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

COVID-19 Clinical Knowledge Transfer from Vizient members and industry resources
Updated: April 16, 2020

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.

Contents

Practice trends..........................................................3
Research and treatment .............................................4
Respiratory care ..........................................................7
End of life care ............................................................8
Specialty care .............................................................9
Ambulatory care .........................................................11
Long term care .............................................................11
Home health care .........................................................11
Ethical considerations ..................................................11
Environmental services ...............................................12
Coding .................................................................12
Additional resources ....................................................13
Additional emerging practices .......................................13
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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. On April 13, the CDC updated recommendations for infection prevention in outpatient settings. This week we’ve also seen:

- The identification of neurologic manifestation commonly including headache, taste or smell impairment, or dizziness. Additionally, severe deterioration of some patients with COVID-19 that may be closely related to the cytokine storm in their bodies and the development of coagulopathy and antiphospholipid antibodies.

- Although some studies from China have indicated that high-flow nasal oxygen cannula (HFNC) and non-invasive ventilation have not been useful in treating patients with COVID-19, information coming from two locations in the U.S. shows that HFNC combined with early prone positioning has been successful in postponing ventilation. There is a potential for secondary inhalation of emissions released from the patient on HFNC so recommendations include placing these patients in negative-pressure rooms if HFNC is used.

- Continued evidence showing benefits of convalescent plasma use and the importance of understanding COVID-19 through serologic antibody levels to identify contact tracing, viral reservoir and epidemiologic studies.

- Potential benefits of universal testing specifically in obstetric patients to determine hospital isolation practices and bed assignments, inform neonatal care, and guide the use of personal protective equipment.

CMS issued updated guidance for hospitals, psychiatric hospitals, and CAHs on screening, discharge and transfers from the hospital, mitigation of staffing crises, and visitation. 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.
Research and treatment

Antibody research

One study outlines the importance of understanding COVID-19 through serologic antibody levels to identify contact tracing, viral reservoir and epidemiologic studies. The author of this study found the antibody levels to be congruent to the severity of illness with the ability to detect two antigens and conversion from vaccination.

Added 4/16/2020

Protecting clinicians during endotracheal intubation

Researchers describe an "aerosol box" that could help protect clinicians without access to standard personal protective equipment during endotracheal intubation. The clear plastic cube covers the patient's head and has two holes through which the clinician passes his or her hands to perform the procedure. During experiments with a simulated cough, only the inside of the box and the clinician's gloves and gowned forearms were contaminated. Without the box, contamination was seen as far as 2 meters from the patient.

Added 4/9/2020

Interim guidance on treating COVID-19

The American Thoracic Society released interim guidance on treating novel coronavirus disease while cautioning that the available data used to guide the recommendations are limited.

• For hospitalized patients with COVID-19 and pneumonia, the group says that hydroxychloroquine or chloroquine may be used on a case-by-case basis, but clinicians must discuss potential risks and benefits of treatment, data must be collected on outcomes, the patient's condition must be severe, and the drug cannot be in short supply.

• For outpatients with COVID-19 or hospitalized patients without pneumonia, the group made no recommendation for or against use of hydroxychloroquine or chloroquine.

The group also declined to take a position for or against other potential drugs at this time. They did suggest use of prone ventilation for patients with refractory hypoxemia related to progressive COVID-19 pneumonia, and then extracorporeal membrane oxygenation (ECMO) if prone ventilation fails.

Added 4/9/2020

Masking

Universal masking is already standard practice in Asia and has recently been adopted by some U.S. hospitals. Although this practice should not replace required infection-control measures in working with suspected or confirmed COVID-19 patients, the possible benefits of Universal Masking in Hospitals in the Covid-19 Era may include reducing the likelihood of transmission from asymptomatic or minimally symptomatic health care workers, reminding people of the importance of social distancing and other infection-control measures, and reducing anxiety.

