Case management protocol for Corona Virus Disease-19 (COVID-19) in Ethiopia

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Introduction

This protocol is intended mostly for clinicians taking care of hospitalized adult and pediatric patients with COVID 19 infection

It is not meant to replace clinical judgment or specialist consultation but rather to strengthen clinical management of these patients and provide up-to-date guidance.

General principle of clinical management for COVID-19

- Identify Severe/Critical cases at Triage then supportive treatment should start without delay.
- Apply strict IPC measures when managing patients starting from triage (contact, droplet and for other air borne precautions (Where applicable) should be applied.
- Specimens for detecting COVID-19 can be obtained from nasopharyngeal (NP) or oropharyngeal (OP) swabs or sputum (if produced) Or lower airways in special conditions.
- Closely monitor patients isolated for COVID-19 infection.
- Underlying /chronic diseases should be identified as early as possible with detailed history from patient, close family members or friends.
- Drug interactions, adverse effects of drugs and drug allergies must be considered during managing the patient with COVID-19.
- Patient care should be with respect and dignity which include but not only limited to: medical support, food/water supply and accurate timely information.
    - Good manner of talking, caring, helping etc.
    - Food, water and other basic needs timely
    - Information should be given as requested

Specific treatments

- No proven anti-viral therapy or vaccine against COVID-19 so far necessitating supportive care for specific symptoms. In moderate to severe infection -use **Chloroquine** as immunomodulation for all patients and **Chloroquine** can be used for milder infections in patients who are older and with underlying diseases.

- Dose: Chloroquine phosphate 1000mg(4tabs) stat, then 500mg (2 tabs) after 12 hrs, then 500mg(2tab) bid for 5 days.

Management in specific conductions

Mild upper respiratory tract illness

Clinical features

- Patients with uncomplicated upper respiratory tract viral infection, may have non-specific symptoms such as fever, cough, sore throat, nasal congestion, malaise, headache, muscle pain
- The elderly and immunosuppressed may present with atypical symptoms. These patients may not have any signs of dehydration, sepsis or shortness of breath.

Management

- Maintain standard Infection prevention and control procedures.
- Minimize contact with household members and provide surgical mask for the patient.
- Provide symptomatic therapies such as antipyretics and/or analgesics.
- Advice patients to keep hydrated, but not to take too much fluid as this can worsen oxygenation problems.
- Monitor patients closely and look out for worsening of their symptoms.

Mild pneumonia

Clinical features

- Patient with pneumonia and no signs of severe pneumonia.
- Child with mild-moderate pneumonia has cough or difficulty breathing + fast breathing:
- Fast breathing (in breaths/min): <2 months, ≥60; 2–11 months, ≥50; 1–5 years, ≥40

Management

- As above + empiric oral antibiotics when needed; Amoxicillin 500mg po BID or Amoxicillin-clavulanate (Augmentin) 2 gm PO BID for 7-10 days + Azithromycin 500mg po for 3 days.

COVID-19 Patients with severe Pneumonia or those who developed SARI

- Provide oxygen supplementation with a target ofSpO_2≥ 90% for adults andSpO_2 >92-94%for pregnant mothers and children.
- Conservative IV fluid management should be instituted.
- In COVID 19, superimposed bacterial infection is common and to treat all likely pathogens, antibiotics administration is common depending on the treating physician's judgment.
- Empiric antimicrobials should be started after taking specimen for culture and sensitivity (preferably broad-spectrum antibiotics)
    - **Adults:**IV ceftriaxone 2 g once daily 5 days.
        - For patients who are critical, hospitalized, immunocompromised or have previous structural lung disorder: Ceftazidime/Cefepime 2g iv Tid+or **+/-** Vancomycin 1 gm IV BID or + Azithromycin 500 mg po/d for 3 days
        - Meropenem 1g IV q8hours +/- vancomycin 1g IV q12 hours in critical patients if there is no response with the above alternative or culture and sensitivity result is suggestive.
        - IV metronidazole 500 mg three times/day can be added when aspiration pneumonia is suspected (usually 7 days).
        - When patients improve and are able to take PO, Amoxicillin-Clavulanate (Augmentin) 2 gm PO BID for 7-10 days
    - **Children:** IV ceftriaxone 50-100mg/kg daily in divided doses (usually for 7 days)

