Republic of Ghana
Ministry of Health

Provisional
Standard Treatment Guidelines
for Novel Coronavirus Infection

COVID-19 Guidelines | for Ghana

2020

version 1.0

Special Note:
Pages 7–28 of this document represent an update to Chapter 8 of the 7th Edition of the Standard Treatment Guidelines titled "**Disorders of the Respiratory System**".
(Standard Treatment Guidelines, Ministry of Health, Seventh Edition, 2017).

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(Drug Policy Unit, Pharmacy Directorate, Technical Coordination Directorate)
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Content

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). The associated disease is now referred to as Corona Virus Disease (COVID-19), and was declared a pandemic by WHO on 11th March 2020. There is limited knowledge about the characteristics of SARS-CoV-2, regarding person-to-person spread, severity of resulting infections as well as treatment. New information about this virus keeps emerging, hence the need to keep up with current information to inform important decisions.

The first two cases of COVID-19 in Ghana were confirmed on 12th March 2020. This called for immediate intensive actions towards the containment of the disease across the country. Preventive measures including effective hand hygiene, respiratory hygiene as well as other Infection Prevention and Control (IPC) practices like social distancing, the use of Personal Protective Equipment (PPEs) were instituted at all treatment centres and in the community.

As part of efforts to mitigate the pandemic, a multi-disciplinary panel of experts was convened to develop evidence-based country-specific guidelines.

This provisional guideline provides recommendations for the management of patients with COVID-19. It is intended to ensure the best possible chances of survival through optimized supportive care for all patients. Due to the novel nature of this virus, this provisional guideline is also intended to serve as a basis for research into treatments that are showing promise.

According to the WHO, the United States (US) Center for Disease Control and Prevention (CDC) and the US Food and Drug Administration (US-FDA), there are currently (as at the time of developing this guideline) no vaccines that have proven to be effective for the prevention of COVID-19. Additionally, there is insufficient clinical trial evidence globally to support the efficacy and/or safe use of any medicines or blood products (e.g. convalescent plasma) in the

prevention (including pre- and post-exposure prophylaxis) or treatment of COVID-19.

There are currently a number of ongoing clinical trials which may warrant review of this provisional guideline on a periodic basis. This guideline is therefore a living document and will continue to be updated in response to emerging evidence.

The general public must avoid statements that stigmatize people with or are suspected to have COVID-19 and any of their contacts as this potentially could prevent or delay reporting.

KWAKU AGYEMAN-MANU (MP)
MINISTER FOR HEALTH

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Coronavirus Disease **(COVID-19)**

Preamble

Corona Virus Disease (COVID-19) is a newly identified Severe Acute Respiratory Infection (SARI) caused by a novel corona virus named Severe Acute Respiratory Syndrome Corona virus 2 (SARS-CoV-2) that was first reported to the World Health Organization (WHO) on 31st December 2019. The disease has spread rapidly among human populations on all continents around the world since it was first identified. It was initially declared by WHO as a Public Health Emergency of International Concern (PHEIC) on 30th January, 2020 and subsequently declared a pandemic on 11th March, 2020.

Although the virus is widely believed to have originated from animals, there is insufficient scientific evidence to identify the specific animal reservoir or the original mode of transmission of the disease to humans. The spread of the disease in humans, however, is currently known to be from person to person, mainly through droplets arising from people sneezing, coughing, speaking or exhaling, which deposit on surfaces. 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 to be between 2 and 14 days. Persons infected by this virus may either exhibit no symptoms, or experience an illness which may range from mild to severe. However, asymptomatic and symptomatic persons are equally capable of transmitting the infection.

The experience from observation of patients presenting to health centres around the world suggests that, over 80% of symptomatic individuals 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 Intensive Care Unit (ICU) with ventilators for care.

The global evidence also suggests that, whereas symptomatic individuals may initially have mild symptoms and physical signs, there may be clinical deterioration during the second week of illness.

Risk factors for severe illness and higher case fatality include old 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 bacterial and other microbial infection, septic shock, cardiac injury, cardiac arrhythmia, liver failure, acute kidney injury, metabolic acidosis, coagulation dysfunction or multi-organ failure.