The Joint Commission has issued a statement supporting use of personal face masks provided from home amid COVID-19 pandemic when health care organizations cannot provide access to protective equipment as well as Frequently Asked Questions regarding the statement. The CDC supports wearing cloth face coverings in public settings where other social distancing measures are difficult to maintain.

Added 4/9/2020
Transmission and symptoms

The SARS-CoV-2 virus might infect a patient's nervous system and skeletal muscle, according to a retrospective case series of roughly 200 patients with COVID-19 in Wuhan, China, published in JAMA Neurology. Just over a third of these patients had some sort of neurologic manifestation, commonly headache, taste or smell impairment, or dizziness. Neurologic symptoms such as acute cerebrovascular disease, conscious disturbance, and skeletal muscle injury were more common among those with more severe illness. The authors note: "During the epidemic period of COVID-19, when seeing patients with these neurologic manifestations, physicians should consider SARS-CoV-2 infection as a differential diagnosis to avoid delayed diagnosis or misdiagnosis and prevention of transmission."

Added 4/16/2020

Writing in the New England Journal of Medicine, physicians note that antiphospholipid antibodies can occur in critically ill patients, and they "may rarely lead to thrombotic events that are difficult to differentiate from other causes of multifocal thrombosis." An older man in China with a history of hypertension, diabetes, and stroke was diagnosed with COVID-19 that ultimately required invasive mechanical ventilation. Testing revealed coagulopathy, antiphospholipid antibodies, and cerebral infarcts in multiple vascular territories. Two other patients in the ICU had similar findings.

Added 4/16/2020

The studies below discuss the relationship between severe deterioration in some patients with COVID-19 and the cytokine storm in their bodies. One author concluded that the "timely control of the cytokine storm in its early stage through such means as immunomodulators and cytokine antagonists, as well as the reduction of lung inflammatory cell infiltration, is the key to improving the treatment success rate and reducing the mortality rate of patients with COVID-19."

- Cytokine Storm: The Sudden Crash in Patients with COVID-19.
- COVID-19: consider cytokine storm syndromes and immunosuppression.

Added 4/16/2020

SARS-CoV-2, the virus that causes COVID-19, could potentially spread through the eyes according to a preliminary study in JAMA Ophthalmology. Of 38 patients in China hospitalized with clinically confirmed COVID-19, roughly a third had conjunctivitis. Some 17% of those with ocular abnormalities tested positive for the virus in both conjunctival and nasopharyngeal swabs.

Added 4/2/2020

The virus may be detectable for as long as 8 days after a person's symptoms resolve. Half of patients in this study still tested positive via throat swab after their symptoms resolved, however it’s unclear whether positive tests mean the virus is capable of transmission later in the course of the disease.

Added 4/2/2020

There is rapidly accumulating anecdotal evidence that loss of smell or taste are frequently reported symptoms associated with COVID-19.

Added 4/2/2020
Convalescent plasma use

Proceedings of the National Academy of Sciences adds to evidence supporting use of convalescent plasma to treat COVID-19. Ten patients in China with severe disease received a 200-mL infusion of inactivated convalescent plasma from recovered donors. All symptoms in all patients "disappeared or largely improved" within 1 to 3 days. Viral load was undetectable within 7 days in seven patients who’d had viremia. There were no serious adverse reactions.

Added 4/16/2020

The FDA is working to enable access to convalescent plasma as a potential treatment for COVID-19, citing early research suggesting a benefit. The agency expects to "be able to move thousands of units of plasma to patients who need them in the coming weeks." A second treatment, hyperimmune globulin made from convalescent plasma, is also under development. People who have been symptom-free for at least two weeks may donate plasma. Frequently asked questions have been posted by the American Red Cross and Mayo Clinic.

Added 4/9/2020

CPR guidance

The American Heart Association has issued interim guidance for CPR and emergency cardiovascular care for patients with known or suspected COVID-19.

