Republic of Ghana
Ministry of Health

Provisional Standard Treatment Guidelines for Novel Coronavirus Infection

COVID - 19 Guidelines for Ghana

Section:
Disorders of the Respiratory System
Pneumonias
Viral Pneumonia

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Preface

On 31st December 2019, the World Health Organization (WHO) was informed of cases of pneumonia of unknown cause detected in Wuhan City, Hubei Province of China. On 7th January 2020, the causative pathogen was identified as a novel coronavirus (2019-nCoV). On 12th February 2020, the novel coronavirus was named Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) while the disease associated with it is now referred to as Corona Virus Disease (COVID-19). The virus is a new strain of coronavirus. that had limited knowledge about the characteristics of the virus, how it spreads between people, how severe the resulting infections are and how to treat them. New information about this virus keeps evolving and there is the need to keep up with current information to inform key decisions.

The first two cases of COVID-19 in Ghana were confirmed on 12th March 2020. This called for intensified actions towards the containment of the disease at all levels of care. Preventive measures including effective hand hygiene, respiratory hygiene and other infection prevention and control practices like social distancing, the use of Personal Protective Equipment (PPEs) by suspected cases with symptoms and front line practitioners taking care of patients were instituted at all levels of care including the community level.

According to the World Health Organization (WHO), the Center for Disease Control and Prevention (CDC), USA and the US Food and Drug Administration (FDA), there are currently no vaccines that have proven to be effective for the prevention of Severe Acute Respiratory Infection from COVID-19.

Ghana has responded to the pandemic by convening a multi-disciplinary panel of healthcare providers to develop country-specific guidelines building on evidence-based recommendations by a multidisciplinary panel of health care providers with experience in the clinical management of patients with COVID-19 following the current pandemic and other viral infections such as Severe

Acute Respiratory Syndrome (SARS) and Middle East Respiratory Syndrome (MERS), also by other corona virus as well as sepsis and complications of Acute Respiratory Distress Syndrome (ARDS).

This provisional guideline is also based on available scientific evidence and provides recommendations for the management of adults, adolescents, pregnant women and children with COVID-19. It is intended to ensure the best possible chances of survival through optimized supportive care for all patients. It is also intended to serve as a basis for optimized reliable comparison of investigational therapeutic interventions of pharmaceutical products that are showing promise in some observational studies as part of randomized controlled trials. It is a living document and will continue to be updated as and when additional evidence emerges.

HON. KWAKU AGYEMAN-MANU
MINISTER FOR HEALTH

Acknowledgement

MOH/GHS Executives and Stakeholders

No.	Name	Designation
1	Kwaku Agyeman-Manu	Hon. Minister for Health
2	Alexander K.K. Abban	Hon. Deputy Minister for Health
3	Tina A. Mensah	Hon. Deputy Minister for Health
4	Nana Kwabena Adjei-Mensah	Chief Director, Ministry of Health
5	Dr. Patrick Kumah Aboagye	Director General, Ghana Health Service
6	Dr. Mrs. Martha Gyansa-Lutterodt	Director Technical Coordination, Ministry of Health

7	Mrs. Joycelyn Azeez	Chief Programme Officer, Pharmacy Directorate, Ministry of Health

Emergency National Medicines Selection Committee of Experts

No.	Name	Organisation
1	Prof. Francis W. Ofei (Chairman)	UCC/SMS
2	Mrs. Delese Mimi Darko	FDA
3	Dr. Audrey Forson	SMD/KBTH
4	Dr. Peter Puplampu	SMD/KBTH
5	Mrs. Joycelyn Azeez	MOH
6	Ms. Edith Gavor	MOH
7	Dr. Brian Adu Asare	MOH
8	Dr. Angela Ackon	MOH
9	Mr. Saviour Yevutsey	MOH
10	Mr. Festus Korang	MOH
11	Dr. N.A. Baddoo	NACP/GHS
12	Prof. K. Ohene Buabeng	CHS/KNUST
13	Dr. Mary Eyram Ashinyo	ICD/GHS
14	Dr. Marc Dzradosi	IMH
15	Dr. Radha Hackman	Dua Clinic
16	Mr. Nicholas Adjimani	MOH

Editorial Group and Reviewers

No.	Name	Organization
1	Prof. Francis W. Ofei (Chairman)	UCC/SMS
2	Ms. Edith Gavor	MOH
3	Dr. Brian Asare	MOH
4	Dr. Edith Andrews Annan	WHO Country Office for Ghana

5	Dr. Angela Ackon	MOH
6	Prof. K. Ohene Buabeng	CHS/KNUST
7	Dr. Marc Dzradosi	IMH
8	Dr. Peter Puplampu	UGMS/KBTH

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Comments should be sent to:
Unit Head,
Drug Policy Unit, Pharmacy Directorate,
Technical Coordination, Ministry of Health
PO Box MB 582
Accra, Ghana

Coronavirus Disease (COVID-19)

Preamble

Corona Virus Disease (COVID-19) is a newly identified severe acute respiratory infection (SARI) caused by a novel coronavirus named Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) that was first reported to the World Health Organization (WHO) on 31st December 2019. The disease has rapidly spread to affect human populations on all continents around the world since it was first identified, meeting WHO's criteria as a Public Health Emergency of International Concern (PHEIC). The disease is now a pandemic.

