

# Multisystem Inflammatory Syndrome Associated with COVID-19 Case Report Form



MIS ID(REQUIRED): \_\_\_\_\_ Health Department ID: \_\_\_\_\_

NNDSS ID (local\_record\_id/case\_id): \_\_\_\_\_ Tools for CRF data submission to supplement NNDSS case notification/data:  DCIPHER  RedCap

Abstractor name: \_\_\_\_\_ NCOV ID (if available): \_\_\_\_\_ Date of abstraction: \_\_\_\_\_

## SECTION 1 – INCLUSION CRITERIA

- 1.1  Age <21, AND
- 1.2  Fever >38.0°C for ≥24 hours, or report of subjective fever lasting ≥24 hours, AND
- 1.3  Laboratory markers of inflammation (including, but not limited to one or more; 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, AND
- 1.4  Evidence of clinically severe illness requiring hospitalization, with multisystem (≥2) organ involvement (check all applicable below): AND
- 1.4.1  Cardiac (e.g. shock, elevated troponin, BNP, abnormal echocardiogram, arrhythmia)
- 1.4.2  Renal (e.g. acute kidney injury or renal failure)
- 1.4.3  Respiratory (e.g. pneumonia, ARDS, pulmonary embolism)
- 1.4.4  Hematologic (e.g. elevated D-dimers, thrombophilia, or thrombocytopenia)
- 1.4.5  Gastrointestinal (e.g. elevated bilirubin, elevated liver enzymes, or diarrhea)
- 1.4.6  Dermatologic, (e.g. rash, mucocutaneous lesions)
- 1.4.7  Neurological, (e.g. CVA, aseptic meningitis, encephalopathy)
- 1.5  No alternative plausible diagnosis; AND
- 1.6  Positive for current or recent SARS-COV-2 infection by (check all applicable below): OR
- 1.6.1  RT-PCR
- 1.6.2  Serology
- 1.6.3  Antigen test
- 1.7  COVID-19 exposure within the 4 weeks prior to the onset of symptoms
- 1.7.1 If yes, date of first exposure within the 4 weeks prior : (MM/DD/YYYY): \_\_\_\_\_  Unknown

## SECTION 2 – PATIENT DEMOGRAPHICS

- 2.1 State of Residence: \_\_\_\_\_
- 2.2 Patient zip code/postal code (primary residence): \_\_\_\_\_
- 2.3 Date of birth (MM/DD/YYYY): \_\_\_\_\_
- 2.4 Sex:  Male  Female
- 2.5 Ethnicity:  Hispanic or Latino  Not Hispanic or Latino  Refused or Unknown
- 2.6 Race (mark all that apply, selecting more than one option as necessary):
- 2.6.1  White
- 2.6.2  Black or African American
- 2.6.3  American Indian
- 2.6.4  Alaska Native or Aboriginal Canadian
- 2.6.5  Native Hawaiian
- 2.6.6  Other Pacific Islander
- 2.6.7  Asian
- 2.6.8  Other
- 2.6.9  Refused or Don't know
- 2.7 Height: \_\_\_\_\_ inches
- 2.8 Weight: \_\_\_\_\_ lbs
- 2.9 BMI: \_\_\_\_\_
- Comorbidities:**
- |         |                                       |                           |                          |        |   |
|---------|---------------------------------------|---------------------------|--------------------------|--------|---|
| 2.10.1  | Immunosuppressive disorder/malignancy | <input type="radio"/> Yes | <input type="radio"/> No | 2.11   | Hospital admission date                         |
| 2.10.2  | Obesity                               | <input type="radio"/> Yes | <input type="radio"/> No |        | (MM/DD/YYYY): _____                             |
| 2.10.3  | Type 1 diabetes                       | <input type="radio"/> Yes | <input type="radio"/> No | 2.11.1 | Number of days in the hospital: _____           |
| 2.10.4  | Type 2 diabetes                       | <input type="radio"/> Yes | <input type="radio"/> No | 2.12   | If admitted to the ICU, admission date          |
| 2.10.5  | Seizures                              | <input type="radio"/> Yes | <input type="radio"/> No |        | (MM/DD/YYYY): _____                             |
| 2.10.6  | Congenital heart disease              | <input type="radio"/> Yes | <input type="radio"/> No | 2.12.1 | Number of days in the ICU: _____                |
| 2.10.7  | Sickle cell disease                   | <input type="radio"/> Yes | <input type="radio"/> No | 2.13   | Patient outcome: Died Discharged Still admitted |
| 2.10.8  | Chronic lung disease                  | <input type="radio"/> Yes | <input type="radio"/> No |        | 2.13.2 Hospital discharge or death date         |
| 2.10.9  | Other congenital malformations        | <input type="radio"/> Yes | <input type="radio"/> No |        | (MM/DD/YYYY): _____                             |
| 2.10.10 | Other (specify): _____                |                           |                          |        |   |