Added 4/6/2020

Blood donation guidance

The FDA has updated its blood donation guidance to expand to expand its donor pool. Some of the changes include shortening the deferral period for men who’ve had sex with men from 12 months to 3 months. The same change applies to those who have received tattoos and piercings or have traveled to malaria-endemic countries.

Added 4/6/2020

Field hospitals

Because the coronavirus pandemic is causing alternative care sites such as “field hospitals,” Chinese health officials reveal a strategy how they minimized infections in these sites. This article shares practical, specific instructions for those care sites that will not be operating in traditional brick and mortar buildings.

Added 4/2/2020

Preventing pressure injuries from PPE use

To prevent the development of or promote healing of pressure injuries from prolonged use of facemasks, goggles, or shields, identify strategies such as foam or hydrocolloid dressings, petroleum jelly, or other pressure and friction reduction strategies that do not compromise the fit and seal of the mask. When injuries are present, determine the appropriate treatment based on the specific stage of the wound.

Recommendations from experts regarding the prevention and treatment of skin lesions associated with non-invasive mechanical ventilation includes always using foam or hydrocolloid dressings on the nasal bridge and evaluating the condition of the skin under the interface and harness every 4 hours.

Added 4/9/2020
Summary of drug trials

Vizient’s summary of evidence on monotherapy trials and combination trials is continuously updated here: Pharmacotherapy for COVID-19.

Updated 4/13/2020

Respiratory care

Noninvasive ventilation

Although some studies from China have indicated that high-flow nasal oxygen cannula (HFNC) and non-invasive ventilation have not been useful in treating patients with COVID-19, information coming from two locations in the U.S. shows that HFNC combined with early prone positioning has been successful in postponing ventilation.

Studies have shown that there is a potential for secondary inhalation of emissions released from the patient on HFNC. Some recommend placing these patients in negative-pressure rooms if HFNC is used. There are some recommendations from clinicians about proper ways to manage these patients in the ICU.

Added 4/16/2020

Patients with Acute Respiratory Distress Syndrome (ARDS) may benefit from noninvasive ventilation delivered by helmet as shown in the following articles. Please note there is no published data in the COVID-19 patients using the helmets. The JAMA article below reported an 18.2% intubation rate in patients randomized to helmet (control group 61.5%). Feedback from Europe (Milan) notes that helmets allows ~30% of patients to avoid intubation:

- Effect of Noninvasive Ventilation Delivered by Helmet vs Face Mask on the Rate of Endotracheal Intubation in Patients with Acute Respiratory Distress Syndrome.
- Patients with Acute Respiratory Distress Syndrome Enrolled in a Randomized Clinical Trial of Helmet versus Facemask Noninvasive Ventilation.
- Helmet-based ventilation is superior to face mask for patients with respiratory distress.
- University of Chicago helmet ventilation management instructional video.

Added 4/6/2020

Ventilator sharing

In a joint statement issued by professional medical organizations from across the U.S., there is no standard guidance or recommendation for sharing mechanical ventilators between patients. This statement concludes that it’s better to purpose the ventilator to the patient most likely to benefit than fail to prevent, or even cause, the demise of multiple patients. However, the U.S. Surgeon General is suggesting a possible crisis standard of care strategy, which would include sharing ventilators without objection from the CDC and FDA.

Added 4/2/2020

Airway management

The Anesthesia Patient Safety Foundation provides a summary of Recommendations for Airway Management in a Patient with Suspected Coronavirus (2019 nCoV) Infection.

Added 3/30/2020
Treatment of ventilated patients

Evidence in support of long duration prone-position ventilation for mortality reduction in severe Acute Respiratory Distress Syndrome (ARDS) cases are shown in the following articles:

- Prone position ventilation in ARDS: An overview of the evidence  (added 4/2/2020).

The American Association of Respiratory Care guidance document synthesis the current experience coming from China, Italy and the US (Seattle & New York) and some common sense approaches from past lessons learned.

