

# Current Strategy to Combat COVID-19 in Indonesia

*by* Muhammad Miftahussurur

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1 **Current Strategy to Combat COVID-19 in Indonesia**

2 Deasy Natalia Adriana<sup>1</sup>, Muhammad Miftahussurur<sup>2,3\*</sup>

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4 <sup>5</sup><sup>1</sup>Department of Internal Medicine, Faculty of Medicine, Universitas Airlangga, Dr. Soetomo  
5 General Academic Hospital, Surabaya, Indonesia

6 <sup>2</sup>Gastroenterology and Hepatology Division, Department of Internal Medicine, Faculty of  
7 Medicine, Universitas Airlangga, Dr. Soetomo General Academic Hospital, Surabaya, Indonesia

8 <sup>36</sup><sup>3</sup>Institute of Tropical Disease, Universitas Airlangga, Surabaya 60115, Indonesia

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10  
11  
12 **\*Corresponding author:**

13 Muhammad Miftahussurur, MD, PhD, Gastroenterohepatologist Consultant

14 <sup>5</sup>Gastroenterology and Hepatology Division, Department of Internal Medicine, Faculty of  
15 Medicine, Universitas Airlangga, Dr. Soetomo General Academic Hospital, Surabaya, Indonesia

16 Telp: +6281252326840; Fax: +62315023865

17 Email: muhammad-m@fk.unair.ac.id

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## 19 ABSTRACT

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## 22 Introduction

23 The outbreak of COVID-19 around late December 2019 in China that rapidly and widely  
24 spread has led us into a tremendous health crisis <sup>20</sup> around the world. The World Health  
25 Organization (WHO) declared COVID-19 as a global pandemic in March 11<sup>th</sup> 2020<sup>1-3</sup>. On  
26 September 26<sup>th</sup> 2020 the number of confirmed case around the world has reached 32,110,656  
27 cases with 980,031 deaths globally<sup>4</sup>. Indonesia as the <sup>24</sup> fourth most populous country in the world  
28 is predicted to suffer greatly and over a long period<sup>1</sup>. By the same date, number of confirmed  
29 case in Indonesia approached 1,886,426 cases with 10,308 deaths<sup>4</sup>. Many believe the actual  
30 number of cases is far beyond regarding the number of Polymerase Chain Reaction (PCR)  
31 analysis available that is not enough to reflect most likely present actual condition of infection in  
32 Indonesia. It is in line with the Case Fatality Rate (CFR) in Indonesia that by the same date  
33 reached 3,8 % which was a higher percentage than 3,1 % global result<sup>1,4</sup>. Geographic and  
34 cultural condition along with lack of facilities and resources, not to mention economic and social  
35 impact from this health crisis has been challenges on managing COVID-19 in Indonesia.

36 Overall, <sup>3</sup> COVID-19 is an acute disease, but it can also be lethal with serious disease,  
37 which may lead to death because of <sup>28</sup> massive alveolar damage and progressive respiratory failure.  
38 CFR <sup>3</sup> varies greatly from country to country. However, it is clear that mortality rate appears  
39 higher in elderly and those with comorbidities. The incubation time of COVID-19 is five to six  
40 days, and the range from one to fourteen days after exposure to the current evidence suggests

3  
41 that the main transmission are droplets, contact and aerosol transfer<sup>5-7</sup>. The Indonesian  
42 government organized a Task Force for COVID-19 in March 2020 that later issued the Guideline<sup>23</sup>  
43 for Medical Rapid Response and Public Health Aspects of COVID-19 in Indonesia. This interim  
44 guideline targets the medical force and general public in terms of informing the means to<sup>14</sup>  
45 mitigate the impacts and death rates and has been revised several times to its fifth revision in  
46 August 2020<sup>1,2</sup>.

### 47 **Early Detection and Screening**

48 As the first confirmed COVID-19 patient was found in Indonesia on March 2<sup>nd</sup> 2020, the  
49 Indonesian government has set strategy to mitigate transmission, yet the disease keeps spreading  
50 rapidly. The purposes of the strategy are to slow down or stop the rate of transmission as well as  
51 to prevent the spreading of the disease, to provide optimal health care facility mainly for critical  
52 ill patients, and to minimize the impact of the COVID-19 pandemic<sup>16</sup> in healthcare system, social  
53 services, economic activity as well as other sectors<sup>2,7</sup>. Every province and municipality are  
54 obligated to determine the transmission scenario in the region based on the definition in WHO  
55 guideline of no cases, sporadic cases, clusters of cases, and community transmission. Different  
56 scenario of transmission will indeed lead to different response and preparedness<sup>8</sup>.

