

COVID-19

Flowchart for the management of suspected COVID-19 patients at the first level of care and in remote areas in the Region of the Americas

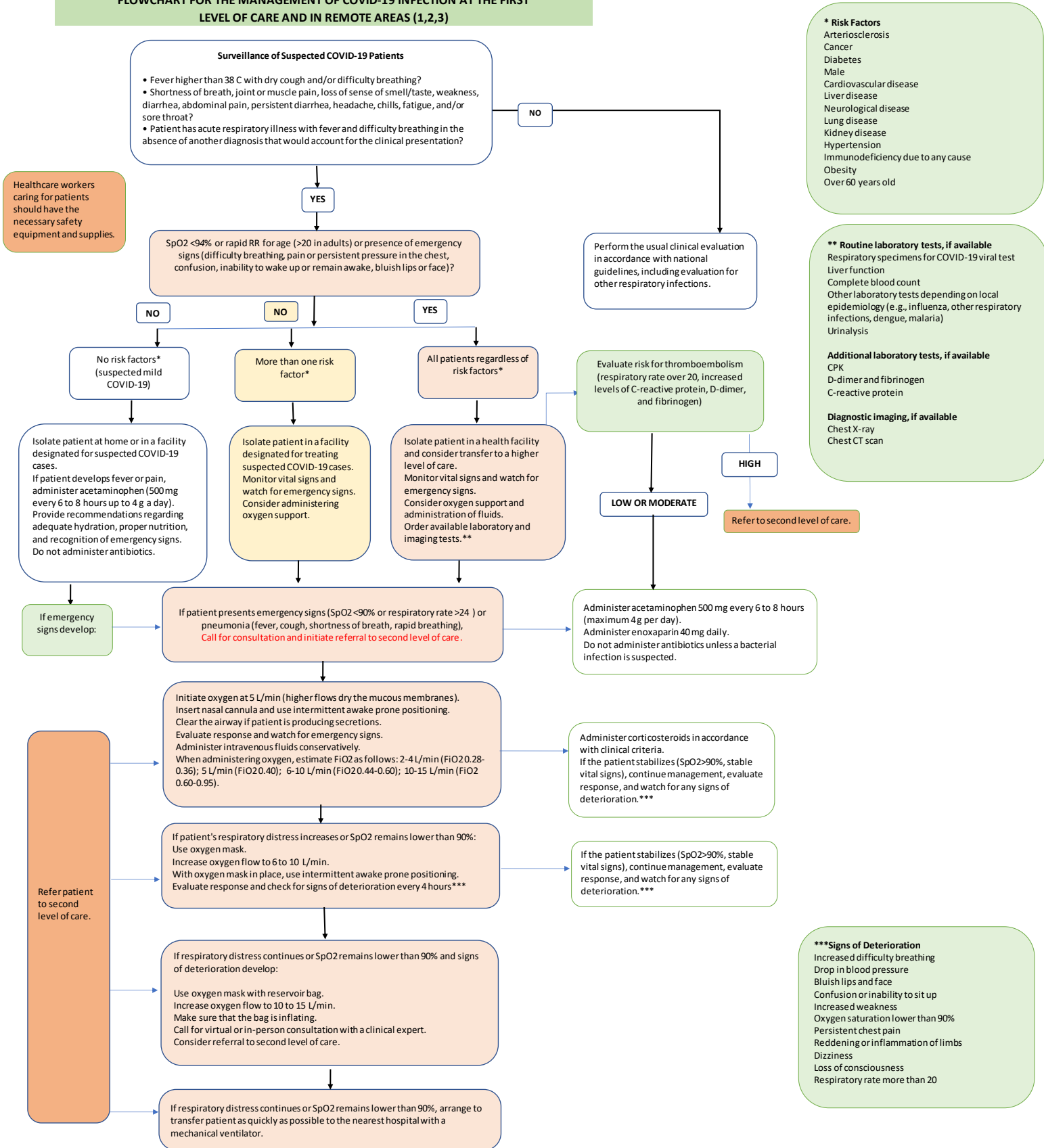
JULY 2020

NOTE

This document offers an algorithm for the management of COVID-19 patients at the first level of care and in remote areas, with focus on early case identification based on severity, and timely indications of remission. The flowchart incorporates the results of a process that included a review of the evidence and validation by experts in the Region. It is subject to revision as new evidence becomes available.

