

CURRENT STRATEGY TO COMBAT COVID-19 IN INDONESIA**ADRIANA D.N.¹, MIFTAHUSSURUR M.^{2,3*}**¹ Department of Internal Medicine, Faculty of Medicine, Universitas Airlangga, Dr. Soetomo General Academic Hospital, Surabaya, Indonesia² Gastroenterology and Hepatology Division, Department of Internal Medicine, Faculty of Medicine, Universitas Airlangga, Dr. Soetomo General Academic Hospital, Surabaya, Indonesia³ Institute of Tropical Disease, Universitas Airlangga, Surabaya, Indonesia*Received 22.04.2020; accepted for printing 14.07.2020***ABSTRACT**

The Coronavirus disease 2019 (COVID-19) pandemic has led the world to a tremendous health crisis. Indonesia is no exception to be impacted by the disease. Indonesia as the fourth most populous country in the world along with its authentic geographical, cultural, economic, and social condition is facing great challenges in managing the outbreak. The government by its Task Force for COVID-19 has set strategies and regulations to control the transmission of the disease as well as to provide optimal health care while minimizing the impact of the pandemic mainly in fundamental sectors such as the economic growth. However, the number of new cases keeps increasing and the high case fatality rate is steadily above the global rate. Many concerns regarding this devastating condition such as the lack of empowerment to do the tests, trace, and treat to the primary care along with lack of discipline and awareness of the citizens worsened by social stigma of the disease, the unpreparedness in releasing the large social scale restriction, and the insufficient health care facilities to manage the disease. This article will highlight the current situation of COVID-19 in Indonesia as well as measures and policies being implemented to control the pandemic in their comparison to the established international guidelines and conditions in other countries.

KEYWORDS: *Indonesia, COVID-19, strategy, Task Force.***INTRODUCTION**

The outbreak of Coronavirus disease 2019 (COVID-19) around late December 2019 in China that rapidly and widely spread has led us into a tremendous health crisis around the world. The World Health Organization (WHO) declared COVID-19 as a global pandemic in March 11th 2020 [Djalante R et al., 2020; KKRI, 2020b; Lan J et al., 2020]. On October 5th 2020 the number of confirmed case around the world has reached over 2.2 million new cases with 39,000 deaths globally [WHO, 2020a]. Indonesia as the fourth most populous country in the world is predicted to suffer greatly and over a long period [Djalante R et al., 2020]. Many believe the actual number of cases is far beyond re-

garding the number of polymerase chain reaction (PCR) analysis available that is not enough to reflect most likely present actual condition of infection in Indonesia. It is in line with the case fatality rate in Indonesia that by the same date reached 3.8 % which was a higher percentage than 3.1 % global result [Djalante R et al., 2020]. Geographic and cultural condition along with lack of facilities and resources, not to mention economic and social impact from this health crisis has been challenges on managing COVID-19 in Indonesia.

Overall, COVID-19 is an acute disease, but it can also be lethal with serious disease, which may lead to death, because of massive alveolar damage and progressive respiratory failure. Case fatality rate varies greatly from country to country. However, it is clear that mortality rate appears higher in elderly and those with comorbidities. The incubation time of COVID-19 is five to six days, and the range from one to fourteen days after exposure to

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the current evidence suggests that the main transmission are droplets, contact and aerosol transfer [Burhan E et al., 2020c; Susilo A et al., 2020; WHO, 2020d]. The Indonesian government organized a Task Force for COVID-19 in March 2020 that later issued the Guideline for Medical Rapid Response and Public Health Aspects of COVID-19 in Indonesia. This interim guideline targets the medical force and general public in terms of informing the means to mitigate the impacts and death rates and has been revised several times to its fifth revision in August 2020 [KKRI, 2020b; Djalante R et al., 2020]. This article will highlight the current situation of COVID-19 in Indonesia as well as measures and policies being implemented to control the pandemic in their comparison to the established international guidelines and conditions in other countries.

EARLY DETECTION AND SCREENING

As the first confirmed COVID-19 patient was found in Indonesia on March 2nd 2020, the Indonesian government has set strategy to mitigate transmission, yet the disease keeps spreading rapidly. The purposes of the strategy are to slow down or stop the rate of transmission as well as to prevent the spreading of the disease, to provide optimal health care facility mainly for critical ill patients, and to minimize the impact of the COVID-19 pandemic in healthcare system, social services, economic activity as well as other sectors [Burhan E et al., 2020c; KKRI, 2020b]. Every province and municipality are obligated to determine the transmission scenario in the region based on the definition in WHO guideline of no cases, sporadic cases, clusters

of cases, and community transmission. Different scenario of transmission will indeed lead to different response and preparedness [WHO, 2020d].

On August 2020, the Indonesian Ministry of Health launched their Fifth Revision of Guideline of Prevention and Control of COVID-19 in Indonesia that includes the early

detection and response in every national and regional entry port [KKRI, 2020b]. While earlier on January 20th 2020, the Indonesian government issued travel restriction from Hubei Province, which was at that time, the epicenter of global COVID-19 [Djalante R et al., 2020; Yurianto A et al., 2020]. The activity of early detection includes detection, prevention and response by monitoring vehicles, people, means, and environment entering from region or nation affected by the COVID-19. Health Alert Card, thermal scanners, Personal Protective Equipment (PPE) for related workers and ambulance to transport to referral hospital is basic recommendation to provide in each port. National and regional governments also require COVID-19 Rapid Diagnostic Test (RDT) or Real Time Reverse Transcriptase Polymerase Chain Reaction (rRT-PCR) results for travelers as well as migrant workers [KKRI, 2020b; Yurianto A et al., 2020]. To accommodate the regulation, the government hand in hand with the private sector also provides facility to perform RDT in airports as well as railway stations across the nation. Travelers will then be managed based on the classification of cases and clinical conditions. This however has many obstacles especially in monitoring travelers crossing the cities and provinces using private vehicles.