The causative virus is a new strain of coronavirus that had not been previously identified in humans prior to 7th January 2020. Currently, there is scanty knowledge about the characteristics of the virus, how it spreads between people, how severe the resulting infections are and how to treat them. Persons infected by this virus may exhibit no symptoms, or experience an illness which may range from mild to severe.

Although the virus is widely believed to have originated from animals, no animal reservoir has as yet been identified and spread of the disease is currently known to be only from person to person, mainly through droplets depositing on surfaces arising from people sneezing, coughing, speaking or exhaling. The virus may be transferred from contaminated surfaces to mucosal surfaces (eyes, nose, mouth), via the hands. Aerosol transmission is also possible when people have prolonged exposure to high concentrations of droplets in relatively closed spaces.

The incubation period for COVID-19 (i.e. the time between exposure to the virus and onset of symptoms) is currently estimated at between 2 and 14 days. Although the disease may initially present with mild symptoms, there are suggestions that there may be clinical deterioration during the second week of illness.

Risk factors for severe illness and higher case fatality include older age, and presence of chronic underlying medical conditions such as cardiovascular disease, diabetes, chronic respiratory disease, hypertension and

immunosuppression. The clinical course of COVID-19 in pregnant patients from recent studies is similar to that for non-pregnant individuals of the same age. The symptoms in children are often relatively mild.

Complications of the disease include acute respiratory distress syndrome (ARDS) leading to acute respiratory failure, secondary infection, septic shock, cardiac injury, arrhythmia, liver failure, acute kidney injury, metabolic acidosis, coagulation dysfunction or multi-organ failure and death.

Suspected cases should be held in quarantine for testing. If confirmed, patients should be transferred to designated hospitals with effective isolation and disease control capacity. Confirmed cases can be treated with multiple patients in the same isolation room. Patients who are severely or critically ill should be admitted to an Intensive Care Unit (ICU) as early as possible.

It has been observed that currently over 80% of patients with COVID-19 develop mild or uncomplicated illness, and approximately 14% develop severe disease requiring hospitalization and oxygen support while 5% may have very severe illness requiring admission to an ICU with ventilators for care.
There are currently no well-researched and approved vaccines or medicines specifically for the prevention and treatment of patients with COVID-19. At present clinical management includes infection prevention and control (IPC) measures and supportive care. A number of medicines which were tried in previous outbreaks of coronavirus infections, as well as the current outbreak, together with some investigational drugs are currently being studied at different research centres all over the world. Some of these medications have been proposed for use in moderate to severely ill patients.

Keeping suspected cases in quarantine while awaiting test results, and tracing contacts of confirmed cases for early detection of the disease is paramount in the identification of asymptomatic or subclinical infection to help prevent spread of the disease.

Causes

- Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2)

Symptoms

- Adults
  - May be asymptomatic
  - Fever
  - Cough (commonly dry but may be productive)
  - Fatigue
  - Myalgia
  - Sore throat
  - Nasal congestion
  - Nasal discharge
  - Shortness of breath
  - Loss or reduced sense of smell (anosmia or hyposmia)
  - Anorexia
  - Diarrhoea
- Children
  - Fever
  - Cough
  - Nasal congestion
  - Rhinorrhea (runny nose)

Signs

- Fever (body temperature ≥ 37.5^{o}C)
- Tachypnea
- Tachycardia
- Cyanosis
- Flaring of nostrils
- Use of accessory muscles of respiration (intercostal indrawing etc.)
- Restricted chest wall movement (unilateral or bilateral)
- Signs of consolidation on chest examination
- Drowsiness, restlessness or confusion
- Low blood oxygen saturation by pulse oximeter

Clinical Presentations of COVID-19 according to severity

Mild	Patients with uncomplicated upper respiratory tract viral infection, may have non-specific symptoms such as fever, fatigue, cough (with or without sputum production), anorexia, malaise, muscle pain, sore throat, dyspnea, nasal congestion, or headache. Rarely, patients may also present with diarrhoea, nausea and vomiting. The elderly and immunosuppressed may present with atypical symptoms. Symptoms due to physiologic adaptations of pregnancy or adverse pregnancy events, such as e.g. dyspnea, fever, GI-symptoms or fatigue, may overlap with COVID-19 symptoms.
Pneumonia	**Adult** with pneumonia but no signs of severe pneumonia and no need for supplemental oxygen. **Child** with non-severe pneumonia who has cough or difficulty breathing + fast breathing: fast breathing (in breaths/min): **< 2 months:** ≥ 60; **2–11 months:** ≥ 50; **1–5 years:** ≥ 40, and no signs of severe pneumonia.
Severe pneumonia	**Adolescent or adult:** fever or suspected respiratory infection, plus one of: respiratory rate > 30 breaths/min; severe respiratory distress; or SpO_2 ≤ 93% on room air **Child** with cough or difficulty in breathing, plus at least one of the following: central cyanosis or SpO_2 < 90%; severe respiratory distress (e.g. grunting, very severe chest indrawing); signs of pneumonia with a general danger sign: inability to breastfeed or drink, lethargy or unconsciousness, or convulsions. Other signs of pneumonia may be present: chest indrawing, fast breathing (in breaths/min): **< 2 months**: ≥ 60; **2–11 months**: ≥ 50; **1–5 years**: ≥ 40. While the diagnosis is made on clinical grounds; chest imaging may identify or exclude some pulmonary complications.

