Diagnosis

Clinical considerations for care of children and adults with confirmed COVID-19

Updated May 27, 2022

What You Need to Know

- When testing for current COVID-19, the CDC recommends that clinicians use viral tests that detect SARS-CoV-2, not a serologic test, which detects antibodies.

Testing is important to identify and help reduce the spread of COVID-19 (see diagnostic tests for COVID-19). Viral tests, including NAAT and antigen tests, are used to diagnose COVID-19. Antibody tests (serology) are not indicated to diagnose a current infection. NAATs that use reverse transcription-polymerase chain reaction (RT-PCR) technology to detect SARS-CoV-2 ribonucleic acid (RNA) are highly sensitive and specific and detect SARS-CoV-2 RNA in respiratory specimens. Clinical RT-PCR tests for SARS-CoV-2 that determine the cycle threshold (Ct) value are not validated to determine viral load, and the NIH recommends that Ct values should be used clinically in consultation with an infectious disease expert.

SARS-CoV-2 antigen tests typically provide rapid results and are less expensive than NAATs, but they are generally less sensitive than NAATs. Antigen tests for SARS-CoV-2 use immunoassays to detect the presence of a specific viral antigen in respiratory specimens, and include point-of-care, laboratory-based, and self-tests. A negative antigen test in persons with signs or symptoms of COVID-19 should be confirmed by NAAT. For more information, see the Antigen Test Algorithm.

Specific recommendations on testing strategies in various clinical situations and information on SARS-CoV-2 molecular and antigen assays (including COVID-19 self-tests) that have received U.S. Food and Drug Administration (FDA) Emergency Use Authorization (EUA) are available, see: FDA's COVID-19 In Vitro Diagnostics EUAs , CDC's Overview of Testing for SARS-CoV-2, CDC's Interim Guidance for Antigen Testing for SARS-CoV-2, and the NIH's Testing for SARS-CoV-2 Infection which describes testing recommendations, including guidance on the use of Ct values.

Considerations for Laboratory Testing

SARS-CoV-2 co-infection with another pathogen, including a respiratory virus, bacterium, or fungus has been documented, particularly in hospitalized patients.[19,20] Detection of a different respiratory pathogen does not rule out COVID-19 infection. Testing for other causes of respiratory illness, in addition to testing for SARS-CoV-2, may be considered, depending on local pathogen co-circulation, patient age, underlying medical conditions, season, and clinical setting. More information on coinfection and recommendations on antimicrobial stewardship or systematic approaches to using antimicrobials can be found on CDC's Testing Guidance for Clinicians When SARS-CoV-2 and Influenza Viruses are Co-circulating webpage and the Infectious Diseases Society of America (IDSA) COVID-19 Real-Time Learning Network webpage .

Other Laboratory Testing Considerations

Several markers of inflammation and abnormal coagulation are associated with severe COVID-19 illness.[21,22] Studies found that hospitalized patients with COVID-19 may have coagulation abnormalities including increased D-dimer concentration, a modest decrease in platelet count, and a prolongation of the prothrombin time.[22] One study that compared markers of inflammation in patients with and without COVID-19 observed modestly lower leukocyte, lymphocyte, and platelet counts and higher hemoglobin values in patients with COVID-19.[21] This study also noted that serum albumin, neutrophil to lymphocyte ratio, and red cell distribution width were each associated with disease severity.[21]

Treatment details: NIH Treatment Guideline for Hospitalized Adults

Radiographic Considerations and Findings

Chest radiographs of patients with severe COVID-19 may demonstrate bilateral air-space consolidation.[23] Chest computed tomography (CT) images from patients with COVID-19 may demonstrate bilateral, peripheral ground glass opacities and consolidation.[24,25] Less common CT findings can include intra- or interlobular septal thickening with ground glass opacities (crazy paving pattern) or focal and rounded areas of ground glass opacity surrounded by a ring or arc of denser consolidation (reverse halo sign).[24]

Multiple studies suggest that abnormalities on CT or chest radiograph may be present in people who are asymptomatic, pre-symptomatic, or before RT-PCR detection of SARS-CoV-2 RNA in nasopharyngeal samples.[25]

Risk Factors for Severe Illness and Death

In adults, older age is the strongest risk factor for severe COVID-19 and death, and the risk of severe COVID-19 (including admission to the hospital or ICU, placement on invasive mechanical ventilation, and death) increases with increasing age.[26,27] Certain underlying medical conditions are also associated with increased risk of severe COVID-19, and the risk of hospitalization, ICU admission, and death increases as the number of high-risk underlying conditions increases.[27-29]

The COVID-19 pandemic has highlighted racial, ethnic, and socioeconomic disparities in COVID-19 illnesses, hospitalizations, and deaths.[29-31] Estimates of COVID-19 deaths in the United States show that people from racial and ethnic minority groups are dying from COVID-19 disproportionately, and studies have identified racial and ethnic differences in at-home COVID-19 test use, vaccination coverage and access to outpatient therapeutics.[32-34] Studies also show that COVID-19 vaccination coverage is lower in rural counties than in urban counties, and the United States has experienced higher COVID-19 incidence and mortality rates in rural than in urban areas.[35,36] The COVID Data Tracker shows weekly cases and deaths by age, race, ethnicity, and sex.

To decrease the risk of severe illness and death in adults and adolescents with immunocompromising conditions, the FDA has authorized the use of tixagevimab plus cilgavimab (Evusheld), two long-acting anti-SARS-CoV-2 monoclonal antibodies for pre-exposure prophylaxis. Adolescents 12 years of age and older weighing at least 88 pounds (40 kg) who are not expected to have an effective response to vaccination or people who are not recommended to receive vaccination due to a history of severe adverse reaction can be considered for this treatment.

Related Pages

For Patients

- Transmission
- COVID-19 Testing: What You Need to Know
- Coronavirus Self-Checker: When to Seek Testing and Medical Care
- COVID-19 Viral Testing Tool: Understand COVID-19 testing options
- COVID-19 Test to Treat

› Improving Ventilation in Your Home

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For Healthcare Providers

› Underlying Medical Conditions Associated with Higher Risk for Severe COVID-19

Health Equity

› Health Equity Considerations and Racial and Ethnic Minority Groups

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