Unlike South Korea which from the beginning of the pandemic had preferred on performing massive rRT-PCR COVID-19 Swab to control infection, Indonesia took quite some time to finally decide on conducting massive testing not by rRT-PCR but by RDT on the citizens around March 2020 [Hong K et al., 2020; Hur S et al., 2020]. The RDT method is based on immunoreaction with results available within 10 to 30 minutes, which is much faster than the PCR test that might take minimum 3 to 8 hours to process and in Indonesia might take 1-2 days until the result being received. The RDT test will measure total Immunoglobulins (Ig), IgG, IgM, and/or IgA in different combinations. IgM and IgA are reported to be detected around 3 to 6 days from onset, while IgG can be detected starting from 10 to 18 days from onset. This is pivotal to consider that there is window period that might give negative test result and therefore multiple tests with 5 to 7-day interval is mandatory. Some reports also have indicated that other coronaviruses, or even dengue, might give false



To overcome it is possible, due to the uniting the knowledge and will of all doctors in the world

positive result. This kind of test is until now has not been recommended by WHO to be used as a main diagnostic tool [Djalante R et al., 2020; WHO, 2020d]. The United States Center for Disease Control (CDC) and the Food and Drug Administration (FDA) are also in line with WHO guidance. FDA has not authorized using antibody tests to diagnose severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection, and CDC in their latest revision in July does not currently recommend using antibody testing as the sole basis for diagnosis of acute infection (Fig. 1). However, CDC makes the use of serological tests to facilitate the clinical diagnosis of those that are late with their infections, either by viral screening or post-infectious syndrome testing [CDC, 2020]. The RDT, until today, has still been used for patients as well as other citizens in Indonesia, notably in areas where rRT-PCR is limited, in spite of being no longer recommended by the local medical associations dealing with the COVID-19. The RDT, however, is not used as the main diagnostic tool [Burhan E et al., 2020c; KKRI, 2020b].

In its clinical laboratories, the Korea Ministry of Food and Drug Safety also advises that South Korea not employ other methods of COVID-19 validation, including pan-coronavirus PCR, serological tests, laboratories developed tests, and

non-diagnose-approved reactors [Hong K et al., 2020]. The nation also has more loose indications for accessing rRT-PCR tests that allow them to use the tests in screening. In order to validate reported cases of COVID-19, to decide on the release of COVID-19 patients confirmed with quarantine, and to test asymptomatic persons in close contact with COVID-19 confirmed patients, COVID-19 rRT-PCR can be conducted for validation purposes and for the differential diagnosis to be made of cases of unexplained respiratory syndromes. South Korea has also launched the world's first scheme for "Drive Thru" and "Walking Thru" system to perform rapid virus test [Hur S et al., 2020].

rRT-PCR until present is the only acknowledged method to detect COVID-19 infection in humans. rRT-PCR targets the presence of actual genetic materials of SARS-CoV2 in samples and only swab samples containing both human and virus RNA will show positive result. The genetic material targets include region on the E, RdRP, N, and S genes. WHO in the last interim guidance by September 2020 still recommends this molecular testing with Nucleic Acid Amplification Tests (NAATs) as a standard confirmation of COVID-19 case. Testing on persons who are asymptomatic or are not in category of suspects is allowed with consideration of epidemiological aspects, local screen-

