

COVID-19 Case Management

Ruot Garjiek Teny¹, Charles O. C. Langoya², Ader Macar Aciek³

1. Department of Cardiology, The Karen Hospital, Nairobi, Kenya
2. Department of Infectious Diseases and Medical Microbiology, Royal Infirmary of Edinburgh, UK
3. Department of Internal Medicine, University of Juba, South Sudan

Correspondence:

Ruot Garjiek Teny
ruotteny@gmail.com

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2019 (COVID-19) was first reported to the World Health Organization (WHO) on 31 December 2019 from Wuhan province of China as a cluster of pneumonia cases. The WHO on 11 March 2020 declared this as a global pandemic. COVID-19 is caused by SARS CoV 2 virus which is a member of the coronaviruses.

South Sudan had 35 confirmed cases by 30 April with the first case announced on 4 April, 2020 while the last case (of the 35) declared on 29 April 2020.

WHO case definition - suspected COVID-19 case

- Any person with acute respiratory illness (fever and at least one sign/symptom of respiratory disease (e.g., cough, shortness of breath)
- AND
- With no other aetiology that fully explains the clinical presentation
- AND
- A history of travel to/or residence in a country / area or territory reporting local transmission of COVID-19 disease during the 14 days prior to symptom onset.^[1]

Clinical presentation

The majority of persons with COVID-19 exhibit no symptoms, however around 20% of patients will have fever, dry cough, fatigue, anorexia, shortness of breath, anosmia, productive cough and myalgia.^[2] While gastroenterological and neurological symptoms were reported in less than 10% in certain studies.^[3]

Also, it is worth mentioning that a patient might present with either a combination of the above symptoms or any single one of them.

Assessments and initial investigations in COVID-19 suspects

Clinical assessment

A COVID-19 patient should follow the same assessment as that of any respiratory case, ensuring that Personal Protective Equipment (PPE) is worn by the health staff. That is to say, the ABCDE approach is followed, addressing each abnormality as it is found.

Suspected and positive COVID-19 cases should be isolated in designated areas which must be different from those areas where non COVID-19 patients are managed. Those patients deemed to be severely ill should be managed in a high dependency or intensive care unit. If a suspected case turns out to be negative, then consider an alternative diagnosis and manage accordingly. False negatives exist in COVID-19 cases probably due to errors of sampling when specimens are collected by nasopharyngeal swabbing.

Haematology and biochemistry

Complete Blood Count usually shows a significantly low lymphocytes count with neutrophil to lymphocyte ratio of >1.3. This ratio is found to be useful as an independent mortality risk factor.^[4] Leukocytosis and neutrophilia are predictors of superimposed bacterial infection. However, this should be correlated with a clinical judgment to ensure antimicrobial stewardship is observed.

Elevated C-reactive protein (CRP), D-dimers and normal pro-calcitonin are common features of COVID-19 although not always.^[5]

Baseline *Urea and Electrolytes and Liver Function Tests (LFTs)*. There is no known

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trend relating COVID-19 and abnormalities for these indices. However, it is important to know the baseline on admission.

Microbiology

The diagnosis of COVID-19 is confirmed by isolating the SARS-CoV-2 virus from a nasopharyngeal or oropharyngeal swab by a RT-PCR. Deeper respiratory samples such as those obtained during bronchoalveolar lavage can equally be used for isolating SARS-CoV-2.

Check sputum for microscopy, culture and sensitivity Acid and Alcohol Fast Bacilli (AAFB).

Blood culture (not available in government hospitals in South Sudan at the moment) is quite important due to the fact that, COVID-19 victims may present with fever and cough but, bacterial septic patients could present in the same way. Therefore, ruling out a bacterial infection is of paramount importance. Clinical judgment becomes crucial in a setting with no blood culture facilities.

Radiology

Do a chest X-ray looking for bilateral lower lobes infiltrates and CT scan of the chest (if available) looking for bilateral ground glass changes. Note that no government hospital in South Sudan currently has a CT scan machine.

