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*By Chris at 1:50 pm, Jun 08, 2020*

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# Coronavirus Disease 2019 (COVID-19)

# Interim Clinical Guidance for Management of Patients with Confirmed Coronavirus Disease 2019 (COVID-19)

Updated June 2, 2020

## Summary of Recent Changes

Revisions were made on May 25, 2020, to reflect the following:

- Refer to new [multisystem inflammatory syndrome in children \(MIS-C\)](#) guidance for health care providers

Revisions were made on May 20, 2020, to reflect the following:

- Refer to new guidance for [Evaluation and Management Considerations for Neonates](#)

Revisions were made on May 12, 2020, to reflect the following:

- New information about COVID-19-Associated Hypercoagulability
- Updated content and resources to include new NIH Treatment Guidelines
- Minor revisions for clarity

This interim guidance is for clinicians caring for patients with confirmed infection with syndrome coronavirus 2 (SARS-CoV-2), the virus that causes coronavirus disease 2019 (this interim guidance as more information becomes available.

## Clinical Presentation

### Incubation period

The incubation period for COVID-19 is thought to extend to 14 days, with a median time symptoms onset.<sup>1-3</sup> One study reported that 97.5% of persons with COVID-19 who developed within 11.5 days of SARS-CoV-2 infection.<sup>3</sup>

### Presentation

The signs and symptoms of COVID-19 present at illness onset vary, but over the course with COVID-19 will experience the following<sup>1,4-9</sup>:

- Fever (83–99%)
- Cough (59–82%)
- Fatigue (44–70%)
- Anorexia (40–84%)
- Shortness of breath (31–40%)
- Sputum production (28–33%)
- Myalgia (11–35%)

Atypical presentations have been described, and older adults and persons with medical history may have a delayed presentation of fever and respiratory symptoms.<sup>10,11</sup> In one study of 1,099 hospitalized patients, fever was present in only 44% at hospital admission but later developed in 89% during hospitalization. Rhinorrhea, sore throat, hemoptysis, vomiting, and diarrhea have been reported but are uncommon. Some persons with COVID-19 have experienced gastrointestinal symptoms such as diarrhea. Some persons with COVID-19 have experienced gastrointestinal symptoms such as diarrhea before developing fever and lower respiratory tract signs and symptoms.<sup>9</sup> Anosmia or ageusia (loss of smell or taste) without respiratory symptoms has been anecdotally reported<sup>12</sup>, but more information is needed to confirm identifying COVID-19.

Several studies have reported that the signs and symptoms of COVID-19 in children are usually milder compared to adults.<sup>13-17</sup> For more information on the clinical presentation of COVID-19 in children, see the clinical guidance on COVID-19 in children.

# Clinical Course

## Illness Severity

The largest cohort of >44,000 persons with COVID-19 from China showed that illness severity was critical:<sup>38</sup>

- Mild to moderate (mild symptoms up to mild pneumonia): 81%
- Severe (dyspnea, hypoxia, or >50% lung involvement on imaging): 14%
- Critical (respiratory failure, shock, or multiorgan system dysfunction): 5%

In this study, all deaths occurred among patients with critical illness and the overall case fatality rate among patients with critical disease was 49%.<sup>38</sup> Among children in China with 94% having asymptomatic, mild or moderate disease, 5% having severe disease, and 1% having critical disease.<sup>14</sup> Among U.S. COVID-19 cases with known disposition, the proportion of persons with critical illness was 19%.<sup>39</sup> The proportion of persons with COVID-19 admitted to the intensive care unit (ICU) was 19%.

## Clinical Progression

Among patients who developed severe disease, the median time to dyspnea ranged from 7 to 10 days, the time to acute respiratory distress syndrome (ARDS) ranged from 8 to 12 days, and the median time to death ranged from 10 to 12 days.<sup>5,6,10,11</sup> Clinicians should be aware of the potential for some patients to die one week after illness onset. Among all hospitalized patients, a range of 26% to 32% of patients were admitted to the ICU.<sup>6,8,11</sup> Among all patients, a range of 3% to 17% developed ARDS compared to a range of 26% to 32% for hospitalized patients and 67% to 85% for patients admitted to the ICU.<sup>1,4-6,8,11</sup> Mortality in the ICU ranges from 39% to 72% depending on the study.<sup>5,8,10,11</sup> The median length of hospital stay for survivors was 10 to 13 days.<sup>1,6,8</sup>

## Risk Factors for Severe Illness

Age is a strong risk factor for severe illness, complications, and death.<sup>1,6,8,10,11,38-41</sup> Among cases of COVID-19 in China, the case fatality rate was highest among older persons: ≥80 years: 8.0%, 60–69 years: 3.6%, 50–59 years: 1.3%, 40–49 years: 0.4%, <40 years: 0.2%.<sup>38,42</sup> Early data suggests that the case fatality was highest in persons aged ≥85 years (range 10%–27%), 65–84 years, 1%–3% for ages 55–64 years, and <1% for ages 0–54 years.<sup>39</sup>

Patients in China with no reported underlying medical conditions had an overall case fatality rate of 1.8%.