Anti-pyretic and analgesics:

Adults:

- **Paracetamol**1 g paracetamol PO (using Nasogastric Tube (NGT)) every 6–8 hours. Maximum 4g/ 24hr
- **For analgesics purpose tramadol** 50–100 mg PO/IV every 4–6 hours as needed, daily maximum 400 mg/day can be given alternatively or combined with paracetamol.
- **Children:**
- Paracetamol10–15mg/kg every 6 hourly, maximum dose 60 mg/kg/day
- **Children > 6 months for analgesics purpose tramadol** 1–2 mg/kg every 4–6 hours, maximum 400 mg/day can be given alternatively or combined with paracetamol.

- Close monitoring for signs of clinical deterioration such as respiratory failure, sepsis/ septic shock has to be done for early management of such complications.

Management of patients with hypoxemic respiratory failure and ARDS

- Some patients fail to maintain oxygen saturation despite standard oxygen flow administration. Such condition is usually due to intrapulmonary ventilation-perfusion mismatch with hypoxemic respiratory failure.
- Clinical features of acute hypoxemic respiratory failure are: Dyspnea, Cyanosis, Confusion, Tachycardia,Tachypnea,use of accessory muscles, Nasal flaring, intercostals and subcostal retraction and altered mental status.
- Patients with COVID 19 infection develop acute respiratory failure 2^0 to ARDS

Acute Respiratory Distress syndrome (ARDS) is characterized by:

- Onset: new/worsening respiratory symptoms within one week
- Chest imaging: bilateral opacities not fully explained by other features like effusions, lobar opacity,lung collapse or nodules
- Origin of edema: respiratory failure not fully explained by cardiac failure or fluid overload
- Oxygenation: severe hypoxemia regardless of high oxygen input

Management of Acute Hypoxemic Respiratory Failure 2^0 to ARDS

- Oxygen via face mask with reservoir bag-flow rates 10-15l/min
- 2-HFNO/NIV should only be used in selected patients without comorbidities and for non-pregnant patients.
- Monitor closely for one hour and deliver invasive ventilation if patients acutely deteriorate or have no improvement.
- Endotracheal intubation should be performed by a trained and experienced provider using airborne precautions.
- **MV setting**-low tidal volume (4-8 ml /KG), low inspiratory pressure, high PEEP
- If no improvement, consider prone ventilation.

Management of Septic Shock

Apply the **Six Sepsis Management Bundles** with in 1hr: appropriate fluid management, Oxygen delivery, antibiotics, sending specimen for culture and sensitivity, and monitoring of lactate and urine out-put hourly.

- Immediate aggressive volume expansion with isotonic solution, preferably R/L or alternatively with N/S, is the main stay of treatment during septic shock.
  - **Adults**: start with at least 30ml/kg in the first 3hrs, then additional fluid boluses.
  - **Children**: 20ml/kg as rapid bolus and up to 40-60ml/kg in the first 1hr.
  - Further fluid administration depends on the response to the previous fluid resuscitations.
  - Closely monitor for signs of fluid overload (jugular venous distension, crackles on lung auscultation, pulmonary edema on imaging, or hepatomegaly in children)
  - Stop or decrease fluid administration if signs of fluid overload are identified.
  - Watch also for signs of target perfusion achievement (Mean Arterial Pressure (MAP)>65 mmHg or age appropriate target for children, urine output (>0.5 ml/kg/hr in adults, 1 ml/kg/hr in children), and improvement of skin mottling, capillary refill, level of consciousness)
- If target perfusion is not achieved or hemodynamic response is poor with standard fluid administration within one hour, start vasopressor administration.
- The vasopressor of choice in adults is norepinephrine (NE) (2-30 µg/min/ (0.1-1 µg/kg/min) but epinephrine (2-30 µg/min, (0.1-1 µg/kg/min) and dopamine (2-20 µg/kg/min) can be used respectively. Titrate dose based on response;
- For children, epinephrine (0.1–0.3 µg /kg/min) is the first-line vasopressor.
- Closely monitor the veins for any extravasations of vasopressors as it may cause tissue swelling and necrosis.
- Broad spectrum antibiotics should be administered for possible superimposed infection.
  - **Adults:**
    - In patients who are critical, hospitalized, immunocompromised or have previous structural lung disorder: Ceftazidime/Cefepime 2g iv Tid +or **+/-**Vancomycin 1 gm IV BID