Acute respiratory distress syndrome	**Onset**: within 1 week of a known clinical insult or new or worsening respiratory symptoms. **Chest imaging** (radiograph, CT scan, or lung ultrasound): bilateral opacities, not fully explained by volume overload, lobar or lung collapse, or nodules. **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/oedema if no risk factor present. **Oxygenation impairment in adults:** • Mild ARDS: 200 mmHg < PaO_2/FiO_2[a] ≤ 300 mmHg (with PEEP or CPAP ≥ 5 cm H_2O, or non-ventilated) • Moderate ARDS: 100 mmHg < PaO_2/FiO_2 ≤ 200 mmHg (with PEEP ≥ 5 cm H_2O, or non-ventilated) • Severe ARDS: PaO_2/FiO_2 ≤ 100 mmHg (with PEEP ≥ 5 cm H_2O, or non-ventilated) • When PaO_2 is not available, SpO_2/FiO_2 ≤ 315 suggests ARDS (including in non-ventilated patients). **Oxygenation impairment in children: note** OI = Oxygenation Index and OSI = Oxygenation Index using SpO_2. Use PaO_2-based metric when available. If PaO_2 not available, wean FiO_2 to maintain SpO_2 ≤ 97% to calculate OSI or SpO_2/FiO_2 ratio: • Bilevel (NIV or CPAP) ≥ 5 cm H_2O via full face mask: PaO_2/FiO_2 ≤ 300 mmHg or SpO_2/FiO_2 ≤ 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

Sepsis	**Adults:** life-threatening organ dysfunction caused by a dysregulated host response to suspected or proven infection.[b] 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. **Children:** suspected or proven infection and ≥ 2 aged based systemic inflammatory response syndrome criteria, of which one must be abnormal temperature or white blood cell count.
Septic shock	**Adults:** persisting hypotension despite volume resuscitation, requiring vasopressors to maintain MAP ≥ 65 mmHg and serum lactate level > 2 mmol/L. **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; tachypnea; mottled or cool skin or petechial or purpuric rash; increased lactate; oliguria; hyperthermia or hypothermia.

[a] If altitude is higher than 1000 m, then correction factor should be calculated as follows: PaO_2/FiO_2 x barometric pressure/760.

[b] The SOFA score ranges from 0 to 24 and includes points related to six organ systems: respiratory (hypoxemia defined by low PaO_2/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.

Abbreviations: ARI acute respiratory infection; BP blood pressure; bpm beats/minute; CPAP continuous positive airway pressure; FiO_2 fraction of inspired oxygen; MAP mean arterial pressure; NIV non-invasive ventilation; OI Oxygenation Index; OSI Oxygenation Index using SpO_2; PaO_2 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; SpO_2 oxygen saturation.

Adopted from WHO Guidelines for clinical management of severe acute respiratory infection and COVID-19 is suspected

Case definitions

1. SUSPECTED CASE		
Any Person with		
FEVER (body temperature ≥ 37.5°C) AND/OR COUGH AND/OR DIFFICULTY IN BREATHING	AND	who within 14 days before the onset of illness had **<u>any</u>** of the following exposures. History of travel to/been in any country* with confirmed and ongoing community transmission of SARS-CoV-2 **Or** Close contact with a confirmed case of COVID-19 **Or** Exposure to a healthcare facility where COVID-19 case(s) have been reported
2. PROBABLE CASE		
A suspect case for whom testing for the COVID-19 virus is inconclusive: **A.** Inconclusive being the result of the test reported by the laboratory **Or** **B.** A suspect case for whom testing could not be performed for any reason		
3. CONFIRMED CASE		
A person with laboratory confirmation of SARS-CoV-2 infection		

Adapted from WHO Coronavirus Disease 2019 (COVID-19) Situation Report-50, (10th March 2020)

Investigations

- Real Time-Polymerase Chain Reaction (RT-PCR) for SARS-CoV-2 using a minimum of one (1) sample from each site

- Nasopharyngeal swab
- Oropharyngeal swab

Additional tests that may be required:

