CMEO Snack

Risk Stratification in Hospitalized SARS-CoV-2 Patients

Supported by an educational grant from Gilead Sciences, Inc.

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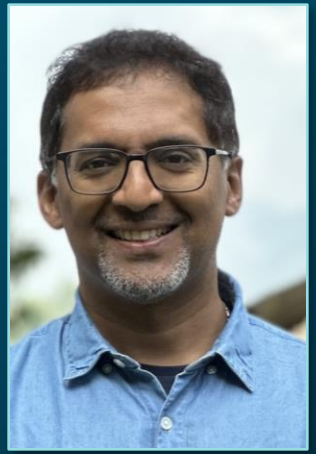
The faculty have been informed of their responsibility to disclose to the audience if they will be discussing off-label or investigational uses (any uses not approved by the FDA) of products or devices.

CMEO Snack

LEARNING OBJECTIVE

Evaluate clinically supported risk stratification tools and clinical indicators to more accurately identify hospitalized patients with SARS-CoV-2 infection who are at increased risk for progression to severe disease



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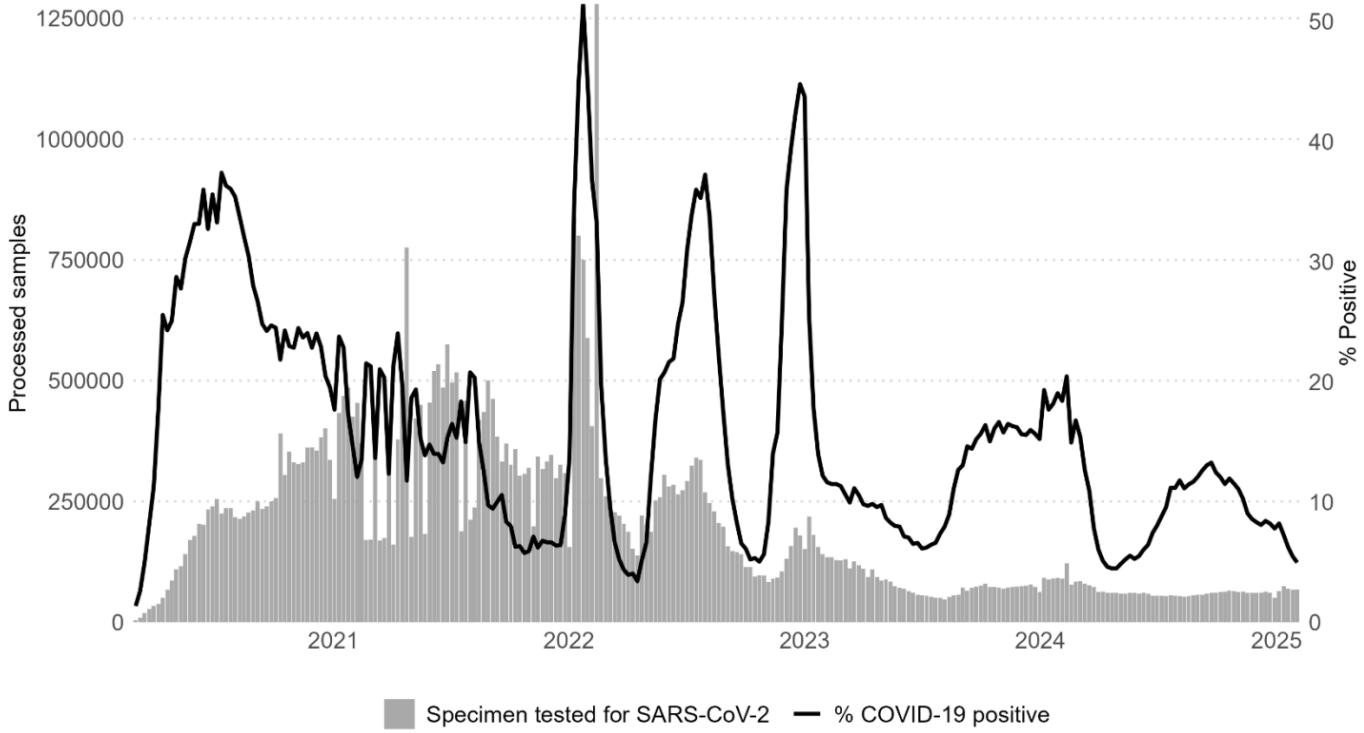
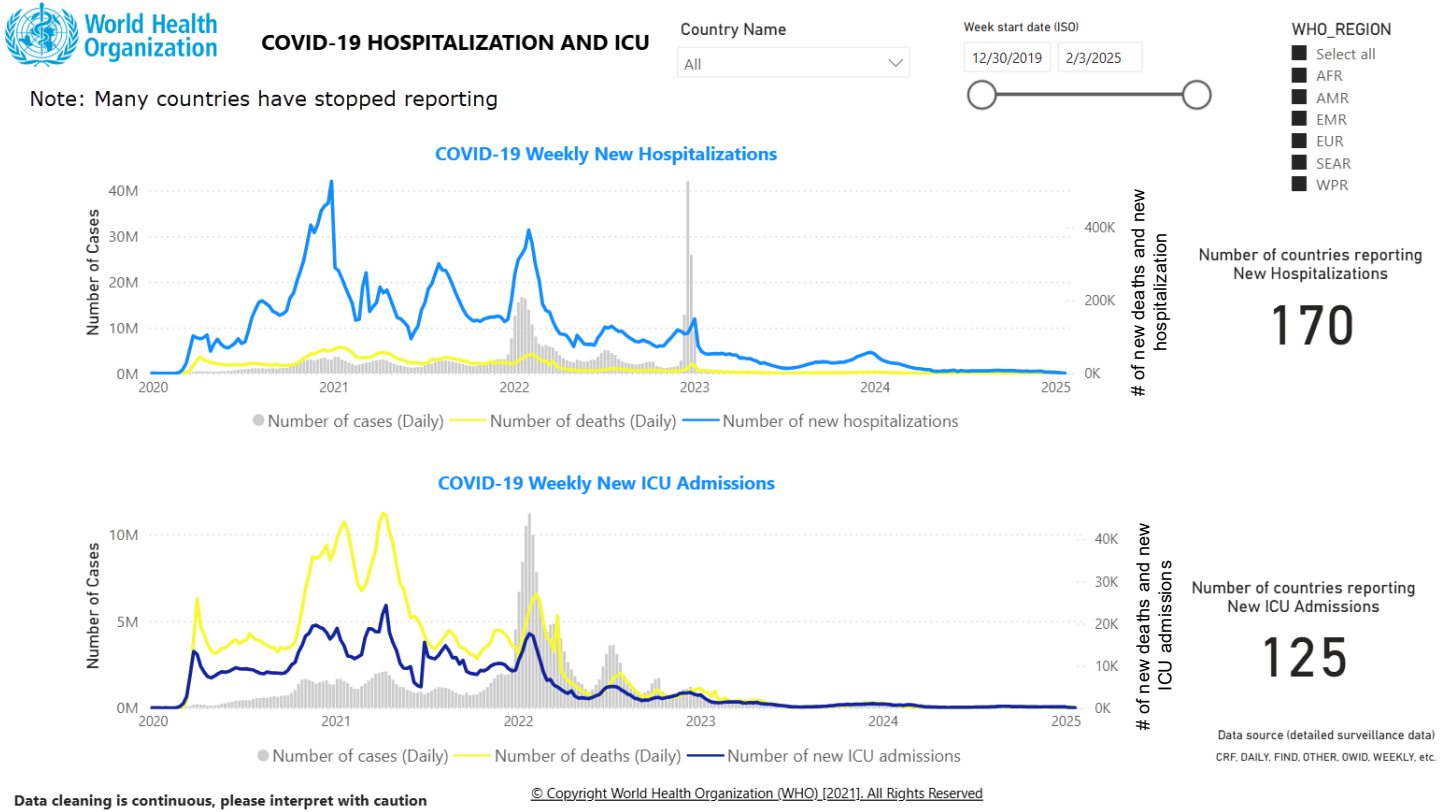
SARS-CoV-2: Positive Test Trend