57 On August 2020, the Indonesian Ministry of Health launched their Fifth Revision of  
58 Guideline of Prevention and Control of COVID-19 in Indonesia that includes the early detection  
59 and response in every national and regional entry port<sup>2</sup>. While earlier on January 20<sup>th</sup> 2020, the  
60 Indonesian government issued travel restriction from Hubei Province, which was at that time, the  
61 epicenter of global COVID-19<sup>1,9</sup>. The activity of early detection includes detection, prevention  
62 and response by monitoring vehicles, people, means, and environment entering from region or

63 nation affected by the COVID-19. Health Alert Card, thermal scanners, Personal Protective  
64 Equipment (PPE) for related workers and ambulance to transport to referral hospital is basic  
65 recommendation to provide in each port. National and regional governments also require  
66 COVID-19 Rapid Diagnostic Test (RDT) or Real Time Reverse Transcriptase Polymerase Chain  
67 Reaction (rRT-PCR) results for travelers as well as migrant workers<sup>2,9</sup>. To accommodate the  
68 regulation, the government hand in hand with the private sector also provides facility to perform  
69 RDT in airports as well as railway stations across the nation. Travelers will then be managed  
70 based on the classification of cases and clinical conditions. This however has many obstacles  
71 especially in monitoring travelers crossing the cities and provinces using private vehicles.

72 Unlike South Korea which from the beginning of the pandemic had preferred on  
73 performing massive rRT-PCR COVID-19 Swab to control infection, Indonesia took quite some  
74 time to finally decide on conducting massive testing not by rRT-PCR but by RDT on the citizens  
75 around March 2020<sup>10,11</sup>. The RDT method is based on immunoreaction with results available  
76 within 10 to 30 minutes, which is much faster than the PCR test that might take minimum 3 to 8  
77 hours to process and in Indonesia might take 1-2 days until the result being received. The RDT  
78 test will measure total Immunoglobulins (Ig), IgG, IgM, and/or IgA in different combinations.  
79 IgM and IgA are reported to be detected around 3 to 6 days from onset, while IgG can be  
80 detected starting from 10 to 18 days from onset. This is pivotal to consider that there is window  
81 period that might give negative test result and therefore multiple tests with 5 to 7 days interval is  
82 mandatory. Some reports also have indicated that other coronaviruses, or even dengue, might  
83 give false positive result. This kind of test is until now has not been recommended by WHO to  
84 be used as a main diagnostic tool<sup>1,6</sup>. The United States Center for Disease Control (CDC) and the  
85 Food and Drug Administration (FDA) are also in line with WHO guidance. FDA has not

86 authorized using antibody tests to diagnose SARS-CoV-2 infection, and CDC in their latest  
87 revision in July <sup>19</sup> does not currently recommend using antibody testing as the sole basis for  
88 diagnosis of acute infection. However, CDC makes the use of serological tests to facilitate the  
89 clinical diagnosis of those that are late with their infections, either by viral screening or post-  
90 infectious syndrome testing.<sup>12</sup> The RDT, until today, has still been used for patients as well as  
91 other citizens in Indonesia, notably in areas where rRT-PCR is limited, in spite of being no  
92 longer recommended by the local medical associations dealing with the Covid-19. The RDT,  
93 however, is not used as the main diagnostic tool<sup>2,7</sup>.

94 In its clinical laboratories, the Korea Ministry of Food and Drug Safety also advises that  
95 South Korea not employ other methods of COVID-19 validation, including pan-coronavirus  
96 PCR, serological tests, laboratories developed tests, and non diagnose-approved reactors<sup>11</sup>. The  
97 nation also has more loose indications for accessing rRT-PCR tests that allow them to use the  
98 tests in screening. In order to validate reported cases of COVID-19, to decide on the release of  
99 COVID-19 patients confirmed with quarantine, and to test asymptomatic persons in close contact  
100 with COVID-19 confirmed patients, COVID-19 rRT-PCR can be conducted for validation  
101 purposes and for the differential diagnosis to be made of cases of unexplained respiratory  
102 syndromes. South Korea has also launched the <sup>3</sup> world's first scheme for "Drive Thru" and  
103 "Walking Thru" system to perform rapid virus test <sup>10</sup>.