Suspected persons should be held in quarantine for testing. If confirmed, patients should be transferred, by special arrangement with the National Ambulance Service and the COVID-19 case management teams (call emergency phone number 112 on all networks), to designated treatment centres 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.

There are currently (as at the time of developing this guideline) no well-researched and approved vaccines, medicines or blood-products (e.g. convalescent plasma) 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 in the current COVID-19 outbreak, together with some investigational drugs are presently being studied at different research and treatment centres all over the world for use as preventive and/or treatment options.
In the absence of proven medicines for prevention and treatment of persons with COVID-19, keeping suspected cases in quarantine while awaiting test results, isolation of confirmed cases and tracing of contacts of confirmed cases for early detection of the disease are therefore paramount in preventing the spread of the disease.

Symptomatic treatment of COVID-19 patients should be done in line with standard treatments as provided in the 7th edition of the Standard Treatment Guidelines (STG). (Standard Treatment Guidelines, Ministry of Health, Seventh Edition, 2017).

All treatments opted for from this guideline for patients with COVID-19 must be based on the clinical judgement of a multi-disciplinary COVID-19 case management team. Any treatments opted for must be fully documented and submitted to the appropriate authorities through the District Health Information Management System-2 (DHIMS2) platform.
Furthermore, all adverse drug reactions (ADRs) must be reported to the Food and Drugs Authority (FDA) by completing the appropriate FDA ADR Form and submitting it directly to the FDA or through the institutional contact person (Details provided below under section for '**Relevant Contacts'**).

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
- Shortness of breath or difficulty in breathing
- Nasal congestion
- Nasal discharge
- 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°C)
- Tachypnea
- Tachycardia
- Cyanosis
- Flaring of nostrils
- Use of accessory muscles of respiration (plus intercostal in-drawing 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 (SPO_2 < 93%)

Clinical Presentations of COVID-19 according to severity

Mild	Patients with mild COVID-19 illness, may have non-specific symptoms such as fever, fatigue, cough (with or without sputum production), anorexia, malaise, muscle pain, sore throat, dyspnoea, nasal congestion, or headache. Rarely, patients may also present with GI symptoms like 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 dyspnoea, 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 and 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, flaring alae nasi, very severe chest in-drawing); clinical signs of pneumonia with a general danger sign such as inability to breastfeed or drink, lethargy or unconsciousness, or convulsions. Other signs of pneumonia may be present such as intercostal in-drawing, fast breathing (in breaths/min): **< 2 months**: ≥ 60; **2–11 months**: ≥ 50; **1–5 years**: ≥ 40. **Note:** While the diagnosis is made on clinical grounds, chest imaging is necessary to exclude some pulmonary complications or changes suggestive of ARDS.
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): diffuse bilateral opacities, not fully explained by volume overload, lobar or lung collapse, or nodules. **Origin of pulmonary infiltrates**: pulmonary oedema not fully explained by cardiac failure or fluid overload. May need

	objective assessment (e.g. echocardiography) to exclude hydrostatic cause of infiltrates/oedema if no obvious cardiovascular 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, 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 • On NIV (BiPAP or CPAP) ≥ 5 cm H_2O via full face mask: PaO_2/FiO_2 ≤ 300 mmHg or SpO_2/FiO_2 ≤ 264 • Mild ARDS (Non-invasive mechanical ventilation): 4 ≤ OI < 8 or 5 ≤ OSI < 7.5 • Moderate ARDS (Non-invasive mechanical ventilation): 8 ≤ OI < 16 or 7.5 ≤ OSI < 12.3 • Severe ARDS (on invasive mechanical ventilation): 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 (< 93%), 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 hyperbilirubinaemia.

	Children: suspected or proven infection and 2 or more age-based systemic inflammatory response syndrome (SIRS) 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; 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 when COVID-19 is suspected 13 March 2020

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 **any** 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 suspected 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 suspected 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

Identification of SAR-COV-2:

- 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:

- A blood sample for SARS-CoV-2 serology is recommended **only** when RT-PCR is not available as it has a relatively low sensitivity (a venous blood sample should be put into two separate plastic tubes, one with EDTA, the other with no 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)

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) into two separate plastic tubes, one with EDTA, the other with no EDTA or a mouth swab (using approved swabs and procedures) can be collected and dispatched accordingly.