- Whole blood (both clotted and EDTA)
- Endotracheal secretions (for severe cases admitted to ICU)
- Broncho-alveolar lavage (for severe cases admitted to ICU)
- Expectorated sputum (this should only be taken at the treatment center to minimise aerosol spread)
- A blood sample for SARS-COV-2 serology is recommended **only** when RT-PCR is not available

Note:
For the exclusion of COVID-19 as the probable cause of death in patients who are dead on arrival or die at a facility, a blood sample (if feasible) or a mouth swab can be collected and dispatched accordingly

- Full Blood Count
  - May show
    - leukopaenia, lymphocytopaenia
    - leukocytosis (suspect secondary infection)
    - thrombocytopaenia
- C-Reactive Protein (CRP)
- Erythrocyte Sedimentation Rate (ESR)
- Liver Function Test
  - May show elevated alanine aminotransferase (ALT) and aspartate aminotransferase (AST) levels
- Chest X-Ray
  - May be normal in non-severe disease and within first 48 hours in severe disease
  - Multiple areas of consolidation and ground glass opacities (bilateral involvement in most patients)
- Chest CT
  - May be normal in non-severe disease and within first 48 hours in severe disease
  - Multiple areas of consolidation and ground glass opacities (bilateral involvement in most patients)
- BUE & Creatinine
- Blood culture & sensitivity

- Sputum culture & sensitivity

Procedure for sample collection

Sample collection requirements: PPE (apron, gloves, face shield, N95 masks), viral transport medium, centrifuge tube, ziploc bag, biohazard label, secondary container, hard frozen gel packs, Giostyle carrier, sample transportation form, marker, disinfectant and hard card box/transport box.

- Assemble materials (collection tubes, swabs, tongue depressor) for respiratory specimen collection
- Label sample tubes with person's name, date of sample collection and time
- Fill in Case investigation form
- Perform hand hygiene
- Put on an appropriate PPE - allowing a trained observer to mirror you for ideal donning
- Collect at least 1 nasopharyngeal sample, inserting swab into the nostril parallel to the palate. Swabbing each nostril for 10-15 seconds, swabbing each nostril with the same swab
- Collect at least 1 oropharyngeal sample. Using a tongue depressor, depress the tongue and swab each tonsil and the posterior pharynx for 10-15 seconds, avoiding the tongue.
- Place nasopharyngeal and oropharyngeal swabs in a single sterile tube containing 2-3ml of Viral Transport Media (VTM) immediately after collection

- If person is coughing, ask them to inhale deeply and cough to expel sputum sample into a leak-proof screw cap sputum collection cup or sterile-dry collection bottle
- In severely ill persons, consider a bronchoalveolar lavage or tracheal aspirate
- If collecting whole blood or serum sample, do not use glass tubes for blood collection. Do not use Heparin as an anti-coagulant.

- All samples should be packaged under triple packaging system
- Discard sample collection materials in a properly labelled biohazard bin
- Decontaminate work surfaces with 0.5% hypochlorite solution
- Take off the PPE, following the appropriate procedure

- Perform hand hygiene
- Send samples under cold chain to Noguchi Memorial Institute for Medical Research or the Kumasi Centre for Collaborative Research
- Notify the Institutional Pubic Health Unit (IPHU) or Disease Control Officer (DCO) of the facility of the suspected case, and aid in completing the case base/investigation form/laboratory sample pick up. The IPHU or Disease Control Officer should notify the facility head and District Health Management Team (DHMT)
- At the Regional/District level, notify the IPHU and DCO in the facility/District and the Director of Health Service (DDHS) immediately. The DDHS/RRT will in turn inform the RDHS/RRT and then the DSD/National EOC
- Results of laboratory testing will be delivered to the Director of the facility where the patient is isolated through the DSD/EOC, RDHS, DDHS

Treatment

Treatment objectives

- To identify suspected cases early and promptly initiate appropriate management including infection prevention and control (IPC)
- To identify confirmed cases for isolation and appropriate treatment
- To identify confirmed cases at greater risk who require management in hospital or who on hospitalization require management in an intensive care unit (ICU)
- To alleviate symptoms
- To identify progression of the disease early
- To prevent and manage complications
- To treat secondary infections
- To eradicate the COVID-19 infection
- To prevent person to person transmission
- To arrange transfer of confirmed cases to a designated treatment centre

Note:
Appropriate treatment interventions including supportive therapy should be instituted for confirmed cases at the quasi-governmental and private sector hospitals with capacity for case management.

Non-pharmacological treatment

- Early quarantine of suspected cases and self-quarantine of all contacts of confirmed cases with follow up (Refer to **Case Management Manual for COVID-19, Ministry of Health-Ghana, March 2020**)
- Psycho-social support by counselling patients and contacts
- Chest physiotherapy, lung expansion and sputum clearance exercises
- Aspiration or drainage of chest fluid (pleural effusion)
- Good nutrition and hydration
- Adequate rest with good ventilation
- Humidified air or steam inhalation
- Lukewarm salt solution gargles 3 to 4 times daily

For Children

- Tepid sponging to control fever i.e. children < 5 years
- Adequate fluids e.g. breast milk, porridge, coconut water
- Feed as can be tolerated during the episode. Give an extra meal per day for two weeks after recovery

Useful adjunctive measures

- Cessation of smoking
- Physical exercise
- Cover the mouth and nose during coughing and sneezing; using surgical masks, cloth mask, tissues or flexed elbow followed by hand hygiene

Note:
Avoid statements that stigmatize patients or their contacts as this potentially could delay or prevent reporting.