Weekly SARS-CoV-2 percent test positivity reported to FluNet from systemically conducted virological surveillance, from 1 March 2020 to 2 February 2025



World Health Organization (WHO). *COVID-19 Epidemiological Update*. 2025. https://www.who.int/docs/default-source/coronaviruse/situation-reports/ceu_177.pdf.

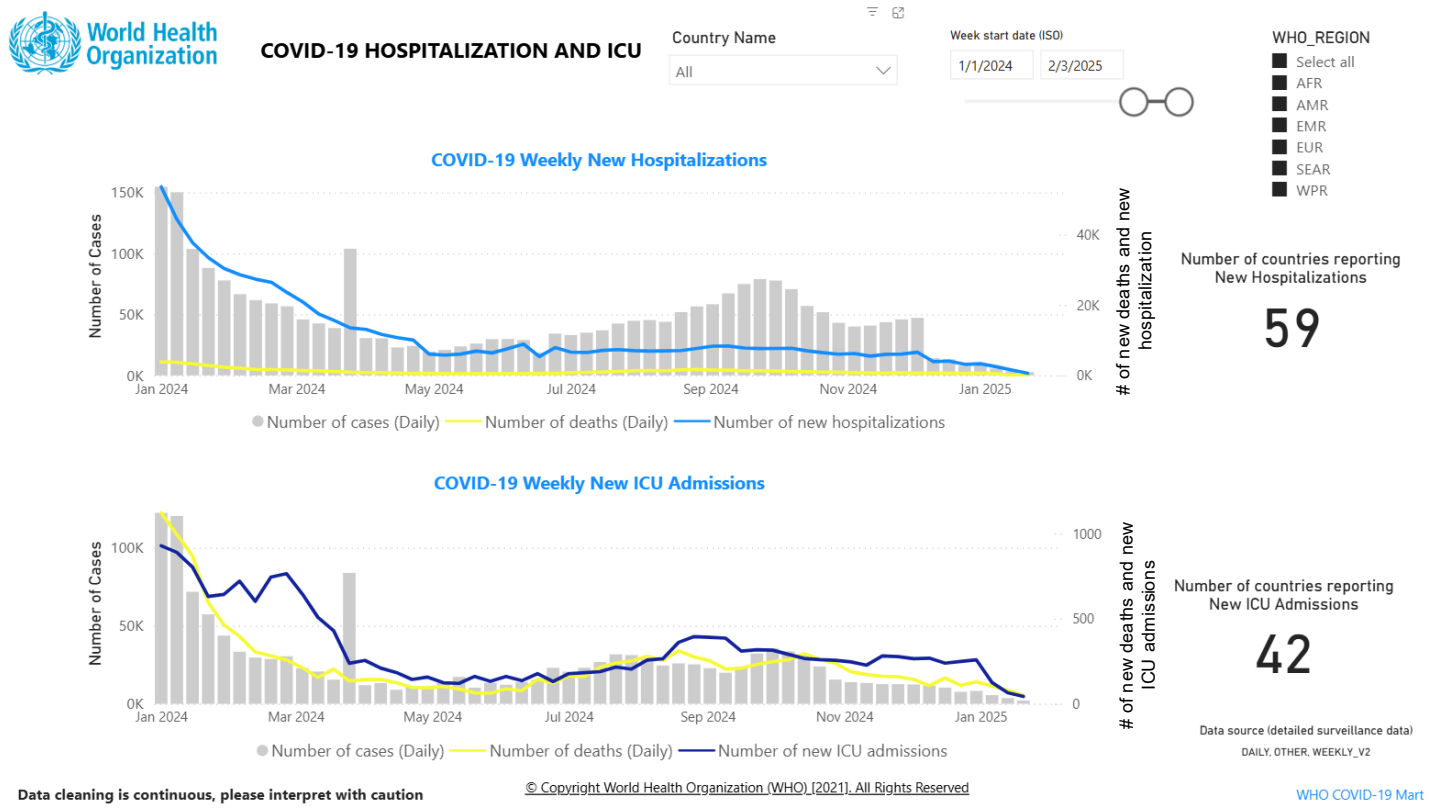
SARS-CoV-2: Hospitalization and ICU Admissions