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FLOWCHART FOR THE MANAGEMENT OF COVID-19 INFECTION AT THE FIRST LEVEL OF CARE AND IN REMOTE AREAS (1,2,3)



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COVID-19 DISEASE SEVERITY³

TABLE 1. SYMPTOMS ASSOCIATED WITH COVID-19

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| Clinical presentation | <p>Presenting signs and symptoms of COVID-19 vary.</p> <p>Most persons experience fever (83–99%), cough (59–82%), fatigue (44–70%), anorexia (40–84%), shortness of breath (31–40%), myalgias (11–35%). Other non-specific symptoms, such as sore throat, nasal congestion, headache, diarrhea, nausea and vomiting, have also been reported. Loss of smell (anosmia) or loss of taste (ageusia) preceding the onset of respiratory symptoms has also been reported.</p> <p>Older people and immunosuppressed patients in particular may present with atypical symptoms such as fatigue, reduced alertness, reduced mobility, diarrhea, loss of appetite, delirium, and absence of fever.</p> <p>Symptoms such as dyspnea, fever, gastrointestinal (GI) symptoms or fatigue due to physiologic adaptations in pregnant women, adverse pregnancy events, or other diseases such as malaria, may overlap with symptoms of COVID-19.</p> <p>Children might not have reported fever or cough as frequently as adults.</p> |
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TABLE 2. COVID-19 DISEASE SEVERITY

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| Mild disease | <p>Symptomatic patients (Table 1) meeting the case definition for COVID-19 without evidence of viral pneumonia or hypoxia.</p> <p>See the WHO website for most up-to-date case definitions</p> | |
| Moderate disease | Pneumonia | <p>Adolescent or adult with clinical signs of pneumonia (fever, cough, dyspnoea, fast breathing) but no signs of severe pneumonia, including SpO₂ = 90% on room air</p> <p>Child with clinical signs of non-severe pneumonia (cough or difficulty breathing + fast breathing and/or chest indrawing) and no signs of severe pneumonia.</p> <p>Fast breathing (in breaths/min): < 2 months: = 60; 2–11 months: = 50; 1–5 years: = 40</p> <p>While the diagnosis can be made on clinical grounds; chest imaging (radiograph, CT scan, ultrasound) may assist in diagnosis and identify or exclude pulmonary complications.</p> <p>While the diagnosis can be made on clinical grounds; chest imaging (radiograph, CT scan, ultrasound) may assist in diagnosis and identify or exclude pulmonary complications.</p> |
| Moderate disease | Severe pneumonia | <p>Adolescent or adult with clinical signs of pneumonia (fever, cough, dyspnea, fast breathing) plus one of the following: respiratory rate > 30 breaths/min; severe respiratory distress; or SpO₂ < 90% on room air.</p> <p>Child with clinical signs of pneumonia (cough or difficulty in breathing) + at least one of the following:</p> |

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| | | <ul style="list-style-type: none"> Central cyanosis or SpO₂ < 90%; severe respiratory distress (e.g. fast breathing, grunting, very severe chest indrawing); general danger sign: inability to breastfeed or drink, lethargy or unconsciousness, or convulsions Fast breathing (in breaths/min): < 2 months: ≥ 60; 2–11 months: ≥ 50; 1–5 years: ≥ 40 (55). <p>While the diagnosis can be made on clinical grounds; chest imaging (radiograph, CT scan, ultrasound) may assist in diagnosis and identify or exclude pulmonary complications</p> |
| Critical disease | Acute respiratory distress syndrome (ARDS) | <p>Onset: within 1 week of a known clinical insult or new or worsening respiratory symptoms.</p> <p>Chest imaging (radiograph, CT scan, or lung ultrasound): bilateral opacities, not fully explained by volume overload, lobar or lung collapse, or nodules.</p> <p>Origin of pulmonary infiltrates: respiratory failure not fully explained by cardiac failure or fluid overload. Need objective assessment (e.g. echocardiography) to exclude hydrostatic cause of infiltrates/o edema if no risk factor present.</p> <p>Oxygenation impairment in adults:</p> <ul style="list-style-type: none"> Mild ARDS: 200 mmHg < PaO₂/FiO₂a ≤ 300 mmHg (with PEEP or CPAP ≥ 5 cmH₂O, or non-ventilated) Moderate ARDS: 100 mmHg < PaO₂/FiO₂ ≤ 200 mmHg (with PEEP ≥ 5 cmH₂O, or non-ventilated) Severe ARDS: PaO₂/FiO₂ ≤ 100 mmHg (with PEEP ≥ 5 cmH₂O, or non-ventilated) When PaO₂ is not available, SpO₂/FiO₂ ≤ 315 suggests ARDS (including in non-ventilated patients). <p>Oxygenation impairment in children: Use PaO₂-based metric when available. If PaO₂ not available, wean FiO₂ to maintain SpO₂ ≤ 97% to calculate OSI or SpO₂/FiO₂ ratio:</p> <ul style="list-style-type: none"> Bilevel (NIV or CPAP) ≥ 5 cmH₂O via full face mask: PaO₂/FiO₂ ≤ 300 mmHg or SpO₂/FiO₂ ≤ 264 Mild ARDS (invasively ventilated): 4 ≤ OI < 8 or 5 ≤ OSI < 7.5 Moderate ARDS (invasively ventilated): 8 ≤ OI < 16 or 7.5 ≤ OSI < 12.3. Severe ARDS (invasively ventilated): OI ≥ 16 or OSI ≥ 12.3. |
| Critical disease | Sepsis | <p>Adults: life-threatening organ dysfunction caused by a dysregulated host response to suspected or proven infection. Signs of organ dysfunction include: altered mental status, difficult or fast breathing, low oxygen saturation, reduced urine output, fast heart rate, weak pulse, cold extremities or low blood pressure, skin mottling, or laboratory evidence of coagulopathy, thrombocytopenia, acidosis, high lactate, or hyperbilirubinemia.}</p> <p>Children: suspected or proven infection and ≥ 2 age- based systemic inflammatory response syndrome criteria, of which one must be abnormal temperature or white blood cell count</p> |

