

# Emerging Practices to Combat Coronavirus Disease (COVID-19): Emerging clinical practice and evidence

COVID-19 Clinical Knowledge Transfer from Vizient members and industry resources  
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Vizient is committed to ongoing research of Vizient members' emerging practices and other related updates to federal and regulatory guidelines in support of efforts to combat the COVID-19 pandemic. The purpose of this document is to assist our members with critical information to supplement this work. As new information surfaces, updates will be provided.

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## Practice trends

As the COVID-19 pandemic continues to evolve, emerging clinical practices and evidence to mitigate the impact are evolving as well.

Some of the new research summarized this week includes:

- A new **U.S. observational study** suggests that ACE inhibitors may protect against severe illness in older COVID-19 patients, leading to a new clinical trial.
- A **new study** on the lifetime of small speech droplets and their potential importance in SARS-CoV-2 transmission. Droplets generated by speech in asymptomatic carriers are increasingly considered to be a likely mode of disease transmission.
- The **first known case** of subacute thyroiditis following COVID-19 infection was documented in Italy in the Journal of Clinical Endocrinology & Metabolism.
- Researchers have **compared and summarized lung damage** in patients who died from COVID-19 versus those who died of acute respiratory distress syndrome related to Influenza A (H1N1). The lungs of both COVID-19 and influenza patients had diffuse alveolar damage and infiltrating perivascular lymphocytes. However, the lungs of COVID-19 patients also had severe endothelial injury associated with intracellular SARS-CoV-2 and disrupted endothelial cell membranes, widespread vascular thrombosis with microangiopathy and occlusion of alveolar capillaries, and significant new blood vessel growth through intussusceptive angiogenesis.

The information included in this document is intended to collate emerging evidence that may help guide your clinical practice and assist in keeping patients and clinicians safe.

## COVID-19 Key strategies roadmap

COVID – 19 Stage	Emerging clinical practices key strategies
Prepare	<ul style="list-style-type: none"> <li>• Preparing with universal masking in hospitals in the COVID-19 era</li> <li>• Preparing for COVID-19: Long-term care facilities, nursing homes - CDC</li> <li>• Guidance on how medical resources should be allocated to patients</li> <li>• Guidance to help health care facilities best prepare for resuming elective surgery</li> </ul>
Respond	<ul style="list-style-type: none"> <li>• Interim guidance on infection prevention and control for patients with suspected/confirmed COVID-19</li> <li>• Guidance for severe acute respiratory infection clinical management with suspected COVID-19</li> <li>• Airway Management in a patient with suspected coronavirus</li> <li>• Caring for critically ill patients with novel coronavirus</li> <li>• Treatment guidelines developed to inform clinicians how to care for patients with COVID-19</li> <li>• Care of the imminently dying patient</li> <li>• Guidance for ambulatory care settings in response to community spread of COVID-19</li> </ul>
Recover	<ul style="list-style-type: none"> <li>• Study findings on e-consult appropriateness in health systems</li> <li>• Implementing home care for patients not requiring hospitalization for COVID-19</li> <li>• Guidance for triage of non-emergent surgical procedures</li> </ul>

## Research and treatment

### Risk calculator

Researchers have developed a web-based risk calculator to estimate the probability that a COVID-19 patient will develop critical illness, defined as intensive care unit admission, invasive ventilation, or death. Reporting in [JAMA Internal Medicine](#), the researchers examined the hospital records of nearly 1600 patients in China and assessed 72 potential risk factors. They found that the following 10 variables at admission were associated with increased risk for critical illness: chest radiographic abnormality, age, hemoptysis, dyspnea, unconsciousness, number of comorbidities, cancer history, neutrophil-to-lymphocyte ratio, lactate dehydrogenase, and direct bilirubin.

*Added 5/21/2020*

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### ACE Inhibitors

A new nationwide U.S. observational [study](#) suggests that ACE inhibitors may protect against severe illness in older people with COVID-19, prompting the start of a randomized clinical trial to test the strategy.

*Added 5/28/2020*

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### Speech-based transmission

A [new study](#) details the airborne lifetime of small speech droplets and their potential importance in SARS-CoV-2 transmission. Speech droplets generated by asymptomatic carriers of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) are increasingly considered to be a likely mode of disease transmission. Highly sensitive laser light scattering observations have revealed that loud speech can emit thousands of oral fluid droplets per second. In a closed, stagnant air environment, they disappear from the window of view with time constants in the range of eight to 14 minutes. These observations confirm that there is a substantial probability that normal speaking causes airborne virus transmission in confined environments.

*Added 5/28/2020*

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### Subacute thyroiditis

Clinicians in Italy report the first known case of subacute thyroiditis following SARS-CoV-2 infection in the [Journal of Clinical Endocrinology & Metabolism](#). A young woman tested positive for SARS-CoV-2 and had mild symptoms. After testing negative two weeks later, she presented with sudden fever and worsening neck pain. Subacute thyroiditis was diagnosed after thyroid ultrasound and after lab exams showed thyroid dysfunction and elevated inflammatory markers. Symptoms resolved after the patient started prednisone.