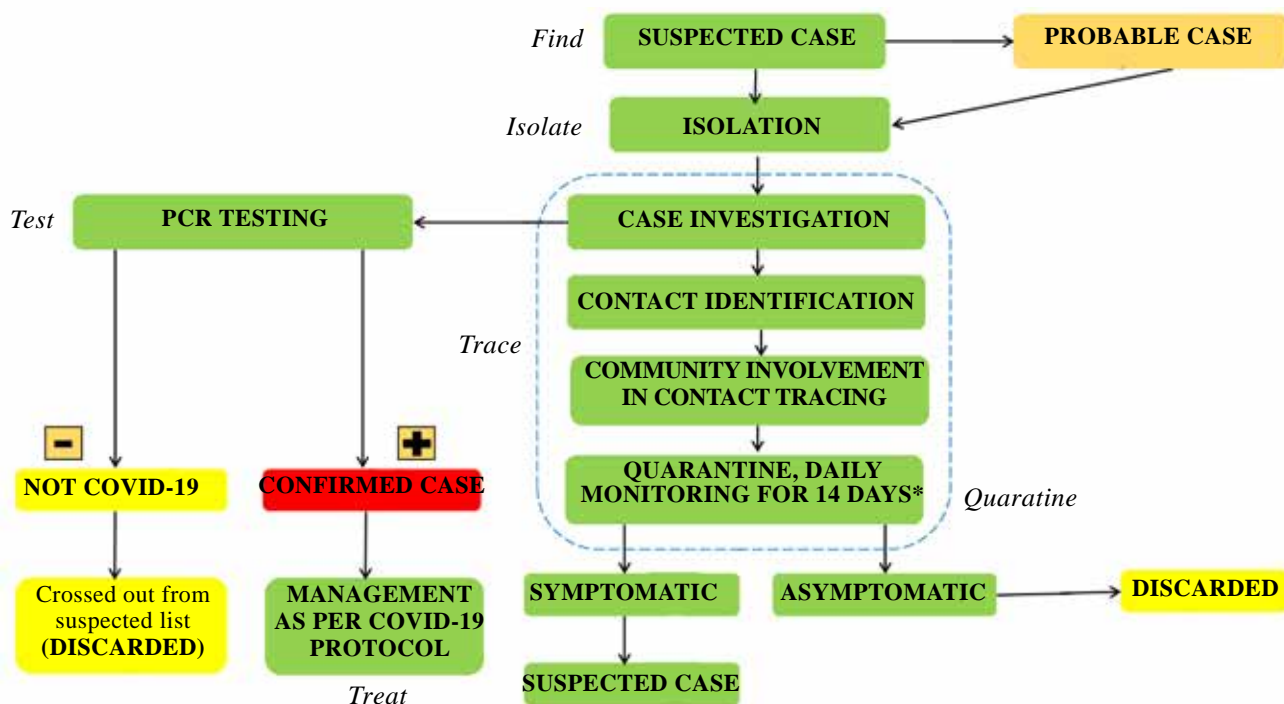


FIGURE 1. The algorithm of diagnosis and management of COVID-19 in Indonesia [Burhan E et al., 2020c; KKRI, 2020b]

ing protocol and testing kits availability [WHO, 2020d]. By the beginning of the pandemic, the rRT-PCR in Indonesia were only conducted to those belong to the category of patients under investigation, and therefore the test was not widely used for screening in Indonesia regarding the limitation of the testing kits availability. The Indonesian government then by that time brought in two Ribonucleic Acid (RNA) extractors as well as 18 PCR detectors in order to speed up the nation's rate for COVID-19 infection. The medical devices were distributed to nation's capital of Jakarta as well as 11 other provinces prioritized for testing. Testing capacity was rising in Indonesia. However, it remained severely limited [Burhan E et al., 2020b; Djalante R et al., 2020].

Japan in March 2020 performed almost similar regulation on preventing needless tests. The health-care centers consistently declined to conduct testing even though the Japan Medical Association reported that there were 290 doctors who agreed that at the time a patient had to get a test for the novel coronavirus. After many pressures from abroad lead to the issue that Japan underestimated how contagious the virus can be, the Japan government eventually pledge COVID-19 testing to increase to 20,000 per day versus recent 5,000 per day [BPCD-GJ, 2020].

Indonesia needs to reconsider the regulation of testing in order to break the chain of virus and prevent futile deaths due to under assessment and management. However, without the ability of producing recommended testing kits independently and vastly depend on donation or brutal competition globally in obtaining the testing kits, it was arduous for Indonesia to provide the number that would be sufficient to cover Indonesia's large population [Djalante R et al., 2020]. Following the changes in WHO interim guidance in diagnostic testing for SARS-CoV-2, Indonesia then revised its protocol in conducting PCR analysis. Regarding the availability of the test that is still low and the high of the testing cost, the government tries to reduce the amount of rRT-PCR usage in follow-up and focusing more in confirming new cases. The rRT-PCR swab samples will be collected in day 1 and 2 to confirm the COVID-19 diagnosis. If the day-1 analysis reveals positive, there will be no need to collect day-2 sample, but if the result reveals negative, then day-2 sample obligates to be

collected. rRT-PCR is only allowed to be conducted maximum three times during the period of hospitalization. Asymptomatic cases or cases with mild to moderate symptoms are in no need to have a follow-up rRT-PCR analysis. An rRT-PCR follow-up analysis is only recommended for patients in severe condition or critical illness. The follow-up analysis sample will be collected ten days after the first collection of positive swab sample. In conditions where persistent positive result is suspected, the Cycle Threshold (CT) value might be used to analyze infectiousness [Burhan E et al., 2020c; KKRI, 2020a].

The Indonesian government was preparing on releasing the social restriction on May 2020. One of the efforts in preparing to ease the social restriction is to do the pooled-sample PCR analysis strategies that might save substantial resources for COVID-19 massive testing. In a phase of releasing social measures, detecting carriers of the virus is fundamental to response efforts. It ensures the quarantine of patients to prevent local spread as well as informs national response measures. The substantial need for diagnostic testing brought on by the pandemic, however, has led to shortages in reagents associated with these tests. Thus it is crucial to develop new ways to conserve the reagents used for diagnostic tests [WHO, 2020b].

Pooled-sample analysis is a method of testing by pooling samples before rRT-PCR amplification and only in positive pool test outcomes is individual samples created, thus reducing the required number of tests theoretically considerably [Deckert A et al., 2020; Yelin I et al., 2020]. Lohse et al in Germany was the first to introduce this kind of testing strategy. A pool of 30,000 samples has been generated from 3 sub pools of 10 samples. If the large pool is positive, the three sub-pools and the samples of the positive sub pool are reanalyzed. The data showed that bundling with existing equipment and test kits up to 30 samples each could improve test capability and identify correct samples with sufficiently diagnostic precision. Nevertheless, borderline single samples in large pools can avoid detection [Lohse S et al., 2020]. North Sulawesi and West Sumatera were two provinces proposing to launch this testing strategy. The awaiting results will surely be such contribution for the Indonesian government in making policies of the testing strategy and considering on releasing the

large scale social restriction. Pooling can be especially useful for routine community survey and for monitoring cohesive groups where a single positive typically requires quarantine of the entire group. It may also allow for more routine monitoring and detection of low frequency of carriage and therefore inform policy makers, reduce transmission, and alleviate strain on healthcare services [Deckert A et al., 2020; Lohse S et al., 2020; Yelin I et al., 2020]. However, WHO recommends before any sample pooling protocols can be implemented, they must be validated in the appropriate populations and settings in which to perform reliable pooling, adequate automation is key. The risk of cross-contamination and the potential increase in workload complexity and volume must also be considered. An inappropriate testing strategy may lead to missed cases or other laboratory errors that may, in turn, negatively affect patient management and public health control measures [WHO, 2020d].

