

April 9, 2021

Health Notice for District of Columbia Health Care Providers
Multisystem Inflammatory Syndrome in Children (MIS-C)

SUMMARY

As of April 5, 2021, there have been a total of 6989 confirmed COVID-19 pediatric cases (<21 years of age) in District of Columbia (DC) residents since the pandemic began. Children infected with SARS-CoV-2 are also at risk for developing MIS-C (multisystem inflammatory syndrome in children). MIS-C is a novel syndrome related to infection with SARS-CoV-2 with manifestations that overlap with Kawasaki disease and toxic shock syndrome. As of April 5, 2021, a total of 26 confirmed cases of MIS-C have been reported to DC Health. Pediatric healthcare provider (PHP) awareness of MIS-C will aid early recognition, diagnosis, and rapid treatment. This health notice provides guidance on reporting and clinical considerations for children infected with SARS-CoV-2.

BACKGROUND

The true incidence of SARS-CoV-2 infection in children remains unclear due to lack of widespread testing related to the prioritization of testing for adults and those with severe illness. It is unclear whether children are as susceptible to infection by SARS-CoV-2 as adults and whether they can transmit the virus as effectively as adults. Recent evidence suggests that infected children likely have at least the same viral loads in their nasopharynx as adults do and that children can spread the virus effectively in households and camp settings.

In late April 2020, initial reports of MIS-C emerged from the United Kingdom. Pediatric case clusters of severe systemic hyperinflammatory shock with multiple organ involvement were reported with epidemiologic links to COVID-19. The Centers for Disease Control and Prevention (CDC) began tracking reports of MIS-C in May 2020 after similar reports began to emerge from other countries. As of March 1st, 2021, there have been 2,617 confirmed cases of MIS-C reported in the United States, with 33 deaths, in 47 states including the District of Columbia (DC). The majority of cases occurred in those ages 1 to 14 years old with an average of 9 years. Most children developed MIS-C two to four weeks after infection with SARS-CoV-2 and more than 66% of cases occurred in those of Hispanic, Latino, or African American heritage.

Symptoms & Severity

The incubation period of SARS-CoV-2 in children and adults is 2-14 days with an average of about 6 days. Symptoms of COVID-19 in children may include fever, fatigue, headache, myalgia, cough, nasal congestion or rhinorrhea, sore throat, shortness of breath or difficulty breathing, abdominal pain, diarrhea, nausea or vomiting, and poor appetite or poor feeding. Children with COVID-19 infection often present with non-specific symptoms, such as only upper respiratory or gastrointestinal symptoms, with the most common being cough and/or fever. Current evidence suggests that anywhere between 16-45% of children are asymptomatic. This combined with the nonspecific clinical presentation makes identification of cases difficult using symptom-based screenings.

Although the rate of hospitalization remains low, 1 in 3 children that do require hospitalization from COVID-19 are admitted to the ICU. Children infected with SARS-CoV-2 are less likely to develop severe illness than adults. Evidence suggests that the level of risk is increased in children with complex underlying medical conditions¹ and those of Hispanic, Latino, or African American heritage. PHPs should maintain a high index of suspicion for SARS-CoV-2 infection in these populations and monitor the progression of illness closely. Children with severe COVID-19 infection may develop complications

¹ A list of chronic health conditions in children that put them at higher risk for severe COVID-19 can be found in *Guidance for Individuals with Chronic Health Conditions* at <https://coronavirus.dc.gov/healthguidance>.

including respiratory failure, myocarditis, shock, acute renal failure, coagulopathy, intussusception, diabetic ketoacidosis (DKA) and multi-organ system failure. Children infected with SARS-CoV-2 are also at risk for developing MIS-C.

Testing for COVID-19

Clinical judgment should be used in determining whether to test a child with possible COVID-19 symptoms. Recommendations on testing do not change based on the age of the child. PHPs must understand the limitations of each testing modality.

- School-aged children (K-12) should be given testing priority if they have:
 - Signs or symptoms of COVID-19 **or**
 - Close contact (within 6 feet of someone for a total of 15 minutes or more cumulatively in a single 24-hour period) with a person with SARS-CoV-2 infection² **or**
 - Increased likelihood for exposure (which includes living in or traveling to a community with substantial transmission as defined by the local public health department) **or**
- Any child that has been in close contact with a person confirmed to have COVID-19, should quarantine³ and be tested 3-5 days after exposure.
- If a child has symptoms consistent with COVID-19 but has no known exposure or increased likelihood of exposures (for example through living in or travel to a high-risk area), they should be evaluated for other disease processes. If an alternative diagnosis seems likely, COVID-19 testing does not need to be performed.
- If a child's test result is positive, testing of household members should be recommended.

For more information on testing, please see the following resources:

- *PCR, Antigen and Antibody Tests* at coronavirus.dc.gov/healthguidance
- *Schools and Childcare COVID-19 Toolkit* at dchealth.dc.gov/page/schools-and-childcare-covid-19-toolkit.
- *Update on SARS-CoV-2 Antigen Testing* dchealth.dc.gov/publication/coronavirus-covid-19-update-sars-cov-2-antigen-testing
- *Overview of Testing for SARS-CoV-2 (COVID-19)* at the CDC webpage cdc.gov/coronavirus/2019-ncov/hcp/testing-overview.html.

