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Multisystem Inflammatory Syndrome in Children (MIS-C) Cases Among Connecticut Residents, April–September 2020

On April 26, 2020, clinicians in the United Kingdom published an article describing severe illnesses among children with current or recent evidence of SARS-CoV-2 infection; these illnesses had Kawasaki disease-like features (*1*). Multiple articles have since been published on this condition among children in the United States (*2,3*). On May 14, 2020, the Centers for Disease Control and Prevention (CDC) issued a health advisory for cases of the new syndrome called Multisystem Inflammatory Syndrome in Children (MIS-C) which provided a case definition and recommended reporting of the condition to state, local, and territorial health departments (*4*). As of October 1, 2020, 1,027 cases of MIS-C had been reported in the United States (*5*). This article summarizes MIS-C cases reported among Connecticut residents between April–September 2020.

As of September 30, 2020, 17 cases of MIS-C that met the CDC case definition have been reported to the Connecticut Department of Public Health (DPH) (Table). Of these, 11 (65%) were among females. The median age was 8 years (range 10 months–18 years). The breakdown of cases by race and ethnicity was as follows: 9 (53%) Hispanic; 6 (35%) Black non-Hispanic; 2 (12%) Other races. Cases were reported from three counties: Fairfield (9), New Haven (5), and Hartford (3). All cases had at least one SARS-CoV-2 test result with the following test types reported: polymerase chain reaction (PCR) positive only (6 cases); antibody positive only (9 cases); both PCR and antibody positive (2 cases). All MIS-C cases were hospitalized; no deaths were reported.

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Table. Demographics of MIS-C cases reported among Connecticut residents April-September 30, 2020.

Classification	Number (%)
All cases	n=17
Age (years)	
<5	5 (29)
5-9	6 (35)
10-14	4 (24)
15-20	2 (12)
Race/Ethnicity	
Hispanic	9 (53)
Black, non-Hispanic	6 (35)
Other races	2 (12)
Gender	
Female	11 (65)
Male	6 (35)
County of Residence	
Fairfield	9 (53)
New Haven	5 (29)
Hartford	3 (18)

Editorial

While the exact cause remains unknown, MIS-C is a serious condition that can cause severe morbidity and mortality among children. Cases of MIS-C reported among Connecticut residents are like those reported nationally, including the majority of cases occurring among Hispanic, and Black non-Hispanic residents. Differences among Connecticut cases include a higher proportion among females (62% vs 44% nationally), and overall, less severe complications (no deaths) compared to cases reported nationally.

Healthcare providers should be alert to the possibility of MIS-C among children who recently tested positive to the SARS-CoV-2 virus or were close contacts to a suspected or confirmed case within 4 weeks of symptom onset. This is especially

important as Connecticut continues to see increases in COVID-19 infections among all age groups, including children. Early suspicion and diagnosis are critical to ensuring the best outcomes for these patients. Both CDC and the American Academy of Pediatrics have published guidance on MIS-C for healthcare providers (*5*).

Cases that meet the CDC surveillance case definition (Figure) should be reported to the Connecticut DPH Epidemiology and Emerging Infections Program. Healthcare providers should complete the CDC MIS-C Case Report form (https://www.cdc.gov/mis-c/pdfs/hcp/mis-c-form-fillable.pdf) for each case identified and call 860-509-7994 to report the case.

References

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4. CDC. Multisystem inflammatory syndrome in children (MIS-C) associated with coronavirus disease 2019 (COVID-19). May 14, 2020. https://emergency.cdc.gov/han/2020/han00432.asp. Accessed October 1, 2020.
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Figure. Case definition for multisystem inflammatory syndrome in children (MIS-C) (*4*)

- An individual aged <21 years presenting with fever[i], laboratory evidence of inflammation[ii], 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

[i]Fever >38.0°C for ≥24 hours, or report of subjective fever lasting ≥24 hours

[ii]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.

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

Preparing Hospitals and Laboratories for the Upcoming Dual Influenza/COVID-19 Pandemic Season

The Connecticut Department of Public Health (DPH) observed a reduction in reported flu cases in March as COVID-19 activity increased. While this reduction has been attributed to decreased virus transmission due to social distancing, mask wearing, and other pandemic mitigation practices; influenza testing may have also decreased due to shortages of nasopharyngeal swabs, viral transport media, and increased demand for SARS-CoV-2 testing.

Decreases in seasonal influenza cases and hospitalizations continued during June-August in Australia and other Southern Hemisphere countries. Recent CDC testing of respiratory specimens revealed low levels of influenza activity in the United States, with equal numbers of A and B viruses in circulation.

