertain if the immune modulator should be dose reduced to potentially modify the risk of infection with SARS-CoV-2, but was in agreement and did vote that it is appropriate to discontinue the immune modulator in a patient who is known to be infected with SARS-CoV-2 or when a patient develops COVID-19.
- In the scenario of a patient who stopped IBD medications because either they tested positive for SARS-CoV-2 infection or had COVID-19, the group voted that it is appropriate to restart

their medications if they do not develop symptoms after two weeks, or when symptoms have completely resolved.

- The group was in agreement and voted it was appropriate to postpone nonessential endoscopic procedures.
- Furthermore, the panel voted that patients in clinical trials should continue those therapies unless they become infected by SARS-CoV-2 or develop COVID-19.
- The group voted that it was appropriate to discontinue the clinical trial drug if a patient tests positive for SARS-CoV-2 or develops COVID-19, but there was some disagreement in the responses

## Acute stroke management pathway during Coronavirus-19 pandemic.

[PMID: 32270359, Apr 10, 2020](#)

Baracchini, Claudio; Pieroni, Alessio; Viaro, Federica; Cianci, Vito; Cattelan, Anna M; Tiberio, Ivo; Munari, Marina; Causin, Francesco

Neurol Sci

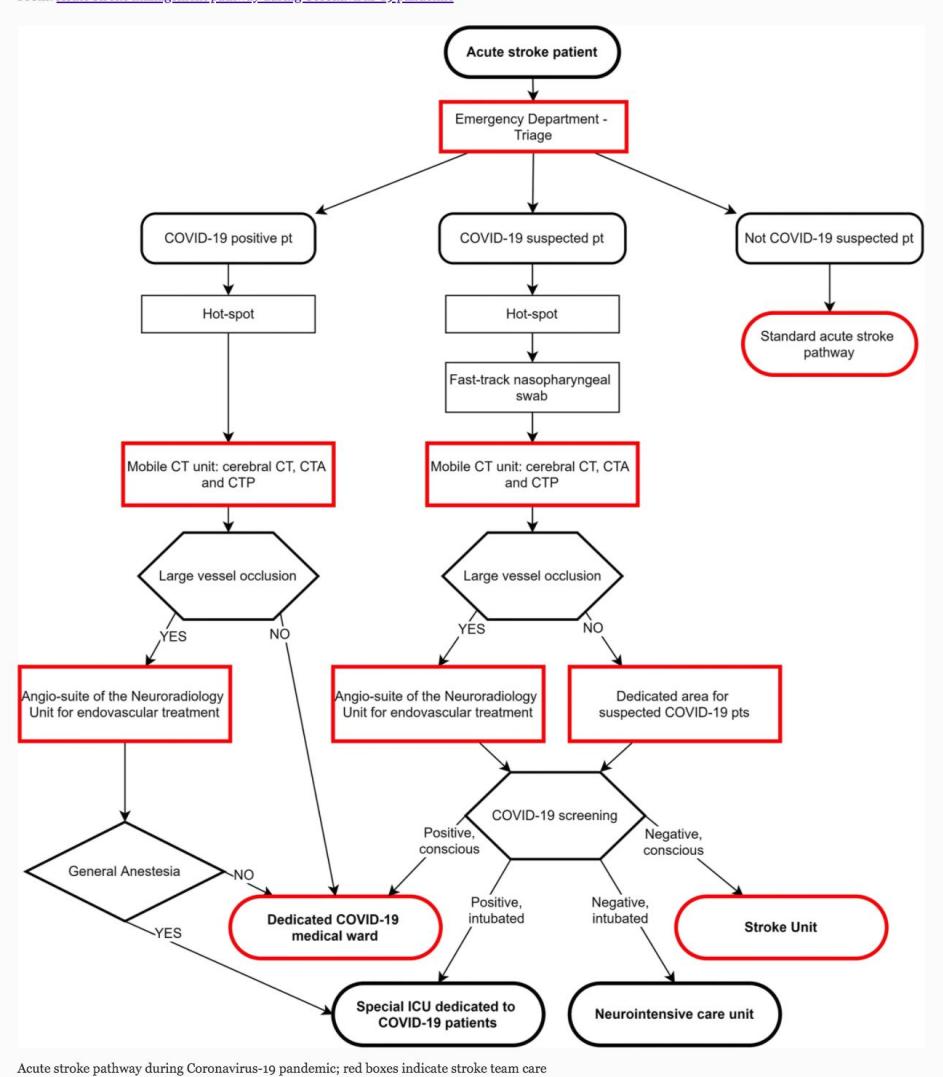
Level of Evidence: Level 5- Expert opinion

Article type: Communication

**BLUF:** Proposed protocol for managing acute stroke during COVID-19 pandemic.

Fig. 1

From: [Acute stroke management pathway during Coronavirus-19 pandemic](#)



Acute stroke pathway during Coronavirus-19 pandemic; red boxes indicate stroke team care

# **Interim Guidance for Basic and Advanced Life Support in Adults, Children, and Neonates With Suspected or Confirmed COVID-19: From the Emergency Cardiovascular Care Committee and Get With the Guidelines((R))-Resuscitation Adult and Pediatric Task Forces of the American Heart Association in Collaboration with the American Academy of Pediatrics, American Association for Respiratory Care, American College of Emergency Physicians, The Society of Critical Care Anesthesiologists, and American Society of Anesthesiologists: Supporting Organizations: American Association of Critical Care Nurses and National EMS Physicians.**

[PMID: 32270695](#), Apr 10, 2020

Edelson, Dana P; Sasson, Comilla; Chan, Paul S; Atkins, Dianne L; Aziz, Khalid; Becker, Lance B; Berg, Robert A; Bradley, Steven M; Brooks, Steven C; Cheng, Adam; Escobedo, Marilyn; Flores, Gustavo E; Girotra, Saket; Hsu, Antony; Kamath-Rayne, Beena D; Lee, Henry C; Lehotzky, Rebecca E; Mancini, Mary E; Merchant, Raina M; Nadkarni, Vinay M; Panchal, Ashish R; Peberdy, Mary Ann R; Raymond, Tia T; Walsh, Brian; Wang, David S; Zelop, Carolyn M; Topjian, Alexis  
Circulation

Level of Evidence: Level 5- Expert Opinion

Type of Article: Recommendations

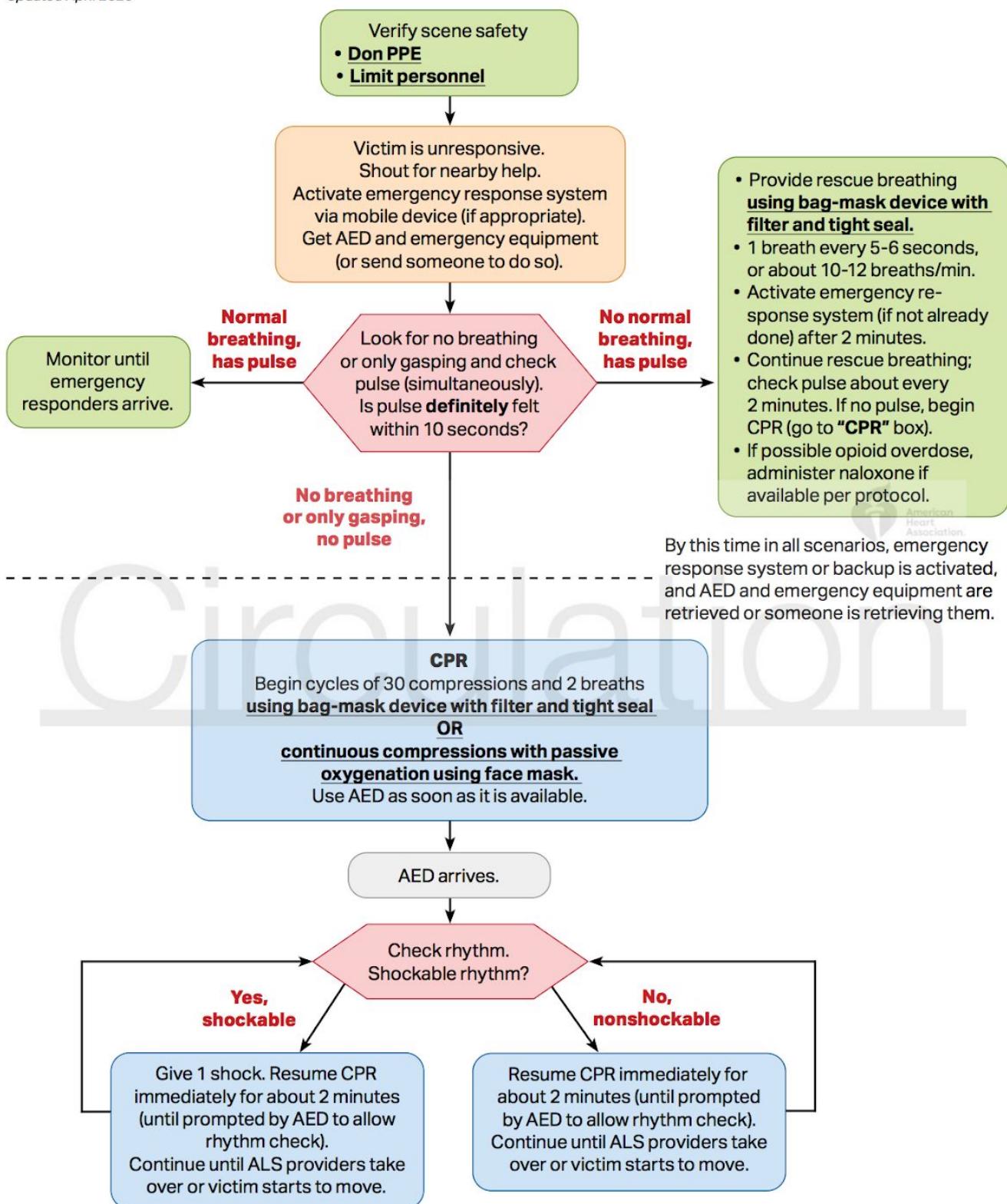
**Summarizing excerpt:** “In arriving at this interim guidance, we reviewed existing AHA CPR recommendations in the context of the COVID-19 pandemic and considered the unique pathophysiology of COVID-19 with reversal of hypoxemia as a central goal. We sought to balance the competing interests of providing timely and high-quality resuscitation to patients while simultaneously protecting rescuers. This statement applies to all adult, pediatric, and neonatal resuscitations in patients with suspected or confirmed COVID-19 infection unless otherwise noted. The guidance contained herein is based on expert opinion and needs to be adapted locally based on current disease burden and resource availability.”