Tests for supportive care and for identification of impending complications:

- Full Blood Count
  - May show
    - leukopaenia, lymphopaenia
    - leukocytosis (suspect secondary infection)
    - thrombocytopaenia
- Erythrocyte Sedimentation Rate (ESR)
- C-Reactive Protein (CRP)
- BUE & Creatinine
- Liver Function Test
  - May show elevated ALT and AST levels
- Blood culture & sensitivity
- Sputum culture & sensitivity
- Prothrombin time, INR
- D-Dimer
- Troponin
- CK-MB
- LDH
- Ferritin
- Electrocardiograph (ECG)
- Chest X-Ray
  - May be normal in non-severe disease and within first 48 hours in severe disease or show 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 or show multiple areas of consolidation and ground glass opacities (bilateral involvement in most patients)

Procedure for sample collection

Sample collection requirements: PPE (apron, gloves, face shield, N95 masks, coverall), 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 2-3 ml 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. Use plastic tubes for blood collection. Do not use Heparin as an anti-coagulant. EDTA plastic tubes should be used.
- 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 or any other designated testing centre for COVID-19
- 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 therapy
- To prevent person to person transmission
- To alleviate symptoms of the disease
- To identify progression of the disease early
- To prevent and/or manage complications of the disease
- To treat secondary bacterial or other infections
- To eradicate the COVID-19 infection
- To arrange transfer of confirmed cases to a designated treatment centre

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 pleural fluid (pleural effusion) if present

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 for all age groups

- 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
- Good nutrition and hydration
- Adequate rest with good ventilation
- Humidified air or steam inhalation
- Lukewarm salt solution gargle 3 to 4 times daily

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
- after moving inanimate objects in patient environment

- 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) 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

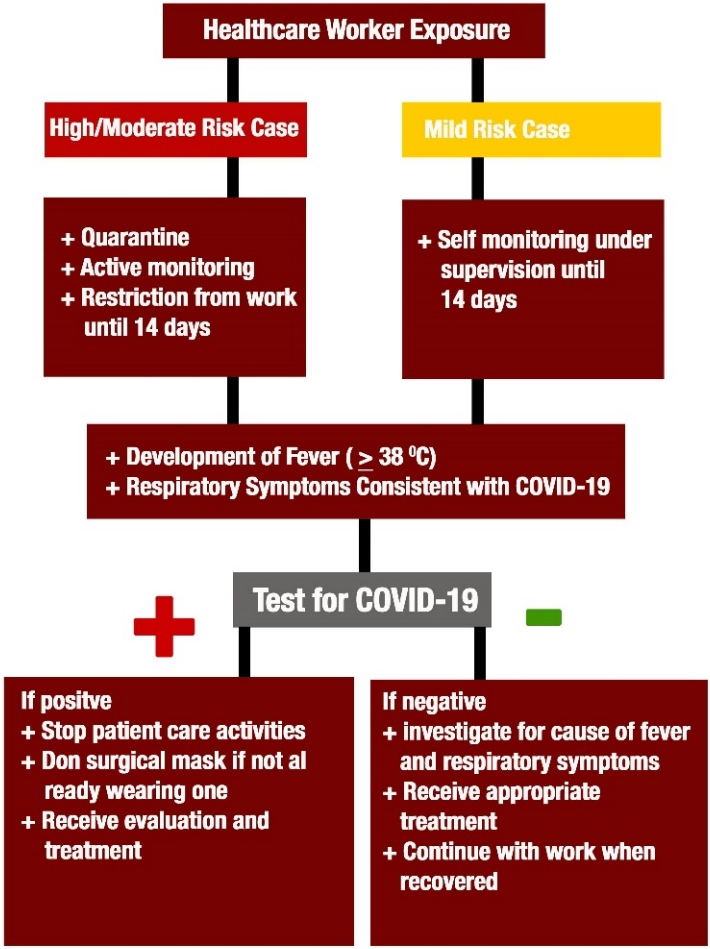
Note:
At the time of developing this provisional guideline, there were no approved vaccines or medicines for the prevention or treatment of COVID-19.