Infection prevention and control

- Early recognition and isolation is critical for containing COVID-19
- All health facilities must institute appropriate pre-triage and triage systems
- Limit entry of other healthcare providers to designated treatment areas
- Ensure appropriate use of personal protective equipment (PPEs) for patients, healthcare providers and heavy-duty purposes
- Encourage hand washing before and after any direct contact with patients, immediately after removal of gloves before a non-surgical procedure (catheters), after touching body fluids/ non-intact skin and

contaminated items, after using lavatory or moving inanimate objects in patient environment and after using the lavatory.

- Patient care environments and surfaces, patient-care equipment, linen/laundry and eating utensils should be cleaned and disinfected using standard hospital disinfectants (such as chlorine) at appropriate concentrations according to national IPC guidelines
- All suspected cases should be immediately quarantined and must wear a surgical mask while awaiting results
- All confirmed cases should be immediately isolated
- Visitors and families must be restricted from entering treatment areas

Pharmacological treatment

Note:
There are currently no approved vaccines or medicines for the prevention of COVID-19 infection.

A. <u>Management of asymptomatic contacts of confirmed cases</u>

Management of asymptomatic contacts of confirmed cases should follow contact tracing principles. Both private and public facilities should work with the District Health Directorate.

B. <u>Management of exposures of healthcare workers</u>

(Adopt diagram in GHS guideline page 44 and Chapter 6 -6.1, 6.2, 6.3)

C. <u>Management of confirmed cases with mild and moderate symptoms</u>

Management of COVID-19 viraemia (for all confirmed cases)
1st line treatment
Evidence Rating [C]

- Hydroxychloroquine, oral,
  <u>Adults</u>
  200 mg 8 hourly for 10 days
  <u>Children</u>
  3 mg/kg 8 hourly (max: 200 mg/dose) for 10 days

And

- Azithromycin, oral,
  Adults
  500 mg for day 1, then 250 mg daily from day 2 to day 5
  Children
  10 mg/kg body weight daily for 3 days
  (not recommended for children below 6 months due to risk of pyloric stenosis)

Caution:
Hydroxychloroquine and Azithromycin are associated with QT-prolongation on ECG and may result in arrhythmias. Use with caution in patients with chronic cardiovascular conditions, other medical conditions e.g. Renal and liver disease, or are on medications that may interact to cause arrhythmias.

2nd line treatment
Evidence Rating [C]

- Chloroquine phosphate, oral,
  Adults
  500 mg (300 mg base) 12 hourly for 5 days
  Children
  > 60 kg; 500 mg (300 mg base) 12 hourly for 5 days
  < 60 kg; 5 mg base per kg 12 hourly for 5 days

And

- Azithromycin, oral,
  Adults
  500 mg for day 1, then 250 mg daily from day 2 to day 5
  Children
  10 mg/kg body weight daily for 3 days
  (not recommended for children below 6 months due to risk of pyloric stenosis)

Caution:
Azithromycin is associated with QT-prolongation on ECG and may result in arrhythmias. Use with caution in patients with chronic cardiovascular

conditions, other medical conditions e.g. Renal and liver disease, or are on medications that may interact to cause arrhythmias.

Note:

- Empiric therapy for persons under investigation (PUI) should be prescribed for critically ill patients awaiting COVID-19 test results
- Preferred therapy for hospitalized patients unable to obtain remdesivir

Note:

- Adverse events include nausea, glucose fluctuations, and diarrhea. GI symptom scan be mitigated by taking hydroxychloroquine with food
- Use with caution in diabetic patients; hypoglycemia may occur. Insulin requirements may decrease
- Use with caution in patient at risk for QT prolongation
- Recommend obtaining G6PD test although risk of hemolysis is very low. It is reasonable to start hydroxychloroquine in most patients while awaiting G6PD testing
- Recommend avoid taking hydroxychloroquine with antacids. Separate administration by at least 4 hours
- Hydroxychloroquine can be crushed

Management of Fever and Myalgia

- Paracetamol, oral,
  Adults
  500 mg - 1g, 6 - 8 hourly
  Children
  6-12 years; 250-500 mg 6 - 8 hourly
  1-5 years; 120-250 mg 6 - 8 hourly
  3 months - 1 years; 60 – 120 mg 6 - 8 hourly

Or

- Paracetamol, rectal,
  Adults
  500 mg - 1 g 6 to 8 hourly
  Children
  6-12 years; 250 - 500 mg 6 - 8 hourly
  1-5 years; 120 - 250 mg 6 - 8 hourly