**Figure 1. Summary of adjustments to CPR algorithms in suspected or confirmed COVID-19 patients.**

<b>Reduce provider exposure</b>
<ul style="list-style-type: none"><li>• Don PPE before entering the room/scene</li><li>• Limit personnel</li><li>• Consider using mechanical CPR devices for adults and adolescents who meet height and weight criteria</li><li>• Communicate COVID-19 status to any new providers</li></ul>
<b>Prioritize oxygenation and ventilation strategies with lower aerosolization risk</b>
<ul style="list-style-type: none"><li>• Use a HEPA filter, if available, for all ventilation</li><li>• Intubate early with a cuffed tube, if possible, and connect to mechanical ventilator, when able</li><li>• Engage the intubator with highest chance of first-pass success</li><li>• Pause chest compressions to intubate</li><li>• Consider use of video laryngoscopy, if available</li><li>• Before intubation, use a bag-mask device (or T-piece in neonates) with a HEPA filter and a tight seal</li><li>• For adults, consider passive oxygenation with nonrebreathing face mask as alternative to bag-mask device for short duration</li><li>• If intubation delayed, consider supraglottic airway</li><li>• Minimize closed circuit disconnections</li></ul>
<b>Consider resuscitation appropriateness</b>
<ul style="list-style-type: none"><li>• Address goals of care</li><li>• Adopt policies to guide determination, taking into account patient risk factors for survival</li></ul>

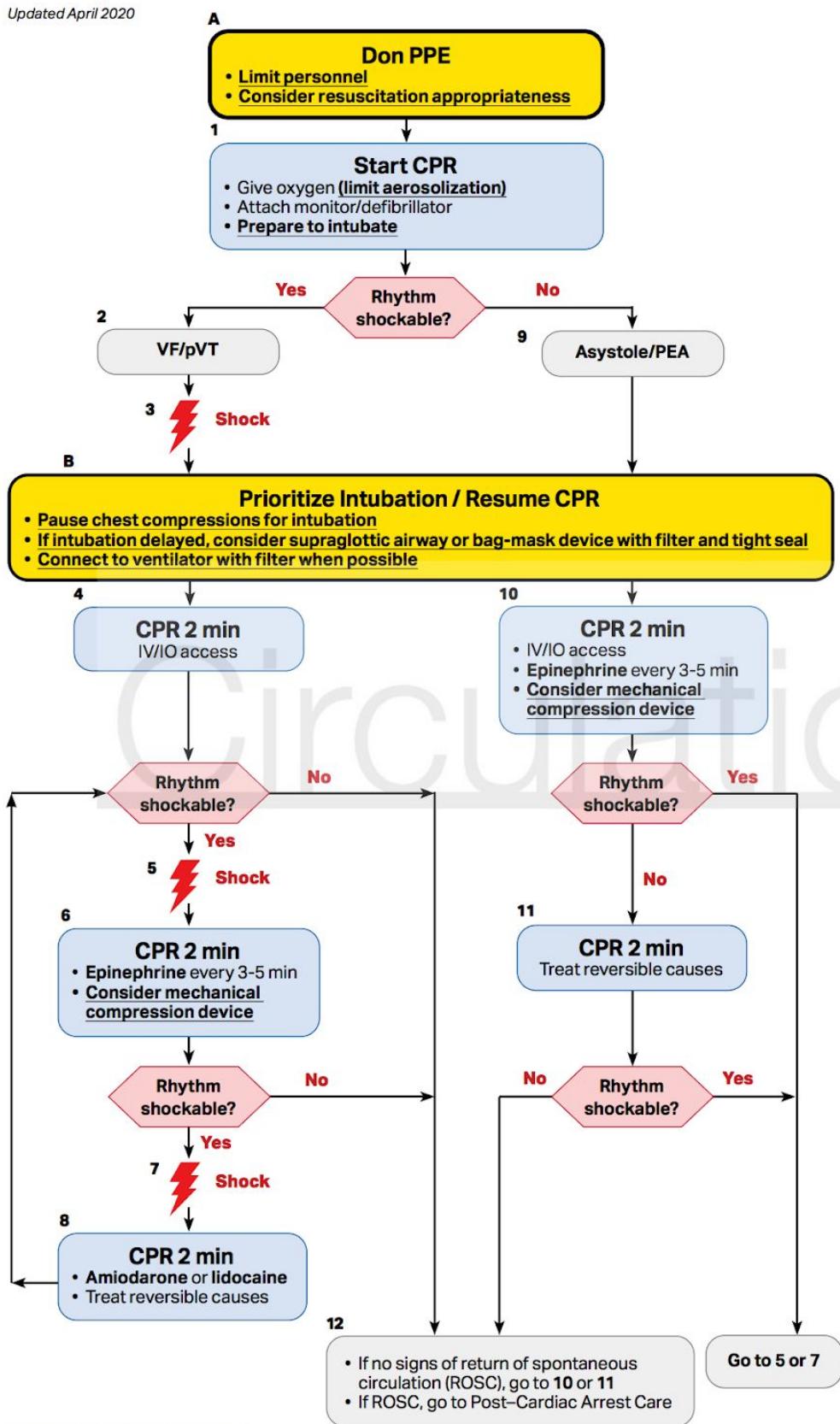
# BLS Healthcare Provider Adult Cardiac Arrest Algorithm for Suspected or Confirmed COVID-19 Patients

Updated April 2020



# ACLS Cardiac Arrest Algorithm for Suspected or Confirmed COVID-19 Patients

Updated April 2020



## CPR Quality

- Push hard (at least 2 inches [5 cm]) and fast (100-120/min) and allow complete chest recoil.
- Minimize interruptions in compressions.
- Avoid excessive ventilation.
- Change compressor every 2 minutes, or sooner if fatigued.
- If no advanced airway, 30:2 compression-ventilation ratio.
- Quantitative waveform capnography
  - If  $\text{PETCO}_2 < 10 \text{ mm Hg}$ , attempt to improve CPR quality.
- Intra-arterial pressure
  - If relaxation phase (diastolic) pressure  $< 20 \text{ mm Hg}$ , attempt to improve CPR quality.

## Shock Energy for Defibrillation

- Biphasic:** Manufacturer recommendation (eg, initial dose of 120-200 J); if unknown, use maximum available. Second and subsequent doses should be equivalent, and higher doses may be considered.
- Monophasic:** 360 J

## Advanced Airway

- Minimize closed-circuit disconnection
- Use intubator with highest likelihood of first pass success
- Consider video laryngoscopy
- Endotracheal intubation or supraglottic advanced airway
- Waveform capnography or capnometry to confirm and monitor ET tube placement
- Once advanced airway in place, give 1 breath every 6 seconds (10 breaths/min) with continuous chest compressions

## Drug Therapy

- Epinephrine IV/IO dose:** 1 mg every 3-5 minutes
- Amiodarone IV/IO dose:** First dose: 300 mg bolus. Second dose: 150 mg.  
or  
**Lidocaine IV/IO dose:** First dose: 1-1.5 mg/kg. Second dose: 0.5-0.75 mg/kg.