All suspected or confirmed cases of COVID-19 who have other co-morbidities (e.g. diabetes, heart disease, COPD, asthma, etc.) or require prophylaxis or treatment with anticoagulants for deep vein thrombosis, should be managed following the principles stated in the 7th edition of the Standard Treatment Guidelines for these conditions while awaiting test results for confirmation of COVID-19 and during treatment.

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

Management of asymptomatic contacts of confirmed cases should follow contact tracing principles and IPC measures. Both private and public health facilities should work with the District Health Directorate. No pharmacological treatment is recommended for this category of individuals.

B. Management of exposures of healthcare workers



Adopted from MOH Case Management Guidelines, March 2020

C. Management of confirmed cases who are asymptomatic

Note:
All treatments selected from this section for patients with COVID-19 must be based on the clinical judgement of a multi-disciplinary COVID-19 case management team.

Caution:
Hydroxychloroquine and Chloroquine may be associated with

- Cardiac arrhythmias and QT-prolongation on ECG.
  - They must be used with caution in patients with pre-existing heart disease who would need additional clinical and/or ECG monitoring.
- Blood glucose fluctuations
  - Use with caution in diabetic patients; hypoglycemia may occur. Anti-hyperglycaemic medication (oral agents or insulin) requirements may decrease requiring individual dose adjustment
- Intravascular haemolysis in persons with G6PD deficiency.
  - However, the risk of haemolysis is low, therefore it is reasonable to start Hydroxychloroquine/Chloroquine while awaiting G6DP testing in most patients

1st line treatment
Evidence Rating [C]

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

Or
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

D. Management of confirmed cases with mild and moderate symptoms

Note:
All treatments selected from this section for patients with COVID-19 must be based on the clinical judgement of a multi-disciplinary COVID-19 case management team.

Caution:
Hydroxychloroquine and Chloroquine may be associated with

- Cardiac arrhythmias and QT-prolongation on ECG.
  - They must be used with caution in patients with pre-existing heart disease who would need additional clinical and/or ECG monitoring.
- Blood glucose fluctuations
  - Use with caution in diabetic patients; hypoglycemia may occur. Anti-hyperglycaemic medication (oral agents or insulin) requirements may decrease requiring individual dose adjustment
- Intravascular haemolysis in persons with G6PD deficiency.
  - However, the risk of haemolysis is low, therefore it is reasonable to start Hydroxychloroquine/Chloroquine while awaiting G6DP testing in most patients

1st line treatment
Evidence Rating [C]

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

And

- Azithromycin, oral,
  Caution:
  To be used with caution in patients with pre-existing cardiac disease or at risk of developing cardiac arrhythmias especially when given together with Hydroxychloroquine. Consider instead, combining Hydroxychloroquine with Doxycycline.

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)

Or

- Doxycycline, oral,
  Adults
  100 mg daily for 5 days
  Children and pregnant women
  Not recommended

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,
  Caution:
  To be used with caution in patients with pre-existing cardiac disease or at risk of developing cardiac arrhythmias especially when given together with Chloroquine. Consider instead, combining Chloroquine with Doxycycline.
  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)

Or

- Doxycycline, oral,
  Adults
  100 mg daily for 5 days
  Children and pregnant women
  Not recommended

Recommendations on the use of Hydroxychloroquine/Chloroquine and Azithromycin combination therapy:

- Monitor patient (ECG or clinical – palpitations and syncope)
- Withhold Azithromycin, Hydroxychloroquine/Chloroquine in patients with baseline QT prolongation (e.g. QTc > 500 msec) or with known congenital long QT syndrome
- Monitor cardiac rhythm and QT interval and withdraw Hydroxychloroquine and Azithromycin if QTc exceeds 500 msec
- Correct hypokalaemia to levels greater than 4 mmol/L and hypomagnesaemia to more than 2 mmol/L before starting therapy
- Avoid use of other QTc-prolonging medicines where possible

E. Management of confirmed cases with severe disease WITHOUT Acute Respiratory Distress Syndrome (ARDS), Cytokine Release Syndrome (CRS) or Disseminated Intravascular Coagulation (DIC)/Coagulopathy

- Hydroxychloroquine or Chloroquine **And** Azithromycin or Doxycycline as in **'Pharmacological treatment, sub-section D' a**bove.