ICU = intensive care unit

World Health Organization (WHO). *WHO COVID-19 Detailed Surveillance Data Dashboard*. 2024. https://app.powerbi.com/view?r=eyJrIjoiY2UyNmQ0MWQtYjdiZC00MmIyLWI5YmYtZmRiZWJkZDcyMDMwIiwidCI6ImY2MTBjMGI3LWJkMjQtNGIzOS04MTBiLTNkYzI4MGFmYjU5MCIsImMiOjh9.

SARS-CoV-2: Hospitalization and ICU Admissions



World Health Organization (WHO). *WHO COVID-19 Detailed Surveillance Data Dashboard*. 2024. https://app.powerbi.com/view?r=eyJrIjoiY2UyNmQ0MWQtYjdiZC00MmIyLWI5YmYtZmRiZWJkZDcyMDMwIiwidCI6ImY2MTBjMGI3LWJkMjQtNGIzOS04MTBiLTNkYzI4MGFmYjU5MCIsImMiOjh9.

SARS-CoV-2 Inpatient Assessment: Clinical Perspectives and Risk Stratification

- ROX Score
- SOFA score and QSOFA
- NEWS 2
- 4-C Mortality Score
- COVID-GRAM

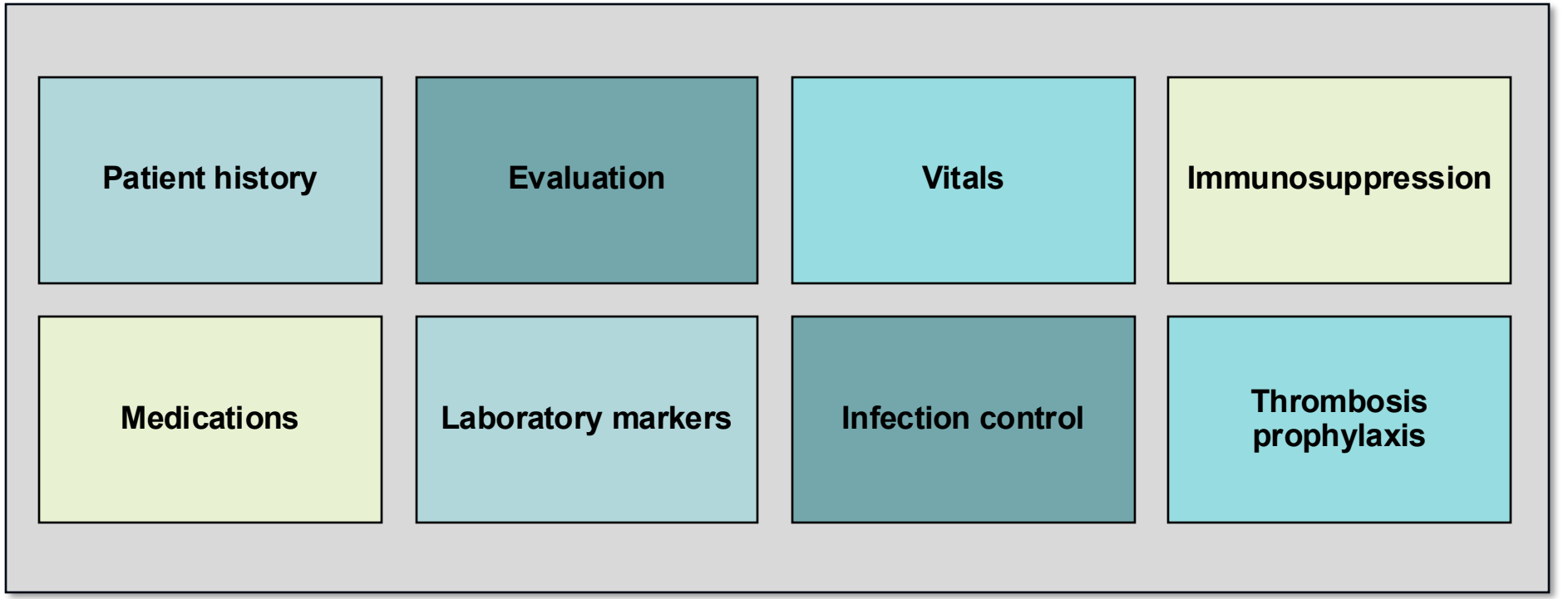
Call to action

Visit the CMEO **Infectious Disease Hub** to download the:
SARS-CoV-2 Risk Stratification Tool Cheat Sheet

NEWS 2 = national early warning score; QSOFA = quick sequential organ failure dysfunction; ROX = respiratory rate-oxygenation index; SOFA = sequential organ failure dysfunction

Knight SR, et al. *BMJ*. 2020;370:m3339; Hohl CM, et al. *CMAJ Open*. 2022;10(1):E90-E99.

SARS-CoV-2 Inpatient Assessment: Clinical Perspectives and Risk Stratification