## Return of Spontaneous Circulation (ROSC)

- Pulse and blood pressure
- Abrupt sustained increase in  $\text{PETCO}_2$  (typically  $\geq 40 \text{ mm Hg}$ )
- Spontaneous arterial pressure waves with intra-arterial monitoring

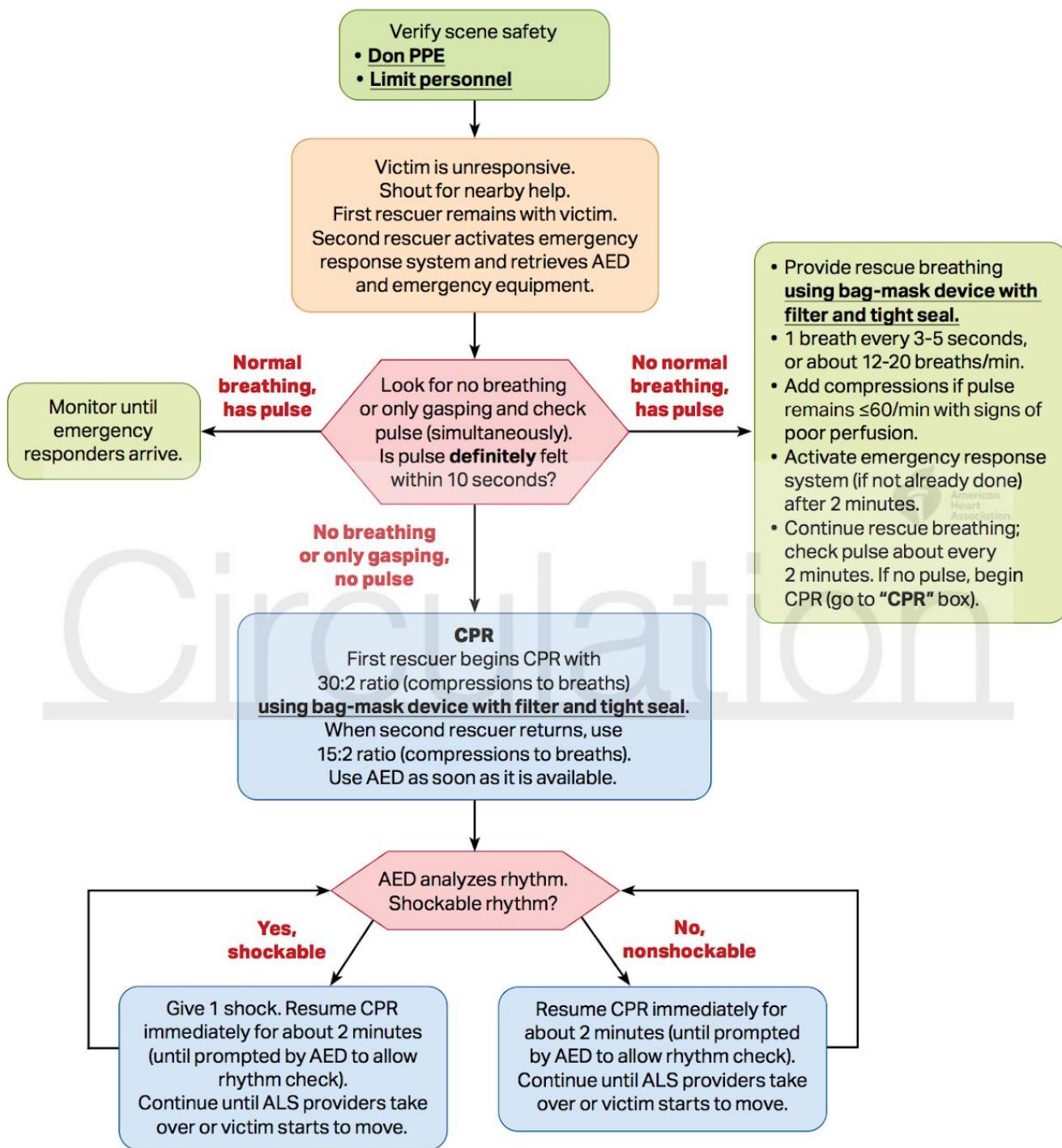
## Reversible Causes

- Hypovolemia
- Hypoxia
- Hydrogen ion (acidosis)
- Hypo-/hyperkalemia
- Hypothermia
- Tension pneumothorax
- Tamponade, cardiac
- Toxins
- Thrombosis, pulmonary
- Thrombosis, coronary