Diagnosis & Treatment:

Pediatricians should strongly consider early consultation with pediatric infectious disease and rheumatology specialists for children with suspected MIS-C. Consultations with pediatric cardiology and critical care specialists may be necessary depending on severity of illness. The initial evaluation should include laboratory testing for markers of inflammation, SARS-CoV-2 RT-PCR or antigen test, SARS-CoV-2 serology, cardiac enzymes, brain natriuretic peptide (BNP), and evaluation for cardiac dysfunction.

When deciding whether to admit a child with SARS-CoV-2 infection, PHPs should consider the child's clinical presentation, requirement for supportive care, underlying medical conditions, and the ability for caregivers to manage the child's condition at home. Currently there are no drugs specifically approved for treatment of COVID-19 in children. Initial treatment should focus on supportive care and symptom management, paying close attention to those at highest risk for progressing to MIS-C.

There are no studies comparing the efficacy of various treatment options for MIS-C. Treatments should consist on supportive care directed at mitigating the underlying inflammatory process including fluid resuscitation, inotropic support, respiratory support, and in extreme cases extracorporeal membranous oxygenation (ECMO). Anti-inflammatory measures have included the frequent use of intravenous

² For exceptions for need to test and quarantine see *Guidance for Contacts of a Person Confirmed to have COVID-19* at coronavirus.dc.gov/healthguidance

³ A 14-day quarantine is the safest option. Ending quarantine after 10 days may be acceptable. Guidance on reduced quarantine period can be found in *Quarantine after COVID-19 Exposure* at coronavirus.dc.gov/healthguidance.

immunoglobulin (IVIG) and steroids. Aspirin has commonly been used due to concerns for coronary artery involvement, and antibiotics are routinely used to treat potential sepsis while awaiting bacterial cultures. Thrombotic prophylaxis is often used for the hypercoagulable state typically associated with MIS-C.

MIS-C Reporting

Emerging infectious diseases or unusual occurrences of diseases are reportable in the District of Columbia. MIS-C is a severe and life-threatening illness in previously healthy children and adolescents. Reporting of suspected cases should not be delayed pending results of SARS-CoV-2 test results.

PHPs should report suspected MIS-C cases among children who are under 21 years old meeting the case definition criteria described below to DC Health by submitting a case report form.

- Submit a “COVID-19 Reporting Form” on the DC Health COVID-19 Reporting website: dchealth.dc.gov/page/covid-19-reporting-requirements.

Case Definition for Multisystem Inflammatory Syndrome in Children (MIS-C)

- An individual aged < 21 years presenting with fever ⁴, laboratory evidence of inflammation ⁵, and evidence of clinically severe illness requiring hospitalization, with multisystem (> 2) organ involvement (cardiac, renal, respiratory, hematologic, gastrointestinal, dermatologic, or neurological); **AND**
- No alternative plausible diagnoses; **AND**
- Positive for current or recent SARS-CoV-2 infection by RT-PCR, serology, or antigen test; or COVID-19 exposure within the 4 weeks prior to the onset of symptoms

Additional comments

- Some individuals may fulfill full or partial criteria for Kawasaki disease but should be reported if they meet the case definition for MIS-C
- Consider MIS-C in any pediatric death with evidence of SARS-CoV-2 infection

The guidelines above will continue to be updated as the outbreak evolves. Please visit coronavirus.dc.gov and the DC Health-Health Notices website (dchealth.dc.gov/page/health-notice) regularly for the most current information.

References:

- Centers for Disease Control and Prevention. (2020). [Multisystem Inflammatory Syndrome \(MIS-C\)](#)
- Centers for Disease Control and Prevention. (2020). [Kawasaki Disease](#).
- Centers for Disease Control and Prevention. (2020). [Reporting Multisystem Inflammatory Syndrome in Children \(MIS-C\)](#).
- Feldstein, L.R., Rose, E.B., Horwitz, S.M., Collins, J.P., Newhams, M.M., Son, M.B.F., ...Randolph, A.G. (2020). Multiple Inflammatory Syndrome in U.S. Children and Adolescents. *New England Journal of Medicine*, 2020;383:334-46. DOI: 10.1056/NEJMoa2021680

Please contact the DC Health Division of Epidemiology–Disease Surveillance and Investigation at:
Phone: 202-442-9370/ 442-8141 (8:15am-4:45pm) | 844-493-2652 (after-hours calls)
Fax: 202-442-8060 | Email: doh.epi@dc.gov

⁴ Fever > 38.0°C for ≥ 24 hours, or report of subjective fever lasting ≥ 24 hours.

⁵ Including, but not limited to, one or more of the following: an elevated C-reactive protein (CRP), erythrocyte sedimentation rate (ESR), fibrinogen, procalcitonin, d-dimer, ferritin, lactic acid dehydrogenase (LDH), or interleukin 6 (IL-6), elevated neutrophils, reduced lymphocytes and low albumin.