Added 4/2/2020

Decontamination and Reuse of FFRs

Although disposable filtering facepiece respirators (FFRs) are not approved for routine decontamination and reuse as standard of care, the CDC provides guidelines as a crisis capacity strategy to ensure continued availability. The CDC summarizes research on the potential methods to decontaminate FFRs using ultraviolet germicidal irradiation, vaporous hydrogen peroxide, and moist heat which show the most promise.

Added 4/6/2020

Treatment of SARI

World Health Organization provides up-to-date guidance on clinical management of severe acute respiratory infection when COVID-19 is suspected.

Added 4/2/2020

End of life care

End of life resource allocation

Allocating Ventilators in a Pandemic. Establish an ethics panel to make decisions about utilization of end-of-life resources (ICU, Ventilators) to buffer the care team from making those decisions or removing life support.

Added 4/2/2020

Standard of care

Care of the imminently dying patient should not differ significantly from standard best palliative care practices, but there are some pertinent modifications in COVID-19 to consider with respect to:

- Non-pharmacological management.
- Pharmacological management.
- Withdrawal of life sustaining treatments (WLST).
- Support for staff who are providing end-of-life care.
Resources for clinicians

Council for Advancing Palliative Care’s toolkit to address end of life care contains COVID-19-specific resources and online courses including scripting for difficult conversations, guidelines for symptom management, patient and family support resources, etc.

Address advance care planning and decisions about Do-Not-Resuscitate orders during novel coronavirus.

Added 4/2/2020

Resources to facilitate communication during COVID-19:

- COVID Ready Communication Playbook.
- Respecting Choices COVID-19 tools and resources.
- Sample videos regarding communicating virtually with families at the end of life.
- PREPARE for your care VOCID-19.

Added 4/2/2020

Specialty care

Managing pregnant women and newborns

New York–Presbyterian Allen Hospital and Columbia University Irving Medical Center conducted Universal Screening for SARS-CoV-2 in Women Admitted for Delivery. Of the 214 patients tested, 33 patients (15%) were positive for SARS-CoV-2. Of these patients who tested positive, 88% were without COVID-19 symptoms and were afebrile on admission. The potential benefits of a universal testing approach include the ability to use COVID-19 status to determine hospital isolation practices and bed assignments, inform neonatal care, and guide the use of personal protective equipment.

Added 4/16/2020

Diligence in evaluating and treating pregnant women is warranted due to the lack of data and experience with coronaviruses in this population. This algorithm is designed to aid practitioners in promptly evaluating and treating pregnant persons with known exposure and/or those with symptoms consistent with COVID-19 (persons under investigation [PUI]).

Added 4/9/2020

Initial guidance for the Management of Infants Born to Mothers with COVID-19 is to separate them and test the newborn if possible to guide their plan of care.

- Temporary separation of mother and newborn will minimize the risk of postnatal infant infection from maternal respiratory secretions. However, an informed discussion between new mothers and their doctor should occur if the mother requests to remain with her infant. In such cases the infant should remain at least six feet from the mother except when nursing.
- Studies to date have not found SARS-CoV-2 in breast milk. Mothers should wear masks while nursing and wash their hands before and after along with washing breast pump parts if they are utilized to assist with lactation.
- Additional articles on this issue include:
Managing patients with opioid dependency

Providers managing patients with an opioid dependency should plan for an adjusted frequency of visits to the clinic, work with their state and SAMHSA to secure waivers needed to manage risk and should establish telehealth options where possible.

- Substance Abuse and Mental Health Services Administration (SAMHSA) COVID-19 Resources and Information.
- Use of Telemedicine While Providing Medication Assisted Treatment (MAT).
- National Institute on Drug Abuse.

Critical Care

Surviving Sepsis Campaign COVID-19 panel issued several recommendations to help support healthcare workers caring for critically ill ICU patients with novel coronavirus.

As the number of critically ill patients surges in hospitals, non-ICU clinicians may be needed to care for critically ill patients. The Society of Critical Care Medicine provides online education to healthcare professionals who may benefit from critical care training as well as other emergency resources and updates.