104 rRT-PCR until present is the only acknowledged method to detect COVID-19 infection in  
105 humans. rRT-PCR targets the presence of actual genetic materials of SARS-CoV2 in samples  
106 and only swab samples containing both human and virus RNA will show positive result. The  
107 genetic material targets include region on the E, RdRP, N, and S genes. WHO in the last interim  
108 guidance by September 2020 still recommends this molecular testing with Nucleic Acid

109 Amplification Tests (NAATs) as a standard confirmation of COVID-19 case. Testing on persons  
110 who are asymptomatic or are not in category of suspects is allowed with consideration of  
111 epidemiological aspects, local screening protocol and testing kits availability<sup>6</sup>. By the beginning  
112 of the pandemic, the rRT-PCR in Indonesia were only conducted to those belong to the category  
113 of patients under investigation, and therefore the test was not widely used for screening in  
114 Indonesia regarding the limitation of the testing kits availability. The Indonesian government  
115 then by that time brought in two Ribonucleic Acid (RNA) extractors as well as 18 PCR detectors  
116 in order to speed up the nation's rate for COVID-19 infection. The medical devices were  
117 distributed to nation's capital of Jakarta as well as 11 other provinces prioritized for testing.  
118 Testing capacity was rising in Indonesia. However, it remained severely limited<sup>1,13</sup>.

119 Japan in March 2020 performed almost similar regulation on preventing needless tests.  
120 The healthcare centers consistently declined to conduct testing even though the Japan Medical  
121 Association reported that there were 290 doctors who agreed that at the time a patient had to get  
122 a test for the novel coronavirus. After many pressures from abroad lead to the issue that Japan  
123 underestimated how contagious the virus can be, the Japan government eventually pledge  
124 COVID-19 testing to increase to 20,000 per day versus recent 5,000 per day<sup>14</sup>.

125 Indonesia needs to reconsider the regulation of testing in order to break the chain of virus  
126 and prevent futile deaths due to under assessment and management. However, without the ability  
127 of producing recommended testing kits independently and vastly depend on donation or brutal  
128 competition globally in obtaining the testing kits, it was arduous for Indonesia to provide the  
129 number that would be sufficient to cover Indonesia's large population<sup>1</sup>. Following the changes in  
130 WHO interim guidance in diagnostic testing for SARS-CoV-2, Indonesia then revised its  
131 protocol in conducting PCR analysis. Regarding the availability of the test that is still low and



132 the high of the testing cost, the government tries to reduce the amount of rRT-PCR usage in  
133 follow-up and focusing more in confirming new cases. The rRT-PCR swab samples will be  
134 collected in day 1 and 2 to confirm the COVID-19 diagnosis. If the day-1 analysis reveals  
135 positive, there will be no need to collect day-2 sample, but if the result reveals negative, then  
136 day-2 sample obligates to be collected. rRT-PCR is only allowed to be conducted maximum  
137 three times during the period of hospitalization. Asymptomatic cases or cases with mild to  
138 moderate symptoms are in no need to have a follow-up rRT-PCR analysis. An rRT-PCR follow-  
139 up analysis is only recommended for patients in severe condition or critical illness. The follow-  
140 up analysis sample will be collected ten days after the first collection of positive swab sample. In  
141 conditions where persistent positive result is suspected, the Cycle Threshold (CT) value might be  
142 used to analyze infectiousness<sup>2,7</sup>.

143 The Indonesian government was preparing on releasing the social restriction on May  
144 2020. One of the efforts in preparing to ease the social restriction is to do the <sup>27</sup> pooled-sample PCR  
145 analysis strategies that might save substantial resources for COVID-19 massive testing. In a  
146 <sup>4</sup> phase of releasing social measures, detecting carriers of the virus is fundamental to response  
147 efforts. It ensures the quarantine of patients to prevent local spread as well as informs national  
148 response measures. The substantial need for diagnostic testing brought on by the pandemic,  
149 however, has led to shortages in reagents associated with these tests. Thus it is crucial to develop  
150 <sup>4</sup> new ways to conserve the reagents used for diagnostic tests<sup>15</sup>.