# Viral Testing

Diagnosis of COVID-19 requires detection of SARS-CoV-2 RNA by reverse transcription p PCR). Detection of SARS-CoV-2 viral RNA is better in nasopharynx samples compared to respiratory samples may have better yield than upper respiratory samples.<sup>33,47</sup> SARS-CoV-2 detected in stool and blood.<sup>13,34,44,48</sup> Detection of SARS-CoV-2 RNA in blood may be a marker for viral RNA shedding may persist over longer periods among older persons and those who have had hospitalization. (median range of viral shedding among hospitalized patients 12–20 day

Infection with both SARS-CoV-2 and with other respiratory viruses has been reported, a respiratory pathogen does not rule out COVID-19.<sup>50</sup>

For more information about testing and specimen collection, handling and storage, visit [Persons for Coronavirus Disease 2019 \(COVID-19\)](#) and [Frequently Asked Questions on COVID-19 Testing in Laboratories](#).

# Laboratory and Radiographic Findings


## Laboratory Findings

Lymphopenia is the most common lab finding in COVID-19 and is found in as many as 80%. Lymphopenia, neutrophilia, elevated serum alanine aminotransferase and aspartate aminotransferase, elevated lactate dehydrogenase, high CRP, and high ferritin levels may be associated with disease severity.<sup>1,5,6,8,10,51</sup> Elevated D-dimer and lymphopenia have been associated with mortality. Patients with normal on admission, but may increase among those admitted to the ICU.<sup>4-6</sup> Patients with elevated plasma levels of inflammatory makers, suggesting potential immune dysregulation.<sup>5,52</sup>

## Radiographic Findings

Chest radiographs of patients with COVID-19 typically demonstrate bilateral air-space consolidation. Some patients may have unremarkable chest radiographs early in the disease.<sup>1,5,53</sup> Chest CT images from patients with COVID-19 typically demonstrate bilateral, peripheral ground glass opacities.<sup>4,8,38,54-63</sup> Because this finding is non-specific and overlaps with other infections, the diagnostic value of chest CT imaging is limited and dependent upon radiographic interpretation.<sup>55,64</sup> One study found that 56% of patients within 7 days of diagnosis had a normal CT<sup>56</sup>. Conversely, other studies have also identified chest CT abnormalities prior to the detection of SARS-CoV-2 RNA.<sup>54,65</sup> Given the variability in chest imaging findings, chest CT alone is not recommended for the diagnosis of COVID-19. The American College of Radiology recommends CT for screening or as a first-line test for diagnosis of COVID-19. (See [American College of Radiology COVID-19 Imaging Recommendations](#))

# Clinical Management and Treatment

The National Institutes of Health published guidelines on prophylaxis use, testing, and r COVID-19. For more information, please visit: [National Institutes of Health: Coronavirus Treatment Guidelines](#) . The recommendations were based on scientific evidence and updated as more data become available.


## Mild to Moderate Disease

Patients with a mild clinical presentation (absence of viral pneumonia and hypoxia) may hospitalization, and many patients will be able to manage their illness at home. The dec the inpatient or outpatient setting should be made on a case-by-case basis. This decisio presentation, requirement for supportive care, potential risk factors for severe disease, to self-isolate at home. Patients with risk factors for severe illness (see [People Who Are Illness](#)) should be monitored closely given the possible risk of progression to severe illn symptom onset.<sup>5,6,10,11</sup>

For information regarding infection prevention and control recommendations, please s [Prevention and Control Recommendations for Patients with Confirmed Coronavirus Dis Persons Under Investigation for COVID-19 in Healthcare Settings](#).

## Severe Disease

Some patients with COVID-19 will have severe disease requiring hospitalization for mar management revolves around the supportive management of the most common comp pneumonia, hypoxemic respiratory failure/ARDS, sepsis and septic shock, cardiomyopa kidney injury, and complications from prolonged hospitalization, including secondary b thromboembolism, gastrointestinal bleeding, and critical illness polyneuropathy/myopa

More information can be found at [National Institutes of Health: Coronavirus Disease 20 Guidelines](#)  and [Healthcare Professionals: Frequently Asked Questions and Answers](#). guidance documents on the treatment and management of COVID-19, including inpatie patients, are provided below.