*Added 5/28/2020*

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### Vascular angiogenesis

Researchers compared lung samples of seven patients who died from COVID-19 with seven who died from acute respiratory distress syndrome related to influenza A(H1N1) and 10 uninfected controls. The lungs of both COVID-19 and influenza patients had diffuse alveolar damage and infiltrating perivascular lymphocytes. However, the lungs of COVID-19 patients also had severe endothelial injury associated with intracellular SARS-CoV-2 and disrupted endothelial cell membranes, widespread vascular thrombosis with microangiopathy and occlusion of alveolar capillaries, and significant new blood vessel growth through intussusceptive angiogenesis. The findings are reported in the [New England Journal of Medicine](#).

Added 5/28/2020

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### Alcohol & COVID-19

In mid-March, alcohol sales in the U.K. were up 67% — while supermarket sales rose just 43%, experts note in [The BMJ](#). They continue: "Now, as signs emerge of some control over new cases of COVID-19, it is increasingly clear that if we don't prepare for emerging from the pandemic, we will see the toll of increased alcohol harm for a generation." They add that people with alcohol use disorder — and those close to it — before the pandemic took hold are in particular need of attention, and they urge the health system to be prepared for a "surge ... in the need for alcohol treatment services." <https://www.bmj.com/content/369/bmj.m1987>

Added 5/28/2020

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### Three predictive biomarkers

Using machine learning, researchers have identified three biomarkers that can predict mortality in patients with COVID-19. They used [blood samples](#) from nearly 500 COVID-19 patients in Wuhan, China. Levels of lactic dehydrogenase, lymphocytes, and high-sensitivity C-reactive protein were all associated with increased mortality risk. The findings appear in Nature Machine Intelligence.

Added 5/21/2020

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### Guillain-Barré Syndrome, a Potential Complication of COVID-19

The major manifestations of COVID-19 are pulmonary. Nevertheless, [neurologic disease may result](#), rarely through direct infection, less rarely through parainfectious complications, or more commonly via critical illness. In this series, five cases of Guillain-Barré syndrome (GBS) in patients with COVID-19 were seen in three hospitals in northern Italy from February 28 through March 21, 2020.

Added 5/21/2020

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### Extended isolation recommended

The CDC has [extended the time that recovered COVID-19 patients should remain isolated](#). In particular, recovered patients should isolate for at least 10 days — rather than 7 — after symptom onset and for at least 3 days after recovery. Stricter requirements — such as longer periods of isolation or testing of respiratory specimens for viral burden — may be appropriate for certain patients. These may include people who could transmit the virus to higher-risk individuals (e.g., those with underlying health conditions), those living in retirement homes and other congregate settings, and those who are immunocompromised and may shed the virus longer than others.

Added 5/14/2020

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### Autopsy findings

Pulmonary arterial thrombosis: In an autopsy study of 11 COVID-19 patients in Austria, ["the most striking and unexpected finding"](#) was the obstruction of pulmonary arteries by thrombotic material present at both the macroscopic and microscopic level in all cases," researchers report in the Annals of Internal Medicine. These thromboses were frequently associated with pulmonary infarction and bronchopneumonia. Of note, 10 of the 11 patients had received prophylactic anticoagulation (although venous thromboembolism had not been suspected in any of them).

Added 5/21/2020

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## Summary of drug trials

Vizient's summary of evidence on monotherapy trials and combination trials is continuously updated here:

[Pharmacotherapy for COVID-19.](#)

*Updated 5/11/2020*

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## Testing

### Serologic testing for antibodies

*A serologic test for antibodies against the SARS-CoV-2 nucleocapsid protein shows optimal specificity and sensitivity at day 14, but its prognostic role is unclear.* Researchers present [data](#) on the sensitivity and specificity of the Abbott SARS-CoV-2 immunoglobulin G (IgG) test, which detects IgG antibodies against the SARS-CoV-2 nucleocapsid protein.

*Added 5/28/2020*

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### CDC guidance on antibody testing

The CDC has issued [interim guidance](#) on testing for SARS-CoV-2 antibodies. Among the recommendations: serologic assays that have received emergency use authorization from the FDA are preferred; the test's positive predictive value should be high (e.g., choose a test with a specificity of 99.5% or greater if possible); and testing can be used to aid in the diagnosis of COVID-19 in patients who present late (e.g., 9–14 days after symptom onset), when the sensitivity of polymerase chain reaction testing is waning.

*Added 5/28/2020*

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## Supply

### Single-Use Bronchoscopes in the COVID-19 Pandemic

The American Association for Bronchology and Interventional Pulmonology has recommended use of [disposable bronchoscopes](#) as a first-line option whenever available. This brief commentary outlines other important considerations regarding infection reduction, risk of contamination, staffing considerations and availability of single-use bronchoscopes.