There are worries about the perils of loading hospital-beds with non-urgent cases impacted by increasing numbers of the tests. However, Indonesian testing rate is still under the WHO standard that demands 1/1000 from citizen number per week. According to the standard, Indonesia needs to minimal conduct about 267,000 tests per week or 38,100 tests per day. There is also a tremendous imbalance of the testing rate between Jakarta as the capital city and other regions. Jakarta is the only province that able to excellence the WHO standard by conducting around 60,000 tests per week which is five times higher than the WHO expected rate of testing [WHO, 2020c]. The Indonesian Task Force on COVID-19 however still expects to raise the number of testing to 30,000 until 100,000 tests per week. Meanwhile the worries of increasing number of tests will lead to increasing number of patients is also reasonable and therefore lead Indonesia to the emergency of rapid development of a kind of South Korea's "life care center" targeting those confirmed patients with no or mild symptoms [Hur S et al., 2020]. Several emergency hospitals across the country have been built to accommodate isolation for asymptomatic and mild cases. The governments also switch the use of some hotels to isolation facilities in order to overcome the need of isolation and quarantine [KKRI, 2020b].

Rapid diagnostic tests that detect the presence of SARS-CoV-2 viral proteins (antigens) in respiratory tract specimens are also being commercialized in Indonesia. The sensitivity of this test compared to rRT-PCR specimens appears to be highly variable. Even so, the fact that the process only takes around 30 minutes to complete considered appealing to many Indonesian citizens. This test, however, still reveals no position in confirming diagnosis of COVID-19 based on the latest Indonesian interim guideline [KKRI, 2020b; WHO, 2020d].

DIAGNOSTIC ALGORITHM

Diagnosing COVID-19 in Indonesia is basically similar to other disease, started with taking history to define classification of case and trace contact or history of travelling. Physical diagnostic is important to discover signs of upper respiratory tract infection or pneumonia and to determine severity of the disease [KKRI, 2020b]. Radiology examination plays an important role in supporting diagnosis of COVID-19. Plain chest X-Ray, Chest CT Scan, and Thoracic Ultrasound in case of pleural effusion are common radiology examinations used in Indonesia. Common radiological findings in CT include: bilateral lung involvement (79%), peripheral distribution of the lung (54%), diffuse distribution (44%), ground-glass opacity (65%), and without septal thickening (65%) [Burhan E et al., 2020b]. Although CT Scan is a valuable examination in diagnosing COVID-19, the availability of the examination in health care services in Indonesia is uneven, particularly those in rural areas. Laboratory examinations to support the diagnosis include complete blood count that commonly shows normal or decreased leucocyte level along with lymphopenia, erythrocyte sedimentation rate (ESR), CRP, Procalcitonin (if bacterial infection is suspected), blood gas analysis, renal and liver function tests, random blood sugar, electrolyte serum, coagulation level, D-Dimer (in severe cases), and lactate level (if sepsis is suspected) [Arif S et al., 2020; Burhan E et al., 2020c]. Again, particular examinations such as procalcitonin and D-Dimer are not widely distributed and some even not covered by national health insurance provided by the Indonesian government.

CLASSIFICATION OF CASES

The initial protocols in management of COVID-19 in Indonesia recognize four levels of COVID-19 case:

1. Asymptomatic person

Person without symptoms is defined as a person with no symptom but has the risk to be infected by confirmed COVID-19 case. Person without symptoms has a close contact to confirmed COVID-19 case. Close contact is defined as a person who has physical contact or ever been in the same room or visiting (in a radius of 1 meter to a patient under surveillance or confirmed case) starting from 2 days prior to onset of symptoms until 14 days from onset of symptoms of the case.

Close contact includes:

Health workers who examine, handle, transport and clean the room of COVID-19 case without using standard PPE.

Person who has ever been in the same room with COVID-19 case (including offices, classes, houses, and big events) starting from 2 days prior to onset of symptoms until 14 days from onset of symptoms of the case.

Person who travels together with COVID-19 case (radius 1 meter) with any kind of vehicles starting from 2 days prior to onset of symptoms until 14 days from onset of symptoms of the case.

2. Person under surveillance

Person with fever ($\geq 38^{\circ}\text{C}$) or history of fever or respiratory symptoms as rhinorrhea/odynophagia/cough AND has no other possible cause with convincing clinical appearance AND has a history of travelling or living in a country or region with COVID-19 local transmission within 14 days prior to onset of symptoms.

Person with respiratory symptoms of rhinorrhea/odynophagia/cough AND has a history of contact to COVID-19 confirmed case within 14 days prior to onset of symptoms.