### SECTION 3 – CLINICAL SIGNS AND SYMPTOMS

- 3.1 Did the patient have preceding COVID-like illness?  Yes  No  
 3.1.1 Date of symptom onset (MM/DD/YYYY): \_\_\_\_\_
- 3.2 Date of symptom onset of MIS (MM/DD/YYYY): \_\_\_\_\_
- 3.3 Fever  $\geq 38.0^{\circ}\text{C}$ :  Yes  No  
 3.3.1 Date of fever onset (MM/DD/YYYY): \_\_\_\_\_  
 3.3.2 Highest Temperature: \_\_\_\_\_  $^{\circ}\text{C}$   
 3.3.3 Number of days febrile: \_\_\_\_\_

#### Signs and symptoms *during present illness*

- |   |   |
|---|---|
| <p><b>3.4.1 Cardiac</b></p> <p>3.4.1.1 Shock <input type="radio"/> Yes <input type="radio"/> No</p> <p>3.4.1.2 Elevated troponin <input type="radio"/> Yes <input type="radio"/> No</p> <p>3.4.1.3 Elevated BNP or NT-proBNP <input type="radio"/> Yes <input type="radio"/> No</p> <p><b>3.4.2 Renal</b></p> <p>3.4.2.1 Acute kidney injury <input type="radio"/> Yes <input type="radio"/> No</p> <p>3.4.2.2 Renal failure <input type="radio"/> Yes <input type="radio"/> No</p> <p><b>3.4.3 Respiratory</b></p> <p>3.4.3.1 Cough <input type="radio"/> Yes <input type="radio"/> No</p> <p>3.4.3.2 Shortness of breath <input type="radio"/> Yes <input type="radio"/> No</p> <p>3.4.3.3 Chest pain/tightness <input type="radio"/> Yes <input type="radio"/> No</p> <p>3.4.3.4 Pneumonia <input type="radio"/> Yes <input type="radio"/> No</p> <p>3.4.3.5 ARDS <input type="radio"/> Yes <input type="radio"/> No</p> <p>3.4.3.6 Pulmonary embolism <input type="radio"/> Yes <input type="radio"/> No</p> <p><b>3.4.4 Hematologic</b></p> <p>3.4.4.1 Elevated D-dimers <input type="radio"/> Yes <input type="radio"/> No</p> <p>3.4.4.2 Thrombophilia <input type="radio"/> Yes <input type="radio"/> No</p> <p>3.4.4.3 Thrombocytopenia <input type="radio"/> Yes <input type="radio"/> No</p> | <p><b>3.4.5 Gastrointestinal</b></p> <p>3.4.5.1 Abdominal pain <input type="radio"/> Yes <input type="radio"/> No</p> <p>3.4.5.2 Vomiting <input type="radio"/> Yes <input type="radio"/> No</p> <p>3.4.5.3 Diarrhea <input type="radio"/> Yes <input type="radio"/> No</p> <p>3.4.5.4 Elevated bilirubin <input type="radio"/> Yes <input type="radio"/> No</p> <p>3.4.5.5 Elevated liver enzymes <input type="radio"/> Yes <input type="radio"/> No</p> <p><b>3.4.6 Dermatologic</b></p> <p>3.4.6.1 Rash <input type="radio"/> Yes <input type="radio"/> No</p> <p>3.4.6.2 Mucocutaneous lesions <input type="radio"/> Yes <input type="radio"/> No</p> <p><b>3.4.7 Neurological</b></p> <p>3.4.7.1 Headache <input type="radio"/> Yes <input type="radio"/> No</p> <p>3.4.7.2 Altered mental state <input type="radio"/> Yes <input type="radio"/> No</p> <p>3.4.7.3 Syncope/near syncope <input type="radio"/> Yes <input type="radio"/> No</p> <p>3.4.7.5 Meningitis <input type="radio"/> Yes <input type="radio"/> No</p> <p>3.4.7.6 Encephalopathy <input type="radio"/> Yes <input type="radio"/> No</p> <p><b>3.4.8 Other</b></p> <p>3.4.8.1 Neck pain <input type="radio"/> Yes <input type="radio"/> No</p> <p>3.4.8.2 Myalgia <input type="radio"/> Yes <input type="radio"/> No</p> <p>3.4.8.3 Conjunctival injection <input type="radio"/> Yes <input type="radio"/> No</p> <p>3.4.8.4 Periorbital edema <input type="radio"/> Yes <input type="radio"/> No</p> <p>3.4.8.5 Cervical lymphadenopathy &gt;1.5 cm diameter <input type="radio"/> Yes <input type="radio"/> No</p> |
|---|---|