3 months – 1 year; 60 - 120 mg 6 - 8 hourly

Or

- Paracetamol, IV,
  Adults
  > 50 kg; 1 g 6 hourly as required
  < 50 kg; 1 g 8 hourly as required (max: 3 g daily)
  Children
  12-18 years (>50 kg); 1 g 8 hourly as required (max: 3 g daily)
  12-18 years (<50 kg); 15 mg/kg 6 hourly as required (max 750 mg per dose)
  2-12 years (<50 kg); 15 mg/kg 6 hourly as required (max 75 mg/kg per day)

Management of Cough (for non-productive or dry cough)
Cough (Productive)

- Guaifenesin containing expectorant, oral,
  Adult
  200-400 mg 4 hourly (max. 2.4 g per day)
  Children
  > 12 years; 100 - 400 mg 4 hourly (max: 2.4 g daily)
  6 - 11 years; 100 - 200 mg 4 hourly (max: 1.2 g daily)
  2 - 5 years; 50 - 100 mg 4 hourly (max: 600 mg daily)
  6 months-2 years; 25 - 50 mg 4 hourly (max: 300 mg daily)

Or

- Carbocysteine, oral,
  Adult
  500 mg to 600 mg 6 to 8hourly (max 2.25 g/day)
  Children
  6 - 12 years; 250 mg 8 hourly (max: 750 mg)
  2 - 5 years; 80 - 160 mg 6 - 8 hourly (max: 500 mg)

Management of Diarrhoea (as per Standard Treatment Guidelines for Ghana)

Bacterial gastroenteritis (fever, abdominal cramps, blood and mucus in stools)

Note:
No antibiotics are required for suspected viral gastroenteritis. Adequate rehydration is the main requirement.

1st Line Treatment
Evidence Rating: [A]

- Ciprofloxacin, oral,
  Adults
  500 mg 12 hourly for 5 days
  Children (for all child age groups)
  15 mg/kg 12 hourly for 5 days

2nd Line Treatment
Evidence Rating: [A]

- Cefuroxime, IV,
  Adults
  750 mg 8 hourly
  Children
  25 mg/kg body weight 12 hourly
  Neonates
  > 7 days; 25 mg/kg body weight 8 hourly
  < 7 days; 25 mg/kg body weight 12 hourly

Then

- Cefuroxime, oral,
  Adults
  250 mg 12 hourly for 5-7days
  Children
  12-18 years; 250 mg 12 hourly for 5-7 days
  2-12 years; 15 mg/kg body weight for 5-7 days (max. 250 mg 12 hourly)
  3 months-2 years; 10 mg/kg body weight for 5-7 days (max. 125 mg 12 hourly)

Note:

Suspension can only be given to children above 3 months, however the IV can be given to neonates.

Amoebic dysentery suspected (patient failing to respond to empirical treatment for bacterial gastroenteritis within 2 days or based on stool microscopy)

Evidence Rating: [A]

- Metronidazole, oral,
  Adults
  800 mg 8 hourly for 5 days
  Children
  8-12 years; 400 mg 8 hourly for 5 days
  4-7 years; 200 mg 8 hourly for 5 days
  0-3 years; 100 mg 8 hourly for 5 days

Cholera: profuse diarrhoea (rice water stool) + vomiting

1st Line Treatment
Evidence Rating: [A]

- Tetracycline, oral,
  Adults
  500 mg 6 hourly for 3 days
  Children
  Not recommended

Or

- Doxycycline, oral,
  Adults
  100 mg 12 hourly for 3 days
  Children
  Not recommended

Or

- Erythromycin, oral,
  Adults
  500 mg 8 hourly for 5 days

Children
> 13 years; 500 mg 8 hourly for 5 days
6-12 years; 250-500 mg 8 hourly for 5 days
2-6 years; 250 mg 6 hourly for 5 days
1 month-2 years; 125 mg 6 hourly for 5 days
Neonates; 12.5 mg/kg 6 hourly for 5 days

Zinc supplementation for diarrhoea
Evidence Rating: [A]

- Zinc supplement, oral,
  Adults
  Not required
  Children
  > 6 months; 20 mg/day for 10-14 days
  < 6 months; 10 mg/day for 10-14 days

(See section on Management of Diarrhoea in STG)

D. Management of severe cases of COVID-19

Management of COVID-19 viraemia

- Hydroxychloroquine or Chloroquine **and** Azithromycin as above

And

- Lopinavir/Ritonavir, oral,
  Adults
  400 mg/100 mg 12 hourly for 5 days
  Children
  6 months to 18 years:
  > 35 kg; 400 mg/100 mg, 12 hourly for 5 days
  26-35 kg; 300 mg/75 mg, 12 hourly for 5 days
  15-25 kg; 200 mg/50 mg, 12 hourly for 5 days
  < 6 months old: Lopinavir component 16 mg/kg, 12 hourly for 5 days

Caution:
Not to be given to neonates less than 14 days

Or

- Remdesivir, oral,
  Adult
  200 mg IV load then 100 mg IV 24 hourly for 2 to 10 days
  Children
  > 40 kg; 200 mg IV load then 100 mg IV 24 hourly for 2 to 10 days
  < 40 kg; 5 mg/kg IV load then 2.5 mg/kg 24 hourly

E. Supportive Treatment

Oxygen therapy

Note:
Give supplemental oxygen therapy immediately to patients with SARI and respiratory distress, hypoxaemia or shock and target > 94%.