3. Patient under investigation

Person with acute respiratory infection who has fever ($\geq 38^{\circ}\text{C}$) or history of fever along with other symptoms as cough/rhinorrhea/odynophagia/shortness of breath/ mild to severe pneumonia AND has no other possible cause with convincing clinical appearance AND has a history of travelling or living in a country or region with COVID-19 local transmission within 14 days prior to onset of symptoms.

Person with fever ($\geq 38^{\circ}\text{C}$) or history of fever or acute respiratory infection AND has a history of contact to COVID-19 confirmed case within 14 days prior to onset of symptoms.

Person with severe acute respiratory infection/pneumonia that requires hospitalization AND has no other possible cause with convincing clinical appearance.

4. Confirmed case

Patient reveals positive result on COVID-19 PCR analysis [Burhan E et al., 2020c; Yurianto A et al., 2020].

Indonesia defines suspect case as patient under investigation. This is slightly different from South Korean Guidelines that distinct suspect case from person under investigation. Suspect case defines as case with fever (37.5°C or higher) and/or respiratory symptoms (cough, sore throat, etc.) within 14 days of being in close contact with a confirmed case, while person under investigation definition does not include history of close contact. This broad definition and classification are in line with South Korean policy on doing massive PCR testing to the citizens in order to reduce transmission and bring outbreaks under control [Hur S et al., 2020].

By August 2020, following the progress of the condition and surveillance, the Indonesian Ministry of Health then revised their definition of COVID-19 cases into eight categories:

1. Suspect case

Suspect case definition is basically similar to the former term of Patient under Investigation.

2. Probable case

Probable case is defined as a suspect case with severe respiratory tract infection or Acute Respiratory Distress Syndrome or a suspect case deceased from a convincing clinical appearance of COVID-19 with RT-PCR result has not been acknowledged.

3. Confirmed case

Patient reveals positive result on COVID-19 RT-PCR analysis. Confirmed case is divided into symptomatic and asymptomatic case.

4. Close contact

Close contact in the revision is classified into the case definition with more detailed definition including the duration of contact. The recent definition of close contact recognizes a person who has a history of contact with probable or confirmed COVID-19 case. The history of contact includes

face to face contact or being close to probable/confirmed case within 1-meter range in duration of more than 15 minutes, having direct physical contact, or a person who gives direct treatment to cases without wearing standard PPE, as well as other condition that indicates contact based on risk evaluation assessed by local epidemiology team. Period of contact to symptomatic probable/confirmed case is reckoned from 2 days prior to onset of symptoms until 14 days from onset of symptoms of the case, while period of contact to asymptomatic confirmed case is counted based on the date of the RT-PCR specimen collected.

5. Travelers

Travelers are those who have the history of either domestic or international travel.

6. Discarded case

Discarded case is defined as a suspect case with two times negative RT-PCR results in two consecutive days in the range of 24 hours or a close contact who completes the 14-days quarantine period.

7. Complete isolation

A complete isolation case includes an asymptomatic confirmed case who completes 10-days course of isolation counted from the collection day of diagnostic RT-PCR specimen having no RT-PCR follow-up result and a symptomatic probable/confirmed case who completes 10-days course of isolation counted from the beginning of onset plus minimum 3-days course with no fever or respiratory symptoms without having an RT-PCR follow-up result or one time negative RT-PCR result.

8. Death

A COVID-19 death is defined for surveillance purposes as a death occurred in probable/confirmed case [KKRI, 2020a; Yurianto A et al., 2020].

Following the magnitude of overall number of COVID-19 deaths in Indonesia as well as local number of deaths in some regions, a polemic to revise the definition of death case has mounted in the nation. The definition of COVID-19 death itself might vary from country to country even though WHO has made their clear statement in the definition of COVID-19 death for surveillance purposes. In the case of suspected or re-confirmed cases of COVID-19, according to the WHO guidelines, COVID-19 death is characterized as a death arising out of clinically complete disease, where a distinct alternative cause of death is present, which is

not attributed to COVID-19 disease (e.g. trauma), and the time of maximum recovery from disease and death shall not occur. The Indonesian definition of death contains neither definition of period between the illness and death nor definition in the cause of death and thus means all deaths occurred in probable/confirmed case are counted as COVID-19 deaths without considering the etiology of deaths [WHO, 2020e]. This condition is considered as not giving the real picture of number of deaths resulting from COVID-19 in Indonesia. The government until the September 2020, however, remains with their latest definition of COVID-19 death as appeared in the last guidance revision.

Surveillance and Response

Surveillance is defined as a continued monitoring to a group of people with risk, while quarantine is defined as restriction to a person or group in a region that is suspected to be infected and/or contaminated in order to prevent spreading of disease or contamination. Surveillance is obligated to run in conjunction with quarantine. Surveillance needs to be continued during quarantine to monitor alteration in one's or more condition [Burhan E et al., 2020c; Yurianto A et al., 2020].

Response to COVID-19 cases in Indonesia is basically distinguished based on the PCR analysis result, level of cases and severity of clinical condition. Response includes isolation and surveillance along with pharmacological and non-pharmacological treatment [KKRI, 2020b].

Contact Tracing

Epidemiological study is mandatory in each level of COVID-19 in Indonesia whether it is person under surveillance, patient under investigation, or confirmed case in order to trace asymptomatic person. Epidemiological analysis is highly important as the basis of policy in managing and preventing rapid spreading of the disease. Contact tracing includes three major components: contact identification, contact listing, and contact follow up [Fehér C, Mensa J, 2016; KKRI, 2020a; Yurianto A et al., 2020].