- meropenem 1g IV q8hours +/- vancomycin 1g IV q12 hours in critical patients if there is no response with the above alternative or culture and sensitivity result is suggestive
- When patients improve and are able to take PO, Amoxicillin -clavulanate (Augmentin) 2 gm PO BID for 7-10 days

o **Children:** IV ceftriaxone 80mg/kg daily in divided doses (usually for 7-10 days)

- Other antibiotics can be administered based on the clinical judgment of the clinician
- Surgical drainage or debridement of an abscess or dead /necrotized tissue
- Blood transfusion if Hgbis ≤ 7mg/dl to keep adequate O2 saturation
- Collect CBC, organ function tests, electrolytes, and imaging results and act accordingly.

Special considerations for pregnant patients

- Pregnant women with suspected or confirmed COVID-19should be treated with supportive therapies as described above, taking into account the physiologic adaptations of pregnancy.
- Emergency delivery and pregnancy termination decisions are based on many factors: gestational age, maternal condition, and fetal stability.
- Consultations with obstetric, neonatal, and intensive care specialists (depending on the condition of the mother) are essential.
- To reduce the risk of transmission of the virus that causes COVID-19 from the mother to the newborn, the baby must be temporarily separated from the mother upon delivery.
- Family members who care for the baby must wear PPEs. If no family member is available, the mother must wear a medical mask and practice hand hygiene before each feeding or other close contact with her newborn.
- Mothers who intend to breastfeed must be encouraged to express their breast milk to establish and maintain milk supply.

Prevention of complications

- Further complication in patients already on supportive care may develop, so close monitoring and management is essential.
- Reduce days of invasive mechanical ventilation- (Use weaning protocols that include daily assessment for readiness to breathe spontaneously and plan early extubation)
- Reduce incidence of ventilator associated pneumonia-
    - Use oral ventilator instead of nasal ventilator and apply frequent suctioning
- Reduce incidence of venous thromboembolism: low molecular-weight heparin [preferred if available] or heparin 5000 units subcutaneously twice daily) in adolescents and adults without contraindications
- Reduce incidence of pressure ulcers- frequent turning of critical patients in ICU, preferably every two hours.
- Reduce incidence of stress ulcers and gastrointestinal bleeding-
    - Early enteral nutrition (usually 24-48hrs after admission)
    - Pharmacological prophylaxis- histamine-2 receptor blockers or proton-pump inhibitors

Discharge criteria for COVID-19 cases admitted to treatment center

1. Patient diagnosed with COVID-19 pneumonia can be discharged when the symptoms have subsided, the body temperature remains at a normal range for at least three days, two consecutive laboratory tests are negative and radiological improvement. The two-time interval for testing will be within 24 and 48 hrs. respectively.

2. Any person who has contact with confirmed COVID-19 case has to be followed for 14 days:

- If no symptoms develop within 14 days follow up, discharge the person from the follow up.
- If symptoms develop during the 14 days follow up, admit the patient, treat and follow the same protocols to discharge.