Clinical treatment of COVID-19 is rapidly evolving. ASPR TRACIE recommends clinicians monitor the National Institutes of Health, Centers for Disease Control and Prevention, and other reliable sources of information. This section provides a brief summary of some current issues and treatment of COVID-19, but it is not intended to be comprehensive nor be a source of clinical advice.

Clinical Presentation

- Estimations of hospitalized cases and those causing death are difficult due to the number of asymptomatic cases. Seroprevalence studies suggest that approximately 30% of adults and 80% of children are asymptomatic.
- Hospitalization published rates are 10-20% for those who develop symptoms; intensive care unit (ICU) hospitalization is required in about 5% of cases. These rates seem to be declining as the epidemic evolves, perhaps due to younger, healthier people being infected compared to the initial phase of the pandemic. Other possibilities include viral mutation, improved treatments, or a combination of factors.
- Classic presentation is fatigue, fever, and cough. Up to 40% of mild cases will not have fever.
- Duration of symptoms is usually about one week.
- In the second week of illness, a minority of patients will experience worsening symptoms usually including hypoxia. Hypoxia can be clinically severe, but not be particularly bothersome to the patient (i.e., “happy hypoxia”). It can, however, progress to respiratory failure.
- Anosmia or ageusia are frequently reported and can be the only symptoms experienced. Other gastrointestinal (GI) side effects are less common but can include anorexia, diarrhea, and more rarely vomiting.
- COVID-19 can present with isolated stroke, though this seems rare. Encephalopathy may develop in intensive care patients and is likely related to hypoxia.
- Dermatologic features can be seen in 20% of cases and are highly variable.
- Conjunctivitis can be seen in a significant minority of cases.
- Pediatric patients seldom develop severe disease unless underlying health conditions (predominately diabetes and obesity) exist. Multisystem inflammatory syndrome may develop in a small number of pediatric patients and mimic Kawasaki disease in presentation.
- Incidence of acute kidney injury (AKI) is estimated at 15-25% in hospitalized patients. In New York City 9% of admissions required renal support therapy. Rhabdomyolysis is less common.
- Cardiac presentations of COVID-19 are uncommon, but evidence of myocardial inflammation is common on magnetic resonance imaging of patients and not correlated with disease severity – unclear significance in asymptomatic patients. Most heart failure is due to right ventricular strain and diastolic dysfunction, though severe acute left ventricular dysfunction can occur.
- “Long-haul” symptoms are possible. Many patients report symptoms continue at 60 days after onset of illness. This usually involves ongoing fatigue but can involve persisting fevers, dyspnea, and cognitive changes.

Resources Related to Clinical Presentation

Risk Factors and Predictors of Severe Disease

• Older age – Data from U.S. intensive care patients indicates that the odds ratio (OR) for death is 11.5 when comparing patients age 80 to those age 40. The OR is 7.45 for patients age 70 versus younger patients.
• Elevated d-dimer
• Elevated troponin, particularly when associated with new evidence of heart failure
• Underlying conditions, especially diabetes, renal failure, obesity (OR 1.6-3), and heart disease (including hypertension and heart failure)

A predictive calculator for severe disease incorporating several of these variables is available with higher scores portending poor outcomes

Resources Related to Risk Factors

Treatment

Available treatments and the data supporting their use changes rapidly. Please do not use this guide to inform direct medical care of patients. Multiple new treatments available under emergency use authorization (EUA) are expected in late 2020 and early 2021.

- Supportive care
- Antipyresis – early concerns about ibuprofen have not been confirmed.
- Monoclonal antibody therapy – recent EUA and more pending. May prevent disease progression when given early in the course of illness to at-risk patients. Requires outpatient infusion.
- Steroids for all patients requiring respiratory support (at minimum – may also benefit those with renal dysfunction).
- Prone positioning as tolerated for hypoxia
- Oxygen – including use of BiPAP and particularly high-flow nasal cannula when available. Intubation if required.
- Fluid management strategies are controversial. Generally, in patients with evolving respiratory pathology a fluid-limited strategy may be best consistent with acute respiratory distress syndrome (ARDS) guidelines. However, in patients with normal lung compliance more aggressive hydration may be appropriate to help prevent renal injury.
- Anticoagulation at prophylactic doses for all admitted patients, escalating to therapeutic for evidence of pulmonary embolism or deep venous thrombosis, has shown up to 50% mortality benefit in hospitalized patients.
- Remdesivir – modest mortality benefit in 5-day course, particularly for patients with moderate disease (e.g., hospitalized with oxygen requirement).
- Convalescent plasma – controversy about degree of benefit exists. Likely most beneficial during early phase of treatment of hospitalized patients. More study results are needed.
- Statins – Odds ratio 0.7 for death when on statin. Acute initiation of statins has not been studied.
- Angiotensin-converting enzyme (ACE) inhibitors and angiotensin II receptor blockers (ARBs) – there is conclusive evidence of benefit to remain on these medications if currently using. Data for acute initiation as therapy to prevent severe pulmonary disease is being studied.
- Immune modulating therapies – not enough evidence to recommend at this time.
- Extracorporeal membrane oxygenation (ECMO) has been shown to benefit selected COVID-19 patients with refractory hypoxia despite mechanical ventilation.
- Pulmonary vasodilators such as nitric oxide or epoprostenol (Flolan) may be initiated per usual guidelines and have been beneficial according to anecdotal accounts and small case series. These should be offered when available and appropriate but specific data on outcomes in COVID-19 are lacking at this time (though studies are underway).
- Hospitals should develop multispecialty, multidisciplinary guidelines that offer the most up to date information on supportive care and treatment of patients with COVID-19. The guidelines
can help to standardize the use of scarce resources such as critical care beds, therapeutics, and life sustaining measures including continuous renal replacement therapy and hemodialysis.

**Resources Related to Treatment**


• World Health Organization. (2020). The Use of Non-Steroidal Anti-Inflammatory Drugs (NSAIDs) in Patients with COVID-19.

Return to Toolkit Landing Page