Criteria for hospital admission

The main reason for admission of COVID-19 patients is respiratory compromise. Therefore, the WHO recommends the admission of the following groups of patients presenting with:

- Shortness of breath
- Low/reduced oxygen saturation for age and comorbidity
- Fever
- Respiratory failure of any type

Medical management of a COVID-19 suspect/patient

For positive cases, determine severity and admission criteria as mentioned above. Review observations which are *oxygen saturation*, respiratory rate, blood pressure, pulse rate and temperature. Each abnormality identified in the observations should be addressed.

Therefore, aim for SpO₂ of 90-96% for majority of patients and adjust oxygen provision accordingly. Please note that the maximum quantity of oxygen that should be delivered via nasal cannulae is 4L/minute. Anything more than this via nasal cannulae is considered aerosol generating and therefore will require different types of PPEs.

Lying in the prone position has been proven to improve oxygenation significantly and therefore should be tried on

patients who can tolerate it.

Paracetamol and analgesia for fevers and myalgias

Intravenous fluid therapy should be given with caution. Over-hydration is associated with increased risk of intubation being required in COVID-19 patients.

Consider antimicrobials for super-added community acquired pneumonia (usually a penicillin +/- macrolide) if clinically, biochemically and radiologically indicated. Use the **CURB65** severity score to assess severity of illness, **C**=confusion, **U**=Blood urea nitrogen >7mmol/litre, **R**=respiratory rate ≥30/minute, **B**=systolic blood pressure <90mmHg, or diastolic blood pressure ≤60mmHg, **65**=Age and above 65. Each positive on the CURB65 scores one (1) point. The severity of the condition is

BOX 1. CURB65 score for mortality risk assessment in hospital^a

CURB65 score is calculated by giving 1 point for each of the following prognostic features:

- confusion (abbreviated Mental Test score 8 or less, or new disorientation in person, place or time)^b
- raised blood urea nitrogen (over 7 mmol/litre)
- raised respiratory rate (30 breaths per minute or more)
- low blood pressure (diastolic 60 mmHg or less, or systolic less than 90 mmHg)
- age 65 years or more.

Patients are stratified for risk of death as follows:

- 0 or 1: low risk (less than 3% mortality risk)
- 2: intermediate risk (3 15% mortality risk)
- 3 to 5: high risk (more than 15% mortality risk).

Reference

- Lim WS, van der Eerden MM, Laing R et al. Defining community acquired pneumonia severity on presentation to hospital: an international derivation and validation study. *Thorax* 2003;58: 377–82.
- For guidance on delirium, see the NICE guideline on [delirium](#).

assessed on the following scale: 1 is low risk, 2 is short inpatient stay or manage as an outpatient, 3 manage as an inpatient and consider Intensive Care Unit (ICU) admission, 4 or 5 intensive management with high probability of ICU treatment.

Consider enrolling patients on any *COVID-19 trials* whenever feasible.

Observe patients with COVID-19 for signs of clinical deterioration, such as progressive respiratory failure by monitoring the respiratory rate and arterial blood gases and sepsis by measuring the lactate dehydrogenase levels (LDH > 49-90 units per litre) and respond promptly with appropriate intervention.

Patients who failed to respond to standard oxygen therapy, should be provided with high oxygen flow and assessed for mechanical ventilator support. Their management should be escalated early to an ICU. The ICU management is outside the scope of this paper.

Discharge criteria

1. Symptoms resolution
2. Viral clearance as documented by two negative viral PCR in two nasopharyngeal samples collected 24 hours apart. A repeat swab should be done at least seven days from the start of symptoms and 48 hours of being fever free (though some guidelines say fever free without the use of antipyretic drugs).^[6]

However, note that point 2 above might not be practical especially when capacity is limited as in South Sudan. In such a case, patients can be discharged home even with positive results when they feel well. This will require close remote follow up by telephone. These patients should be advised to self-isolate for 14 days from symptom onset.

It is worth mentioning that all the preventive measures should be explained to/and maintained by both swab positive and negative individuals.

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