In order to make communities quarantined and tracked for the fourteen days of incubation of the virus, the WHO urges countries and populations to quickly recognize the close connections throughout all reported cases. Countries and communities must improve their ability, on the basis of signs or

symptoms in the general public, to detect potential cases of COVID-19 in the general population. Nation may need to increase its population quickly to identify cases with the use of new technologies, including internet apps, to allow people to advocate for themselves beyond the conventional public health system [WHO, 2020b; c].

South Korea is the country that successfully implementing contact tracing beyond paper-based system. A system for transmitting crisis text messaging has been in operation and run since 2003 by the South Korean government. In the case of viral infection, this system can find all reported cases of infected region, age, gender, close contact, and route of transmission through GPS mobile phone monitoring, CCTV monitoring, use of credit cards, and interviews to make it clear for the citizens of the country [Hur S et al., 2020].

Many financial technology and application-based companies in Indonesia have managed to lure the citizens to get their selves tested. The Indonesian Task Force of COVID-19 in coordination with the Ministry of Communication and Informatics has launched the application to support the contact tracing in order to find the asymptomatic person that has the possibility to spread the disease further. This is, however, will not be sufficient regarding Indonesia's health care system, which is starkly divided between urban and rural populations, similar to much of its social services. Education level and openness to technology are other substantial matters. Indonesia needs to push on the ability of the communities to enable general population to practice self-surveillance to control the transmission [Djalante R et al., 2020].

Clinical Management

Clinical management of COVID-19 in Indonesia is based on the classification of case and degree of severity of illnesses (Fig. 2). As we all know, there is yet no specific treatment or vaccine available for COVID-19 until present. Clinical management in Indonesia involves non-pharmacological and pharmacological therapy [Arif S et al., 2020; Susilo A et al., 2020].

Confirmed COVID-19 case with no or mild symptoms will be recommended to do a 10-day self-isolation at home while being observed by the local health-care facility or in the isolation facilities provided by the government. Patient will be

obligated to do at-home transmission prevention recommendation, such as wearing mask, washing hands, practicing good respiratory etiquette, and individual level distancing while regularly checking body temperatures twice daily, and sunbathing [Burhan E et al., 2020c; b]. Patient will be supported with Vitamin C and Multivitamin containing Vitamin B, C, E, and Zinc for 14 to 30-day consumption. To those with mild symptoms will be recommended to have the same regulation to the asymptomatic cases plus another 3-days course with no fever and respiratory symptoms. The treatment will be added with a 5-day term of 500 mg oral Azithromycin, antiviral such as oseltamivir or favipiravir or combination of lopinavir + ritonavir, and also symptomatic medication. Chloroquine phosphate or hydroxychloroquine can still be considered if patient is being hospitalized and having no contraindication. Confirmed cases with moderate or severe degree of illness will be managed in COVID-19 referral hospital. Moderate cases will be given almost similar treatment to mild cases, except for vitamin C and Azithromycin or Levofloxacin as the alternative that will be given by intravenous route. Patient will be treated with Chloroquine Phosphate/ Hydroxychloroquine plus Azithromycin/ Levofloxacin plus one of antiviral, which is either Oseltamivir or combination of Lopinavir + Ritonavir or Favipiravir or Remdesivir. Patient will also be evaluated for the need of anticoagulant [Burhan E et al., 2020a; KKRI, 2020b]. However, severe cases need to be in close monitor of oxygen level, hydration status, electrolyte level as well as nutrition. Patient requires strict observation from any possibilities of respiratory failure and multi organ failure in which demanding Intensive Care Unit (ICU) treatment with ventilator support. Pharmacological treatment will be escalated with higher dose for the antivirus and added with intravenous vitamin B1 and Dexamethasone 6 mg/day for a 10-day term. Types of oxygen support available in Indonesia include High Flow Nasal Cannula (HFNC), Non Invasive Ventilation (NIV), Invasive Mechanical Ventilation, and also Extra Corporeal Membrane Oxygenation in some centers [Arif S et al., 2020; KKRI, 2020b].

In contrary, the CDC Panel until May 2020 recommended that there were insufficient clinical data to either for or against using Chloroquine or