151 Pooled-sample analysis is a method of testing by pooling <sup>8</sup> samples before RRT-PCR  
152 amplification and only in positive pool test outcomes is individual samples created, thus reducing  
153 the required number of tests theoretically considerably.<sup>16,17</sup> Lohse et al in Germany was the first  
154 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<sup>18</sup>. 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<sup>16-18</sup>. 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<sup>6</sup>.

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

178 around 60,000 tests per week which is five times higher than the WHO expected rate of testing<sup>8</sup>.  
179 The Indonesian Task Force on COVID-19 however still expects to raise the number of testing to  
180 30,000 until 100,000 tests per week. Meanwhile the worries of increasing number of tests will  
181 lead to increasing number of patients is also reasonable and therefore lead Indonesia to the  
182 emergency of rapid development of a kind of South Korea's "life care center" targeting those  
183 confirmed patients with no or mild symptoms<sup>10</sup>. Several emergency hospitals across the country  
184 have been built to accommodate isolation for asymptomatic and mild cases. The governments  
185 also switch the use of some hotels to isolation facilities in order to overcome the need of  
186 isolation and quarantine<sup>2</sup>.

187 <sup>35</sup> Rapid diagnostic tests that detect the presence of SARS-CoV-2 viral proteins (antigens)  
188 in respiratory tract specimens are also being commercialized in Indonesia. The sensitivity of this  
189 test compared to rRT-PCR specimens appears to be highly variable. Even so, the fact that the  
190 process only takes around 30 minutes to complete considered appealing to many Indonesian  
191 citizens. This test, however, still reveals no position in confirming diagnosis of COVID-19 based  
192 on the latest Indonesian interim guideline<sup>2,6</sup>.

### 193 **Diagnostic Algorithm**

194 Diagnosing COVID-19 in Indonesia is basically similar to other disease, started with  
195 taking history to define classification of case and trace contact or history of travelling. Physical  
196 diagnostic is important to discover signs of upper respiratory tract infection or pneumonia and to  
197 determine severity of the disease<sup>2</sup>. Radiology examination <sup>32</sup> plays an important role in supporting  
198 diagnosis of COVID-19. Plain chest X-Ray, Chest CT Scan, and Thoracic Ultrasound in case of  
199 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%)<sup>13</sup>. 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, Procalcitonine (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)<sup>7,19</sup>. Again, particular examinations such as procalcitonine and D-Dimer are not widely distributed and some even not covered by national health insurance provided by the Indonesian government.

**Figure 1.** Algorithm of Diagnosis and Management of COVID-19 in Indonesia<sup>2,7</sup>

## **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:

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

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

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

## 230 **2. Person under surveillance**

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

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

## 237 **3. Patient under investigation**

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

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

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

#### 247 **4. Confirmed case**

248 Patient reveals positive result on COVID-19 PCR analysis<sup>7,9</sup>.

249 Indonesia defines suspect case as patient under investigation. This is slightly different  
250 from South Korean Guidelines that distinct suspect case from person under investigation.  
251 Suspect case defines as case with fever ( $37.5^{\circ}\text{C}$  or higher) and/or respiratory symptoms (cough,  
252 sore throat, etc.) within 14 days of being in close contact with a confirmed case, while person  
253 under investigation definition does not include history of close contact. This broad definition and  
254 classification are in line with South Korean policy on doing massive PCR testing to the citizens  
255 in order to reduce transmission and bring outbreaks under control<sup>10</sup>.

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

#### 258 **1. Suspect case**

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

#### 260 **2. Probable case**

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

### 264 **3. Confirmed case**

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

### 267 **4. Close contact**

268 Close contact in the revision is classified into the case definition with more detailed definition  
269 including the duration of contact. The recent definition of close contact recognizes a person who  
270 has a <sup>34</sup> history of contact with probable or confirmed COVID-19 case. The history of contact  
271 includes face to face contact or being close to probable/ confirmed case within 1 meter range in  
272 duration of more than 15 minutes, having direct physical contact, or a person who gives direct  
273 treatment to cases without wearing standard PPE, as well as other condition that indicates contact  
274 based on risk evaluation assessed by local epidemiology team. Period of contact to symptomatic  
275 probable/ confirmed case is reckoned from <sup>2</sup> 2 days prior to onset of symptoms until <sup>2</sup> 14 days from  
276 onset of symptoms of the case, while period of contact to asymptomatic confirmed case is  
277 counted based on the date of the RT-PCR specimen collected.