Infectious Diseases Society of America (IDSA). 2025. https://www.idsociety.org/practice-guideline/SARS-CoV-2-guideline-treatment-and-management/.

SARS-CoV-2 Inpatient Assessment and Treatment

Oxygenation-focused assessment

- Track SpO2 trends & O2 requirement (target ranges per local policy)
- Consider ROX index to follow response to O2/HFNO (if used)
- Escalate if increasing work of breathing/FiO2 needs

FiO2 = fraction of inspired oxygen; HFNO = high-flow nasal oxygen; SpO2 = peripheral oxygen saturation

Taylor JS, et al. *CHEST Crit Care*. 2025:100223-100223.

Inpatient Treatment (Evidence-Based Highlights)

Respiratory support (non-invasive)

- Awake prone positioning for higher O2 needs if tolerated
- Prefer CPAP when hypoxemia persists on ≥ 40% FiO2 and escalation is an option
- Reserve HFNO when CPAP not tolerated/appropriate or for breaks/weaning
- Do not wait too long before moving to invasive

CPAP = continuous positive airway pressure

Infectious Diseases Society of America (IDSA). 2025. https://www.idsociety.org/practice-guideline/SARS-CoV-2-guideline-treatment-and-management/;
Indian Council for Medical Research. *Clinical Guidance for Management of Adult COVID-19 Patients*. 2023.
https://covid19dashboard.mohfw.gov.in/pdf/ClinicalGuidanceforManagementofAdultCOVID19Patientsupdatedason05thjan2023.pdf.