### SECTION 4 – COMPLICATIONS

- |   |   |
|---|---|
| <p><b>4.1 Arrhythmia</b> <input type="radio"/> Yes <input type="radio"/> No<br/>             If yes:</p> <p>4.1.1 Ventricular arrhythmia: <input type="radio"/> Yes <input type="radio"/> No</p> <p>4.1.2 Supraventricular arrhythmia: <input type="radio"/> Yes <input type="radio"/> No</p> <p>4.1.3 Other arrhythmia (<i>specify</i>): _____<br/>             _____</p> <p><b>4.2 Congestive heart failure</b> <input type="radio"/> Yes <input type="radio"/> No</p> <p><b>4.3 Myocarditis</b> <input type="radio"/> Yes <input type="radio"/> No</p> | <p><b>4.4 Pericarditis</b> <input type="radio"/> Yes <input type="radio"/> No</p> <p><b>4.5 Liver failure</b> <input type="radio"/> Yes <input type="radio"/> No</p> <p><b>4.6 Deep vein thrombosis or PE</b> <input type="radio"/> Yes <input type="radio"/> No</p> <p><b>4.7 ARDS</b> <input type="radio"/> Yes <input type="radio"/> No</p> <p><b>4.8 Pneumonia</b> <input type="radio"/> Yes <input type="radio"/> No</p> <p><b>4.9 CVA or stroke</b> <input type="radio"/> Yes <input type="radio"/> No</p> <p><b>4.10 Encephalitis or aseptic meningitis</b> <input type="radio"/> Yes <input type="radio"/> No</p> <p><b>4.11 Shock</b> <input type="radio"/> Yes <input type="radio"/> No</p> <p><b>4.12 Hypotension</b> <input type="radio"/> Yes <input type="radio"/> No</p> |
|---|---|

### SECTION 5 – TREATMENTS

- |  |  |
|--|--|
| <p><b>5.1 Low flow nasal cannula</b> <input type="radio"/> Yes <input type="radio"/> No</p> <p><b>5.2 High flow nasal cannula</b> <input type="radio"/> Yes <input type="radio"/> No</p> <p><b>5.3 Non-invasive ventilation</b> <input type="radio"/> Yes <input type="radio"/> No</p> <p><b>5.4 Intubation</b> <input type="radio"/> Yes <input type="radio"/> No</p> <p><b>5.5 Mechanical ventilation</b> <input type="radio"/> Yes <input type="radio"/> No</p> <p><b>5.6 ECMO</b> <input type="radio"/> Yes <input type="radio"/> No</p> <p><b>5.7 Vasoactive medications</b> (e.g. epinephrine, milrinone, norepinephrine, or vasopressin) <input type="radio"/> Yes <input type="radio"/> No<br/> <i>(specify):</i> _____<br/>             _____</p> <p><b>5.8 Steroids</b> <input type="radio"/> Yes <input type="radio"/> No</p> <p><b>5.9 Immune modulators</b> (e.g. anakinra, tocilizumab) <input type="radio"/> Yes <input type="radio"/> No<br/> <i>(specify):</i> _____<br/>             _____</p> | <p><b>5.10 Antiplatelets</b> (e.g. aspirin, clopidogrel) <input type="radio"/> Yes <input type="radio"/> No<br/> <i>(specify):</i> _____<br/>             _____</p> <p><b>5.11 Anticoagulation</b> (e.g. heparin, enoxaparin, warfarin) <input type="radio"/> Yes <input type="radio"/> No<br/> <i>(specify):</i> _____<br/>             _____</p> <p><b>5.12 Dialysis</b> <input type="radio"/> Yes <input type="radio"/> No</p> <p><b>5.13 First IVIG</b> <input type="radio"/> Yes <input type="radio"/> No</p> <p><b>5.14 Second IVIG</b> <input type="radio"/> Yes <input type="radio"/> No</p> |
|--|--|