### 278 **5. Travelers**

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

### 280 **6. Discarded case**



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

## 284 **7. Complete isolation**

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

## 291 **8. Death**

292 A COVID-19 death is defined for surveillance purposes as a death occurred in  
293 probable/confirmed case<sup>9,20</sup>.

294 Following the magnitude of overall number of COVID-19 deaths in Indonesia as well as  
295 local number of deaths in some regions, a polemic to revise the definition of death case has  
296 mounted in the nation. The definition of COVID-19 death itself might vary from country to  
297 country even though WHO has made their clear statement in the definition of COVID-19 death  
298 for surveillance purposes. <sup>13</sup> In the case of suspected or re-confirmed cases of COVID-19,  
299 according to the WHO guidelines, COVID-19 death is characterized as a death arising out of  
300 clinically complete disease, where a distinct alternative cause of death is present, which is not  
301 attributed to COVID-19 disease (e.g. trauma), and the time of maximum recovery from disease  
302 and death shall not occur. The Indonesian definition of death contains neither definition of period



303 between the illness and death nor definition in the cause of death and thus means all deaths  
304 occurred in probable/confirmed case are counted as COVID-19 deaths without considering the  
305 etiology of deaths<sup>21</sup>. This condition is considered as not giving the real picture of number of  
306 deaths resulting from COVID-19 in Indonesia. The government until the September 2020,  
307 however, remains with their latest definition of COVID-19 death as appeared in the last guidance  
308 revision.

### 309 **Surveillance and Response**

310 Surveillance is defined as a continued monitoring to a group of people with risk, while  
311 quarantine is defined as restriction to a person or group in a region that is suspected to be  
312 infected and/or contaminated in order to prevent spreading of disease or contamination.  
313 Surveillance is obligated to run in conjunction with quarantine. Surveillance needs to be  
314 continued during quarantine to monitor alteration in one's or more condition<sup>7,9</sup>.

315 Response to COVID-19 cases in Indonesia is basically distinguished based on the PCR  
316 analysis result, level of cases and severity of clinical condition. Response includes isolation and  
317 surveillance along with pharmacological and non-pharmacological treatment<sup>2</sup>.

### 318 **Contact Tracing**

319 Epidemiological study is mandatory in each level of COVID-19 in Indonesia whether it is  
320 person under surveillance, patient under investigation, or confirmed case in order to trace  
321 asymptomatic person. Epidemiological analysis is highly important as the basis of policy in  
322 managing and preventing rapid spreading of the disease. Contact tracing includes three major  
323 components: contact identification, contact listing, and contact follow up<sup>9,20,22</sup>.

324 In order to make communities quarantined and tracked for the fourteen days of  
325 incubation of the virus, the WHO urges countries and populations to quickly recognize the close  
326 connections throughout all reported cases. Countries and communities must improve their  
327 ability, on the basis of signs or symptoms in the general public, to detect potential cases of  
328 COVID-19 in the general population. Nation may need to increase its population quickly to  
329 identify cases with the use of new technologies, including internet apps, to allow people to  
330 advocate for themselves beyond the conventional public health system.<sup>8,15</sup>.

331 South Korea is the country that successfully implementing contact tracing beyond paper-  
332 based system. A system for transmitting crisis text messaging has been in operation and run since  
333 2003 by the South Korean government. In the case of viral infection, this system can find all  
334 reported cases of infected region, age, gender, close contact, and route of transmission through  
335 GPS mobile phone monitoring, CCTV monitoring, use of credit cards, and interviews to make it  
336 clear for the citizens of the country.<sup>10</sup>.