Despite this apparent low flu activity, the need for rapid detection of circulating influenza viruses remains essential for situational awareness. Several available antiviral drugs are effective against influenza, and rapid identification and treatment of flu-associated hospitalizations will free hospital beds for COVID-19 cases.

The DPH will continue to post weekly influenza updates to our website. Beginning with the 2020-2021 influenza season, we will include data provided by the Connecticut Hospital Association (CHA) that indicates total statewide flu-associated: hospitalizations, patients in ICU, patients on ventilator, deaths, patients and deaths who are both COVID-19 and flu positive. These data are being provided in response to new reporting requirements by the U.S. Department of Health and Human Services (HHS).

The following instructions have been revised to meet the challenges of a dual influenza season/ COVID-19 pandemic:

Hospital Instructions for Influenza Surveillance and Reporting, 2020-2021 Season

Influenza-associated hospitalizations and influenza-associated deaths are reportable to the DPH (Figure). These events will continue to be reportable throughout the dual influenza season/ COVID-19 pandemic. This information is shared with relevant local health departments through the Connecticut Electronic Disease Surveillance System (CTEDSS).

The Emerging Infections Program (EIP) at the Yale School of Public Health conducts enhanced surveillance for residents of Middlesex and New Haven counties on behalf of the DPH. These data contribute to FluSurv-NET, CDC's Influenza Hospitalization Surveillance Network, which covers 70 counties in 14 states. FluSurv-NET data are used to estimate age-specific hospitalization rates and describe characteristics of persons hospitalized with severe influenza illness. Staff of DPH or Yale EIP may request supplemental information from healthcare providers. Providers can contact Alan Siniscalchi (DPH: 860-509-7994) or Kim Yousey-Hindes (Yale: 203-764-5942) with any questions.

Reporting should be done through the web-based CTEDSS, the preferred method of reporting. This option will help with prompt dissemination of information. For information about how hospital staff can acquire access to CTEDSS, contact the CTEDSS team at dph.ctedss@ct.gov.

Influenza-associated Hospitalizations

Influenza-associated hospitalizations must be reported **within 12 hours** on the day of recognition or strong suspicion (i.e. patients with compatible illness regardless of the results of the initial rapid antigen and/or DFA test). Respiratory specimens from all influenza-associated hospitalizations should be submitted to the DPH SPHL for PCR testing.

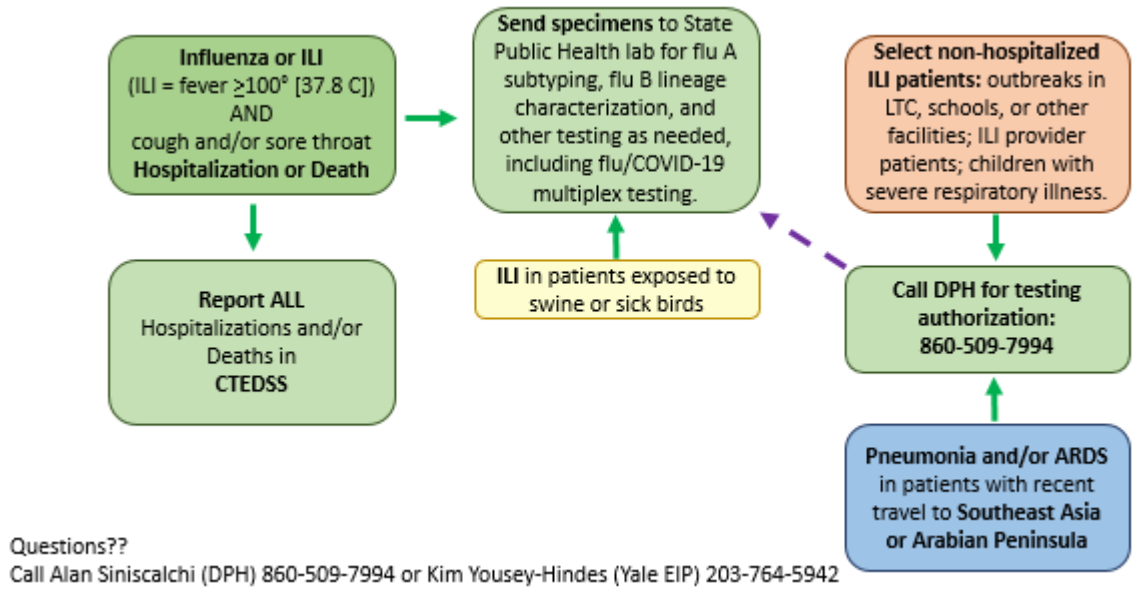
Influenza-associated Deaths

All possible influenza-associated deaths must be reported to the DPH **within 12 hours**, even if influenza was not the primary cause of death. Save respiratory specimens and submit to the SPHL for post-mortem PCR testing. Reporting is conducted by entry into CTEDSS. Provide both date and causes of death. For after hours or holiday reporting, report on the next normal business day.