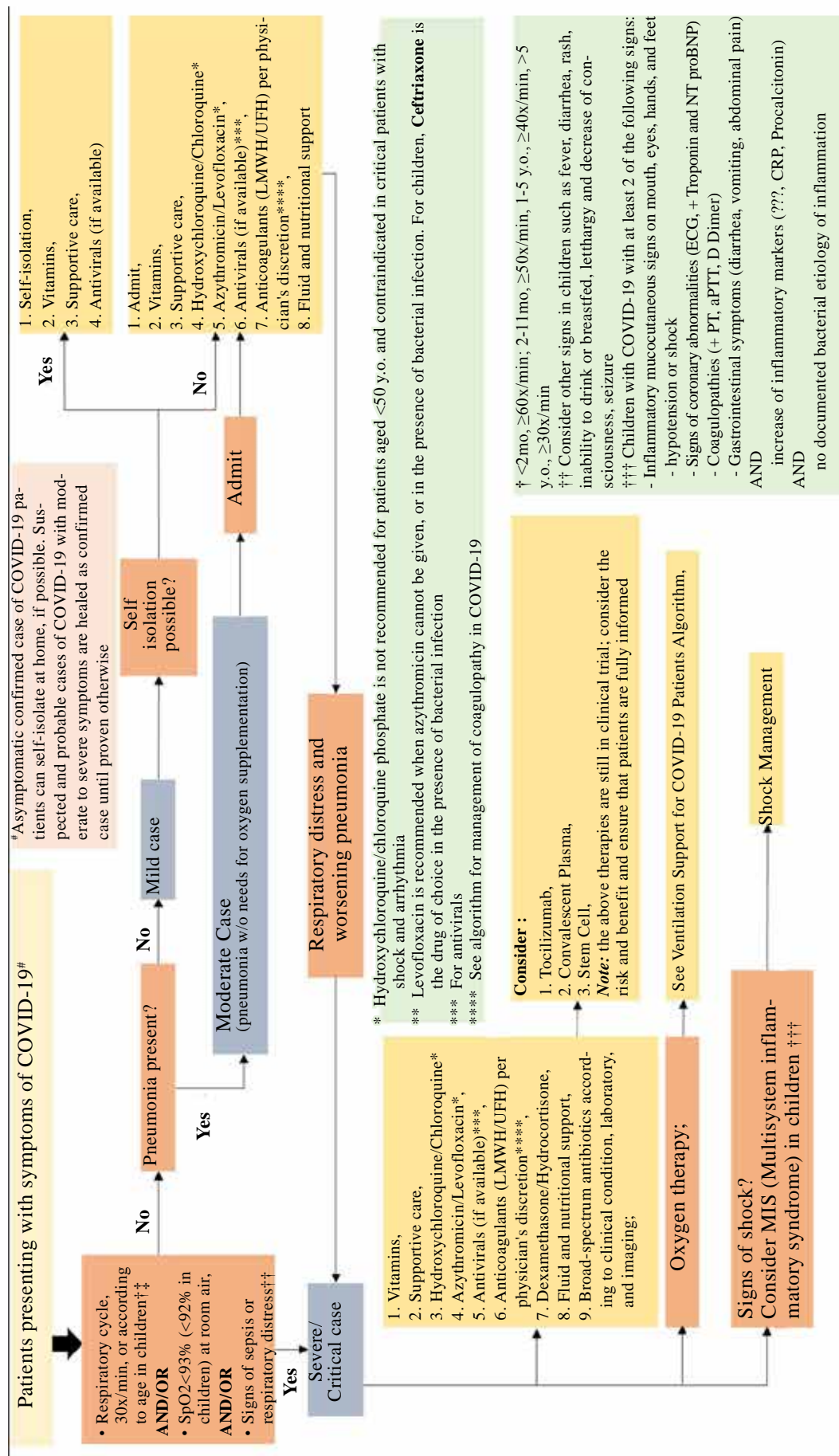


FIGURE 2. Algorithm of Management of COVID-19 Patients in Indonesia [KKRI, 2020b]

Hydroxychloroquine for the treatment of COVID-19. However, the Panel strictly recommend against the use of Hydroxychloroquine plus Azithromycin for the treatment of COVID-19 regarding the association with QTc prolongation, except in the context of clinical trial. The Panel suggested that, except in the course of clinical study, Lopinavir/Ritonavir or other HIV protease inhibitors be used to treat COVID-19. However, on 2 May 2020, United States regulators approved for the urgently needed use of the Remdesivir medication to help certain patients heal more rapidly. After a government-funded analysis of 1,063 patients, which found Remdesivir improved the recovery period by 31 percent or an average of about four days, the FDA acted. The prescription will become a new form of treatment for chronically ill patients with COVID-19. The medicine was not tested in milder disease patients [CDC, 2020].

Prevention and Infection Control

Japan on April 7, 2020 declared a state of emergency of the pandemic influenza and thus emergency measures in several regions were taken. Except under emergency situations, the government of Japan aims to mitigate the effect on economic and social activities and does not follow obligatory policies, such as lockdown implemented in other countries [BPCD-GJ, 2020]. In line with Japan, Indonesia on April 10, 2020 imposed a large-scale social restriction (PSBB). Jakarta as the epicenter of the outbreak and hardest-hit province in the country was the first to implement the social restriction for 14 days, which later be prolonged due to the pandemic situation. Several other provinces, municipalities and regencies across the archipelago have requested to the Ministry of Health to impose similar social restriction to break the chain of transmission of the highly contagious respiratory illness. Early review of the social constraints indicates that many non-essential places of work also ignore regulation and enable their employees to reach the office, beyond the required physical distance criteria to avoid further COVID-19 transmission. Many claim that these loose laws of social distancing delay the Indonesian recovery while questions about the costs of preserving the economy are increasing [Djalante R et al., 2020]. The Indonesian Ministry of Law and Human Rights on April 2, 2020 had also announced that Indonesia

will ban the entry and/or transit of foreigners into Indonesian territory as stipulated by Minister of Law and Human Rights Regulation on the Temporary Prohibition of Foreigners from Entering the Territory of the Republic of Indonesia. The ban came into effect starting on April 2, 2020 and will last until the pandemic is over.

WHO is aware of the various levels of national and subnational outbreaks in countries. By restricting interactions between individuals, physical distancing measures, and mobility limitations will delay COVID-19 transmission. These measures will, however, have a profound negative effect on social and economic life. WHO encourages countries with widespread physical distancing interventions and population-level movement to prepare to gradually remove such constraints through the provision of an appropriate balance between socioeconomic gains and epidemiological risk, in its most recent WHO COVID-19 Policy Update of 14 April 2020 [WHO, 2020b]. Indonesia should consider the reduction of the disease spread below the level beyond which health systems cannot reduce unnecessary mortality while allowing economic and social life to recover.

