Centers for Disease Control and Prevention

REVIEWED
By Chris at 8:23 am, Jun 22, 2020

Find pages with...

All these words:

Results must contain all of these words

This exact word or phrase:

Results must contain this full phrase

Any of these words:

Results must match at least one of these words

None of these words:

Results cannot contain any of these words

Language:

Any

Find pages in the language you select

Between these dates:

From

To

Results updated between these given dates

Clear Advanced Search

Coronavirus Disease 2019 (COVID-19)

Interim Clinical Guidance for Managem Patients with Confirmed Coronavirus D (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 h

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 s
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.[1-3] One study reported that 97.5% of persons with COVID-19 who deve
within 11.5 days of SARS-CoV-2 infection.[3]

Presentation

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

- 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
delayed presentation of fever and respiratory symptoms.[10,11] In one study of 1,099 hosp
present in only 44% at hospital admission but later developed in 89% during hospitaliza
rhinorrhea, sore throat, hemoptysis, vomiting, and diarrhea have been reported but are
Some persons with COVID-19 have experienced gastrointestinal symptoms such as diar
developing fever and lower respiratory tract signs and symptoms.[9] Anosmia or ageusia
respiratory symptoms has been anecdotally reported[12], but more information is neede
identifying COVID-19.

Several studies have reported that the signs and symptoms of COVID-19 in children are
usually milder compared to adults.[13-17] For more information on the clinical presentatio

Clinical Course

Illness Severity

The largest cohort of >44,000 persons with COVID-19 from China showed that illness se
critical:[38]

- 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 cas
case fatality rate among patients with critical disease was 49%.[38] Among children in Chi
with 94% having asymptomatic, mild or moderate disease, 5% having severe disease, a
disease.[14] Among U.S. COVID-19 cases with known disposition, the proportion of perso
19%.[39] The proportion of persons with COVID-19 admitted to the intensive care unit (IC

Clinical Progression

Among patients who developed severe disease, the medium time to dyspnea ranged fr
time to acute respiratory distress syndrome (ARDS) ranged from 8 to 12 days, and the r
ranged from 10 to 12 days.[5,6,10,11] Clinicians should be aware of the potential for some p
one week after illness onset. Among all hospitalized patients, a range of 26% to 32% of
ICU.[6,8,11] Among all patients, a range of 3% to 17% developed ARDS compared to a rang
hospitalized patients and 67% to 85% for patients admitted to the ICU.[1,4-6,8,11] Mortality a
the ICU ranges from 39% to 72% depending on the study.[5,8,10,11] The median length of h
survivors was 10 to 13 days.[1,6,8]

Risk Factors for Severe Illness

Age is a strong risk factor for severe illness, complications, and death.[1,6,8,10,11,38-41] Amon
cases of COVID-19 in China, the case fatality rate was highest among older persons: ≥8
8.0%, 60–69 years: 3.6%, 50–59 years: 1.3%, 40–49 years: 0.4%, <40 years: 0.2%.[38,42] Earl
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.[39]

Patients in China with no reported underlying medical conditions had an overall case fa

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.[33,47]. SARS-C
detected in stool and blood.[13,34,44,48] Detection of SARS-CoV-2 RNA in blood may be a ma
RNA shedding may persist over longer periods among older persons and those who ha
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.[50]

For more information about testing and specimen collection, handling and storage, visi
Persons for Coronavirus Disease 2019 (COVID-19) and Frequently Asked Questions on C
Laboratories.

Laboratory and Radiographic Findings

Laboratory Findings

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

Radiographic Findings

Chest radiographs of patients with COVID-19 typically demonstrate bilateral air-space c
may have unremarkable chest radiographs early in the disease.[1,5,53] Chest CT images fr
typically demonstrate bilateral, peripheral ground glass opacities.[4,8,38,54-63] Because this
non-specific and overlaps with other infections, the diagnostic value of chest CT imagin
and dependent upon radiographic interpretation.[55,64] One study found that 56% of pati
days of diagnosis had a normal CT[56]. Conversely, other studies have also identified ches
prior to the detection of SARS-CoV-2 RNA.[54,65] Given the variability in chest imaging findi
alone is not recommended for the diagnosis of COVID-19. The American College of Rad
recommend CT for screening or as a first-line test for diagnosis of COVID-19. (See Amer

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.[5,6,10,11]

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.[70,71] **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 Suspe 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 acu novel coronavirus (nCoV) infection is suspected
- Surviving Sepsis Campaign: Guidelines on the Management of Critically Ill Adults wit (COVID-19)
- Surviving Sepsis Campaign: International Guidelines for Management of Sepsis and
- Surviving Sepsis Campaign International Guidelines for the Management of Septic Sl Organ Dysfunction in Children
- Diagnosis and Treatment of Adults with Community-acquired Pneumonia. An Officia the American Thoracic Society and Infectious Diseases Society of America
- ACR Recommendations for the use of Chest Radiography and Computed Tomograph COVID-19 Infection
- National Institutes of Health: Coronavirus Disease 2019 (COVID-19) Treatment Guide
- Infectious Diseases Society of America Guidelines on the Treatment and Manageme Infection

1. Guan WJ, Ni ZY, Hu Y, et al. Clinical Characteristics of Coronavirus Disease 2019 in Ch 2020;382:1708-20.
2. Li Q, Guan X, Wu P, et al. Early Transmission Dynamics in Wuhan, China, of Novel Co 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 (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 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 cor *Lancet* 2020;395:497-506.
6. Wang D, Hu B, Hu C, et al. Clinical Characteristics of 138 Hospitalized Patients With 2 Infected 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 (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 Sy 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 Digestiv 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 inpatie 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 SAR Wuhan, China: a single-centered, retrospective, observational study. *Lancet Respir M*
12. Giacomelli A, Pezzati L, Conti F, et al. Self-reported olfactory and taste disorders in SA sectional study. *Clin Infect Dis* 2020.
13. Cai J, Xu J, Lin D, et al. A Case Series of children with 2019 novel coronavirus infectior features. *Clin Infect Dis* 2020.
14. Dong Y, Mo X, Hu Y, et al. Epidemiology of COVID-19 Among Children in China. *Pedia*
15. Liu W, Zhang Q, Chen J, et al. Detection of Covid-19 in Children in Early January 2020 2020;382:1370-1.
16. Lu X, Zhang L, Du H, et al. SARS-CoV-2 Infection in Children. *N Engl J Med* 2020;382:1
17. Wei M, Yuan J, Liu Y, Fu T, Yu X, Zhang ZJ. Novel Coronavirus Infection in Hospitalized in China. *JAMA* 2020.
18. Chan JF, Yuan S, Kok KH, et al. A familial cluster of pneumonia associated with the 20