337 Many financial technology and application-based companies in Indonesia have managed  
338 to lure the citizens to get their selves tested. The Indonesian Task Force of COVID-19 in  
339 coordination with the Ministry of Communication and Informatics has launched the application  
340 to support the contact tracing in order to find the asymptomatic person that has the possibility to  
341 spread the disease further. This is, however, will not be sufficient regarding Indonesia's health  
342 care system which is starkly divided between urban and rural populations, similar to much of its  
343 social services. Education level and openness to technology are other substantial matters.  
344 Indonesia needs to push on the ability of the communities to enable general population to  
345 practice self-surveillance to control the transmission<sup>1</sup>.

## 346 **Clinical Management**

347 Clinical management of COVID-19 in Indonesia is based on the classification of case and  
348 degree of severity of illnesses. As we all know, <sup>30</sup> there is yet no specific treatment or vaccine  
349 available for COVID-19 until present. Clinical management in Indonesia involves non-  
350 pharmacological and pharmacological therapy<sup>5,19</sup>.

351 Confirmed COVID-19 case with no or mild symptoms will be recommended to do a 10-  
352 day self-isolation at home while being observed by the local health-care facility or in the  
353 isolation facilities provided by the government. Patient will be obligated to do at-home  
354 transmission prevention recommendation, such as wearing mask, washing hands, practicing good  
355 respiratory etiquette, and individual level distancing while regularly checking body temperatures  
356 twice daily, and sunbathing<sup>7,13</sup>. Patient will be supported with Vitamin C and Multivitamin  
357 containing Vitamin B, C, E, and Zinc for 14 to 30 days consumption. To those with mild  
358 symptoms will be recommended to have the same regulation to the asymptomatic cases plus  
359 another <sup>17</sup> 3-days course with no fever and respiratory symptoms. The treatment will be added with  
360 a 5-day term of 500 mg oral Azythromycin, antiviral such as oseltamivir or favipiravir or  
361 combination of lopinavir+ritonavir, and also symptomatic medication. Chloroquine phosphate or  
362 hydroxychloroquine can still be considered if patient is being hospitalized and having no  
363 contraindication. Confirmed cases with moderate or severe degree of illness will be managed in  
364 COVID-19 referral hospital. Moderate cases will be given almost similar treatment to mild cases,  
365 except for vitamin C and Azithromycin or Levofloxacin as the alternative that will be given by  
366 intravenous route. Patient will be treated with Chloroquine Posphate/ Hydroxychloroquine plus  
367 Azithromycin/ Levofloxacin plus one of antiviral which is either Oseltamivir or combination of  
368 Lopinavir+Ritonavir or Favipiravir or Remdesivir. Patient will also be evaluated for the need of

369 anticoagulant<sup>2,23</sup>. However, severe cases need to be in close monitor of oxygen level, hydration  
370 status, electrolyte level as well as nutrition. Patient requires strict observation from any  
371 possibilities of respiratory failure and multi organ failure in which demanding Intensive Care  
372 Unit (ICU) treatment with ventilator support. Pharmacological treatment will be escalated with  
373 higher dose for the antivirus and added with intravenous vitamin B1 and Dexamethasone 6  
374 mg/day for a 10-day term. Types of oxygen support available in Indonesia include High Flow  
375 Nasal Cannula (HFNC), Non Invasive Ventilation (NIV), Invasive Mechanical Ventilation, and  
376 also Extra Corporeal Membrane Oxygenation in some centers<sup>2,19</sup>.

377 In contrary, the Centers for Disease Control and Prevention (CDC) Panel until May 2020  
378 recommended that there were insufficient clinical data to either for or against using Chloroquine  
379 or Hydroxychloroquine for the treatment of COVID-19. However the Panel strictly recommend  
380 against the use of Hydroxychloroquine plus Azithromycin for the treatment of COVID-19  
381 regarding the association with QTc prolongation, except in the context of clinical trial. The Panel  
382 suggested that, except in the course of clinical study, Lopinavir/Ritonavir or other HIV protease  
383 inhibitors be used to treat COVID-19. However, on 2 May 2020, United States regulators  
384 approved for the urgently needed use of the Remdesivir medication to help certain patients heal  
385 more rapidly. After a government-funded analysis of 1,063 patients, which found Remdesivir  
386 improved the recovery period by 31 percent or an average of about four days, the FDA acted.  
387 The prescription will become a new form of treatment for chronically ill patients with COVID-  
388 19. The medicine was not tested in milder disease patients<sup>12</sup>.