- Critical Care for the Non-ICU Clinician.
- Resources (includes checklist and videos).
- COVID-19 updates.

Use of PPE in GI endoscopy

This report now joins other recent guidance on endoscopy during COVID-19, including recommendations from endoscopists in Italy.

Anesthesiology

Anesthesia machine use, protection and decontamination during the COVID-19 pandemic.

Webpage last updated 4/1/2020
Coronavirus information for Anesthesiologists from the American Society for Anesthesiologists.

Webpage last updated 3/20/2020

Ambulatory care

Infection Prevention

The Centers for Disease Control and Prevention (CDC) has issued recommendations for infection prevention in outpatient settings for patients with suspected or known coronavirus disease 2019 (COVID-19). These patients should be isolated in a well-ventilated triage area with private room, if possible. Patients with respiratory symptoms should receive priority triage.

Added 4/16/2020

Elective surgery during COVID-19 incubation period

Researchers retrospectively analyzed clinical data of 34 patients who underwent elective surgeries in China during the incubation period of COVID-19. They discovered that symptoms quickly emerged after surgery with 44% of patients studied requiring intensive care for COVID-19. Seven patients died — all had undergone level-3 surgeries (with level 4 being the most difficult). The authors say the findings "suggest that surgery may accelerate and exacerbate disease progression of COVID-19."

Added 4/9/2020

Long term care


Webpage last reviewed 3/21/2020

Home health care

CDC Interim Guidance for Implementing Home Care of People Not Requiring Hospitalization for COVID-19.

Webpage last reviewed 3/20/2020

Ethical considerations

Operationalizing ethical values

The University of Pittsburgh Medical Center developed a framework for determining how medical resources should be allocated to patients based on their score on an eight-point scale that takes into account their odds of survival to hospital discharge and certain life-limiting medical conditions.

Many states have legacy policies or emergency plans in place regarding allocating resources. Some examples are below. Check with your state health department to view your state’s plans.

- Alabama ventilator rationing plan.

Updated 4/9/2020

NEJM article describes how to operationalize four ethical values for rationing health resources in a pandemic.

Added 4/2/2020
Ethical resources
The Hastings Center has assembled ethics resources for responding to novel Coronavirus (COVID-19).

- Ethical Framework for Health Care Institutions & Guidelines for Institutional Ethics Services Responding to the Coronavirus Pandemic.

Added 3/30/2020

Legal ramifications of rationing
There are potential legal ramifications of either withholding or withdrawing a ventilator from a patient who would ordinarily receive such aid in the absence of a public health emergency. This article discusses the risks of legal liability and identifies needed reforms states should consider.

Added 4/6/2020

Environmental services
Transmission Routes and Surface Survival
Because information is still lacking on the transmissibility of COVID-19 from contaminated environmental surfaces and objects, studies looking at decontamination are important.

Added 4/9/2020

Aerosol and surface stability of SARS-CoV-2 as compared with SARS-CoV-1 on various surfaces and estimated rates of decay.

Added 4/2/2020

Disinfectants and room cleaning

Webpage last reviewed 4/1/2020

EPA’s list of disinfectants for use against COVID-19.

Added 4/2/2020

UW Medicine’s room cleaning policy.

Added 4/2/2020

Infection control guidelines
CDC Environmental Infection Control Guidelines.

Webpage last reviewed 7/23/2020

Coding
Medical coding resources for COVID-19 novel coronavirus:
• Vizient’s Emergency use of ICD codes summary.
• Vizient Advisory Solutions team recorded presentation outlining recent changes.
• ICD-10-CM Official Coding and Reporting Guidelines.

Added 4/9/2020

Additional resources

• University of Washington (UW) resources
• UCSF resources
• Nebraska Medicine resources
• Lifespan, The Miriam Hospital resources
• The University of Chicago Medicine resources

Additional emerging practices

Access resource documents on other topics.

• Managing critical supplies
• Testing
• Surge capacity
• Staff impact
• Visitation