Laboratory Instructions for Influenza Testing and Surveillance, 2020-2021 Season

To monitor circulating influenza strains throughout the **dual influenza season/COVID-19 pandemic**, rapidly identify novel strains, and determine the effectiveness of this season's vaccines, the DPH SPHL provides testing of specimens obtained from select patients. During the COVID-19 pandemic, most patients presenting with respiratory symptoms had been tested for the SARS

Figure. Summary of special instructions for hospitals during the 2020-2021 influenza season.



CoV-2 virus prior to any testing for influenza or other respiratory viruses. For the 2020-2021 influenza season, laboratories are asked to submit respiratory specimens obtained from patients with **a positive or unknown influenza test result AND a negative COVID test result*** in the following categories (1-4) who present with influenza-like illness (ILI = fever ≥100°F [37.8°C] AND cough and/or sore throat). Respiratory specimens may also be accepted from patients with **a positive influenza test result AND a positive COVID test result*** who present with ILI in the following categories:

1. **All hospitalized patients with ILI or confirmed influenza;**
2. Selected non-hospitalized patients with ILI, including: a) patients of ILI network (ILINet) providers, b) patients associated with outbreaks in long-term care, schools, or other facilities, and c) in children, severe respiratory illness with or without fever. Please contact the DPH Epidemiology and Emerging Infections Program (EEIP) at 860-509-7994 to discuss testing of 2a-c, including possible respiratory viral panel (RVP) testing for enterovirus and other respiratory viruses;
3. All patients with ILI and recent close exposure to swine, sick poultry at farms and agricultural settings, or migratory birds (exposure history should be provided);
4. All patients with pneumonia and/or Acute Respiratory Distress Syndrome (ARDS) developing within 17 days of travel to Southeast Asia or within 14 days of travel in or near the Arabian Peninsula, contact the DPH EEIP at 860 -509-7994 regarding possible avian flu or Middle East Respiratory Syndrome Coronavirus [MERS-CoV] testing. Travel history should be provided.

*During the dual 2020-2021 influenza season/COVID-19 pandemic, SPHL will also consider accepting specimens from patients who **may not yet have been tested for SARS-CoV-2** or who have tested positive for both influenza **and COVID** to evaluate for combined influenza/COVID-19 infections. The SPHL will utilize the CDC Influenza SARS-CoV-2 (Flu SC2) Multiplex Assay for their primary evaluation of specimens from patients presenting with ILI. Since the SPHL has limited resources for testing using this assay, requests for multiplex testing beyond typical seasonal influenza surveillance testing must be approved by DPH EEIP at 860-509-7994 prior to specimen submission.

The sensitivity of rapid influenza diagnostic tests (RIDTs) and direct immunofluorescence assays (DFAs) are lower than real-time reverse transcriptase polymerase chain reaction (rRT-PCR) tests and viral culture. A negative RIDT or DFA result does not rule out influenza virus infection. Moreover, these tests cannot distinguish between influenza A subtypes, such as the 2009 H1N1 or H3N2 influenza A viruses. For additional information visit the CDC website.

Federal guidelines requiring specimens to be transported on ice or with ice packs remain in effect. For questions or assistance regarding collection and handling of specimens, please call the SPHL Virology Laboratory at 860-920-6662. Influenza PCR specimen collection kits can be ordered by calling Support Services at 860-920-6674 or 860-920-6675. See additional specimen collection and shipping instructions on our website: Influenza PCR Testing Kit Collection Instructions.

The entire Clinical Test Requisition form (OL-9B) **must be completed in order for the SPHL to accept specimens for influenza testing.** Please provide reasons for testing including ILI symptoms, hospitalization, outbreak association, close exposure to swine, poultry or other birds, and/or international travel history in the "Comments" space (see Section 3 of the OL-9B).

Notes: The SPHL testing options described in this document should be considered part of DPH disease surveillance, and not as diagnostic testing services. These testing criteria are subject to change based on the evolving nature of the dual influenza season/ COVID-19 pandemic and the presence of other emerging respiratory viruses.

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