# BLS Healthcare Provider

## Pediatric Cardiac Arrest Algorithm for 2 or More Rescuers for Suspected or Confirmed COVID-19 Patients

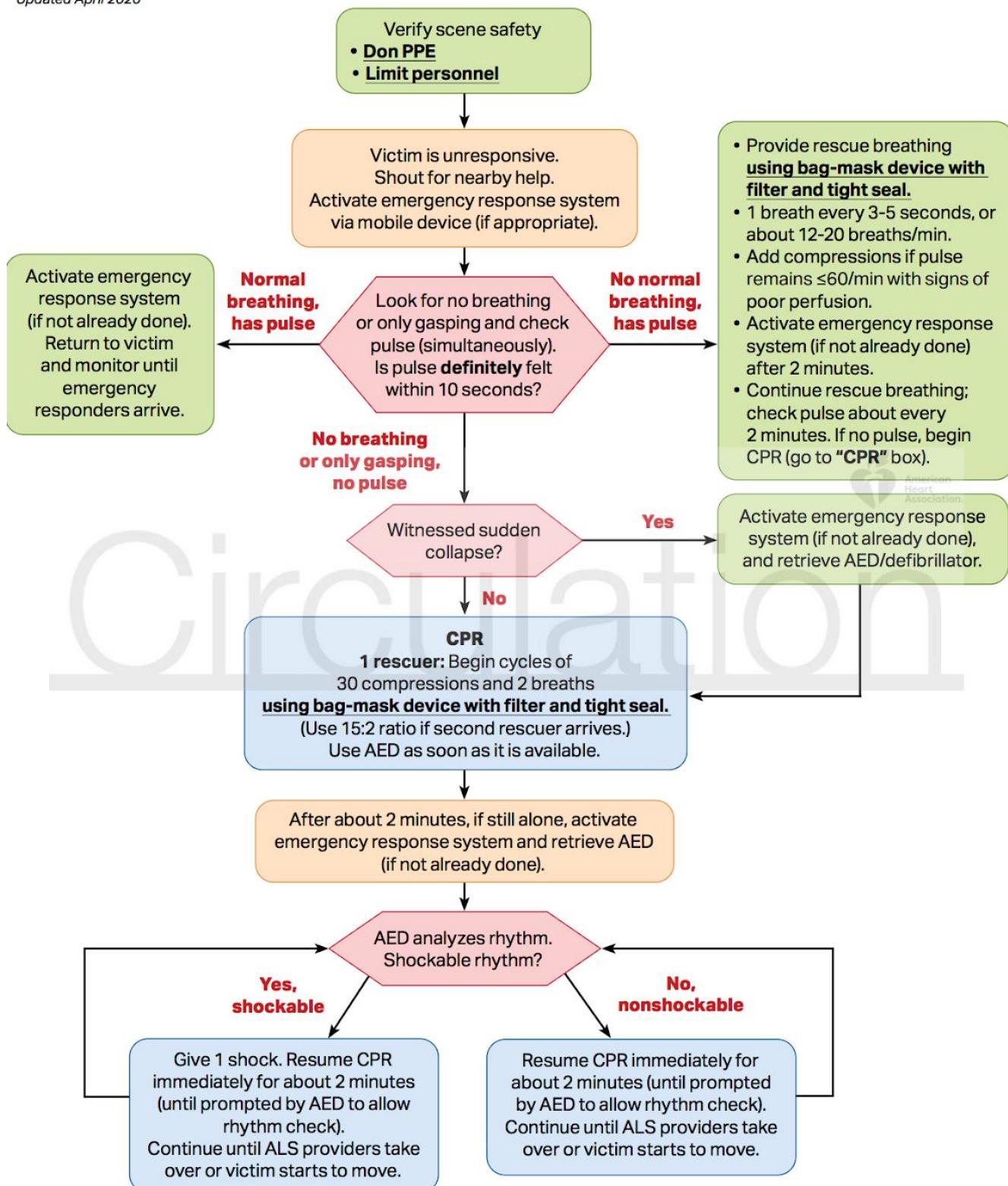
Updated April 2020



# BLS Healthcare Provider

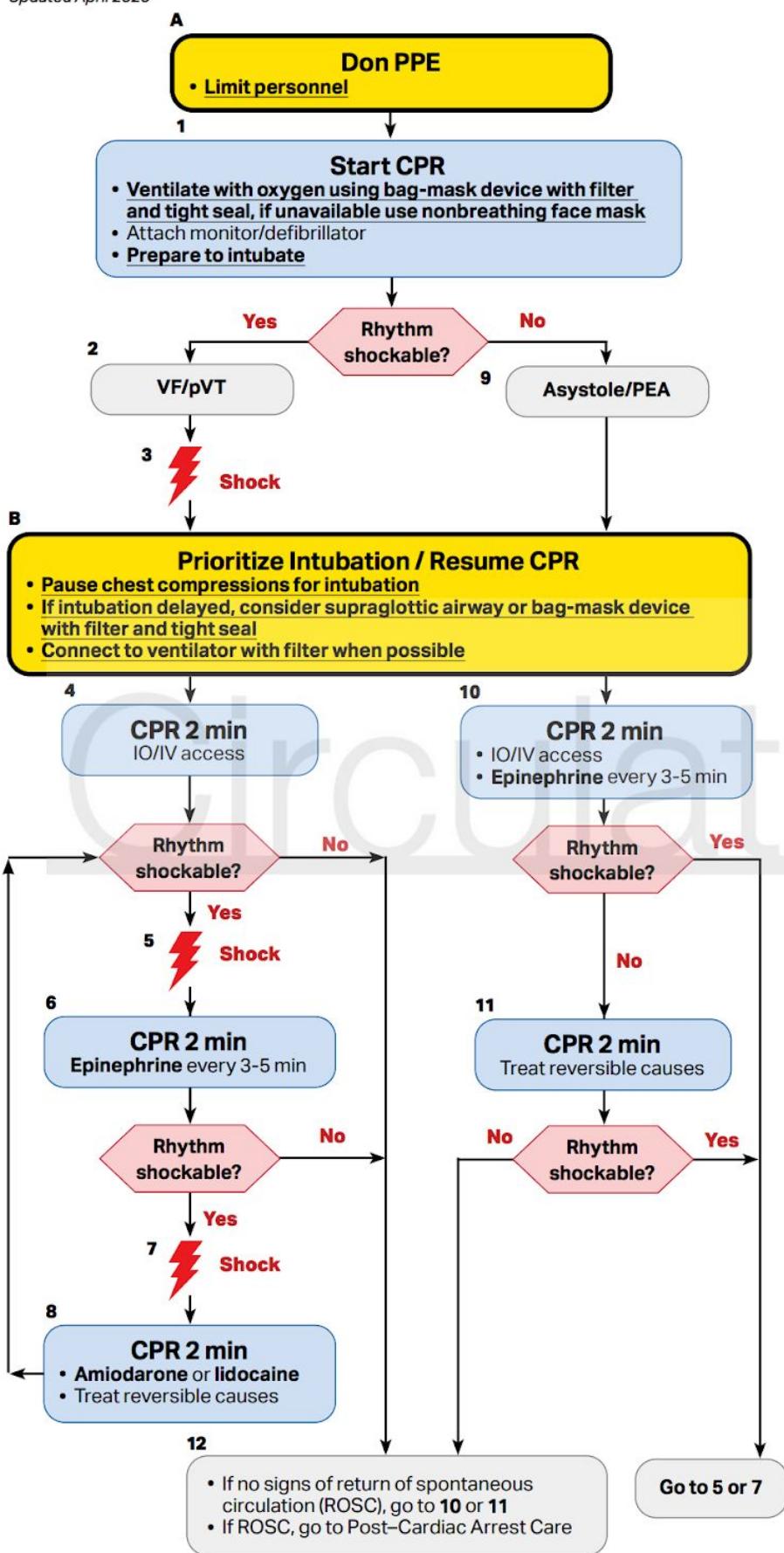
## Pediatric Cardiac Arrest Algorithm for the Single Rescuer for Suspected or Confirmed COVID-19 Patients

Updated April 2020



# Pediatric Cardiac Arrest Algorithm for Suspected or Confirmed COVID-19 Patients

Updated April 2020



## CPR Quality

- Push hard ( $\geq 1/3$  of anteroposterior diameter of chest) and fast (100-120/min) and allow complete chest recoil.
- Minimize interruptions in compressions.
- Avoid excessive ventilation.
- Change compressor every 2 minutes, or sooner if fatigued.
- If no advanced airway, 15:2 compression-ventilation ratio.

## Shock Energy for Defibrillation

First shock 2 J/kg, second shock 4 J/kg, subsequent shocks  $\geq 4$  J/kg, maximum 10 J/kg or adult dose

## Advanced Airway

- Minimize closed-circuit disconnection
- Use intubator with highest likelihood of first pass success
- Consider video laryngoscopy
- Prefer cuffed endotracheal tube if available
- Endotracheal intubation or supraglottic advanced airway
- Waveform capnography or capnometry to confirm and monitor ET tube placement
- Once advanced airway in place, give 1 breath every 6 seconds (10 breaths/min) with continuous chest compressions

## Drug Therapy

- Epinephrine IO/IV dose:** 0.01 mg/kg (0.1 mL/kg of the 0.1 mg/mL concentration). Repeat every 3-5 minutes.
- Amiodarone IO/IV dose:** 5 mg/kg bolus during cardiac arrest. May repeat up to 2 times for refractory VF/pulseless VT.
- Lidocaine IO/IV dose:** Initial: 1 mg/kg loading dose. Maintenance: 20-50 mcg/kg per minute infusion (repeat bolus dose if infusion initiated >15 minutes after initial bolus therapy).

## Return of Spontaneous Circulation (ROSC)

- Pulse and blood pressure
- Spontaneous arterial pressure waves with intra-arterial monitoring

## Reversible Causes

- Hypovolemia
- Hypoxia
- Hydrogen ion (acidosis)
- Hypoglycemia
- Hypo-/hyperkalemia
- Hypothermia
- Tension pneumothorax
- Tamponade, cardiac
- Toxins
- Thrombosis, pulmonary
- Thrombosis, coronary

## **Expert consensus from the Italian Society for Colposcopy and Cervico-Vaginal Pathology (SICPCV) for colposcopy and outpatient surgery of the lower genital tract during the COVID-19 pandemic.**

[PMID: 32270477, Apr 10, 2020](#)

Ciavattini, Andrea; Delli Carpini, Giovanni; Giannella, Luca; De Vincenzo, Rosa; Frega, Antonio; Cattani, Paolo; Boselli, Fausto; Sopracordevole, Francesco; Barbero, Maggiorino *Int J Gynaecol Obstet*

Level of Evidence: Level 5- Expert consensus

Type of Article: Special Article

**Summary:** Special considerations are needed to prevent transmission of SARS-CoV-2 during lower genital tract procedures. Attention is called to reduce the likelihood of smoke inhalation from electrosurgical instruments, PPI and protective covering/proper disinfection of colposcope recommended.

### **Abstract**

In the context of the COVID-19 pandemic, patients need to be evaluated within 2–4 weeks in the following cases: cytology result of “squamous cell carcinoma,” “atypical glandular cells, favor neoplastic,” “endocervical adenocarcinoma in situ,” or “adenocarcinoma”; histopathological diagnosis of suspected invasion from cervical/vaginal biopsy, or invasive disease after a cervical excision procedure, vaginal excision, or vulvar biopsy/excision; sudden onset of strongly suggestive symptoms for malignancy. Digital imaging technologies represent an important opportunity during the COVID-19 pandemic to share colposcopic images with reference centers, with the aim of avoiding any concentration of patients. All patients must undergo screening for COVID-19 exposure and should wear a surgical mask. A high-efficiency filter smoke evacuation system is mandatory to remove surgical smoke. Electrosurgical instruments should be set at the lowest possible power and not be used for long continuous periods to reduce the amount of surgical smoke. The following personal protective equipment should be used: sterile fluid-repellant surgical gloves, an underlying pair of gloves, eye protection, FFP3 mask, surgical cap, and gown. The colposcope should be protected by a disposable transparent cover. A protective lens that must be disinfected after each use should be applied. The use of a video colposcope should be preferred.

## **Vaso-occlusive Crisis and Acute Chest Syndrome in Sickle Cell Disease due to 2019 Novel Coronavirus Disease (COVID-19).**

[PMID: 32267016, Apr 9, 2020](#)

Nur, E; Gaartman, A E; van Tuijn, C F J; Tang, M W; Biemond, B  
*JAm J Hematol*

Level of Evidence: Level 4- Case series

Type of Article: Case Report

**Summary:** Case report of two patients with homozygous sickle cell disease. They presented in painful vaso-occlusive crisis and related acute coronary syndrome without any preceding or concomitant flu-like symptoms. Also supports prior evidence that abnormalities on a chest CT seem to be a more sensitive indicator for COVID-19 than the nasal swab.

## Digestive system involvement of novel coronavirus infection: prevention and control infection from a gastroenterology perspective.

[PMID: 32267098](#), Apr 9, 2020

Li, Lian Yong; Wu, Wei; Chen, Sheng; Gu, Jian Wen; Li, Xin Lou; Song, Hai Jing; Du, Feng; Wang, Gang; Zhong, Chang Qing; Wang, Xiao Ying; Chen, Yan; Shah, Rushikesh; Yang, He Ming; Cai, Qiang J Dig Dis

Level of Evidence: Level 5- Expert opinion

Type of article: Review

Summary: SARS-CoV-2 can cause GI symptoms given ACE2 receptor expression in the GI tract.

Patients with negative throat swabs for the virus continue to shed RNA through stool for many days, but whether this represents actual viral particles with the capacity to infect remains in question.

### Abstract

An epidemic of an acute respiratory syndrome caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) in Wuhan, China, now known as coronavirus disease 2019 (COVID-19), beginning in December 2019 has attracted an intense amount of attention worldwide. As the natural history and variety of clinical presentations of this disease unfolds, the extrapulmonary symptoms of the disease have emerged, especially the symptoms related to the digestive system. While the respiratory mode of transmission is well-known and likely the principal mode of transmission of this disease, the possibility of the fecal–oral route of transmission has also emerged in various case series and clinical scenario. In this review article, we summarized the published literatures to date concerning four different aspects: (a) gastrointestinal manifestations of COVID-19 infection; (b) microbiologic and virological investigations; (c) the role of fecal–oral transmission; and (d) prevention/control infection in the digestive endoscopy room. A timely understanding of the relationship between the disease and the digestive system and implementing effective preventive measures are of great significance for a favorable outcome of the disease and can help mitigate further transmission by appropriate measures.