## Hypercoagulability and COVID-19

Some patients with COVID-19 may develop signs of a hypercoagulable state and be at ir arterial thrombosis of large and small vessels.<sup>70,71</sup> **Laboratory abnormalities** commonly

## CDC Resources

- [Healthcare Professionals: Frequently Asked Questions and Answers](#)
- [Information for Pediatric Healthcare Providers](#)
- [Evaluating and Testing Persons for Coronavirus Disease 2019 \(COVID-19\)](#)
- [Frequently Asked Questions on COVID-19 Testing at Laboratories](#)
- [Infection Control Guidance for Healthcare Professionals about COVID-19](#)
- [Interim Infection Prevention and Control Recommendations for Patients with Suspected Coronavirus Disease 2019 \(COVID-19\) or in Healthcare Settings](#)
- [Evaluation and Management Considerations for Neonates At Risk for COVID-19](#)
- [COVIDView: A Weekly Surveillance Summary of U.S. COVID-19 Activity](#)

## Additional resources

- [World Health Organization. Interim Guidance on Clinical management of severe acute respiratory infection of novel coronavirus \(nCoV\) infection is suspected](#) 
- [Surviving Sepsis Campaign: Guidelines on the Management of Critically Ill Adults with COVID-19](#)  
- [Surviving Sepsis Campaign: International Guidelines for Management of Sepsis and Septic Shock: 2017](#)
- [Surviving Sepsis Campaign International Guidelines for the Management of Septic Shock and Organ Dysfunction in Children](#) 
- [Diagnosis and Treatment of Adults with Community-acquired Pneumonia. An Official Statement of the American Thoracic Society and Infectious Diseases Society of America](#) 
- [ACR Recommendations for the use of Chest Radiography and Computed Tomography for the Detection, Diagnosis, and Management of COVID-19 Infection](#) 
- [National Institutes of Health: Coronavirus Disease 2019 \(COVID-19\) Treatment Guidelines](#)
- [Infectious Diseases Society of America Guidelines on the Treatment and Management of COVID-19 Infection](#) 



1. Guan WJ, Ni ZY, Hu Y, et al. Clinical Characteristics of Coronavirus Disease 2019 in China. *N Engl J Med* 2020;382:1708-20.
2. Li Q, Guan X, Wu P, et al. Early Transmission Dynamics in Wuhan, China, of Novel Coronavirus Pneumonia. *N Engl J Med* 2020;382:1199-207.
3. Lauer SA, Grantz KH, Bi Q, et al. The Incubation Period of Coronavirus Disease 2019 (COVID-19) From Publicly Reported Confirmed Cases: Estimation and Application. *Ann Intern Med* 2020.
4. Chen N, Zhou M, Dong X, et al. Epidemiological and clinical characteristics of 99 case patients with pneumonia in Wuhan, China: a descriptive study. *Lancet* 2020;395:507-13.
5. Huang C, Wang Y, Li X, et al. Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. *Lancet* 2020;395:497-506.
6. Wang D, Hu B, Hu C, et al. Clinical Characteristics of 138 Hospitalized Patients With 2019 Novel Coronavirus Pneumonia in Wuhan, China. *JAMA* 2020.
7. Xu XW, Wu XX, Jiang XG, et al. Clinical findings in a group of patients infected with the novel coronavirus (SARS-CoV-2) outside of Wuhan, China: retrospective case series. *BMJ* 2020;368:m606.
8. Wu C, Chen X, Cai Y, et al. Risk Factors Associated With Acute Respiratory Distress Syndrome in Patients With Coronavirus Disease 2019 Pneumonia in Wuhan, China. *JAMA Intern Med* 2020.
9. Pan L, Mu M, Yang P, et al. Clinical Characteristics of COVID-19 Patients With Digestive System Involvement: A Descriptive, Cross-Sectional, Multicenter Study. *Am J Gastroenterol* 2020.
10. Zhou F, Yu T, Du R, et al. Clinical course and risk factors for mortality of adult inpatients with COVID-19 in Wuhan, China: a retrospective cohort study. *Lancet* 2020.
11. Yang X, Yu Y, Xu J, et al. Clinical course and outcomes of critically ill patients with SARS-CoV-2 pneumonia in Wuhan, China: a single-centered, retrospective, observational study. *Lancet Respir Med* 2020.
12. Giacomelli A, Pezzati L, Conti F, et al. Self-reported olfactory and taste disorders in SARS-CoV-2 infection: a cross-sectional study. *Clin Infect Dis* 2020.
13. Cai J, Xu J, Lin D, et al. A Case Series of children with 2019 novel coronavirus infection: clinical features. *Clin Infect Dis* 2020.
14. Dong Y, Mo X, Hu Y, et al. Epidemiology of COVID-19 Among Children in China. *Pediatrics* 2020.
15. Liu W, Zhang Q, Chen J, et al. Detection of Covid-19 in Children in Early January 2020 in Wuhan, China. *N Engl J Med* 2020;382:1370-1.
16. Lu X, Zhang L, Du H, et al. SARS-CoV-2 Infection in Children. *N Engl J Med* 2020;382:1781-9.
17. Wei M, Yuan J, Liu Y, Fu T, Yu X, Zhang ZJ. Novel Coronavirus Infection in Hospitalized Patients in China. *JAMA* 2020.
18. Chen IF, Yuan C, Ke K, et al. A familial cluster of pneumonia associated with the 2019 novel coronavirus indicating person-to-person transmission of the virus. *N Engl J Med* 2020.