- Oxygen, by face mask,
  Adult
  Patient with emergency signs - obstructed or absent breathing, severe respiratory distress, central cyanosis, shock, coma or convulsions)
  - Airway management and oxygen therapy during resuscitation to target SpO2 ≥ 94%.
  - Monitor and maintain oxygen saturation between > 94%
  - Initiate oxygen therapy at 5 L/min and titrate flow rates to reach target SpO2 ≥ 93% during resuscitation

  Patient in critical condition
  - face mask with reservoir bag (at 10–15 L/min)

  Patient in stable condition
  - Target oxygen saturation:
    - Non-pregnant adults: > 90% SpO2
    - Pregnant adults: ≥ 92– 95%

  Children
  Patient with emergency signs (obstructed or absent breathing, severe respiratory distress, central cyanosis, shock, coma or convulsions)

- Airway management and oxygen therapy during resuscitation to target $SpO_2 \geq 94\%$
- Monitor and maintain oxygen saturation between > 94% **Or** target $SpO_2 \geq 90\%$

Note:
Use of nasal prongs or nasal cannula is preferred in young children, as it may be better tolerated.

Note:
All areas where patients with SARI are cared for should be equipped with pulse oximeters, functioning oxygen systems and disposable, single-use, oxygen-delivering interfaces (nasal cannula, nasal prongs, simple face mask and mask with reservoir bag).

Note:
- Adults with pneumonia but no sign of severe pneumonia should be treated with appropriate antibiotics, guided by data of microbial flora in the health system and pattern of antimicrobial susceptibility.
- Other medications that may be used to boost immunity is Vitamin supplement rich in Ascorbic Acid and Zinc and adequate rest.
- Dehydration may be managed with the use of Oral rehydration salts

Caution:
- Older patients and patients with comorbidities like asthma and cardiovascular diseases have increased risk of severe disease and mortality, inspite of the fact that they may present with mild symptoms.
- They have a high risk of deterioration and should be admitted to a designated treatment center for close monitoring and therapy.

F. <u>Treatment of Bacterial Co-infections</u>

Note:
Culture and sensitivity testing should guide definitive treatment, meanwhile empirical treatment can be initiated with the following.

G. Management of critical cases

Note:
Should follow the standard protocols for management of the various complications.

Management of Patients with Acute Respiratory Distress Syndrome (ARDS)

Management of COVID 19 patients who develops Severe Acute Respiratory Infection (SARI)

- severe pneumonia characterized by severe respiratory distress/shortness of breath, SPO_2 < 93%, plus respiratory rate > 30 bpm.
- Appropriate antibiotic therapy,
  - depending on whether the pneumonia is hospital or community acquired.
  - COVID 19 patients showing signs of ARDS must be ventilated, in addition to the oxygen therapy.
  - Supplemental oxygen therapy must be initiated and promptly with patient is showing signs of SARI, respiratory distress or hypoxaemia. Therapeutic target is SPO_2 > 94% for adults.
- For children, same target of SPO_2 as adults during resuscitation otherwise 90 > or greater (i.e. without resuscitation)
  - Appropriate supporting equipment's like pulse oximeters, and others must be available to support oxygen therapy in COVID 19 with SARI patients

Management of Sepsis as a complication of COVID 19

Note:
Before initiation of broad-spectrum empiric antimicrobial therapy for sepsis, samples should be taken for culture and sensitivity testing and treatment shifted to definitive antimicrobial therapy based on culture results.

Rehydration with or without blood transfusion

- Appropriate IV fluid
  And

- Blood transfusion (if Hb is < 7 g/dl)

Patients in Septic Shock

- Rehydration

And

- Positive ionotropic agents (to increase BP and reduced perfusion)

Prevention of Venous Thromboembolic complication

- Low molecular weight heparin

Patients with impaired renal function associated with septic shock or a complication by the virus

- Renal Replacement Therapy (Dialysis)