## Surgical management of head and neck tumours during the SARS-CoV (Covid-19) pandemic.

[PMID: 32271745](#), Apr 10, 2020

Ansarin, Mohssen

Acta Otorhinolaryngol Ital

Level of Evidence: Level 5- Expert opinion

Type of Article: Editorial

**BLUF:** Description of how an ENT regional cancer center tried to remain COVID-19 to serve as a hub for surgical intervention of head and neck tumors.

### Abstract:

The health emergency caused by the SARS-CoV (Covid-19) pandemic calls for the utmost commitment on the part of every member of the healthcare team and involves a reorganization of the health system to meet exceptional care needs efficiently and effectively. In Lombardy – one of the Italian regions most affected by this pandemic – many public and private hospitals have been wholly reconverted to ensure the treatment of Covid-19 patients. At the same time, other “Covid-free” hospitals have been identified and designated to treat all other diseases and conditions safely. As a consequence of this reorganization, specific cancer centres, including the European Institute of Oncology, have become regional reference “hubs” for the treatment of cancer patients. A series of

organisational and clinical problems has therefore to be addressed as the number of patients to be evaluated and treated increases, while at the same time, it is necessary to ensure that the “hub” remains as “COVID-19-free” as possible over time. These dedicated centres are employed in the treatment of patients referring from different areas, with a significant increase in workload, where, alongside the complexity of oncological disease, there is the overlapping problem of coronavirus infection.

## **Early virus clearance and delayed antibody response in a case of COVID-19 with a history of co-infection with HIV-1 and HCV.**

[PMID: 32270178](#), Apr 10, 2020

Zhao, Juanjuan; Liao, Xuejiao; Wang, Haiyan; Wei, Lanlan; Xing, Mingzhao; Liu, Lei; Zhang, Zheng  
Clinical Infectious Diseases

Level of Evidence: 4- Case report

Type of Article: Research

**Abstract:** The effect of host immune status on SARS-CoV-2 infection remains unknown. Here, we report the first **case of COVID-19 with HIV-1 and HCV co-infection**, who showed a persistently negative SARS-CoV-2 RNA test, but delayed antibody response in the plasma. This case highlights the influence of **HIV-1-induced immune dysfunction on the early SARS-CoV-2 clearance**.

# Therapeutics

## In silico identification of vaccine targets for 2019-nCoV.

[PMID: 32269766, Apr 10, 2020](#)

Hyun-Jung Lee, Chloe; Koohy, Hashem  
F1000Res

Level of Evidence: Level 5- Mechanism based reasoning

Type of Article: Research

**Summary:** Presents a “shortlist” of candidates for experimental validation for SARS-CoV-2 vaccine development

## Structure of the RNA-dependent RNA polymerase from COVID-19 virus

[DOI: https://doi.org/10.1126/science.abb7498, April 10, 2020 ahead of print](#)

Gao Yan, Yan Liming, Huang Yucen, Liu Fengjiang, Zhao Fengjiang, Cao Fengjiang, Wang Tao, Sun Qianqian, Ming Zhenhua, Zhang Lianqi, Ge Ji, Zheng Litao, Zhang Ying, Wang Haofeng, Zhu Yan, Zhu Chen, Hu Tianyu, Hua Tian, Zhang Bing, Yang Xiuna, Li Jun, Yang Haitao, Liu Zhijie, Xu Wenqing, Guddat Luke W., Wang Quan, Lou Zhiyong, Rao Zihe  
Science

Type of Article: Report

Level of Evidence: 5- Basic science

**BLUF:** The experimental drug remdesivir can bind and inhibit the SARS-CoV-2 polymerase, which is essential for viral replication. They hope to use their model to identify other promising drug candidates such as the broad-spectrum antiviral, favipiravir.

### Abstract:

A novel coronavirus (COVID-19 virus) outbreak has caused a global pandemic resulting in tens of thousands of infections and thousands of deaths worldwide. The **RNA-dependent RNA polymerase (RdRp, also named**

**nsp12) is the central component of coronaviral replication/transcription machinery and appears to be a primary target for the antiviral drug, remdesivir.** We report the cryo-EM structure of COVID-19 virus full-length nsp12 in complex with cofactors nsp7 and nsp8 at 2.9-Å resolution. In addition to the conserved architecture of the polymerase core of the viral polymerase family, nsp12 possesses a newly identified β-hairpin domain at its N terminus. A comparative analysis model shows how remdesivir binds to this polymerase. **The structure provides a basis for the design of new antiviral therapeutics targeting viral RdRp.**

## Structure of M<sup>Pro</sup> from COVID-19 virus and discovery of its inhibitors

[PMID: 32272481, April 9, 2020 ahead of print](#)

Jin Zhenming, Du Xiaoyu, Xu Yechun, Deng Yongqiang, Liu Meiqin, Zhao Yao, Zhang Bing, Li Xiaofeng, Zhang Leike, Peng Chao, Duan Yinkai, Yu Jing, Wang Lin, Yang Kailin, Liu Fengjiang, Jiang Rendi, Yang Xinglou, You Tian, Liu Xiaoce, Yang Xiuna, Bai Fang, Liu Hong, Liu Xiang, Guddat

Luke W., Xu Wenqing, Xiao Gengfu, Qin Chengfeng, Shi Zhengli, Jiang Hualiang, Rao Zihe, Yang

Haita

Nature

Level of Evidence: 5- Basic Science

Type of Article: Research

**BLUF:** Screening over 10,000 compounds that are all already approved drugs, or drugs in clinical trials in conjunction with *in silico* screening, and high-throughput *in vitro* antiviral testing, Cinanserin (a serotonin antagonist), ebselen (a drug being tested for treating disorders such as bipolar disorder and hearing loss), and N3 (antiviral against SARS and MERS) show the highest potential for use as COVID-19 therapeutics. Their high-throughput screening techniques allow for more rapid discovery of safe and effective antivirals.

### **Abstract:**

A new coronavirus (CoV) identified as COVID-19 virus is the etiological agent responsible for the 2019-2020 viral pneumonia outbreak that commenced in Wuhan . Currently there are no targeted therapeutics and effective treatment options remain very limited. **In order to rapidly discover lead compounds for clinical use, we initiated a program of combined structure-assisted drug design, virtual drug screening and high-throughput screening to identify new drug leads that target the COVID-19 virus main protease (Mpro).** Mpro is a key CoV enzyme, which plays a pivotal role in mediating viral replication and transcription, making it an attractive drug target for this virus . Here, **we identified a mechanism-based inhibitor, N3**, by computer-aided drug design and subsequently determined the crystal structure of COVID-19 virus Mpro in complex with this compound. Next, through a combination of structure-based virtual and high-throughput screening, **we assayed over 10,000 compounds including approved drugs, drug candidates in clinical trials, and other pharmacologically active compounds as inhibitors of Mpro.** Six of these compounds inhibited Mpro with IC<sub>50</sub> values ranging from 0.67 to 21.4 μM. Ebselen also exhibited promising antiviral activity in cell-based assays. Our results demonstrate the **efficacy of this screening strategy**, which can lead to the rapid discovery of drug leads with clinical potential in response to new infectious diseases for which no specific drugs or vaccines are available

### **Intensive care management of coronavirus disease 2019 (COVID-19): challenges and recommendations. [Review of potential treatments]**

**PMID: 32272080, Apr 10, 2020**

Phua, Jason; Weng, Li; Ling, Lowell; Egi, Moritoki; Lim, Chae-Man; Divatia, Jigeeshu Vasishtha; Shrestha, Babu Raja; Arabi, Yaseen M; Ng, Jensen; Gomersall, Charles D; Nishimura, Masaji; Koh, Younsuck; Du, Bin  
Lancet Respir Med

