Adults with severe COVID-19

***Executive summary***

**Introduction**

This guideline assumes that an adult patient has been diagnosed with COVID-19 or that the clinical picture is highly suspicious for COVID-19. A small group of patients who contract COVID-19 will become very unwell with it.

**Target User**

* Nurses
* Doctors

**Target area of use**

* Ward

## Key areas of focus / New additions / Changes

* Identification of those who may become unwell.
* Management of complications
* The importance of PPE in all circumstances

**Limitations**

* We lack access to HDU/ITU level care and cannot ventilate patients.
* We have two negative pressure rooms.

## Presenting symptoms and signs

There are two groups of patients to think about as high risk in the COVID-19 outbreak:

1. **Those who have become very unwell with COVID-19 as their only problem.** This group seems to present to hospital 5-12 days after the start of symptoms. They can develop Acute Respiratory Distress Syndrome (ARDS) and become very unwell. They comprise patients who have diabetes, chronic respiratory conditions (including severe asthma and COPD), chronic heart conditions (including uncontrolled hypertension) and immunosuppression (which in our setting is HIV/AIDS, steroids and methotrexate use). Also, lymphopenia, especially when progressively worsening seems to be a marker of likely poorer prognosis.
2. **Those patients who have another medical condition that has been complicated by contracting COVID-19**.

### Clinical presentation of COVID-19 Pneumonia (severe & critical COVID-19)

Clinically apparent COVID-19 primarily presents as a febrile, flu-like illness with recovery in approximately 80 % of cases.

In around 20% of cases this flu-like illness progresses to a pneumonia over a period of 5-12 days from symptom onset and in a small number of cases (approximately 5% of total clinically apparent cases) this progresses further to ARDS, multi-organ failure, circulatory collapse & death. COVID with hypoxia, tachypnoea, or widespread CXR changes (> 50% lungs on CXR) is considered severe disease, whilst the presence of ARDS, multi-organ failure or circulatory collapse would constitute critical disease.

Fever can be prolonged, lasting up to 14 days even in relatively uncomplicated cases, though persistence of fever after 7 days suggests that a more severe course may be developing.

As disease become more common, more atypical presentations may present including acute abdominal pain, diarrhoea, delirium etc.

### Differentiating COVID-19 from bacterial pneumonia (CAP)

The following are suggestive of COVID-19 rather than CAP:

* Travel from outside the Gambia
* A history of close contact with confirmed / suspected case(s) of COVID-19
* Household contacts with acute cough, fever, breathlessness
* High rapidly spiking fever (peaks > 37.80C)
* Several days history before respiratory deterioration
* History of loss of sense of smell / taste is highly suggestive and should be sought in all patients
* History of myalgia and /or headache
* Bilateral respiratory signs
* Bilateral infiltrates on the chest X ray, with a non-lobar, lower zone and peripheral predominance
* Normal WCC with relative lymphopenia and absence of neutrophilia.
* Significant pleural effusion is uncommon in COVID-19

Other laboratory features commonly seen:

* Slightly elevated liver enzymes (ALT/AST)
* Low platelets
* Raised LDH
* Raised troponin

Currently COVID-19 can only be confirmed by a viral PCR, usually of a throat or nasopharyngeal swab sample. Estimates of the sensitivity of the vary from 80-90%, probably worse later in disease when the virus is predominantly in the lungs. Specificity is good. Therefore remember two things:

* Imaging changes (CXR or US in our context) with symptoms and lab tests suggestive of COVID-19 with a negative test can still be COVID-19. This is particularly true at the time when pneumonia becomes a predominant feature, and also becomes more of a problem as the disease spreads (pre-test probability rises and the test performs worse).
* If someone has COVID-19, they can still have another infection or health problem complicating their presentation.

## Management

All patients must be assessed for severity and a decision made about plans for treatment escalation at the time of admission. This is covered in another guideline.

Currently, the management of COVD-19 is **supportive**.

There have been several treatments suggested that may be of benefit. At this moment, **only patients enrolled in a clinical trial** should receive therapy directed at COVID-19. This group of medicines include high dose corticosteroids (in the absence of bronchoconstriction), hydroxychloroquine, azithromycin and anti-retroviral medications such as Lopinavir/ritonavir.