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| Critical disease | Septic shock | <p>Adults: persisting hypotension despite volume resuscitation, requiring vasopressors to maintain MAP \geq 65mmHg and serum lactate level $>$ 2 mmol/L.</p> <p>Children: any hypotension (SBP $<$ 5th centile or $>$ 2 SD below normal for age) or two or three of the following: altered mental state; tachycardia or bradycardia (HR $<$ 90 bpm or $>$ 160 bpm in infants and HR $<$ 70 bpm or $>$ 150 bpm in children); prolonged capillary refill ($>$ 2 sec) or feeble pulse; tachypnoea; mottled or cool skin or petechial or purpuric rash; increased lactate; oliguria; hyperthermia or hypothermia.</p> |
| <p>Other complications that have been described in COVID-19 patients include acute, life-threatening conditions such as: acute pulmonary embolism, acute coronary syndrome, acute stroke and delirium. Clinical suspicion for these complications should be heightened when caring for COVID-19 patients, and appropriate diagnostic and treatment protocols available.</p> | | |
| <p>If altitude is higher than 1000 m, then correction factor should be calculated as follows: $\text{PaO}_2/\text{FiO}_2 \times \text{barometric pressure}/760$. When PaO_2 is not available, $\text{SpO}_2/\text{FiO}_2 \leq 315$ suggests ARDS (including in non-ventilated patients). The SOFA score ranges from 0 to 24 and includes points related to six organ systems: respiratory (hypoxemia defined by low $\text{PaO}_2/\text{FiO}_2$); coagulation (low platelets); liver (high bilirubin); cardiovascular (hypotension); central nervous system (low level of consciousness defined by Glasgow Coma Scale); and renal (low urine output or high creatinine). Sepsis is defined by an increase in the sepsis-related SOFA score of ≥ 2 points. Assume the baseline score is 0 if data are not available. SIRS criteria: abnormal temperature ($>$ 38.5 °C or $<$ 36 °C); tachycardia for age or bradycardia for age if $<$ 1 year; tachypnoea for age or need for mechanical ventilation; abnormal white blood cell count for age or $>$ 10% bands.</p> | | |
| <p><i>Abbreviations: ARI acute respiratory infection; BP blood pressure; bpm beats/minute; CPAP continuous positive airway pressure; FiO2 fraction of inspired oxygen; MAP mean arterial pressure; NIV non-invasive ventilation; OI Oxygenation Index; OSI Oxygenation Index using SpO2; PaO2 partial pressure of oxygen; PEEP positive end-expiratory pressure; SBP systolic blood pressure; SD standard deviation; SIRS systemic inflammatory response syndrome; SOFA sequential organ failure assessment; SpO2 oxygen saturation.</i></p> | | |

Bibliography

1. Organización Panamericana de la Salud. Guía para el cuidado crítico de pacientes adultos graves con Coronavirus (COVID-19) en las Américas (Versión 2.0). July 2020. Available at: <https://iris.paho.org/handle/10665.2/52529>
2. World Health Organization. Clinical care of severe acute respiratory infections – Tool kit. COVID-19 adaptation. 2020. Available at: <https://www.who.int/publications/i/item/clinical-care-of-severe-acute-respiratory-infections-tool-kit>
3. World Health Organization. (2020). Clinical management of COVID-19: interim guidance, 27 May 2020. World Health Organization. <https://apps.who.int/iris/handle/10665/332196>. License: CC BY-NC-SA 3.0 IGO
4. Organización Panamericana de la Salud. Aspectos técnicos y regulatorios sobre el uso de oxímetros de pulso en el monitoreo de pacientes con COVID-19, 4 de agosto del 2020. Available at: <https://iris.paho.org/handle/10665.2/52551>

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