	Efficacy	Safety
<b>Remdesivir (nucleotide analogue)</b> Deemed to be the most promising candidate drug by experts convened in January, 2020, by WHO; <sup>66</sup> relevant studies include PALM, an RCT of remdesivir and different monoclonal antibodies in 681 patients with Ebola virus disease (primary outcome: death at 28 days); <sup>67</sup> study of remdesivir, lopinavir-ritonavir, and interferon beta in mice infected with MERS-CoV; <sup>68</sup> in-vitro studies of remdesivir on SARS-CoV-2, MERS-CoV, and SARS-CoV <sup>69,70</sup>	Not efficacious for Ebola virus disease compared with other investigational therapies; <sup>67</sup> superior activity compared with lopinavir-ritonavir in mice with MERS-CoV; <sup>68</sup> effectively inhibited SARS-CoV-2, MERS-CoV, and SARS-CoV in vitro <sup>69,70</sup>	No peer-reviewed, published safety data available for SARS-CoV-2; in the PALM trial, only 1 of 175 patients randomised to remdesivir had a potentially serious adverse event (hypotension during a loading dose followed by cardiac arrest, possibly due to remdesivir or to fulminant Ebola virus disease itself) <sup>67</sup>
<b>Lopinavir-ritonavir (protease inhibitor)</b> Second candidate identified for rapid implementation in clinical trials, alone or in combination with interferon beta, by WHO; <sup>66</sup> relevant studies include an RCT of lopinavir-ritonavir versus standard care in 199 hospitalised adults with SARS-CoV-2-associated pneumonia and hypoxaemia (primary outcome: time to clinical improvement); <sup>71</sup> MIRACLE, an ongoing RCT of lopinavir-ritonavir plus interferon beta versus placebo in patients with MERS-CoV infection (primary outcome: 90-day mortality); <sup>72</sup> case reports describing use of lopinavir-ritonavir plus interferon alfa in patients with MERS-CoV infection; <sup>73</sup> observational study of lopinavir-ritonavir in patients with SARS-CoV <sup>74</sup>	No significant difference in time to clinical improvement, reduction in viral load, or 28-day mortality with lopinavir-ritonavir compared with standard care in patients with severe COVID-19 (28-day mortality was numerically lower: 19·2% vs 25·0%), but median time to randomisation was 13 days after symptom onset, so effects of earlier treatment remain unknown; <sup>71</sup> efficacy unclear in case reports of patients with MERS-CoV <sup>72</sup> associated with reduced viral load and mortality in an observational study of SARS-CoV <sup>73</sup>	Gastrointestinal side-effects, including diarrhoea, nausea, and vomiting <sup>71,72</sup>
<b>Chloroquine (antimalarial)</b> Studies ongoing in patients with COVID-19; <sup>75</sup> in vitro studies of chloroquine on SARS-CoV and SARS-CoV-2 <sup>67,76</sup>	According to a news briefing, <sup>76</sup> chloroquine slowed the progression of pneumonia and accelerated SARS-CoV-2 clearance and recovery in >100 patients with COVID-19, but results have not been published in the peer-reviewed literature and caution is advised in interpreting these findings; <sup>75</sup> in-vitro antiviral effects reported for both SARS-CoV and SARS-CoV-2 <sup>76,77</sup>	No peer-reviewed, published safety data available for SARS-CoV-2, but concerns include the possibility of QT prolongation <sup>78</sup>
<b>Hydroxychloroquine (antimalarial)</b> Open label, non-randomised trial in 36 patients with COVID-19 (endpoint: presence or absence of virus at 6 days); <sup>79</sup> in-vitro studies of hydroxychloroquine on SARS-CoV-2 <sup>80</sup>	Reduced SARS-CoV-2 load in the nasopharynx of patients with COVID-19, especially when combined with azithromycin; <sup>79</sup> more potent than chloroquine in inhibiting SARS-CoV-2 in vitro <sup>80</sup>	No peer-reviewed, published safety data available for SARS-CoV-2, but concerns include the possibility of QT prolongation <sup>78</sup>
<b>Intravenous immunoglobulin (immunotherapy)</b> Phase 1 trial of human polyclonal immunoglobulin G (SAB-301) in healthy participants; <sup>81</sup> study of human polyclonal immunoglobulin G (SAB-300) in a mouse model of MERS-CoV <sup>82</sup>	SAB-301 found to be safe and well tolerated; <sup>81</sup> SAB-300 reduced viral lung titres near or below the limit of detection in mice infected with MERS-CoV <sup>82</sup>	No peer-reviewed, published safety data available for the various types of interferon (alfa and beta) for SARS-CoV-2, but generally well tolerated <sup>83</sup>
<b>Convalescent plasma (immunotherapy)</b> Meta-analysis of 27 studies of treatment in patients with SARS-CoV infection; <sup>84</sup> use has been protocolised for MERS-CoV; <sup>84</sup> uncontrolled case series of 5 patients with SARS-CoV-2 <sup>85</sup>	Might reduce mortality in severe acute respiratory infections due to SARS-CoV and influenza; <sup>84</sup> associated with reduction in viral load and improvement in fever, oxygenation, and chest imaging in a case series, but study limited by small sample size, multiple possible confounders, and absence of controls <sup>85</sup>	No peer-reviewed, published safety data available for SARS-CoV-2, but studies of SARS-CoV have not reported serious adverse events <sup>84</sup>
<b>Tocilizumab (monoclonal antibody against interleukin-6)</b> Licensed for cytokine release syndrome; hypothesised to work against cytokine storm with raised ferritin and interleukin-6 levels due to SARS-CoV-2 <sup>86</sup>	No peer-reviewed, published efficacy data available for SARS-CoV-2	No peer-reviewed, published safety data available for SARS-CoV-2
<b>Favipiravir (RNA-dependent RNA polymerase inhibitor)</b> Hypothesised to have an antiviral action on SARS-CoV-2 (RNA virus); multiple clinical studies underway for SARS-CoV-2 <sup>87</sup>	No peer-reviewed, published efficacy data available for SARS-CoV-2; preliminary, unpublished trial data suggest a more potent antiviral action with favipiravir compared with lopinavir-ritonavir, but caution is advised in interpreting these results <sup>87</sup>	No peer-reviewed, published safety data available for SARS-CoV-2; preliminary, unpublished trial data suggest fewer adverse events with favipiravir compared with lopinavir-ritonavir, but caution is advised in interpreting these results <sup>87</sup>
<b>XueBijing and others</b> Traditional Chinese medicines, such as XueBijing, suggested as candidates to treat SARS-CoV-2 infection are being studied <sup>88</sup>	No peer-reviewed, published efficacy data available for SARS-CoV-2, but XueBijing reported to reduce mortality in patients with severe community-acquired pneumonia with mixed aetiologies <sup>88</sup>	No peer-reviewed, published safety data available for SARS-CoV-2

COVID-19=coronavirus disease 2019. MERS-CoV=Middle East respiratory syndrome coronavirus. MIRACLE=MERS-CoV Infection Treated with a Combination of Lopinavir/Ritonavir and Interferon- $\beta$ 1b. PALM=Paroxysmal Tular Maisha. RCT=randomised controlled trial. SARS-CoV=severe acute respiratory syndrome coronavirus. SARS-CoV-2=severe acute respiratory syndrome coronavirus 2.

Table 3: Evidence for the safety and potential benefits of repurposed and experimental therapies

## Will Complement Inhibition be the New Target in Treating COVID-19 Related Systemic Thrombosis?

[PMID: 32271624](#), Apr 10, 2020

Campbell, Courtney M; Kahwash, Rami  
Circulation

Level of Evidence: Level-5 Mechanism based reasoning

Type of Article: Uncategorized

**Summary:** Autopsy review of patients who succumbed to COVID-19 was significant for diffuse multiorgan microvascular thrombi suggesting a role of pathologic complement activation during active disease. Author considers the role of eculizumab and other complement inhibitors in treating thrombotic microangiopathy from COVID-19.

## **Safety considerations with chloroquine, hydroxychloroquine and azithromycin in the management of SARS-CoV-2 infection.**

[PMID: 32269021](#), Apr 10, 2020

Juurlink, David N

CMAJ

Level of Evidence: Level 5- Expert Opinion

Type of Article: Review

**Summary:** Current discourse on use of hydroxychloroquine or chloroquine for treatment or prevention of COVID-19 is based on poorly powered human and *in vitro* studies. Though adverse reactions to these medications are uncommon, they can be life threatening: prolonged QTc (if prescribed with azithromycin or in patients with a history of cardiac disease), hypoglycemia, hypersensitivity reactions and overdose.

## **Chloroquine and hydroxychloroquine in covid-19.**

[PMID: 32269046](#), Apr 10, 2020

Ferner, Robin E; Aronson, Jeffrey K

BMJ

Level of Evidence: N/A

Type of Article: Editorial

**BLUF:** Authors advocate for caution and focus on newer drugs and vaccine development until better studies are done on 4-aminoquinolines.

**Summary:** Authors call attention to trials in the 1960s for 4-aminoquinolines (a category which includes chloroquine and hydroxychloroquine) for treatment of mononucleosis. Initial reports were encouraging, but a randomized, double-blinded, placebo-controlled trial demonstrated that chloroquine had no benefit. Similarly, the authors argue that this medication show promising results in *in vitro* studies for studies for COVID-19 infection, but ultimately be found to have no benefit or even cause harm to patients.

## **Considerations for statin therapy in patients with COVID-19.**

[PMID: 32267560](#), Apr 9, 2020

Dashti-Khavidaki, Simin; Khalili, Hossein

Pharmacotherapy

Level of Evidence: Level 5- Expert opinion and mechanism based reasoning

Type of Article:

**BLUF:** Statins already being prescribed to patients with COVID-19 for atherosclerosis or diabetes should be continued. Statin should be started on COVID-19 patients with acute cardiac injury.