The Indonesian President in May 2020 announced the government's decision to prohibit civil servants, employees of state-owned enterprises, as well as members of the police and the armed forces from participating in the annual exodus tradition observed during the Islamic Holiday Idul Fitri, known as "mudik", in the effort to prevent COVID-19 from spreading further. The president, however, was refraining from banning the general public from participating in the tradition completely [EKONID, 2020]. Now when the social restriction has been released, the government has new challenge on preventing large transmission caused by the coming election. Polemic raises on how some campaign events appear as being risk of new cluster. Many believe that it is better to postpone the election until the nation reach steady rate of infection. Nevertheless, government still remains on launching the election as scheduled while having strict monitoring on the campaign events [Gumelar G, Ghaliya G, 2020].

The deaths of medical workers in Indonesia have exposed the underequipped nature of the health system and shortages of PPE [Jayadevan R,

George S, 2020]. On April 2, 2020 the Indonesian Ministry of Trade is allowing the imports of used and refurbished medical devices, as well as re-opening, in strict terms, the export of face masks and other PPE. Minister of Trade Regulation allows the importing of used and refurbished capital goods as long as it is done with the recommendation of the head of Indonesian COVID-19 Task Force. The Indonesian Defense Ministry also brought in more than 8 tons of medical devices from China to Indonesia. The total aid provided by China reached 12 tons consisting of PPE such as protective clothing, N95 masks, disposable gloves and goggles. However, amid the on-going struggle of many medical institutions in obtaining standard PPE, the Minister of Trade amends the Minister of Trade Regulation on the temporary ban of exports for antiseptics, raw material for face masks, PPE and face masks, effectively allowing the exports of these goods via ministerial exemption in coordination with other ministries or other non-governmental institutions [EKONID, 2020]. This regulation takes effect on March 18, 2020 and applies retroactively. Meanwhile, South Korea forbids the export of masks to foreign countries and measures to raise mask production because the supply is not adequate [Hur S et al., 2020].

Starting from April 12, 2020 all passengers of the *TransJakarta* Bus service, the Jakarta MRT and the Jakarta LRT are obligated to wear face masks. This rule is based on Jakarta Governor Appeal on the use of face masks to prevent the spread of COVID-19. In line with that, The Indonesian Task Force of COVID-19 recommend the use of cloth masks to all citizens going out of the house amid the scarcity of surgical masks. The government considered that the cloth mask would not be as efficient as at least the surgical masks. However, regarding the inability to ensure the number of masks for the healthcare providers that need to be prioritized, cloth mask be the choice by perforce [Pinandita A, 2020]. In reality, South Korean government managed to have and distribute masks so that every week the whole country could buy two masks. The majority of Koreans wear masks without fear and were engaged in a policy of social distancing. Because of the absence of masks, South Korea's government is involved, since 27 February 2020 and has started to

market over 2.4 billion masks a day to 24,000 pharmacies around the world [Hur S et al., 2020].

Releasing the Social Restriction

Indonesia in May 2020 was preparing on releasing the large scale social restriction on the basis of several considerations, including economic condition and the fact that the implementation of the restriction in several regions that not strict enough so that such guidance became useless. The President stated that the basic reproduction number (R_0) of COVID-19 had dropped below 1 in several provinces and showed a decrease in the transmission rate in those regions. However, concerns were mounting over the government's approach to reopening public places while urging citizens to embrace the what-so-called "new normal" as numbers of COVID-19 cases and deaths continue to rise across the country [Ivanka N, 2020].

The Indonesian Ministry of Health on May 23rd 2020 issued new health protocols for workplaces to usher in the so-called "new normal". The ministerial decree requires company management to create task forces to curb the spread of the diseases. Companies should ensure their cleanliness and hygiene at the workplace and increase the number of hand-washing facilities. Companies are also advised to do away with late-night shifts or at least only assign such shifts to workers under the age of fifty. Employees are required to maintain a safe physical distance and wear masks at workplace with body temperature being checked daily and having exercise together before work starts. Concerns are, however, mounting regarding these protocols are perhaps not considering those asymptomatic employees allowed to work and risk the workplace on becoming new cluster [Fakhry S, 2020; Ivanka N, 2020].

In June 2020, however, due to the urge of preventing worse economic impact and several other considerations, the government decided to ease the social restriction and enter the transition phase with the "new normal" regulation. The number of positive cases, however, keeps increasing that urges Jakarta as the foremost region with positive cases to launch back the social restriction until undetermined time [Arbi I, 2020]. Transmission of the disease also swifts to offices cluster as they start to open the regular schedule, and even to family cluster. Lack of discipline and awareness from the citizens has been major concerns besides other subjects.

CONCLUSION

Indonesia as one of the largest populous country in the world is facing a huge challenge in managing COVID-19. The government has tried to be in line with the WHO interim guidance and raising the facilities needed to overcome the outbreak, yet the number of cases keeps increasing along with number of deaths. There are still many efforts that need

to be established from the bottom of contact tracing to the increase the number of tests in confirming cases and hospital facilities to treat those with severe condition and critical illnesses. And in the main subject of that, increasing the citizens' awareness to mitigate the transmission might be the most fundamental effort that always has to be in concern.

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