Inpatient SARS-CoV-2 Treatment Algorithm (Unified)

Assess severity & oxygen needs

- If no O2 needed: monitor, labs, consider remdesivir if high risk
- If low-flow O2 needed: corticosteroids + remdesivir
- If HFNC/NIV needed: escalate support, add immunomodulatory agent
- If mechanical ventilation/critical intervention needed: advanced support + immunomodulatory therapy

Respiratory support

- NC/NRB --> HFNC/CPAP --> intubation if needed
- Proning cycle initiation for non-intubated

Pharmacologic therapy

- Corticosteroids for all hypoxic patients
- Remdesivir if eligible
- Add tocilizumab or baricitinib if worsening on steroids
- Consider infliximab, anakinra, or abatacept if others are unavailable (severe only)

Adjunctive Management

- Prophylactic anticoagulation
- Therapeutic anticoagulation if indicated
- Supportive care (fluids, antibiotics for co-infection)
- Monitor hepatic and renal function; adjust doses as needed
- Continually assess for potential drug-drug interactions

HFNC = high-flow nasal cannula; NC = nasal cannula; NIV = non-invasive ventilation; NRB = non-rebreather mask

World Health Organization (WHO). 2025. https://iris.who.int/server/api/core/bitstreams/d1021eff-f570-4c22-b630-a44bf4267a6c/content; Infectious Diseases Society of America (IDSA). 2025. https://www.idsociety.org/practice-guideline/SARS-CoV-2-guideline-treatment-and-management/; Indian Council for Medical Research. *Clinical Guidance for Management of Adult COVID-19 Patients*. 2023. https://covid19dashboard.mohfw.gov.in/pdf/ClinicalGuidanceforManagementofAdultCOVID19Patientsupdatedason05thjan2023.pdf.

Inpatient SARS-CoV-2 Treatment Algorithm (Unified)

Reassess & escalate

- Re-evaluate SpO2/FiO2
- Run labs every 6-12h
- Escalate support or therapies if worsening

De-escalation & discharge

- Wean O2
- Ensure stability on minimal support
- Discharge criteria: improving oxygenation, no new end-organ dysfunction

Plan followup

- Multidisciplinary support
- Advise on residual symptoms
- Shared decision-making

Adjunctive Management

- Prophylactic anticoagulation
- Therapeutic anticoagulation if indicated
- Supportive care (fluids, antibiotics for co-infection)
- Monitor hepatic and renal function; adjust doses as needed
- Continually assess for potential drug-drug interactions

FiO2 = fraction of inspired oxygen

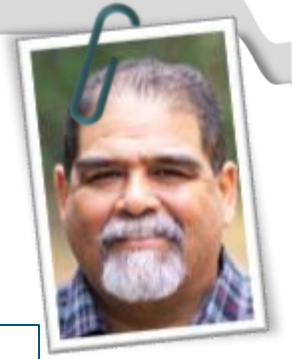
World Health Organization (WHO). 2025. https://iris.who.int/server/api/core/bitstreams/d1021eff-f570-4c22-b630-a44bf4267a6c/content; Infectious Diseases Society of America (IDSA). 2025. https://www.idsociety.org/practice-guideline/SARS-CoV-2-guideline-treatment-and-management/; Indian Council for Medical Research. *Clinical Guidance for Management of Adult COVID-19 Patients.* 2023. https://covid19dashboard.mohfw.gov.in/pdf/ClinicalGuidanceforManagementofAdultCOVID19Patientsupdatedason05thjan2023.pdf.

SARS-CoV-2: Evidence-Based Inpatient Treatment Highlights

- **Corticosteroids**: Use in hypoxic patients (e.g., dexamethasone 6 mg daily up to 10 days)
- **Antivirals**: Consider remdesivir for hospitalized adults at high risk/oxygen-requiring early disease
- **Immunomodulators**: Add tocilizumab (or baricitinib) in patients on steroids with escalating O2/inflammation
- **Alternative Immunomodulators**: Abatacept or infliximab may be considered (specific settings)
- **Antibiotics**: Avoid unless bacterial co-infection suspected

Infectious Diseases Society of America (IDSA). 2025. https://www.idsociety.org/practice-guideline/SARS-CoV-2-guideline-treatment-and-management/;
Indian Council for Medical Research. *Clinical Guidance for Management of Adult COVID-19 Patients*. 2023.
https://covid19dashboard.mohfw.gov.in/pdf/ClinicalGuidanceforManagementofAdultCOVID19Patientsupdatedason05thjan2023.pdf.