### **Abstract:**

Current coronavirus pandemic named coronavirus disease 2019 (COVID-19) caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). SARS-CoV-2 is the third coronavirus outbreak during the current century after severe acute respiratory syndrome (SARS) and Middle East respiratory syndrome (MERS) coronaviruses.(1) Acute respiratory distress syndrome (ARDS) is an immunopathologic event and main cause of death following COVID-19. The main mechanism of ARDS is uncontrolled systemic inflammatory response and cytokine storm following release of proinflammatory cytokines (such as interferons (IFN), interleukines (IL), tumor necrosis factor (TNF)-alpha) and chemokines.(2-3) So, some Chinese researchers proposed or used anti-inflammatory agents in the treatment regimen of patients with COVID-19.(3-4).

## The possible of immunotherapy for COVID-19: A systematic review.

[PMID: 32272396, Apr 10, 2020](#)

AminJafari, Akram; Ghasemi, Sorayya

Int Immunopharmacol

Level of Evidence: Level 1- Systematic Review

Type of Article: Review

**Summary:** During the SARS-CoV and MERS-CoV epidemic, monoclonal antibodies against the spike protein were efficacious in preventing viral attachment at the ACE2 receptor. Since SARS-CoV and SARS-CoV-2 share the same receptor, we should be trialing these biologics in COVID-19 patients. Siltuximab and tocilizumab, which reduce IL-6 signal transmission, this could also prove useful in treating COVID-19.

## Coronavirus membrane fusion mechanism offers as a potential target for antiviral development.

[PMID: 32272173, Apr 10, 2020](#)

Tang, Tiffany; Bidon, Miya; Jaimes, Javier A; Whittaker, Gary R; Daniel, Susan

Antiviral Res

Level of Evidence: Level 2- Review

Type of Article: Review

**Summary:** “SARS-CoV, MERS-CoV, and SARS-CoV-2 entry (receptor binding and membrane fusion) is governed by the viral spike (S) protein.

- A predicted furin cleavage in SARS-CoV-2 differentiates it from SARS-CoV, and may affect its entry and transmissibility.
- The proposed SARS-CoV-2 FP using a pairwise sequence alignment with SARS-CoV shows 93% sequence homology.
- S protein can be activated for early plasma membrane or late endosomal membrane entry depending on protease availability.
- The fusion peptide is well conserved across the CoV family, making it a good target for pan coronavirus antivirals.”

### Abstract

The coronavirus disease 2019 (COVID-19) pandemic has focused attention on the need to develop effective therapies against the causative agent, SARS-CoV-2, and also against other pathogenic coronaviruses (CoV) that have emerged in the past or might appear in future. Researchers are therefore focusing on steps in the CoV replication cycle that may be vulnerable to inhibition by broad-spectrum or specific antiviral agents. The conserved nature of the fusion domain and mechanism across the CoV family make it a valuable target to elucidate and develop pan-CoV therapeutics. In this article, we review the role of the CoV spike protein in mediating fusion of the viral and host cell membranes, summarizing the results of research on SARS-CoV, MERS-CoV, and recent peer-reviewed studies of SARS-CoV-2, and suggest that the fusion mechanism be investigated as a potential antiviral target. We also provide a supplemental file containing background information on the biology, epidemiology, and clinical features of all human-infecting coronaviruses, along with a phylogenetic tree of these coronaviruses.

## **Does recombinant human Erythropoietin administration in critically ill COVID-19 patients have miraculous therapeutic effects?**

[PMID: 32270515](#), Apr 10, 2020

Hadadi, Azar; Mortezaee, Masoud; Kolahdouzan, Kasra; Alavian, Golbarg

Journal of Medical Virology

Level of Evidence: 4- Case report

Type of Article: Research

**BLUF:** Recombinant human erythropoietin may have an immunological effect on COVID-19 to enable faster recovery based on a case report in a patient from a population that has had higher mortality from the virus based on current data.

### **Abstract:**

An 80-year-old man with multiple comorbidities presented to the emergency department with tachypnea, tachycardia, fever and critically low O<sub>2</sub> saturation and definitive chest CT scan findings in favor of COVID-19 and positive PCR results in 48 h. **He received antiviral treatment plus recombinant human Erythropoietin(rhEPO) due to his severe anemia. After 7 days of treatment, he was discharged with miraculous improvement in his symptoms and hemoglobin level.** We concluded that rhEPO could attenuate respiratory distress syndrome and confront the SARS-CoV-2 virus through multiple mechanisms including cytokine modulation, anti-apoptotic effects, leukocyte release from bone marrow, and iron redistribution away from the intracellular virus.

## **Structure of M(pro) from COVID-19 virus and discovery of its inhibitors.**

[PMID: 32272481](#), Apr 10, 2020

Jin, Zhenming; Du, Xiaoyu; Xu, Yechun; Deng, Yongqiang; Liu, Meiqin; Zhao, Yao; Zhang, Bing; Li, Xiaofeng; Zhang, Leike; Peng, Chao; Duan, Yinkai; Yu, Jing; Wang, Lin; Yang, Kailin; Liu, Fengjiang; Jiang, Rendi; Yang, Xinglou; You, Tian; Liu, Xiaoce; Yang, Xiuna; Bai, Fang; Liu, Hong; Liu, Xiang; Guddat, Luke W; Xu, Wenqing; Xiao, Gengfu; Qin, Chengfeng; Shi, Zhengli; Jiang, Hualiang; Rao, Zihe; Yang, Haitao

Nature

Level of Evidence: : 5 – Bench research, mechanism-based reasoning

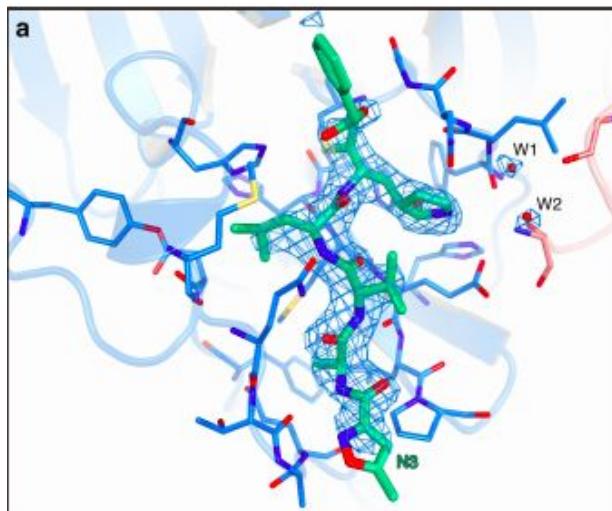
Type of Article: Research

**BLUF:** Targeted analysis of current proposed therapeutics in study in correlation with their simulated effects on target proteins in COVID-19 could enable identification of possible pharmaceutical therapies.

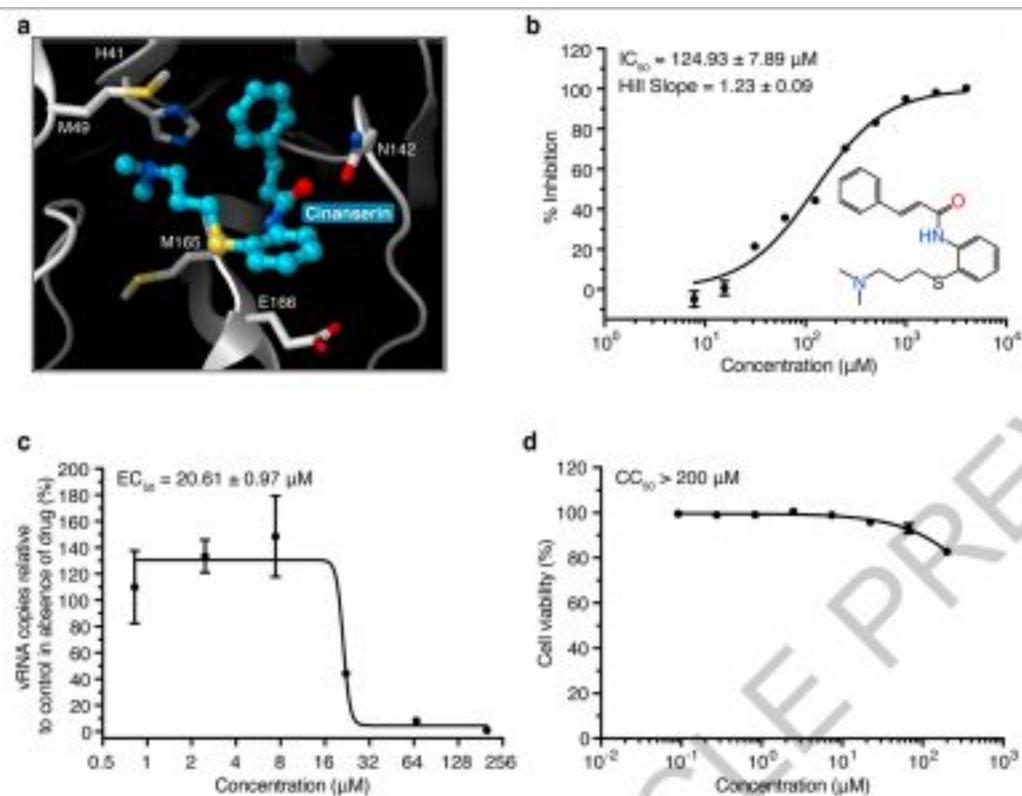
### **Abstract:**

A new coronavirus (CoV) identified as COVID-19 virus is the etiological agent responsible for the 2019-2020 viral pneumonia outbreak that commenced in Wuhan(1-4). **Currently there are no targeted therapeutics** and effective treatment options remain very limited. In order to rapidly discover lead compounds for clinical use, we initiated a program of combined structure-assisted drug design, virtual drug screening and high-throughput screening to identify new drug leads that target the COVID-19 virus main protease (M(pro)). **M(pro) is a key CoV enzyme, which plays a pivotal role in mediating viral replication and transcription, making it an attractive drug target for this virus(5,6).** Here, we identified a mechanism-based inhibitor, N<sub>3</sub>, by computer-aided drug design and subsequently determined the crystal structure of **COVID-19 virus M(pro) in complex with this compound.** Next, through a combination of structure-based virtual and high-throughput screening, we assayed over 10,000 compounds including approved drugs, drug candidates in clinical trials, and other pharmacologically active compounds as