389 **Figure 2.** Algorithm of Management of COVID-19 Patients in Indonesia<sup>2</sup>

390 **Prevention and Infection Control**

391 Japan on April 7, 2020 declared a state of emergency of the pandemic influenza and thus  
392 emergency measures in several regions were taken. Except under emergency situations, the  
393 government of Japan aims to mitigate the effect on economic and social activities and does not  
394 follow obligatory policies, such as lockdown implemented in other countries.<sup>14</sup>. In line with  
395 Japan, Indonesia on April 10, 2020 imposed a large-scale social restriction (PSBB). Jakarta as  
396 the epicenter of the outbreak and hardest-hit province in the country was the first to implement  
397 the social restriction for 14 days which later be prolonged due to the pandemic situation. Several  
398 other provinces, municipalities and regencies across the archipelago have requested to the  
399 Ministry of Health to impose similar social restriction to break the chain of transmission of the  
400 highly contagious respiratory illness. Early review of the social constraints indicates that many  
401 non-essential places of work also ignore regulation and enable their employees to reach the  
402 office, beyond the required physical distance criteria to avoid further COVID-19 transmission.  
403 Many claim that these loose laws of social distancing delay the Indonesian recovery while  
404 questions about the costs of preserving the economy are increasing.<sup>15</sup>. The Indonesian Ministry  
405 of Law and Human Rights on April 2, 2020 had also announced that Indonesia will ban the entry  
406 and/or transit of foreigners into Indonesian territory as stipulated by Minister of Law and Human  
407 Rights Regulation on the Temporary Prohibition of Foreigners from Entering the Territory of the  
408 Republic of Indonesia. The ban came into effect starting on April 2, 2020 and will last until the  
409 pandemic is over.

410 WHO is aware of the various levels of national and subnational outbreaks in countries.  
411 By restricting interactions between individuals, physical distancing measures, and mobility  
412 limitations will delay COVID-19 transmission. These measures will, however, have a profound  
413 negative effect on social and economic life. WHO encourages countries with widespread

414 physical distancing interventions and population-level movement to prepare to gradually remove  
415 such constraints through the provision of an appropriate balance between socio-economic gains  
416 and epidemiological risk, in its most recent COVID-19 Policy Update of 14 April 2020 The  
417 World Health Organization (WHO)<sup>15</sup>. Indonesia should consider the reduction of the disease  
418 spread below the level beyond which health systems cannot reduce unnecessary mortality while  
419 allowing economic and social life to recover.

420         The Indonesian President in May 2020 announced the government's decision to prohibit  
421 civil servants, employees of state-owned enterprises, as well as members of the police and the  
422 armed forces from participating in the annual exodus tradition observed during the Islamic  
423 Holiday Idul Fitri, known as "mudik", in the effort to prevent COVID-19 from spreading further.  
424 The President, however, was refraining from banning the general public from participating in the  
425 tradition completely<sup>24</sup>. Now when the social restriction has been released, the government has  
426 new challenge on preventing large transmission caused by the coming election. Polemic raises on  
427 how some campaign events appear as being risk of new cluster. Many believe that it is better to  
428 postpone the election until the nation reach steady rate of infection. Nevertheless, government  
429 still remains on launching the election as scheduled while having strict monitoring on the  
430 campaign events<sup>25</sup>.

431         The deaths of medical workers in Indonesia have exposed the underequipped nature of  
432 the health system and shortages of PPE<sup>26</sup>. On April 2, 2020 the Indonesian Ministry of Trade is  
433 allowing the imports of used and refurbished medical devices, as well as reopening, in strict  
434 terms, the export of face masks and other PPE. Minister of Trade Regulation allows the  
435 importing of used and refurbished capital goods as long as it is done with the recommendation of  
436 the head of Indonesian COVID-19 Task Force. The Indonesian Defense Ministry also brought in

437 more than 8 tons of medical devices from China to Indonesia. The total aid provided by China  
438 reached 12 tons consisting of PPE such as protective clothing, N95 masks, disposable gloves and  
439 goggles. However, amid the on-going struggle of many medical institutions in obtaining standard  
440 PPE, the Minister of Trade amends the Minister of Trade Regulation <sup>29</sup> on the temporary ban of  
441 exports for antiseptics, raw material for face masks, PPE and face masks, effectively allowing  
442 the exports of these goods via ministerial exemption in coordination with other ministries or  
443 other non-governmental institutions<sup>24</sup>. This regulation takes effect on March 18, 2020 and  
444 applies retroactively. Meanwhile, South Korea forbids the <sup>3</sup> export of masks to foreign countries  
445 and measures to raise mask production because the supply is not adequate <sup>10</sup>.