Patient Case: JG



- JG is a 55-yr old male hospital nephrologist with a history of hyperlipidemia, taking statins, otherwise healthy, presents to the clinic with fever, myalgia, and cough

Days 1-3

- SpO2 97% on RA
- Mild CRP ↑
- **Positive RT-PCR for COVID**

Days 5-7

- Exertional breathlessness
- SpO2 92-93% on RA
- CRP and D-dimer ↑
- CT chest without contrast → **20% GGO**
- **Admitted, starts O2 2-3 L/min**

Days 8-10

- Stable low-flow O2 needs
- No progression
- **LMWH prophylaxis started**

Days 11-14

- Gradual recovery
- O2 weaned
- **Discharged**

- Hyperlipidemia on statins

History

- **What to take away from this case?**

CRP = C-reactive protein; CT = computed tomography; GGO = ground-glass opacity; LMWH = low-molecular-weight heparin; RA = room air; RT-PCR = reverse transcription-polymerase chain reaction

Patient Case – Teaching Points

Recognize early desaturation (exertional hypoxia is a red flag)

Anticoagulation is essential even if not worsening → prophylaxis for all inpatients

ICU/Ventilated patients: continue prophylaxis, escalate to therapeutic dose **only if proven thrombosis**

Comorbid vigilance: even “healthy” clinicians may harbor risks (lipids, cardiac, metabolic)

World Health Organization (WHO). 2025. https://iris.who.int/server/api/core/bitstreams/d1021eff-f570-4c22-b630-a44bf4267a6c/content; Infectious Diseases Society of America (IDSA). 2025. https://www.idsociety.org/practice-guideline/SARS-CoV-2-guideline-treatment-and-management/; Indian Council for Medical Research. *Clinical Guidance for Management of Adult COVID-19 Patients.* 2023. https://covid19dashboard.mohfw.gov.in/pdf/ClinicalGuidanceforManagementofAdultCOVID19Patientsupdatedason05thjan2023.pdf; The Institute for Functional Medicine. 2025. https://www.ifm.org/articles/long-term-cardiometabolic-impacts-of-covid-19.