And (if available)

- Convalescent plasma, Evidence Rating [C]
  200 to 250 ml (once) of plasma from a COVID-19 recovered patient with significant levels of anti-SARs-CoV-2 antibodies (IgG and IgM) and neutralizing antibody titre. (Contact National Blood Service [NBS] and see NBS Guidelines. Contacts for NBS provided under section for '**Relevant Contacts'** below)

Note:
If frozen plasma is being used for transfusion, it should be thawed in a water bath between +30^{0}C and +37^{0}C or other suitable thawing device before use

and infused using a blood administration set as soon as possible after thawing.

And

- Methylprednisolone, IV, Evidence Rating [C]
  Adults
  80 mg – 120 mg or 1-2 mg/kg daily for 3 - 5 days
  Children
  Initial dose: 0.5 – 1.6 mg/kg body weight per day in 3 or 4 divided doses (Based on disease severity, response of patient and clinical judgement)

Note:
IV steroid (Methylprednisolone) therapy is indicated early in severe disease day 5 - 7 only if early evidence of cytokine release syndrome (CRS) with rise in IL-6 and inflammatory markers is noted. Steroid therapy may have adverse effects In the presence of sepsis and some other clinical situations.

F. Management of confirmed cases with severe disease WITH Acute Respiratory Distress Syndrome (ARDS) or Cytokine Release Syndrome (CRS) or Disseminated Intravascular Coagulation (DIC)/Coagulopathy

- Treat as in **'Pharmacological treatment sub-section E'** (which includes sub-section D) above

And

- Tocilizumab, IV, (single dose), Evidence Rating [C]
  Adults
  400 mg or 8 mg/kg (max: 800 mg)
  Children
  > 30 kg; dosage same as adults
  < 30 kg; 12 mg/kg body weight

Note:
Treatment should only be initiated after discussions in a multidisciplinary team of specialists.

And (if available)

- Remdesivir, IV, Evidence Rating [B]
  Adult
  200 mg IV load then 100 mg IV 24 hourly for 7 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