**In all circumstances**, appropriate PPE must be worn. If a patient becomes critically unwell, then staff should still take the time to don the PPE in a safe and proper manner.

Decisions on whether patients with COVID-19 need admission are likely to vary depending on the state of the epidemic at the time and the public health strategy. Where containment is the objective public health authorities may request the admission of all patients. If resources and beds become scarce, this may change to those meeting specific criteria (eg at risk of deterioration, needing oxygen or palliation).

**Respiratory support**: Give oxygen to patients with SARI and resp distress, hypoxaemia, seizures or shock and target SpO2 > or equal to 94%. Once stable, target saturation is > 90% in non-pregnant and 92 – 95% in pregnant patients. (This is not a guide on how many litres of oxygen to give them but a target for the optimum saturations once the oxygen is started. Oxygen should be turned down if saturations are consistently 99-100%).

It may help in all patients, to lie them in a prone position i.e. on their front.

BiPAP or CPAP are indicated when patients are classed as critically ill. If BiPAP or CPAP are available, they are likely to be the ceiling of care for many patients in The Gambia. CPAP and BiPAP are aerosol generating so should ideally be deployed in a neutral or negative pressure room. It may become necessary to cohort (place together) patients with proven or suspected COVID-19 and COVID-19 patients on CPAP or BiPAP.

Intubation and ventilation may be available in a few cases offsite, but the feasibility of this is currently unknown. With mortality in well-resourced settings of 66% for selected patients put on a ventilator with COVID-19, it will be necessary to select specific patients that may benefit from this resource intensive procedure. Intubation should be done by the most skilled operative using strict PPE.

**Fever**: Give due consideration as to why the fever is being treated. Generally, bringing down a patient's fever will likely make them feel better but not necessarily change how long they are unwell for. The exception to this is in patients with haemodynamic instability where reducing fever may reduce the risk of hypoxic tissue damage.

There is currently no evidence that NSAIDs are associated with extra morbidity and mortality in COVID-19. There is some evidence from other respiratory infections that NSAIDS will increase stroke and heart disease risk in susceptible patients. We recommend the use paracetamol first and then ibuprofen at as little a quantity as possible, for as short a time as possible.

**Pain**: Please, see above under fever above. If unresponsive to paracetamol, then use the WHO pain ladder.

**Underlying medical conditions**: Individual decisions should be made about each patient as they come, to manage their underlying condition alongside their acute COVID-19 as needed. There are a few areas of controversy to address:

* **ACEi/ARB:** There is no current evidence to support that patients will either gain protection or come to harm from these medications. Continuing the medication where it is needed while the patient is unwell is reasonable. However, given that these patients are likely to be acutely unwell, they are likely to be at risk of hypotension and renal injury. In such a situation, consideration should be given to stopping them during the infection and re-starting these medications after recovery.
* **Asthma/COPD/Post TB lung**: These patients may benefit from steroids. Endeavour to use the lowest effective dose and where possible reduce the dose to less than 20mg for adults. However, given our limited therapy for bronchoconstriction, higher doses of steroids may still be needed.

**Secondary bacterial infection**: Patients who worsen unexpectedly, whose cough becomes productive, who have neutrophil leucocytosis or who have new lateralising signs and symptoms should be considered for treatment with antibiotics aimed at bacterial pneumonia. It may be necessary for some patients (eg. critical cases with unclear aetiology) to start antibiotics when they are unwell and then stop them if the test for COVID-19 comes back and explains their presentation.

**Pressure area care**: Ensure that patients who become bed bound are turned regularly (2-3 hourly) by nursing staff to stop pressure area damage.

**Fluid and nutrition**: Patients should be encouraged to eat but anorexia and anosmia are a common feature. Food intake is not vital and people will recover an appetite and their lost weight after recovery.

Fluid should be encouraged orally and then given NG first and ultimately intravenously if that does not work. If iv fluids are given, the aim is to maintain euvolaemia, taking into account insensible losses. Boluses should only be used if a patient is obviously shocked.

**Monitoring**: Hospitalised patients should be monitored regularly to identify deterioration. Saturations are particularly important. Early warning scores or specific severity scores should be used according to current practice.

## Key Issues for Nursing care

* Regular monitoring of a potential unstable group of patients
* Adhering to PPE to ensure staff and wider public safety
* Communication with patients and families

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