Gaps in Early Intervention of SARS-CoV-2

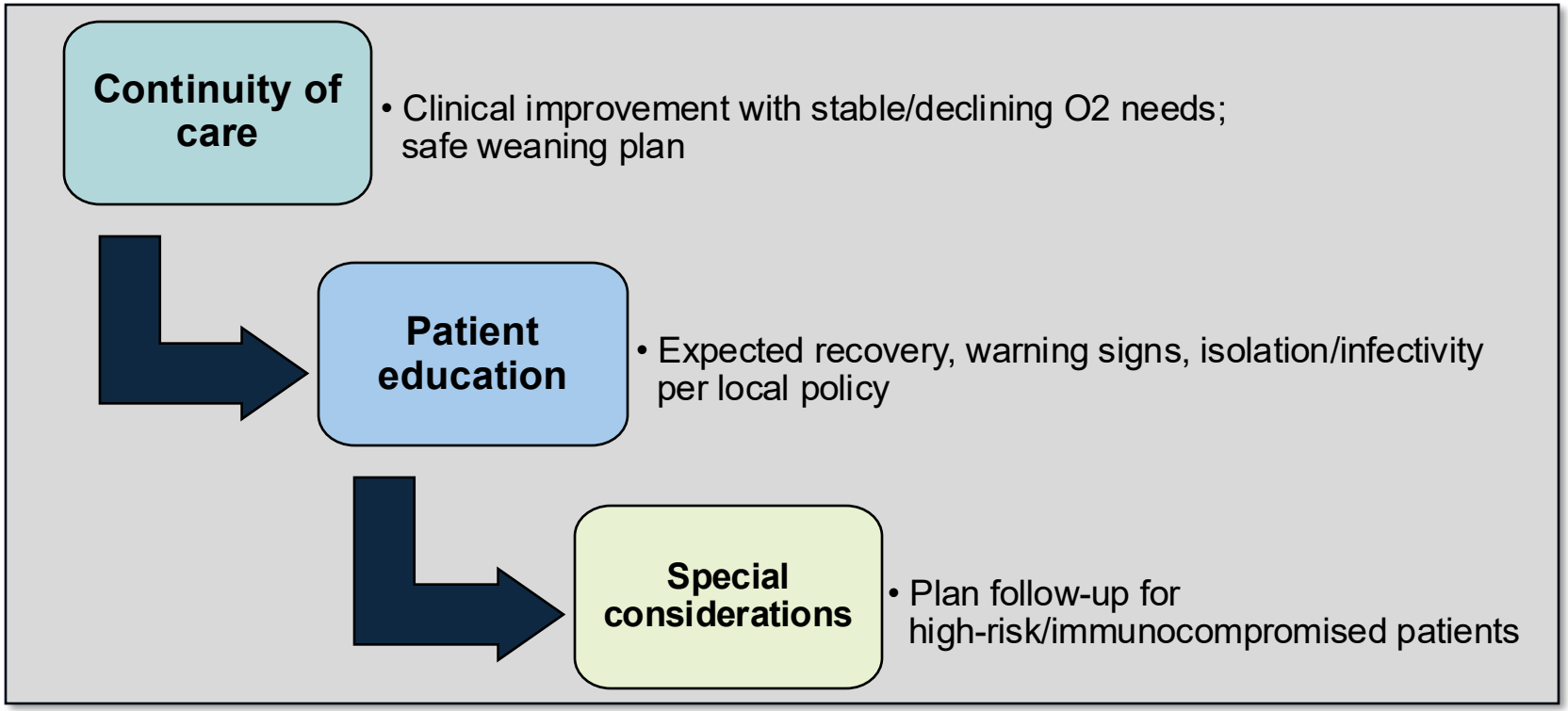
Disconnect between patient's true symptom burden and clinician's initial assessment

Inconsistent implementation of evidence-based prophylactic anticoagulation

Variable application of region-specific infectivity data for effective patient isolation

Dehnan D, et al. *J Med Virol*. 2021;94(3):951-957; Vale CL, et al. *Ann. Intern Med.* 2025;178(1):59-69;
Alderman JE, et al. *Lancet Digit Health*. 2024;6(11):e827-e847.

Discharge/Step-down Considerations



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SMART Goals

Specific, Measurable, Attainable, Relevant, Timely

Put information into action! In the next 3 months…

- Apply risk-based assessment in 100% of hospitalized COVID-19 patients, ensuring timely initiation of oxygen, antivirals, and supportive care
- Ensure timely initiation of oxygen, antivirals, and supportive care in 100% of hospitalized COVID-19 patients to decrease their risk for poor outcomes
- Utilize communication strategies that optimize consistent care as patients transfer from the ICU to a less critical stage of care
- Modify your discharge procedures to include at least 2 proactive measures to reduce readmission to the hospital

CME OUTFITTERS

Visit the

Infectious Disease Hub

Free resources and education
for health care professionals and patients

https://www.cmeoutfitters.com/infectious-disease-hub/

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Other programs in this series include:

Part 1

Guideline-Based Therapeutics for Hospitalized Patients with SARS-CoV-2 Infection

Part 2:

Early Diagnosis and Timely Treatment in Hospitalized Patients with SARS-CoV-2 Infection

Part 4:

Regional SARS-CoV-2 Variants and their Impact on Inpatient Treatment

To Receive Credit

To receive CME/CE credit for this activity, participants must complete the post-test and evaluation online.

Participants will be able to download and print their certificate immediately upon completion.