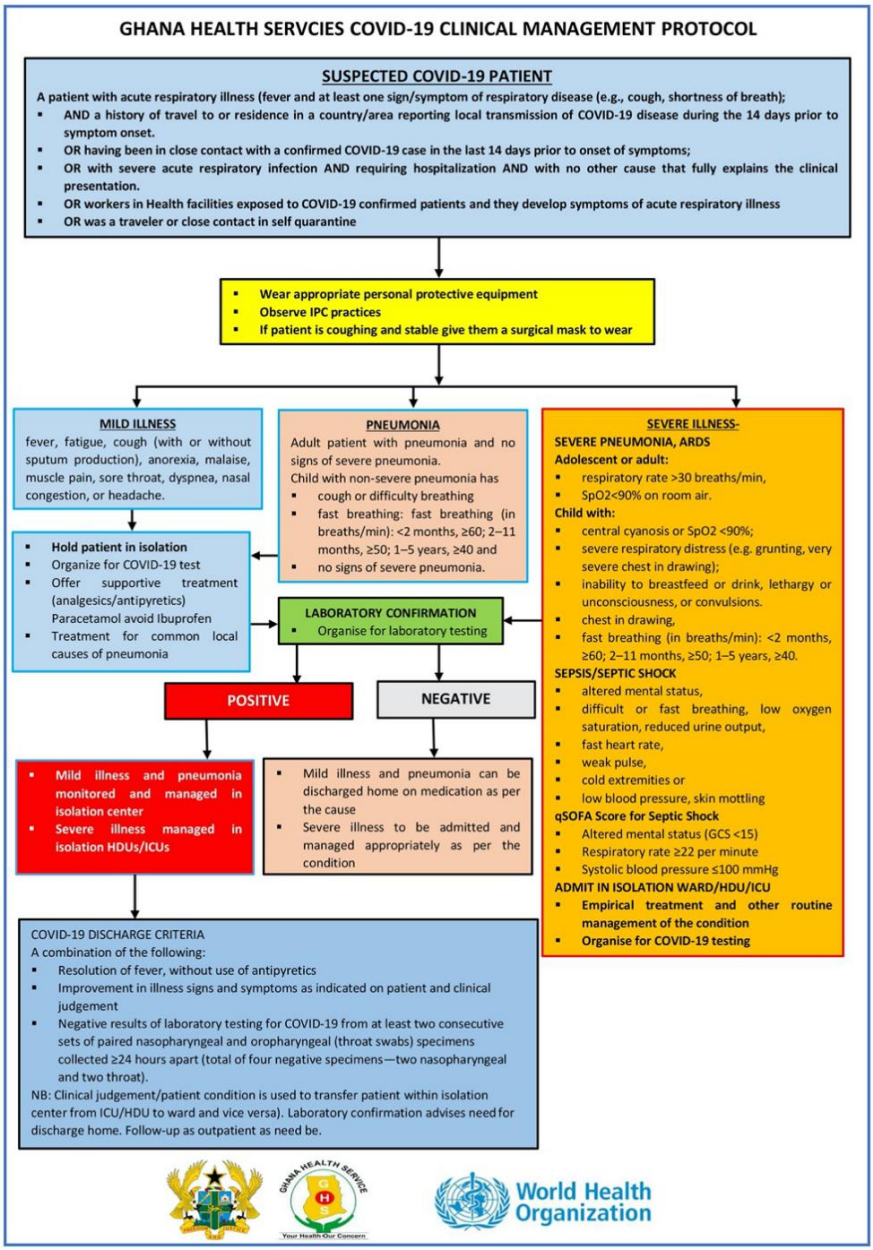
G. Treatment of Bacterial Co-infections

Note:
Culture and sensitivity testing should guide definitive treatment. Meanwhile empirical treatment can be initiated while awaiting results based on local bacterial culture and sensitivity patterns.

H. Supportive treatment for all persons under investigation (PUI) for COVID-19 or confirmed cases who have comorbidities

Note:
For persons who have other co-morbidities (e.g. diabetes, heart disease, COPD, asthma, etc.) or require prophylaxis or treatment with anticoagulants for deep vein thrombosis and are under investigation for COVID-19 (persons under investigation-PUI) or are being treated, follow standard management principles as stated in the 7th edition of the Standard Treatment Guidelines while awaiting test results for confirmation of COVID-19 and during treatment.

Identification of patients and management flowchart



Treatment flowchart

REPUBLIC OF GHANA
Ministry of Health
Provisional Standard Treatment Guidelines for Novel Coronavirus Infection

A Asymptomatic contacts of confirmed cases

No Pharmacological Treatments Recommended
Contact tracing principles; IPC measures; Working with District Health Directorate

B Exposures of healthcare workers

See algorithm adopted from MOH Case Management Guidelines March 2020

C Confirmed cases who are asymptomatic

1st line treatment	2nd line treatment
Hydorxychloroquine, oral	Chloroquine, oral

Note: Remdesivir can be used as a substitute for hydroxychloroquine (HCQ) or chloroquine (CQ) in cases with contra-indications for HCQ or CQ or in patients who are not able to tolerate HCQ or CQ.

D Confirmed cases with MILD and MODERATE symptoms

1st line treatment		2nd line treatment	
Option 1	Option 2	Option 1	Option 2
Hydorxychloroquine, oral	Hydorxychloroquine, oral	Chloroquine, oral	Chloroquine, oral
And	And	And	And
Azithromycin, oral	Doxycycline, oral	Azithromycin, oral	Doxycycline, oral

Note: Remdesivir can be used as a substitute for hydroxychloroquine (HCQ) or chloroquine (CQ) in cases with contra-indications for HCQ or CQ or in patients who are not able to tolerate HCQ or CQ.

E Confirmed cases with SEVERE disease WITHOUT Acute Respiratory Distress Syndrome (ARDS), Cytokine Release Syndrome (CRS) or Disseminated Intravascular Coagulation (DIC)/Coagulopathy

1st line treatment		2nd line treatment	
Option 1	Option 2	Option 1	Option 2
Treatments for Confirmed cases with mild and moderate symptoms (in Section D) above			
And	And	And	And
Convalescent plasma	Convalescent plasma	Convalescent plasma	Convalescent plasma
And (if available)	And (if available)	And (if available)	And (if available)
Methylprednisolone, IV	Methylprednisolone, IV	Methylprednisolone, IV	Methylprednisolone, IV