inhibitors of M(pro). Six of these compounds inhibited M(pro) with IC<sub>50</sub> values ranging from 0.67 to 21.4 μM. Ebselen also exhibited promising antiviral activity in cell-based assays. **Our results demonstrate the efficacy of this screening strategy, which can lead to the rapid discovery of drug leads with clinical potential** in response to new infectious diseases for which no specific drugs or vaccines are available.



Extended Data Fig. 2 | The interactions between COVID-19 virus Mpro and N3. a, The Fo-Fc omit map (contour level = 3 σ, shown as the blue mesh).



Extended Data Fig. 4 | Cinanserin is an inhibitor for COVID-19 virus Mpro. a, The docking result of cinanserin. The structure of COVID-19 virus Mpro is shown as a white cartoon, cinanserin is shown as cyan balls and sticks, residues predicted to be interacting with cinanserin are shown as sticks. b, Inhibitory activity of cinanserin on Mpro. c, Antiviral activity of cinanserin determined by qRT-PCR. d, Cytotoxicity assay of cinanserin on Vero E6 cells. All data are shown as mean ± s.e.m., n = 3 biological replicates.

# Mental Health & Resilience

## Coronavirus Epidemic and Geriatric Mental Healthcare in China: How a Coordinated Response by Professional Organizations Helped Older Adults During an Unprecedented Crisis.

[PMID: 32268928, Apr 10, 2020](#)

Wang, Huali; Li, Tao; Gauthier, Serge; Yu, Enyan; Tang, Yanqing; Barbarino, Paola; Yu, Xin  
Int Psychogeriatr

Level of Evidence: Level 5-Expert Opinion

Article Type: Recommendations

**Summary:** Older persons are more vulnerable to mental health and behavioral problems in the face of an emergency. Study in Chinese population finds that lack of access to information fueled anxiety or inability to take proper precautions. The effects of quarantine and social distancing also seem to have disproportionately negative consequences for persons of advanced age. The author recommends that self-help guidebooks in both print and audible presentation should be offered to seniors. Additionally, social workers and other community members should take responsibility for creating an environment that protects the seniors by helping them learn how to take online courses, shop online and offer psychological first aid. Finally, these staff members should be supported by psychological counselors through online appointments and webinars to reduce staff burnout.

## Traumatic stress in the age of COVID-19: A call to close critical gaps and adapt to new realities.

[PMID: 32271070, Apr 10, 2020](#)

Horesh, Danny; Brown, Adam D  
Psychol Trauma

Level of Evidence: Level 5- Expert opinion

Article type: Recommendations

**BLUF:** The COVID-19 pandemic is causing many to have prolonged stress related and traumatic responses as it continues to test virtually every critical infrastructure within our society. It is likely to result in causing or exacerbating trauma based mental illness.

### Abstract:

**THE ISSUE:** Coronavirus-19 (COVID-19) is transforming every aspect of our lives. Identified in late 2019, COVID-19 quickly became characterized as a global pandemic by March of 2020. Given the rapid acceleration of transmission, and the lack of preparedness to prevent and treat this virus, the negative impacts of COVID-19 are rippling through every facet of society. Although large numbers of people throughout the world will show resilience to the profound loss, stress, and fear associated with COVID-19, the virus will likely exacerbate existing mental health disorders and contribute to the onset of new stress-related disorders for many.

**RECOMMENDATIONS:** The field of traumatic stress should address the serious needs that will emerge now and well into the future. However, we propose that these efforts may be limited, in part, by ongoing gaps that exist within our research and clinical care. In particular, we suggest that COVID-19 requires us to prioritize and mobilize as a research and clinical community around several key areas: (a) diagnostics, (b) prevention, (c) public outreach and communication, (d) working with medical staff and mainstreaming into nonmental health services, and (e) COVID-19-specific trauma

research. As members of our community begin to rapidly develop and test interventions for COVID-19-related distress, we hope that those in positions of leadership in the field of traumatic stress consider limits of our current approaches, and invest the intellectual and financial resources urgently needed in order to innovate, forge partnerships, and develop the technologies to support those in greatest need.

## Psychiatry's Niche Role in the COVID-19 Pandemic.

[PMID: 32271507](#), Apr 10, 2020

Goldberg, Joseph F

J Clin Psychiatry

Level of Evidence: Level 5- Expert Opinion

Type of Article: Commentary

**Summary:** The author explores the specific needs that psychiatrists can fill during the pandemic; not limited to telepsychiatry to assess and manage outpatient detox, medication adjustments, making risk/safety assessments, helping distinguish psychopathology from physiological distress, helping identify events that may predispose someone to PTSD, supporting front line workers and self-care.

## Mental Health and Psychosocial Problems of Medical Health Workers during the COVID-19 Epidemic in China.

[PMID: 32272480](#), Apr 10, 2020

Zhang, Wen-Rui; Wang, Kun; Yin, Lu; Zhao, Wen-Feng; Xue, Qing; Peng, Mao; Min, Bao-Quan; Tian, Qing; Leng, Hai-Xia; Du, Jia-Lin; Chang, Hong; Yang, Yuan; Li, Wei; Shangguan, Fang-Fang; Yan, Tian-Yi; Dong, Hui-Qing; Han, Ying; Wang, Yu-Ping; Cosci, Fiammetta; Wang, Hong-Xing  
Psychother Psychosom

Level of Evidence: Level 1- Cross sectional studies with local and current random sample survey

Type of Article: Research

**BLUF:** Healthcare professionals and those with pre-existing conditions are at an increased risk for developing insomnia, anxiety, depression, somatization and obsessive compulsive symptoms when compared to the general public as measured by ISI, GAD-2, PHQ-2 and SCL-90-R OCS.

### Abstract:

**OBJECTIVE:** We explored whether medical health workers had more psychosocial problems than nonmedical health workers during the COVID-19 outbreak.

**METHODS:** An online survey was run from February 19 to March 6, 2020; a total of 2,182 Chinese subjects participated. Mental health variables were assessed via the Insomnia Severity Index (ISI), the Symptom Check List-revised (SCL-90-R), and the Patient Health Questionnaire-4 (PHQ-4), which included a 2-item anxiety scale and a 2-item depression scale (PHQ-2).

**RESULTS:** Compared with nonmedical health workers ( $n = 1,255$ ), medical health workers ( $n = 927$ ) had a higher prevalence of insomnia (38.4 vs. 30.5%,  $p < 0.01$ ), anxiety (13.0 vs. 8.5%,  $p < 0.01$ ), depression (12.2 vs. 9.5%;  $p < 0.04$ ), somatization (1.6 vs. 0.4%;  $p < 0.01$ ), and obsessive-compulsive symptoms (5.3 vs. 2.2%;  $p < 0.01$ ). They also had higher total scores of ISI, GAD-2, PHQ-2, and SCL-90-R obsessive-compulsive symptoms ( $p < 0.01$ ). Among medical health workers, having organic disease was an independent factor for insomnia, anxiety, depression, somatization, and obsessive-compulsive symptoms ( $p < 0.05$  or  $0.01$ ). Living in rural areas, being female, and being at risk of contact with COVID-19 patients were the most common risk factors for insomnia, anxiety, obsessive-compulsive symptoms, and depression ( $p < 0.01$  or  $0.05$ ). Among nonmedical health workers, having organic disease was a risk factor for insomnia, depression, and obsessive-compulsive

symptoms ( $p < 0.01$  or  $0.05$ ).

**CONCLUSIONS:** During the COVID-19 outbreak, medical health workers had psychosocial problems and risk factors for developing them. They were in need of attention and recovery programs.

## Ten work-life balance tips for researchers based at home during the pandemic.

[PMID: 32269375](#), Apr 10, 2020

Taylor, Lucy A

Nature

Level of Evidence: : 5 - Expert opinion

Type of Article: News

**Summary:** The author recommends incorporating a schedule and dedicated work space to enable structure while working from home. Routines are helpful for productivity and should not only be related to work. Personal routines are also important and can sustain your wellbeing during this time. Finally, flexibility and altered expectations are also important to sustain morale.