446 Starting from <sup>7</sup> April 12, 2020 all passengers of the TransJakarta Bus service, the Jakarta  
447 MRT and the Jakarta LRT are obligated to wear face masks. This rule is based on Jakarta  
448 Governor Appeal on the use of face masks to prevent the spread of COVID-19. In line with that,  
449 The Indonesian Task Force of COVID-19 recommend the use of cloth masks to all citizens going  
450 out of the house amid the scarcity of surgical masks. The government considered that the cloth  
451 mask would not be as efficient as at least the surgical masks. However, regarding the inability to  
452 ensure the number of masks for the healthcare providers that need to be prioritized, cloth mask  
453 be the choice by perforce<sup>27</sup>. In reality, South Korean government managed to have and distribute  
454 masks so that every week the whole country could buy two masks. The majority of Koreans wear  
455 masks without fear and were engaged in a policy of social distancing. Because of the absence of  
456 masks, South Korea's government is involved since 27 February 2020 and has started to market  
457 over 2.4 billion masks a day to 24,000 pharmacies around the world<sup>10</sup>.

#### 458 **Releasing the Social Restriction**



459 Indonesia in May 2020 was preparing on releasing the large scale social restriction on the  
460 basis of several considerations, including economic condition and the fact <sup>6</sup> that the  
461 implementation of the restriction in several regions that not strict enough so that such guidance  
462 became useless. The President stated that the basic reproduction number ( $R_0$ ) of COVID-19 had  
463 dropped below 1 in several provinces and showed a decrease in the transmission rate in those  
464 regions. However, concerns were <sup>6</sup> mounting over the government's approach to reopening public  
465 places while urging citizens to embrace the what-so-called "new normal" as numbers of COVID-  
466 19 cases and deaths continue to rise across the country<sup>28</sup>.

467 The Indonesian Ministry of Health on May 23<sup>rd</sup> 2020 <sup>1</sup> issued new health protocols for  
468 workplaces to usher in the so-called "new normal". <sup>1</sup> The ministerial decree requires company  
469 management to create task forces to curb the spread of the diseases. Companies should ensure  
470 their cleanliness and hygiene at the workplace and increase the number of hand-washing  
471 facilities. Companies are also advised to do away with late-night shifts or at least only assign  
472 such shifts to workers under the age of fifty. Employees are required to maintain a safe physical  
473 distance and wear masks at workplace with body temperature being checked daily and having  
474 exercise together before work starts. Concerns are, however, mounting regarding these protocols  
475 are perhaps not considering those asymptomatic employees allowed to work and risk the  
476 workplace on becoming new cluster<sup>28,29</sup>.

477 In June 2020, however, due to the urge of preventing worse economic impact and several  
478 other considerations, the government decided to ease the social restriction and enter the transition  
479 phase with the "new normal" regulation. The number of positive cases, however, keeps  
480 increasing that urges Jakarta as the foremost region with positive cases to launch back the social  
481 restriction until undetermined time<sup>30</sup>. Transmission of the disease also swifts to offices cluster as

482 they start to open the regular schedule, and even to family cluster. Lack of discipline and  
483 awareness from the citizens has been major concerns besides other subjects.

#### 484 **Conclusion**

485 Indonesia as one of the largest populous country in the world is facing a huge challenge  
486 in managing COVID-19. The government has tried to be in line with the WHO interim guidance  
487 and raising the facilities needed to overcome the outbreak, yet the number of cases keeps  
488 increasing along with number of deaths. There are still many efforts that need to be established  
489 from the bottom of contact tracing to the increase the number of tests in confirming cases and  
490 hospital facilities to treat those with severe condition and critical illnesses. And in the main  
491 subject of that, increasing the citizens' awareness to mitigate the transmission might be the most  
492 fundamental effort that always has to be in concern.

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