F Confirmed cases with SEVERE disease WITH Acute Respiratory Distress Syndrome (ARDS), Cytokine Release Syndrome (CRS) or Disseminated Intravascular Coagulation (DIC)/Coagulopathy

1st line treatment		2nd line treatment	
Option 1	Option 2	Option 1	Option 2
Treatments for Confirmed cases with severe disease WITHOUT ARDS, CRS or DIC/Coagulopathy (in Section E) above			
And	And	And	And
Tocilizumab, IV	Tocilizumab, IV	Tocilizumab, IV	Tocilizumab, IV
And	And	And	And
Remdesivir, IV (if available)	Remdesivir, IV (if available)	Remdesivir, IV (if available)	Remdesivir, IV (if available)

At the time of developing this provisional guideline, there were no approved vaccines or medicines for the prevention or treatment of COVID-19. All treatments selected patients with COVID-19 must be based on the clinical judgement of a multi-disciplinary COVID-19 case management team.
All suspected or confirmed cases of COVID-19 who have other co-morbidities (e.g. diabetes, heart disease, COPD, asthma, etc.) or require prophylaxis or treatment with anticoagulants for deep vein thrombosis, should be managed following the principles stated in the 7th edition of the Standard Treatment Guidelines for these conditions while awaiting test results for confirmation of COVID-19 and during treatment.

by National Medicines Selection Commtitee, Ministry of Health

Referral criteria

Suspected or confirmed COVID-19 cases should not be referred from the health facility to which they first present, or leave their home to go to a treatment centre. Instead a phone call should be placed to the National Ambulance Service (**Phone number 112 on all networks**) following which a designated ambulance would be provided to transport the suspected or confirmed case from the holding facility or their home, to an appropriate treatment centre.

For guidance on referrals and arranged transportation of patients **refer to MOH/GHS COVID-19 Case Management Manual page 51-52**.

Transfer from Non COVID-19 treatment centre

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

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 COVID-19 Case Management procedures.

Criteria for declaration of recovery from COVID-19 / Discharge from a treatment centre:

SARS-CoV-2 positive patients (whether managed at home or admitted to a treatment centre) can be considered recovered and discharged from the treatment centre, if on admission, whenever they satisfy the following criteria after they have been ascertained by the COVID-19 case management team:

1. Absence of fever, without use of antipyretic medication
2. Absence of symptoms and signs
3. Two negative paired samples from the naso-pharyngeal and oro-pharyngeal sites for SARS-CoV-2 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

Food and Drugs Authority

- Food and Drugs Authority (P. O. Box CT 2783, Cantonments – Accra, Ghana)
- 0800 151000 - Toll free
- **0299 802932, 0299 802933 – Call (Hotline)**
- 0302 233200, 0302 235100, 0302 229794 - Call
- 0244 310 297 - Mobile/WhatsApp
- +233 302 229794, +233 302 229794 - Fax
- Email: fda@fda.gov.gh, drug.safety@fda.gov.gh
- Website: www.fdaghana.gov.gh

National Blood Service

- 0800 501010 - Toll free
- 0302 428940 - Call
- 0277 501010 - WhatsApp

Relevant Forms

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

Provisional Medicines List for Novel Coronavirus Infection

COVID-19 Core List of Medicines (Re-purposed)

INN	Formulation	Strength	Category
Hydroxychloroquine	Tablet	200 mg	Anticovid/ Antimalarial
Chloroquine phosphate	Tablet	500 mg	Anticovid/ Antimalarial
Azithromycin	Capsule	250 mg	Anticovid/ Antibacterial
Azithromycin	Suspension	200 mg/ml	Anticovid/ Antibacterial
Doxycycline	Tablet	100 mg	Anticovid/ Antibacterial
Methylprednisolone Sodium Succinate	Injection	500 mg	Anticovid/Steroid
Convalescent plasma			Anticovid/Blood product
Tocilizumab	Injection	20 mg/ml	Anticovid/ Interleukin-6 receptor antagonist
Tocilizumab	Injection	180 mg/ml	Anticovid/ Interleukin-6 receptor antagonist
Remdesivir	Injection	(equiv. 100 mg remdesivir)	Anticovid/Antiviral