**SECTION 6 – STUDIES**

**6.1 Blood Test Results**

- |        |                         |                      |                      |              |        |      |
|--------|-------------------------|----------------------|----------------------|--------------|--------|------|
| 6.1.1  | Fibrinogen              | Highest value: _____ | units: _____         | Low          | Normal | High |
| 6.1.2  | CRP                     | Highest value: _____ | units: _____         | Low          | Normal | High |
| 6.1.3  | Ferritin                | Highest value: _____ | units: _____         | Low          | Normal | High |
| 6.1.4  | Troponin                | Highest value: _____ | units: _____         | Low          | Normal | High |
| 6.1.5  | BNP                     | Highest value: _____ | units: _____         | Low          | Normal | High |
| 6.1.6  | NT-proBNP               | Highest value: _____ | units: _____         | Low          | Normal | High |
| 6.1.7  | D-dimer                 | Highest value: _____ | units: _____         | Low          | Normal | High |
| 6.1.8  | IL-6                    | Highest value: _____ | units: _____         | Low          | Normal | High |
| 6.1.9  | Serum White Blood Count | Highest value: _____ | Lowest value : _____ | units: _____ |        |      |
| 6.1.10 | Platelets               | Highest value: _____ | Lowest value : _____ | units: _____ |        |      |
| 6.1.11 | Neutrophils             | Highest value: _____ | Lowest value : _____ | units: _____ |        |      |
| 6.1.12 | Lymphocytes             | Highest value: _____ | Lowest value : _____ | units: _____ |        |      |
| 6.1.13 | Bands                   | Highest value: _____ | Lowest value : _____ | units: _____ |        |      |

**6.2 CSF Studies**

- |       |                   |                      |                      |              |
|-------|-------------------|----------------------|----------------------|--------------|
| 6.2.1 | White blood count | Highest value: _____ | Lowest value : _____ | units: _____ |
| 6.2.2 | Protein           | Highest value: _____ | Lowest value : _____ | units: _____ |
| 6.2.3 | Glucose           | Highest value: _____ | Lowest value : _____ | units: _____ |

**6.3 Urinalysis**

- |       |                         |                       |                      |              |
|-------|-------------------------|-----------------------|----------------------|--------------|
| 6.3.1 | Urine White blood count | Highest value : _____ | Lowest value : _____ | units: _____ |
|-------|-------------------------|-----------------------|----------------------|--------------|

**6.4 Echocardiogram (check if seen on ANY echocardiogram)**

- 6.4.1  Not done
- 6.4.2  Normal results
- 6.4.3  Coronary artery aneurysms
- 6.4.3.1** Max coronary artery Z-score: \_\_\_\_\_
- 6.4.4  Coronary artery dilatation
- 6.4.5  Cardiac dysfunction (decreased function), specify type:
- 6.4.5.1**  left ventricular dysfunction
- 6.4.5.2**  right ventricular dysfunction
- 6.4.6  Pericardial effusion
- 6.4.7  Pleural effusion
- 6.4.8  Mitral regurgitation, specify type:     mild     moderate     severe
- 6.4.9  Other (specify): \_\_\_\_\_

**6.5 Date of first test showing coronary artery aneurysm or dilatation (MM/DD/YYYY): \_\_\_\_\_**

**6.6 Abdominal imaging**                      Ultrasound              CT              Not done

- 6.6.1  Normal
- 6.6.2  Mesenteric lymphadenopathy
- 6.6.3  Free fluid
- 6.6.4  Other (specify): \_\_\_\_\_

**6.7 Chest imaging**                      Chest x-ray              CT              Not done

- 6.7.1  Normal
- 6.7.2  Pneumonia
- 6.7.3  Atelectasis
- 6.7.4  Pleural effusion
- 6.7.5  Other (specify): \_\_\_\_\_

**SARS-COV-2 testing**

- 6.8 **RT-PCR:**     Positive               Negative     Not done
- 6.8.1**              If performed, date (MM/DD/YYYY): \_\_\_\_\_
- 6.9 **Antigen:**     Positive               Negative     Not done
- 6.9.1**              If performed, date (MM/DD/YYYY): \_\_\_\_\_
- 6.10 **IgG:**         Positive               Negative     Not done
- 6.10.1**              If performed, date (MM/DD/YYYY): \_\_\_\_\_
- 6.11 **IgM:**         Positive               Negative     Not done
- 6.11.1**              If performed, date (MM/DD/YYYY): \_\_\_\_\_
- 6.12 **IgA:**         Positive               Negative     Not done
- 6.12.1**              If performed, date (MM/DD/YYYY): \_\_\_\_\_