Management of Stress ulcers and GI bleeding

- Omeprazole

Or

- Esomeprazole

Management of Septic shock

Adjunctive therapies

- Corticosteroids

Management of pregnant women with COVID-19

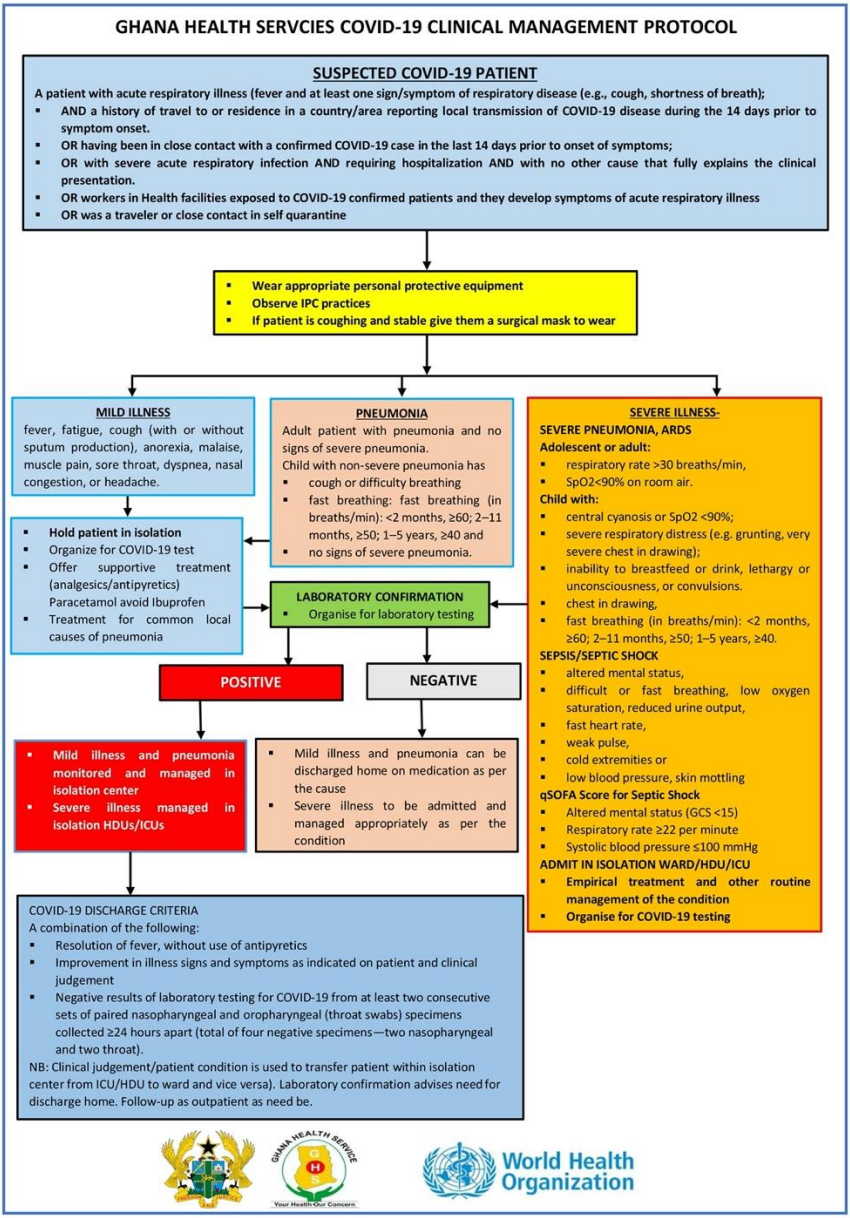
Management of infants and mothers

- IPC and breastfeeding
- Care for older persons with COVID-19

Note:
Incidence of pressure sores may be reduced or supported with Povidone Iodine powder for the pressure sores.

Flowcharts and Diagrams

Identification of patients and Management flowchart



General Personal hygiene (coughing, etc.)
Infection prevention and control
Hand hygiene
Discharge criteria
Self-quarantine
Mandatory quarantine

Referral criteria

Suspected or confirmed COVID-19 cases should not be referred but transported. For guidance on referrals and arranged transportation of patients (**Refer to Case Management Manual page 51-52**)

A. <u>Transfer from Non COVID-19 treatment centre</u>

In non-designated treatment centres **without a holding bay**, arrangement should be made for patient to be transferred to a nearby facility with a holding area in line with MOH COVID-19 Case Management Manual.

In non-designated treatment centres **with a holding bay (holding area)**, keep the patient, arrangement should be made to transfer patients to a designated treatment centre in line with MOH COVID-19 Case Management Manual.

B. <u>Discharge from hospital</u>

Patients can be discharged from the healthcare facility whenever they satisfy the following criteria:

1. Resolution of fever, without use of antipyretic medication
2. Resolution of signs and symptoms
3. Two negative tests for COVID-19 taken 24 hours apart

Relevant contacts

COVID-19 Case Management Hotlines:

- 055 222 2004
- 055 222 2005

Ghana Health Service COVID-19 Case Surveillance Telephone Numbers:

- 050 949 7700
- 055 843 9868

Noguchi Memorial Institute for Medical Research

- 0244 296 984 (Dr. Ivy Asantewaa)

Kumasi Centre for Collaborative Research

- 020 914 0451 (Prof. Richard Phillips)

Emergency Number

- 112

Ridge Hospital

- 050 949 7700
- 055 843 9868

Relevant Forms

- Case Investigation form--COVID-19 (2019-nCoV)
- FDA ADR Forms