*Added 5/28/2020*

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### Personal Protective Equipment for Common Urologic Procedures Before and During the US COVID-19 Pandemic

This [study](#) sought to quantify the personal protective equipment (PPE) used per urology case to determine the impact on potentially limited resources needed for protecting healthcare providers treating COVID-19 patients. The authors performed a retrospective analysis of all urologic procedures and urologic interventional radiology procedures in March 2019 and March 2020. The mean PPE per case varied greatly between endoscopic and robotic categories. For upper tract obstruction, the authors found that percutaneous nephrostomy placement used much less PPE than ureteral stent placement. Robotic-assisted procedures, especially cystectomy, also required substantial PPE due to multiple people and phases of the operation. Endourologic procedures all required a similar, moderate amount of PPE. The authors provided benchmark PPE required for common urological

procedures. These data can be used in counseling and preparation for procedure selection and resource allocation.

*Added 5/28/2020*

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### **N95 sterilization**

Irradiating N95 masks with gamma radiation reduces their ability to filter air particles — even when relatively low doses are used — according to a [study](#) in JAMA Network Open. Researchers irradiated three different models of N95 masks (doses ranged from 1 -50 kGy of 1.3 MeV gamma radiation). After irradiation, all masks passed a fit test. The masks were then placed in an air duct, through which ambient particulate matter was passed. The masks' filtration efficiency was significantly reduced by all radiation doses. The researchers note: "These findings suggest that a qualitative fit test alone is unable to fully assess mask integrity and that at the doses required for sterilization, gamma radiation degrades the filtration efficiency of N95 masks."

*Added 5/28/2020*

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## Specialty care

### Obstetrics

#### **Testing during pregnancy**

In areas with high COVID-19 prevalence, asymptomatic infection is common among pregnant women and the family or friends (i.e., support people) who accompany them into the delivery room, researchers report in [Obstetrics & Gynecology](#). Roughly 160 pregnant women with scheduled deliveries (e.g., cesarean, labor induction) at a New York City hospital in early April first underwent telephone screening for COVID-19 symptoms and then underwent SARS-CoV-2 testing the day before delivery. None screened positive, yet 16% had positive test results. Additionally, of the support people who screened negative by phone, nearly 10% tested positive the day before delivery. The researchers write, "If universal testing of pregnant patients in a high prevalence area is not performed, health care workers will be inadvertently exposed to COVID-19, unless universal precautions with personal protective equipment are taken."

*Added 5/28/2020*

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## Pediatrics

### **Characteristics and outcomes of children with COVID-19 infection admitted to ICUs**

A [study](#) of pediatric patients in the United States and Canada with COVID-19 found that 83% of children who required admission to the intensive care unit had pre-existing conditions. A majority of children initially presented with respiratory symptoms, with 38% requiring mechanical ventilation.

*Added 5/28/2020*

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### **Pediatric immune thrombocytopenia**

Researchers also report the first known case of pediatric immune thrombocytopenia (ITP) following SARS-CoV-2 infection. The 10-year-old had mild COVID-19 symptoms and known exposure to the virus three weeks before she presented with a rash, bruises, purple lesions in her mouth and severe thrombocytopenia. She tested positive for the virus. In [Pediatrics](#), the researchers write: "It is important for healthcare providers to be aware of ITP as a

possible presentation of COVID-19 and to consider viral testing in these patients for appropriate triaging and isolation to limit community spread and healthcare worker infection during epidemics or pandemics."

*Added 5/28/2020*

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### **ACE2 gene expression in kids' noses**

ACE2 gene expression in the nasal epithelium is lowest in children younger than 10 years old and then increases with age, according to findings in [JAMA](#). The researchers — noting that ACE2 is the receptor that SARS-CoV-2 uses to enter host cells — write, "Lower ACE2 expression in children relative to adults may help explain why COVID-19 is less prevalent in children." Their findings were based on a retrospective analysis of ACE2 expression in nasal epithelium samples taken from roughly 300 patients in a New York City health system in 2015-2018.

*Added 5/28/2020*

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## **Resuming Elective Surgeries and Procedures**

### **Guidance for restarting elective surgeries and procedures**

Physicians and other [experts from Vizient and Sg2®](#) have collaborated to provide guidance for safely balancing the provision of health care overall, including for COVID-19 patients, with the necessity to provide electively scheduled surgery and other procedures.

*Added 5/14/2020*

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## **Additional resources**

Vizient member resources

- [University of Washington \(UW\) resources](#)
- [UCSF resources](#)
- [Nebraska Medicine resources](#)
- [Lifespan, The Miriam Hospital resources](#)
- [The University of Chicago Medicine resources](#)

Other resources

- [Federal Healthcare Resilience Task Force Alternate Care Site Toolkit](#)
- [The Joint Commission COVID Resources Page](#)

## **Additional emerging practices**

Access resource documents on other topics.

- [Managing critical supplies](#)
- [Testing](#)
- [Surge capacity](#)
- [Staff impact](#)

- Visitation